FINAL PROGRAM

AMERICAN HERNIA SOCIETY

2023 Annual Meeting

Sept. 21–23, 2023

JW Marriott Austin, TX

ASSURANCE

FOR YOUR COMPLEX HERNIA PATIENTS

In a retrospective evaluation of biologic tissue matrices, including STRATTICE™ RTM, **91.7% of patients were recurrence-free at 7 years post-op**[1,*]

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Strattice™
ReconstructiveTissue Matrix

*Includes porcine and bovine acellular dermal matrices (ADMs) (n=157). Bridged repair and human ADM were excluded from the study group.

References: 1. Garvey PB, Giordano SA, Baumann DP, Liu J, Butler CE. Long-term outcomes after abdominal wall reconstruction with acellular dermal matrix. *J Am Coll Surg*. 2017;224(3):341-350. **2.** Data on file, Allergan. 510(k) Summary. LifeCell Corporation Inc, 2007. **3.** Data on file, Allergan Aesthetics, 2023, Number of AlloDerm™ RTM and STRATTICE™ RTM Units Sold. **4.** Data on file, Allergan Aesthetics; PubMed search performed May 2022.

INDICATIONS

STRATTICE™ Reconstructive Tissue Matrix (RTM), STRATTICE™ RTM Perforated, STRATTICE™ RTM Extra Thick, and STRATTICE™ RTM Laparoscopic are intended for use as soft tissue patches to reinforce soft tissue where weakness exists and for the surgical repair of damaged or ruptured soft tissue membranes. Indications for use of these products include the repair of hernias and/or body wall defects which require the use of reinforcing or bridging material to obtain the desired surgical outcome. STRATTICE™ RTM Laparoscopic is indicated for such uses in open or laparoscopic procedures. These products are supplied sterile and are intended for single patient one-time use only.

IMPORTANT SAFETY INFORMATION

CONTRAINDICATIONS

These products should not be used in patients with a known sensitivity to porcine material and/or Polysorbate 20.

WARNINGS

Do not resterilize. Discard all open and unused portions of these devices. **Do not use** if the package is opened or damaged. **Do not use** if seal is broken or compromised. After use, handle and dispose of all unused product and packaging in accordance with accepted medical practice and applicable local, state, and federal laws and regulations.

Do not reuse once the surgical mesh has been removed from the packaging and/or is in contact with a patient. This increases risk of patient-to-patient contamination and subsequent infection.

For STRATTICE™ RTM Extra Thick, **do not use** if the temperature monitoring device does not display "OK."

PRECAUTIONS

Discard these products if mishandling has caused possible damage or contamination, or the products are past their expiration date. Ensure these products are placed in a sterile basin and covered with room temperature sterile saline or room temperature sterile lactated Ringer's solution for a minimum of 2 minutes prior to implantation in the body. Place these products in maximum possible contact with healthy, well-vascularized tissue to promote cell ingrowth and tissue remodeling. These products should be hydrated and moist when the package is opened. If the surgical mesh is dry, do not use.

Certain considerations should be used when performing surgical procedures using a surgical mesh product. Consider the risk/benefit balance of use in patients with significant co-morbidities; including but not limited to, obesity, smoking, diabetes, immunosuppression, malnourishment, poor tissue oxygenation (such as COPD), and pre- or post-operative radiation.

Bioburden-reducing techniques should be utilized in significantly contaminated or infected cases to minimize contamination levels at the surgical site, including, but not limited to, appropriate drainage, debridement, negative pressure therapy, and/or antimicrobial therapy prior and in addition to implantation of the surgical mesh. In large abdominal wall defect cases where midline fascial closure cannot be obtained, with or without separation of components techniques, utilization of the surgical mesh in a bridged fashion is associated with a higher risk of hernia recurrence than when used to reinforce fascial closure.

For STRATTICE™ RTM Perforated, if a tissue punch-out piece is visible, remove using aseptic technique before implantation.

For STRATTICE™ RTM Laparoscopic, refrain from using excessive force if inserting the mesh through the trocar.

STRATTICE™ RTM, STRATTICE™ RTM Perforated, STRATTICE™ RTM Extra Thick, and STRATTICE™ RTM Laparoscopic are available by prescription only.

For more information, please see the Instructions for Use (IFU) for all STRATTICE™ RTM products available at www.allergan.com/STRATTICEIFU or call 1.800.678.1605.

To report an adverse reaction, please call Allergan at 1.800.367.5737.

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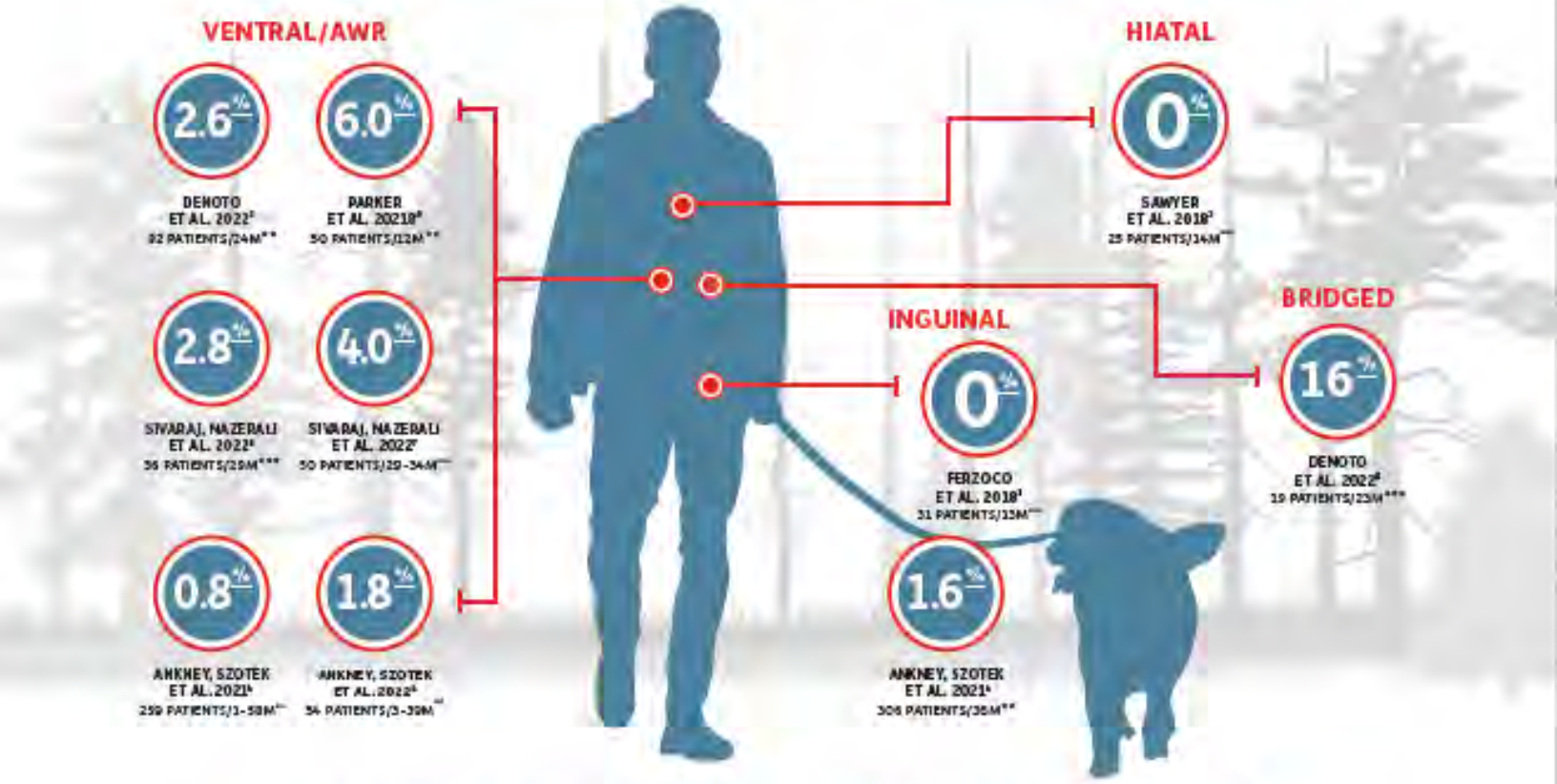

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Experience a next generation soft tissue repair platform made with layers of ovine (sheep) rumen designed with JUST ENOUGH polymer suture for needed strength.

*TELA Bio sales data. ** Follow up months. ***Average follow up months.

1. Sawyer M A J. (2018) New Ovine Polymer-Reinforced Bioscaffold in Hiatal Hernia Repair. JSLS J. Soc. Laparoendosc. Surg. 2018;22 doi: 10.4293/JSLS.2018.00057. 2. DeNoto, G III, Coppa, EP, Pacella SJ, Sawyer, M, Slayden, G, Takata, M, Tuma, G, Yunis, J. 24 Month Results of the BRAVO Study: A prospective, multi-center study evaluating the clinical outcomes of ventral hernias treated with OviTex® 1S Permanent Re-inforced Tissue Matrix. American Hernia Society Annual Meeting Podium Presentation. September 14-16, 2022. 3. Ferzoco SJ. Early experience outcome of a reinforced Bioscaffold in inguinal hernia repair: A case series. Int J. Surg. Open. 2018;12:9–11. doi: 10.1016/j.ijso.2018.06.001. 4. Ankney C, Banaschak C, Sowers B, Szotak P (2021) Minimizing Retained Foreign Body in Hernia Repair Using a Novel Technique: Reinforced Biologic Augmented Repair (ReBAR). Maples. 2021 July 5. Sivaraj, D, Henn, D, Fischer, KS, Trudy S. Kim, TS, Black, CK, Lin, JQ, Barrera, JA, Lazolou, MC, Makarewicz, HS, Chen, K, Perrault, DP, Gurtner, GC, Lee, GK, Nazerali, R Reinforced Biologic Mesh Reduces Postoperative Complications Compared to Biologic Mesh after Ventral Hernia Repair. Plast Reconstr Surg Glob Open 2022;10:e4083; doi: 10.1097/GOX.0000000000004083. 6. George DeNoto, Bridged repair of large ventral hernia defects using an ovine reinforced biologic: A case series, Annals of Medicine and Surgery, Volume 75, 2022, 103446, ISSN 2049-0801, https://doi.org/10.1016/j.amsu.2022.103446. (https://www.sciencedirect.com/science/article/pii/S2049080122000060). 7. Sivaraj, D., Fischer, K.S., Kim, T. S., Chen, K., Tigchelaar, S. S., Trotsyuk, A. A., Gurtner, G. C., Lee, G. K., Henn, D., & Nazerali, R. S. (2022). Outcomes of Biosynthetic and Synthetic Mesh in Ventral Hernia Repair. Plastic and reconstructive surgery. Global open, 10(12), e4707. https://doi.org/10.1097/GOX.0000000000004707.
8. Parker MJ, Kim RC, Barrio M, Socas J, Reed LR, Nakoob A, House MG, Coppa EP. A novel biosynthetic scaffold mesh reinforcement affords the lowest hernia recurrence in the highest-risk patients. Surg Endosc. 2021 Sep;35(9):5173-5178. doi: 10.1007/s00464-020-08009-1. Epub 2020 Sep 24. PMID: 32970208.

Important Safety Information: OviTex is intended for use as a surgical mesh to reinforce and/or repair soft tissue where weakness exists. Indications for use include the repair of hernias and/or abdominal wall defects that require the use of reinforcing or bridging material to obtain the desired surgical outcome.

Caution: Federal (US) law restricts this device to sale by or on order of a physician. Do not use OviTex in patients known to be sensitive to materials of ovine (sheep) origin. Use of OviTex in this patient population may result in an allergic or immunological reaction.

The following adverse events have been reported for surgical repair of hernias (with or without the use of surgical mesh): pain, infection, hernia recurrence, adhesion, bowel obstruction, bleeding, fistula, seroma, perforation, mesh migration, and mesh contraction. For additional important safety information, please see the OviTex Instructions for Use.

Healthcare professionals must use their own clinical judgment in evaluating appropriate treatment options for a particular patient. Treatment of a specific patient should be based on individual needs and the medical care deemed necessary by the patient's treating physician. Always refer to the package insert, product label, and/or Instructions for Use before using any TELA Bio product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets.

Please contact your TELA Bio representative if you have questions about TELA Bio products.

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Join AHS - Online Application

WHY JOIN THE AMERICAN HERNIA SOCIETY?

The American Hernia Society (AHS) is recognized as the worldwide authority on hernia surgery. The purpose of the Society is to advance the science and treatment of hernia and abdominal core health, and to promote the highest standards of professional skills and competence among surgeons who perform abdominal wall reconstruction.

Meetings

Receive discounted meeting registration for the AHS Annual Meeting covering all areas of abdominal wall reconstruction. The meeting includes faculty from around the globe who are leading educators in hernia surgery.

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Surgeons are able to connect with colleagues through the AHS website. Be included in our online “Find a Hernia Surgeon” directory. As a member, you have control of the information available on your surgeon profile.

Hernia Journal

Subscription to Hernia is included in your annual dues. AHS members receive 6 electronic editions of Journal Hernia each year. Members receive access to download Journal Hernia articles online at no additional cost.

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Enjoy curated video content from renowned hernia faculty worldwide! The WiSE Library is an educational resource designed to be the premier academic resource for all things hernia. Content has been invited and peer reviewed to provide AHS members with convenient access to the best video education to advance the science and treatment of hernia.

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AMERICAN HERNIA SOCIETY EDUCATIONAL FOUNDATION

CME INFORMATION

In support of improving patient care, this activity has been planned and implemented by Amedco LLC and the American Hernia Society. Amedco LLC is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Physicians (ACCME) Credit Designation Statement

Amedco LLC designates this live activity for a maximum of 21.5 *AMA PRA Category 1 Credits™* for physicians. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Other Professions

American Board of Surgery (ABS) MOC

Successful completion of this CME activity, which includes participation in the evaluation component, enables the learner to earn credit toward the CME and/or Self-Assessment requirements of the American Board of Surgery's Continuous Certification program. It is the CME activity provider's responsibility to submit learner completion information to ACCME for the purpose of granting ABS credit.

You must request your certificate within 30 days of the activity to meet the deadline for submission to PARS.

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STOP BY THE EXHIBIT HALL

GRIFFIN HALL

2ND FLOOR

Exhibit Hall Hours

Location: Griffin Hall

Thursday: 7:00am - 6:30pm

Friday: 7:00am - 6:00pm

Saturday: 7:00am - 1:45pm

SCIENTIFIC PROGRAM

SCHEDULE-AT-A-GLANCE

Thursday, September 21

7:15am – 8:00am	**Attendee Breakfast** *Griffin Hall*
8:00am – 8:15am	**Welcome & Announcements** *Lone Star A-E*
8:15am - 8:45am	**AHS Committee Updates** *Lone Star A-E*
8:45am - 9:15am	**Nyhus-Wantz Lecture** *Lone Star A-E*
9:15am - 9:45am	**Keynote Lecture** *Lone Star A-E*
9:45am - 10:30am	**Presidential Address** *Lone Star A-E*
10:30am – 11:00am	**Visit Exhibit Hall – Morning Break** *Griffin Hall*
11:00am - 12:30pm	**Fireside Chat With Experts - "Standard" Procedures** *Lone Star A-E*
11:00am - 12:30pm	**Disparities in Hernia Care** *Lone Star F-H*
12:45pm - 1:30pm	**Lunch & Learn** Lone Star F-H & Brazos
1:45pm - 3:45pm	**Prehabilitation Debate** *Lone Star A-E*
1:45pm - 3:45pm	**Abstract Session 1** *Lone Star F-H*
4:00pm - 5:30pm	**There Are Consequences to What We Do in the Operating Room** *Lone Star A-E*
4:00pm- 5:30pm	**Evidence, Practice and Eminence in Hernia Surgery** *Lone Star F-H*
5:30pm - 6:30pm	**Welcome Reception in Exhibit Hall** *Griffin Hall*

Friday, September 22

7:00am - 7:45am	**Breakfast & Learn** Lone Star F-H & Brazos
7:15am - 8:00am	**Continental Breakfast** *Griffin Hall*
8:00am - 9:45am	**What's New in Hernia Prevention and Treatment** *Lone Star A-E*
8:00am - 9:45am	**Abstract Session 2** *Lone Star F-H*
9:45am - 10:15am	**Morning Break & Hernia Olympics** *Griffin Hall*
10:15am - 11:15pm	**The Predictive Value of Hernia Radiology** *Lone Star A-E*
10:15am - 11:15pm	**Abstract Session 3** *Lone Star F-H*
11:15am - 12:15pm	**Redefining Key Measures of Success in Hernia Repair** *Lone Star A-E*
11:15am - 12:15pm	**Economics - New Codes, Advocacy, Cost Containment** *Lone Star F-H*
12:30pm - 1:15pm	**Lunch & Learn** *Lone Star F-H & Brazos*
1:15pm - 3:00pm	**Fireside Chat With Experts - "Complex" Procedures** *Lone Star A-E*
1:15pm - 2:15pm	**My Resident and I** *Lone Star F-H*
3:00pm - 3:45pm	**Quick Shots** *Lone Star A-E*
3:00pm - 3:45pm	**Visit Exhibit Hall** *Griffin Hall*
3:45pm - 4:45pm	**Best Abstracts (4)** *Lone Star A-E*
3:45pm - 4:45pm	**New Innovations in Prevention and Treatment** *Lone Star F-H*
4:45pm - 5:45pm	**Hernia Jeopardy** *Lone Star F-H*
5:45pm – 6:00pm	**AHS Visiting Observership Presentations** *Lone Star A-E*
6:00pm – 7:00pm	**AHS Leadership & Trainee Reception** *Room 303-304*
6:45pm - 7:45pm	**Women in Surgery Reception - Sponsored by Allergan** *Lone Star East Foyer*

Saturday, September 23

7:00am - 7:45am	**Breakfast & Learn - Sponsored by Integra** *Lone Star F-H*
7:15am - 8:00am	**Continental Breakfast** *Griffin Hall*
8:00am - 10:00am	**Bariatric Surgery and Hernia Repair** *Lone Star A-E*
8:00am - 10:00am	**Abstract Session 5** *Lone Star F-H*
10:00am - 10:30am	**Morning Break & Hernia Olympics Final Round** *Griffin Hall*
10:30am - 11:30am	**Difficult Case of the Day – Debate** *Lone Star A-E*
10:30am - 11:30am	**Abstract Session 6** *Lone Star F-H*
11:30am - 12:30pm	**Attendee Lunch** *Griffin Hall*
12:30pm - 1:45pm	**My Crazy Cases From the Last Year** *Lone Star A-E*
12:30pm - 1:45pm	**A Decade of Data - Helping You Optimize Your Outcomes Through Collaborative Learning - ACHQC Session** *Lone Star F-H*
1:45pm - 2:00pm	**AHS Awards** *Lone Star A-E*
2:00pm – 2:15pm	**AHS Business Meeting** Lone Star A-E
4:00pm	**AHS Kayaking Tour of Austin Skyline** *(pre-registration required)*

Thursday, September 21

7:15am – 8:00am
Attendee Breakfast in Exhibit Hall
Griffin Hall

8:00am - 8:15am
Welcome & Announcements
Lone Star A-E
Archana Ramaswamy MD, MBA | Loma Linda Veterans Administration Hospital

8:15am - 8:45am
AHS Committee Updates
Lone Star A-E
Yuri W. Novitsky MD | Columbia Surgery

8:45am - 9:15am
Nyhus-Wantz Lecture
Lone Star A-E
Introduction: Yuri W. Novitsky MD | Columbia Surgery
The Long Road to Innovation in Hernia Surgery
Jorge Daes MD | Clinica Portoazul

9:15am - 9:45am
Keynote Lecture
Lone Star A-E
Introduction: Archana Ramaswamy MD, MBA | Loma Linda Veterans Administration Hospital
Hidden Cost of Complications
Sunil Geevarghese MD, MSCI | Vanderbilt University Medical Center

9:45am - 10:30am
Presidential Address
Lone Star A-E
Introduction: Archana Ramaswamy MD, MBA | Loma Linda Veterans Administration Hospital
A Move Towards "Goodness": Changing the Landscape of Abdominal Wall Surgery
Yuri W. Novitsky MD | Columbia Surgery

10:30am - 11:00am
Morning Break in Exhibit Hall
Griffin Hall

11:00am - 12:30pm
Fireside Chat With Experts | "Standard" Procedures
Lone Star A-E
Moderators:
Sean Orenstein MD | Oregon Health & Science University
Rana Higgins MD | Medical College of Wisconsin
MIS TEP Inguinal Hernia Repair
Matt Goldblatt MD | Medical College of Wisconsin
MIS TAPP Inguinal Hernia Repair
Mette Willaume MD, PhD | Bispebjerg Hospital
Open Umbilical Hernia Repair
Ian MacQueen MD | David Geffen School of Medicine at UCLA
MIS TAPP Ventral Hernia Repair
Alisa Coker MD | Johns Hopkins University School of Medicine
MIS IPUM Ventral Hernia Repair
Brian Jacob MD | NYC Hernia

11:00am - 12:30pm
Disparities in Hernia Care
Lone Star F-H
Moderators:
Eric M. Pauli MD | Penn State Health Milton S. Hershey Center
Sunil Geevarghese MD, MSCI | Vanderbilt University Medical Center

Medical Device Acquisition and Distribution
Mercedeh Baghai MD | Torrance Memorial Medical Center
Inguinal Hernias in Elderly Patients
Leandro Totti Cavazzola MD, MSc, PhD | Universidade Federal do Rio Grande do Sul
Sex Disparities in Hernia Treatment and Outcomes
Heidi Miller MD | Maine Medical Center
Socioeconomic Impact on Presentation and Hernia Management
Courtney Collins MD | The Ohio State University Wexner Medical Center
Better Care and Care For All in Hernia Surgery: Can We Achieve It?
Kamal Itani MD | VA Boston Health Care System and Boston University
Supporting Hernia Repair Programs in the Developing World - the El Salvador Experience
Gabriel Arevalo MD | Houston Methodist Willowbrook
Rural Distress vs. Urban Distress: The Interaction of Neighborhood and Environment on Postoperative Outcomes
Savannah Renshaw MPH, MPA | The Ohio State University Wexner Medical Center
Q&A/Discussion

12:45pm - 1:30pm
Lunch & Learn: Advanced Techniques in Robotic ETEP & Challenging Parastomal Hernia Repairs: "A Global Perspective"
Lone Star F-H
George DeNoto MD | St. Francis Hospital
Miguel Ángel García Ureña MD, PhD | Hospital Universitario, Madrid

12:45pm - 1:30pm
Lunch & Learn: Providing Better Patient Experiences: How to Overcome Postsurgical Pain Management Obstacles
Brazos
Vedra Augenstein MD | Atrium Health
Jon Albrecht RPh, MHA, BCNSP, FASHP | Methodist Health System

1:45pm - 3:45pm
Prehabilitation Debate
Lone Star A-E
Moderators:
Archana Ramaswamy MD, MBA | Loma Linda Veterans Administration Hospital
David Krpata MD | Cleveland Clinic Foundation

Smoking Cessation Prior to Abdominal Wall Reconstruction

Smoking, Who Cares?
Jeremy Warren MD | Prisma Health
Smoking, Do Not Pass Go, Do Not Collect $200?
Matt Ritter MD | Indiana University School of Medicine

Weight Loss Prior to Abdominal Surgery

Obesity and AWR Don't Mix
Rana Higgins MD | Medical College of Wisconsin
AWR Was Made for the Obese
Manuel Lopez Cano MD | University Hospital Vall d'Hebron

Pre-operative Botox

Botox and AWR Make the Hole Go Down, Of Course You Should Use It!
Megan Nelson MD | Mayo Clinic

Botox is an Expensive Way to Delay Surgery and Not Change Outcomes!
Lucas Beffa MD | Cleveland Clinic Foundation

Panel Discussion/Q&A

1:45pm - 3:45pm
Abstract Session 1
Lone Star F-H
Moderators:
Benjamin Poulose MD | The Ohio State University
Alisa Coker MD | Johns Hopkins University

1. Watch and Wait? A Nationwide Analysis of the Healthcare Burden of Non-Elective versus Elective Ventral Hernia Repair
Theodore Habarth BS | University of Pennsylvania

2. Ventral Hernias >2cm: Does Surgical Approach Matter?
Melissa Thornton MD | Veteran's Affairs Medical Center North Texas

3. A Comparison Of Robotic Enhanced-View Totally Extraperitoneal Approach Versus Trans-Abdominal Retro-Muscular Approach For Midline Ventral Hernias
Tulio Pacheco MD | New York University Long Island School of Medicine

4. eTEP Transversus Abdominis Release for Ventral Hernia Repair
Maria Irarrazaval MD | Pontificia Universidad Católica de Chile

5. Robotic IPOM Explanation with SCOLA Hernia Repair
Mark Glover MD | Austin Surgeons

6. Robotic Redo Abdominal Wall Reconstruction: Bilateral TAR for Recurrence After eTEP
Emily Goddard MD | Brown University

7. Does Baseline Abdominal Wall Tension Predict Perioperative Outcomes During Complex Abdominal Wall Reconstruction With Posterior Component Separation?
Ryan Ellis MD | Cleveland Clinic Foundation

8. Abdominal Wall Reconstruction After Desmoid Tumor Exeresis
Jessica Macret | Santa Casa de Misericórdia de São Paulo

9. Postoperative Hemorrhagic Complications Among Patients Receiving Prophylactic Anticoagulation Following Ventral Hernia Repair
Kirsten Gimbel BS | Penn State Health Milton S. Hershey Medical Center

10. Early Bowel Obstruction After Laparoscopic Repair Of A Parastomal And Incisional Hernia: Error In Technique Or Patient Disease?
Emanuele Lo Menzo MD, PhD | Cleveland Clinic Foundation, Florida

11. Retrorectus Repair Of Incisional Ventral Hernia
Sharbel Elhage MD | Atrium Health Carolinas Medical Center

12. Endoscopic-Assisted Ventral Hernia Repair Associated To Rectus Abdominis Diastasis (EMILOS)
Ezequiel Sadava MD | Hospital Aleman de Buenos Aires

3:45pm - 4:00pm
Afternoon Break
Griffin Hall

4:00pm - 5:30pm
There Are Consequences to What We Do in the Operating Room
Lone Star A-E
Moderators:
Conrad Ballecer MD | Dignity Health
Kristi Harold MD | Mayo Clinic Arizona

TRAM/VRAM/DIEP
Antonio Espinosa-de-los-Monteros MD | National Institute of Medical Sciences and Nutrition

TRAM Flap Hernia
Dina Podolsky MD | Columbia University Medical Center

VRAM Flap Prophylaxis
David Pearson MD | Mayo Clinic
Management of Open Abdomens
Andrea Pakula MD | Adventist Health Simi Valley
Management of Hernia/ECF
Kimberly Coughlin | Ascension St. John Hospital
Poor Decision-Making Leads to Poor Outcomes in Hernia Repair
David Chen MD | David Geffen School of Medicine at UCLA
Discussion/Q&A

4:00pm- 5:30pm
Evidence, Practice and Eminence in Hernia Surgery
Lone Star F-H
Moderators:
Kamal Itani MD | VA Boston Health Care System / Boston University
B. Todd Heniford MD | Carolinas Medical Center
How to Achieve Best Evidence
Sabrina Drexel MD | Northwest Hernia Center
Translating Best Evidence Into Practice
Neil Smart MD | Royal Devon and Exeter NHS Trust
New Procedures and Technologies - Where is the Evidence?
Yaritza Perez-Soto MD | Physicians Regional Medical Group
Can We Equate Experience with Evidence?
Flavio Malcher MD, MSc | NYU Langone
Can We Equate Eminence with Evidence?
Shirin Towfigh MD | Beverly Hills Hernia Center

5:30pm - 6:30pm
Welcome Reception in Exhibit Hall

7:00pm
Faculty Dinner (by invitation only)
Edge Rooftop – Capitol View Terrace

Friday, September 22

7:00am - 7:45am
Attendee Breakfast in Exhibit Hall
Griffin Hall

7:00am - 7:45am
Breakfast & Learn: Transforming My Hernia Practice as a Community Surgeon; Algorithms, Outcomes, Economic, Robotics and Mesh
Brazos
Moderator:
Salvatore Docimo DO | USF Health
Amber Koon DO | Deaconess Health
J. Scott Roth MD | University of Kentucky Medical Center

7:00am - 7:45am
Breakfast & Learn: Multi-Center Experience with T-Line® Mesh – Open & Robotic Cases
Lone Star F-H
Moderator:
Flavio Malcher MD, MSc | NYU Langone
Hobart Harris MD, MPH | University of California San Francisco
Eduardo Parra Davila MD | Palm Beach Digital Surgery Institute

8:00am - 9:45am
What's New in Hernia Prevention and Treatment?
Lone Star A-E
Moderators:
Hobart Harris MD, MPH | University of California San Francisco
Sharon Bachman MD | Inova Health System

What's New in Hernia Prevention and Treatment?
Charlotte Horne MD | Penn State Health
Hernia Prevention - Where are We Now? Stoma Formation
Sonia Ribas MD | Faculdade de Medicina Universidade de Coimbra
What Promotes Adoption of New Techniques, and What Keeps Us from Adopting New Recommendations and Guidelines?
Vahagn Nikolian | Oregon Health & Science University
Does Prehabilitation Prevent Hernias?
S. Scott Davis MD | Emory University
What's on the Horizon? The Unanswered Questions and the Ongoing Studies
William Hope MD | Novant Health New Hanover Regional Medical Center

8:00am - 9:45am
Abstract Session 2
Lone Star F-H
Moderators:
Kristi L. Harold, MD | Mayo Clinic Arizona

13. Combined Abdominoperineal Repair of Perineal Hernia with Open Transabdominal Mesh-Based Repair and Pedicled Myocutaneous Gracilis Flap
Victoria Rendell MD | Penn State Health Milton S. Hershey Medical Center
14. Preliminary Clinical Experience of Robotic Single-Incision TAPP with DaVinci Single Port
Francesco Maria Bianco MD | University of Illinois at Chicago
15. Round Ligament Management During Groin Hernia Repair in Women: A Systematic Review and Meta-Analysis
Carlos Balthazar da Silveira MS | Bahiana School of Medicine and Public Health
16. Robotic Genitofemoral Nerve Sheath Tumor Removal With Inguinal Hernia Repair
Sharon Shiraga MD | Northern California Kaiser Permanente
17. Robotic Perineal Hernia Repair
William Freeman MD | University of Florida
18. Robotic Abdominal Wall Reconstruction: Extraperitoneal Repair of Ventral, Umbilical and Bilateral Inguinal Hernias with Rectus Fascia Flaps and Mesh
Eva Koeller MD | Brown University
19. Comparison Of Early Post-Operative Outcomes Of Anterior Versus Posterior Approach For Recurrent Inguinal Hernias
June Zolfaghari MD, MS | Yale New Haven Hospital
20. The Staple Single-Incision Retrorectus Surgery for Ventral Hernia Repair: Results from a Single Institution
Presenter: Paul Szotek MD, MBA | Indiana Hernia Center
21. Robotic Repair Of Bilateral Giant Inguinoscrotal Hernias With Loss Of Domain
Desmond Huynh MD | University of Michigan
22. Repairing Core Muscles: Outcomes For Adductor Longus Tendon Repair
Alexa De La Fuente Hagopian MD | Houston Methodist Hospital

9:45am - 10:15am
Morning Break in Exhibit Hall
Griffin Hall

10:15am - 11:15am
The Predictive Value of Hernia Radiology
Lone Star A-E
Moderators:
Salvatore Docimo DO | USF Health
Charlotte M. Horne MD | Penn State Health

Prediction Models in Acute Care Hernia Surgery
Eric Pauli MD | Penn State Health
Predicting the Need for Component Separation
Mazen Al-Mansour MD | University of Florida
Predicting Postoperative Complications
Shirin Towfigh MD | Beverly Hills Hernia Center
How Accurate Are Our Predictions using Hernia Radiology
Kaela Blake MD | University of Tennessee Medical Center

10:15am - 11:15am
Abstract Session 3
Lone Star F-H
Moderator:
Vinayak Mishra MD | Hanumant Endosurgery Centre
Sharon Bachman MD | Inova Health System

23. The Rate Of Incisional Hernia At Diverting Loop Ileostomy Closure Sites - More Common Than We Think?
Megan Obi MD | Cleveland Clinic Foundation
24. Ventral Hernia Size Discrepancy Between CT Scan and Operation: A Multi-center Clinical Quality Improvement (CQI) Project
Buckminster Farrow MD | Southwest Surgical Associates
25. Automation of Morphological Assessment of Hernias on CT Imaging Using Deep Learning Algorithms
Vinayak Rengan MS | Curium.life
26. Development And Internal Validation Of A Machine Learning Model To Predict The Occurrence Of Incisional Hernia After A Midline Laparotomy
Edgard Efren Lozada Hernández | Regional Hospital of High Specialty of Bajio
27. Video-Based Assessments of Inguinal Hernia Repair: Comparing an Objective, Procedure-Specific Assessment
Vahagn Nikolian MD | Oregon Health & Science University
28. Gender Disparity in the Hernia Journal and its Affiliated Societies
Nicole Lyons MD | University of Miami

11:15am - 12:15pm
Redefining Key Measures of Success in Hernia Repair
Lone Star A-E
Moderators:
John P. Fischer MD, MPH | Penn Medicine
Dina Podolsky MD | Columbia University Medical Center

Current Trends in Hernia Surgery Research - Level 1 Evidence, NIH Funding, and Trends in Publication
Dana Telem MD | University of Michigan
What Does it Mean to Be a Hernia Center & What are its Obligations to Outcomes?
Philip George MD | Columbia University
Looking Beyond Postoperative Complications: The Rise of PROMs in Hernia Related Research
John Fischer MD, MPH | Penn Medicine
Ventral Hernia Guidelines: Updates, Changes and Future Directions
Maarten Simons MD | Onze Lieve Vrouwe Gasthuis Hospital
Mobile Data Capture for Outcomes
Jonah Stulberg MD | McGovern Medical School at the University of Texas Health Sciences Center of Houston

11:15am - 12:15pm
Economics - New Codes, Advocacy, Cost Containment
Lone Star F-H
Moderators:
Megan Nelson MD | Mayo Clinic
Jeffrey A. Blatnik MD | Washington University School of Medicine, St. Louis

Advocacy as Hernia Surgeons
Heidi J. Miller MD | MaineHealth
The Burden of Chronic Pain in Hernia Repair
Bruce Ramshaw MD | CQInsights
Building an Economically Viable Robotics Program in the UK
Aali Sheen MD | Manchester General Surgery
Help! These New Hernia Codes Are Killing Me
J. Scott Roth MD | University of Kentucky

12:30pm - 1:15pm
Lunch & Learn: Allergan Aesthetics, an AbbVie Company
Lone Star F-H

12:30pm - 1:15pm
Lunch & Learn: Da Vinci® to the Rescue: Complex Case Video Review
Brazos

Flavio Malcher MD, MSc | NYU Langone
Conrad Ballecer MD | Dignity Health
Alisa Coker MD | Johns Hopkins University School of Medicine
Michael Meara MD | The Ohio State University

1:15pm - 3:00pm
Fireside Chat With Experts | "Complex" Procedures
Lone Star A-E
Moderators:
Vedra Augenstein MD | Atrium Health
J. Scott Roth MD | University of Kentucky

Optimal Treatment of Parastomal Hernia
Jenny Shao MD | University of Pennsylvania
Open Preperitoneal Hernia Repair: Is It Possible and Reproducible?
Jana Sacco MD | University of Florida
How to Perform a Perfect Lap eTEP Ventral Hernia Repair
Jorge Daes MD | Clinica Portoazul
Robotic Retrorectus Hernia Repair: Tips From 500 Cases
Filip Muysoms MD | AZ Maria Middelares
RoboTAR: How to Do it Well and Who Really Needs It?
Andrea Pakula MD | Adventist Health Simi Valley
The Steps for a Successful Repair of Complicated Paraesophageal Hernia
Gina Adrales MD | Johns Hopkins University School of Medicine

1:15pm - 2:45pm
My Resident & I
Lone Star F-H
Moderators:
Conrad Ballecer MD | Dignity Health
Kathryn Schlosser MD | Prisma Health
My Attending & Me: From Bedside Assist to Console Surgeon

Katie Hoener MD | Creighton University
Robotic TAPP Subxiphoid Hernia Repair
Leslie Okorji MD | University of Alabama at Birmingham

Robotic Morgagni Hernia Repair
Mohamed Elsheikh MD | Oregon Health and Science University
Patent Urachus Incarcerated in a Ventral Hernia
Katherine Zhao MD | Huntington Hospital Pasadena
Laparoscopic Management of A Recurrent Spigelian Hernia
Ryan Alonzo MD | Methodist Houston
Robotic External Oblique Release
Artem Shmelev MD | Stonybrook University
Abdominal Wall Reconstruction in the Setting of J-Pouch Creation
Alexis Holland MD | Atrium Healthcare
Closing the Training Gap: Open Inguinal Hernia Simulation in the Modern Era of MIS Repairs
Andrew Kinahan MD | Creighton University
Robotic eTEP Incisional Hernia Repair With Mesh
Jacqueline Lykstad MD | Creighton University
Robotic Single Dock Bilateral TAR For Repair of Large Incisional Hernia
Xavier Pereira MD | NYU Grossman School of Medicine
Robotic and Thoracoacopic Management of a Diaphragmatic Hernia
Yang (Frank) Lu MD | UCLA
From Resident to Abdominal Wall Specialist: Do You Really Need a Fellowship?
Bonnie Lee MD | University of Southern Alabama

3:00pm - 3:45pm
Quick Shots
Lone Star A-E
Bonnie Lee MD | University of South Alabama Health
Nozomi Ueno, MD, PhD | Saiseikai Suita Hospital Hernia Center

Q 1. In 2023 Are Still Hernias Strangulated?
Irma Sanchez Montes | SEDESA
Q2. Lateral Hernia Repair: Comparison of Robotic versus Open Techniques
Saher-Zahra Khan MD | University of Wisconsin
Q 3. Lightweight: The Fragility of Randomized Controlled Trials (RCTs) Utilizing Mesh in Abdominal Wall Reconstruction (AWR)
Sullivan Ayuso MD | Atrium Health Carolinas Medical Center
Q 4. Incidence of Incisional Hernias Following Minimally-Invasive Urologic Oncology Operations
Megan Nguyen BA | Penn State Health Milton S. Hershey Medical Center
Q 5. Prospective Study on Robotic Assisted Extended Total Extraperitoneal Transversus Abdominus Release Repair for Traumatic Abdominal Intercostal Hernias
Anthony Iacco MD | Corewell Health East William Beaumont University Hospital
Q 6. Is There A Place To Inguinal Ring Closure In Laparoscopic TAPP?
Ezequiel Sadava MD | Hospital Aleman de Buenos Aires
Q 7. Technique Matters: Robotic Repair of Moderate Ventral Hernias Reduced Complications, Readmissions, And Hospitalization Compared To Open Techniques
Jonathan Carter MD | University of California, San Francisco
Q 8. Hybrid Ipom Plus: The Dark Horse
Ashvind Bawa MD, MS | Dayanand Medical College and Hospital
Q 9. Robo TAR On "Talking To The Wall" Project: Teaching, Learning And Helping Patients
Rodrigo Galhego MD | Hospital Santa Catarina Paulista

3:00pm - 3:45pm
Afternoon Break
Griffin Hall

3:45pm - 4:45pm
Abstract Session 4 - Best Abstracts
Lone Star A-E
Moderators:
Yuri W. Novitsky MD | Columbia Surgery
Maarten Simons MD | Onze Lieve Vrouwe Gasthuis Hospital

29. Abdominal Wall Mass Resections: Closure Practices And Outcomes Following Oncologic "Shark Bites"
Sara Maskal MD | Cleveland Clinic Foundation

30. Preoperative Geriatrician Evaluation Significantly Improves Abdominal Wall Reconstruction (AWR) Outcomes in the Geriatric Patient Population
Hadley Wilson MD | Atrium Health Carolinas Medical Center

31. Robotic Unilateral Transversus Abdominis Release For A Large Flank Incisional Hernia
Adriana Valera Reyes MD | Creighton University, Arizona

32. Addition Of Ventral Hernia Repair Does Not Increase Inpatient Mortality In Non-Oncologic Colorectal Surgery
Brianna Slatnick MD | Rutgers Robert Wood Johnson Medical School

33. Robotic Incisional Hernia Repair, Extended Totally Extraperitoneal (eTEP) Access with Unilateral Transversus Abdominis Release (TAR)
Kimberly Coughlin MD | Ascension St. John Hospital

34. Robotic Versus Laparoscopic Groin Hernia Repair: A Multicenter Propensity Score Matched Analysis Of 30-Day And 1 Year Outcomes
Diego Lima | Montefiore Medical Center

3:45pm - 4:45pm
New Innovations in Prevention and Treatment
Lone Star F-H
Moderators:
Gina Adrales MD | Johns Hopkins University School of Medicine
Mario Goncalves MD | Hospital de Braga, Portugal

Incisional Hernia Prevention Through Enhanced Wound Healing
Hobart Harris MD | University of California San Francisco

Innovative Management of Large Atypical Hernias
Conrad Ballecer MD | Dignity Health

Non Mesh Minimally Invasive Repair
Shirin Towfigh MD | Beverly Hills Hernia Center

Adjuncts to Decreasing Hernia Formation - Prophylactic Mesh and Specialized Suture
Arielle Perez MD, MPH, MS | UNC Health

4:45pm - 5:45pm
Hernia Jeopardy
Lone Star A-E
Moderators:
Kent R. Van Sickle MD | UT Health San Antonio
Talar Tejirian MD | Kaiser Permanente

5:45pm - 6:00pm
AHS Visiting Observership Presentations
Lone Star A-E

6:00pm – 7:00pm
AHS Leadership & Trainee Reception Sponsored by Intuitive
Room 303-304

7:00pm – 8:00pm
Women in Surgery Reception Sponsored by Allergan
Lone Star East Foyer

Saturday, September 23

7:00am - 7:45am
Attendee Breakfast in Exhibit Hall
Griffin Hall

7:00am - 7:45am
Breakfast & Learn: Biologically Derived Grafts in Practice
Lone Star F-H
Adham R. Saad MD | USF Health

8:00am - 10:00am
Bariatrics and Hernia Repair
Lone Star A-E
Moderators:
Jorge Daes MD | Clinica Portoazul
Marina Kurian MD | NYU Langone

The Basics of the Problem: Does Robotics Make it Better?
Bonnie Lee MD | University of Southern Alabama
Optimizing the Patient with Obesity for Ventral Hernia Repair: Where to Start?
Eduardo Parra Davila MD | Palm Beach Digital Surgery Institute
Mathematics, Charm and the Reluctant Patient: Best Strategies to Get Patient Buy-In
Todd Heniford MD | Carolinas Medical Center
Acutely Incarcerated Hernia in the Patient with Morbid Obesity: Best Methods for Repair
Sharon Bachman MD | Inova Health System
Decision Algorithms in the Obese Patient with Ventral Hernia: Perfecting Outcomes
Sean Orenstein MD | Oregon Health Science Center
Abdominoplasty and Hernia Repair: Timing and Maximizing Cosmesis
Miguel Ángel García Ureña MD | Hospital Universitario del Henares, Universidad Francisco de Vitoria

8:00am- 10:00am
Abstract Session 5
Lone Star F-H
Moderators: Dina Podolsky MD| Columbia University Medical Center: Richard A. Pierce MD, PhD | Vanderbilt University Medical Center

35. Robotic repair of recurrent incisional lumbar hernia/lateral incisional hernia (LIH)
Alice Gamble DO | Creighton University, Arizona
36. Unilateral Dock for Robotic Pauli Parastomal Hernia Repair
Antoinette Hu MD | Penn State Health Milton S. Hershey Medical Center
37. Anterior Cutaneous Nerve Entrapment Syndrome & Its Management With A Novel Approach Using Totally Extraperitoneal Robotic Posterior Neurectomy
Snigdha Gulati MD | St. Joseph's Hospital and Medical Center, Dignity Health
38. Concomitant Cesarean Section with Abdominal Wall Reconstruction
Ryan Ellis MD | Cleveland Clinic Foundation
39. Intricate Approach to Thoracoabdominal Hernia Containing Kidney, Colon, Pancreas, and Spleen
Jacqueline Lykstad DO | Creighton University, Arizona
40. Robotic Repair of Rare Recurrent Incision Hernia in Setting of Prior Reconstructed Diaphragm and Chest Wall
Stefanie Sueda MD | Dartmouth-Hitchcock Medical Center
41. Robotic Transabdominal (rTAPP) Approach for a Large Incisional Hernia from Prior Kidney Transplant
Eleanor Johnson MD, MPH | Mayo Clinic Arizona
42. The Management of Subxiphoid Hernias after Sternal Dehiscence
Kathryn Schlosser MD | Prisma Health Upstate
43. Robotic Sugarbaker Parastomal Hernia Repair with Unilateral Transversus Abdominis Muscle Release for Multiply Recurrent Parastomal Hernia
Keouna Pather MD | University of Florida, Jacksonville
44. Redo- Transversus Abdominis Release after Mesh Fracture in a Patient with a TRAM flap
Sara Maskal MD | Cleveland Clinic Foundation

45. Open Transversus Abdominis Release For Bilateral Traumatic Flank Hernias
Megan Melland-smith MD | Cleveland Clinic Foundation
46. Robotic Preperitoneal Morgagni Hernia Repair with Mesh
Sierra Grasso DO | Peconic Bay Medical Center

10:00am - 10:30am
Morning Break & Hernia Olympics in Exhibit Hall
Griffin Hall

10:30am - 11:30am
Difficult Case of the Day - Debates
Lone Star A-E
Moderators:
David Chen MD | David Geffen School of Medicine at UCLA
Mette Willaume MD, PhD | Bispebjerg Hospital

Case 1: Hernia Repair and Fistula Take Down- Concurrent or Staged?
Fix Both at the Same Time- Vedra Augenstein MD | Atrium Health
Come Back and Fight Another Day - Ashvind Bawa MD | Dayanand Medical College and Hospital
Panel Vote

Case 2: MIS Extraperitoneal Ventral Hernia Repairs- Close the Posterior Sheath or Mind the Gap?
Close It- Igor Belyansky MD | Luminis Health
Leave it Alone- Wolfgang Reinpold MD | Hamburger Hernien Centrum
Panel Vote

Case 3: Cirrhosis and the Elective Umbilical Hernia- To Fix or Not to Fix?
Fix it- Pilar Hernández-Granados MD | SERMAS
Watchful Waiting: Hakan Gok MD | Hernia Istanbul
Panel Vote

Case 4: Loss of Domain- Does the Linea Alba Really Need to Be Closed?
Always Try to Close the Midline- Sean Orenstein MD | Oregon Health Science Center
Peritoneal Flap or Bridge is Fine- Jana Sacco MD | University of Florida
Panel Vote

Case 5: Chronic Pain After Ventral Hernia- Reoperate or Conservative Measures?
Go Fix It- Sabrina Drexel MD | Northwest Hernia Center
Don't Rush. You Break it you Buy it
Richard Pierce MD, PhD | Vanderbilt University Medical Center
Panel Vote

10:30am - 11:30am
Abstract Session 6
Lone Star F-H
Moderators: Kent Van Sickle MD | UT Health San Antonio
Andrea Pakula MD, MPH | Adventist Health Simi Valley

47. Primary Abandonment Of The Sac In The Management Of Scrotal Hernias: A Multi-Center Experience Of Short-Term Outcomes
Vahagn Nikolian MD | Oregon Health & Science University
48. The Effect of Major Depressive and Generalized Anxiety Disorder on Quality of Life Following Hernia Repair
Thomas Andry BS | University of Texas Medical Branch
49. Volumetry after Botulinum Toxin A in Abdominal Wall Reconstruction: The Impacts of Compliance on Intra-abdominal Pressure and Ventilatory Dynamics
Pedro Amaral MD | Santa Casa de Misericórdia de São Paulo

50. The Enigma of Hernia Prediction Unraveled: External Validation of a Prognostic Model in Colorectal Surgery Patients
Chris Amro MD | University of Pennsylvania
51. Prophylactic Drain Use Is Unnecessary After Robotic-Assisted Extended Total Extraperitoneal Rives-Stoppa, Retro-Rectus Hernia Repair
Anthony Iacco MD | Corewell Health East William Beaumont University Hospital
52. Small Bites Versus Large Bites During Abdominal Wall Closure: A Systematic Review and Meta-Analysis
Ana Caroline Rasador MS | Bahiana School of Medicine and Public Health

11:30pm - 12:30pm
Attendee Lunch
Griffin Hall

12:30pm - 1:45pm
My Crazy Cases From the Last Year
Lone Star A-E
Moderators:
David Lourie MD | Huntington Hospital
Heidi J. Miller MD | MaineHealth
Presenters:
Lucian Panait MD | Minnesota Hernia Center
Ramesh Punjani MS, FICS, FMAS, FIAGES | Pooja Nursing Home PVT

12:30pm - 1:45pm
A Decade of Data - Helping You Optimize Your Outcomes Through Collaborative Learning - ACHQC Session
Lone Star F-H
Moderator:
Flavio Malcher MD, MSc | NYU Langone
Arielle Perez MD, MPH, MS | UNC Health
Preoperative Optimization, What Really Improves Outcomes?
Mazen Al-Mansour MD | University of Florida
What Have We Learned About the Best Approach for Routine Ventral Hernia Repairs?
Courtney Collins MD | The Ohio State University Wexner Medical Center
Does the Plane We Place Mesh Really Matter?
Clayton Petro MD | Cleveland Clinic Foundation
Postoperative Pain Management - Getting the Best Outcomes for Your Patients
Jeremy Warren MD | Prisma Health
Predictors of Venous Thromboembolism in Incisional Hernia Repair
Muhammad Jawad Javed MBBS | University of Florida
Q&A/Discussion

1:45pm – 2:00pm
AHS Awards
Lone Star A-E
Yuri W. Novitsky MD | Columbia Surgery

2:00pm - 2:15pm
AHS Business Meeting
Lone Star A-E

3:00pm
AHS Kayaking Event (pre-registration required)

AHS 2023 POSTER LIST

POD 1. Benefits of ERAS protocol and Robotic Surgery for Complex Ventral Hernia Repair: A Quality Improvement Study
Aquiles Garza MD | Methodist Hospital Willowbrook
POD 2. The First Experience Of Single-Port (SP) Robotic Inguinal Hernia Repair With Totally Extraperitoneal Approach (SP-rTEP)
Seung-Rim Han MD, PhD | Ain Hospital
POD 3. A Clinical Quality Improvement (CQI) Project for Ventral Hernia Repair (VHR): Assessing Long-Acting Local Anesthetic and Low-Pressure Pneumoperitoneum
Hadley Wilson MD | CQInsights PBC
POD 4. Incidence Of Incisional Hernia Associated With Surgical Site Infection (SSI) After Midline Laparotomy And The Predictive Utility Of ACS-NSQIP
Roland Kevin Cethorth Fonseca MD | Regional Hospital of High Specialty of Bajio
POD 5. Standardized Setups of Hugotm Robot-Assisted Surgery System for Inguinal Hernia Repair
Francesco Maria Bianco MD | University of Illinois at Chicago
P6. Short-term Outcomes for a Novel Non-Woven Polypropylene Mesh Used in All Types of Hernia Repair: A Clinical Quality Improvement (CQI) Project
Joshua Trussell MD | CQInsights PBC
P7. Incidence Of Trocar Site Hernias In Minimally-Invasive Colorectal Cancer Surgery Patients
Aidan Hintze BS | Penn State Health Milton S. Hershey Medical Center
P8. Lap-Endoscopic Sublay/Extraperitoneal Sugarbaker Mesh Repair For Parastomal Hernia
Binggen Li | Affiliated Hexian Memorial Hospital of Southern Medical University
P9. A New De-Centralized Method for Evaluating Clinical Data and Outcomes: A Multi-center Clinical Quality Improvement (CQI) Project for Hernia Repair
Bruce Ramshaw MD | CQInsights PBC
P10. 10 Years Of Usage Of A Self Adhesive Mesh In TAPP Hernia Repair. Long Term Result Of A Prospective Study Based On European Herniamed Register.
Pavol Klobusicky | Helios St. Elisabeth Hospital Bad Kissingen
P12. The Resident Drag Factor: Robotic Hernia Repair
Alexander Mikhail MD, MS | Louisiana State University
P13. Robotic eTEP with Unilateral TAR for Midline and Kidney Transplant Incisional Hernias
Eleanor Johnson MD, MPH | Mayo Clinic Arizona
P15. Robotic Thoraco-Abdominal Hernia Repair
Diego Lima | Montefiore Medical Center
P16. A Single Center's Three-Year Experience Utilizing the Polypropylene T-Line® Mesh for Abdominal Wall Reconstruction
David Tran MD | New York University Langone Health
P18. Comparation Between Small Bites, RTL And Mesh For Prevention Of Abdominal Wound Dehiscence. Systematic Review And Network Meta-Analysis.
Alfredo Sinahi Abarca Magallon MD | Regional Hospital of High Specialty of Bajio
P19. Improved Outcomes After Inguinal Hernia Surgery In Sweden Between 1992 And 2021: Swedish Hernia Register
Erik Axman MD | Sahlgrenska University Hospital
P20. Sex Differences In Preoperative And Acute Postoperative Pain Among Primary Unilateral Inguinal Hernia Repair Patients
Marguerite Mainprize MSc BSc(Hons) | Shouldice Hospital
P21. Use Of Arista For Robotic Retro-Muscular Abdominal Reconstruction
Snigdha Gulati MD | St. Joseph's Hospital and Medical Center, Dignity Health
P23. Predictors Of Bowel Injury In Incisional Hernia Repair
Muhammad Jawad Javed MBBS | University of Florida
P24. Transinguinal Preperitoneal Repair of A Recurrent Femoral Hernia With An Adjacent Ipsilateral Permanent Ostomy
Mazen Al-Mansour MBBS | University of Florida, Gainesville
P27. Comparison of Permanent Synthetic vs Biologic and Absorbable Mesh for Open Parastomal Hernia Repair
David Xiao MD | Vanderbilt University Medical Center

P28. Pregnancy after Rectus Muscles Diastasis Laparoscopic Repair with LAP-T Technique, 53 Cases with No Recurrences

Giuseppe Pozzi MD | Abdominal Diastasis International Center (CIDA)

P31. Fibrin Glue Vs Tacker in Laparoscopic Totally Extraperitoneal Inguinal Repair: A Systematic Review and Meta-analysis of Randomized Controlled Trials

Ana Caroline Rasador MS | Bahiana School of Medicine and Public Health

P32. TransInguinal Preperitoneal (TIPP) Versus Lichtenstein Inguinal Hernia Repair: A Systematic Review and Meta-analysis

Carlos Balthazar da Silveira MS | Bahiana School of Medicine and Public Health

P33. Repair of Midline and Parastomal Hernias Using a Modified Pauli Parastomal Hernia Repair Technique

Nicholas Gabinet | Brown University

P34. CPL-01, An Investigational Long-Acting Ropivacaine, Demonstrates Safety And Efficacy In Open Inguinal Hernia Repair

Erol Onel | Cali Biosciences

P35. Management of Soft Tissue Coverage After Abdominal Wall Reconstruction

Aldo Fafaj MD | Cleveland Clinic Foundation

P36. Early Laparoscopic Explantation of Preperitoneal Inguinal Mesh Secondary to an Antibiotic Resistant Mycobacterium

Zachary Delgado | Cleveland Clinic Foundation, Florida

P37. Robotic External Oblique Release for M2M3W2 Incisional Hernia

Artem Shmelev MD | Columbia University

P38. Mesh Infections - Are We Heading Into An Epidemic?

Aman Arora MBBS, MS, DNB | Command Hospital Chandimandir

P40. Keeping an eye on NPWT : An Exposé

Ashvind Bawa MD, MS | Dayanand Medical College and Hospital

P41. Groin hernia repair in female: Do we need to use a mesh ?

Moamena El Matbouly MD | Hamad Medical Corporation

P42. Hernia 3D-Training Model: A New Inguinal Hernia 3D Printed Simulator

Natália Pascotini Pereira MD | Hospital Alemão Oswaldo Cruz

P43. Incidence of Incisional Hernia In A High-Volume Liver Transplant Center: Importance of Multidisciplinary Approach and Plastic Surgeons Role in Repair

Souha Farhat MD | Houston Methodist Hospital

P44. Retrospective Review of Outcomes After Robotic Ventral Hernia Repair in Obese versus Non-obese Patients

Alexandra Nguyen MD | Kaiser Permanente

P45. Patient-Centered Outcomes in Inguinal Hernias Before and After the Introduction of the Robotic Surgical Platform

William Dacus MS | Medical University of South Carolina

P46. A Performance Improvement Project to Reduce Opioid Prescribing for Cholecystectomy and Hernia Repair Patients

Kendall Montgomery BS | Methodist Medical Group-Surgical Associates of Mansfield

P47. Does The Weight Matter? Short Term Outcomes Of Lightweight Versus Heavyweight Three-Dimensional Anatomical Mesh In Inguinal Hernia Repair.

Diego Lima | Montefiore Medical Center

P48. Drain Versus No Drain Placement After Retromuscular Ventral Hernia Repair With Mesh: An ACHQC Analysis

Diego Lima | Montefiore Medical Center

P49. The Frequency And Risk Factors Of Chronic Postoperative Inguinal Pain In Japan: A Prospective, Longitudinal Nationwide Survey

Masato Narita MD, PhD | National Hospital Organization

P50. Robotic Transversus Abdominis Release (Tar) In The Acute Setting: A Case Series

Helen Liu DO | New York University Long Island School of Medicine

P51. Robotic Repair of Ventral Hernia Secondary to Semilunar Line Injury

Daniel Halpern MD | New York University Long Island School of Medicine

P52. Failed Prehabilitation: Causes, Consequences and Conclusions

Michael Lechner | Paracelsus Medical University

P54. Is There A Role For Botulinum Toxine In Inguinal Hernia Surgery? Case Report Of The Management Of A Giant Scrotal Hernia

Clemens Schmutzhart | Paracelsus Medical University Salzburg

P56. Pre-Operative Adjuncts In Large Ventral Hernia With Loss Of Domain
Ramesh Punjani MD | Pooja Nursing Home
P57. A New Etiology Of Semilunar Line Diastasis And The Relation To Rectus Diastasis
Moshe Dudai MD | Ramat Aviv Medical Center and Hernia Excellence
P58. Endoscopic TEP Repair Of Recurrent Hernias After Initial Laparoendoscopic Repair, Is This The Right Way
Moshe Dudai MD | Ramat Aviv Medical Center and Hernia Excellence
P59. What Dose A General Surgeon Need To Know About The Spotsman Hernia And Athletes Pubalgia
Moshe Dudai MD | Ramat Aviv Medical Center and Hernia Excellence
P62. Extended Total Extra-Peritoneal Approach For "Pauli" Robotic Retromuscular Sugarbaker Repair For Para-Urostomal Hernias: A Case Series
Jigesh Baxi MD | Rutgers Robert Wood Johnson Medical School
P63. Surgical Expertise And Risk Of Long-Term Complication After Groin Hernia Surgery - A Patient-Reported National Register Study
Hanna de la Croix MD, PhD | Sahlgrenska University Hospital
P64. Early Outcomes of Biologically-Derived Grafts in Minimally Invasive Ventral Hernia Repairs
Adam Young PhD | Surgical Healing Arts; Integra LifeSciences Corp
P65. Incidence of Undiagnosed Contralateral Inguinal Hernia Determined at the Time of Laparoscopic Inguinal Herniorrhaphy in Adults
Mahnoor Zia MD | The Houston Methodist Hospital
P67. Incidence of Postoperative Complications Among Patients with Active or Resolved COVID-19 Undergoing Elective Abdominal Wall Reconstruction
Grant Wagner BS | University of Alabama at Birmingham
P68. Computed Tomography Measurements To Predict Need For Robotic Transversus Abdominis Release: A Single Institution Analysis
Leslie Okorji MD | University of Alabama at Birmingham
P69. Effectively Managing Complex Grade II-IV Abdominal Wall Hernias with the Innovative T-Line Hernia Fixation System
Hobart Harris MD, MPH | University of California, San Francisco
P70. The University of Illinois at Chicago Technique for TAPP Inguinal Hernia Repair Performed With The Davinci Single Post System
Francesco Maria Bianco MD | University of Illinois at Chicago
P71. Surgical Sleuthing: Differentiating Inguinal vs. Spigelian Hernia
Robert-Marlo Bautista MD | University of Kentucky
P72. Ventral Hernia Surgery: the Impact of Surgeon and Patient Gender on Documentation and Outcomes
Nicole Lyons MD | University of Miami
P73. Ultrasound-Guided Quadratus Lumborum Blocks Prior To Abdominal Wall Reconstruction: A Retrospective Cohort Study
Kaela Blake MD | University of Tennessee, Knoxville
P74. Robotic Mesh Plug Removal x2
Kimberly Coughlin MD | Ascension St. John Hospital
P75. Chemical Denervation for Reconstruction of Abdominal Wall in a 2-year-old patient with Eagle Barrett (Prune Belly) Syndrome
William Lorenz MD | Atrium Health Carolinas Medical Center
P76. Preperitoneal Mesh Repair of a Large Multiply Recurrent Hernia in a Contaminated Field
Michael Katzen MD | Atrium Health Carolinas Medical Center
P79. Intraperitoneal Onlay Mesh Repair Of Interparietal Hernia With Defect Closure Following Failure Of Rives-Stoppa Repair Of Large Midline Ventral Hernia
Elan Kaplan MBBS | Holmesglen Private Hospital
P80. Cord Lipoma In Inguinal Hernia Surgical Repair: A Prospective Study
Jessica Zilberman Macret MD | Hospital Alemão Oswaldo Cruz
P84. Laparoscopic Inguinal Hernia Repair With Mesh Fixation Using Tisseel®/Tissucol® (Fibrin Sealant) Versus Histocryl® Lapfix Glue
Aali Sheen MD | Manchester University Foundation NHS Trust
P85. Robotic-assisted Right Inguinal Mesh Removal with Subsequent Hernia Repair
Britton Donato MD, MPH, MS | Mayo Clinic Arizona

P86. A Case Series of Enteroprosthetic Fistula; The Octopus Sign
Matthew Krell MD | New York University Long Island School of Medicine
P87. Retro-rectus Ventral Hernia Repair Using T-Line Hernia Mesh: A Multi-Surgeon Case Series
Anna Malysz Oyola DO | Novant New Hanover Regional Medical Center
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Nicolas Quezada MD | Pontificia Universidad Católica de Chile
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ORAL ABSTRACTS

1. Watch and Wait? A Nationwide Analysis of the Healthcare Burden of Non-Elective versus Elective Ventral Hernia Repair

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Background: Ventral hernia (VH) repair remains one of the most common surgical procedures. Patients undergoing emergent or non-elective repair of VH may be at an increased risk of morbidity. We sought to quantify the healthcare burden of non-elective repair (NR) of ventral hernia versus electively repaired cases in a nationwide population-based readmission database.

Methods: All primary VH repairs from 2010-2019 were identified in the Nationwide Readmission Database and stratified by NR or elective repair. Patients were followed up for 6 months and outcomes abstracted were surgical site complications, infections, cumulative readmissions, costs, and length of stay. Univariate and multivariate comparisons using risk-adjusted logistic regression were performed. Generalized linear modeling was used to determine mean associated difference in cost and length of stay associated with setting of repair.

Results: A total of 420,598 primary VH repairs of were identified. Of these, 54.9% were performed in the elective setting. Patients undergoing NR tended to be older (59.1 vs. 56.8 years, P< 0.001), had greater comorbidity burden (Elixhauser comorbidity index: 2.7 vs 2.2, P< 0.001), had public (Medicare/Medicaid) insurance (58.2% vs. 55.1%, P< 0.001), and were in the bottom quartile of income (29.5 vs. 26.2, P=0.001). The unplanned 180-day readmission rate for the NR cohort was 20.6% compared to 15.7% in the elective setting (P=0.001). There were no differences in infectious outcomes, or wound complications. Increased medical complications were associated with non-elective repair (14.3% vs. 11.2%, P=0.023). Six-month hernia recurrence was also associated with NR (0.28 vs. 0.14, P=0.031). Non-elective repairs were associated with an expected mean increase of USD$ 5,783.57 per index admission compared to elective repairs (P< 0.001). NRs were also associated with a 2.7 day longer length of stay than elective repairs (P=0.011). The total annual costs associated with non-elective repairs of VH were $USD 406,231,420.

Conclusion: Non-elective repair of VH is associated with increased medical complications and overall healthcare utilization nationwide. These patients more often appear to have a higher comorbidity burden and belong to lower socioeconomic status brackets. It is unknown whether this difference can be attributed to practice patterns or lack of referral and general awareness. Greater efforts should be undertaken to identify why patients are not referred for or present for elective repair. Reduction of the rate of emergent or non-elective repair of VH will result in substantial savings to patients and the healthcare system.

2. Ventral Hernias >2cm: Does Surgical Approach Matter?

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Background: More than 600,000 ventral hernia repairs are performed in the United States annually. There is significant heterogeneity in repair techniques among providers based on hernia anatomy, patient factors, and provider preference. The adoption of laparoscopic and robotic minimally invasive techniques has increased over time with evidence demonstrating improvements in morbidity and recovery. The purpose of this study was to compare post-operative outcomes of open compared to MIS repairs for hernias ≥2cm. The primary outcome of interest was hernia recurrence; secondary outcomes were length of stay and wound complications. We hypothesized that MIS repairs would be associated with overall similar outcomes to open repairs but have a decreased length of stay.

Methods: This was a retrospective study of ventral abdominal wall hernias in the Veterans Surgical Quality Improvement Program (VASQIP), a national sample of all hernias repaired at government hospitals from 2018-2019. Patients were identified by CPT code for open and MIS (laparoscopic and robotic) ventral hernia repair. VASQIP data was supplemented with chart review to gather data on patient demographics, hernia characteristics, operative techniques, and outcomes. Recurrences were identified via clinical exam by a surgeon or cross-sectional imaging studies. Outcomes were analyzed with t-tests, chi-squared tests and multivariate logistic regression using STATA software, $p< 0.05$ was considered significant.

Results: Initially 1,974 ventral hernia patients were identified during the specified study period. After review, 685 were excluded because they had a hernia < 2cm in greatest dimension leaving 1,289 for analysis. There were 908 (70%) open repairs and 381 (30%) minimally invasive repairs. There were no significant differences in baseline demographic risk factors for recurrence between the two groups (Table 1). Open hernia repairs were more likely to be primary hernias (54%) and MIS repairs were more commonly incisional or recurrent hernias (59%). MIS hernias were larger (4.1cm SD 2.9) compared to open hernias (3.7 cm SD 2.6). Mesh was used in 100% of the MIS hernia repairs and 78% of open repairs ($p=0.001$)(Table 2). The recurrence rate was slightly higher in open repairs (10%) compared to MIS repairs (7%) ($p=0.2$). Length of stay was longer in the open repairs (4.9days SD: 6.4 vs 2.3 SD: 2.0; $p< 0.001$). Seromas were more common in the MIS group (16% vs 9%, $p< 0.001$), but wound dehiscence and infection were more common in the open group (2% vs 1%, $p< 0.001$). On multi-variate analysis, preoperative albumin (β -0.86; 95% CI: -1.58, -0.13), maximum dimension (β +0.11; 95% CI 0.026, 0.19), incisional hernias (β +1.08; 95% CI 0.41, 1.76) and recurrent hernias (β +1.05; 95% CI 0.37, 1.73) were associated with recurrence.

Conclusion: In our analysis of ventral hernias >2cm, MIS techniques were used more commonly in larger and more complex (incisional and recurrent) hernias. Despite increased hernia size and complexity, MIS repair was associated with significantly decreased wound dehiscence, infection, and length of stay. MIS repair also had a non-significant decrease in recurrence rate. The improved outcomes may be related to superior mesh placement in MIS when compared to open repairs.

Table 1

	Open	MIS	P value
Total	908 (70%)	381 (30%)	
Age (SD)	60.6 (11.5)	59.8 (12.0)	0.3
Gender			0.5
Male	842 (93%)	360 (94%)	
Female	66 (7%)	21 (6%)	
BMI	31.7 (5.2)	32.3 (6.0)	0.3
Diabetes	188 (21%)	83 (22%)	0.7
Pre-op A1c	7.2(1.3)	7.1 (1.0)	0.7
CHF	152 (17%)	72 (19%)	0.5
Smoker	216 (24%)	91 (24%)	0.8
MI within 6 months preop	68 (7%)	26 (7%)	0.8
Preop Albumin	4.1 (0.4)	4.1 (0.4)	0.2

Table 2

	Open	MIS	P values
Hernia Location			0.4
Umbilical	717 (79%)	290 (76%)	
Epigastric/Supraumbilical	132 (15%)	67 (18%)	
Infraumbilical	6 (1%)	0	
Hernia Type			0.001
Primary	493 (54%)	157 (41%)	
Incisional	219 (24%)	102 (27%)	
Recurrent	194 (21%)	122 (32%)	
Max Dimension (cm)	3.7 (2.6)	4.1 (2.9)	0.001
Number of defects	1.2 (0.5)	1.3 (0.7)	0.001
Primary Closure	203 (22%)	0	0.001
Mesh	703 (78%)	381 (100%)	0.001
Mesh location:			0.001
Underlay	604 (67%)	379 (99%)	
Sublay	49 (5%)	2 (0%)	
Onlay	43 (5%)	0	
Inlay	7 (0%)	0	
Operative Time (hr)	1.2 (0.8)	1.8 (1.1)	0.001

3. A Comparison Of Robotic Enhanced-View Totally Extraperitoneal Approach Versus Trans-Abdominal Retro-Muscular Approach For Midline Ventral Hernias

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Background: The last decade has seen tremendous advances in robotic ventral hernia repair techniques. The Rives Stoppa retro-muscular repair has been associated with hernia recurrence rates of < 5% and is considered the gold standard for open ventral hernia repair. The robotic approaches to this repair include trans-abdominal retro-muscular repair (TARM) and extended total extra-peritoneal approach (eTEP). We compared the TARM and eTEP approach to robotic repair of medium size hernia defects. As the eTEP allows direct access to the retromuscular space and TARM requires access via an incision in the posterior sheath, we postulated that the eTEP approach would allow for larger area of mesh placement and be associated with a shorter operative time, decreased post-operative pain scores, shorter hospital length of stay (LOS).

Methods: We retrospectively reviewed electronic medical records for patients who underwent robot-assisted TARM or eTEP ventral hernia repair with bilateral retro-rectus release over a period of 6 years from 2016 to 2021 at a single institution in New York, identifying 36 TARM and 60 eTEP procedures. In all cases, dissection was limited to the rectus abdominis complex and the midline was reconstructed over a mesh prosthesis that was placed in the underlay position (retromuscular).

Demographics, comorbidities, hernia characteristics, hospital course and postoperative course were compared between both groups using the chi-square or Fisher's exact test, as deemed appropriate, for categorical variables, and the two sample t-test or Mann-Whitney test for continuous data.

Results: Mean BMI was 33.2kg/m2 for TARM and 30.5 kg/m2 for eTEP ($p = 0.019$). Hernia defect width was similar in both groups (5.1 cm TARM, 5.0 cm eTEP; $p = 0.799$). Mesh area covered in eTEP group was almost double the mesh area in TARM (724.56 cm2 ± 193.74; 329.06 cm2 ± 70.3; p 0.05 for all comparisons). There was no difference in thirty day hospital readmissions (2.8% for TARM and 0 % for eTEP; $p = 0.375$).

Conclusion: Both eTEP and TARM procedures demonstrated comparability with respect to operative duration, hernia defect dimensions, SSO, SSI and SSOPI. Although statistically significant differences were observed in patients' BMI, mesh area, mesh composition, and fixation techniques, additional research is necessary to ascertain the clinical relevance of these disparities. The decision to employ eTEP or TARM may hinge on factors specific to individual patients, the surgeon's expertise, and the resources at hand. There is the potential for larger area of mesh placement, lower pain scores and shorter hospital LOS in patients undergoing eTEP repair using the robotic platform.

		TARM (n=36)	ETEP (n=60)	p-value
Age		57.47 ± 12.02	57.35 ± 11.29	0.960
BMI at time of surgery		33.24 ± 6.52	30.47 ± 4.75	0.019
Defect Width (cm)		5.10 ± 1.42	4.98 ± 2.65	0.799
Total Mesh size AREA		329.06 ± 70.3	724.56 ± 193.74	<0.001
Total Op Time (Min)		182.75 ± 35.29	182.92 ± 47.27	0.985
LOS		1 (1, 1)	0 (0, 1)	<0.001
Post op Pain Scale		3 (2, 5)	2 (0, 4)	0.020
Gender	*Female*	18 (50%)	32 (53.33%)	0.752
	Male	18 (50%)	28 (46.67%)	
Race	*Asian Indian*	0 (0%)	1 (1.67%)	0.650
	Asian	0 (0%)	1 (1.67%)	
	Black	4 (11.11%)	2 (3.33%)	
	Hispanic	1 (2.78%)	1 (1.67%)	
	Other	1 (2.78%)	2 (3.33%)	
	White	30 (83.33%)	53 (88.33%)	
Smoking history	*Current*	4 (11.11%)	5 (8.33%)	0.569
	Former	15 (41.67%)	20 (33.33%)	
	Never	17 (47.22%)	35 (58.33%)	
COPD		1 (2.78%)	2 (3.33%)	1.000
CAD		3 (8.33%)	3 (5%)	0.669
CRI		0 (0%)	1 (1.67%)	1.000
HTN		16 (44.44%)	22 (36.67%)	0.451
DM		9 (25%)	9 (15%)	0.224
Steroids or Immuno Suppressants		2 (5.56%)	3 (5%)	1.000
Prior Abd Surgery		32 (88.89%)	52 (86.67%)	1.000
Hernia Type	*Incisional*	20 (55.56%)	32 (53.33%)	0.833
	Ventral	16 (44.44%)	28 (46.67%)	
Hernia	*Initial*	23 (63.89%)	47 (78.33%)	0.123
	Recurrent	13 (36.11%)	13 (21.67%)	
Active INFXN		0 (0%)	0 (0%)	*N/A*
PRIOR WOUND INFXN		2 (5.56%)	3 (5%)	1.000
PRIOR MESH INFXN		1 (2.78%)	0 (0%)	0.375
Hernia Grade	*1*	8 (22.22%)	21 (35%)	0.416
	2	26 (72.22%)	35 (58.33%)	
	3	2 (5.56%)	4 (6.67%)	
ASA	*1*	4 (11.11%)	5 (8.33%)	0.402
	2	23 (63.89%)	32 (53.33%)	
	3	9 (25%)	23 (38.33%)	
Ing	*Bilateral*	1 (2.78%)	8 (13.33%)	0.114
	None	35 (97.22%)	49 (81.67%)	
	Unilateral	0 (0%)	3 (5%)	
Diastatis present		27 (75%)	52 (86.67%)	0.147
Mesh Type	*Polyester*	12 (33.33%)	0 (0%)	<0.001
	Polypropylene	24 (66.67%)	60 (100%)	
Was Fixation Used		35 (97.2%)	57 (95%)	1.000
Type of Fixation Used	*Glue*	0 (0%)	52 (91.23%)	<0.001
	Self Adherent	7 (20%)	0 (0%)	
	Suture	28 (80%)	5 (8.77%)	
Previous Mesh Explanted		1 (2.78%)	1 (1.67%)	1.000
Dock	*1*	36 (100%)	47 (78.33%)	0.002
	2	0 (0%)	13 (21.67%)	
Convert to Open		0 (0%)	0 (0%)	*N/A*
JP		0 (0%)	2 (3.33%)	0.526
Enterotomy		0 (0%)	0 (0%)	*N/A*
EBL (cc)	*100*	1 (2.78%)	0 (0%)	0.612
	30	0 (0%)	1 (1.67%)	
	<10	35 (97.22%)	59 (98.33%)	
Seroma		4 (11.11%)	5 (8.33%)	0.724
Hospital Complications		0 (0%)	0 (0%)	*N/A*
30-Day ED Visit		1 (2.78%)	0 (0%)	0.375
30-Day Readmit		1 (2.78%)	0 (0%)	0.375
30-Day Re-op		1 (2.78%)	0 (0%)	0.375
<30 days Post-Op Complications		1 (2.78%)	1 (1.67%)	1.000
30-90 days Post-Op Complications		0 (0%)	1 (1.67%)	1.000
>90 days Post-Op Complications	*None*	14 (38.89%)	24 (40.00%)	0.914
	No follow up	22 (61.11%)	36 (60.00%)	
SSO		4 (11.11%)	5 (8.33%)	0.724
SSI		1 (2.78%)	0 (0%)	0.375
SSOPI		1 (2.78%)	0 (0%)	0.375

4. eTEP Transversus Abdominis Release for Ventral Hernia Repair

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Background: The posterior component separation technique, also known as Transversus abdominis release (TAR), has been described for the treatment of large ventral hernias at different locations in the abdominal wall. The potential benefit of the TAR technique includes avoiding the devascularization of the abdominal wall skin, preventing skin necrosis and seroma formation, and mesh placement in the retromuscular position without fixation in most cases.

Methods: Female, 51 years. Personal history of cholecystectomy and ventral hernia repair 15 years ago. She consulted for incisional hernia: M1-M3, W2. Due to the size of the hernia defect and that it was a recurrent hernia, an eTEP transversus abdominis release was indicated.

Results: With the patient in supine position and arms tucked on both sides, we performed an open access to the retrorectus space just above the last left rib. The space was fully created through telescoping with the camera and CO2 insufflation. After fully dissecting the left retrorectus space, we did the crossover in the pelvic preperitoneal space with blunt dissection. The linea alba was identified and the posterior rectus sheath incised just next to it. The preperitoneal fat is dissected exposing the right posterior rectus sheath. We identified the linea alba and the rectus abdominis by transparence, opening the right posterior rectus sheath avoiding injury to the linea alba. The right retrorectus space is dissected. The dissection is continued towards the hernia defect. We opened the sac and entered the abdominal cavity. Hernia sac was dissected until we identifiy clearly both hernia defects. In the upper right abdomen, we opened the posterior lamella of the internal oblique muscle and divided the fibers of the transversus abdominis. We continued cutting the fibers cephalad towards caudal using ultrasonic energy. The peritoneum and fascia transversalis sheath are dissected free laterally to allow tension free approximation of the midline. We introduced three auxiliars trocars in the right lower quadrant of the abdomen. The dissection on the left side was performed with the bottom-up approach until both posteriors' sheaths could be approximated in the midline with no tension. The posterior sheath was closed using a barbed non-absorbable continuous suture. Anterior midline and hernia defects were closed using a barbed non-absorbable suture. For this step, the second surgeon pushed down the abdominal wall to facilitate passing the stiches.

After reviewing hemostasis, a 25x30 polipropilene mesh was introduced into the retrorectal space, rolled and secured with a stich. The mesh is deployed and covered properly the visceral sac. A 15 Fr aspirative drain was placed and CO2 expulsed allowing closing the space.

Conclusion: The eTEP TAR abdominal wall repair is a complex laparoscopic procedure reproducible with excellent Results in terms of the rate of hernia recurrence and potentially a lower risk of wound morbidity, especially in high-risk patients.

5. Robotic IPOM Explanation with SCOLA Hernia Repair

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Background: While explantation of intraperitoneal mesh can be fairly straightforward, simultaneous minimally invasive repair with extraperitoneal mesh can pose more of a challenge. This video demonstrates robotic explantation of IPOM mesh with SCOLA repair of diastasis recti through the same port sites. It also touches on unintentional inflammatory changes that may occur in a seemingly otherwise uncomplicated IPOM repair.

6. Robotic Redo Abdominal Wall Reconstruction: Bilateral TAR for Recurrence After eTEP

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Background: This is a case presentation of a 37yo female with a past surgical history of two prior open ventral hernia repairs performed in an outside country, who underwent an elective robotic eTEP. She presented a few months later with a large recurrence on both physical exam and CT imaging. She was taken to the operating room to attempt an elective robotic intraabdominal bilateral posterior component separation with mesh. The original eTEP mesh was left in place and the procedure was successfully performed entirely robotically. Postoperatively, the patient did well, and she was discharged on post-operative day 3. She continues to do well in follow-up.

7. Does Baseline Abdominal Wall Tension Predict Perioperative Outcomes During Complex Abdominal Wall Reconstruction With Posterior Component Separation?

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Background: Ventral hernias result in fibrosis and scarring of the lateral abdominal wall musculature increasing tension on fascial closure. Little is known about the effect of abdominal wall tension on outcomes after AWR. We aimed to correlate early postoperative outcomes with respect to abdominal wall tension in patients with incisional hernias who underwent PCS with TAR.

Methods: Using a novel, sterilizable tensiometer, the tension needed to bring the anterior fascial elements to the midline of the abdominal wall during PCS with TAR were recorded. Tensiometer measurements, in pounds (lbs), were calibrated using a scale which accounted for the acceleration of Earth's gravity. Baseline fascial tension, change in fascial tension, and fascial tension at closure were evaluated with respect to 30-day outcomes, including wound morbidity, hospital readmission, reoperation, ileus, bleeding, and pulmonary complications.

Results: A total of 103 patients underwent bilateral abdominal wall tensiometry, for a total of 206 measurements (left and right side for each patient). Mean (SD) baseline anterior fascial tension was 6.65 (4.6) lbs. At abdominal closure, the mean (SD) anterior fascial tension was 3.14 (3.18). Baseline fascial tension, residual fascial tension after PCS at abdominal closure were not associated with surgical site infection (SSI), surgical site occurrence (SSO), readmission, ileus, and bleeding requiring transfusion. The event rates for all other complications were too infrequent for statistical analysis.

Conclusion: Baseline fascial tension of the anterior abdominal wall does not correlate with postoperative morbidity in patients undergoing posterior component separations. Additionally, the remaining fascial tension after posterior component separations was also not correlated with postoperative complications. Further work should be performed to identify other correlates to predict postoperative outcomes in complex abdominal wall reconstruction.

	Anterior Myofascial Tension		Total Tension change after PCS	
	OR	**95% CI**	**OR**	**95% CI**
SSI	0.92	[0.71-1.11]	1.04	[0.97-1.13]
SSO	0.97	[0.73-1.18]	1.04	[0.96-1.16]
Readmission	1.04	[0.85-1.23]	0.97	[0.91-1.05]
Ileus	0.97	[0.82-1.11]	0.99	[0.94-1.04]
Bleeding	0.78	[0.46-1.08]	1.09	[0.98-1.28]

8. Abdominal Wall Reconstruction After Desmoid Tumor Exeresis

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Background: Female patient, 33 years old, without comorbidities, complaining of bulging in the right iliac fossa for 1 year, in progressive growth, associated with local pain. On physical examination, she presented a tumor in the right iliac fossa, of fibroelastic consistency, with a diameter of 10 cm. CT scan of the abdomen with evidence of expansive formation centered on the right internal oblique muscle, measuring 12x10x11cm. The lesion does not present a cleavage plane with the external oblique and transverse muscles of the abdomen and touches the anterosuperior iliac spine. She underwent biospia, with a diagnosis of desmoid tumor.

Methods: She underwent exploratory laparotomy with tumor resection. The tumor invaded the rectus abdominis muscle, oblique internal, external and transverse, which were resected. It had contact with the pube and right iliac crest, with no signs of invasion.

Results: The abdominal wall withas reconstructed with the technique of posterior separation of components and placement of polypropylene mesh in the retromuscular space- fixed in both Cooper´s ligament, right iliac crest and xiphoid process- and another mesh was placed in the defect of the anterior wall.

Conclusion: The patient presented good postoperative evolution and was discharged after 3 days. In outpatient follow-up, with no signs of recurrence after 6 months.

9. Postoperative Hemorrhagic Complications Among Patients Receiving Prophylactic Anticoagulation Following Ventral Hernia Repair

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Background: Open posterior component separation for ventral hernia repair is becoming a common approach for larger hernias. These surgeries are associated with prolonged operatives, and certain guidelines suggest an extended duration of prophylactic anticoagulation (PA). However, due to the extent of the surgery, potential bleeding complications should not be minimized. Currently, thromboprophylaxis management following repair differs significantly among surgeons. Some argue the risk of hemorrhagic complications like surgical site hematomas, are greater than the potential benefit of outpatient thromboprophylaxis. Currently, no expert consensus exists on PA use post-operatively. This study compared postoperative complications related to PA in patients who were discharged on PA versus those who were not.

Methods: An Institutional-Board-Review-approved, retrospective chart analysis was performed for adult patients at a single academic center who underwent ventral hernia repair between 2018 to 2023 by two abdominal wall reconstruction specialists. Exclusion criteria included patients already on therapeutic home anticoagulation or who were unable to take PA properly. Primary outcomes were rates of deep vein thrombosis (DVT), pulmonary embolism (PE), stroke, postoperative bleeding requiring transfusion within 30 days, and those requiring re-operation for bleeding. An unpaired t-test was used to evaluate differences between those discharged on PA for two weeks and those who were maintained on PA only during their hospital stay.

Results: 203 patients were included, with 54% (n=111) of patients discharged on PA and 46% (n=92) of patients discharged without PA. Overall, the mean age was 60.6 years (SD 11), over half were female (56%), the mean body mass index was 33.0 (SD 5.1), and over half (62.6%) were ASA class 3. In the PA group, the majority (97.3%; n=108) were discharged on enoxaparin with the rest discharged on heparin. There was a 100% 30-day follow up rate. The mean length of stay was 5 days (SD 2.8) and the overall readmission and reoperation rates were 6.8% and 0.9%, respectively. None of the aforementioned variables were statistically significant between the two groups. Surgical site infections were 4.5% (n=5) and 1.09% (n=1) in the PA and no PA groups, respectively (p=.1539), and surgical site occurrences were 24.32% and 19.57% in the PA and no PA groups, respectively (p=.5472). Most surgical site occurrences were seromas (11.33%), none requiring surgical intervention. The rates of PE and stroke within 30 days were zero. There was one incidence of deep vein thrombosis (DVT) within 30 days in the group without PA on discharge (1.09%) (Table 1). This patient developed leg pain 5 days postoperatively and was found to have a chronic-appearing, non-occlusive DVT in the right gastrocnemius veins on venous duplex.

Conclusion: There were no significant differences in terms of postoperative complications related to PA between patients discharged on PA and patients who were not discharged on PA. Thromboembolic complications are rare and PA on discharge was not associated with a significant reduction in thromboembolic complications. Additionally, patients receiving prophylaxis on discharge did not have a significant increase in hemorrhagic incidences. Thromboprophylaxis following ventral hernia repair should be made on an independent risk assessment basis.

Table 1. Complications Within 30 Days of Ventral Hernia Repair

	Discharged on Prophylactic Anticoagulation (n=111)	No Anticoagulation (n=92)	P-value
Readmission	9 (8.11%)	3 (3.26%)	p=.0723
Reoperation	2 (1.80%)	0 (0%)	p=.1975
Surgical Site Infection	5 (4.50%)	1 (1.09%)	p=.1539
Surgical Site Occurrence	27 (24.32%)	18 (19.57%)	p=.5472
Pulmonary Embolism	0 (0%)	0 (0%)	p= 0
Stroke	0 (0%)	0 (0%)	p= 0
Deep Vein Thrombosis	0 (0%)	1 (1.09%)	p=.2731
Postoperative Bleeding Requiring Transfusion	3 (2.70%)	0 (0%)	p=.4181

10. Early Bowel Obstruction After Laparoscopic Repair Of A Parastomal And Incisional Hernia: Error In Technique Or Patient Disease?

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Background: Parastomal hernias are a recurrent problem after colorectal surgery and occur in 17-50% of stomas, especially after creation of an end colostomy. There is no consensus on the best technique to prevent and repair these hernias, however a minimally invasive approach and Sugarbaker technique seems to be associated with better outcomes. A concomitant incisional hernia can make a repair even more challenging. We present the case of a 78 year old male with a history of an open abdominoperineal resection and end descending colostomy for a locally advanced rectal cancer. Thirteen years later, the patient presented with a symptomatic parastomal and incisional hernia.

Methods: A laparoscopic repair was planned. Intraoperatively, a parastomal hernia and incisional hernia were found. The overall defect measured 10 cm. The parastomal defect was narrowed on each side of the ostomy using running 2-0 non absorbable Quill barbed sutures. A 15 x 20 cm Parietene DS mesh was placed intraperitoneally with transfascial sutures in a modified Sugarbaker technique. The mesh was fixed circumferentially with permanent tacks.

Results: His initial postoperative course was uneventful and the patient had a return of bowel function, however he then developed a bowel obstruction requiring nasogastric decompression. The patient underwent re-laparoscopic exploration with reconfiguration of the mesh and extensive adhesiolysis. Ultimately the patient recovered uneventfully.

Conclusion: Parastomal hernia repair for a definitive colostomy remains challenging. Laparoscopic modified Sugarbaker technique might be a good option to treat a concomitant parastomal and incisional hernia. Technical pitfalls are discussed in the video.

11. Retrorectus Repair Of Incisional Ventral Hernia

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Atrium Health Carolinas Medical Center

Background: Incisional ventral hernias are repair in various ways based on surgeon preference. The aim of our video is to demonstrate a retrorectus repair of a midline incisional hernia, preserving perforating vessels to the rectus muscle and creating preperitoneal landing zones superiorly and inferiorly.

Methods: Preoperative computed tomography images and intraoperative footage were included.

Results: A 43-year-old female with a history of well controlled type I diabetes mellitus (Hgb A1c 7.0) and obesity (BMI 35) presented to clinic with a midline incisional ventral hernia. She had undergone prior laparoscopic appendectomy, laparoscopic cholecystectomy, open hysterectomy, and exploratory laparotomy for a small bowel obstruction. Her hernia was causing significant discomfort and impairment of her quality of life. Preoperative imaging showed a 9.9 cm hernia defect and bilateral large retrorectus spaces of approximately 11 cm allowing for significant mesh overlap. A retrorectus hernia repair with synthetic mesh is demonstrated, with the retrorectus space connecting to a superior preperitoneal landing zone over the falciform ligament and an inferior preperitoneal landing zone in the space of Retzius. This allowed for a piece of synthetic mesh to be placed measuring 45x24cm. The patient tolerated the procedure well, was discharged, and has since been seen in follow-up. She has had significant improvement in her quality of life.

Conclusion: In this patient with a 10 cm incisional midline ventral hernia and large retrorectus spaces, we demonstrate a successful retrorectus repair utilizing preperitoneal superior and inferior landing zones allowing for significant mesh overlap.

12. Endoscopic-Assisted Ventral Hernia Repair Associated To Rectus Abdominis Diastasis (EMILOS)

E Sadava, A Valinoti, A Olivero
Hospital Aleman de Buenos Aires

Background: Rectus abdominis diastasis (RAD) is defined as a linea alba width more than 2 cm leading to an imbalance in core functionality. It is associated to midline hernias in up to 20-30% of cases and higher hernia recurrence; therefore, simultaneous resolution is preferred. However, there is no consensus on the ideal technique for repair and laparoscopic/endoscopic approaches have emerged as a promising alternative.

The objective of this video is to describe, step by step, how we perform the eMILOS technique (endoscopic mini/less open sublay technique) to repair an umbilical hernia associated to rectus diastasis. This is a hybrid transhernial technique allows restoring the linea alba and placing at least 15*25 cm piece of mesh in the retrorectus plane.

Conclusion: The eMILOS technique is a promising alternative to repair RAD associated to midline defects. This approach offers the benefits of the minimally invasive surgery with mesh reinforcement in the retromuscular plane.

13. Combined Abdominoperineal Repair of Perineal Hernia with Open Transabdominal Mesh-Based Repair and Pedicled Myocutaneous Gracilis Flap

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Background: Perineal hernias are rare defects that form in the pelvic floor allowing protrusion of intra-abdominal contents into the perineum and are a source of morbidity for patients. They are overall poorly studied with varied approaches described but no consensus established on the best approach.

Methods: We present a video of one approach, a combined open transabdominal mesh-based repair with a pedicled myocutaneous gracilis flap perineal reconstruction. Our recording of this open case was facilitated by a mounted laparoscopic camera on the surgical field. The patient is a 73-year-old woman with a history of rectal cancer with pelvic radiation and an abdominoperineal resection as well as hysterectomy who presented with a symptomatic perineal bulge approximately 1 year after her repair. Due to worsening symptoms she sought repair. We demonstrate the technique of an open transabdominal repair with placement of uncoated polypropylene mesh anchored to the presacral fascia as well as to Cooper's ligament bilaterally. We used the patient's omentum to cover the mesh and protect the bowel. Our plastic surgery colleagues performed a pedicled myocutaneous gracilis flap from the right leg to reconstruct the perineum.

Results: While a variety of approaches are described for this rare hernia, there are no guidelines for selecting an approach. A combined transabdominal and perineal approach such as ours has been suggested to result in a lower recurrence rate in recent meta-analyses with small case numbers.

Conclusion: When selecting this approach, it should be understood that there is combined risk of morbidity from both surgical approaches. Further studies of the surgical approaches for perineal hernias should be encouraged to help determine optimal repair strategies.

14. Preliminary Clinical Experience of Robotic Single-Incision TAPP with DaVinci Single Port

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Background: A new robotic platform DaVinci Single Port (SP) has been introduced in 2018 mainly for urologic procedures. The platform currently has no FDA approval in general surgery. We started using the SP in general surgery in July 2019 under an IRB protocol. With this study we present the initial experience of 100 inguinal hernia surgeries with the DaVinci SP system.

Methods: A prospective series of robotic single-incision inguinal hernia surgeries (SP-TAPP) (off-label) were analyzed. Primary endpoints were safety and feasibility defined by the need for conversion and incidence of perioperative complications.

Results: One hundred patients consecutively underwent SP-TAPP in our institution for a total of 110 procedures (90 unilateral, 20 bilateral). The mean age at the time of surgery is 53.6(15-82) and the mean BMI is 27 kg/m2 (18.9 – 41.6); 93% of enrolled patients are male while 29% already underwent a previous abdominal surgery. There were no conversions or additional ports placed. Mean console time was 31.9min, and 50 min for unilateral, and bilateral SP-TAPP, respectively. There was no mortality, intraoperative or major postoperative complications. All patient where treated in an outpatient setting and the mean length of stay in the recovery area was 112 min. Only 2 patients were admitted after the procedure because the hernia surgery was combined with another surgical procedure (nephrectomy and prostatectomy).

Conclusion: Robotic SP surgery is safe and feasible for inguinal hernia surgery. Further experience might allow expanding the applications of robotic single-incision surgery for other abdominal wall procedures.

15. Round Ligament Management During Groin Hernia Repair in Women: A Systematic Review and Meta-Analysis

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Bahiana School of Medicine and Public Health

Background: Female sex has been associated with worse outcomes after groin hernia repair (GHR) when compared to males, such as a higher rate of chronic pain, recurrence, and risk for emergency operations. Most of the studies in GHR are performed in males and the recommendations for females extrapolate from these studies, even though females have particular anatomy intricacies. The round ligament of the uterus (RLU), present in females, is associated with pelvic floor stabilization, protection against prolapses and plays a role in sexual and sensory function. Transection of the RLU during GHR is controversial as it can allow easier mesh placement, but can favor genitourinary complications and cause chronic pain. As no previous meta-analysis compared preserving versus transecting the RLU during GHR, we aim to perform a systematic review and meta-analysis evaluating surgical outcomes comparing the two approaches.

Methods: Cochrane Central, Embase and PubMed databases were systematically searched for studies comparing transection versus preservation of the round ligament of the uterus in groin hernia surgeries up to March 2023. Outcomes assessed were operative time, bleeding, surgical site events (seroma, hematoma, wound infection), hospital stay, chronic pain (>3 months), paresthesia, recurrence rates, and genital prolapse rates. A subgroup analysis was done comparing preservation and transection in laparoscopic and robotic surgeries only. Statistical analysis was performed using RevMan 5.4.1. Heterogeneity was assessed with I^2 statistics and random-risk effect was used if $I^2 > 25\%$.

Results: 1738 studies were screened and 11 were thoroughly reviewed. A total of six studies, comprising 2325 women were included, of whom 1324 (56.9%) had transection and 1001 (43.1%) had preservation of the round ligament of the uterus during groin hernia repair. We found no statistical difference between groups regarding chronic pain, sensitivity abnormalities, recurrence rates, intraoperative and postoperative complications. We found that the operative time was longer for the preservation group (MD 6.84 minutes; 95% CI 3.0-10.68; P = 0.0005; i2 = 74%) in laparoscopic and robotic surgeries. Subgroup analysis of laparoscopic and robotic surgeries showed no significant difference regarding chronic pain, sensitivity abnormalities, recurrence rates, and postoperative complications.

Conclusions: Transecting the round ligament of the uterus reduces the operative time during minimally invasive groin hernia repair. This meta-analysis found no difference to support either of the approaches regarding postoperative outcomes, such as chronic pain, sensitivity disturbance, recurrence and prolapse rates following transection or preservation of the round ligament during groin hernia repair. Further prospective randomized studies with long-term follow-up and patient-reported outcomes are necessary to analyze the consequences of round ligament transection during groin hernia repair.

Figure 1. Mean operative time.

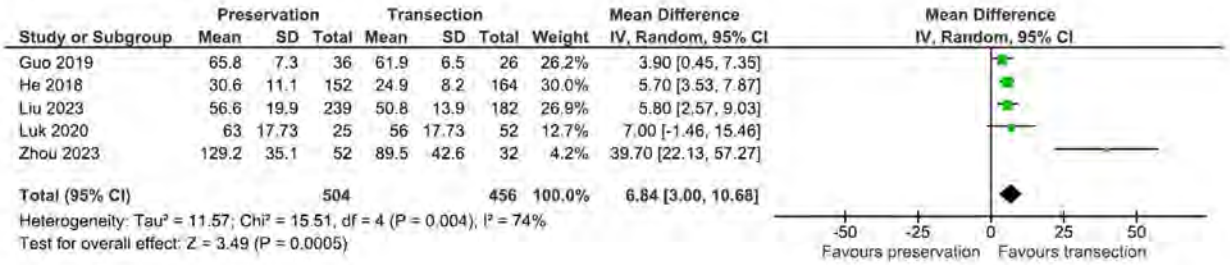


Figure 2. Recurrence rates.

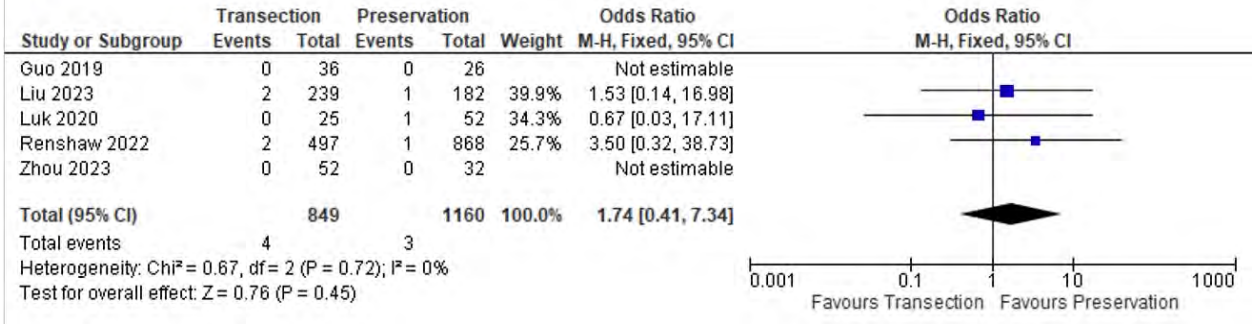
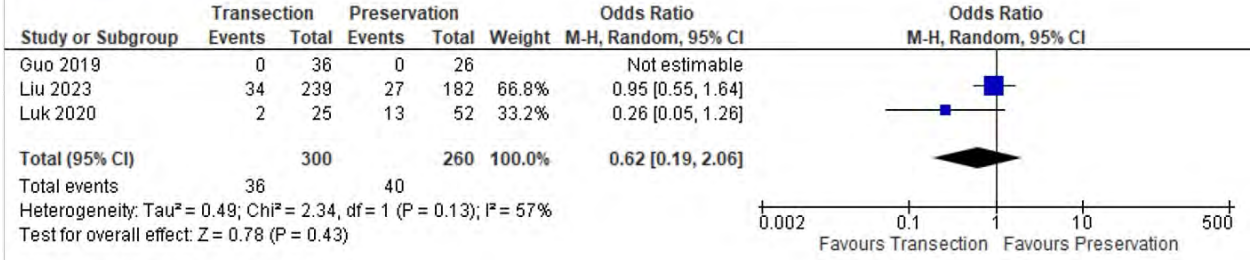


Figure 3. Chronic pain.



16. Robotic Genitofemoral Nerve Sheath Tumor Removal With Inguinal Hernia Repair

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Northern California Kaiser Permanente

Background: Robotic assisted surgery has modernized the surgical field in providing minimally invasive procedures that improve patient recovery time and minimize postoperative pain. In this video, I present robotic removal of peripheral nerve sheath tumors (PNSTs) in conjunction with inguinal hernia repair.

Methods: 64-year-old woman presented with groin pain with a lump in the hernia. Initial ultrasound showed groin lymphadenopathy, which was followed by a CT that confirmed two distinct groin masses along the iliac artery. Neurosurgeon diagnosed the lesions as PNSTs.

Conclusion: PNSTs are relatively rare and can occur anywhere along the nerves in the body. These tumors are often benign, but they can cause significant pain and discomfort. The removal of PNSTs have been performed using open surgical techniques. In the case of genitofemoral PNSTs with inguinal hernia, the combination of the two procedures into a single operation using the robotic approach is a novel technique that allow for a minimally approach to treat both pathologies with excellent result.

17. Robotic Perineal Hernia Repair

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University of Florida

Background: Our patient is a 69-year-old female with a past medical history significant for Crohn's disease requiring an abdominoperineal resection and subsequent advancement flap for a non-healing perineal wound. She also had a history of a laparoscopic parastomal hernia repair with mesh. She presented to our clinic with a painful, enlarging perineal hernia. A CT abdomen and pelvis was performed identifying herniation of intra-abdominal contents through the pelvic floor musculature posterior to the bladder. Given her presentation and these findings, a robotic perineal hernia repair was offered.

Methods: In the operating room, bilateral ureteral stents were placed and ICG was injected. 8mm trocars were placed in her upper abdomen followed by an additional 12mm trocar. The patient was placed in steep Trendelenburg position prior to docking the robot and entering the abdomen. Upon entering the abdomen, adhesions were identified in the right lower quadrant at the site of her colostomy and previous parastomal hernia repair. Adhesiolysis was completed prior to turning our attention to her perineal hernia. The hernia contents were reduced from the perineal defect. The bladder, ureters, and iliac vessels were identified and protected. The location of these structures were confirmed with the use of the FIREFLY system. The perineal defect was primarily closed with the use of a #0 V-Loc suture in a running fashion. Once this was completed, we turned our attention to creating a space where our mesh would be placed by incising the peritoneum horizontally at the level of the pubic bone to create a flap. The space of Retzius was developed, Cooper's ligament was identified and the bladder was reflected posteriorly. A 15x22 cm Ventralight ST mesh was introduced into the field via our 12 mm trocar. The mesh was secured anteriorly to Cooper's ligament and posteriorly to the sacral promontory with ProTacks. Medially and laterally the mesh was secured to the peritoneum with the use of 2-0 Vicryl sutures in an interrupted fashion, being vigilant to protect the ureters and iliac vessels from injury.

Results: The excess skin from the perineum was excised with an elliptical incision and the wound was reconstructed.

Conclusion: Post-operatively the patient was admitted to the floor where she was normalized and discharged home. At her follow-up appointment her perineal wound was healing well and she denied any concerns.

18. Robotic Abdominal Wall Reconstruction: Extraperitoneal Repair of Ventral, Umbilical and Bilateral Inguinal Hernias with Rectus Fascia Flaps and Mesh

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Brown University

Background: This is the case of a 53yo M who presented to general surgery clinic complaining of symptomatic ventral and left inguinal hernias. He had a CT scan and physical exam performed which showed both a ventral and umbilical hernia as well as bilateral inguinal hernias and diastasis.

Methods: He was booked and consented for robotic repair using an eTEP approach, which would allow us to repair both the ventral and inguinal hernias concurrently using the same approach. We started by addressing the ventral hernias and initially accessed the retrorectus space from the left abdomen and, working from left to right, created bilateral rectus fascia flaps. The diastasis and ventral hernias were identified during this dissection and repaired. We then placed additional ports to enable us to remain extra-peritoneal and address the inguinal hernias from the same plane using a top down approach. To maintain our orientation we used the epigastric vessels as landmarks leading us to the groins. We then followed the linea alba medially until we identified the pubic bone and had dropped the bladder down. Below the arcuate line we bluntly dissected laterally to identify the transversus abdominus.

Results: The patient was found to have bilateral cord lipomas as well as indirect and femoral hernias on the right side and a direct and indirect hernia on the left. After our dissection was complete, we placed mesh to cover all three potential spaces on both sides of the groin and in the retrorectus space.

Conclusion: Using this eTEP approach allowed us to repair all six of our patient's hernias with mesh, in a single operation and without entering the intraperitoneal space. The patient did well and was discharged home from PACU the same day.

19. Comparison Of Early Post-Operative Outcomes Of Anterior Versus Posterior Approach For Recurrent Inguinal Hernias

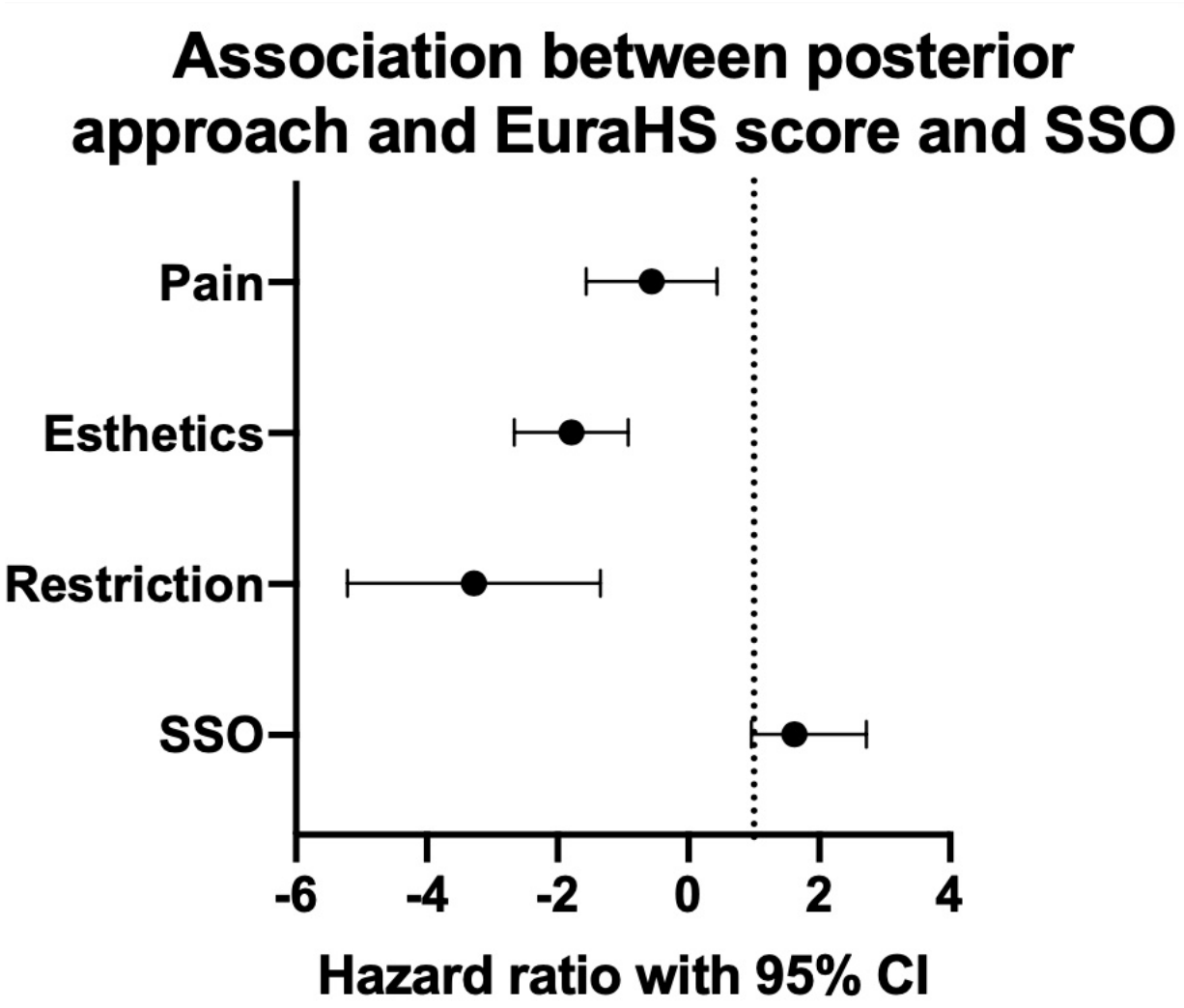
L Ying, G Chao, J Zolfaghari, M Cheung, G Nadzam, S Ghiassi, A Duffy, J Morton, R Zhou
Yale New Haven Hospital

Background: The lifetime incidence of inguinal hernias is approximately 25% in men and 2% in women. Approximately 800,000 hernia surgeries are performed annually. Recurrence rates following primary hernia repair range from 0.5% to 15%. There is no consensus on the optimal technique for repairing recurrent hernias, and the decision is often based on surgeon preference. In this study, we utilize the Abdominal Core Health Quality Collective (ACHQC) database to compare outcomes between anterior and posterior approaches to recurrent inguinal hernia repair.

Methods: We queried the ACHQC to identify elective, unilateral, recurrent inguinal hernia repairs performed via an anterior approach (mesh on-lay; n=415) or posterior approach (transabdominal preperitoneal and totally extra-peritoneal; n=1079). Demographics, baseline characteristics, and operative characteristics were analyzed. Primary outcomes included self-reported postoperative pain and quality of life via the EuraHS Quality of Life scale, in which higher values indicates worse outcome. Secondary outcomes included 30-day surgical site occurrences (SSO). Multivariate analysis was performed to assess the impact of posterior approach on quality-of-life scores and SSO after controlling for age, gender, race, smoking, body mass index (BMI), and select co-morbidities.

Results: There was no significant difference in the age, gender distribution, race distribution, BMI, and insurance status between the two groups. Patients who underwent an anterior approach were significantly more likely ($p< 0.05$) to have several co-morbidities including COPD (8% vs. 3.8%), dyspnea (2.9% vs. 0.9%), history of AAA (2.4% vs. 0.8%), and higher ASA class (ASA class 3 or 4: 42.9% vs. 27.8%). There was no significant difference in operative length. Patients who underwent an anterior repair tended to have a higher-grade hernia (Hernia grade 2: 40% vs. 34%; $p< 0.05$). There was no significant difference in the rate of surgical site infections, recurrence, wound disruption, or other tracked complications. Posterior approach was associated with better postoperative pain scores (4.0 vs. 3.0), perceived esthetics (5.0 vs. 2.0), and restriction (10.0 vs. 6.0). Multivariate analysis showed that a posterior approach significantly improved perceived esthetic appearance [-1.79 (95%CI: -2.66 to -0.92)] and perceived restriction [-3.28 (95%CI: -5.21 to -1.35)]. There was no significant association with perceived pain or risk of SSO.

Conclusion: Although decisions regarding operative approach for recurrent inguinal hernia repair are often based on surgeon preference, our results show that a posterior approach is associated with clear improvements in perceived postoperative esthetic appearance and restriction. While there was a higher incidence of postoperative seroma, even after controlling for patient co-morbidities, there was no greater overall risk of postoperative complications. Randomized control trials may help further characterize the advantages of posterior approaches.


Association between posterior approach and EuraHS score and SSO
Pain
Esthetics
Restriction
SSO
-6
-4
-2
0
2
4
Hazard ratio with 95% CI

20. The Staple Single-Incision Retrorectus Surgery for Ventral Hernia Repair: Results from a Single Institution

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Indiana Hernia Center

Background: Ventral Hernia (VH) repair poses many challenges. Consensus holds that minimally invasive techniques reduce the incidence of infection from open VH repair. Additionally, strong evidence suggests that placing the reinforcing mesh in the retrorectus (i.e., sublay) plane optimizes outcomes. However, both dissection of the retrorectus plane and the consolidation of the posterior rectus fascia can be technically challenging. To reach ideal repair, we describe a novel, minimally-invasive technique for VH repair, the staple single incision retrorectus surgery (sSIRRS).

Methods: Between September 2018 and May 2021, a retrospective review identified 30 patients with VH that underwent repair by sSIRRS. Data about patient demographics, comorbidities, hernia characteristics, operative details, and postoperative outcomes were recorded.

Methods: A small, 3-4cm incision is created directly over the hernia. Dissection exposes the defect and the anterior rectus fascia. The hernia is reduced. The retrorectus space is then entered in a cephalad direction on either side of the linea alba. Dissection is continued to create enough space on either side of the linea alba to insert a laparoscopic articulating powered stapler. Caudad dissection can also be undertaken to provide complete dissection from sternum to pubis. The tissues are compressed, and the stapler is fired. This creates an anterior and posterior staple line while plicating any diastasis recti and expanding the retrorectus space. A small amount of manual dissection is required beyond the staple line to allow placement of the jaws. With completion of the retrorectus space dissection, a reinforced biologic tissue matrix (ReBAR) or synthetic mesh can be placed. Prior to placing the mesh reinforcement in the retrorectus space, the posterior fascial defect is closed with a running 2-0 PDS suture. The space is measured, and the mesh is cut to size. To anchor the mesh, 18" 0 barbed suture is placed at the apex of the cephalad and caudad staple line. The mesh is then cabled into position. These steps are represented visually in Figure One and Two.

Results: Average age was 57.5 years. Two patients had diabetes, fourteen had hypertension, and four were smokers. Average BMI was 31.3 kg/m2. Hernia recurrence was the primary indication for surgery for twenty patients. No complications were observed during the 90-day postoperative period, but one patient had a hematoma. No patients had hernia recurrences with a follow-up time of 45.9 months (range: 23.3-55.5). The full set of cohort characteristics and outcomes are shown in Table One.

Conclusion: sSIRRS is a ReBAR-compatible approaches that allow minimally invasive repair of VH at long-term follow up with no reports of hernia recurrences and minimal complications. They approach ideal repair in a time of increasing ventral hernia burdens in an aging population.

Table One – Study Characteristics

Sample Size		30
Patient Characteristics		
Female Sex (% of cohort)		10 (33.3%)
Mean Age (Standard Deviation; Range)		57.47 (11.39; 36-71)
Mean BMI (Standard Deviation; Range)		31.31 (6.00; 19-43)
Current Smoker (% of cohort)		8 (26.7%)
Hypertension (% of cohort)		20 (46.7%)
Coronary Artery Disease (% of cohort)		12 (40.0%)
Diabetes Mellitus (% of cohort)		5 (16.7%)
COPD (% of cohort)		5 (16.7%)
Other Pulmonary Disease (% of cohort)		8 (26.7%)
CKD (% of cohort)		2 (6.7%)
Radiation (% of cohort)		1 (3.3%)
Prior Abdominal Surgery (% of cohort)		30 (100.0%)
Prior Hernia Surgery (% of cohort)		20 (66.7%)
Patients Whose Indication for Surgery Was Recurrent Ventral Hernia (% of cohort)		20 (66.7%)
Operative Characteristics		
MVHWGC (% of cohort)	Class I	15 (50.0%)
	Class II	15 (50.0%)
Incarcerated Hernia (% of cohort)		29 (96.7%)
Component Separation (% of cohort)		23 (76.7%)
Mean Defect Area in Cm^2 (Standard Deviation; Range)		65.5 (58.0; 5-252)
Mean Area of Mesh Used in Cm^2 (Standard Deviation; Range)		307.6 (111.2; 94-648)
Mesh Type (% of Cohort)	Ovitex Core Tissue Matrix	6 (20.0%)
	Ovitex 1S Tissue Matrix	19 (63.3%)
	Ovitex LPR Tissue Matrix	5 (16.7%)
Open Surgery (% of cohort)		25 (83.3%)
Robot-Assisted (% of cohort)		4 (13.3%)
Complications (% of cohort)	None	28 (93.3%)
	Death (Unrelated to Procedures)	1 (3.3%)
	Hematoma	1 (3.3%)
Follow Up and Medication Characteristics		
Mean Oral Morphine Equivalents Taken (Standard Deviation; Range)		6.0 (7.5; 0-28)
Mean Oral Morphine Equivalents Given (Standard Deviation; Range)		13.7 (8.8; 4-28)
Mean Months of Follow Up (Standard Deviation; Range)		45.9 (8.0; 23.2-55.5)

Figure One — Demonstration of the sSIRRS Technique: Expansion of the Retrorectus Space with a Laparoscopic Articulating Stapler

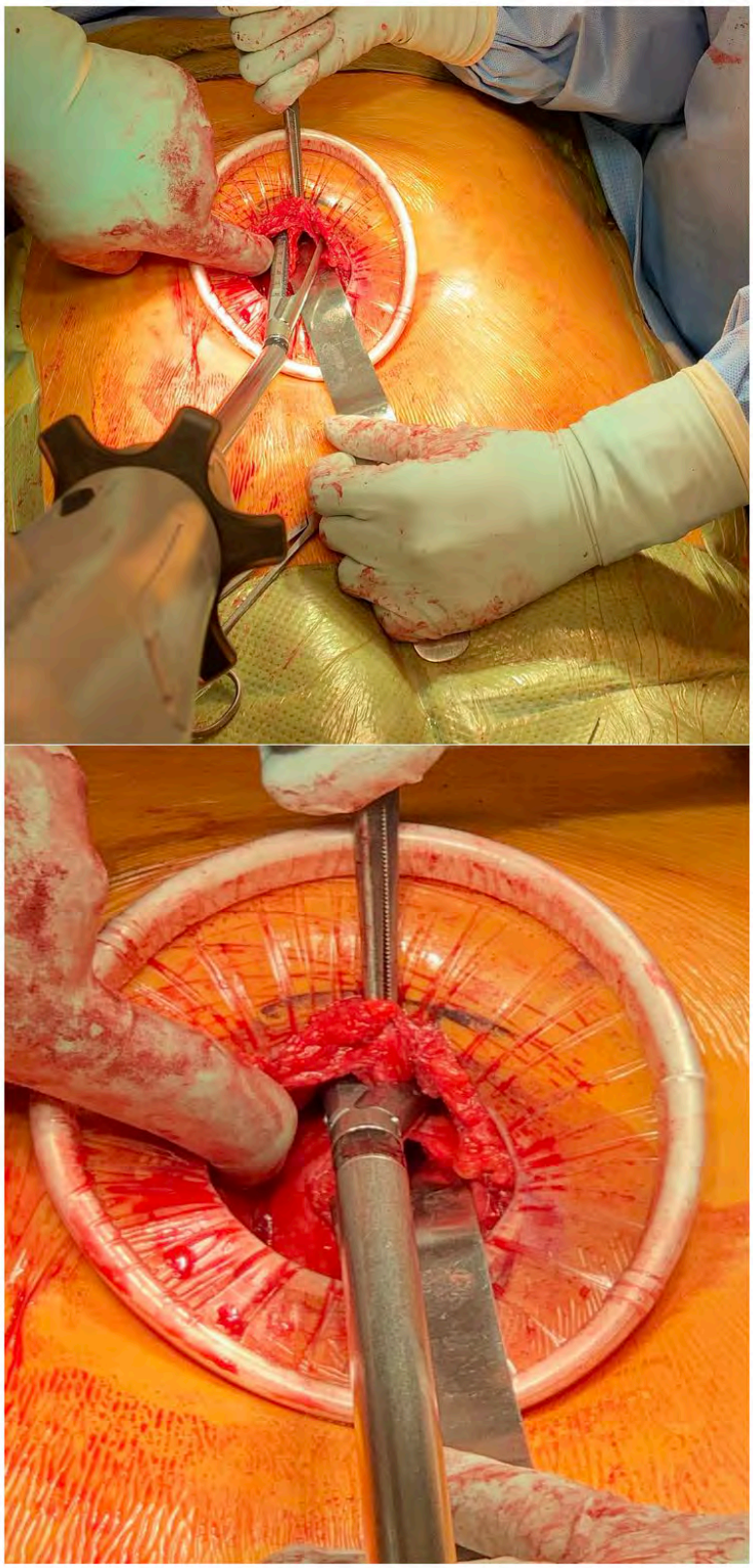
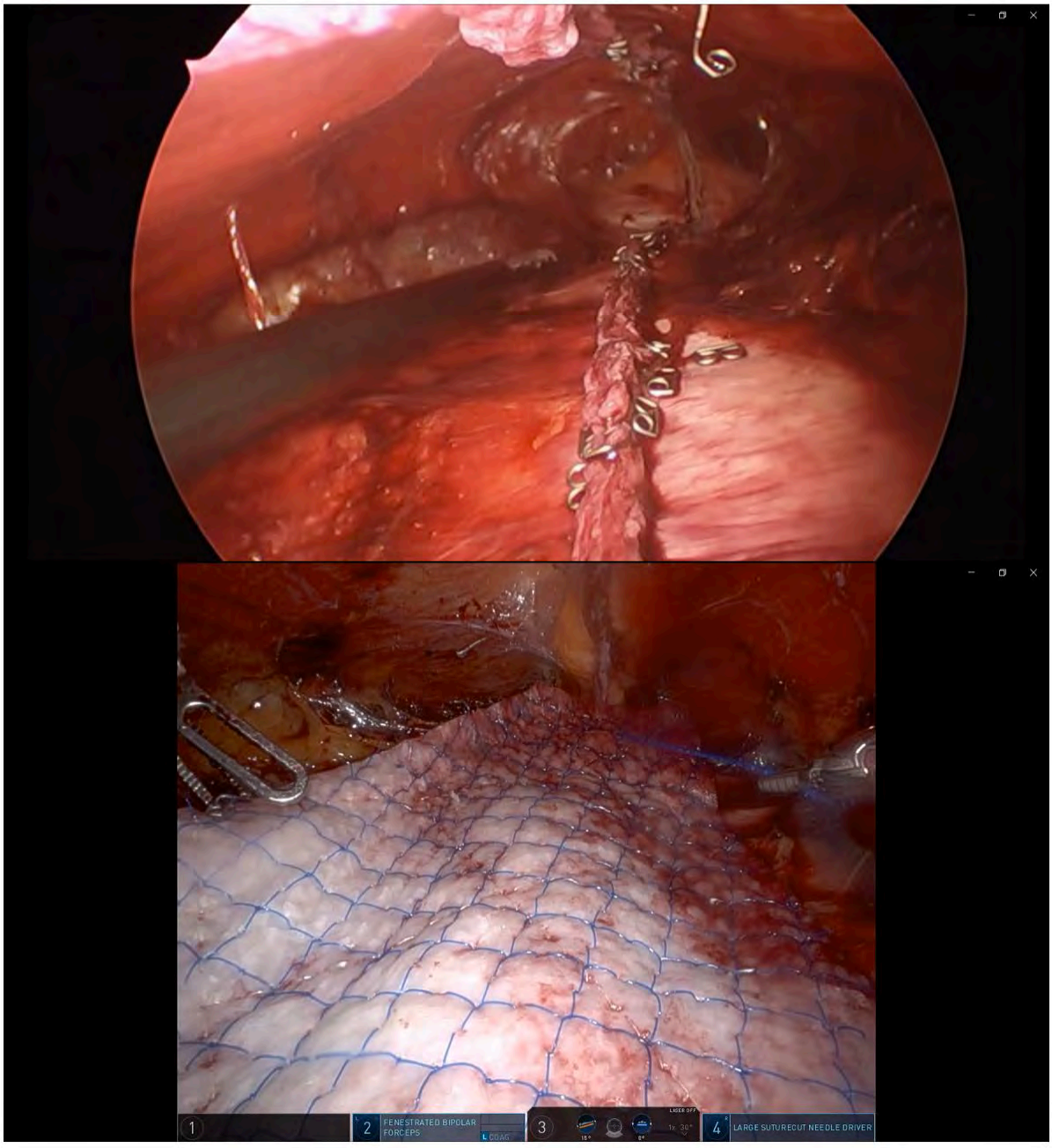


Figure Two — Demonstration of the sSIRRS Technique: The Stapled Linea Alba and Subsequent Mesh Placement



21. Robotic Repair Of Bilateral Giant Inguinoscrotal Hernias With Loss Of Domain

D Huynh, J Shao
University of Michigan

Background: Minimally invasive repair of inguinoscrotal hernias can be technically challenging. Here we present a robotic repair of giant bilateral hernias along with several techniques to help manage these difficult cases.

The patient is a 32 year old male with a history of developmental delay and an unknown past surgical history who presents with bilateral giant inguinoscrotal hernias. Physical exam and imaging demonstrated large bilateral defects with loss of domain.

Methods: Based on the size of the hernias and the loss of domain, preoperative pneumoperitoneum was employed with a final insufflation volume of 2L. The patient was then taken for robotic transabdominal preperitoneal repair using the Da Vinci Xi robotic platform. Indirect defects were identified on both sides. Due to its size, the left sided hernia sac was abandoned and an open anterior plication was also performed. Extra-large polypropylene mesh were then placed, with suture and adhesive fixation. The peritoneum was closed with barbed absorbable suture.

22. Repairing Core Muscles: Outcomes For Adductor Longus Tendon Repair

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Houston Methodist Hospital

Background: Injuries to the adductor tendons comprise about 64% of groin pathology (1), with the adductor longus having the highest incidence of involvement (2). Repair of the adductor tendons has not been well described in the literature but is an important procedure in reconstructing the core muscles following injury. The purpose of this case series is to demonstrate the efficacy of adductor longus repair.

Methods: We reviewed a total of 25 male patients with complete or high-grade partial avulsions to adductor longus, between 2021 and 2023. Patients presented with groin pain described as dull, sharp, burning, and weakness with adduction. The diagnosis was confirmed by patient history, physical examination, and magnetic resonance imaging (MRI). Most patients referred to a pop-like or tearing sensation in the groin area at the time of injury.

A low incision is made in the inguinal crease over the pubic bone with the patient in the frog legged position. The external oblique tendon is opened. The cord structures are retracted to expose the inguinal floor deep and the adductor tendon inferiorly. The proximal tendon is dissected from the compartment. permanent suture (Smith& Nephew MiniTape) is used in a running-locking fashion on the tendon. Scar tissue is removed from the pubic bone prior to the 1.8mm tunnels drilled in the bone. The bone anchors were used to secure the tendon to the bone. Additional suture is used to further secure the anterior surface of the adductor tendon to the pubic bone.

Results: Patients' ages ranged from 15 to 64 years of age, 60% were left-sided injuries, and 40% were right-sided, with a muscle retraction average of 1.8cm ± 1.4cm observed on MRI, on average patients returned to usual activities at 8.5 weeks with a standard deviation of 1.4 weeks. Complete relief of symptoms was observed in all patients and reintegration to usual activities was observed in 100% of the cohort.

We had only 2 postoperative complications, 1 seroma, and 1 suture extrusion both requiring incision and drainage, with no further complications after reintervention.

Conclusion: In high-grade injuries to the tendon complete recovery and reintegration to sports or usual activities rarely occurs without surgical treatment. The surgical technique described allows for repair of the adductor tendon to the pubic bone and full return to activity in this small cohort of patients.

23. The Rate Of Incisional Hernia At Diverting Loop Ileostomy Closure Sites - More Common Than We Think?

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Background: Diverting loop ileostomies are commonly utilized in both benign and malignant colorectal diseases to protect high-risk anastomoses and are typically reversed (DLI-R) 3-6 months later via a local incision. Prior studies have reported incisional hernia (IH) rates between 7-24% after stoma reversal. In considering whether this population warrants prophylactic hernia repair at the time of DLI-R, we hypothesized that these hernia rates are drastically under-reported in this context. Therefore, we aimed to characterize the true incidence and risk factors associated with incisional hernia formation within 1 year at loop ileostomy reversal sites within a high volume colorectal surgery practice.

Methods: Natural language processing was utilized to retrospectively identify adult patients within our institution who underwent a DLI-R between 2017-2023 and who subsequently had an abdominal computerized tomography scan (CT) performed within approximately 1-year (180-550 days) for any indication post-operatively. All CTs were independently reviewed by staff surgeons to determine if there was a fascial defect at the DLI-R site. Figures represent frequency (proportion) or mean (SD). Univariate analysis was performed to identify risk factors for radiographic IH.

Results: Of 2196 patients who underwent a DLI-R, 575 had a 1-year CT scan to review (Figure 1). The average age of patients was 55 (±15), with a BMI of 27.6 kg/m2 (±6), 54% were either current or former smokers, and 15% had a parastomal hernia identified at the time of DLI-R (Table 1). A total of 205 (36%) patients had an incisional hernia at the DLI-R site within 1 year.

On univariate analysis, age (p=0.12), gender (p=0.36), race (p=0.73), and smoking status (p=0.85) were not associated with IH following DLI-R. Co-morbidities (diabetes, prior MI, CAD, CHF, history of TIA or stroke, COPD, CKD, liver disease, and peripheral vascular disease) were also not significantly associated with IH after DLI-R (Table 2). Higher BMI (30.4 vs 26.1 kg/m2, p< 0.001) and having a parastomal hernia at the time of reversal (21% vs 12%, p=0.005) were both associated with subsequent incisional hernia development.

Conclusion: The rate of incisional hernia (36%) within 1 year of diverting ileostomy reversal is likely under-reported for this high-volume procedure. Given the high incidence, consideration for prophylactic hernia repair at the time of DLI-R could be considered in these high-risk patients.

Figure 1: Consort Diagram

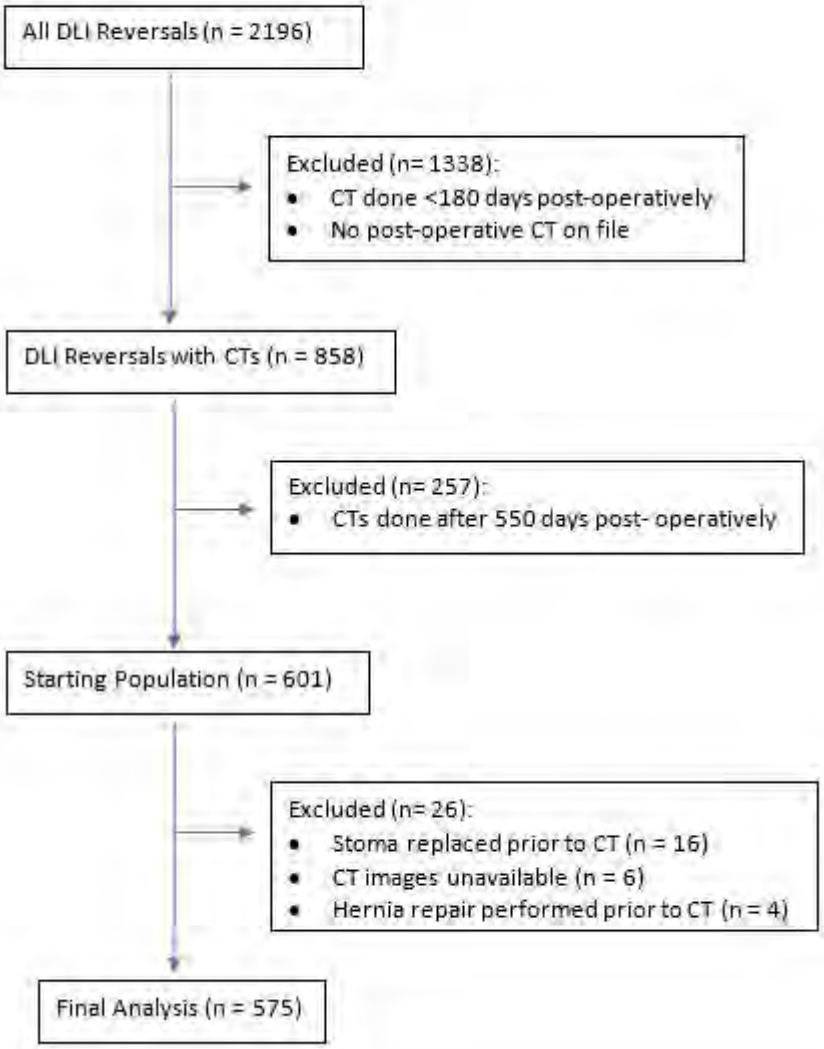

Table 1: Patient Demographics	N (%)
Age (mean, SD)	55.01 (15.0)
Gender	
Female	291 (50.6)
Male	284 (49.4)
Race	
White	482 (83.8)
Black	60 (10.4)
Other	20 (3.5)
Unknown	13 (2.3)
Ethnicity	
Hispanic	16 (2.8)
Not Hispanic	554 (96.4)
Unknown	5 (0.9)
BMI kg/m^2 (mean, SD)	27.63 (6.0)
Smoking Status	
Yes	67 (11.7)
Quit	241 (41.9)
Never	267 (46.4)
Case Length, min (mean, SD)	151.3 (55.7)
EBL, ml (mean, SD)	25.9 (69.6)
LOS, d (mean, SD)	3.79 (4.1)
Parastomal Hernia	88 (15.3)
Time to CT, d (mean, SD)	320.8 (96.8)
Comorbidities	
DM	108 (18.8)
CAD	71 (12.4)
CHF	42 (7.3)
MI	24 (4.2)
TIA/Stroke	30 (5.2)
COPD	57 (9.9)
CKD	58 (10.1)
Liver Disease	17 (3.0)
PVD	25 (4.4)

Table 2: Univariate Analysis of Patient Demographics and Risk Factors

	Hernia (+) N (%)	Hernia (-) N (%)	p-value
Age (mean)	56.3	54.3	0.12
Gender			0.36
Female	109 (53.2)	182 (49.2)	
Male	96 (46.8)	188 (50.8)	
Race			0.73
White	175 (86.6)	307 (85.3)	
Black	21 (10.4)	39 (10.8)	
Other	6 (3.0)	14 (3.9)	
BMI (mean)	30.4	26.1	<0.001*
Smoking Status			0.85
Yes	25 (12.2)	42 (11.4)	
Quit	88 (42.9)	153 (41.4)	
Never	92 (44.9)	175 (47.3)	
LOS, d (mean)	3.81	3.78	0.92
Case Length, min (mean)	151.8	151	0.87
Parastomal hernia			0.005*
Yes	43 (21.0)	45 (12.2)	
No	162 (79.0)	325 (87.8)	
DM			0.09
Yes	46 (22.4)	62 (16.8)	
No	159 (77.6)	308 (83.2)	
MI			0.81
Yes	8 (3.9)	16 (4.3)	
No	197 (96.1)	354 (95.7)	
CAD			0.86
Yes	26 (12.7)	45 (12.2)	
No	179 (87.3)	325 (87.8)	
CHF			0.99
Yes	15 (7.3)	27 (7.3)	
No	190 (92.7)	343 (92.7)	
TIA/Stroke			0.79
Yes	10 (4.9)	20 (5.4)	
No	195 (95.1)	350 (94.6)	
COPD			0.44
Yes	23 (11.2)	34 (9.2)	
No	182 (88.8)	336 (90.8)	
CKD			0.34
Yes	24 (11.7)	34 (9.2)	
No	181 (88.3)	336 (90.8)	
Liver Disease			0.98
Yes	6 (2.9)	11 (3.0)	
No	199 (97.1)	359 (97.0)	
PVD			0.64
Yes	10 (4.9)	15 (4.1)	
No	195 (95.1)	355 (95.9)	

*indicates statistical significance

24. Ventral Hernia Size Discrepancy Between CT Scan and Operation: A Multi-center Clinical Quality Improvement (CQI) Project

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Background: There has been a significant change in how hernia surgeons are reimbursed for ventral hernia repair procedures based on the size of the hernia defect in 2023. There is no guidance on what documentation will be used by insurance companies to justify the level of reimbursement. It is possible that insurance companies could use the documentation that **Results** in the lowest reimbursement to the surgeon.

Methods: A de-centralized, multi-centered clinical quality improvement (CQI) project is a relatively new way to measure and improve outcomes using real-world clinical data. Each clinical site developed a unique dataset and used data analytics and visualization tools to gain insights to improve outcomes. The clinical sites then met to collaboratively share their data analysis and insights in an attempt to improve outcomes through insights gained from each clinical site. Two clinical sites often collected data describing the size of the hernia defect(s) from a CT scan and during the operative procedure.

Results: A total of 129 patients (58 female and 71 male) underwent ventral hernia repair (VHR) at two clinical CQI sites. The mean age was 57.9 years (range 28 – 84), mean BMI was 30.79 (range 19.55 – 47.20), and 40/129 (31.0%) were recurrent hernias. Forty-four patients (34.1%) had well-documented hernia size measurements in both the CT scan report and the operative report. One clinical size documented the hernia measurements in ranges, while the other documented the measurements in surface area (cm2). Results of the comparison between the CT scan hernia size measurement and the operative note hernia size measurement for each patient are presented in Table 1.

Table 1: Combined data describing hernia size from CT scan and from OR documentation at two clinical sites

Conclusion: In most cases, hernia size was underestimated by CT scan reported measurements compared with the description of the hernia size at the time of the operation. This discrepancy could impact surgeon reimbursement. An accurate measurement of the size of an abdominal wall hernia is most likely to occur at the time of the operation by the surgeon performing the hernia repair.

	Hernia Size CT Scan, Number of patients	Hernia Size OR, Number of patients	CT underestimated defect size (%)	Mean Hernia Size CT Scan, cm2 (Range)	Mean Hernia Size OR, cm2 (Range)	CT size vs OR size (%)
1st Clinical Site: VHF (n =15/77)						
	No defect, 1	> 5cm defect, 1	1/1 (100%)			
	< 2 cm defect, 8	< 2 cm defect: 3 2-5 cm defect: 3 > 5 cm defect: 2	5/8 (62.5%)			
	2 – 5 cm defect, 2	2 – 5 cm defect: 2	0/2 (0%)			
	> 5 cm defect, 4	> 5 cm defect: 4	0/4 (0%)			
Total	15	15	6/15 (40%)			
2nd Clinical Site: VHI (n = 29/52)				31.1 (1 – 120)	90.4 (4 – 350)	
CT Underestimated (22)				21.6 (1 – 109)	101.0 (9-350)	22/29 (79.5%)
CT same as OR (4)				82.3 (20-120)	82.3 (20-120)	4/29 (13.8%)
CT Overestimated (3)				32.0 (5 – 55)	23.7 (4 – 51)	3/29 (10.3%)
Total (both clinical sites) CT Underestimated CT Same CT Overestimated						 28/44 (63.6%) 13/44 (29.5%) 3/44 (6.8%)

25. Automation of Morphological Assessment of Hernias on CT Imaging Using Deep Learning Algorithms

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Curium.life

Background: CT scan has become the diagnostic imaging of choice for ventral hernias. However the reporting systems are not standardised. The hernial sac volume and the various indices associated with it are of immense importance to the AWR surgeon. In most parts of the world, the hernia sac volume is not calculated by the radiologist and the surgeon is left to estimate it using rudimentary means such as visual estimation. In recurrent hernias, the presence of meshes from previous surgery is also elusive to the human eye on many instances.

Deep learning (DL) has revolutionised the field of radiology and we believe automation is the way forward to standardising hernia reporting. In this study we try to tap the potential of deep learning techniques in easing the process of hernia imaging.

Aim: To identify the hernia sac and defect , define the morphological characteristics of the hernia and tissue planes using deep learning techniques.

Methods: 70 ventral hernia CT scans were used. Slices with hernia defect sac and sac were annotated using computer vision tools. We annotated mesh data from 30 ventral hernia CT scans of patients who had undergone previous ventral hernia repairs.

80% of the data was used for training and validation. 20% data was used for testing. We used a combination of 3D reconstruction algorithms and deep learning to train the models. The model output was compared to manual annotation by expert radiologist and surgeon.

Results: The testing data showed that the defect was estimated with an accuracy of 93%. The mean IOU for detection of hernia sac was 86% and volume estimation accuracy was 85%.

Conclusion: Model was able to identify the mesh with an accuracy of 70% when compared to a manual annotator. Retraining our model with more varied data gave us improved

26. Development And Internal Validation Of A Machine Learning Model To Predict The Occurrence Of Incisional Hernia After A Midline Laparotomy

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Background: One of the main complications after laparotomy is incisional hernia (IH). In IH prophylaxis studies, there is no consensus on determining which patients are low or high-risk, making it difficult to compare results, which in turn has resulted in a lack of consensus on the technique of choice for the prevention of this complication. In the last ten years, seven predictive scales have been published. These scales have used traditional methods such as multiple logistic regression or Cox regression, which, although they are validated and proven methods, have at least resulted in the prediction of this complication with poor prognostic performance. There is no currently published study in which artificial intelligence is applied for the prediction of HI, so the objective of this study was to develop a predictive model of HI based on machine learning with the use of the XGBoost technique, secondarily develop a web app with the results of the model, which helps surgeons in charge of abdominal wall closure to have objective support to determine high-risk patients and in them provide a more selective assignment of prevention interventions.

Methods: To conduct the study, I used the TRIPOD statement guide. It was registered in the hospital research and ethics committees and in the Clinical Trials platform with registration number NCT 0571899. Patients older than 18 years of age, post-operative midline exploratory laparotomy, and who completed 24 months of follow-up after the initial surgery were included. The predictive models were developed using three machine learning algorithms: decision tree, logistic regression, and XGBoost. All data processing was done by writing custom code in Python within the Jupyter Notebook environment (anaconda 3). Using the XGBoost machine learning algorithm for prediction and SHAP values for the explanation, a web application based on the Shiny R library was developed.

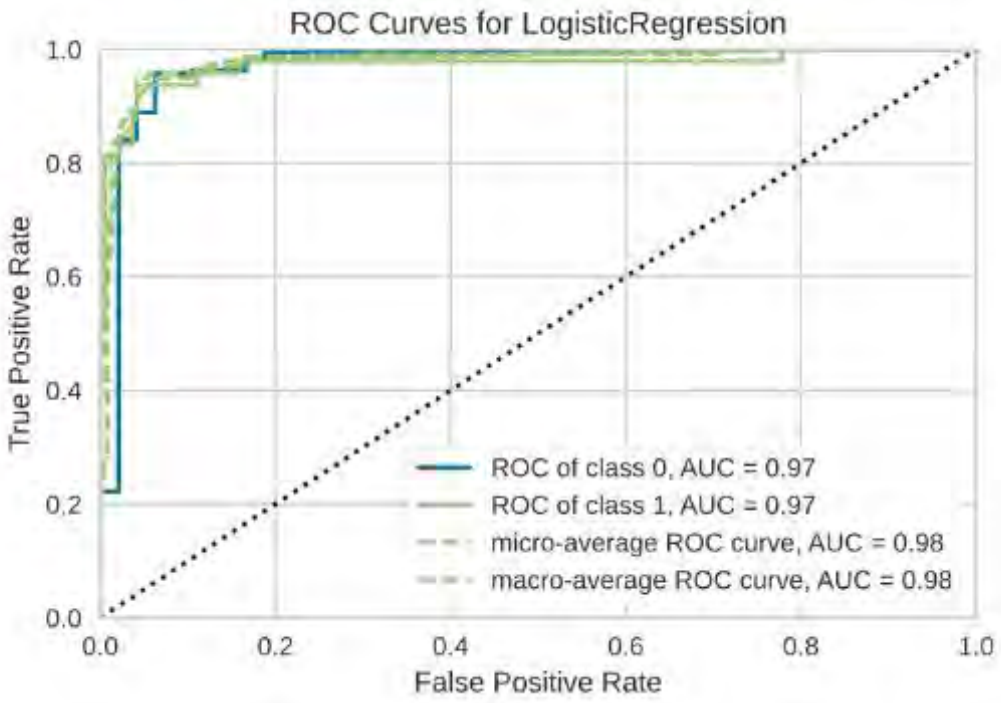
Results: 789 patients were analyzed, and 161 presented HI with an incidence of 20.4%. The model with the best performance was the XGBoost classifier with an accuracy score of 0.97, AUC of 0.97, a precision of 1, recall of 0.89 F1 of 0.94 for the variable of interest (presence of incisional hernia). Compared with logistic regression and decision tree they obtained an AUC of 0.62 and 0.74 respectively. The six most influential characteristics were: risk of infection, history of previous abdominal surgery, BMI, age, non-colorectal surgery, and emergency surgery.

Conclusion: The use of artificial intelligence is useful to predict the occurrence of incisional hernia in postoperative midline laparotomy patients, the XGBoost model obtained a sensitivity of 0.97%, specificity 0.96, and accuracy of 0.97, with better diagnostic performance than traditional regression models. multiple logistics and decision tree.

Comparison of artificial intelligence models and their performance in HI forecasting

Evaluation metric	Logistic regression	Decision tree	XGBoost
AUC **Accuracy**	0.62(0.57-0.74) 0.64(0.58-0.67)	0.74 (0.62-0.83) 0.73(0.65-0.88)	0.97 (0.94-0.98) 0.97(0.93-98)
Recall	49%	25%	89%
Specificity	87%	97%	96%
PPV	50%	71%	90%
NPV	87%	83%	94%
F1	0.44	0.67	0.94

AUC= Under curve area, () = 95% confidence interval PPV, NPV positive and negative predictive value



a. The effect of the individual features on the model output and their ranked importance

b. A summary plot of the impact of the features on the prediction (HI) of the model. Each patient is represented by a point in each row. The colour of the points represents the relative value of the feature, and the x-position of the points is the SHapley Additive exPlanations (SHAP) value, that is, the impact on the model's prediction

27. Video-Based Assessments of Inguinal Hernia Repair: Comparing an Objective, Procedure-Specific Assessment

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Background: We previously reported on the development of an OPSA to assess safe completion of surgical tasks for laparoscopic IHR (LIHR) and robotic IHR (RIHR) to support awarding individual autonomy and entrustable professional activities (EPA). In this study, we compare the inter-rater reliability of IHR OPSA with both the Global Objective Assessment of Laparoscopic Skills (GOALS), and Global Evaluative Assessment of Robotic Skills (GEARS), instruments designed to evaluate generic surgical techniques such as instrument handling and efficiency of motion.

Methods: IHR OPSA includes 8 items: incision/port placement; elevation of peritoneal flap; exposure; reducing the sac; full dissection of the myopectineal orifice; mesh insertion; mesh fixation, and operation flow. Items are assessed on a three-point scale: 1 = poor (unsafe); 2 = adequate (safe); 3 = excellent (safe). 30 IHR videos representing varying difficulty and anatomy were selected, de-identified, and randomized from a repository of 175 videos and uploaded to a proprietary SaaS-based platform used for VBAs and surgical quality improvement. Six board-certified surgeons experienced in minimally invasive IHR (mean practice duration: 16.9 years) completed the IHR OPSA, and GOALS or GEARS on each video. Mean inter-rater reliability was calculated for all items and each instrument using Gwet's AC2. IHR OPSA was assessed using a dichotomized safe (score ≥ 2) vs. unsafe (score < 2) scale. Pearson correlation statistics were calculated between IHR OPSA - GOALS and IHR OPSA - GEARS.

Results: 120 video reviews were completed and analyzed. The IHR OPSA inter-rater reliability for LIHR and RIHR ranged from 0.84-1.0 (mean 0.94) and 0.84-1.0 (mean 0.93), respectively. The inter-rater reliability of the GOALS and GEARS was substantially lower, ranging from 0.27-0.46 (mean, 0.33) and 0.33-0.61 (mean, 0.42), respectively. The IHR OPSA Pearson correlation to GOALS and GEARS was 0.82 and 0.87 respectively.

Conclusion: The IHR OPSA had excellent inter-rater reliability for both LIHR and RIHR, supporting its use as a reliable measure of safe procedure conduct to determine surgeon competency for granting autonomy in IHR. The IHR OPSA had higher inter-rater reliability than GOALS and GEARS instruments. The positive but imperfect correlation between instruments provides face validity that surgeons who complete tasks safely also have good technique and at the same time suggests that global assessment tools alone do not provide a complete picture of surgical competence.

Table 1: IHR OPSA Inter-rater Reliability by Item (Gwet's AC_2)

	OPSA	
	Laparoscopic IHR	Robotic IHR
Incision/port placement	1.0	1.0
Elevation of peritoneal flap (TAPP)	0.84	1.0
Elevation of peritoneal flap (TEPP)	0.92	0.86
Exposure	1.0	0.94
Reducing the sac	0.94	0.98
Full dissection of the myopectineal orifice	0.92	0.90
Mesh insertion	0.94	0.84
Mesh fixation	0.86	0.94
Operation flow	1.0	0.91

28. Gender Disparity in the Hernia Journal and its Affiliated Societies

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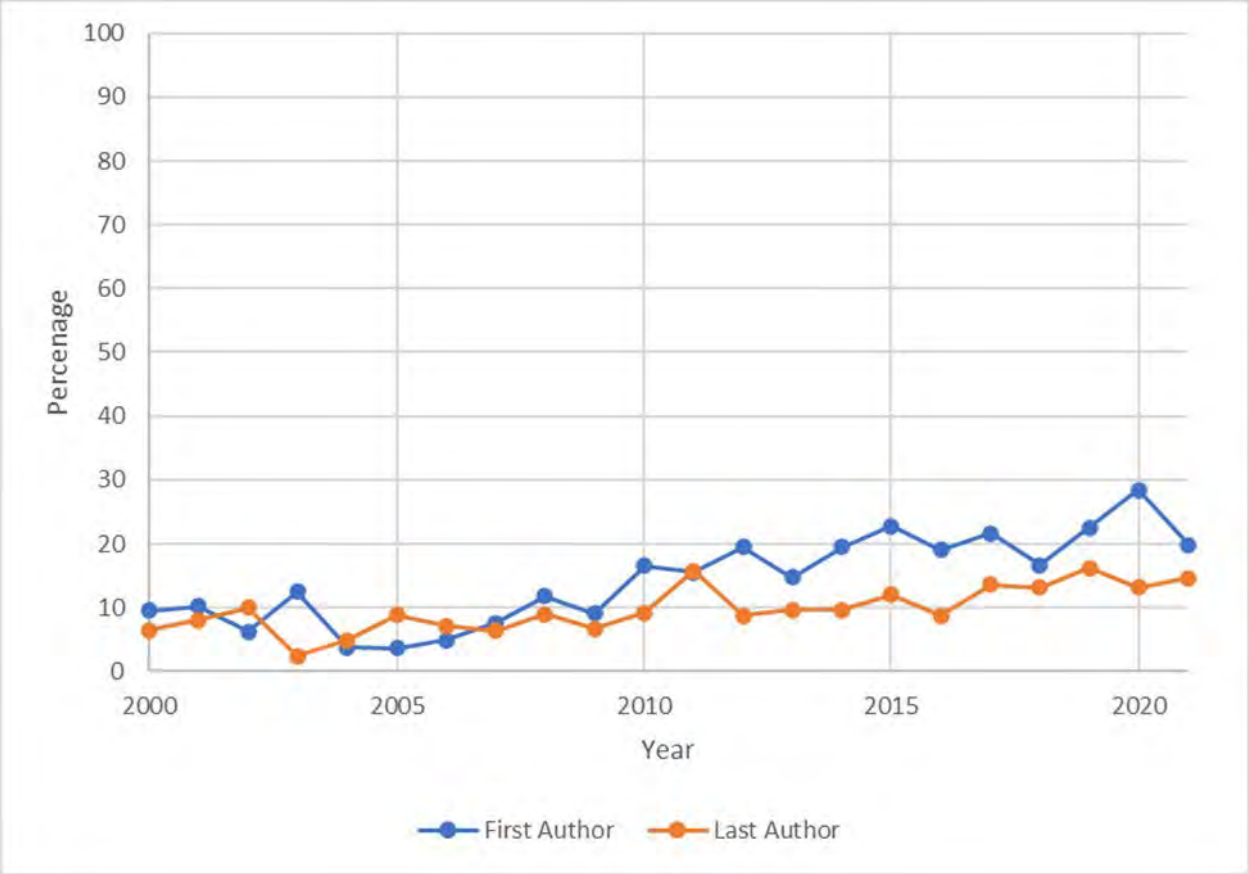
Background: In 2017 women medical school matriculates (50.7%) surpassed the percentage of male students in the United States, and in 2020 45% of general surgery residents were women. However, gender disparity still exists within academic surgery, with women only representing 28% of US medical school faculty in 2021. Our aim was to determine the leadership disparity within the journal "Hernia" and its affiliated societies and disparity in authorship in Hernia. We hypothesized that a substantial gender bias would exist 20 years ago, but gender equity should now be approximately 50% for authors and 30% for leadership positions.

Methods: The female authorship for first and last authors for Hernia was determined from 2000-2021 by cross-referencing the author's name and affiliated institution if an academic profile was available. If there was not one available, internet searches were conducted for public sources that would indicate gender. The current percentage of female editors of Hernia and the percentage of females in leadership positions for Americas Hernia Society (AHS) and European Hernia Society (EHS) was found online. The Cochrane-Armitage test was used to look for a trend in female authorship over time.

Results: There were 2,407 articles over the 21-year period. Overall, 15.7% of first authors and 10.5% of last authors were female. There was a linear trend ($p \leq .001$) with female first authors increasing from 9.5% to 19.8% and last authors increasing from 6.5% to 14.6% (Figure). Only 16.7% of Hernia editors are women. In the AHS, 40.0% of executive leadership are women and 18.1% of the board of governors are women. In the EHS, 7.7% of the board of governors, 11.1% of the committee chairs, and 33.3% of the committee members are women.

Conclusion: Although there has been an improvement over time, gender equity has not been achieved in hernia surgery. Hernia societies must work to actively involve women at all levels and promote more qualified women into leadership positions as diversity is important to promote new insights, innovation, and ideas.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Last Author

29. Abdominal Wall Mass Resections: Closure Practices And Outcomes Following Oncologic "Shark Bites"

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Background: Resection of tumors from the abdominal wall can pose a quandary for hernia surgeons. Due to the relative rarity of these procedures, there is little in surgical literature to guide management or manage the acute defect created by these operations. Here, we aim to describe the surgical management and outcomes following radical tumor resection from the abdominal wall fascia.

Methods: This was a single-center retrospective review of patients who underwent radical resection of abdominal wall masses, identified through CPT codes 22900, 22901, 22904, and 22905, between January 2010- December 2022. Patients were included if resection included fascia. Outcomes included operative characteristics, 30-day and long-term wound complications, hernia development, tumor recurrence, and reoperation.

Results: 120 patients were identified with a mean follow up of 46.6±40.8 months postoperatively. Seventy-five (62.5%) of the masses were primary masses of the abdominal wall, with the most common being desmoid (N=25) and endometrioma (N=27), and the remaining 45 masses were secondary to metastasis. Most tumors involved resection of the anterior fascia (N=112 (93%)) and most included resection medial to the linea semilunaris (N=97(81%)). Mean tumor width was 6.2±3.4cm and mean defect width was 8.1 ± 4.1cm. Sixty-one patients (50.8%) had mesh placed for abdominal closure, with variation in mesh type, mesh location, and use of component separation (Table 1). Compared to the group without mesh placed, the group with mesh placed had significantly larger tumors (mean (SD) width: 7.7±3.4 vs. 4.4±2.5cm) and fascial defects (mean (SD) width: 10.1±3.7 vs. 5.8±3.2cm) ($p< 0.001$). There was no difference in BMI (29.1±7.22 vs. 31±15.3kg/m2) or rate of hernia development (N=16, (26%))vs N=11(18.6%)) for suture and mesh-based repairs, ($p=0.39$ and 0.34 respectively).

Postoperative CT scans were available for 88 (73.3%) patients at a mean follow up of 36.4±33 months after surgery. Forty (33.3%), 11 (9.2%), and 18 (15%) patients experienced an SSO, SSI, or SSOPI respectively within 30 days. On multivariable analysis, increased defect width was associated with SSOPI (OR 1.17, 95%CI 1.00-1.36, $p=0.041$) and wound class II and III were associated with SSI (OR 8.38, 95%CI 1.78-60.6 and 49.1, 95%CI, $p< 0.05$) and SSOPI (OR 5.77, 95%CI 1.74-21.6 and 17.4, 95%CI 1.42-227, $p< 0.05$)(Table 2). Seven patients (5.8%) required reoperation within 30 days and 35 (20.8%) required additional operations after 30 days. Eight patients (6.7%) developed recurrence of the abdominal wall tumors including desmoid (3), endometrioma (1), and metastatic cancers (4). Twenty-seven (22.5%) patients developed radiographic evidence of a hernia after resection with a mean fascial defect width of 9.8±7.2 cm.

Conclusion: This represents the largest series to date describing outcomes after resection of tumors involving the abdominal wall. There was a trend towards using mesh for larger defects, with similar hernia development rates to smaller defects with suture-only closure. This is a highly morbid population, with often contaminated resection cases, so further work should attempt to address the advantages and disadvantages of mesh placement in these challenging clinical scenarios.

Table 1: Operative details

	N=120
Tumor width, cm, mean (SD)	6.2 (3.4)
Tumor length, cm, mean (SD)	8.1 (4.7)
Defect width, cm, mean (SD)	8.1 (4.1)
Defect length, cm, mean (SD)	10.4 (6.2)
Wound class, n (%)	
Clean	80 (66.7)
Clean- contaminated	33 (27.5)
Contaminated	4 (3.3)
Dirty	3 (2.5)
Mesh used, n (%)	61 (50.8)
Mesh type, n (%)	
Biologic	12 (19.7)
Lightweight permanent synthetic	1 (1.6)
Mediumweight permanent synthetic	26 (42.6)
Heavyweight permanent synthetic	12 (19.7)
Other permanent synthetic	5 (8.2)
Resorbable synthetic	10 (16.4)
Biosynthetic	1 (1.6)
Mesh location, n (%)	
Intraperitoneal	4 (6.6)
Preperitoneal	11 (18.0)
Retromuscular	13 (21.3)
Inlay	33 (54.1)
Onlay	6 (9.8)
Mesh width, cm, mean(SD)	13.4 (8.0)
Mesh length, cm, mean(SD)	16.2 (9.8)
Fixation, n (%)	
None	4 (6.6)
Suture	45 (73.8)
Tack	2 (3.3)
Glue	0 (0)
Unspecified	13 (21.3)
Component separation, n (%)	
None	101 (84.2)
Posterior sheath incision	8 (6.7)
Transversus abdominis release	2 (1.7)
Anterior component separation	11 (9.2)
Plastic flap performed, n (%)	4 (3.33)
Anterior fascia closure method, n (%)	
No	38 (31.7)
Interrupted	46 (38.3)
Running	35 (29.2)
Permanent	20 (16.7)
Absorbable	61 (50.8)

Table 2: Multivariable analysis for hernia outcomes

	SSI			SSO			SSOPI			Reoperation		
Characteristic	**OR[1]**	**95% CI[1]**	**p-value**	**OR[1]**	**95% CI[1]**	**p-value**	**OR[1]**	**95% CI[1]**	**p-value**	**OR[1]**	**95% CI[1]**	**p-value**
Defect width (cm)	1.12	0.90, 1.37	0.3	1.12	1.00, 1.27	0.051	1.17	1.00, 1.36	0.041	1.17	0.96, 1.41	0.089
Fascia closure												
No	—	—		—	—		—	—		—	—	
Yes	1.07	0.14, 8.67	>0.9	1.93	0.63, 6.45	0.3	3.19	0.66, 20.1	0.2	0.83	0.09, 7.45	0.9
Wound Class												
Clean	—	—		—	—		—	—		—	—	
Clean-contaminated	8.38	1.78, 60.6	0.013	1.39	0.55, 3.42	0.5	5.77	1.74, 21.6	0.005	1.76	0.32, 8.76	0.5
Contaminated	49.1	3.72, 826	0.003	3.08	0.31, 29.9	0.3	17.4	1.42, 227	0.021	8.84	0.34, 116	0.11
Dirty	0.00		>0.9	0.00		>0.9	0.00		>0.9	0.00		>0.9
Mesh used												
No	—	—		—	—		—	—		—	—	
Yes	0.32	0.04, 2.28	0.3	0.33	0.09, 1.08	0.077	0.23	0.03, 1.25	0.11	0.29	0.03, 1.91	0.2

30. Preoperative Geriatrician Evaluation Significantly Improves Abdominal Wall Reconstruction (AWR) Outcomes in the Geriatric Patient Population

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Background: Patients of an advanced age are more likely to suffer from comorbidities, frailty and other degenerative issues associated with the aging process. Previously, our data demonstrated significant increased length of stay (LOS) and complications for every 10 years of life after 60. In a quality improvement effort, a partnership was developed with Geriatric Medicine to provide direct consultation for appropriate general surgery and, specifically, AWR clinic patients at the time of their surgical consultation. The goal was to assess the impact of a preoperative Geriatric Medicine visit on surgical and postoperative outcomes.

Methods: Prospectively collected, single-center, hernia-specific data were queried for patients who underwent surgery for any hernia type and had a preoperative evaluation by Geriatric Medicine(GM). Patients were propensity matched in a 1:1 fashion based on hernia type, age, body mass index(BMI), COPD, history of diabetes, and total number of comorbidities to similar patients who did not have a preoperative evaluation by GM(NGM). Standard descriptive statistics were reported, and subgroup analysis was performed for only patients undergoing AWR for a ventral hernia.

Results: A total of 160 GM patients undergoing various general surgery procedures were evaluated. After matching, 124 matched pairs showed no significant differences between GM and NGM among matched variables. GM patients were more likely to be on steroids(17.7% vs 3.2%,p<.001) and have an ASA class III(73.4% vs 44.4%,p<.001). No significant differences existed in CDC wound class or operative technique. GM patients had lower rates of wound breakdown(0.0% vs 6.5%,p=0.007), less overall wound complications(3.2% vs 13.7%,p=0.005), and lower medical complications(4.8% vs 16.1%,p=0.006). An examination of GM AWR versus NGM AWR patients(62 matched pairs) was performed, and the groups were again similar in matched characteristics. GM patients were more likely to be on steroids(16.0% vs 0.0%,p<.001) and have an ASA class III(79.0% vs 51.6%,p=0.005). No significant differences existed in CDC wound class, operative technique, or mesh type. Following AWR, GM patients had shorter LOS(4.7±2.9vs 6.7±6.5,p=0.028), less wound breakdown(0.0% vs 11.3%,p=0.013), and less overall wound complications(3.2% vs 21.0%,p=0.004). They also had fewer medical complications(8.1% vs 19.4%,p=0.115) and ICU admissions(1.6% vs 11.3%,p=0.062), although these were not statistically significant.

Conclusions: This propensity match analysis demonstrated that seeing a geriatrician at the same time as an AWR specialist decrease AWR associated complications, LOS, and possibly ICU admissions in patients of advanced age despite increased ASA class and steroid use. Overall, these results support preoperative geriatric evaluation to improve resource utilization at a tertiary hernia referral center.

31. Robotic Unilateral Transversus Abdominis Release (TAR) For A Large Flank Incisional Hernia

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Background: Lumbar and flank hernias, also called atypical hernias, are relatively rare defects of the lateral and posterior abdominal wall. They present several challenges due to their low rates and their anatomic location in close relation with bony surfaces. Lumbar hernias account for < 1% of abdominal wall hernias. There are approximately only 300 cases noted in the literature and about 9% develop painful incarceration or strangulation, thus repair in the vast majority occurs in an elective setting.

Atypical hernias can be congenital (20%) or acquired (80%). Acquired lumbar and flank hernias are either primary (spontaneous) or secondary (trauma or surgery). So far, main surgical options are open repair or minimally invasive, either transabdominal or totally extraperitoneal.

Here we are presenting a case of a 62 year old male with history of rib fracture and open right flank hernia repair in 2017 presenting with recurrent right flank hernia, for which we proceed with Robotic transabdominal unilateral Transversus Abdominis Release (TAR) with retromuscular mesh placement.

At presentation, patient reports progressively enlarged right flank bulge, causing him daily discomfort, and interfering with his quality of life. He endorses shortness of breath when bending or lifting, burning and tearing pain across his abdomen. He had to stop working as a heavy machinery driver due to the pain. At physical exam patient had a large right subcostal flank bulge with well healed surgical scar, worse with valsalva or cough.

On initial clinic visit patient BMI was 32.5. He was engaged in a diet and continued to follow monthly to check weight loss goals in an effort to improve his symptoms and optimize him for surgery. Patient was diligent about losing weight and demonstrated to be an active participant in his care. After 6 months of follow up, at time of surgery patient BMI was 29.5.

Methods: We obtained intra-abdominal access at Palmer's point, and placed next two trocars over the left hemiabdomen. Next, we performed our first myofascial release incising the right posterior sheet, just underneath the rectus muscle, we carried this dissection lateral to the semilunar line, we identified the neurovascular bundle and incised the posterior lamella of the internal oblique just medial to it. Next, we transected and performed the right transversus abdominis release. During dissection the whole hernia was reduced. We recognized the transversalis fascia and carried blunt dissection lateral to the level of the retroperitoneal fat and lateral border of psoas and quadratus lumborum muscle. We created a large retromuscular space to fit a 27 cm wide x 25 cm long sheet of Prolene heavy weight mesh and be able to re-approximate the posterior sheath to midline without tension, performing a durable repair with a minimally invasive approach.

Results: Patient has been followed up at clinic, at 2 months post-operative, continues to be engaged on his care losing weight. He denies limitations to his daily living activities. He is no longer experiencing shortness of breath or pain.

32. Addition Of Ventral Hernia Repair Does Not Increase Inpatient Mortality In Non-Oncologic Colorectal Surgery

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Background: Elective colorectal surgery patients often present with concurrent ventral hernias. This study examines the inpatient mortality risk when a ventral hernia repair is added to an index non-oncologic colorectal procedure.

Methods: Mortality risk was assessed in patients undergoing elective, non-oncologic colorectal surgery with a concurrent ventral hernia diagnosis from the Vizient clinical database between 2019 and 2022. To ensure fair comparison given the multitude of corresponding ICD10 PCS codes, we utilized Uniform Manifold Approximation and Projection with k-means clustering to group patients who underwent similar colorectal operations. Ventral hernia repair was identified via ICD10 codes and included any open or laparoscopic method with or without component separation and excluded umbilical hernia repair. We utilized a propensity score model to generate 1:1 matched cohorts by matching individuals who underwent hernia repair with those who did not based on age, sex, race, index operation, insurance type, and ICU admission. For our primary outcome - mortality, we estimated the average treatment effect between patients who underwent hernia repair vs those who did not using logistic regression models with bootstrapping.

Results: 22,906 patients underwent colorectal surgery and had a diagnosis of ventral hernia. 7,713 (33.7%) had a ventral hernia repair performed concurrently. The characteristics of patients, including demographics, were largely comparable between those who underwent hernia repair and those who did not, with slight variations observed in race, payer type, and readmission rates. The median age for both groups was 62. The median hospital length of stay was similar between the two groups: 7 days [IQR: 4, 12] for those without hernia repair and 6 days [IQR: 4, 12] for those with hernia repair (p=0.6). The median total treatment cost was higher for those who underwent hernia repair at $29,232 [IQR: $19,033, $48,466] compared to those who did not at $24,437 [IQR: $16,280, $42,477] (p< 0.001) Readmission rates were also slightly higher among those who underwent hernia repair (16.5%) compared to those who did not (13.9%) (p< 0.001). On adjusted analysis, patients who underwent a ventral hernia repair (VHR) had a 1% reduction in inpatient mortality rate ATE-0.01 (95% CI -0.01 to -0.008).

Conclusion: Addition of ventral hernia repair to non-oncologic colorectal surgery does not increase the risk of inpatient mortality, but does have a higher readmission rate and increased treatment cost. Importantly, concomitant VHR does not increase LOS. When clinically appropriate, ventral hernia repair need not be deferred.

33. Robotic Incisional Hernia Repair, Extended Totally Extraperitoneal (eTEP) Access with Unilateral Transversus Abdominis Release (TAR)

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Background: 55 year old female with a history of rectal cancer, previously underwent a laparoscopic low anterior resection with diverting loop ileostomy and subsequent ileostomy reversal. She developed a right lower quadrant ostomy site hernia, which was repaired with a robotic IPUM. She presented to me with a recurrence of her right lower quadrant incisional hernia with incarcerated transverse colon, as well as a midline incisional hernia from her extraction site. I chose to perform a robotic repair with eTEP access, left Rives Stoppa and right TAR.

34. Robotic Versus Laparoscopic Groin Hernia Repair: A Multicenter Propensity Score Matched Analysis Of 30-Day And 1 Year Outcomes

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Background: There is continuing debate regarding the best surgical approach for treating inguinal hernias. The minimally invasive approach using the robotic platform for inguinal hernia repair (IHR) has gained momentum in the last decade. The objective of this study is to compare perioperative outcomes in patients who underwent unilateral robotic (RTAPP), and laparoscopic (LTAPP and LTEP) groin hernia repair using the Abdominal Core Health Quality Collaborative (ACHQC) Database.

Methods: A retrospective review of prospectively collected data from the Abdominal Core Health Quality Collaborative (ACHQC) was performed to include all adult patients who underwent elective unilateral inguinal hernia repair. A 1:1 propensity score match (PSM) analysis was conducted for balanced groups. Univariate analysis was performed to compare three groups (LTAPP, LTEP, and RTAPP) across preoperative, intraoperative, and postoperative timeframes.

Results: ACHQC database identified 8,662 patients that underwent IHR. A PSM analysis stratified 1,598 patients to each group with a total of 4,794. The median age of patients who underwent LTAPP group was 60 (IQR 47-69), LTEP 62 (IQR 48-70) and RTAPP 60 (IQR 47-70). A painful bulge was the most common indication for repair in all groups. We combined LTAPP and LTEP in one group (Lap) and compared them with RTAPP. OR time > 2 hr was greater in the RTAPP group (123;8%) ($p< 0.001$). There was no difference in readmission rates and reoperation between the groups. There was also no difference in Surgical Site Infection (SSI) between groups with five patients in the Lap group and three in the robotic group. Surgical Site Occurrences (SSO) was higher in the Lap group (n=214; 7%) versus the robotic group (n=69; 4%) ($p< 0.001$). There was no difference in hematoma, SSI and SSOPI. There was no difference in hernia recurrence between the groups, at 30 days or 1 year, with an overall recurrence rate of 6% at 1 year ($p = 0.33$)

Conclusion: There was no difference in readmission, reoperation, and SSI between the different surgical techniques at 30 days. The laparoscopic group was more associated with seromas and SSO when compared with the robotic approach. Hernia recurrence at 30 days and 1 year were similar across treatments.

35. Robotic repair of recurrent incisional lumbar hernia/lateral incisional hernia (LIH)

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Background: This video demonstrates the preoperative imaging, anatomic considerations, patient positioning, equipment choice, and operative approach for a single patient while repairing his multiply recurrent incisional flank hernia. Lateral incisional hernias, and particularly lumbar hernias, are challenging to approach and repair due to the multiple boney prominences in close proximity and the lack of robust fascial tissues in the area. Both factors limit the surgeon's ability to obtain adequate area for mesh coverage and closure of the defects.

Methods: The patient was a male in his sixth decade that acquired a LIH from a spinal exposure. Preoperative imaging showed a 7 cm defect of his left quadratus lumborum musculature with colon included in the hernia sack. Based on imaging landmarks, the anticipated mesh placement extended to the anterolateral border of the psoas muscle posteriorly and to the linea semi-lunaris anteriorly. The patient was positioned at a 45-degree right lateral recumbent with the left arm raised above the head to avoid collisions with the Da Vinci XI Robotic boom. Three 8 mm reusable robotic trocars were placed through the rectus muscle in the left upper, periumbilical, and lower quadrants. Preperitoneal dissection was extended circumferentially to the hernia defect prior to attempting reduction of the sac from the retroperitoneal fat. The sliding component that incorporated the descending colon made this dissection more difficult. Retroperitoneal dissection was completed once the iliopsoas junction, quadratus lumborum, and transversus abdominus muscle were exposed at the base of the retroperitoneum. The defect was then primarily closed with an 18-inch 1-0 non-absorbable V-Loc suture, starting closure from most cephalad and caudad aspects, then sequentially cinching to meet in the center. The repair was reinforced with a 15 x 18 cm heavyweight knitted monofilament polypropylene mesh. The mesh was secured in place with several interrupted 2- Vicryl sutures in cardinal directions, and the peritoneal flap was closed with a running V-Loc suture.

Conclusion: The patient stayed one-night inpatient for observation and was subsequently discharged. At the six-week follow-up, the patient had returned to all activities of daily living without evidence of hernia recurrence.

36. Unilateral Dock for Robotic Pauli Parastomal Hernia Repair

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Background: For parastomal hernias, mesh-based repairs are superior to suture-based repairs in terms of recurrence. Primary fascial closure has a recurrence rate up to 66%, while mesh based repairs have a low recurrence rate of 13%. One mesh-based technique for parastomal hernia repair is the Pauli parastomal hernia repair (PPHR), which is a modification of the Sugarbaker technique. This involves a transversus abdominis release (TAR) in order to lateralize the stomal loop in the retromuscular plane, followed by extraperitoneal mesh placement within the retromuscular plane. We have previously described open retromuscular repair that requires development of bilateral retromuscular pockets. In this video, we show a unilateral dock method for PPHR that involves right sided pre-peritoneal dissection in order to cover the small midline hernias that can exist.

The PPHR is an alternative to the laparoscopic modified Sugarbaker technique. A key step in this technique is to determine which direction (inferior-lateral versus superior-lateral) to lateralize the stoma. Maintaining the original bowel orientation is crucial to achieve tension-free positioning and avoid kinking of the bowel. Additionally, if the patient does not have significant minimal midline components, as was the case in our patient presented here, then it is possible to do a PPHR with a unilateral dock approach. However, a bilateral dock approach may be necessary in patients who require more medial mobilization in order to close the midline.

37. Anterior Cutaneous Nerve Entrapment Syndrome & Its Management With A Novel Approach Using Totally Extraperitoneal Robotic Posterior Neurectomy

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Background: Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) is an often under-diagnosed and mistreated etiology of chronic abdominal wall pain, arising from the entrapment or compression of anterior cutaneous branches of intercostal nerves as they traverse the posterior rectus sheath to innervate overlying structures. [1]. The exact cause remains unclear but may be related to mechanical factors, such as increased intra- or extra-abdominal pressures, trauma, ischemia, localized scarring, surgery, obesity, pregnancy, or activities that increase pressure on the abdominal wall.

The incidence of ACNES is estimated to be 10% in both pediatric and adult patients presenting with abdominal pain. [3][4]

Diagnosis of ACNES relies on patient history and physical examination, specifically utilizing Carnett's test. Confirmation is achieved through a directed injection of lidocaine into the affected thoracic nerve, resulting in temporary, partial, or complete alleviation of symptoms. [5].

Therapeutic management of ACNES follows a stepwise approach, starting with oral analgesics and lidocaine injections (with or without steroid injections)[6], progressing to ultrasound-guided pulsed radio-frequency ablation[7], and finally, surgical intervention if needed. Open anterior and posterior neurectomy are the only reported surgical modalities studied to date, having a success rate of 60-70%.

We present a novel method for treating ACNES: Totally Extraperitoneal Robotic Posterior Neurectomy, an alternative to the open neurectomy.

Methods: The symptomatic area of the abdominal wall is mapped and marked. The ipsilateral retromuscular space is entered via ports just medial to the linea alba. Following the dissection of the retromuscular space, the culprit intercostal nerves are identified and is resected. Possible complications may include neuroma formation, lateralization of abdominal wall pain, and post-surgery muscle weakness or diastasis recti.

Conclusion: We believe Robot-assisted Posterior Neurectomy has the potential to become an alternative surgical approach in the management of patients with ACNES. Further studies should be done to validate this approach and to study its long-term success rates & potential complications.

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38. Concomitant Cesarean Section with Abdominal Wall Reconstruction

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Cleveland Clinic Foundation

Background: An adult female undergoes abdominal wall reconstruction for a large ventral hernia at the time of cesarean section and delivery of healthy baby

39. Intricate Approach to Thoracoabdominal Hernia Containing Kidney, Colon, Pancreas, and Spleen

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Background: This is a 61-year-old female with history of COPD, DM, obesity, and right-sided adrenalectomy who presented for progressively enlarging left thoracoabdominal hernia. This hernia developed 3 years prior, after an episode of coughing while twisting. Upon imaging review, there were associated old rib fractures, contents herniating between the 9th and 10th rib spaces, with significant diaphragmatic contribution. The hernia contained both intraabdominal and retroperitoneal structures, including the left lateral segment of the liver, stomach, spleen, colon, the pancreas, small bowel, and the left kidney. Due to significant pain, discomfort, and difficulty accomplishing activities of daily living, her hernia was dramatically affecting her quality of life. After achieving weight loss to a BMI < 37, we decided to proceed with robotic assisted laparoscopic repair.

Methods: Based on the hernia size and location, adequate mesh coverage would require extension to the medial border of psoas. As such, unilateral transversus abdominis release with patient in full right lateral decubitus position was pursued, ports placed along the left rectus. After extensive lysis of adhesions, we began by cutting the posterior sheath, entering the retromuscular space, extending to the pretransversalis plane, and delineating our anatomy, isolating the Space of Bogros and identifying the transversus abdominis at the caudal border. During further dissection, the left hemithorax was inadvertently entered. Our patient remained hemodynamically stable and did not require a chest tube. However, it became clear that we would need to meticulously dissect the pleura from the peritoneum in order to preserve the posterior elements. This was successfully accomplished. Dissection was continued to the superior and lateral extent of the diaphragmatic disruption. Inferolaterally, the white line of toldt was taken down to medialize the colon out of the defect while identifying quadratus lumborum and following it superiorly to the psoas. Once adequate musculature was identified, the defect was approximated, reconstituting the relationship of the diaphragm, quadratus lumborum, and the transversus abdominis—thereby covering the pleura. To improve visualization of the final remaining lumbar hernia, a 4th lower abdominal port was placed, allowing static retraction and completion of the case. The abdominal wall was successfully reconstituted, a heavy weight mesh was placed, secured at cardinal points, and the posterior sheath was closed.

Results: Postoperatively the patient did exceptionally well and did not require narcotic medications. She was discharged on post-operative day 3 due to persistent oxygen requirement, but was back to her life in rural Arizona soon after.

Conclusion: This is an interesting case due to the size and location of the defect, as well as the delicate, beautiful dissection of the peritoneum off of the pleura—a demonstration of robotic prowess. Additionally, this case is an excellent testament to the fact that complex, large scale repairs can be accomplished with a robotic platform, achieving what would previously require an open abdominal approach and prolonged hospital stay. Our patient quickly regained her quality of life, and to this day remains very satisfied with her repair.

40. Robotic Repair of Rare Recurrent Incision Hernia in Setting of Prior Reconstructed Diaphragm and Chest Wall

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Background: This is a unique case of a 45 year-old man with a history of synovial sarcoma requiring resection along with chest wall and diaphragm reconstruction who subsequently developed a recurrent incisional hernia. His treatment course included neoadjuant chemoradiation, followed by radical resection of this right costophrenic synovial sarcoma, with diaphragm reconstruction using a Gore-Tex patch, and rib reconstruction using methyl methacrylate. His chest wall was reconstructed with a combination of Prolene mesh, a rectus muscle flap, and an omental flap which was tunneled through subcutaneous tissue. The patient presented a year after his resection with an incisional hernia, at which time a robotic repair was attempted with a bridging mesh. His hernia recurred shortly after, and he was referred for complex hernia repair. We elected to repair his hernia robotically. He had extensive adhesions to the abdominal wall, prior patch repair, and within the hernia sac. We planned to dissect and mobilize under his diaphragm to allow for complete closure of the defect and coverage of mesh. His prior right diaphragm reconstruction was prohibitive of a right sided mobilization, and so a unilateral left transversus abdominus release with sub-diaphragmatic dissection was performed from left to right until the Gore-Tex patch was encountered. The right sided retro-rectus space was scarred from his prior rectus muscle mobilization and diaphragm reconstruction. To avoid inadvertently entering the chest, the right sided dissection was continued in a pre-peritoneal plane until the Gore-Tex patch was encountered. The hernia defect was closed primarily and covered with a retromuscular mesh. The mesh was secured in several places including along its right edge to the Gore-Tex patch using permanent 2-0 Stratafix suture. The mesh was completely covered with a peritoneal/posterior rectus sheath flap. The patient had an uncomplicated post-operative course. A recent CT shows his repair remains intact with resolution of his hernia symptoms.

41. Robotic Transabdominal (rTAPP) Approach for a Large Incisional Hernia from Prior Kidney Transplant

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Background: Incisional hernias following kidney transplant present unique challenges. The location of the iliac transplant incision causes disruption of the semilunar line and can result in denervation and loss of lateral abdominal wall musculature. These defects are prone to relatively rapid enlargement due to weakness of the abdominal wall and lateral muscular retraction of the obliques following transplant. The immunosuppressed state of transplant patients adds additional challenges as they are at elevated risk of wound complications following open surgery. They therefore benefit greatly from minimally invasive approaches. A minimally invasive reconstruction is ideal in this cohort of unique hernia patients. Here we demonstrate the use of the robotic transabdominal preperitoneal (rTAPP) approach for a large incisional hernia from prior kidney transplant. This approach allows for the dissection to be carried out far posteriorly in the retroperitoneum to achieve wide posterior and lateral mesh overlap. This approach allows for a complete and minimally invasive reconstruction of large disruptions of the semilunar line after an iliac incision.

42. The Management of Subxiphoid Hernias after Sternal Dehisence

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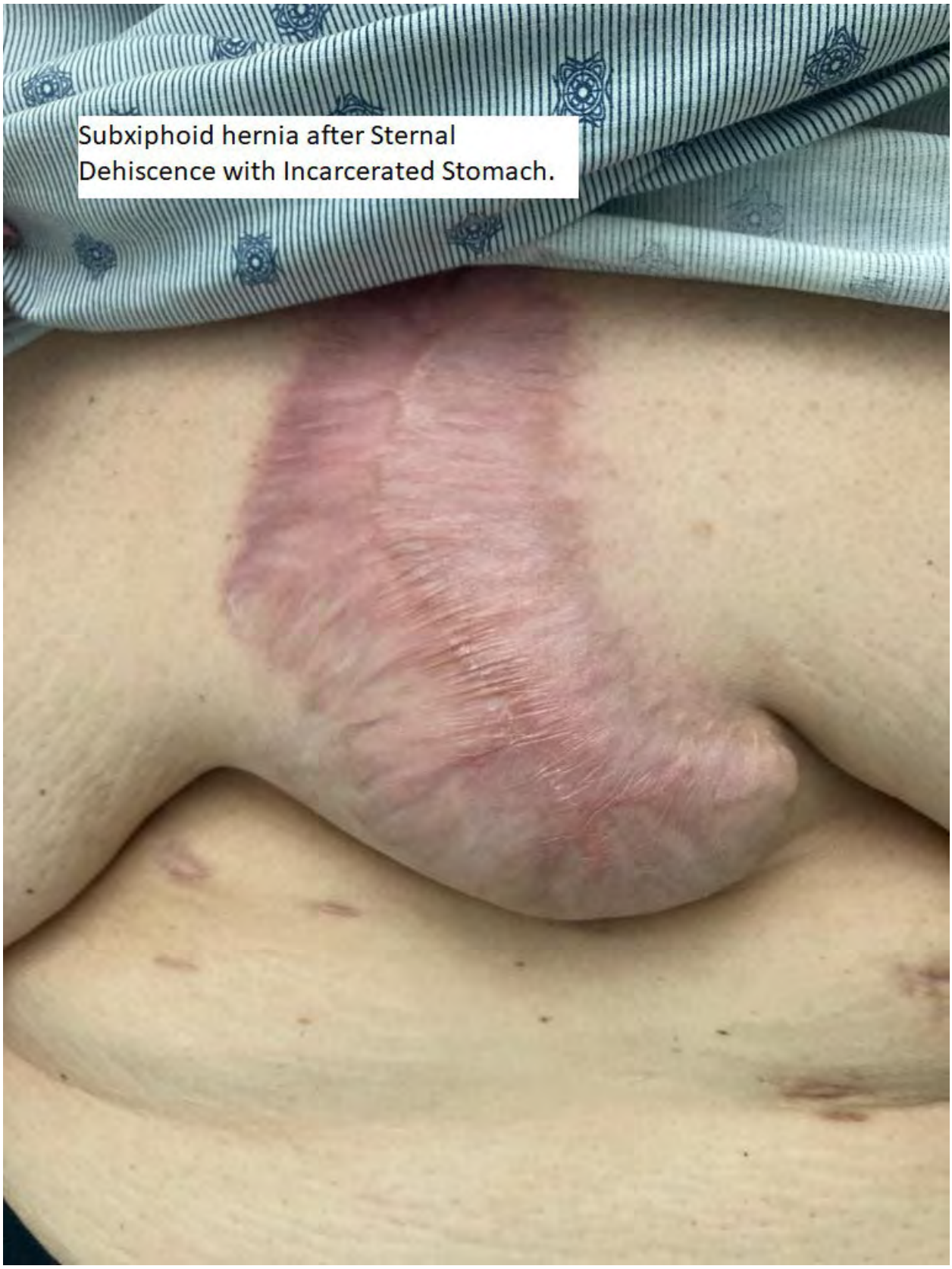
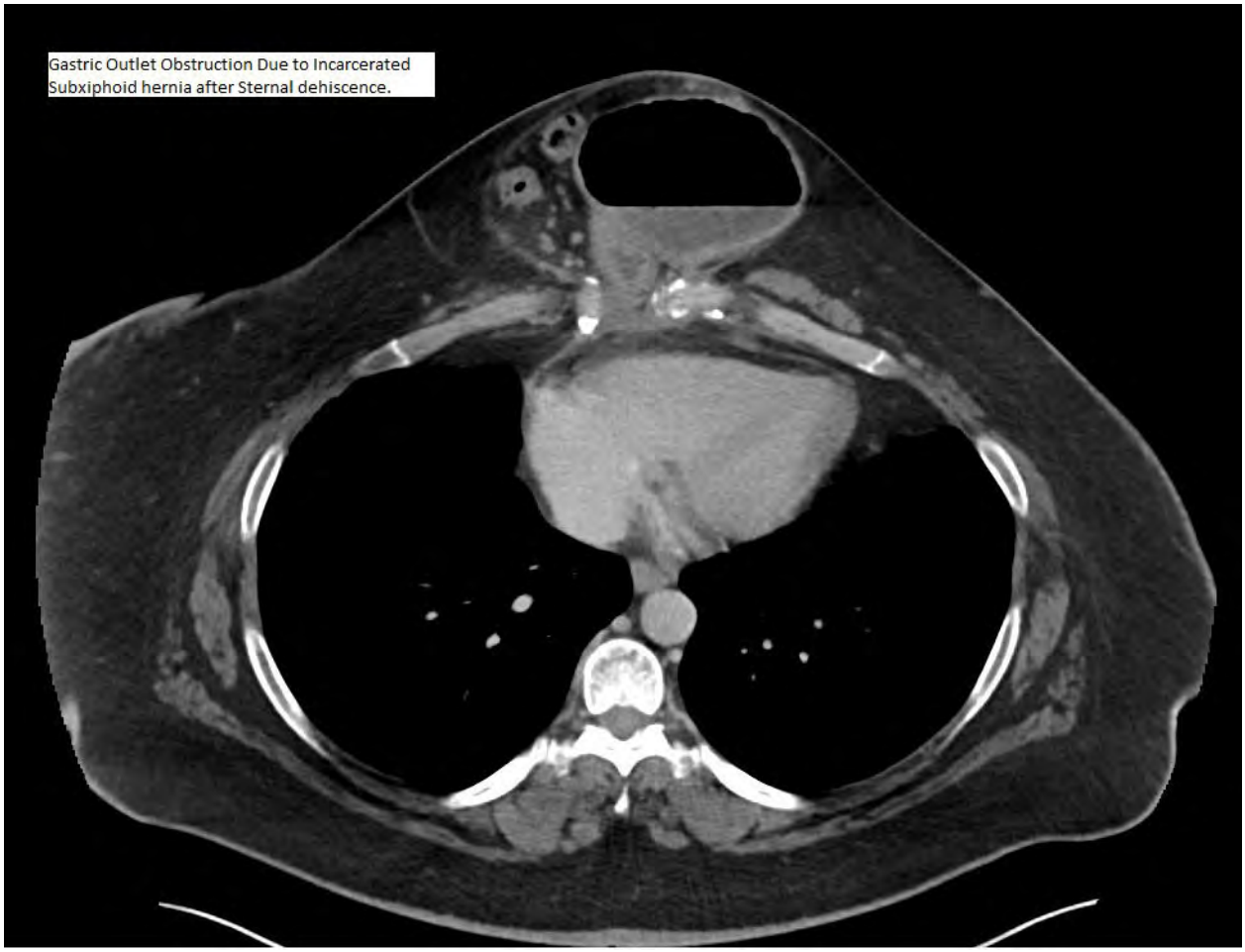
Background: Sternal infection and dehiscence after sternotomy often requires operative interventions including omental, pectoralis, and skin flaps for tissue coverage and healing. Subxiphoid incisional hernias commonly result due to disruption of the linea alba. Repair of subxiphoid hernias is constrained anatomically by the ribs, sternum, diaphragm, and abdominal muscular attachments. This creates difficulty in obtaining tension free fascial closure and optimally placing mesh with adequate overlap and fixation. Open, laparoscopic, and robotic approaches have been described. Here we review operative management of subxiphoid hernias secondary to sternal dehiscence with a focus on the technical aspects of repair and clinical outcomes.

Methods: A retrospective query of the institution specific Abdominal Core Health Quality Collaborative (ACHQC) database was performed for abdominal hernia repairs with any M1 (subxiphoid) classification from 2015 to 2022. Records were reviewed for patients with a history of hernia due to sternotomy who underwent definitive hernia repair. Data points included preoperative comorbidities, operative approach with hernia details, postoperative outcomes and recurrence. Operative interventions for sternal dehiscence were also reviewed. Unique anatomic considerations including the transitional anatomy from the retromuscular abdominal compartment to the costal margin and subdiaphragmatic peritoneum are addressed. Primary outcomes are the rate of fascial closure, wound complications, and hernia recurrence.

Results: A total of 37 patients with subxiphoid hernia repair after sternal dehiscence were identified from 2013 to 2022. This included 67.7% males with mean BMI 31.65. Comorbidities included 81% with hypertension, 27% diabetes, 27% COPD, 13.5% active smoker, and all were ASA 3. After initial sternal debridement, 6 patients had history of omental flap, 5 had both omental and pectoralis flap, and 4 had pectoralis flap alone. Mean hernia size was 6.4 length x 5.1 cm width. One case was performed laparoscopically, with 18 cases performed robotically and 18 performed open. Intraperitoneal mesh was used in 2 cases (one laparoscopic, one robotic), retromuscular mesh in 10, and preperitoneal mesh in 25. Mesh placed was macroporous polypropylene in 29, absorbable synthetic in 1, barrier coated polytetrafluorethylene in 2, and heavy-weight polypropylene in 4. Fascial closure was achieved in 28 patients (75.7%), with 10 patients undergoing myofascial release to achieve closure. Complications included one readmission, one cellulitis, 10 seromas, and one hematoma. There were no recurrences in this population.

Conclusion: The anatomic constraints of the subxiphoid space result in decreased ability to achieve primary fascial closure. However, good clinical outcomes can be achieved with detailed knowledge of thoracoabdominal transitional anatomy and the potential extraperitoneal planes available for mesh repair.


Subxiphoid hernia after Sternal
Dehiscence with Incarcerated Stomach.


Gastric Outlet Obstruction Due to Incarcerated
Subxiphoid hernia after Sternal dehiscence.

Gastric Outlet Obstruction Due to Incarcerated Subxiphoid Hernia after Sternal Dehiscence

43. Robotic Sugarbaker Parastomal Hernia Repair with Unilateral Transversus Abdominis Muscle Release for Multiply Recurrent Parastomal Hernia

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Background: The incidence of parastomal hernias after end ileostomy creation has been reported up to 30%, with recurrence as high as 46% following repair.

Methods: We present a case of a healthy 64-year-old woman with recurrent parastomal hernia associated with intermittent bowel obstruction–symptoms included abdominal pain, nausea, and obstipation, affecting her quality of life.

Her prior surgical history included open total abdominal colectomy with end ileostomy for Crohn's disease 31 years ago and multiple parastomal hernia repairs, thereafter. Previously employed techniques included robotic repair with keyhole preperitoneal mesh, primary repair, small bowel resection with new ileostomy, ileostomy resiting, and most recently, a robotic Sugarbaker repair with intrabdominal biologic mesh 15 months ago, with recurrence six weeks postoperatively.

We performed a robotic retrorectus Sugarbaker repair with a unilateral TAR. The abdomen was entered with a Veress needle in the LUQ without complication and a 5mm trochar was then introduced. Three 8 mm robotic ports were then placed on the patient's right side and the robot was then docked. The previously placed mesh had migrated medially and formed a meshoma without any coverage laterally, which was likely the reason for recurrence. The parastomal hernia contained loops of incarcerated small bowel and preperitoneal fat-containing ventral hernia was also noted. Multiple interloop adhesions were lysed to lateralize the stoma, which took over 3 hours. Bowel viability was confirmed with IV ICG administration. Three prior meshes were encountered and explanted. The retrorectus plane was developed and continued across the midline ensuring the protection of the linea albea. Next, a unilateral TAR was performed to allow wide mesh overlap and ileostomy lateralization. The stomal defect was narrowed with a running permanent barbed suture.

Prior to inserting the mesh, the end ileosotmy was lateralized and the mesentery was sutured to the lateral abdominal wall with vicryl sutures. This allowed the bowel to be well lateralized so that only the mesentery would be in contact with the mesh. A 20x27 cm biosynthetic mesh was placed and a 7 cm Sugarbaker tunnel created. The posterior rectus sheath was reapproximated to the abdominal wall to exclude the mesh from the intraabdominal cavity.

Results: Postoperatively, she did well and was discharged after bowel function returned. Eight weeks postoperatively, she has no recurrence or complications.

Conclusion: Parastomal hernias frequently recur and may require novel repair techniques. This case highlights the successful repair of a multiply recurrent parastomal hernia via robotic modified retrorectus Sugarbaker repair with a unilateral TAR.

44. Redo- Transversus Abdominis Release after Mesh Fracture in a Patient with a TRAM flap

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Cleveland Clinic Foundation

Background: With the growing experience in transversus abdominis release (TAR), hernia surgeons are increasingly recognizing the challenge of fixing recurrent hernias after TAR. Our quaternary center has gained substantial experience with complex redo abdominal wall reconstruction and mechanisms of failure. Here we present a case of redo-TAR in a patient with the additional complexity of a previous TRAM flap.

Methods: A 65-year-old obese female with history of a five-time recurrent ventral hernia resultant from breast reconstruction with right sided TRAM flap underwent a transversus abdominis release for a 28 cm wide hernia defect which required a vicryl bridge of the posterior rectus sheath, a 50x50cm mediumweight polypropylene mesh placed in the retrorectus plane, and a bridged closure of the anterior rectus sheath. Two years after repair she developed a hernia recurrence due to central mesh fracture. Initially she attempted weight loss, but developed obstructive symptoms necessitating repair.

Results: A redo-transversus abdominis release was performed. There were multiple areas of mesh fracture identified intraoperatively. An omental bridge was used to bridge the posterior sheath, a 60x30cm heavyweight mesh was placed in the retrorectus plane and the anterior sheath was bridged. Postoperatively she developed a pulmonary embolism requiring anticoagulation and was discharged on postoperative day 11 without further postoperative complication.

Conclusion: Hernia recurrences after TAR requiring reoperation are becoming more common. The mechanism of recurrence should impact operative planning and in this case where fascial bridging was anticipated, heavyweight polypropylene was preferred over lighter weight material. Redo TARs are complex and have a relatively high hernia recurrence rate, but are feasible and demonstrate improvement in pain and quality of life.

45. Open Transversus Abdominis Release For Bilateral Traumatic Flank Hernias

M Melland-Smith, V Essani, C Petro, A Prabhu, D Krpata, B Miller, L Beffa, M Rosen
Cleveland Clinic Foundation

Background: Traumatic hernias after blunt trauma are rare but devastating injuries that can result in large lateral fascial defects. Flank hernias are a challenge to repair due to their lateral location and proximity to bony landmarks. Bilateral flank hernias further complicate the surgical approach and patient positioning.

Methods: A sixty-year-old female with a complicated surgical history presented with massive bilateral traumatic flank hernias. She was involved in a motor vehicle collision in 2020 resulting in a rectus sheath hematoma and bilateral traumatic flank hernias. She underwent percutaneous drainage of the hematoma complicated by injury to the small bowel and subsequent fistula formation. This was followed by exploratory laparotomy, fistula takedown and small bowel resection. She presented with bilateral massive flank bulges and partial obstructive symptoms.

Results: In supine position, a midline laparotomy incision was made and bilateral transversus abdominis release was performed. The hernia defect measured 40cm longitudinally by 30cm vertically. The posterior rectus sheath came together without tension. A 60x60cm heavy weight mesh was placed in the retromuscular/preperitoneal pocket. The mesh was fixated to the costal margin and inferior border of the hernia defect as well as to the iliac crest using bone anchors. The lateral hernia defects were left open, and the midline anterior fascia closed without tension. Her postoperative course was complicated by respiratory acidosis requiring BIPAP. She was discharged on postoperative day 4 without further complication.

Conclusion: Large bilateral flank hernias can successfully be repaired with a bilateral TAR through a midline incision. Wide mesh overlap and lateral bony fixation and should be considered in these challenging cases.

46. Robotic Preperitoneal Morgagni Hernia Repair with Mesh

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Peconic Bay Medical Center

Background: A robotic approach to a Morgagni hernia preperitoneal repair with mesh.

Methods: A Morgagni hernia is a developmental defect of the right anterior diaphragm that allows intra-abdominal contents to migrate into the thoracic space. Most of these cases are found incidentally later in life with a good long-term prognosis and low recurrence rate. These hernias present a surgical challenge. Diaphragmatic defect closure with or without mesh is routinely debated as are the associated complications and recurrence rates.

Results: We present a case report of a female with previous robotic cholecystectomy and identification of incidental Morgagni hernia at that time. Her diaphragmatic hernia defect was 7.5 cm in size. The hernia contained omentum and transverse colon. A robotic preperitoneal hernia repair with mesh was utilized to treat this defect and is illustrated in the associated video. A robotic approach provided clear anatomy and visualization of the preperitoneal space as compared with a laparoscopic approach. The mesh was covered with peritoneum leaving no bowel exposed, despite the difficult location superiorly on the abdominal wall. This location poses a challenge to reinforce with mesh as the ribs normally provide the superior border and do not allow for overlap. Performing this repair in the preperitoneal space avoided this problem and was performed most easily with the robotic system. The patient did well with the procedure and has had no complications since that time.

Conclusion: This patient benefited from a robotic approach to Morgagni hernia repair as the anatomy was clearly delineated, and a comprehensive and adequate closure with mesh was performed.

47. Primary Abandonment Of The Sac In The Management Of Scrotal Hernias: A Multi-Center Experience Of Short-Term Outcomes

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Oregon Health & Science University

Background: Management of scrotal hernias presents as a common challenge, with operative interventions to address these hernias associated with higher rates of morbidity compared to those of less complex pathology. Complications such as acute and chronic pain – related to damage to cord elements, surgical site occurrences, and recurrence – are well-described. Surgeons have advocated for the use of techniques such as primary abandonment of the distal sac as a potential means to reduce complications for operative intervention, with preliminary findings and single-center experiences demonstrating feasibility. We sought to assess outcomes related to primary sac abandonment among patients undergoing minimally invasive repair of scrotal hernias.

Methods: A review of prospectively maintained databases among two academic hernia centers was conducted to identify patients who underwent minimally invasive inguinal hernia repairs with primary sac abandonment. Patient demographics, hernia risk factors, intraoperative factors, and postoperative outcomes were evaluated. Short-term outcomes related to patient reported experiences, pain scores, and surgical site occurrences requiring procedural intervention were queried.

Results: Sixty-seven male patients [mean age: 58 years; interquartile range (IQR): 38-73 years] underwent inguinal hernia repair with primary sac abandonment. Patient factors were assessed with mean body mass index of 25.8 kg/m2 (IQR: 23.4-28) and recurrent hernias following prior anterior repair (14.9%). Hernias were classified using the European Hernia Society classification system, with 59.3% of patient having L2 hernias and the remaining having L3 defects. Intraoperative findings demonstrated a median operative duration of 89 minutes (IQR: 65-106 minutes). No intraoperative complications were reported. Anatomic polypropylene mesh was used in 97% cases and fixated with absorbable sutures. Decision-making related to mesh weight favored midweight materials (88.1% of cases), with heavy weight used for the remaining procedures. Drains were not placed for any patient. Peritoneal flap and fenestration closure was accomplished with absorbable barbed suture, with no cases necessitating mesh bridge to address the fenestration related to sac abandonment. The majority (87%) of cases were performed in an outpatient basis and only one patient required hospitalization beyond one night. Rates of postoperative complications were low and included postoperative urinary retention (2%), patient-reported symptomatic seromas/hematomas within a 30-day follow-up period (28%), deep venous thrombosis (1.5%), and pelvic hematoma (1.5%). No patients reporting symptomatic seromas or hematomas necessitated procedural interventions, with resolution of symptoms within three months of their operation. The rate of chronic postoperative inguinal pain was reported as 1.5%. Long-term outcomes demonstrated no hernia recurrences in the follow-up period.

Conclusion: We report the first multi-center experience for patients managed with primary abandonment of the sac technique for scrotal hernias. Utilization of this technique appears to be safe and reproducible with a low burden of short-term complications. These outcomes support further evaluation with prospective studies related to this novel technique in the management of scrotal hernias.

48. The Effect of Major Depressive and Generalized Anxiety Disorder on Quality of Life Following Hernia Repair

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University of Texas Medical Branch

Background: Patients diagnosed with major depressive disorder (MDD) or generalized anxiety disorder (GAD) have been noted to report poorer outcomes following orthopedic, cardiac, and plastic surgery compared to individuals without a psychiatric history. Thus, the patient's psychosocial attributes are an important perioperative consideration, especially in procedures that may contribute to their depression or anxiety. However, there is scant literature detailing the effect that MDD/GAD may have on patient perceived outcomes or quality of life in the setting of ventral or inguinal hernia repair. We aimed to determine the association between MDD/GAD and patient quality of life before and after hernia repair.

Methods: We conducted a retrospective review of patients who underwent inguinal or ventral hernia repair and completed a preoperative and postoperative quality of life survey at our institution. Inguinal hernia patients completed the EuraHS-QoL survey, and ventral hernia patients completed the Hernia-Related Quality-of-Life Survey (HerQLes). Additional data included patient demographics, psychiatric history of MDD and/or GAD, perioperative factors, and postoperative follow-up. All patients received care from the same surgeon. Preoperative and postoperative survey responses from individuals with and without MDD/GAD were compared using mixed-effects model analysis with $p < 0.05$ considered significant.

Results: Sixty-nine patients were included in the study: 38 with inguinal hernias and 31 with ventral hernias. Nine (24%) of inguinal hernia patients and 11 (35%) of ventral hernia patients reported a diagnosis of MDD/GAD. Age, sex distribution, BMI, length of stay, and rate of postoperative complications did not differ significantly between groups with and without a history of MDD/GAD. Inguinal hernia patients did not demonstrate a significant difference in survey responses between patients with and without MDD/GAD (Figure 1a). Ventral hernia patients with MDD/GAD reported significantly higher mean HerQLes scores (53.9 vs. 48 preop, 46.5 vs. 34.4 postop, $p=0.04$), indicating worse quality of life, compared to those without a psychiatric history (Figure 1b). However, differences between preoperative and postoperative survey responses were not significant when comparing patients with and without MDD/GAD; this was true for both inguinal and ventral hernia patients (Figure 2).

Conclusion: A diagnosis of MDD/GAD did not appear to significantly affect quality of life following inguinal hernia repair. However, these diagnoses were associated with poorer quality of life among patients who underwent ventral hernia repair. This appears to be due to worse patient perceptions both before and after surgery, rather than less improvement in quality of life provided by surgery, as indicated by the difference between preoperative and postoperative survey responses not varying significantly between patients with and without MDD/GAD. These findings may have implications on how to optimize perioperative counseling for patients with MDD/GAD who are undergoing hernia repair, although additional studies with larger patient populations and other psychiatric diagnoses are warranted.

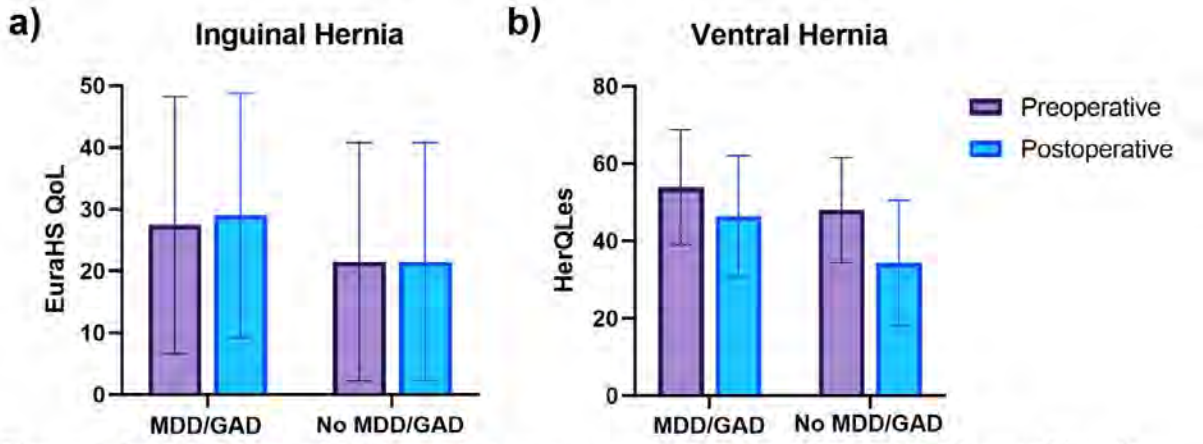

Figure 1. Preoperative and postoperative survey responses among inguinal and ventral hernia patients. *MDD, major depressive disorder; GAD, generalized anxiety disorder*

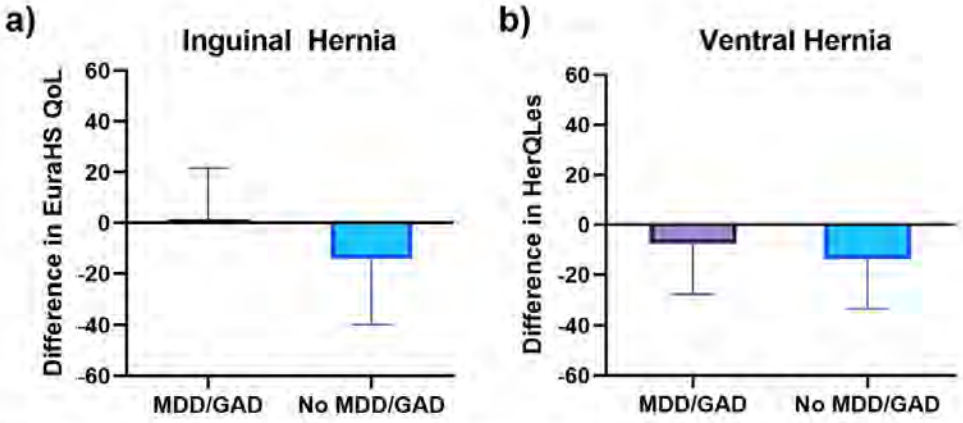

Figure 2. Difference between preoperative and postoperative survey responses among inguinal and ventral hernia patients. *MDD, major depressive disorder; GAD, generalized anxiety disorder*

49. Volumetry After Botulinum Toxin A in Abdominal Wall Reconstruction: The Impacts of Compliance on Intra-Abdominal Pressure and Ventilatory Dynamics

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Background: Botulinum toxin type A is an adjuvant tool in the preoperative preparation of complex hernias before abdominal wall reconstruction. This study aims to demonstrate changes in the measurements of the abdominal cavity and hernia sac after botulinum toxin application and relate it to intra- and postoperative progression.

Methods: Prospective study with 27 patients with hernia defect size ≥10cm and loss of domain ≥20% undergoing AWR. CT measurements and volumetry before and after BTA were performed. Intraoperative and postoperative outcomes were evaluated.

Results: CT measurements showed a hernia diameter reduction of 1.92 cm, lateral muscle elongation of 3.12 cm, hernia volume reduction from 2.94 ±0.93L to 2.41 ±0.77L, and increased abdominal cavity volume from 9.71 ±2.53L to 10.33 ± 2.42L, whereas the hernia volume /abdominal cavity volume ratio decreased from 30.25 ±5.01% to 23.45 ±6.14%. The peritoneal did not show volumetric variation either before (12.65 ±3.22L) or after (12.74 ±3.06L). The peritoneal index decreased from 23.26 ±4.7 % to 18.9 ±4.9%. Midline fascial closure was possible in 92.6% and component separation was required in 77.8% of cases. The mean variation of the endotracheal plateau pressure was 3.53 cmH2O (the mean intraoperative and postoperative values were 20.29 ±3.01 and 23.82 ±2.88, respectively), with 92.6% of patients extubated in the operating room. Of the total patients, N=2 were extubated in surgical intensive care unit due to plateau variation >6 cmH2O and presented with no signs indicative of respiratory failure.At 90-day follow-up, the wound morbidity rate was 25%, the unplanned readmission, 11% and the recurrence, 7.4%.

Conclusion: Abdominal compliance after botulinum toxin seems to contribute to tension-free midline closure while aiding in intra-abdominal pressure dynamics. Further studies are required to determine the role of BTA in the surgical armamentarium for complex hernia repair.

50. The Enigma of Hernia Prediction Unraveled: External Validation of a Prognostic Model in Colorectal Surgery Patients

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Background: Accurate prediction of hernia occurrence is vital for surgical decision-making and patient management, particularly in colorectal surgery patients. A hernia prediction model has been developed, but its performance and applicability in external populations remain to be investigated. This study aims to validate the existing model on an external dataset of patients who underwent colorectal surgery, evaluating its performance and potential for generalizability.

Methods: An external international dataset comprising patients undergoing colorectal surgery was obtained, encompassing patient demographics, comorbidities, and surgical details. The previously developed hernia prediction model, based on logistic regression, was applied to the external dataset. Model performance was assessed using key metrics, including area under the receiver operating characteristic curve (AUC-ROC), area under the precision-recall curve (AUC-PR), and Brier score.

Results: An external international dataset consisting of 802 patients who underwent colorectal surgery with two years follow up were identified. The average age of patients was 68.5 years, with 63.5% male and 36.5% female. The average BMI was 27.8. Prevalence of diabetes, hypertension, and smoking were 16.6%, 15.5%, and 35.7%, respectively. Additionally, 7.86% of patients had a previous hernia. The most common operation types were right hemicolectomy (35.3%) and low anterior resection (31.9%). Hernia occurrence rate at two-year follow-up was 14.1%. The external validation revealed an AUC-ROC of 0.66, AUC-PR of 0.87, and a Brier score of 0.12.

Conclusion: The hernia prediction model demonstrated moderate performance in the external validation, suggesting its potential for generalizability in diverse patient populations, specifically those undergoing colorectal surgery. The model may assist clinicians in identifying high-risk patients and implementing preventive measures to reduce hernia incidence.

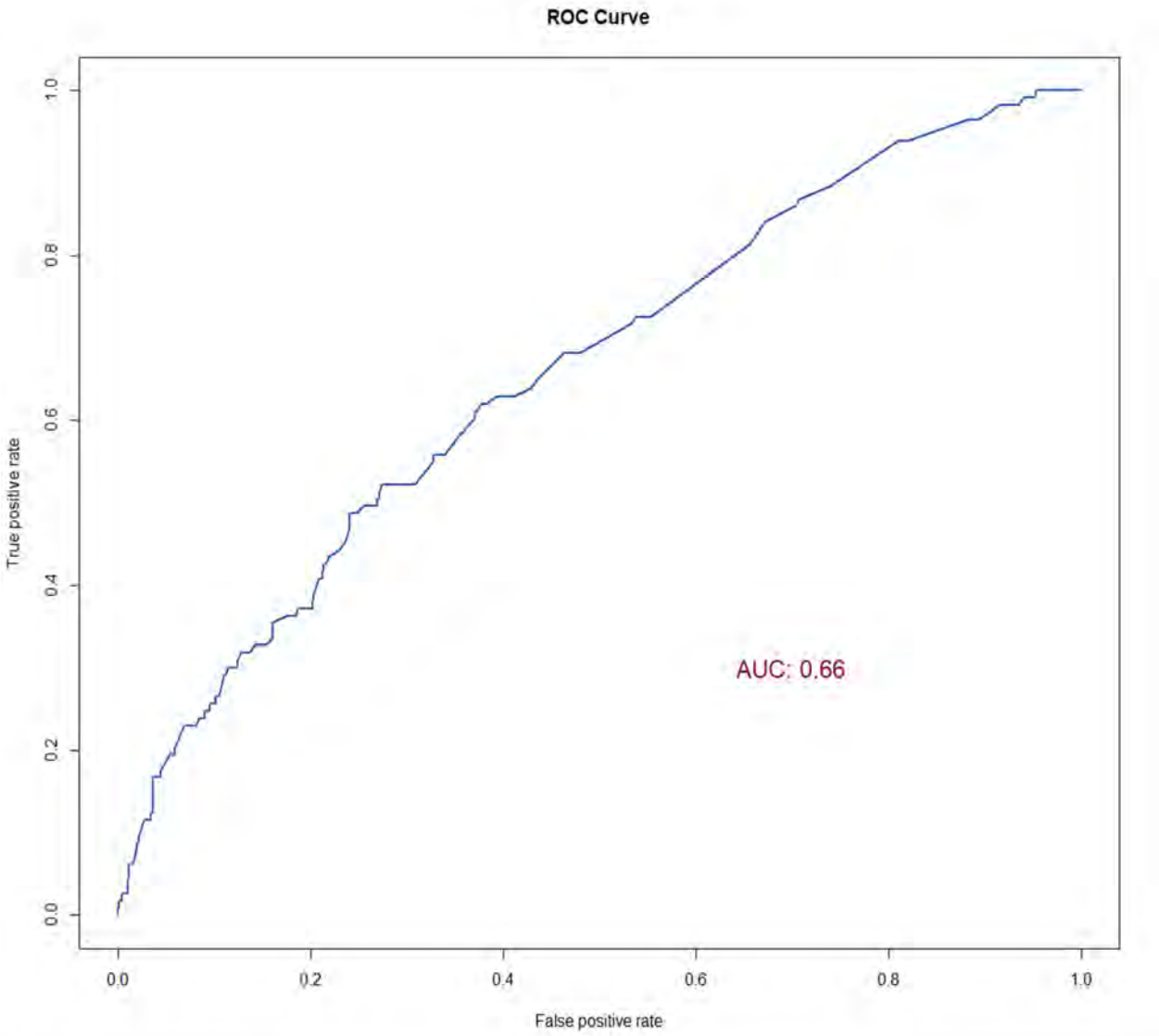

Figure 1: Receiver Operating Characteristic (ROC) curve illustrating the performance of the hernia prediction model in the external validation dataset of patients who underwent colorectal surgery. The curve represents the trade-off between sensitivity (true positive rate) and specificity (false positive rate) across various threshold values. The area under the curve (AUC-ROC) is 0.66, indicating moderate predictive performance.

51. Prophylactic Drain Use Is Unnecessary After Robotic-Assisted Extended Total Extraperitoneal Rives-Stoppa, Retro-Rectus Hernia Repair

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Background: The necessity of drain use following robot assisted extended total extraperitoneal Rives-Stoppa, retro-rectus hernia (rETEP) repair is unknown.

Methods: All patients at a high volume hernia center undergoing rETEP from July 2021-December 2022 did not have drains placed at the time of surgery and were prospectively followed. Midweight uncoated polypropylene was used in all cases. Average defect length and width was 13x6cm. Average mesh size was 32x18cm. 30-day postop visits were completed in person and abdominal CT scans were performed to evaluate for the presence of occult seroma or hematoma. 53 patients underwent repair. 3 patients did not seek 30-day follow-up. 9 patients were seen in follow-up but declined CT scan. 36 remaining patients underwent CT scan between 30-60 days postop. 5 patients were seen in emergency room within 2 weeks of operation for pain and had CT performed. Scans were classified as NO retromuscular fluid(RMF), Minimal RMF, Moderate RMF or Large RMF. Minimal RMF defined as fluid limited to midline posterior linea alba/retro umbilical. Moderate defined as fluid extending behind rectus muscle, less than 1cm in thickness. Large defined as retro-rectus fluid >1cm in thickness.

Results: 27 patients had NO RMF(66%), 9 had Minimal RMF(22%), 4 had Moderate RMF(10%), and 1 Large RMF(2%). 4/9 Minimal RMF patients had follow-up CT on average of 5.5 months post-op and showed complete resolution of fluid. 2/4 patients in Moderate group had follow-up CT and showed resolution of fluid. Large RMF patients had follow-up CT at 2 months with complete resolution of fluid. Patients without follow-up CT were contacted via phone and expressed no post op complications.

Conclusion: Drain placement is not necessary for rETEP repairs. Implications of post operative fluid on long term durability of repair remains to be elucidated.


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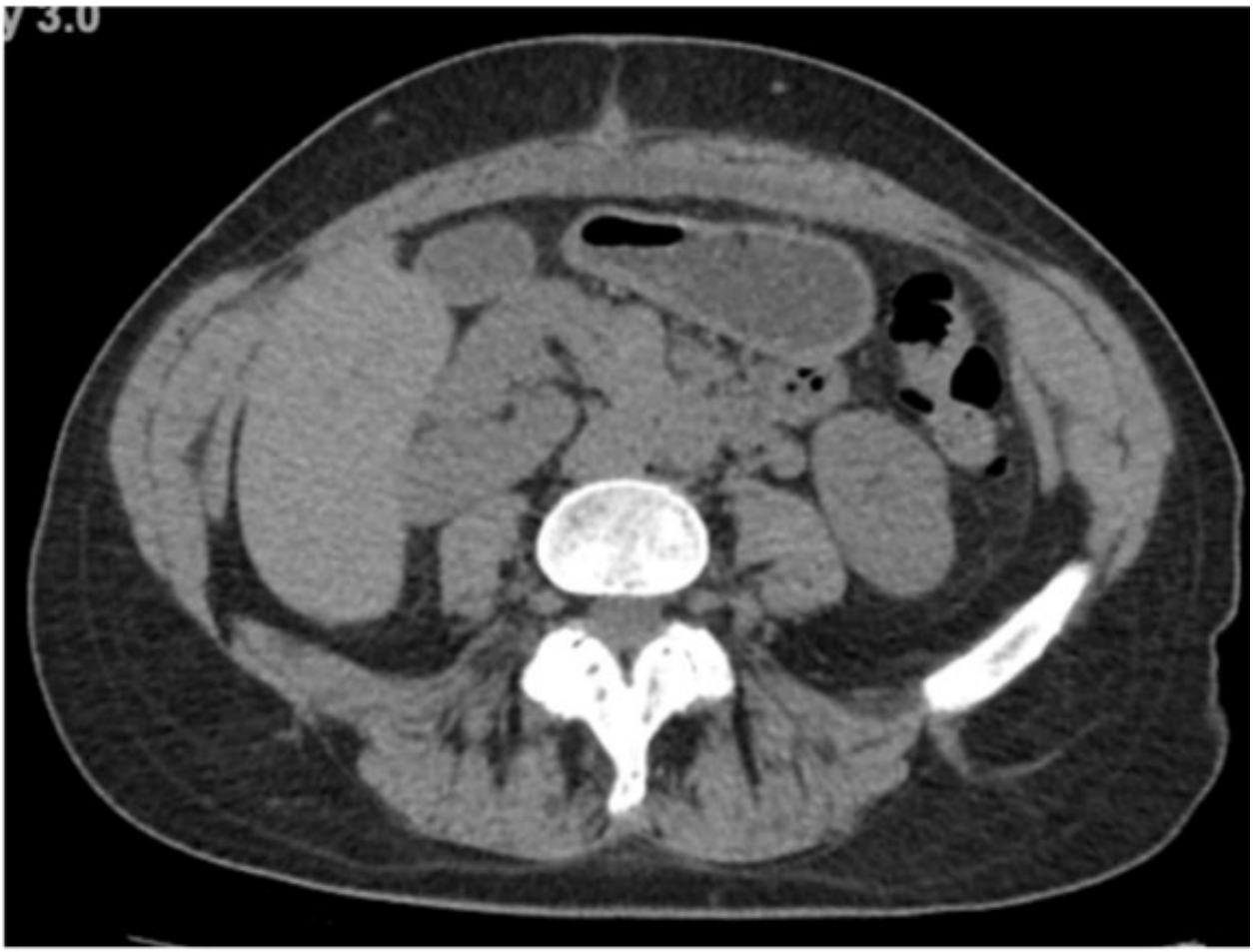

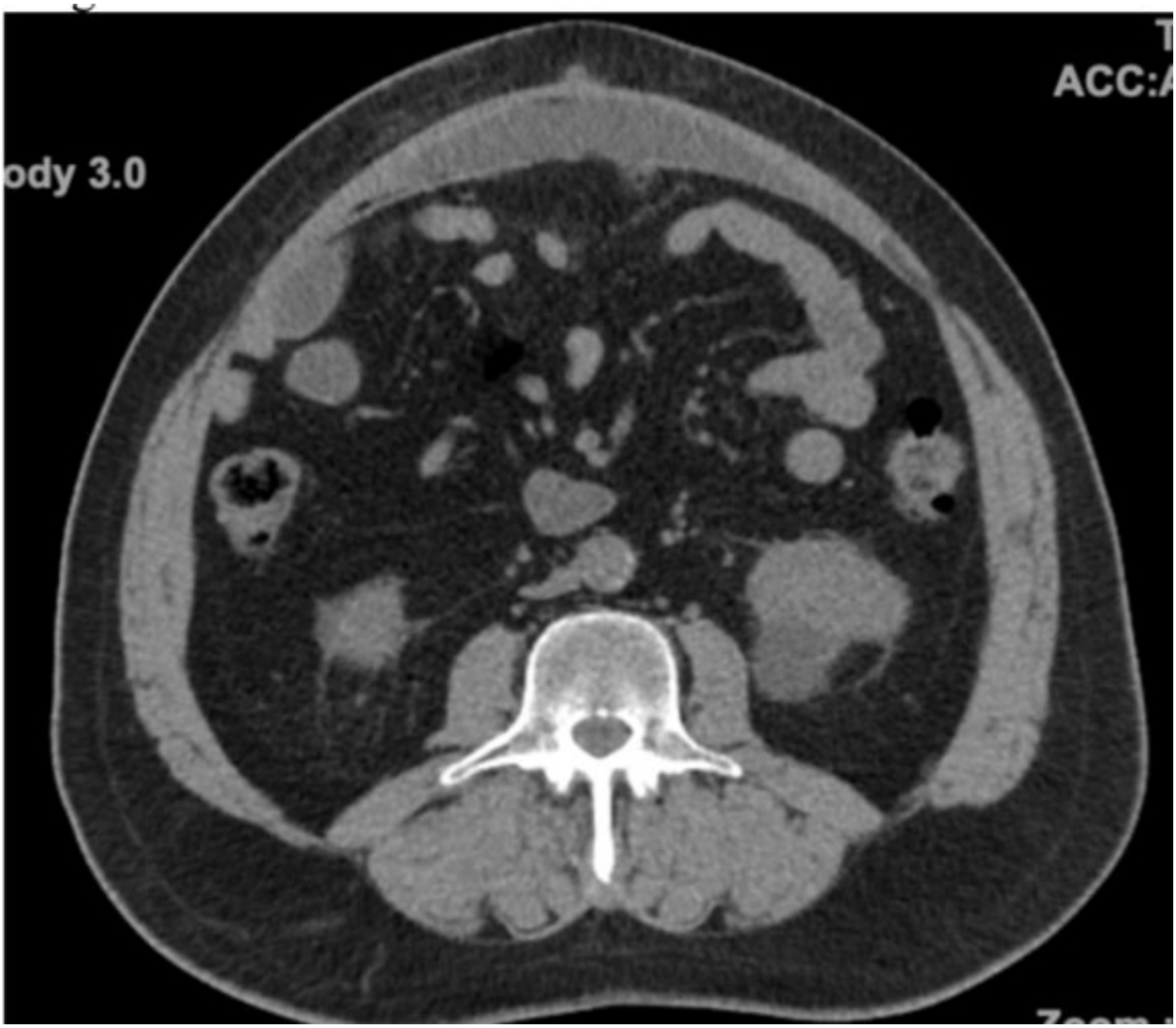
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52. Small Bites Versus Large Bites During Abdominal Wall Closure: A Systematic Review and Meta-Analysis

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Background: Incisional ventral hernias are common after abdominal procedures, with a 10.3% incidence after midline laparotomies at one year of follow-up. Incisional ventral hernias are associated with high financial costs, psychological distress, and functional impact on the patient's life. Small Bites (SB) during fascial closure was developed as an alternative to Large Bites (LB) based on the hypothesis of lesser soft tissue damage, inflammation, necrosis and better tension distribution during abdominal wall closure. The present study aims to assess the effectiveness of SB compared to LB regarding the development of incisional ventral hernias.

Methods: We performed a systematic search for studies comparing small bites with large bites techniques up to March 2023 on Cochrane, EMBASE, and PubMed databases. Outcomes assessed were incisional ventral hernias (≥ 12 months), surgical site infections, fascial dehiscence, seroma, hematoma, ileus, length of hospital stay and duration of surgery. A subgroup analysis was done comparing small bites and large bites in randomized controlled trials only. Postoperative outcomes were assessed by pooled analysis and meta-analysis. Statistical analysis was performed using RevMan 5.4. Heterogeneity was assessed with I^2 statistics and random-risk effect was used if $I^2 > 25\%$.

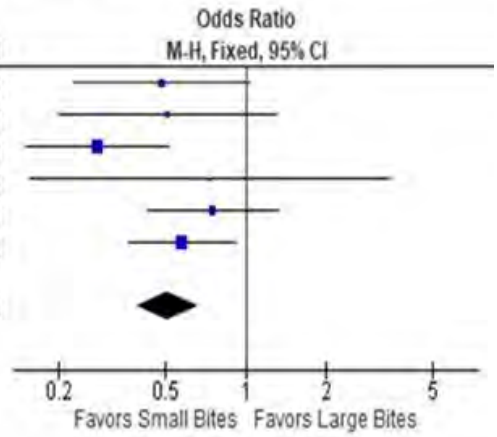
Results: 1687 studies were screened and 45 were thoroughly reviewed. A total of eight studies, including 4 randomized controlled trials and 3516 patients, of whom 1694 (48.17%) received SB and 1822 (51.83%) received LB technique. SB technique was associated with fewer incisional ventral hernias (OR 0.51; 95% CI 0.39-0.66; P = 0.29; I2 = 19%), surgical site infections (OR 0.64; 95% CI 0.51-0.81; P = 0.66; I2 = 0%), and fascial dehiscence (OR 0.67; 95% CI 0.46-0.97; P = 0.50; I2 = 0%). Subgroup analysis of RCT only showed similar findings regarding incisional ventral hernias (OR 0.45; 95% CI 0.33-0.62; P = 0.27; I2 = 24%) and surgical site infections (OR 0.71; 95% CI 0.53-0.95; P = 0.53; I2 = 0%). No differences were seen between the two techniques regarding seroma, hematoma, ileus, and length of hospital stay.

Conclusion: Abdominal wall closure of midline laparotomies with the Small Bites technique is associated with less incisional ventral hernia, surgical site infections, and fascial dehiscence at 1-year follow-up when compared to the Large Bites technique. Small Bites should be the technique of choice during midline laparotomy closure.

Small Bites Versus Large Bites for Incisional Ventral Hernias

Study or Subgroup	Small Bites Events	Total	Large Bites Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
de Vries 2019	10	136	27	191	13.0%	0.48 [0.23, 1.03]
ESTOIH 2022	7	215	13	210	7.9%	0.51 [0.20, 1.30]
Millbourn 2009	14	356	49	381	28.4%	0.28 [0.15, 0.51]
Probst 2020	3	50	4	50	2.3%	0.73 [0.16, 3.46]
Söderbäck 2022	21	518	32	602	17.7%	0.75 [0.43, 1.32]
STITCH 2015	35	276	57	284	30.6%	0.58 [0.37, 0.91]
Total (95% CI)		1551		1718	100.0%	0.51 [0.39, 0.66]
Total events	90		182			

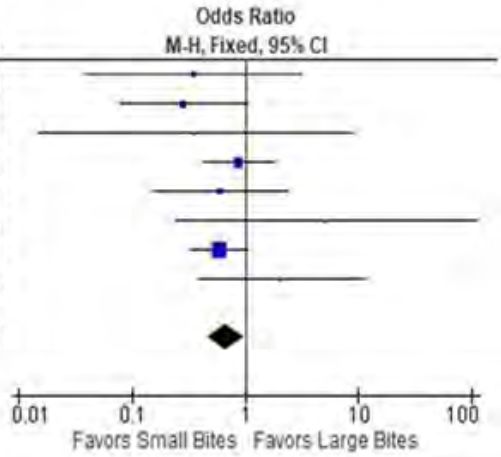
Heterogeneity: Chi² = 6.15, df = 5 (P = 0.29); I² = 19%
Test for overall effect: Z = 4.97 (P < 0.00001)



Small Bites Versus Large Bites for Fascial Dehiscence

Study or Subgroup	Small Bites Events	Total	Large Bites Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
de Vries 2019	1	136	4	191	4.9%	0.35 [0.04, 3.13]
ESTOIH 2022	3	215	10	210	14.8%	0.28 [0.08, 1.04]
Millbourn 2009	0	356	1	381	2.1%	0.36 [0.01, 8.76]
Pérez 2022	22	110	16	72	22.9%	0.88 [0.42, 1.81]
Ponce 2022	4	33	6	32	7.9%	0.60 [0.15, 2.36]
Probst 2020	2	50	0	50	0.7%	5.21 [0.24, 111.24]
Söderbäck 2022	17	518	33	602	43.7%	0.59 [0.32, 1.06]
STITCH 2015	4	276	2	284	2.9%	2.07 [0.38, 11.41]
Total (95% CI)		1694		1822	100.0%	0.67 [0.46, 0.97]
Total events	53		72			

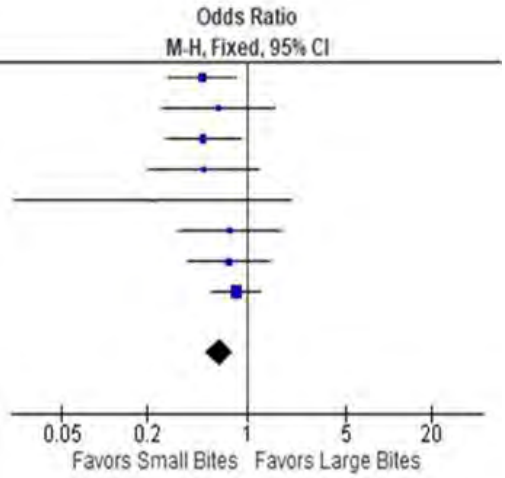
Heterogeneity: Chi² = 6.32, df = 7 (P = 0.50); I² = 0%
Test for overall effect: Z = 2.11 (P = 0.03)



Small Bites Versus Large Bites for Surgical Site Infections

Study or Subgroup	Small Bites Events	Total	Large Bites Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
de Vries 2019	23	136	56	191	20.8%	0.49 [0.28, 0.85]
ESTOIH 2022	8	215	12	210	6.3%	0.64 [0.26, 1.59]
Millbourn 2009	17	356	35	381	17.3%	0.50 [0.27, 0.90]
Pérez 2022	10	110	12	72	7.1%	0.50 [0.20, 1.23]
Ponce 2022	1	33	4	32	2.1%	0.22 [0.02, 2.07]
Probst 2020	15	50	18	50	6.8%	0.76 [0.33, 1.76]
Söderbäck 2022	15	518	23	602	11.1%	0.75 [0.39, 1.45]
STITCH 2015	58	276	68	284	28.5%	0.85 [0.57, 1.26]
Total (95% CI)		1694		1822	100.0%	0.64 [0.51, 0.81]
Total events	147		228			

Heterogeneity: Chi² = 5.03, df = 7 (P = 0.66); I² = 0%
Test for overall effect: Z = 3.77 (P = 0.0002)



QUICKSHOT ABSTRACTS

Q 1. In 2023 Are Still Hernias Strangulated?

I Sanchez Montes
SEDESA

Background: Strangulation is the most serious complication of an abdominal wall hernia (AWH) and is a surgical emergency. Strangulated hernia is defined when the contents of this develop with ischemia due to a compromise in its irrigation. The contents of the sac can be bowel, omentum, colon, or stomach. The clinical diagnosis may be of bowel obstruction, or be ambiguous and reach the precise diagnosis in short time, which affects the strangulated organ being necessary bowel resection, as well as the systemic repercussion. The strangulated hernia occurs between 5 to 15% depending on its location; the importance of this occurrence is that it endangers the patient's life, with increased morbidity (6-43%) and mortality (1-27%).

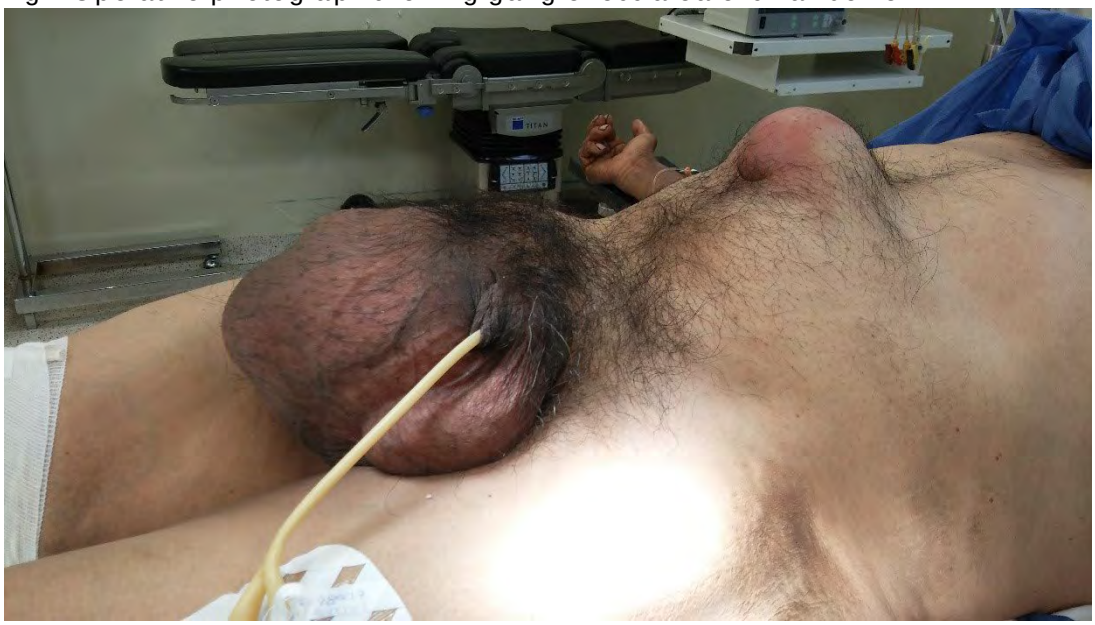
Methods: A retrospective study of a total of 1,500 patients over 18 years of age who underwent AWH surgery was conducted in 4 hospitals in Mexico City by the author over a period of 20 years. The files with the diagnosis of strangulated hernias were reviewed to know its clinical picture, evolution and management.

Results: Of the 1,500 patients with AWH, 27 (1.8%) had a strangulated hernia. The mean age was 63.6 Years (23-90), 14 (51.8%) were women, according to their location: 9 inicisional, 7 inguinal, 4femoral, 3 umbilical, 2 para-umbilical, and 2 epigastric. In 22 (74%), they presented symptoms of bowel occlusion, although the findings do not agree with the number of resections that were performed. 7 (25.9%) had septic shock. Patients with less than 24 hours of evolution did not require bowel resection. Bowel resection was performed in 12 (44.4%), of these 2 were Richter's hernias (femoral) and the other 2 femoral contained necrotic omentum and in one of them, the bowel was recovered; 4 more underwent omentectomy due to the omentum necrosis. An inguinal hernia was due to sliding hernia containing sigmoid which was recovered. There were 7 (25.9%) due to concomitant illnesses, as well as septic shock and acute onset time of more than 36 hours.

Conclusion: Although occurrence of strangulated AWH is low, the importance is that it endangers the patient's life. The risk factors for its presentation are: >60 years, in femoral hernias, women, chronic-degenerative diseases, the time of evolution of the acute picture and reaching the diagnosis of certainty cause the strangulated organ to become necrotic with systemic repercussions and get bad outcomes. Therefore, it is suggested that patients with AWH undergo elective surgery at the time it is diagnosed.

Fig 1 Clinical photograph showing swelling in the region of the umbilicus with erythema the surrounding skin.

Fig 2 Operative photograph showing gangrenous area of small bowel



Q 2. Lateral Hernia Repair: Comparison of Robotic versus Open Techniques

S Khan, A Pletch, D Hashimoto, M Elsheikh, S Drexel, R Juza
University of Wisconsin

Background: Lateral hernias are rare in comparison to ventral hernias. As such few studies have assessed and compared methods of repairing lateral hernias. Recent studies comparing different minimally invasive techniques (intraperitoneal onlay, transabdominal preperitoneal repair [TAPP], totally extraperitoneal repairs, retromuscular [RM] approach) have consistently shown positive patient outcomes. There are minimal comparisons of outcomes in patients undergoing open lateral hernia repair versus robotic repair. Our aim was to compare outcomes in patients undergoing open RM repair, robotic RM repair, and robotic TAPP repair.

Methods: This is a retrospective review of all lateral hernia repairs completed by two surgeons with fellowship training in abdominal wall reconstruction. The repairs occurred between 2018 and 2023. Primary outcomes included length of stay (LOS), postoperative pain levels, and 30-day complication rate. Outcomes in patients undergoing open RM, robotic RM, and robotic TAPP repairs were compared using Fisher's exact test and Wilcoxon rank sum test.

Results: A total of 36 patients were included in the analysis, 5 underwent open RM repair, 13 robotic TAPP, and 18 robotic RM. Two patients in the robotic RM group required conversion to open surgery; they remained in the robotic RM group for analysis on an intention-to-treat basis. Hernia size was significantly larger in open patients (238 cm2) compared to robotic TAPP patients (72.0 cm2), although there were no other differences. Operative time was longer in the robotic RM group compared to the robotic TAPP group (230 min vs 154 min, p = 0.03), although neither had differing times compared to the open group. LOS in the open group (6 days) was longer than in the robotic TAPP group (1 day, p = 0.002) and robotic RM group (2 days, p = 0.003). Pain scores were higher in the open group on postoperative day 1 although this did not differ by the date of discharge. There were 3 patients in the open group with complications (2 requiring blood transfusions, 1 readmission for constipation that also developed a seroma), 2 in the TAPP group (one readmission for lower gastrointestinal bleed and one superficial infection treated with antibiotics), and 1 in the robotic RM group (one seroma). The overall complication rate in the open group was higher than that in the robotic RM group (p = 0.021) although this did not achieve statistical significance in the comparison with the TAPP group (p = 0.099).

Conclusion: Our results demonstrate that robotic TAPP and RM repairs are safe and effective methods of repair for lateral hernias. Both methods were similarly superior to open repair in terms of length of stay, pain scores, and complication rates. Additionally, anecdotally, anatomic visualization is improved from the posterior approach and may facilitate improved fascial closure of these challenging defects.

Q 3. Lightweight: The Fragility of Randomized Controlled Trials (RCTs) Utilizing Mesh in Abdominal Wall Reconstruction (AWR)

S Ayuso, G Scarola, T Cheung, N Smart, B Heniford
Atrium Health Carolinas Medical Center

Background: The fragility index (FI) was developed in order to assess the robustness of clinical trials. FI calculates the number of individual outcomes that would need to change in order to make a significant result insignificant. Specifically, FI uses the Fisher's exact test to determine the lowest number of events required to obtain a p-value > 0.05. Reverse fragility index (RFI) is the inverse of FI and is meant for negative trials, which report an insignificant finding. Previous systematic reviews have suggested that studies with a FI/RFI <= 3 are considered fragile. Currently, there are no studies evaluating the fragility of hernia publications. The aim of this study is to evaluate the fragility of mesh RCTs in AWR.

Methods: Google Scholar and PubMed were used to query for mesh RCTs in AWR from 2000-2023. The first 200 studies from each search engine were reviewed along with the references cited in each of the studies. RCTs had to have a dichotomous and clinical primary outcome (e.g., recurrence or wound complication rate). Only studies evaluating ventral and incisional hernias were included. Studies that focused on minimally invasive technique, inguinal or parastomal hernias, or had a continuous outcome were excluded. FI and RFI were calculated using publicly available online calculators. Fragility quotient (FQ) and reverse fragility quotient (RFQ) were determined by dividing the FI and RFI by the sample size of the study. The impact factor (IF) of each journal and conflicts of interest (COI) were also reported.

Results: There were 37 RCTs identified. After exclusion criteria were applied, 17 RCTs were included – 11 were positive RCTs and six were negative RCTs. The British Journal of Surgery (n=3), JAMA Surgery (n=2), and Annals of Surgery (n=2) were the most common journals for RCT publication. Hernia recurrence (41.2%) and "major" complications (29.4%) were the most frequent primary outcomes. The median FI for positive RCTs was 2 (range:0-37), and the median RFI nor negative RCTs was 3.5 (range:1-8). There was no significant difference between FIs and RFIs (p=0.67). For all studies, 11 of 17 (64.7%) had an FI or RFI <= 3. Four studies had an FI/RFI of one, and one study that had an FI of zero, which indicated that if a different statistical test was used for the same data (e.g., Fisher's exact), then the study outcomes would no longer be significant. Mean FQ was 0.04+/-0.06 and mean RFQ was 0.04+/-0.04. IF of journal did not correlate with FI/RFI; the study published in the highest IF journal (IF of 202) had a FI of 2. There was COI reported in 5/17 (29.4%) of studies; 4/5 of these studies had an FI/RFI <=3.

Conclusions: There were a paucity of mesh RCTs identified in the AWR literature. The majority of mesh RCTs were fragile and lacked robustness. For fragile studies, a change in very few patient outcomes would have altered their conclusions. Study fragility should be strongly considered when evaluating RCTs, especially when their results may change clinical practice.

Q 4. Incidence of Incisional Hernias Following Minimally-Invasive Urologic Oncology Operations

M Nguyen, A Hu, A Hintze, E Pauli, C Horne
Penn State Health Milton S. Hershey Medical Center

Background: Trocar site hernias (TSH) are small and may be missed on routine imaging interpretation if asymptomatic. While the incidence of TSH has been reported to be under 1%, current literature suffers from inconsistent terminology and definitions. Some studies label TSH as incisional hernias while others include extraction sites hernias (EHS) in this cohort. Our study aim was to quantify the incidence of TSH following urologic cancer surgery utilizing hernia surgeon interpretation of cross-sectional imaging.

Methods: This was a retrospective, Institutional-Review-Board-approved, single institution study that included adult patients who underwent minimally invasive (laparoscopic or robotic) urologic cancer surgery and had cross-axial imaging for any indication within three years of their index operation. Cross-sectional imaging was reviewed independently by two abdominal wall reconstruction surgeons (CMH and EMP). TSH were defined as those resulting from 5 mm, 8 mm, 10 mm, and 12 mm trocars without any extension of the trocar site for specimen extraction. We also quantified hernias due to extension of the trocar site for specimen removal (TSH-ESH).

Results: 141 patients were included from 2017 to 2021. The mean age was 61 years (SD12.1), mean body mass index was 31.2 kg/m2 (SD 6.2) and 79% were male. Over half of the cohort had a diagnosis of prostate cancer (51.1%) followed by renal cancer (42.5%). A total of 785 trocar sites were included and all trocars used were either radially dilating or blunt. Of these, 22.9% were 5 mm, 42.2% were 8 mm, and 31.9% were 12 mm trocars. 100% of patients had cross-axial imaging within three years of index operation. Prior to hernia surgeon review, 5.7% (n=17/141) of patients had incisional hernias identified either clinically or radiographically, and three of these were symptomatic with either pain or bulging. Notably, 32% (n=16/49) of patients had pre-existing umbilical hernias that were present pre-operatively and were not treated at time of index operation.

After hernia surgeon review, 35.5% (n=50/141) of patients were found to have TSH or TSH-ESH. The TSH rate was 1.42% (n=2/141) and both were located in the epigastric region The TSH-ESH rate was 34.0% (n=48/141) and these were located in the epigastric (38%), umbilical (34%), epigastric and umbilical (20%), and flank (4%) areas. These were identified on average 520 days (SD 646) from index operation. The majority of TSH-ESH hernias occurred from extending the original trocar site by several centimeters using a scalpel for specimen extraction.

Conclusion: Our study found that while our TSH rate was comparable to the < 1% quoted in literature, the TSH-ESH rate was high. More attention should be paid to closing these midline extraction sites, particularly in patients with a high rate of pre-existing umbilical hernias. One limitation was the heterogeneity in operative reports and our study was unable to correlate actual incision size with TSH-ESH rate. Future studies should consider comparing midline closure techniques in this population to reduce the TSH-ESH rate.

Q 5. Prospective Study on Robotic Assisted Extended Total Extraperitoneal Transversus Abdominus Release Repair for Traumatic Abdominal Intercostal Hernias

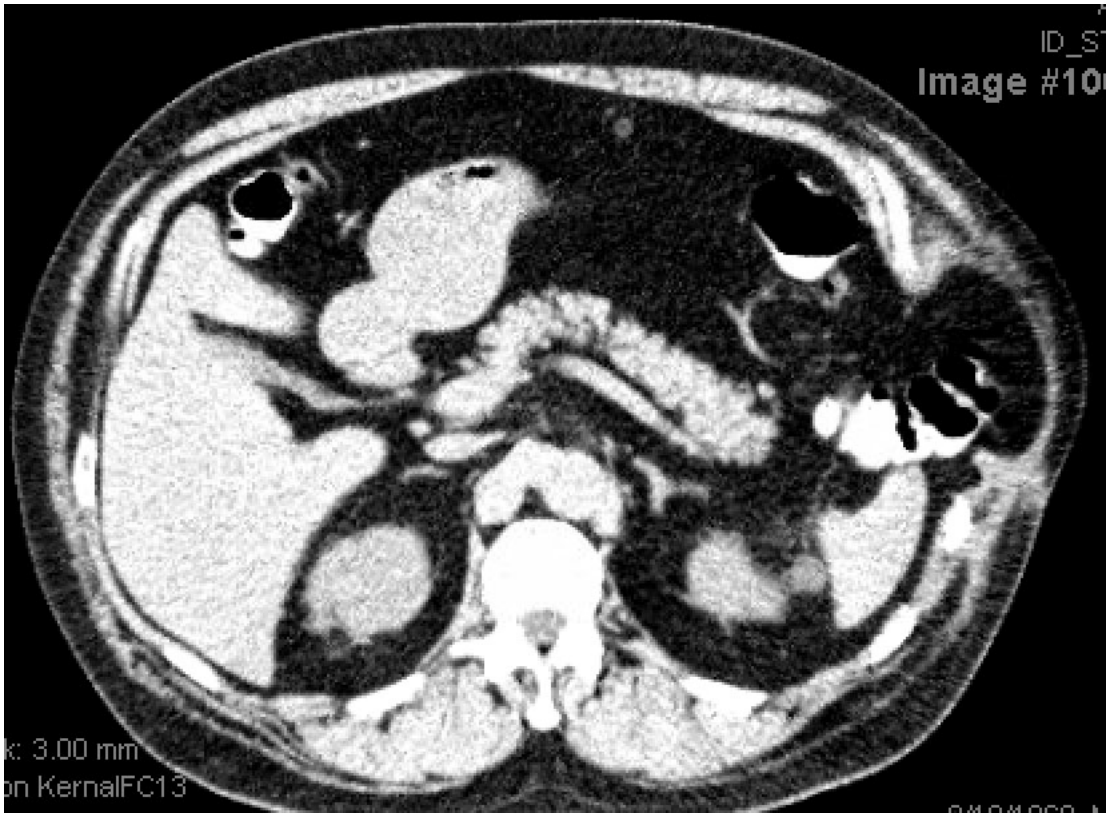
A Iacco, M Hutchinson, K Aung, R Janczyk
Corewell Health East William Beaumont University Hospital

Background: Traumatic Abdominal Intercostal Hernias (TAIH) present a perplexing challenge for surgeons seeking to repair them. The objective of this study was to evaluate the effectiveness of the Robotic-Assisted ETEP/TAR (rETEP/TAR) method in repairing TAIH. Eight patients, four men and four women, were identified and followed prospectively between 2019 and 2022. All patients suffered traumatic valsalva-induced hernias. Two patients suffered injuries due to a motor vehicle crash, one from a ground-level fall, one from lifting a heavy object from the ground, and four due to respiratory infections leading to prolonged and severe coughing episodes. Average age was 56 years old and patients presented 2.75 years after the injury.

Methods: All patients presented with abdominal wall pain as primary symptom associated with bulging. ETEP access was gained through the retro-rectus space ipsilateral to the hernia, using a transversus abdominis release performed laterally to the level of the posterior axillary line. Dissection was completed from the pelvis to the central tendon as necessary. Average defect size was 11x17cm. Heavyweight uncoated polypropylene mesh was placed in the retro-muscular space and secured with permanent suture. Average mesh size was 34x30cm and operative time was 3.5 hours.

Results: Patients were followed for two years after the operation. All patients reported continued improvement in their pain symptoms compared to their preoperative status without any evidence of recurrence.

Conclusion: This study demonstrates that the Robotic-Assisted ETEP/TAR technique is an effective way of repairing traumatically acquired abdominal intercostal hernias.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Q 6. Is There A Place To Inguinal Ring Closure In Laparoscopic TAPP?

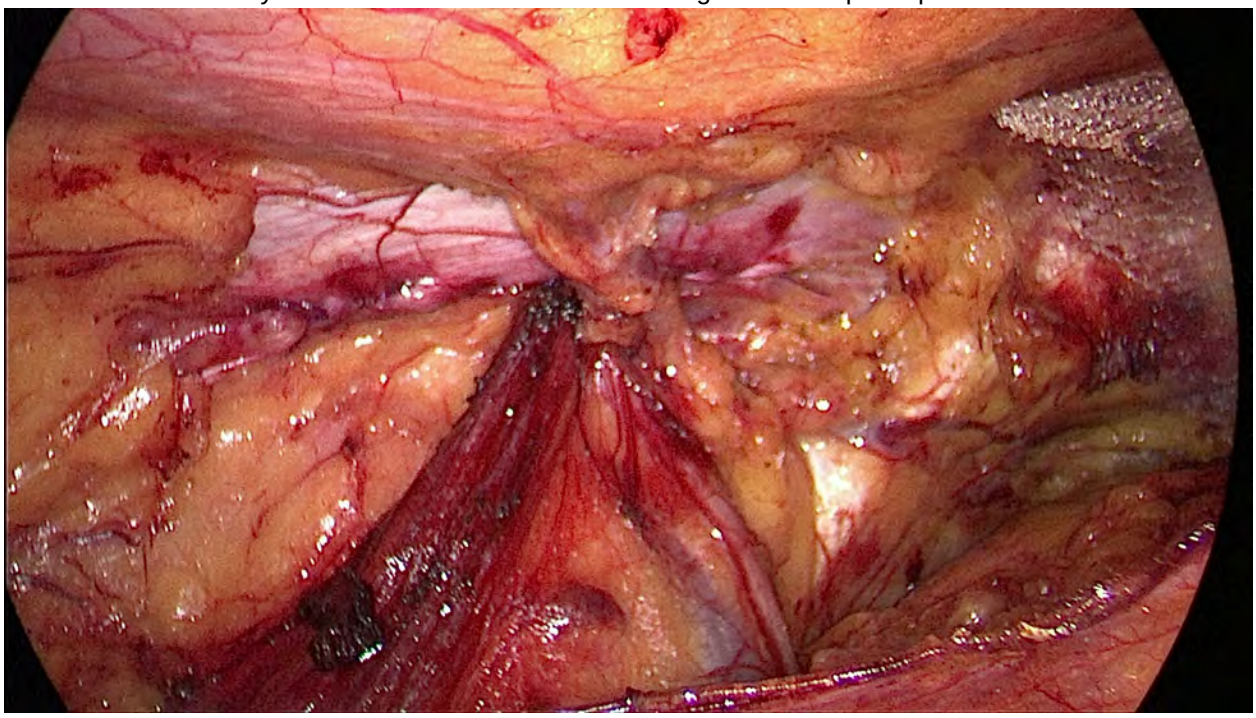
E Sadava, A Valinoti, N Murdoch
Hospital Aleman de Buenos Aires

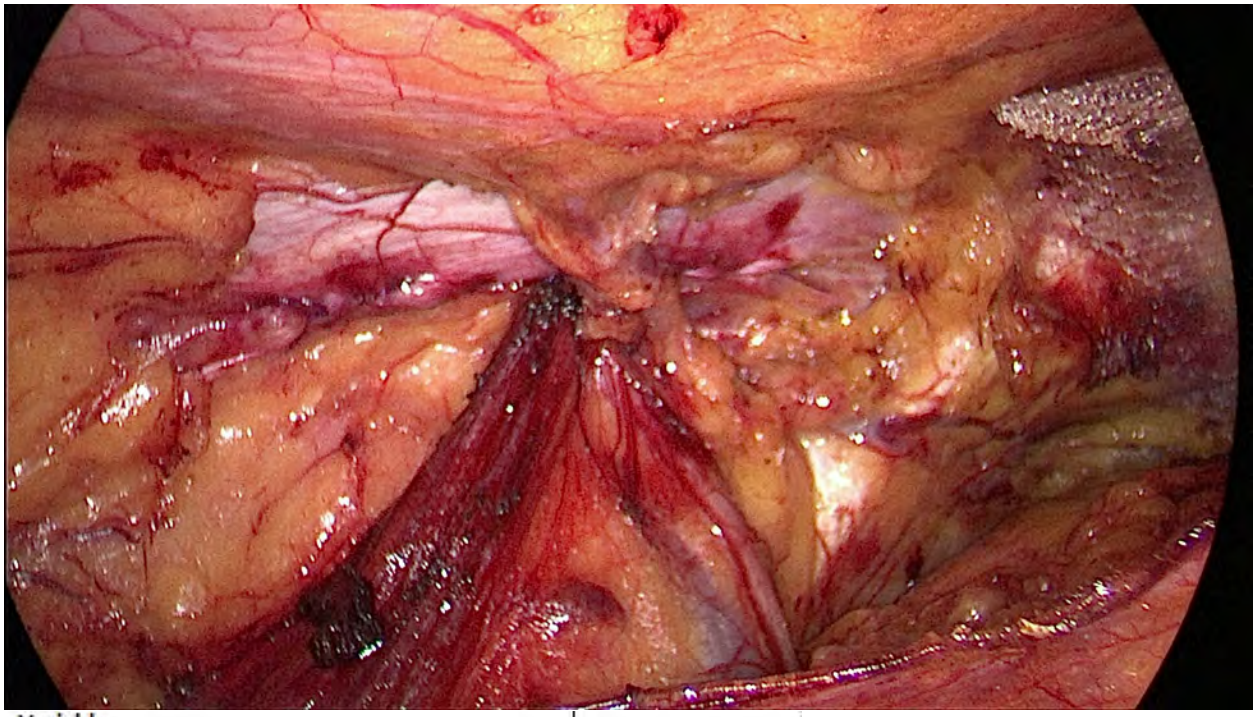
Background: Hernia defect closure during laparoscopic TAPP repairs is debated. We postulate that closing the hernia defect will readapt the inguinal muscles allowing mesh stability and reducing the need for mesh fixation.

Methods: A prospective evaluation of patients who underwent laparoscopic TAPP with indirect/direct defect closure was analyzed from November 2021 to September 2022. Patients with hernia defects more than 4 cm (M3 and L3 of EHS Classification) and with a follow-up more than 6 months were included. Thirty-day postoperative complications were the primary outcome. Postoperative pain and hernia recurrence were also recorded.

Results: Consecutive 34 patients with 42 hernias (35 indirect and 7 direct) were included in the analysis. The mean age was 65 years-old, with a mean body mass index of 25.8 kg/m2 ± 3.2 kg/m2 .The mean size of the hernia defect was 16.7 ± 10.4 cm2 (r: 6-48 cm2). The mean operative time for each hernia repair was 48.3 ± 10.8 min (r: 33-72 min), and the mean time required for internal ring closure was 6.7 ± 2.2 min (r: 4-10 min). Mesh fixation was required only in 6 (19%) patients. There were no conversions or intraoperative complication during the ring closure. The mean visual analog scale pain score at postoperative day 10 was 2 (Range 0-7). Ninety percent of patients were discharged the same day of the surgery. Overall 30-day morbidity was 4% (2 patients), 1 had mild seroma and 1 patient had inguinal hematoma. After a mean follow-up period of 9.9 (6-15) months, no hernia recurrence or chronic pain were recorded.

Conclusions: Defect closure in laparoscopic inguinal hernia repair is safe and feasible. It could reduce the necessity of mesh fixation without affecting mid-term postoperative outcomes.





Variable	
n	41
Age, *mean (range)*	65 (84-40)
BMI, *kg/m2 (range)*	25.8 (21-38)
Smoking status, *%*	
- Ex-smokers	23.5
- Non-smokers	70
- Smokers	6.5
ASA, *%*	
- I	25
- II	63
- III	12
Defect size, cm2	16.7 ± 10.4 min
Ring closure time, *min*	6.7 ± 2 min
Operative time, *min*	48.3 ± 10.8 min
Overall 30-day morbidity, *%*	4
Recurrence, *%*	0
Cronic pain, *%*	0

Q 7. Technique Matters: Robotic Repair of Moderate Ventral Hernias Reduced Complications, Readmissions, And Hospitalization Compared To Open Techniques

J Carter, F Ahmed, J Juprasert, M Anderson, M Lin, I Soriano
University of California, San Francisco

Background: Despite the development of robotic techniques for ventral hernia repair that achieve complete fascial closure and underlay (intraperitoneal or retrorectus) mesh reinforcement, many ventral hernias suitable for robotic repair continue to be performed open, even in hernia centers of excellence.

Methods: From 2017-2021, patient characteristics and 30-day outcomes for all ventral hernias at our center were prospectively collected as part of the National Surgical Quality Improvement Project. We studied ventral hernias unequivocally suitable for robotic repair: elective, midline, 3-10 cm of rectus separation, no prior mesh, no loss of domain, no need for skin excision from ulceration or thin skin over the hernia sac, and no need for concomitant additional procedure such as stoma takedown, bowel resection, cholecystectomy, etc. Robotic or open repair was performed by surgeon or patient preference. The primary outcome was any complication, defined as Clavien-Dindo score 1 or more. Secondary outcomes were operative time, hospitalization, infections, and readmissions. Regression analysis was used to identify predictors of complications.

Results: There were 70 robotic and 52 open midline hernia repairs. Patient characteristics, co-morbidities, Charlson comorbidity index, and Ventral Hernia Working Grade classification did not differ significantly between groups, except there more immunosuppressed patients in the open group (11 versus 5 patients, p=0.031). There was no significant difference in hernia defect size between groups (152 ± 161 cm2 robotic versus 163 ± 141 cm2 open, p=NS). The fascia was closed in all patients, with underlay mesh placed in the majority. Mean size of mesh implant did not differ significantly between groups (552 ± 318 cm2 robotic versus 472 ± 540 cm2 open, p=NS). Operative time was similar between groups, averaging 153+55 minutes (robotic) versus 160+75 minutes (open), p=NS. Seven complications occurred after open repair, whereas only 2 complications occurred after robotic repair, p=0.036. Surgical site infection occurred after 4 (8%) of open repairs, but none after robotic repair, p=0.004. Hospitalization averaged almost three days shorter after robotic repair: 4.3 ± 2.7 days (open) versus 1.5 ± 1.4 days (robotic, p=0.031). Readmission occurred after 6 (12%) of open repairs but in only 1 (2%) robotic repair, (p=0.041). In regression models, open technique predicted complications, whereas patient characteristics, co-morbidities (including immunosuppression), hernia size, and other variables were not predictive of complications.

Conclusion: Despite the availability of robotic hernia expertise at our center, 40% of uncomplicated moderate-sized midline ventral hernias suitable for a robotic approach were still repaired using open techniques. The robotic approach was associated with fewer complications, shorter hospitalization, fewer infections, and fewer readmissions compared to open techniques, all while achieving the same technical result of primary fascial closure with underlay mesh reinforcement. Open surgical technique was the only predictor of complications.

Q 8. Hybrid Ipom Plus: The Dark Horse

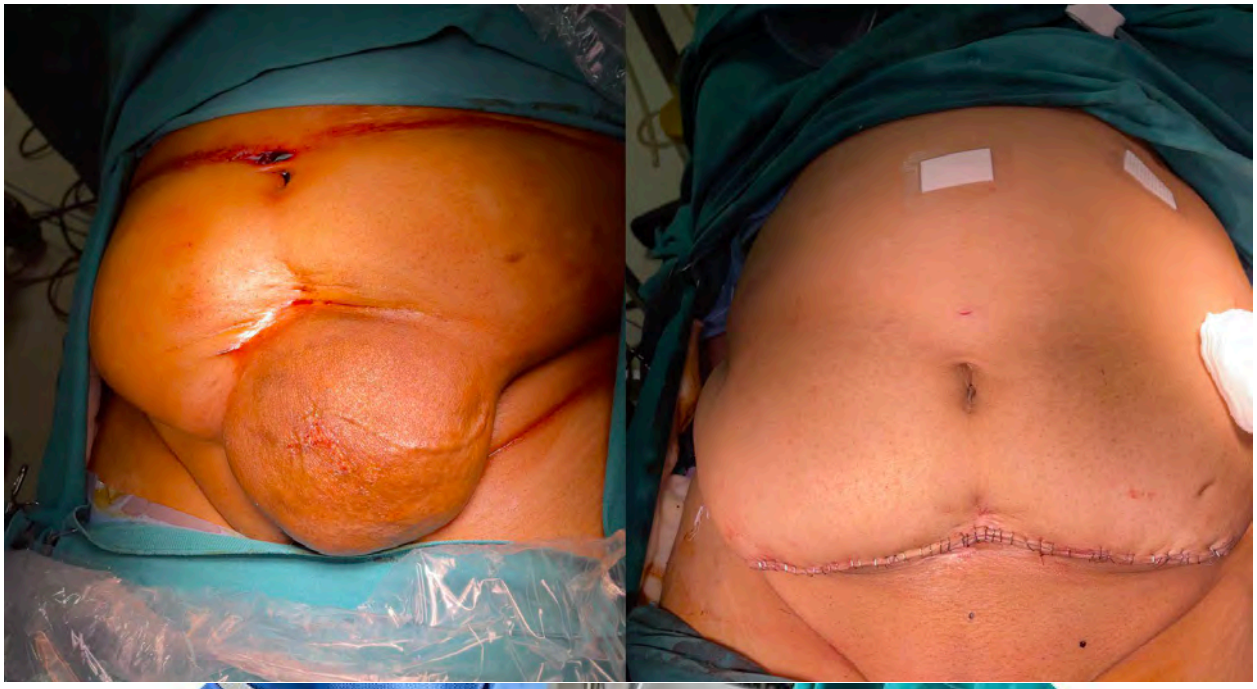
A Bawa, M Mehta, H Kishore, R Kansal, K Malhotra, V Mishra, V Rengan, E Arora, R Balasubramaniam
Dayanand Medical College and Hospital

Background: Hybrid Intraperitoneal onlay Meshplasty, also called Hybrid IPOM or Laparoscopic Assisted Ventral Hernia Repair, is a way to fix a Ventral Hernia that uses both open surgery and Laparoscopic surgery. The process can be used to excise large hernia sacs and break up adhesions. It can also be used to fix scars, do abdominoplasties, or close the abdominal wall with or without component separation. The beauty of the procedure is that it only removes a small amount of skin, so it looks cosmetically better. An intraperitoneal mesh is also placed, and no skin flaps are raised.

Methods: In this retrospective study, all patients who had a Hybrid Ipom Repair in our surgery unit between January 2019 and November 2022 were taken. Analysed were the recorded demographic data, patient characters, clinical information, operative time, post-operative pain, hospital stay, and complications. At one week, one month, three months, and six months, patients were checked on in hospital or by phone. The QoL surveys were filled out before surgery, one month after surgery, and six months after surgery.

Results: In our unit, a total of 42 people had Hybrid IPOM. There were 35 women and 7 men in this group. 37 of the people had an incisional hernia, and 5 of them had a primary hernia. Patients averaged 49 years old (ages ranged from 33 to 72). On average, the operation took 145 minutes. The average length of stay in the hospital was 3 days. 5 patients got seromas, which were treated with watchful waiting. The mean VAS score at baseline was 1.5, and it was 1.4 at follow-up ($p = 0.50$). There was significant change in the body pain score ($p=0.001$) and physical performance score ($p = 0.014$) from baseline to the time six month after surgery.

Conclusion: Hybrid IPOM uses both minimal access surgery and limited open surgery. This gives a better appearance, makes sure that the defect is closed, and avoids skin flaps being raised for onlay mesh placement. Even though our study only has a small number of people, the repair seems to be working so far and is dark horse among hernia repairs.



Q 9. Robo TAR On "Talking To The Wall" Project: Teaching, Learning And Helping Patients

N Pereira, P Fogaça de Barros, Y Novitsky, R Galhego, C Ballecer
Hospital Santa Catarina Paulista

Background: "Talking to the Wall" was created in 2020 to connect and disseminate knowledge about the abdominal wall to surgeons around the world amid the midst of the covid-19 pandemic. Until April 2023, 20 online meetings were held with 83 speakers from 18 countries, with an average access of 300 people per meeting. In January 2023, the first face-to-face event was held in the city of São Paulo, with an immersion course in robotic abdominal wall surgery. It had 11 students and 7 teachers. After the first day of theoretical classes, 6 robotic surgical procedures were performed. The patients selected for the course did not have access to robotic surgery through insurance plans and benefited from the project.

The objective is to present a case of robotic ART and its positive impact on the patient's life.

Methods: Female patient, smoker, BMI 41, depressive, rheumatoid arthritis, uncontrolled diabetic, with a calculated risk of complications (CeDAR) of 38%. She presents an infra umbilical incisional hernia due to an emergency laparotomy due to torsion of the right ovary in March 2022. The patient had difficulty socializing and a low level of personal care due to depression, obesity and a large abdominal hernia. On examination: complex incisional hernia of 14 cm (5.51 inches) infra umbilical, with skin erosion, without infection. Multidisciplinary follow-up was performed for weight loss, smoking cessation and diabetes control. In 5 months of preoperative preparation, she evolved with a weight loss of 10% of the baseline weight, BMI of 36, diabetes control but without stopping smoking, and CeDAR of 24%. The patient had no health insurance or access to robotic surgery, being benefited from the Talking to the Wall São Paulo program. In January 2023, a robotic TAR surgery was performed, opting for the hybrid technique to resect redundant skin and closure of the anterior infra umbilical aponeurosis by laparotomy.

Results: The patient had no complications for 30 days. Today, with a follow-up of 4 months, she does not have depressive symptoms, with a significant improvement in self-esteem, personal care and social interaction outside the home.

Conclusion: With the increase in social media interactions during covid-19, "Talking to the Wall" emerged with a proposal to connect surgeons around the world and improve continuing education about the abdominal wall. Its first face-to-face event enabled the sharing of knowledge in advanced ventral hernia repair techniques. In São Paulo, less than 40% of the population has access to health insurance, while in the rest of the country, less than a third of the population has health insurance and less than 1% of surgeries performed in the public health are laparoscopic. This face-to-face event, in addition to enabling technical improvement for surgeons, enabled state-of-the-art treatment for patients who would not have access to robotic surgery, offering better operative results and improved quality of life for patients.

POSTER ABSTRACTS

POD 1. Benefits of ERAS protocol and Robotic Surgery for Complex Ventral Hernia Repair: A Quality Improvement Study

A Garza, G Arevalo
Methodist Hospital Willowbrook

Background: Open Ventral Hernia Repair (VHR) for complex abdominal wall repairs (AWR) is associated with prolonged hospital stay; there is scarce literature about the QoL after AWR. The Enhanced Recovery After Surgery (ERAS) protocol is designed to reduce the length of hospital stay (LOS) and improve outcomes. ERAS protocol has proven to improve outcomes in other surgical fields. Robotic surgery has attracted attention for its potential positive impact on surgical outcomes compared to open surgery. The synergy of these two entities can lead to better outcomes. Our main goal is to demonstrate the improvement in quality of life and long-term surgical outcomes of these two approaches.

ERAS protocol is used in the pre, peri, and postoperative courses. It aims to reduce the harmful effects of surgery on the body and help patients recover better after surgery. We hypothesized that our ERAS pathway combined with robotic surgery would accelerate functional recovery and shorten hospitalization and improve the quality of life in patients undergoing abdominal wall reconstruction.

Methods: A retrospective review of a prospectively maintained database identified 101 patients who underwent minimally invasive hernia repair and ERAS at our institution. Patients were followed up at 2 weeks, 3 months, 1 year, and 3 years. These actions were carried out between August 2018 and January 2022. Patient demographics were collected, and ERAS was approved in all patients. The ERAS pathways include: All patients underwent robotic abdominal wall reconstruction. Results were measured using a quality questionnaire. The data on which we focused was the quality-of-life questionnaire. The quality of life score used for pre and post-op was the European Hernia Society Quality of Life focused on ventral abdominal wall hernias single institution.

Results: One hundred and one consecutive robotic procedures were analyzed. Demographics are depicted in Table 1. Patients without transverse abdominal release (TAR) were discharged the same day, with a mean length of stay (LOS) of < 0.1, and the mean with TAR was 2.3 days (Table 2). The overall EuraHS score improved after surgery both in the global score and in the three elementary components of quality of life being assessed: pain, activity restriction, and cosmetic discomfort. The EuraHS score is a useful tool for measuring the success of hernia surgery. It was designed to be used with verbal numerical rating scales that are considered more effective and have lower failure rates than visual analog scales.

Conclusion: Our comprehensive ERAS pathway in synergy with robotics surgery was associated with a short LOS, fewer systemic complications, and an improvement in QoL. Although there is little evidence about the ERAS pathway and Robotic Hernia Surgery, we advocate the selective use of robotics for complex AWR, and that our ERAS pathway be implemented across the Methodist system.

01 Perioperative

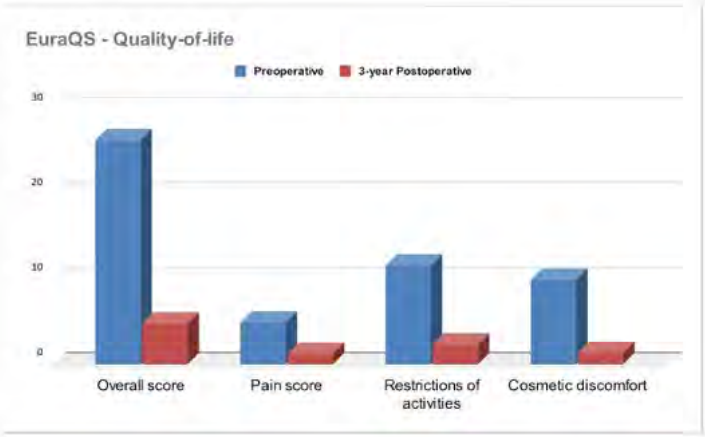
- Mrsa screen
- If MRSA positive, Intranasal Mupirocin for 5 days prior
- Smoking cessation for 2 weeks
- Impact AR: 3 shakes a day, for 5 days
- The night before: Ensure Clear 8 oz. If Diabetic drink only half.
- Shower with the antibacterial soap.
- DM HbA1c if >8 refer to Diabetic educator or endocrinologist.
- Medical optimization lifestyle habits and medication tunning
- We need two serum glucose WNR
- New Trend: HbA1c 7.4
- Cond, dx, tx alternatives , optimization and expected outcomes discussion
- Quality of life score pre op

02 Preoperative

- Before leaving home: Shower with the antibacterial soap.
- Clindamycin 900 mg iv
- Mrsa +. Vancomycin 1 hr before sx
- Ancef 2 grams or 3 grams depending on weight. If clindamycin shortage. New trend is Ancef
- Penicillin allergy: Clindamycin 900 mg iv
- If incarcerated bowel: cefoxitin 2 grams iv
- Ensure Clear 8 onz. 2 hours before surgery. If Diabetic or hx of GERD, do not drink.
- Entereg 12 mg po
- Gabapentin 300 mg po
- TAP Block, Exparel
- DM patients measure glucose if > 100 repeat 30-60 after incision, if > 160 treat with ISS
- Heparin 5000 un sub q.
- Iv Fluids: LR 50 ml /hr
- Hx of nausea Decadron and Zofran,
- Foley if anticipated sx is > 2 hrs
- Abdominal Binder

02 Preoperative

- Entereg 12 mg po q 12 hrs
- Gabapentin 300 mg TID
- Dilaudid 0.5 mg iv q 3 hrs, PRN
- Norco 7.5 mg po q 6 hrs PRN
- Hx of nausea, magnesium 3 grams iv.
- Valium 5 mg po BID. For relaxation only. Hold for OSA or > 65 yo
- Lovenox 40 mg sub q POD 1 Scd on POD 0
- Iv fluids 75 ml/hr "Monitor urine output"
- Diet:
- Full liquids POD0
- Easy to Digest POD 1
- Discharge: Norco 7.5 mg x 15 tablets
- JP drain follow up in 1 weeks. Dc if output < 30 ml



Surgical Outcomes for Quality-of-life

	Preoperative	3 YPO
EuraHS-QoL, *mean±SD [median]*	26.4 (14.5) [20]	4.8 (2.2) [4]*
Pain	4.9 (3.8) [4]	1.2 (0.9) [1]*
Activities	11.6 (7.9) [10]	2.3 (1.4) [2]*
Cosmetic	9.9 (5.7) [9]	1.3 (0.9) [1]*

YPO years postopertive; EuraHS-QoL European Hernia Society quality-of-life

*significant results compared to preop, p <0.05

Wilcoxon signed rank test for p-significance

POD 2. The First Experience Of Single-Port (SP) Robotic Inguinal Hernia Repair With Totally Extraperitoneal Approach (SP-rTEP)

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Ain Hospital

Background: Inguinal hernia repair is the most commonly performed surgery worldwide, and since robotic surgery with the advantages of much better 3D view and comfortable ergonomics recently arrived, robotic inguinal hernia surgery is also increasing. However, most of the robotic inguinal hernia surgery is performed by transabdominal preperitoneal (TAPP) approach, and totally extraperitoneal (TEP) approach is not implemented much due to technical barriers.

The SP robotic TEP we introduce is a " New" surgical method that has not yet been attempted. The aim of this study was to evaluate the safety and feasibility of the SP TEP for inguinal hernia.

Methods: From March, 2022 to Feb. 2022, 2 operators performed robotic TEP for inguinal hernia using daVinci SP platform. Intraoperative and perioperative outcomes, such as, intraoperative events, conversion, operative time, robotic docking time, console time, complication and hospital day were analyzed.

Results: 18 patients performed single-port robotic TEP for inguinal hernia. The average age was 58 years old (31-84), and there were 13 males (72.2%) and 5 females (27.8%). 11 (61.1%) cases were indirect, 6 (33.3%) cases were direct and 1 case of emergent femoral hernia was included. There were 3 (16.7%) bilateral cases and 1 recurrent case. The mean operation time was 98.2 minutes (56 - 200), docking time was 4.6 minutes (3-10), and console time was 56.3 minutes (30-135). There was no open conversion, and 1 TAPP conversion case because obese patient's incarcerated omentum was not reduced. There were no main events during surgery, 4 minor events (3 peritoneal tearing, 1 rectus sheath tearing). The mean hospital day was 1 day (0-2), and there were no complications or readmissions within postoperative 30 days.

Conclusion: Robotic SP-TEP for inguinal hernia is safe and feasible. Further comparative studies are needed to confirm the benefits of the SP platform.

Table 1. Demographic characteristics of study population

Variables		Total N= 18 (%)
Demographic characteristics		
Age		58.0 ± 3.5 (31 - 84)
Sex	Male	13 (72.2)
	Female	5 (27.8)
BMI (kg/m^2)		23.5 ± 2.7 (18.4 - 29.9)
Hernia type	Indirect	11 (61.1)
	Direct	6 (33.3)
	Femoral	1 (5.6)
Hernia site	Unilateral_right	7 (38.9)
	Unilateral_left	7 (38.9)
	bilateral	3 (16.7)
	recurrent	1 (5.6)
OP history	Intraperitoneal	5 (27.8)
	prostatectomy	2 (11.1)
Clinical Outcome		
Hospital stay (Day)		1.0 ± 0.7 (0 ~ 2)
Complication (30 days)		0
Readmission (30 days)		0

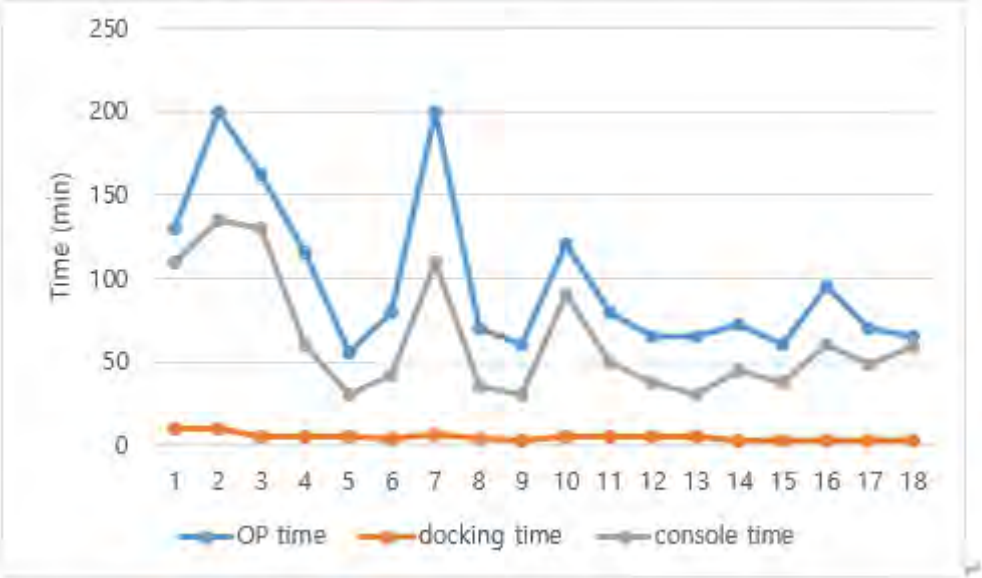
BMI, body mass index; OP, opeartion

Table 2. Intraoperative variables of study population

Variables		Total N= 18 (%)
Conversion rate	TAPP conversion	1 (5.6)
Operation time (min)	Total	98.2 ± 47.1 (56 - 200)
	Docking time	4.6 ± 1.9 (3 - 10)
	Console time	56.3 ± 7.6 (30 - 135)
Intraoperative events	Peritoneal tear	3 (16.7)
	Rectus sheath injury	1 (5.6)

TAPP, transabdominal preperitoneal

Fig 1. The distribution of total, docking and console times among 18 single-port robotic totally extraperitoneal repairs (SP-rTEP).



Bilateral hernia at 2,4, 17th, TAPP conversion at 7th case

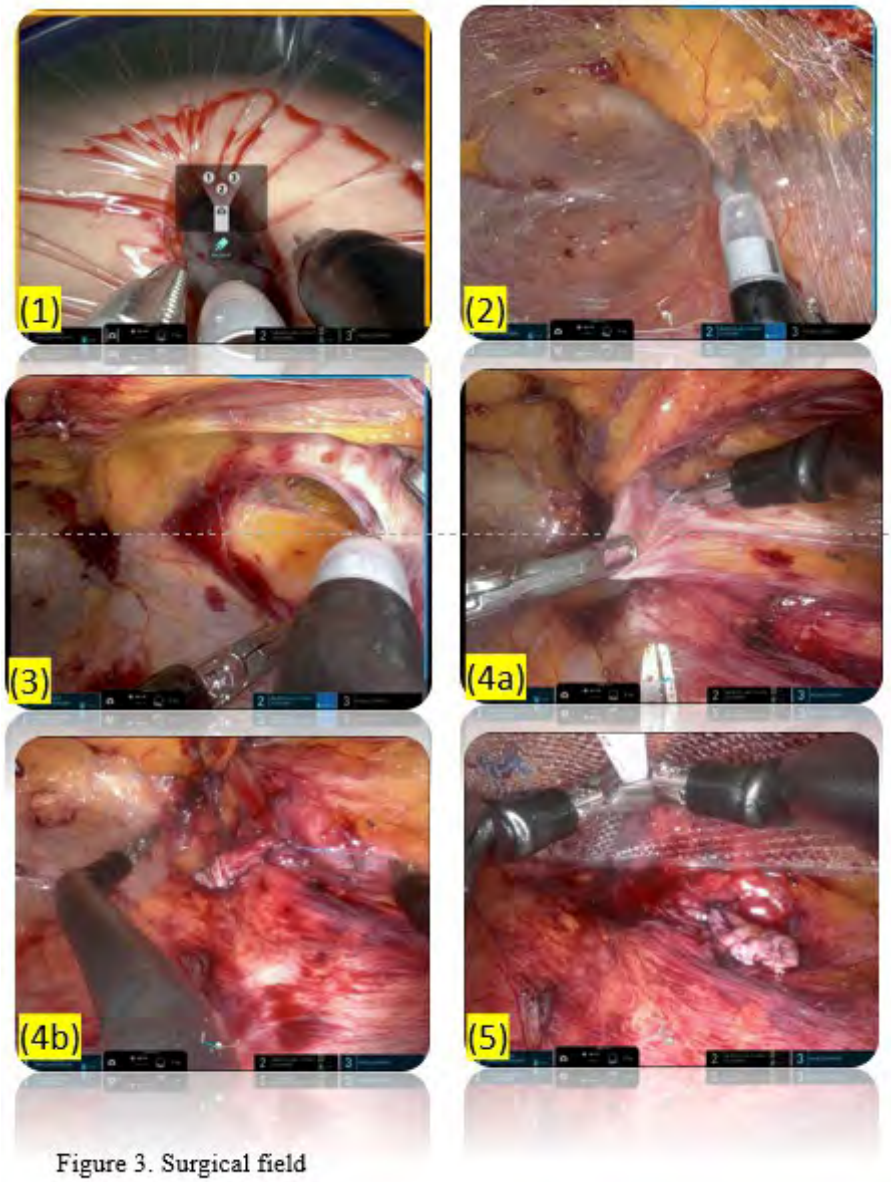


Figure 3. Surgical field

POD 3. A Clinical Quality Improvement (CQI) Project for Ventral Hernia Repair (VHR): Assessing Long-Acting Local Anesthetic and Low-Pressure Pneumoperitoneum

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Background: In healthcare, the concept of clinical quality improvement (CQI) has typically been applied at the level of a sub-process, attempting to decrease the incidence of central line infection, for example. However, attempting to improve a subprocess without assessing the impact on the whole, definable patient care process(es) results in suboptimization. With suboptimization, the outcomes of the subprocess may improve while the outcomes of the whole process do not improve. To improve patient outcomes, it will be important to apply CQI principles to whole, definable patient care processes and to assess any attempt to improve the patient process by measuring the outcomes for the whole patient care process.

Methods: A de-centralized, multi-centered clinical quality improvement (CQI) project is a relatively new way to measure and improve outcomes for the whole, definable patient care process using real-world clinical data. In this CQI project attempting to improve outcomes for ventral hernia repair patients, one clinical site initially developed a unique dataset using a laparoscopic ventral hernia repair (LVHR) approach and applied data analytics and visualization tools to gain insights to improve outcomes. A second clinical site was recently added to the project using a robotic ventral hernia repair (RVHR) approach. At each clinical site, a long-acting local anesthetic was introduced in an attempt to improve outcomes such as length of stay. The initial clinical site also introduced the use of low-pressure pneumoperitoneum after the long-acting local anesthetic had been introduced.

Results: The first clinical site had a total of 125 patients (67 females, 58 males). Mean age was 59.3 years (range 21 – 93, standard deviation (SD) = 12.38), mean BMI was 35.05 (range 21.38 – 62.45, SD = 9.08) and there were 69/125 (55.2%) patients with recurrent hernias. The second clinical site had a total of 103 patients (50 females, 53 males). Mean age was 58.5 years (range 22 – 90, SD = 13.24), mean BMI was 31.91 (range 18.45 – 50.06, SD = 6.60) and there were 17/103 (16.5%) patients with recurrent hernias. Additional treatment and outcomes data is summarized in Table 1.

Table 1: Treatment and outcomes data from a CQI project for VHR at two clinical sites

Conclusion: A CQI method for measuring and improving ventral hernia repair outcomes has been implemented at two clinical sites, one utilizing a laparoscopic approach and one with a robotic approach. Improvement attempts included the use of a long-acting local anesthetic at both sites and a low-pressure pneumoperitoneum system at one site. Outcomes including LOS at both sites and Total Meq for post-op pain control at one site were improved.

	Mean Hernia Size, cm2 (Range, SD)	Mean Mesh Size, cm2 (Range, SD)	Mean OR Time, minutes (Range, SD)	Length of Stay, days (Range, SD)	In-hospital Post-op opioids, Meq (Range, SD)	Insufflation Pressure, mmHg (Range, SD)
1st Clinical Site: LVHR (n = 125)						
No LALA/No LPP (n = 52)	102.0 (6 – 400, 107.34)	552.5 (150-1032, 251.66)	148.2 (53-418, 95.53)	4.2 (0 – 19, 2.96)	170.0 (0 – 1019.3, 199.75)	15 (15, 0)
LALA/No LPP (n = 36)	115.8 (4 – 368, 112.79)	568.9 (153 – 1135, 290.61)	123.3 (38 – 296, 74.32)	3.4 (0 – 13, 2.96)	79.9 (0 – 326.3, 79.40)	15 (15, 0)
LALA/LPP (n = 37)	57.1 (1 – 234, 58.89)	457.5 (54 – 936, 235.75)	116.0 (53 – 275, 52.62)	2.2 (0 – 11, 2.53)	74.0 (0 – 1064.8, 178.53)	8.7 (6 – 12, 1.34)
2nd Clinical Site: RVHR (n= 103)						
No LALA (n = 89)	37.4 (3.1 – 161.5, 64.37)	330.3 (8 – 900, 85.83)	167.2 (58 – 432, 70.36)	2.2 (0 – 8)	N/A	15 (15, 0)
LALA (n = 14)	47.1 (3.1 – 370, 6.04)	350.2 (17 – 960, 117.93)	154.7 (38 – 442, 50.80)	0.7 (0 – 2, 0.61)	N/A	15 (15, 0)

SD- Standard Deviation LALA - Long-Acting Local Anesthetic LPP - Low Pressure Pneumoperitoneum Meq - Morphine Equivalents LVHR - Laparoscopic Ventral Hernia Repair RVHR - Robotic Ventral Hernia Repair

POD 4. Incidence Of Incisional Hernia Associated With Surgical Site Infection (SSI) After Midline Laparotomy And The Predictive Utility Of ACS-NSQIP

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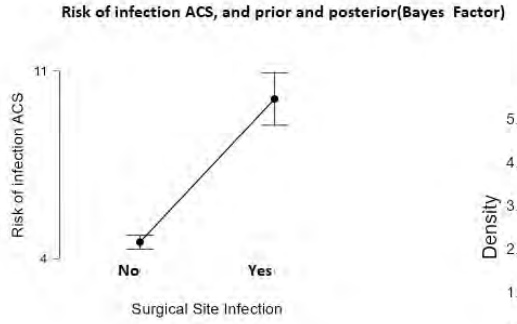
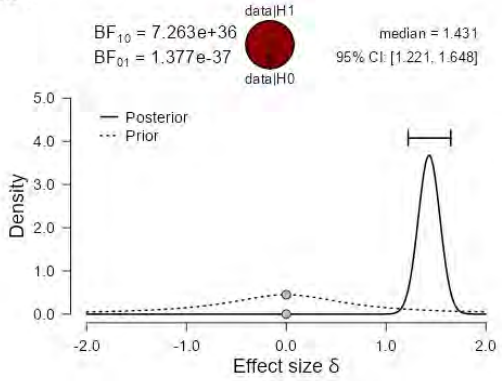
Background: One of the main complications after laparotomy is SSI, which has a variable incidence, depending on perioperative factors and the characteristics of the patients. The presence of SSI is associated with the presence of other comorbidities such as incisional hernia (IH) and higher morbidity and mortality. Two studies have reported the direct relationship between the occurrence of SSI and IH and it was found that 38.5% of the patients who developed hernia had SSI, while those who did not develop hernia only 9.4 % submitted it. Hence, the fact of having SSI increases the risk of having IH as a complication with an OR 5.9 (95% CI 3.4-10.3) p= 0.0001. Various predictive scales developed from retrospective studies with low diagnostic performance have been published. The objective of this study is to evaluate prospectively the utility of the ACS-NSQIP in the prediction of the occurrence of SSI after midline laparotomy and your association with the occurrence of Incisional hernia.

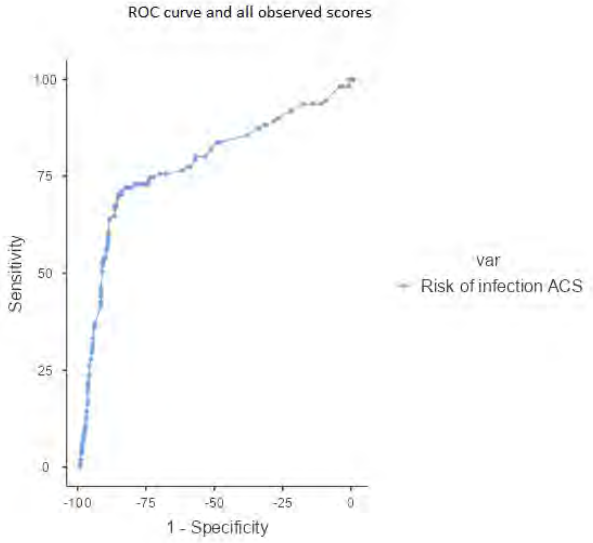
Methods: We conducted a prospective cohort study between January 2020 and December 2022. Included patients older than 18 years of age, post-operative midline exploratory laparotomy, and who completed 24 months of follow-up after the initial surgery. The main outcome measures were SSIs and IH. We evaluated the variables included in the ACS NSQIP score, this score includes risk factors related to the development of SSIs. We assessed infection risk prediction, comparing the estimated probabilities with actual occurrence using the areas under the receiver operating characteristic (ROC) curves. Association measures were made to assess the impact of infection on the presence of HI.

Results: 789 patients were analyzed, 161 developed hernia (20.4%) and 111 (14%) presented SSI. SSI was associated with increased IH with a relative risk of 5.2 (95% CI 2.7-5.32) p= < 0.0001. The ACS-NSQIP predictive model demonstrated good discrimination with an AUROC of 0.78 (95% confidence interval [CI], 0.70-0.86). For the cut-off point of 7, the model presents a specificity of 82.3, a negative predictive value of 94.8, and a sensitivity of 74%. The average score of the prognostic score was 4.62 (3.39) for patients without SSI and 9.45 (5.21) for those who did present SSI with a p-value = 0.001 and a mean difference with 95% CI of 1.221-1.648.

Conclusion: The ACS-NSQIP predictive model demonstrated good discrimination to predict the occurrence of SSI with an AUC of 0.78 being superior to other published scores. The RR between SSI and IH was 5.2.







Scale: Risk of infection ACS

Cutpoint	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Youden's index	AUC
5.3	72.97%	78.91%	36.16%	94.69%	0.519	0.786
5.4	72.97%	79.5%	36.82%	94.73%	0.525	0.786
5.6	72.97%	79.65%	36.99%	94.74%	0.526	0.786
5.8	72.97%	79.79%	37.16%	94.75%	0.528	0.786
6	72.97%	79.94%	37.33%	94.76%	0.529	0.786
6.1	72.07%	81.42%	38.83%	94.68%	0.535	0.786
6.2	72.07%	81.71%	39.22%	94.7%	0.538	0.786
6.3	72.07%	82.15%	39.8%	94.73%	0.542	0.786
6.4	72.07%	82.89%	40.82%	94.77%	0.550	0.786
6.9	72.07%	83.19%	41.24%	94.79%	0.553	0.786
7	72.07%	83.33%	41.45%	94.8%	0.554	0.786
7.2	71.17%	84.81%	43.41%	94.73%	0.560	0.786
7.5	70.27%	84.96%	43.33%	94.58%	0.552	0.786
8	70.27%	85.1%	43.58%	94.59%	0.554	0.786
8.1	70.27%	86.14%	45.35%	94.65%	0.564	0.786
8.2	69.37%	86.28%	45.29%	94.51%	0.557	0.786
8.3	67.57%	86.73%	45.45%	94.23%	0.543	0.786
8.5	67.57%	87.17%	46.3%	94.26%	0.547	0.786
8.6	67.57%	87.32%	46.58%	94.27%	0.549	0.786
8.7	66.67%	87.32%	46.25%	94.12%	0.540	0.786
8.8	64.86%	87.32%	45.57%	93.82%	0.522	0.786
8.9	64.86%	87.46%	45.86%	93.83%	0.523	0.786
9	64.86%	87.61%	46.15%	93.84%	0.525	0.786
9.1	63.96%	89.23%	49.31%	93.8%	0.532	0.786
9.2	63.96%	89.38%	49.65%	93.81%	0.533	0.786

POD 5. Standardized Setups of Hugotm Robot-Assisted Surgery System for Inguinal Hernia Repair

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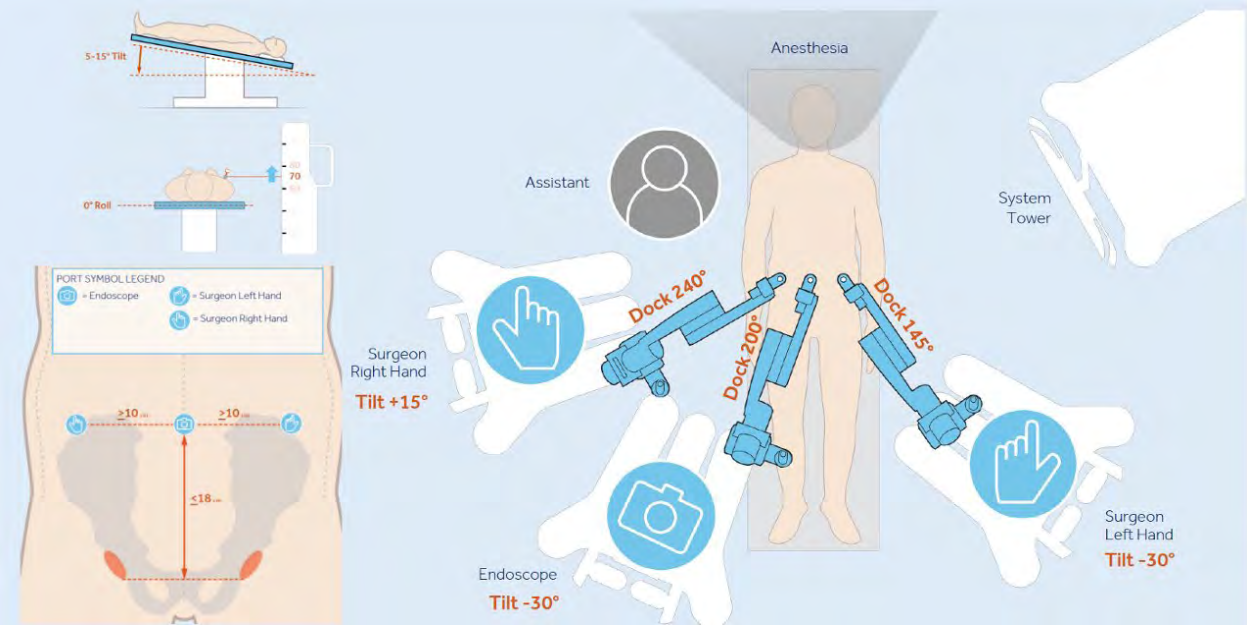
Background: The HugoTM Robotic-Assisted Surgery (RAS) System (Medtronic, Minneapolis, MN, USA), is a novel robotic platform that redefines the fundamentals of previous robotic multiport systems. HugoTM RAS stands out for its modular design made of four single-robotic-arm carts. This unlocks new possibilities for the setup of the robotic carts, which can approach the target anatomy from different positions while widening the range of movement. This preclinical study aims to standardize the setup of HugoTM RAS in terms of port positioning, corresponding robotic arms location and setting, and operative room configuration for abdominal wall surgery.

Methods: Weekly cadaver sessions (22 in total) were conducted with the participation of highly skilled surgeons and fellows at the Surgical Innovation and Training Laboratory at University of Illinois at Chicago. These sessions were focused on developing the final configurations for the inguinal hernia surgery, using over forty human cadavers as models. The primary objective was to evaluate the system dynamics and then, consecutively, fine-tune the setup of the operating room for hernia surgery.

Results: A three-ports approach has been chosen: the camera trocar is placed at the umbilicus while the other two ports are positioned in the transverse umbilical line at least 10cm away from the camera port. Two robotic carts are positioned on the patient's right and one on the left side. The bedside assistant stays on the patient's right while the system tower is on the left. The final configuration of the system and the specific setup of each robotic cart is described in Figure 1.

Conclusion: This is the first preclinical study assessing the feasibility and safety of the HugoTM Robot-Assisted Surgery System in abdominal wall surgery. The OR setups for both inguinal and ventral hernia repair were standardized in order to provide new users with a guide for their clinical practice.



P6. Short-term Outcomes for a Novel Non-Woven Polypropylene Mesh Used in All Types of Hernia Repair: A Clinical Quality Improvement (CQI) Project

J Trussell, J Yunis, B Farrow, K Van Sickle, J Kaufman, B Alvoid-Preston, R Forman, B Ramshaw
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Background: Most synthetic hernia mesh is produced through a mechanical weaving process (Figure 1). A novel non-woven synthetic mesh was designed producing a randomly oriented polypropylene microfiber scaffold (Figure 2). The random orientation of the polypropylene microfibers may be more biocompatible than other synthetic polymer meshes produced with a mechanical woven process.

Figure 1: Woven polypropylene mesh

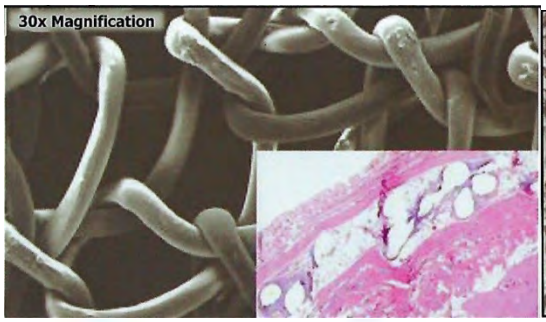
Figure 2: Non-woven polypropylene mesh

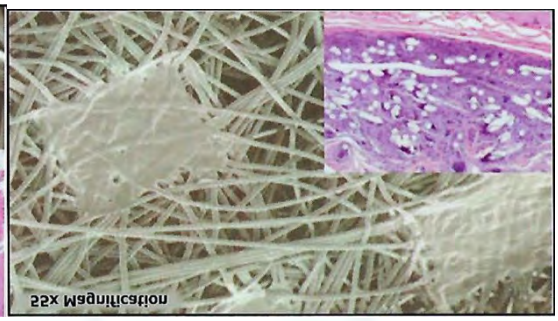
Methods: A de-centralized, multi-centered clinical quality improvement (CQI) project is a relatively new way to measure and improve outcomes using real-world clinical data. In this CQI project, after one clinical site evaluated the novel non-woven hernia mesh, several additional clinical sites were added to the CQI project. Each clinical site developed a unique dataset and used data analytics and visualization tools to gain insights to measure and attempt to improve outcomes. The clinical sites then met to collaboratively share their insights.

Results: Surgimesh was used to repair 227 hernias in 213 patients, including 174 ventral hernia repairs (VHR) in 172 patients and 53 inguinal hernia repairs (IHR) in 41 patients. Ventral hernia repairs included robotic (64), laparoscopic (64), open abdominal wall reconstruction (16) open (2) and combined (2) approaches. Inguinal hernia repairs included robotic (35) and open (6) approaches for right (16), left (13) and bilateral (12) inguinal hernias. Short term outcomes were good based on no mesh related complications. Mean length of stay for VHR was 2.3 days (range 0 – 39) and for IHR was 0.1 day (range 0 – 5). The overall complication rate was 21/172 (12.2%) ventral hernia repair complications and 1/41 (2.4%) inguinal hernia repair complications. Complications that could have impacted the mesh are listed in Table 1.

Table 1: Complications that could have impacted the mesh

Conclusion: A novel non-woven hernia mesh has been evaluated in a multi-center CQI project. The short-term results suggest that this new type of mesh has good outcomes in a broad range of inguinal and ventral hernia repair techniques including in the most complex patients. There were no mesh related complications and there was no mesh removal required despite patients who had seromas drained, abdominal wall bleeding, an early abdominal re-operation and significant wound complications. Additional data will help to evaluate the value of this novel mesh for long-term hernia repair outcomes.





Complication	Procedure	Consequence	Mesh Used
Seroma with drainage Seroma with drainage	Open VHR Open AWR	Minimal- 3 cc of fluid Large seroma, pt eventually did well	Surgimesh WN Surgimesh WN
Abdominal wall bleeding Abdominal wall hematoma	Laparoscopic VHR Robotic VHR	ED visit, no treatment Extended LOS	Surgimesh XB Surgimesh XB
Major wound complication	Open AWR	Major wound care, eventually did well	Surgimesh WN
Major wound complication	Open AWR	Major wound care, eventually did well	Surgimesh WN
Major wound complication	Open AWR	Major wound care including re-operation, eventually did well	Surgimesh XB
Re-operation for SBO (internal hernia, unrelated to VHR)	Robotic eTEP with unilateral TAR	Re-admission x2, re-operation 1.25 months post-op, prior mesh well integrated	Surgimesh WN

P7. Incidence Of Trocar Site Hernias In Minimally-Invasive Colorectal Cancer Surgery Patients

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Background: While the incidence of trocar site hernias (TSH) has been reported to be less than 1%, current literature suffers from inconsistent terminology and definitions. For example, some studies label TSH as incisional hernias while others include extraction sites as TSH. Additionally, true TSH are generally small and may be easily missed on routine imaging interpretation if asymptomatic. Our study sought to quantify the incidence of TSH following minimally invasive colorectal cancer surgery using dedicated hernia surgeons to interpret cross-axial imaging.

Methods: This was a retrospective, Institutional-Review-Board-approved chart review at a single institution that included adult patients who underwent minimally invasive colorectal cancer surgery and had cross-axial imaging within one to three years of their initial operation for any indication. Cross-axial imaging was reviewed independently by two abdominal wall reconstruction surgeons (CMH and EMP). TSH were defined as those resulting from 5 mm, 8 mm, 10 mm, and 12 mm trocars without any extension of the trocar site for specimen extraction. We also quantified the number of extraction site hernias (ESH), defined as hernias resulting from incisions made purely for specimen removal, and TSH-ESH hernias, defined as hernias resulting from extending the trocar site for specimen removal. Other incisional hernias, parastomal hernias, and hernias from prior stoma sites were excluded.

Results: 136 patients were included from 2017 to 2021. The mean age was 61 (SD 13.5), mean body mass index was 28.2 (SD 7.1), and 63.9% were male. The indication for operation was adenocarcinoma in 96% of our patients, with 58.8% being diagnosed with colon cancer and 41% diagnosed with rectal cancer. A total of 479 trocar sites were included and all trocars used were either radially dilating or blunt. Over half of the 479 trocar sites were from 5 mm trocars (62.4%), 18.4% were from 8 mm trocars, 0.2% were from 10 mm trocars, and 13.4% were from 12mm trocars. There was a 94.9% clinical follow-up rate within 3 years and 100% had cross-axial imaging. The TSH rate as identified by hernia surgeons was 1.04% (n=5) and these were located in the M2 (n=2), M4, L2, and L3 areas per EHS hernia classification. The ESH rate was 1.04% (n=5) and these were located in the M3 area (n=4) and the M2 area (n=1). The TSH-ESH rate was 0.21% (n=1) in the M3 area with extension of the infraumbilical trocar site to a lower midline incision. Clinically, all TSH, ESH, and TSH-ESH were asymptomatic.

Conclusion: Using strict definitions and imaging overreads with hernia surgeons, our study found that our TSH rate was comparable to the < 1% quoted in the literature. One limitation was the heterogeneity in operative reports and our study was unable to correlate trocar size with TSH rate. Future studies should consider comparing TSH across different surgical populations.

P8. Lap-Endoscopic Sublay/Extraperitoneal Sugarbaker Mesh Repair For Parastomal Hernia

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Background: Surgical repair of parastomal hernia (PSH) is one of the most challenging issue in hernia surgery. Multiple techniques have been described in the past few decades, most techniques are performed intraperitoneally and the Sugarbaker mesh repair is more favorable because of its better performance. However, recently, the endoscopic sublay/extraperitoneal mesh repair have gained its popularity in the field of ventral hernias repair. Now, we expanded the horizon of this techniques and applied it in the repair of PSH.

Methods: We applied the totally endoscopic sublay/extraperitoneal (TES) technique (which is similar to the TEP repair in inguinal hernia) and the TAPP technique in the PSH repair. According to the previous cancer radical surgery, we chose the operative approach individually. Normally, if previous was laparoscopic surgery, then we applied the TES approach now; otherwise, previous was open surgery, now we applied the TAPP approach. Only a mid-weight polypropylene mesh and few absorbable tacks was required. The mesh was deployed in a Sugarbaker configuration and confined with minimum tacks.

Results: In this 3-year study, 30 patients were enrolled, including 8 cases of type Ⅰ and 20 cases of type Ⅲ and two of the most challenging type Ⅳ PSH (EHS classification), among them, 20 cases were repaired by TES approach, and 10 were repaired by TAPP approach. All operations were successfully performed and without intraoperative complications. The mean operative time was 190min. Postoperative pain was mild and the mean VAS score was 3.2. The average postoperative hospital stay was 5.4 days and no recurrence was detected during a mean 1.4 years follow-up period.

Conclusion: Endoscopic sublay/extraperitoneal repair for parastomal hernia is technically feasible, it requires no anti-adhesive coated mesh and less traumatic fixation, then reduces the mesh-related complication and postoperative pain, making it more cost effective. The present described case series represent an early attempt to perform endoscopic sublay/extraperitoneal mesh repair for PSH.

P9. A New De-Centralized Method for Evaluating Clinical Data and Outcomes: A Multi-center Clinical Quality Improvement (CQI) Project for Hernia Repair

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CQInsights PBC

Background: The typical way that real-world clinical data is collected is through centralized clinical registries. These registries are usually sponsored by medical and surgical societies or industry. The problem with this approach is that centralized data analysis produces averages and not meaningful insights. Algorithms generated from these aggregated datasets have been shown to be potentially harmful to patient sub-populations, especially marginalized sub-populations that are not well-represented by averages. Principles of data science applied to healthcare include collecting data in a de-centralized method in the context of whole, definable patient care process(es) in each local clinical environment.

Methods: A de-centralized, multi-centered clinical quality improvement (CQI) project is a relatively new way to measure and improve outcomes using real-world clinical data. This CQI project was sponsored by an industry partner to evaluate the performance of their hernia mesh product, Surgimesh, in the real-world patient care setting for ventral and inguinal hernia repair. Each clinical site developed a unique dataset and used data analytics and visualization tools to gain insights to improve outcomes. The clinical sites then met to collaboratively share their data analysis and insights in an attempt to improve outcomes. At two clinical sites, automated data acquisition and cleaning were deployed.

Results: Many lessons were learned in evaluating real-world clinical data from multiple clinical sites. First, there are always data gaps. These gaps occur for a variety of reasons. Sometimes data that should be documented is not. Also, there are data gaps because we don't have a good mechanism for acquiring the data. This is especially a problem in hernia disease for long-term follow-up data. Another issue is data conflicts. For example, the size of the hernia defect documented in a CT scan is often different than the documented defect size in the operative report. At this point in the CQI project, automated data extraction for entire text groupings has been successful. Using software to acquire specific data points is a work in progress.

Table 1: The number of patients, types of procedures, and use of Surgimesh at each clinical site with totals.

Conclusion: In less than a year, data was collected and analyzed from multiple clinical sites using human and automated data extraction. A variety of data issues, including gaps, conflicts, and errors, were identified and resolved. Using data analysis and visualization tools, the datasets will be used to attempt to improve patient outcomes and to understand the value of Surgimesh. In the future, financial data will be included in the datasets allowing value-based outcomes to be measured and improved. A new method for measuring and improving outcomes in healthcare may help facilitate a sustainable healthcare system based on value for patients.

Surgimesh CQI Project Clinical Sites (CS)	Inguinal Total	Surgimesh Inguinal (patients/hernia repairs)	Ventral Total (patients/hernia repairs)	Surgimesh Ventral (patients/hernia repairs)	All Total Hernia Repairs (patients/hernia repairs)	All Surgimesh Hernia Repairs (patients/hernia repairs)
CS #1	0	0	261/262	78 /79	261/262	78 / 79
CS #2	41/53	41 / 53	63/63	62 / 62	104/116	103 / 115
CS #3	110/131	0	78/79	3 / 4	188/210	3 / 4
CS #4	0	0	185/185	5 / 5	185/185	5 / 5
CS #5	0	0	22/22	22 /22	22/22	22 / 22
CS #6	0	0	2/2	2 / 2	2/2	2 / 2
Total	151/184	41 / 53	611/613	172 / 174	762/797	213 / 227

P10. 10 Years Of Usage Of A Self Adhesive Mesh In TAPP Hernia Repair. Long Term Result Of A Prospective Study Based On European Herniamed Register.

P Klobusicky, P Feyerherd
Helios St. Elisabeth Hospital Bad Kissingen

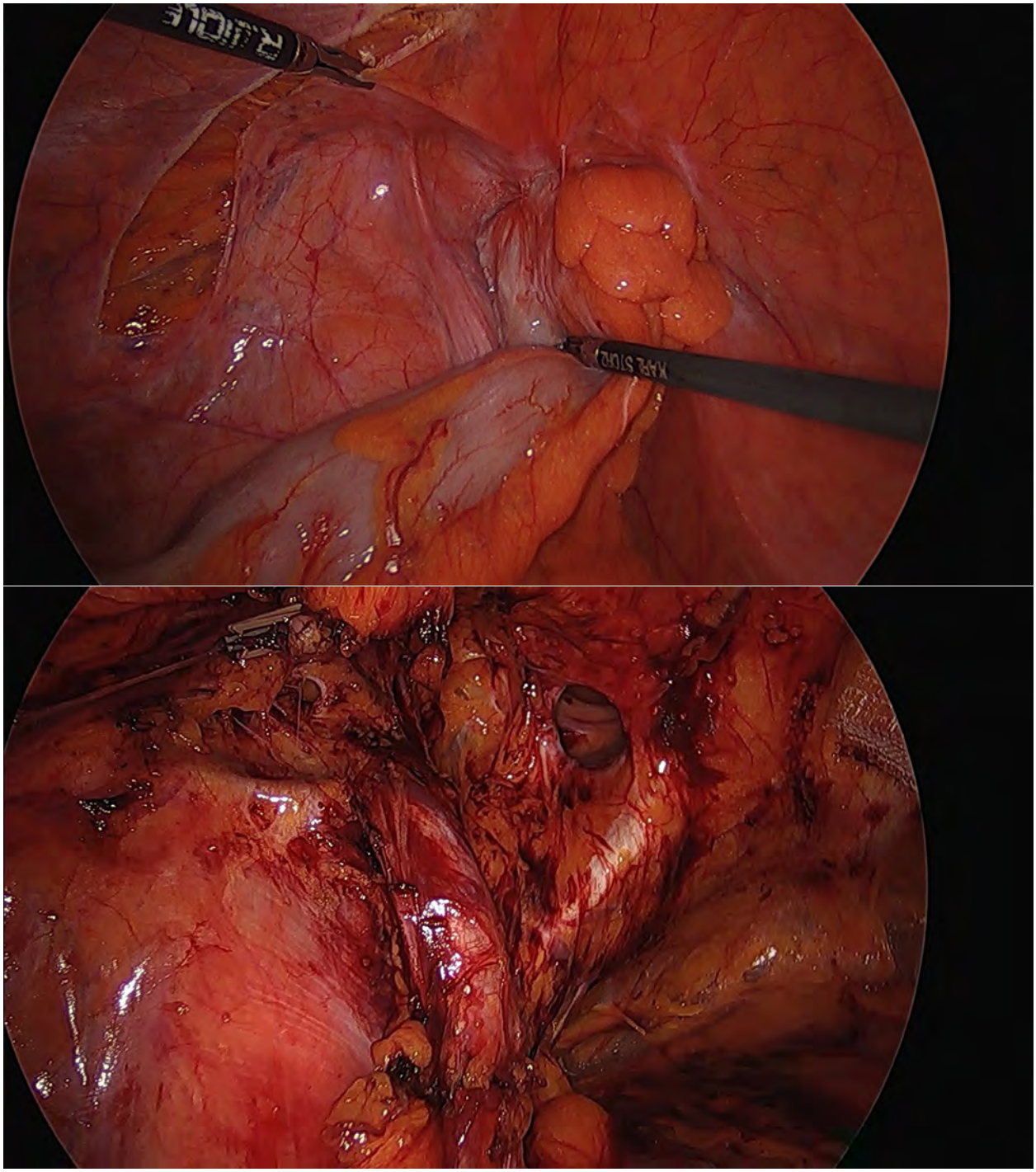
Background: Inguinal hernia repair is one of the most frequently performed surgical procedures worldwide in general surgery. Trans-abdominal laparoscopic (TAPP) approach in the therapy of inguinal hernia seems to be a suitable alternative to classical open inguinal hernia repair mainly in the hands of an experienced surgeon. For the fixation of mesh to the required position is used surface of the mesh, which after contact with tissue and combination with fine mechanical pressure creates solid connection, which prevents secondary shift or migration of the mesh, so there is no need of further fixation of the mesh.

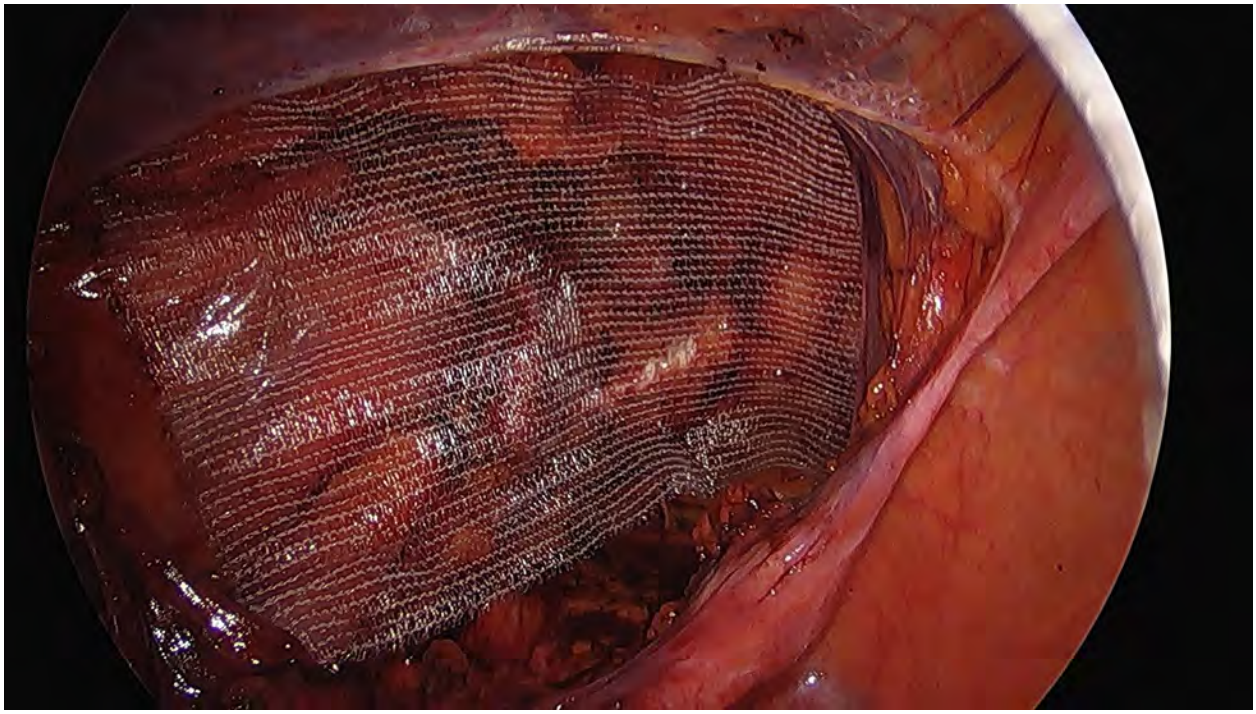
Method: Data analysis included all patients, who underwent inguinal hernia surgery at the Surgical Department in Bad Kissingen within the period from 1.1.2013 to 1.1.2023, who fulfilled the inclusion criteria. Standard surgical technique was used. Data were entered and subsequently analysed on Herniamed Register platform. There were 1550 patients enrolled to the demonstrated group and there were totally 2199 inguinal hernias repaired. From the demographic point of view there were 1328 men (86%) and 222 women (14%) n=1550

Long term follow up, recurrence and chronic pain evaluation: Standard long term follow up after 12 and 60 months was evaluated. Long term follow up was performed with standard questionnaire according to Herniamed Register platform.

Results: Our study as well as long term experience with self-fixation mesh demonstrates, that laparoscopic inguinal hernia repair using TAPP technique with implantation of a self-fixation mesh is fast, effective, reliable and economically advantageous method in experienced hands, which combines the advantages of laparoscopic approach with simple and practical implantation of self-fixation mesh.

Conclusion: In benchmark data to the full data set of Herniamed Register, our technique seems to be safer, with fewer postop. complications and better long term outcome.





P12. The Resident Drag Factor: Robotic Hernia Repair

A Mikhail, K Leblanc, D Cobb, Y Kawji, C Issa, L Daniels
Louisiana State University

Background: Increasing operating room efficiency can increase the revenue of a hospital. Resident education undoubtedly increases operating room time thus costing hospitals money. It would be unethical to reduce surgical training programs in an effort to save money as the general public relies on a steady stream of young physicians to fuel the workforce. To date, there is little objective data to show the difference in operating room time between attending and trainees. This study was designed to compare the differences in console time and total procedure time amongst cases (robotic ventral hernia repair and robotic inguinal hernia repair) where a trainee (resident or fellow) assisted the surgery compared to cases performed by an attending only.

Methods: This is a retrospective review of patients undergoing robotic ventral and robotic inguinal hernia repair by Dr. Karl Leblanc or his trainee (general surgery resident or minimally invasive surgery fellow) between 2014 and 2023. Total console time and post console time (defined as time to procedure completion after console time ended) was compared amongst each group (resident, fellow, or attending only).

Results: A total of 527 cases were reviewed. 157 were performed with a fellow assistant, 231 by a resident assistant, and 139 by attending only. The median console time for each group was 106 minutes, 72 minutes, and 48 minutes respectively. The median post console time was 22 minutes, 22 minutes, and 21 minutes respectively.

Conclusion: Cases that involve a trainee (resident or fellow) increase operating room time compared to cases that did not involve a trainee in robotic ventral hernia repair and robotic inguinal hernia repair. Interestingly, cases involving a fellow take longer than cases involving a resident.

*Note: We are actively working with a statistician to further analyze our results. These results are preliminary. Further analysis to come.

P13. Robotic eTEP with Unilateral TAR for Midline and Kidney Transplant Incisional Hernias

E Johnson, K Harold, M Nelson, D Pearson
Mayo Clinic Arizona

Background: Robotic abdominal wall reconstruction has increased in popularity over the past decade as more surgeons are learning robotic techniques. The retrorectus plane is most commonly accessed using the extended totally extraperitoneal repair (eTEP) approach. For the reconstruction of large midline hernias, as well as hernias through or lateral to the semilunar line, a transversus abdominis release (TAR) can be readily performed from the eTEP approach. Demonstrated here is a unique case utilizing eTEP access with unilateral TAR in a patient with both midline and lateral abdominal wall incisional hernias from two prior kidney transplants. Intraoperatively, the patient was found to have an inguinal incisional hernia that was not apparent on preoperative imaging. This approach allowed for the reconstruction of the entire disrupted abdominal wall. This case demonstrates the safe and effective use of multiple robotic techniques to complete a minimally invasive repair in a kidney transplant patient with complex abdominal wall hernias.

P14. Benefits of ERAS protocol and Robotic Surgery for Complex Ventral Hernia Repair: A Quality Improvement Study

A Garza, G Arevalo
Methodist Hospital Willowbrook

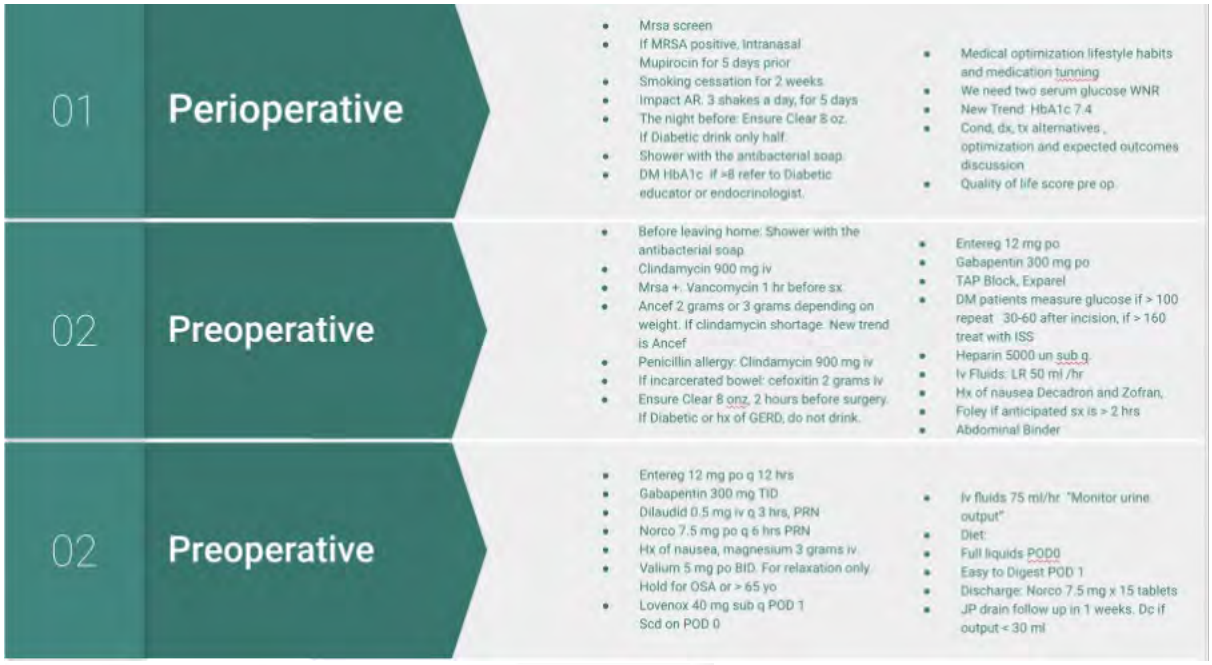
Background: Open Ventral Hernia Repair (VHR) for complex abdominal wall repairs (AWR) is associated with prolonged hospital stay; there is scarce literature about the QoL after AWR. The Enhanced Recovery After Surgery (ERAS) protocol is designed to reduce the length of hospital stay (LOS) and improve outcomes. ERAS protocol has proven to improve outcomes in other surgical fields. Robotic surgery has attracted attention for its potential positive impact on surgical outcomes compared to open surgery. The synergy of these two entities can lead to better outcomes. Our main goal is to demonstrate the improvement in quality of life and long-term surgical outcomes of these two approaches.

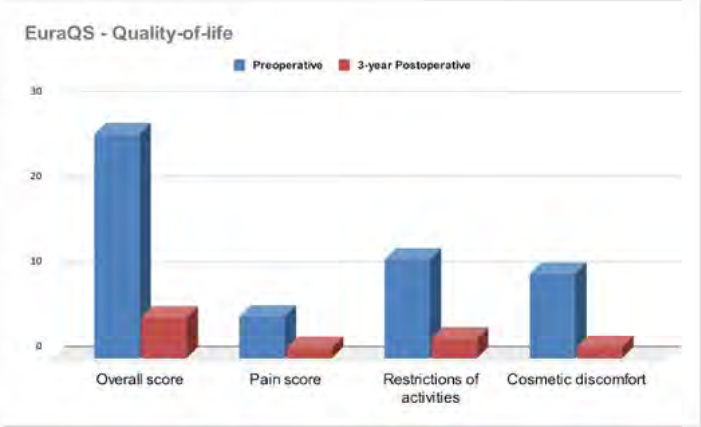
ERAS protocol is used in the pre, peri, and postoperative courses. It aims to reduce the harmful effects of surgery on the body and help patients recover better after surgery. We hypothesized that our ERAS pathway combined with robotic surgery would accelerate functional recovery and shorten hospitalization and improve the quality of life in patients undergoing abdominal wall reconstruction.

Methods: A retrospective review of a prospectively maintained database identified 101 patients who underwent minimally invasive hernia repair and ERAS at our institution. Patients were followed up at 2 weeks, 3 months, 1 year, and 3 years. These actions were carried out between August 2018 and January 2022. Patient demographics were collected, and ERAS was approved in all patients. The ERAS pathways include: All patients underwent robotic abdominal wall reconstruction. Results were measured using a quality questionnaire. The data on which we focused was the quality-of-life questionnaire. The quality of life score used for pre and post-op was the European Hernia Society Quality of Life focused on ventral abdominal wall hernias single institution.

Results: One hundred and one consecutive robotic procedures were analyzed. Demographics are depicted in Table 1. Patients without transverse abdominal release (TAR) were discharged the same day, with a mean length of stay (LOS) of < 0.1, and the mean with TAR was 2.3 days (Table 2). The overall EuraHS score improved after surgery both in the global score and in the three elementary components of quality of life being assessed: pain, activity restriction, and cosmetic discomfort. The EuraHS score is a useful tool for measuring the success of hernia surgery. It was designed to be used with verbal numerical rating scales that are considered more effective and have lower failure rates than visual analog scales.

Conclusion: Our comprehensive ERAS pathway in synergy with robotics surgery was associated with a short LOS, fewer systemic complications, and an improvement in QoL. Although there is little evidence about the ERAS pathway and Robotic Hernia Surgery, we advocate the selective use of robotics for complex AWR, and that our ERAS pathway be implemented across the Methodist system.





Surgical Outcomes for Quality-of-life

	Preoperative	3 YPO
EuraHS-QoL, *mean±SD [median]*	26.4 (14.5) [20]	4.8 (2.2) [4]*
Pain	4.9 (3.8) [4]	1.2 (0.9) [1]*
Activities	11.6 (7.9) [10]	2.3 (1.4) [2]*
Cosmetic	9.9 (5.7) [9]	1.3 (0.9) [1]*

YPO years postopertive; EuraHS-QoL European Hernia Society quality-of-life

*significant results compared to preop, p <0.05

Wilcoxon signed rank test for p-significance

P15. Robotic Thoraco-Abdominal Hernia Repair

D Lima, P Sreeramoju
Montefiore Medical Center

Background: A 75 y/o male presented to the clinic with a large left flank incisional hernia after an open AAA repair by posterolateral approach. His CT scan showed an intercostal hernia between the 9th and 10th ribs and a flank hernia containing most of his small bowel and descending colon and fat. His medical history is significant for hypertension, Coronary Artery Disease, hyperlipidemia, and Methicillin-resistant Staphylococcus aureus (MRSA) infections. After pre-operative medical optimization, he was scheduled for a robotic hernia repair with mesh.

Methods: We planned for an enhanced total extraperitoneal (eTEP) with a unilateral transverse abdominis muscle (TAR) release and executed it using a robotic platform. The patient was positioned in the right lateral decubitus position after general anesthesia. Left retrorectus space was created with an optical trocar, and three robotic 8 mm trocars were placed in the medial retrorectus space under direct visualization. Robot was docked. TAR was performed after identifying and preserving the neurovascular bundle in a top-down fashion. Hernial contents were reduced, and most of the hernia sac was recruited for posterior layer coverage. The pre-transversalis plane was circumferentially dissected until we had a good 5-7cm overlap for mesh coverage, posteriorly over the thoracodorsal fascia, quadratus lumborum, and Psoas fascia, cranially under the diaphragm, caudally up to the anterior superior iliac spine and iliopubic tract. Two hernial defects were identified as demonstrated on the CT scan, measuring a 5cm x 9cm intercostal hernia between the 9th and 10th ribs and a left lateral hernia in L1, L2, L4 region as per EHS classification measuring 15cm x 11cm. Hernial defects were closed with the help of a 0 nonabsorbable barbed suture in a continuous fashion, restoring the Linea semilunaris. Once the lateral abdominal muscles were reattached to the linea semilunaris, the posterior layer peritoneal defect was closed with the help of a 3-0 barbed suture. A self-gripping polyester mesh was positioned, covering the entire retromuscular region from the medial edge of the left rectus muscle to the left thoracodorsal fascia, extending over to the diaphragm. The effective mesh area was 30 x 22 cm. We used sealant glue for additional hemostasis. A drain was placed in the retromuscular space under the mesh.

Results: The patient tolerated the procedure well. His postoperative course was uncomplicated except for sub-segmental bilateral pulmonary emboli needing only supplemental oxygen by nasal cannula. His venous duplex was negative for deep venous thrombosis. His postoperative follow-up in 30 days and 3 months demonstrated no recurrence or SSO.

P16. A Single Center's Three-Year Experience Utilizing the Polypropylene T-Line® Mesh for Abdominal Wall Reconstruction

A Volk, D Tran, F Malcher, J Levine
New York University Langone Health

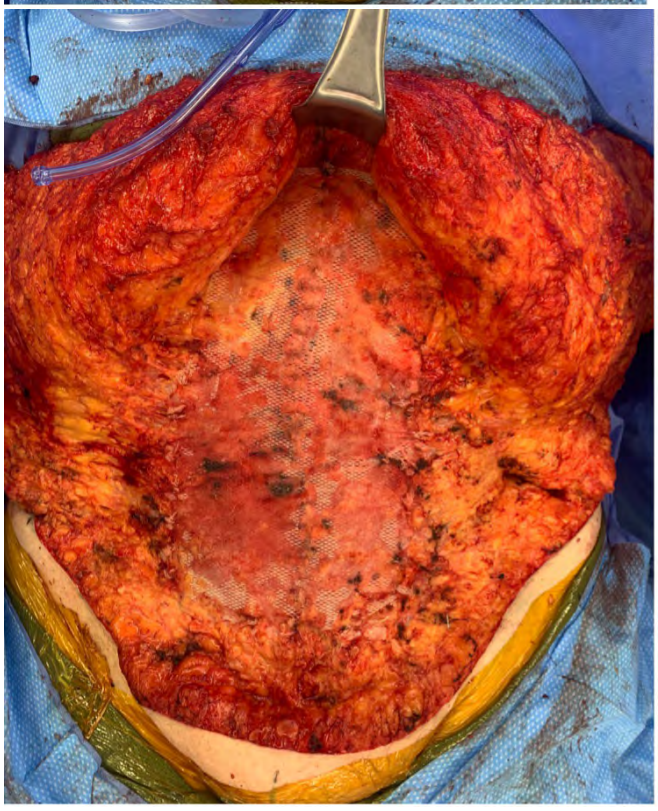
Background: The T-Line® Hernia Mesh (Deep Blue Medical Advances, Durham, North Carolina) is a polypropylene mesh with incorporated mesh extension sutures. These mesh extension sutures offer tension distribution at the suture and tissue interface to prevent suture-tissue tear and ultimate hernia recurrence. This study reports a large, single center's experience utilizing the T-Line® mesh in abdominal wall reconstruction.

Methods: A retrospective study identified patients who underwent abdominal wall reconstruction utilizing the TLine® mesh at a single academic center from October 2021 through January 2023. All surgeries were performed by the two senior authors (F.M. and J.P.L). Patient demographics and medical comorbidities were recorded. Outcomes were evaluated including operative details, complications, and hernia recurrence. Additionally, a survey was administered to patients post-operatively to analyze patient reported outcomes.

Results: A total of 18 patients (13 females, 5 males) underwent open abdominal wall reconstruction utilizing an onlay TLine® mesh during the study period. The mean age was 61.7 years (range 37-80) with an average BMI of 30.9 (range 22.1-42.1). The most common medical comorbidities were hypertension (13 patients) and diabetes (3 patients). 8 patients had a prior abdominal hernia repair (3 open repairs with mesh, 3 robotic repairs with mesh, 2 unknown prior repairs). The average surface area of mesh utilized was 455.5cm2 (range 190-600cm2). 8 patients had a concomitant panniculectomy. There were no hospital readmissions, and no significant in hospital or post-operative complications. The average length of follow-up was 184 days with no evidence of hernia recurrence.

The survey response rate was 61% at an average time of 410 days since surgery (range 132-477 days). Only 1 person reported feeling that their hernia recurred and reported seeing a bulge, however, no recurrence was noted at their follow-up exam. Many patients felt strongly that their abdominal wall had a great impact on their lives, however, there was little reported interference with activities of daily living associated with their abdominal wall.

Conclusion: This study reveals that use of the TLine® mesh for abdominal wall reconstruction is safe, with no observed complications, and effective in preventing hernia recurrence. Additionally, patient reported outcomes revealed that after hernia repair with the TLine® mesh, the abdominal wall did not negatively impact their quality of life.



P18. Comparation Between Small Bites, RTL And Mesh For Prevention Of Abdominal Wound Dehiscence. Systematic Review And Network Meta-Analysis.

A Abarca Magallon, E Lozada Hernández, S Carlos Jimenez, J Alaniz Ruiz
Regional Hospital of High Specialty of Bajio

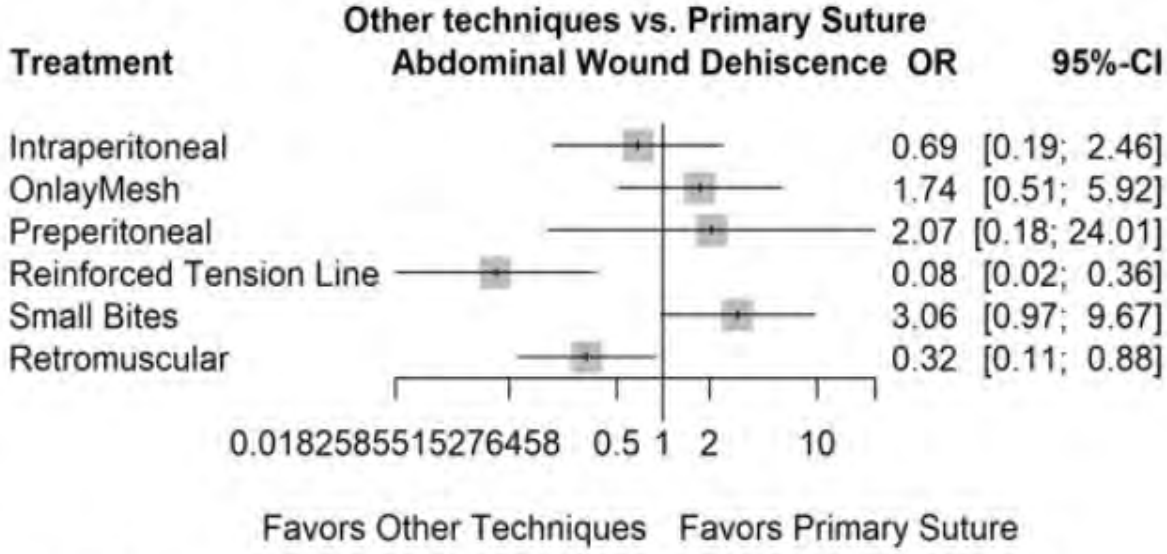
Background: Abdominal Wound Dehiscence (AWD) is the occurrence of acute PO failure of the fascial closure of the abdominal wall, which has an incidence of 3% midline laparotomy, but in emergency surgery & high-risk patients can be 14%.This is a serious complication because it is associated with high morbidity (75%) and mortality (45%), and decreased survival to 5 years in 42.4% of patients that present it. The prevention of AWD has 3 strategies: 1. Prehabilitation, 2. Modifying the closure technique and 3. using meshes to reinforce the closure. The impact of prehabilitation on the reduction of AWD has not yet been determined. Therefore, at present, the options for reducing the incidence of this complication focus on the use of prophylactic meshes and on modifying the laparotomy closure technique. Evidence indicates that the use of mesh is a safe and effective procedure in both clean and clean-contaminated surgery, but there is insufficient evidence for contaminated or dirty surgeries; nonetheless, its use has not yet become widespread. In the modification of the closure technique, only two techniques have proven to be useful in the prevention of this complication, RTL and Small Bites like those obtained with the use of mesh. The objective of this network meta-analysis is to evaluate the safety and efficacy of RTL and Small Bites techniques compared with mesh for reducing the incidence of AWD and to describe the complications associated with the implementation of these techniques to provide objective support for their recommendation.

Methods: A network meta-analysis was performed according to the PRISMA-NMA guidelines. The primary objective was to determine the effect on the decrease in the incidence of AWD comparing RTL Small Bites and prophylactic mesh and the secondary objective was to determine the incidence of postoperative complications. Only published clinical trials were included. The risk of bias was analyzed, and the random effects model was used to determine statistical significance.

Results: 17 studies that used prophylactic mesh were analyzed and 8 (47%) did not report the occurrence of AWD, in addition to 4 studies that compared the use of small bites and 2 RTL. 3498 patients were analyzed. 91 patients presented AWD with an incidence of 2.6%. In the meta-analysis, it was found that only RTL and retromuscular position of the mesh decreased the incidence of this complication by 0.08(0.02-0.36) and 0.32(0.11-0.88) respectively. The P-score determines the possibility that each of the techniques has of being the best and accordingly, the best techniques are RTL, Small Bites, and intraperitoneal mesh with a value of 0.98, 0.79, and 0.58 respectively. Limitations of the analysis included differences in patient selection, diagnostic **Methods**, and the reporting of postoperative complications among the studies.

Conclusion: RTL and retromuscular mesh are useful for reducing the incidence of AWD with no difference in complications, an issue that is taken with reservation because not all the authors reported them. The use of mesh continues to be the standard and RTL has proven to be the most useful non-mesh technique in preventing this complication.

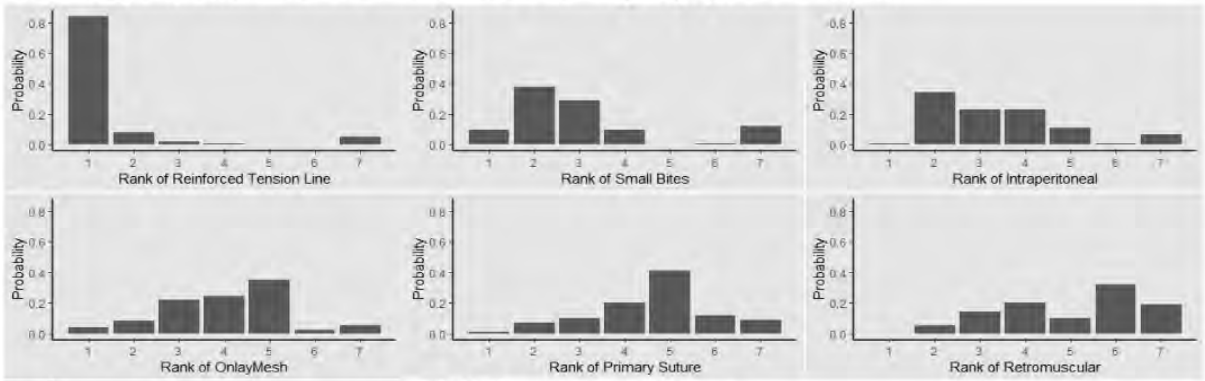
Forest plot: Prevention of abdominal wall dehiscence



Test of inconsistency (between designs):
Q d.f. p-value 0.86 2 0.6518

Indirect comparison of Small Bites, RTL and Mesh						
Intraperitoneal	0.761 (0.141, 4.115)	0.333 (0.021, 5.280)	0.687 (0.192, 2.464)	5.183 (0.789, 34.066)	0.357 (0.069, 1.843)	1.366 (0.280, 6.670)
1.314 (0.243, 7.106)	OnlayMesh	0.437 (0.030, 6.434)	0.903 (0.299, 2.724)	6.811 (1.160, 39.997)	0.469 (0.181, 1.216)	1.795 (0.461, 6.991)
3.007 (0.189, 47.737)	2.288 (0.155, 33.687)	Preperitoneal	2.067 (0.178, 24.006)	15.583 (0.933, 260.395)	1.074 (0.075, 15.361)	4.108 (0.297, 56.792)
1.455 (0.406, 5.215)	1.107 (0.367, 3.339)	0.484 (0.042, 5.620)	Primary Suture	7.541 (1.889, 30.093)	0.520 (0.185, 1.457)	1.988 (0.776, 5.089)
0.193 (0.029, 1.268)	0.147 (0.025, 0.862)	0.064 (0.004, 1.072)	0.133 (0.033, 0.529)	Reinforced Tension Line	0.069 (0.012, 0.387)	0.264 (0.049, 1.405)
2.799 (0.543, 14.439)	2.130 (0.823, 5.515)	0.931 (0.065, 13.310)	1.924 (0.686, 5.392)	14.507 (2.583, 81.459)	Retromuscular	3.824 (0.999, 14.641)
0.732 (0.150, 3.573)	0.557 (0.143, 2.169)	0.243 (0.018, 3.365)	0.503 (0.196, 1.288)	3.794 (0.712, 20.214)	0.262 (0.068, 1.001)	Small Bites

Rankogram and P-score of SB, RTL and prophylactic Mesh



Technique	P-score
Reinforced Tension Line	0.9831
Small Bites	0.7956
Intraperitoneal	0.5831
Primary Suture	0.4665
OnlayMesh	0.2970
Preperitoneal	0.2764
Retromuscular	0.0984

P19. Improved Outcomes After Inguinal Hernia Surgery In Sweden Between 1992 And 2021: Swedish Hernia Register

E Axman, H Holmberg, E Nilsson, J Österberg, U Dahlstrand, A Montgomery, P Nordin, H de la Croix
Sahlgrenska University Hospital

Background: Surgery for inguinal hernia is one of the most common operations in the world. Research concerning the outcome of inguinal hernia surgery is, therefore, of great importance for the individual patient as well as for the society providing the healthcare costs. The Swedish Hernia Register was established in 1992 and provides data with national coverage from 30 years of prospectively registered hernia repairs. Our aim is to evaluate the outcome of hernia surgery in Sweden from 1992 to 2021.

Methods: All inguinal hernia repairs registered in the Swedish Hernia Register between 1992 to 2021 were analysed with emphasis on the surgical method, rate of reoperation for recurrence and time period of operation, specifically 1992-2001, 2002-2011 and 2012-2021. By using personal identification numbers, a cumulative rate of reoperations has been deduced for males and females separately.

Results: In total, 368 502 inguinal hernia operations in the Swedish Hernia Register between 1992 to 2021 were eligible for analysis. Since the start of the register, significant changes can be seen in the choice of operative techniques, from suture repair in 1992 to open anterior mesh repair around the year 2000 until today, where an increasing proportion of hernias are repaired with laparo-endoscopic techniques. The rate of day case surgery has increased greatly, and a reduction in the rate of reoperation for recurrence has been seen in both males and females, where the most pronounced improvement is seen in females.

Conclusion: Inguinal hernia surgery in Sweden has undergone substantial changes during the past 30 years. Taken together, reoperation for recurrence has decreased significantly during the latter years, especially in females and the proportion of day-case surgery has increased.

P20. Sex Differences In Preoperative And Acute Postoperative Pain Among Primary Unilateral Inguinal Hernia Repair Patients

M Mainprize, F Spencer Netto, A Svendrovski, J Katz
Shouldice Hospital

Background: Little is known about sex differences in primary unilateral hernia-related pain and inguinal hernia repair is relatively rare in females so there are few studies with sufficient sample size to compare sexes in a matched way. The objective was to compare pain and related psychological factors during the preoperative [PO] and acute postoperative period (3-days [3D] and 2-weeks [2W]) between male and female patients, who underwent primary unilateral inguinal hernia repair.

Methods: After REB approval, informed consent was obtained, and data was collected. The study compared male and female participants by one-to-one manually matching the pairs based off sex (male to female), on 10 clinical and demographic variables potentially related to pain. Descriptive statistics were used (mean± standard deviation) and pain severity was measured by numerical rating scale [NRS] from 0-10. Comparison between the sexes was performed using Chi-square or Fisher's Exact test for categorical data and independent samples t-test or non-parametric equivalent (Mann-Whitney) tests for numerical scores. $P< 0.05$ is reported as statistically significant. To control for type I error, Bonferroni correction was used to adjust the level of significance.

Results: The results included 72 participants with 36 pairs matched on age, BMI [deciles], smoking, PO depression and anxiety symptoms, living alone, health classification, PO persistent pain, PO hernia pain, PO pain catastrophizing, and nerve handling. Operation length was longer in males, by 8.5±2.75 minutes (p=0.006). Males had more right sided hernias whereas females had more left sided hernias (p=0.002). Females had a higher incidence of indirect hernias whereas males had more direct and both indirect and direct hernias (p=0.013). “Worst” pain severity scores at the 2W assessment (female:3.08±2.36; male: 2.00±1.88) (p=0.045) and the PO NRS pain rating score when sitting down for more than 30 minutes (male: 3.40±1.34; female: 5.40±0.55) (p=0.017) were higher in females. We conducted an unmatched analysis including all participants and results were not substantially different from the matched analysis.

Conclusion: When controlling for known confounders and using a conservative Type I error rate, pain and related factors between the sexes did not differ greatly. Female patients reported higher preoperative pain when sitting and higher worst acute postoperative pain scores 2 weeks after surgery. These findings are consistent with other studies that show females report higher acute pain scores than males after several types of surgery but to our knowledge this is one of very few studies to evaluate sex differences in acute pain after inguinal hernia repair.

P21. Use Of Arista For Robotic Retro-Muscular Abdominal Reconstruction

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Background: Development of postoperative seroma and/or hematoma in a surgical wound is often considered an expected outcome rather than a complication [1,2,3], especially among patients undergoing large ventral hernia repairs with prosthetic mesh, irrespective of the technique used [4].

The purpose of this study was to study the efficacy of the FDA-approved hemostatic agent Arista in decreasing drain output per day and the length of duration of drains needed in patients who have had the product applied to the surface of the prosthetic mesh in the retro rectus space after undergoing a robotic-assisted retro muscular hernia repairs [5].

Methods: 59 patients undergoing elective robotic-assisted ventral hernia surgeries were randomized (using Redcap) into cases and controls, with their due consent.

The intervention group including eTEP Rives, and robotic TAR, were administered 5gm of AristaTM, in accordance with the standard FDA-approved labeling, to help obtain hemostasis and seroma control. All subjects had a drain placed in the retro-muscular space at the end of surgery, as a part of standard practice.

Patients were asked to document the daily output of their drains and were followed up following a week, and then 4-6 weeks after surgery. Hematomas/Seromas were diagnosed clinically either by physical exam or postoperative imaging including US and CT scans.

Statistical analysis was done using SPSS 29.0. Wilcoxon Rank sum test and Chi-squared Fisher's exact test were used to compare the continuous and categorical variables respectively.

Results: In the preliminary analysis of our ongoing study, AristaTM has not been currently shown to reduce drain output as initially hypothesized.

The rate of postoperative day 1 drain output was 88% higher [p-value 0.001] and the rate of total drain output was 56% higher in the group that received Arista [p-value 0.007]-both incidence rate ratios controlled for by surgical approach (eTEP versus eTEP with TAR) and estimated blood loss.

Conclusion: Arista has not currently been shown to reduce drain output as initially hypothesized, although its effectiveness in reducing the incidence of seroma or hematoma is yet to be determined. The AURoRA trial is expected to be completed by the year's end.

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P23. Predictors Of Bowel Injury In Incisional Hernia Repair

M Javed, R Tamer, M Al-Mansour
University of Florida

Background: Bowel injury is a potentially devastating complication of incisional hernia repair (IHR). The predictors of bowel injury have not been adequately studied. Therefore, we sought to explore and evaluate predictors of bowel injury in IHR patients using a hernia-specific national database.

Methods: The Abdominal Core Health Quality Collaborative database was retrospectively queried for IHR. Patients who underwent IHR were divided into two groups depending on the occurrence of bowel injury. Mixed-effects logistic regression was used to identify risk factors for bowel injury following incisional hernia repair.

Results: A total of 25,325 patients were included, out of which 3% developed bowel injury (n=760) and 1.71% of these injuries (n=13) went undetected intraoperatively. Compared to cases without bowel injury, those with bowel injury were associated with longer median length of stay (5 versus 2 days), readmission (15% versus 6%), reoperation (7% versus 2%), surgical site infection (15% vs. 4%) and mortality (3% vs. 1%) within 30-days. Bivariate analysis showed that bowel injury was associated with older age, African-American race, Medicare insurance, higher socioeconomic distress, rural ZIP code, academic surgeon affiliation, higher American Society of Anesthesiology class, history of abdominal wall infection, parastomal hernia, recurrent hernia status, presence of stoma, history of component separation, larger hernia width and length, prior mesh presence, open approach and myofascial release, all $p < 0.05$. However, on multivariate analysis, anticoagulant use (OR=1.37, 95% CI [1.00,1.88]), the presence of a stoma (OR=1.45, 95% CI [1.04,2.03]), both parastomal & incisional hernia repair (OR=1.58, 95% CI [1.08,2.30]) and robotic approach (OR=2.0, 95% CI [1.46,2.73]) were associated with higher probability of bowel injury. African-American race (OR=0.60, 95% CI [0.46,0.77]), history of abdominal wall infection (OR=0.80,95% CI [0.6,0.96]), conversion from minimally invasive to open surgery (OR=0.16,95% CI [0.12,0.22]) and myofascial release (OR=0.75, 95% CI 0.61,0.93]) were associated with lower probability of bowel injury.

Conclusion: Bowel injury is an uncommon complication of incisional hernia repair and is associated with worse morbidity and mortality. We identified a number of risk factors that are associated with increased as well as decreased probability of bowel injury in this cohort.

P24. Transinguinal Preperitoneal Repair of A Recurrent Femoral Hernia With An Adjacent Ipsilateral Permanent Ostomy

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University of Florida, Gainesville

Background: This video submission showcases an open repair of a recurrent right femoral hernia using the trans-inguinal preperitoneal approach. The patient, a 74-year-old female, presented with a recurrent right femoral hernia 9 months following an emergent repair for strangulation. At that time a transverse groin incision was made, the femoral ring was enlarged by incising the inguinal ligament, a 10 cm segment of necrotic small bowel was resected, and a piece of polyglactin mesh was rolled and used to "plug" the femoral canal. The patient's past surgical history includes a laparoscopic total proctocolectomy for ulcerative colitis with a right lower quadrant ileostomy making minimally invasive femoral hernia repair not feasible. Therefore, we elected to proceed with an open preperitoneal mesh repair. The procedure involved a transverse right groin incision, dissection of the femoral hernia sac from surrounding subcutaneous tissue below the inguinal ligament, accessing the inguinal canal, division of the round ligament and incising the inguinal canal floor to access the preperitoneal plane. After reducing the femoral hernia sac, an enlarged femoral ring was encountered. The spaces of Bogros and Retzius were developed laterally and medially, respectively. A 8.5 x 14 cm pre-shaped heavyweight polypropelene mesh was placed in the preperitoneal plane and fixed to Cooper's ligament and the undersurface of the right rectus muscle with absorbable suture. Both the floor of the inguinal canal and the dilated femoral ring were closed with absorbable sutures. The immediate postoperative course was uncomplicated.

P27. Comparison of Permanent Synthetic vs Biologic and Absorbable Mesh for Open Parastomal Hernia Repair

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Vanderbilt University Medical Center

Background: Hernia repair in the setting of contaminated fields (CDC Class II & III) has traditionally been performed with avoidance of permanent synthetic mesh to limit morbidity from infection, often at the cost of higher recurrence and expenses from biologic mesh. However, there is recent evidence challenging this dogma and showing the safety of permanent synthetic mesh in contaminated fields. This is especially promising for open parastomal hernia repairs, which are common elective and contaminated procedures with high recurrence rates of approximately 60% and 16% respectively, when done primarily or with biologic mesh. While there are many approaches, the onlay technique for open parastomal hernia repair utilizing midweight microporous permanent synthetic mesh in urgent/emergent situations has become highly utilized due to the technical simplicity, avoidance of reentering re-operative abdomen, and minimal exposure of prosthetic material to bowel. We set out to compare short-term rates of recurrence and complications between permanent synthetic mesh versus biologic and absorbable mesh in onlay parastomal hernia repairs among adults in the Abdominal Core Health Quality Collaborative (ACHQC) database.

Methods: Utilizing the ACHQC database, all adult patients who underwent onlay parastomal hernia repairs were included in our retrospective analysis. Our primary outcomes include recurrence rate at 30 days and major complications at 30 days, with focus on surgical site infection (SSI), surgical site occurrence (SSO), and surgical site occurrences requiring procedural interventions (SSOPI). We also performed multivariate logistic regression analysis to find factors that may be predictive of complications.

Results: Of the 143 patients who underwent an open onlay parastomal hernia repair, 113 used permanent synthetic mesh, 18 used absorbable synthetic, and 12 used biologic. Absorbable and biologic patients were combined as one cohort comparison group. We found no statistically significant differences in hernia recurrence rates at 30 days and no differences in SSI and SSO rates. However, the biologic and absorbable synthetic group did have higher rates of both SSOPI at 20% compared to 6% for permanent mesh (p=0.03) and readmission at 26.7% versus 10.6% in permanent (p=0.04). When controlling for mesh type and other factors, multivariate logistic regression analysis showed that hernia width was predictive of incidences of SSI with OR of 1.26 (95% CI 1.06-1.50), SSO with OR of 1.25 (95% CI 1.09-1.45), and SSOPI with OR of 1.20 (95% CI 1.03-1.41). Diabetes was also predictive of developing SSI with OR of 6.92 (95% CI 1.19-40.26).

Conclusion: In this retrospective ACHQC database study, we found permanent synthetic mesh to be a safe option for use in open parastomal hernia repairs by demonstrating a lower rate of wound complications and readmissions compared to biologic and absorbable synthetic mesh. When controlled for mesh type, hernia width and diabetes diagnosis were associated with higher rates of wound complications. These findings encourage the use of permanent synthetic mesh in contaminated fields and prompts further research with larger, prospective cohorts and longer follow up, especially given the significantly lower cost of permanent vs. biologic meshes.

P28. Pregnancy after Rectus Muscles Diastasis Laparoscopic Repair with LAP-T Technique, 53 Cases with No Recurrences

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Background: Diastasis of Rectus Abdominis Muscles (DRAM) in women is predominantly due to abdominal wall muscles and fascial stretching and tearing during pregnancy. Parietal damage is generally located on midline, but lateral diastasis can also occur. After Diastasis Recti Repair, regardless of the technique, it is generally ill-judged to carry on further pregnancies because of a high risk of recurrence. The LAP-T Technique allows Mini-Invasive full restoration of the anatomy and physiologic functionality of the abdominal wall through a laparoscopic, gas-less, tailored suture of muscles and sheaths to close the midline and the positioning of dual sided mesh, without direct contact with the muscles' fibers, to consolidate the repair. The aim of this cohort case analysis is to evaluate if, contrarily to most DRAM repair techniques, the LAP-T technique permits further pregnancies without increased risk of recurrence.

Methods: Among 1.235 female patients undergoing a LAP-T Repair for DRAM complicated by abdominal wall hernia, from November 2006 to December 2020, 53 came back to follow-up being pregnant in the first quarter of the new pregnancy. All patients were prescribed to suspend abdominal wall exercise and to wear, from the 5th month, an abdominal containment girdle. All patients have been scheduled for control with clinical visit and abdominal wall study with ultrasound at 4, 6 and 8 months during pregnancy, and 2 to 3 months after the childbirth. A further control visit with ultrasound was scheduled for all patients at 12 months.

Results: In all patients, the clinical examinations and abdominal wall ultrasound studies, confirmed that the rectus muscles anatomy and physiological functionality, previously restored with the LAP-T laparoscopic tailored Suture & Mesh repair, remained stable during the new, further, pregnancy and after childbirth. None of the ultrasound scan showed an Inter Rectal Distance (IRD) >21mm. No recurrencies were observed (100% follow up at 12 months). All patients resumed their full daily and sport activity with no impairment.

Conclusion: The Laparoscopic gas-less LAP-T Tailored suture & mesh Repair, restoring the rectus muscles anatomy and abdominal trunk physiological functionality, with midline closure and mesh buttress of the posterior abdominal wall, proved to be a sound reconstruction of DRAM, associated hernias, and musculo-fascial tearing, allowing for further pregnancies with no recurrencies observed.

P31. Fibrin Glue Vs Tacker in Laparoscopic Totally Extraperitoneal Inguinal Repair: A Systematic Review and Meta-analysis of Randomized Controlled Trials

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Bahiana School of Medicine and Public Health

Background: As laparoscopic inguinal hernia repairs become more common, such as the totally extraperitoneal (TEP) technique, a wide variety of mesh fixation techniques are available. These can be broadly divided into mechanical methods, like sutures and tissue penetrating devices, and non-mechanical, like self-gripping meshes and tissue adhesives (glue). The tackers are tissue penetrating devices, which are hypothesized to cause more postoperative pain and increase the risk of osteitis pubis due to local tissue trauma. As no previous meta-analysis was done comparing fibrin glue and tacker for laparoscopic totally extraperitoneal inguinal hernia repair, we aimed to perform a systematic review and meta-analysis of randomized controlled trials comparing the two fixation techniques.

Methods: Cochrane Central, Embase, and PubMed databases were systematically searched for randomized controlled trials comparing mesh fixation with fibrin glue and tacker for inguinal hernia repair from inception up to March 2023. Outcomes assessed were epididymitis, neuralgia, mean visual cosmesis scale (VCS), visual analog pain scale (VAS), time to return to work/activity, mean operative time, average hospital stay, incidence of postoperative surgical site complications (hematoma, seroma, wound infection), and general complications. Statistical analysis was performed using RevMan 5.4.1. Heterogeneity was assessed with I2 statistics and random-risk effect was used if I2 > 25%.

Results: 90 studies were screened and 33 were thoroughly reviewed. A total of 7 randomized controlled trials comprising 769 patients were included, of whom 376 (48,9%) received fibrin glue and 393 (51,1%) received tacks for mesh fixation during inguinal hernia repair. We found that the fibrin glue group presented a lower Visual Analogue Pain Scale (VAS) at 1 month after surgery (MD -2.64; CI 95% -3.74 - (-1.54); P = 0.0005; i2 = 90%) and higher return-to-work rate at 15 days after surgery (OR 2.73; CI 95% 1.44-5.15; P = 0.002; i2 = 0%). Furthermore, we found no statistically significant difference between the two interventions in hematoma, seroma, wound infection, operating time, hospital stay, and general postoperative complications.

Conclusion: Fibrin glue is associated with a lower VAS pain score at 1 month and a higher return to work rate at 15 days after surgery than mechanical tack fixation in laparoscopic TEP inguinal hernia. Further prospective randomized studies with long-term follow-up are necessary to evaluate chronic pain and hernia recurrence rates associated with both fixation techniques.

Figure 1. VAS score 1 month after surgery.

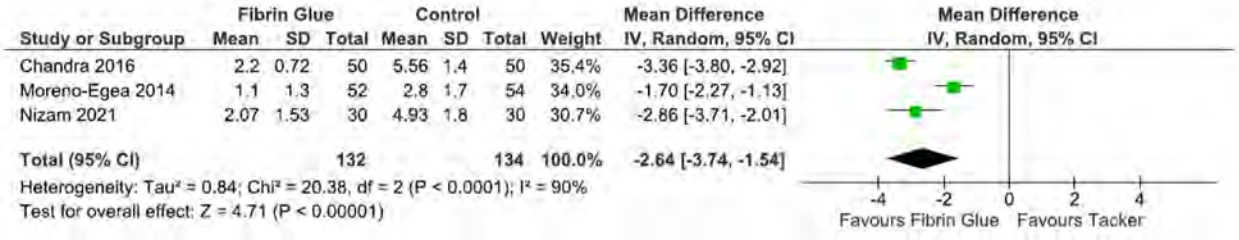
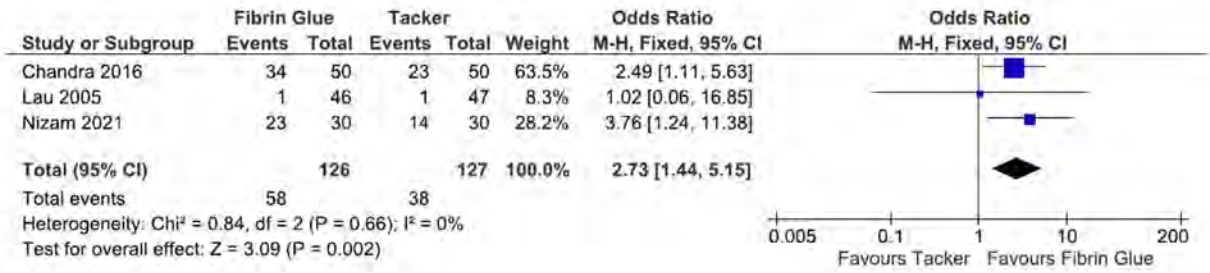


Figure 2. Work return rates at 15 days after surgery.



P32. TransInguinal Preperitoneal (TIPP) Versus Lichtenstein Inguinal Hernia Repair: A Systematic Review and Meta-analysis

C Balthazar da Silveira, S Poli de Figueiredo, Y Meirelles Dias, R Martin, A Rasador, M Fernandez, R Lu
Bahiana School of Medicine and Public Health

Background: As stated by recent guidelines for groin hernia management, no consensus can be made about which technique is preferred for open inguinal hernia repair. Many techniques exist and the mesh can be placed anteriorly in a Lichtenstein repair or posterior with preperitoneal techniques. As first described by Pélissier, the TIPP technique dissects the preperitoneal space through the dilated internal ring in an indirect hernia or hernia sac in a direct hernia, avoiding opening the inguinal floor as in other open preperitoneal inguinal hernia repair techniques. Although Lichtenstein is the most commonly performed inguinal hernia repair technique, some studies suggest that placement of the mesh posteriorly and minimizing suture fixation may decrease postoperative pain. As no previous meta-analysis compared TIPP and Lichtenstein techniques, we aimed to perform a systematic review and meta-analysis on surgical, functional, and postoperative outcomes comparing the two methods.

Methods: Cochrane Central, Scopus, and PubMed databases were systematically searched for studies comparing transinguinal preperitoneal (TIPP) and Lichtenstein´s technique for inguinal hernia repair from inception up to March 2023. Outcomes assessed were operative time, bleeding, surgical site events (seroma, hematoma, wound infection), hospital stay, the Visual Analogue Pain Score (VAS), chronic pain, sensory disturbance rates, and recurrence rates. Statistical analysis was performed using RevMan 5.4.1. Heterogeneity was assessed with I2 statistics and random-risk effect was used if I2 > 25%.

Results: 790 studies were screened and 44 were thoroughly reviewed. A total of nine studies, including 5 randomized controlled trials, comprising 8428 patients were included, of whom 4185 (49,7%) received TIPP and 4243 (50,3%) received Lichtenstein inguinal hernia repair. We found that TIPP presented less chronic pain (OR 0.43; 95% CI 0.20-0.93 P = 0.03; I2 = 84%) and sensory disturbance rates evaluated at 1 year postoperatively (OR 0.27; 95% CI 0.07-0.99; P = 0.05; I2 = 63%) than Lichtenstein group. In addition, TIPP was associated with a lower VAS pain score at 14 postoperative-day (MD -0.93; 95% CI -1.48 - -0.39; P = 0.0007; I2 = 99%). Intraoperative data showed a lower operative time in minutes for TIPP technique (MD -7.18; 95% CI -12.50-, -1,87; P = 0.008; I2 = 94%). Furthermore, we found no statistical difference between groups regarding recurrence rates, surgical site events, bleeding, hospital stay and reoperation rates.

Conclusion: TIPP may be a valuable technique for inguinal hernias considering it was associated with lower 14-day postoperative pain, chronic pain, and sensory disturbance when compared to Lichtenstein technique. Further long-term prospective randomized studies are necessary to confirm our findings, evaluate the postoperative complications, learning curves, and recurrence rates.

Figure 1. VAS Pain Score at 14-postoperative day.

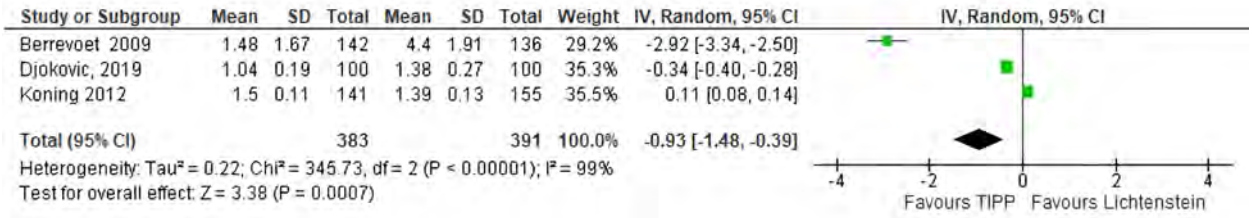


Figure 2. Chronic pain rates.

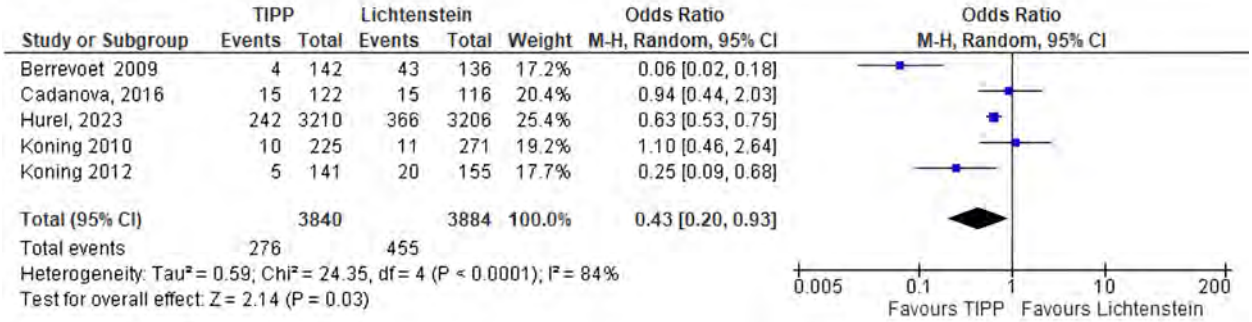
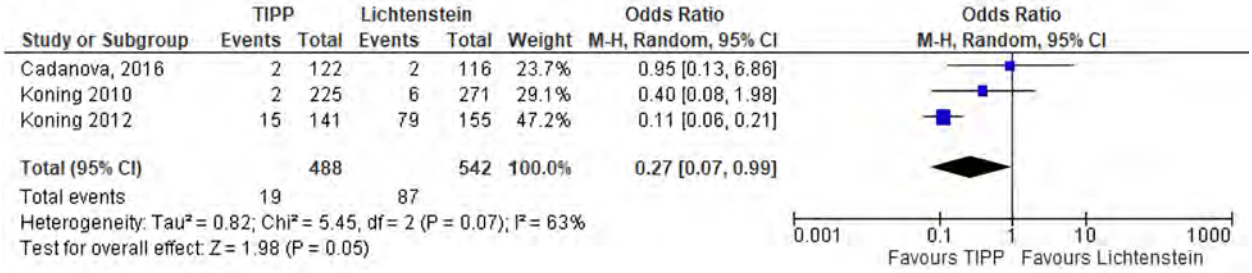


Figure 3. Sensory disturbance rates.



P33. Repair of Midline and Parastomal Hernias Using a Modified Pauli Parastomal Hernia Repair Technique

N Gabinet, M Giorgi, E Ortega Goddard
Brown University

Background: Parastomal hernias have long presented a challenge for the hernia surgeon, with considerable symptomatic burden for patients and high recurrence rates with existing repair techniques. The Pauli parastomal hernia technique, which Dr. Eric Pauli described in 2016, has provided minimally invasive surgeons with a novel and promising approach to repairing these difficult hernias. In this video, we detail our institutions early experience and approach to this procedure. The video here shows our repair of not only a parastomal hernia, but also midline defects and rectus diastasis in a 61 year old male with a history of ulcerative colitis status post end ileostomy. Our approach involves key-holing of the mesh in addition to Dr. Pauli's described component separation and bowel lateralization. We hope increasing experience with this repair will offer our patients improved outcomes with a lesser risk of recurrence.

P34. CPL-01, An Investigational Long-Acting Ropivacaine, Demonstrates Safety And Efficacy In Open Inguinal Hernia Repair

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Cali Biosciences

Background: As the opioid crisis continues to rage, the use of non-opioid postoperative pain control has emerged as a critical factor. While multiple long-acting local anesthetics have been approved, all of them are bupivacaine based. As ropivacaine is generally considered to be a safer alternative, the lack of a ropivacaine based long-acting local anesthetic is an unmet medical need. CPL-01, an extended-release injectable formulation of ropivacaine, was developed to meet this need by being infiltrated into the surgical site to provide analgesia and reduce or eliminate the need for opioid over the initial 72 hours after surgery.

Methods: After signing informed consent and passing inclusion/exclusion criteria, subjects undergoing open inguinal hernia with mesh received either CPL-01 600 mg (n=14), Naropin 150 mg (n=40), or saline placebo (n=13) infiltrated into the surgical site prior to closure. Subjects were kept in the hospital for 72 hours afterwards, where pain and rescue medication use was monitored. Subjects were followed again at Day 7 and Day 28.

Results: Despite using half the opioids of the two comparator groups, the 14 subjects who received CPL-01 showed a mean AUC of the NRS-A for pain intensity through 72 hours adjusted for wWOCF (the primary endpoint) of 286.8, showing a trend towards significance as compared to the pooled placebo group (mean AUC0-72 of 369.2, p=0.08) and numerically better than the 40 subjects who received Naropin (mean AUC0-72 of 322.5). These differences were considered to be clinically meaningful because they exceeded more than one AUC point per hour. Approximately 2/3 of the CPL-01 subjects (9/14) required no opioids at all through the first 72 hours after the operation, compared to roughly half of the Naropin subjects and 30% of the placebo subjects. A validated outcomes instrument, the MPADSS, showed that substantially more CPL-01 subjects were ready for discharge earlier than the other subjects. Safety was similar among the treatment groups. The only treatment emergent adverse events that occurred in more than one CPL-01 subject were constipation, headache, dizziness, nausea, and vomiting, none of which were thought to be related to the drug. The geometric mean Cmax for ropivacaine in subjects who received CPL-01 600 mg dose was 836 ng/mL, as compared to 652 ng/mL for subjects who received Naropin. Variability in Cmax, as measured by CV%, was similar (42% for CPL-01 600 mg vs 38% for Naropin). No subject had a maximum Cmax greater than 2000 ng/mL. CPL-01 delivered ropivacaine at a lower dose-normalized Cmax as compared to Naropin while maintaining the same total systemic exposure for a given milligram of ropivacaine over time.

Conclusion: CPL-01 decreased pain and opioid use in this phase 2 study. Subjects who received CPL-01 were less likely to experience severe pain or need opioid rescue. CPL-01 was safe and well-tolerated, with no clinically meaningful safety signals. Depending on the results of the current Phase 3 studies, CPL-01 may be the first long-acting ropivacaine to answer this unmet clinical need, addressing postoperative pain while reducing the need for opioids.

P35. Management of Soft Tissue Coverage After Abdominal Wall Reconstruction

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Background: Large, loss of domain ventral hernia associated with a non-compliant abdomen poses a major challenge for the reconstructive surgeon. It can be challenging to obtain soft tissue coverage after the repair. Our multidisciplinary approach to repairing a large loss of domain hernia in the setting of inadequate soft tissue coverage is presented step-by-step in this video.

Methods: A 52-year-old female with a prior history of hypertension, diabetes and breast cancer presented to the clinic with a large right lower quadrant incisional hernia. Past surgical history included a right deep inferior epigastric artery perforator flap, left transverse rectus abdominis myocutaneous flap and abdominoplasty. The operative strategy was planned with the collaboration of the plastic surgery team; elective hernia repair with combined reconstruction of the abdominal wall and concomitant anterolateral thigh flap was offered.

Results: An open, bilateral myofascial release was performed followed and the repair was reinforced with polypropylene mesh. As suspected preoperatively the fascia was bridged over the defect and there was inadequate soft tissue coverage. The plastic surgery team harvested a rectus femoris muscle flap from right thigh and mobilized to provide soft tissue coverage. Patient recovery was uneventful, and she was discharged on postoperative day seven.

Conclusion: Lack of soft tissue coverage after abdominal wall reconstruction is a challenging clinical scenario and can be devastating without appropriate preoperative planning. Reconstruction was achieved after soft tissue coverage was provided with an anterolateral thigh flap with good long-term results by a multidisciplinary team.

P36. Early Laparoscopic Explantation of Preperitoneal Inguinal Mesh Secondary to an Antibiotic Resistant Mycobacterium

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Background: Infections after laparoscopic inguinal hernia are rare but could be a significant source of morbidity. Although the most common bacteria associated with prosthetic mesh infection is Staphylococcus aureus, non-tuberculous mycobacteria (NTM) infections can occur, and they are difficult to treat due to the intrinsic resistance to antibiotics of these bacteria. To our knowledge, Mycobacterium abscessus species infections after laparoscopic totally extraperitoneal (TEP) inguinal hernia repair have not been reported. We present the case of an early infection with such bacteria and we discuss some of the complex decision making and technical aspects of this unfortunate complication.

Methods: We present a case of a 70-year-old male patient with a medical history of HTN, CAD (non-compliant with ASA), HLD, tobacco smoking (0.5 ppd x 56 years), and bilateral inguinal hernias who developed early unusual pain and high fevers after bilateral inguinal hernia TEP repair. Initially the patient was treated with antibiotics, however he was soon diagnosed with a preperitoneal abscess and imaging-guided drain placement. Once Mycobacterium abscessus species infection was identified in the fluid culture, a multidisciplinary team decision was made to proceed with mesh removal.

Results: The patient underwent an uneventful laparoscopic transabdominal preperitoneal mesh excision, wash out, and drainage. Besides a lateral push pocket, the rest of the mesh was very well incorporated into the tissues. The patient had symptomatic recovery, and resolution of the pain and infectious symptoms. However, is undergoing prolonged suppressive antibiotic therapy.

Conclusion: Mesh infection is one of the rare but most serious complications of laparoscopic inguinal hernia repair. Although rare, non-tuberculous mycobacteria can be the causative pathogen of such infections and mesh explantation is necessary due to the high resistance of such species. Early mesh excision can be technically challenging.

P37. Robotic External Oblique Release for M2M3W2 Incisional Hernia

A Shmelev, Y Novitsky
Columbia University

Background: Robotic approach provides easily reproducible anterior components separation (ACS). It's reasonable applications are medium-size midline hernias which do not mandate giant prosthetic reinforcement of visceral sac, and/or hernias in the setting of hostile abdomen. Here we present a case of robotic external oblique release for 7 cm wide upper midline hernia in a patient with a history of complicated pancreaticoduodenectomy. Midline was approximated without tension. Large microporous polypropylene mesh was implanted. Subcutaneous drains were kept until minimal discharge. Although robotic ACS does not preserve periumbilical perforators, it avoids wound morbidity of open ACS, and allows for implantation of large mesh outside of challenging abdomen.

P38. Mesh Infections - Are We Heading Into An Epidemic?

A Arora, K singh, V Trehan, G Panchal
Command Hospital Chandimandir

Background: The use of prosthetic materials in anterior abdominal wall repair has gone up manyfold over the last few years owing to easier availability , reducing costs and increased level of comfort of surgeons in usage of meshes. The obvious advantage of tension free repairs and a long term reinforcement of abdominal wall has immensely popularised the usage. But as the usage is increasing , so is the incidence of mesh related infections. This paper attempts to analyse the factors behind the mesh infections and the need to standardise the protocol for treatment of mesh infections particularly in Low resource settings.

Methods: A retrospective analysis of prospectively collected data of 25 patients presenting with mesh infections requiring mesh explantations from 2016 - 2022 was done to study the factors responsible , the antibiotic protocol given for the initial treatment and surgical technique followed .

Results: A total of 25 patients were studied who ultimately required the mesh to explanted . 22 cases were of inguinal hernia repair out of which 14 had undergone open mesh hernioplasty (Lichtenstein), 8 had undergone laparoscopic inguinal hernia repair (5 TAPP & 3 TEP). 3 patients had presented with discharging sinus from anterior abdominal wall following IPOM repair of ventral hernia.

Patients had undergone varying antibiotic protocols including anti tubercular therapy and no coherence was found in the initial antibiotic therapy given.

All patients underwent mesh explantation with either open or laparoscopic technique & mesh as well as any collection was sent for culture.

8 patients had evidence of Non tuberculous mycobacteria while in other no growth was found in cultures.

Conclusion: In view of the increasing use of prosthetic materials , there is a need to reinforce amongst surgeons the importance of following all aseptic protocols. Also due to the varying presentations of the mesh infections , there is a felt need to formalise the approach and revisit the existing protocols to control mesh infections and thereby reduce the need for explanation of mesh and the associated morbidity particularly in the resource constrained settings & LMIC.


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P40. Keeping an eye on NPWT: An Exposé

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Dayanand Medical College and Hospital

Background: Negative Pressure Wound Therapy (NPWT) is a significant advancement in wound care; however, its effectiveness relies heavily on consistent, accurate monitoring, a process that can be subjective and time-consuming. Illuminate, a handheld fluorescent imaging device, reveals and classifies bacterial infections in real-time, facilitating the early initiation of antimicrobial treatments. eKare offers digital 3D wound assessment capabilities, using advanced imaging and AI to accurately measure wound dimensions and track progress over time. By incorporating both Illuminate and eKare into NPWT wound monitoring, wound management can be revolutionized, ensuring precise assessment of wound status and facilitating patient-specific treatment strategies.

Methods: This study was carried out in our department, encompassing a broad range of wound types being treated with Negative Pressure Wound Therapy (NPWT). Two pivotal technologies were employed for wound monitoring: Illuminate and eKare wound cameras.

Advanced imaging technology along with AI algorithms enabled the precise measurement of wound dimensions, including area, volume, and depth. Wound images were taken at consistent intervals following a standard protocol to track the healing progression and any variations in wound characteristics over time. The data obtained from both technologies was analyzed using a blend of quantitative and qualitative methods, aiming to provide an objective, comprehensive understanding of NPWT wound status and progression.

Results: In our study, a total of 50 wounds undergoing Negative Pressure Wound Therapy (NPWT) were imaged using both cameras. This approach enabled us to gather a comprehensive set of data pertaining to bacterial infection and physical wound characteristics.

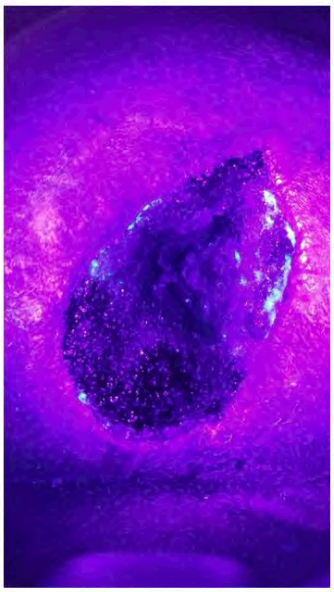
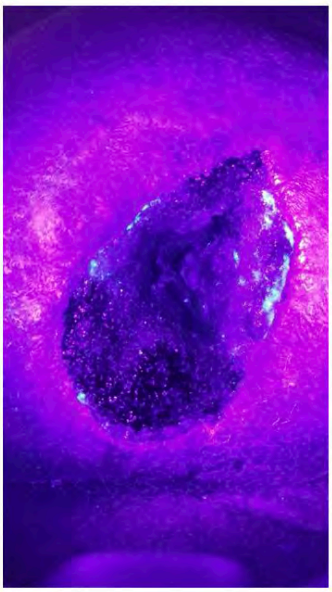
Through the imaging technology for bacterial detection, we were able to identify bacterial infection in real-time in a significant portion of wounds, allowing for immediate and appropriate antimicrobial interventions.

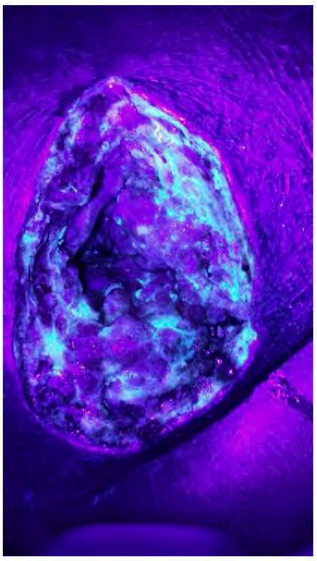
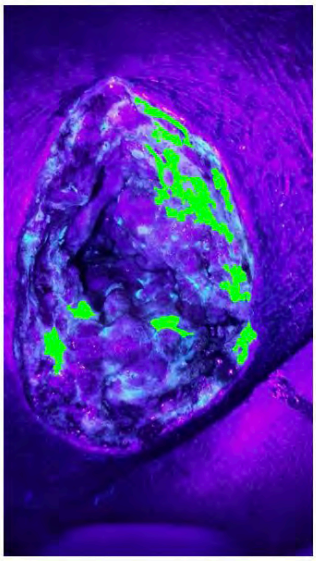
On serial imaging of NPWT wounds, a significant reduction in bioburden of wounds was noted overtime, which was corelated with tissue cultures obtained from the wounds.

The 3D wound assessment technology facilitated precise measurements of wound dimensions across all cases. The depth, area, and volume of wounds were quantified, and a distinct pattern in wound healing progression under NPWT was observed.

Our analysis revealed significant correlations between the objective measurements obtained and the observed wound healing outcomes.

Conclusion: The integration of advanced imaging technologies could revolutionize wound care practices, paving the way for more data-driven, precise, and personalized wound management, thus keeping an eye on NPWT and other wound care interventions too.

Illuminate Imaging Scenario		Pre NPWT/VAC
White Light Image	Multi-spectral Image	AI-enabled Image
		

Illuminate Imaging Scenario		Pre NPWT/VAC
White Light Image	Multi-spectral Image	AI-enabled Image
		

P41. Groin Hernia Repair in Female: Do we Need to use a Mesh ?

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Hamad Medical Corporation

Background: Female hernia has been excluded from most of the hernia studies making the decision-making for female hernia even more difficult. This is a retrospective chart review of all consecutive patients treated with inguinal hernia repair at a single institution from January 2018 through December 2022 in Hamad Medical Corporation, Doha-Qatar. A total of 33 patients had inguinal hernia operation during the study period. The mean patients' age was 43.2 years (SEM 14.8). The most common primary presenting symptom was painful bulge, occurring in 14 cases (42 %). CT scan helped in diagnosing 15% of the cases while the majority were diagnosed clinically. A total of 85 % of patients undergoing laparoscopic hernia repair and 15% had open repair. The most frequently utilized mesh with laparoscopic repair was Progrip (33%). The average hospital stay was 1.4 ±1.2 days. Mild pain was reported by 40% of patients in the first follow up visit and 12 patients had chronic post operative pain (36%) requiring further follow up.

MIS approach using laparoscopic/robotic with TEP or TAP is generally recommended most female hernias to address the femoral hernia that occurs at higher incidence in female. Females have been excluded from major clinical trials investigating groin hernia repair; thus, the use of mesh should be individually tailored to avoid mesh related complications and chronic pain.

Table 1: female patients characteristics

Characteristic	N=33 (%)
Age (mean, SEM)	43.2±14.8 years
BMI	26±4.7
Primary symptoms	
Pain	9 (27)
Bulge	14 (42)
Pain and Bulge	9 (27)
Asymptomatic	1 (3)
CT diagnosis	5 (15)
Recurrent hernia at diagnosis	1 (3)
Hernia characteristics	
Indirect	24 (73)
Direct	6 (18)
Femoral	2 (6)
Pantaloon	1 (3)
Bilateral cases	1 (3)
Emergency cases	16 (48)
Type of repair	
Open repair	5 (15)
Laparoscopic repair	28 (85)

Table 2: Choice of mesh/product for each type of repair

Mesh	Open (%)	Laparoscopic (%)
Progrip		11 (33)
Ultrapro		9 (27)
Dextile (polypropelene)	1 (3)	4 (12)
Proceed		4 (12)
Vypro (prolene)	1 (3)	1 (3)
none	1 (3)	1 (3)

P42. Hernia 3D-Training Model: A New Inguinal Hernia 3D Printed Simulator

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Background: Inguinal hernia is one of the most common abdominal surgical conditions. Minimally invasive surgery (MIS) has a long learning curve, making its dissemination difficult. Several training models have been developed for this purpose. The cheapest models do not reliably represent the anatomical regions. The objective is to demonstrate a 3D printed model with anatomical representativeness, low cost, and potential for scalability.

Methods: The model was created based on subtraction data of pelvic bones and lumbar spine from computed tomography using Blender 3.2.2 software program. Images were modeled and reconstructed in 3D to display a male inguinal region, as usually viewed from a laparoscopic approach. Initially, the quadratus lumborum and iliopsoas muscles were recreated, abiding by insertions in the pelvic and lumbar spinal bones. Subsequently, the iliac, deep epigastric, gonadal, and vas deferens vessels were inserted. The inguinal region nerves are displayed, abiding by their anatomical limits. Polylactic Acid Plastic (PLA) was used to print the model. The model was painted to improve training didactics. Some of the structures were made from Ethylene Vinyl Acetate (EVA) to enable possible material replacement and model reutilization. The peritoneum was recreated using GLAD and PRESS'N SEAL Plastic wrap (Press'n Seal; Glad, Oakland, CA, USA). Thirty surgeons with different training levels were invited to use the model. Transabdominal inguinal herniorrhaphy procedures were performed by simulating the same steps as laparoscopic surgery, and the surgeon answered a questionnaire regarding the simulation.

Results: Twenty-eight surgeons responded, seven of whom were experts in the treatment of abdominal wall hernias. The model was deemed easy to use, realistic and anatomically precise, being considered a useful adjunct to MIS training

Conclusion: This 3D model had a good evaluation, recreating the inguinal region in a more anatomical way, without increasing the cost of training, and could be a good option for training surgeons at the beginning of their experience.

P43. Incidence of Incisional Hernia In A High-Volume Liver Transplant Center: Importance of Multidisciplinary Approach and Plastic Surgeons Role in Repair

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Background: Hernia is a common complication after open abdominal surgery, with incisional hernia (IH) being the most frequently observed type. Managing IH in liver transplant (LT) patients requires a multidisciplinary approach, involving the LT team and sometimes other surgical specialists. The literature lacks comprehensive reporting on the incidence and risk factors of IH in this population, highlighting the need for early involvement of plastic surgeons (PS) when detecting incisional hernia in liver transplant recipients.

Methods: We performed a retrospective cohort study of all LT from our institution who had post-transplant hernia repair surgeries from June 2016 to December 2022. Demographics, BMI, social history, surgeon specialties, length of stay (LOS) at LT, and hernia repair. Univariate statistical analysis stratified by recurrent hernia repair surgeries and by surgeon specialties was performed using Kruskal-Wallis and Chi-squared tests.

Results: 1090 patients received LT between 2016 to 2022 and 129 required various hernia repairs. Among those, 89 patients required IH repairs, and 21 of those recurred. Most patients who had IH repair were males (84%) and white (84%). Median BMI for IH repair was 30. 73% were overweight or obese at LT, 83% were overweight or obese at initial hernia repair and 95% at second hernia repair. Patients with recurrent IH are equally likely to be females or males (24% vs. 23%), significantly older at LT (age 65 vs. 58, p=0.016) and at the time of initial IH repair (66 vs. 60, p=0.028) and are more likely to be overweight or obese at the time of LT (95% vs. 73%). Patients were found to have a longer LOS at LT (31 vs. 25 days). PS participated in 10 hernia repairs, all incisional. They were more often involved when recurrence occurred (29% vs. 4%). Patients had higher BMI than those without a PS (31 vs 29). For the initial IH repair, LOS was shorter than when a PS was not involved (24 vs. 31 days). This may be explained by the complexity of the case at hand requiring the expertise of a PS. For patients who required a PS for recurrent repair, the median LOS decreased from 3 days to 2.

The results revealed an overall incidence rate of hernia repair among LT recipients at our institution to be 12%. Within this group, IH accounted for 69% of all hernias, which aligns with the existing literature on IH being the most common hernia type following major surgery. Older age, male gender, and obesity were associated with IH repair. Recurrent IH repair surgeries were more common in older, overweight patients with longer initial hospital stays. PS were involved in 29% of recurrent IH cases and their presence was linked to shorter LOS. This highlights the need for a collaborative approach to managing IH in LT recipients.

Conclusion: IH is a common complication among LT recipients, necessitating a collaborative and multidisciplinary approach for effective management. PS involvement, particularly in recurrent cases, offers potential advantages including shorter LOS.

P44. Retrospective Review of Outcomes After Robotic Ventral Hernia Repair in Obese versus Non-obese Patients

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Background: The purpose of this study is to compare outcomes after robotic ventral hernia repair between non-obese and obese patients.

Over the last several decades, the prevelance of obesity has been steadily rising, and its levels are currently unprecented1. More than 68% of adults in the United States are considered overweight and 35% are considered obese1. An increasing prevelance of obesity increases the number of patients requiring surgical intervention who also are obese2. Obesity is considered a major comorbiditiy3 and is associated with numerous perioperative complications2. Currently hernia repairs are accomplished surgically using either open or minimally invasive approaches2. Laparoscopic ventral repair of hernias in obese patients have been shown to have fewer perioperative complications when compared to open repair4. Robotic ventral hernia repair has been shown to be safe and feasible, however, there are few studies evaluating the safety and feasibility of robotic ventral hernia repair in an obese population4. To further evaluate whether elevated body mass index (BMI) is a risk factor for patients undergoing robotic hernia repair, a BMI of 35 kg/m2 was chosen as a set point5. The aim of this study is to investigate whether obesity affects post-operative results after robotic hernia repair.

Methods/Results: A retrospective review was performed using data from a single community institution. Charts from February 2019 to July 2022 were reviewed. A total of 299 patients were found to have undergone robotic ventral hernia repair and were included in this study. Patients were sorted into two groups based on BMI, with one group with BMI under 35 kg/m2 and the other with BMI greater than 35 kg/m2. Age, gender, length of hospital stay (LOS), estimated blood loss (EBL), and operative time were compared between the two groups. Age was analyzed with non-parametric Mann Whitney U Test. All other comparisons were analyzed with Chi-square test. Results show no significant difference between LOS ($p = 0.370$), with non-obese patients having a longer LOS compared to obese patients, and no significant difference between operative time ($p = 0.7501$). No significant difference in percentage of total risk factors (including hypertension, coronary artery disease, diabetes mellitus, smoking, hyperlipidemia, obstructive sleep apnea, and history of atrial fibrillation) has been found ($p = 0.081$). Patients were assessed at 3 months, 6 months, 12 months, 24 months and there was no statistical significant difference in recurrence.

Conclusion: Robotics are a developing platform in minimally invasive surgery which can offer advantages over laparoscopy in ventral hernia repairs4. When comparing length of stay, operative time, and percentage of total tisk factors, this study provides evidence that robotic ventral hernia repair has comparable post-operative results in obese patients as in non-obese patients over a 3, 6, 12, and 24 month time period.

Table 1.

	Body Mass Index Under 30 kg/m² N = 99	Body Mass Index Over 30 kg/m² N = 200	p-value
Demographics			
[a]Age	59.19 +/- 14.5	55.9 +/- 13	0.065
Male (%)	62 (62%)	104 (52%)	0.082
Female (%)	37 (37%)	96 (48%)	0.082
Length of Hospital Stay (days)	2.5 +/- 2.1	0.7 +/- 1.4	0.001
Estimated Blood Loss (mls)	13.9 +/- 24.1	18.2 +/-30.8	0.189
Operative Time (mins)	193.4 +/- 73.4	223.5 +/- 79.4	0.001
Comorbid Conditions			
Hypertension (%)	35 (35%)	86 (43%)	0.205
Coronary Artery Disease (%)	3 (3%)	11 (5.5%)	0.341
Diabetes Mellitus (%)	20 (20%)	45 (22.5%)	0.650
Abdominal Aortic Aneurysm (%)	5 (5%)	0 (0%)	0.001
Smoking (%)	4 (4%)	18 (9%)	0.122
Hyperlipidemia (%)	39 (39%)	72 (36%)	0.568
Obstructive Sleep Apnea (%)	12 (12%)	32 (16%)	0.373
Hx of Atrial Fibrillation (%)	3 (3%)	4 (2%)	0.579
Total Risk Factors (%)	1.2 +/- 1.1	1.3 +/- 1.2	0.402

[a]analyzed with non-parametric Mann Whitney U Test. All other comparisons with Chi-square test.

P45. Patient-Centered Outcomes in Inguinal Hernias Before and After the Background: of the Robotic Surgical Platform

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Background: There are few reports on the long-term patient reported outcomes comparing robotic to laparoscopic to open inguinal hernia repair. This retrospective study was designed to determine the impact of the replacement of laparoscopic inguinal hernia repair (LIHR) with robotic inguinal hernia repair (RIHR) on patient centered outcomes using a standardized assessment tool.

Methods: We adapted the Abdominal Core Health Quality Collaborative inguinal hernia post-operative assessment tool to be disseminated via REDCap. The survey included questions on hernia recurrence and postoperative opioid medication use, and asked patients to rate severity of pain, physical restrictions, and cosmesis on a scale of 1 to 10. A survey link was sent in early March 2023 to patients who had undergone IHR between July 2018 and July 2022 who had a registered email address. The new data was combined with existing data and included information related to surgical approach, hernia recurrence, and patient experience/satisfaction.

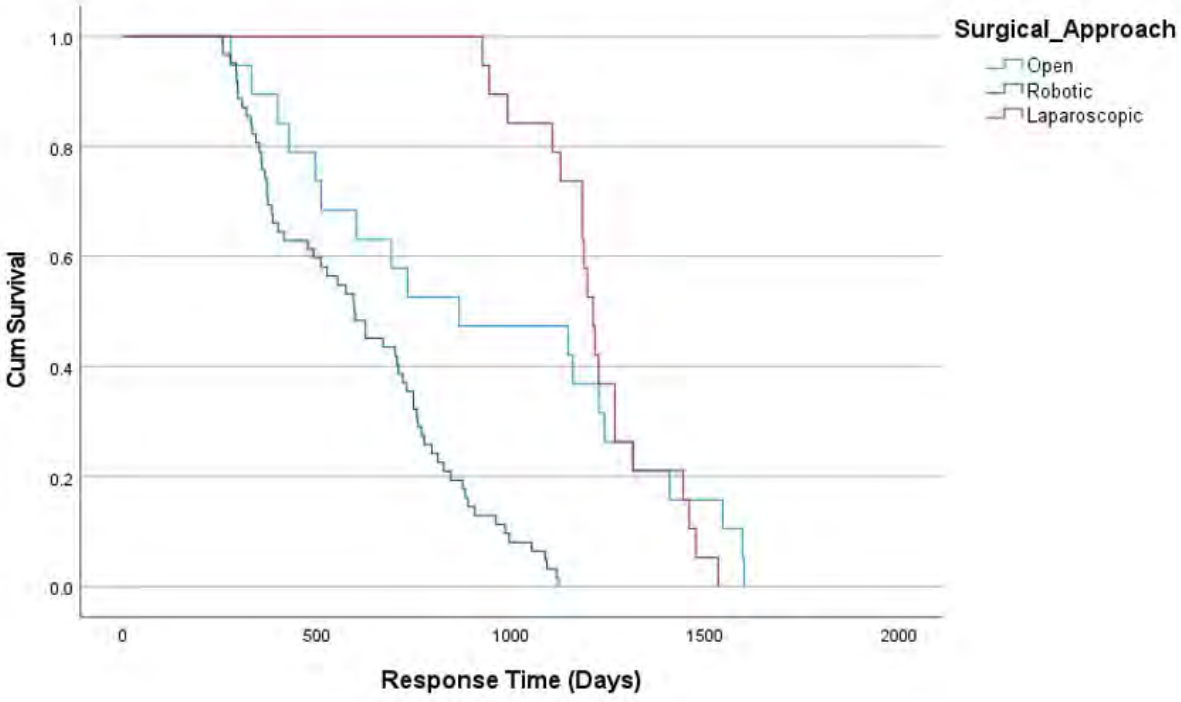
Results: We received 108 patient responses, with 100 [41.7%] responses ultimately included in the final analysis (6 were duplicates, 1 was incomplete, and 1 was completed by a family member). There was no significant difference in patient demographics between the three surgical approaches (Table 1). A Kaplan-Meier time to event analysis showed that laparoscopic cases had the longest mean follow up [1223 days, 95% CI 1146-1299] followed by open [923 days, 95% CI 716-1131] and robotic [610 days, 95% CI 546-675], and that this difference was significant [Mantel-Cox Log rank test, $p < 0.001$] (Figure 1). For dichotomous variables Chi-Square testing revealed no significant differences with regards to hernia recurrence, physical symptoms, and additional abdominal surgery between surgical approaches. Ordinal variables were treated as categorical and analyzed using Chi-Square test, showing near significance differences for both postoperative opioid use [$p = 0.07$] and for pain felt during activity [$p = 0.08$] between surgical approaches (Table 2).

Conclusion: We employed a standardized instrument to track patient-reported outcomes after inguinal hernia repair after adding the robotic-assisted approach to our surgical practice. We found that pain associated with physical activity was greatest for open cases and lowest for laparoscopic cases. Our results may be affected by response time bias, as the robotic cases had significantly less follow-up time than other approaches. However, we created a process that we intend to repeat in a prospective manner in the future, and the relatively high response rate over such a lengthy period is encouraging. Further research is indicated to ensure that there are appropriate gains in patient-centered outcomes associated with the increased resource utilization of RIHR.

Table 1: Patient demographics compared between surgical approaches

		Open (n = 19)	Laparoscopic (n = 19)	Robotic (n = 62)	p - value
Male (%)		16 (84.2)	16 (84.2)	54 (87.1)	0.92
Age (mean years +/- SE)		65 ± 3.0	66 ± 2.6	61 ± 1.8	0.29
BMI (mea16 n +/- SE)		27.3 ± 0.9	26.2 ± 1.1	26.5 ± 0.5	0.69
ASA	Healthy	1 (5.3)	1 (5.3)	8 (12.9)	0.39
	Mild Systemic Disease	11 (57.9)	11 (57.9)	38 (61.3)	
	Severe Systemic Disease	7 (36.8)	6 (31.6)	16 (25.8)	
	Incapacitating Disease	0	1 (5.3)	0	
Emergent (%)		0	1 (5.3)	3 (4.8)	0.61
Recurrent Hernia (%)		7 (36.8)	5 (26.3)	10 (16.1)	0.14

Figure 1: Kaplan Meier time to event analysis demonstrating length of follow up



P46. A Performance Improvement Project to Reduce Opioid Prescribing for Cholecystectomy and Hernia Repair Patients

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Background: Opioids have traditionally been used for postoperative pain management in the home setting, but their use contributes to public health concerns in the age of the opioid epidemic. Typically, 20 to 40 narcotic tablets are prescribed for patients discharged home after common operations including routine hernia repairs and cholecystectomy. In this performance improvement project, we assessed whether a multimodal postoperative pain regimen in the home setting would provide acceptable pain management while reducing the number of narcotic tablets prescribed for patients undergoing cholecystectomy and hernia repairs. The aim of this performance improvement project is to reduce the number of narcotics prescribed without negatively impacting patient experience in the home recovery period.

Methods: This is a retrospective review of data obtained from a cohort of 326 consecutive routine hernia and cholecystectomy patients done by a group of five surgeons between May 1, 2022 and September 31, 2022. The hernia repair patients included all elective routine robotic, laparoscopic, and open ventral, umbilical, and inguinal hernias. Cholecystectomy patients had either laparoscopic or robotic cholecystectomy in an outpatient setting or inpatient urgent setting. Patients who had complex hernia procedures requiring component separation techniques and those that took narcotics chronically were excluded. Each patient was prescribed a multimodal regimen consisting of scheduled acetaminophen, a scheduled NSAID (naproxen, ibuprofen, celecoxib, or meloxicam), daily MiraLAX, an abdominal binder, and ten pills of an as-needed narcotic (tramadol 50mg, oxycodone 5mg, hydrocodone5/325, or Tylenol-codeine). Data collected from electronic medical records and patient questionnaires included demographics, procedure type and details, narcotic and adjunct protocol prescribed, pain level, and pain control satisfaction. Descriptive analysis was performed for all variables, and Dunn's pairwise comparison and Wilcoxon tests were used to compare groups.

Results: Patients on the multimodal pain regimen reported that their pain was adequately controlled, with a significant difference in pain before and after all medication regimens (6.08 ± 2.56 vs. 2.39 ± 1.94; $p < 0.00001$). Of 316 patients, 293 (92.7%) reported that pain control was as good as or better than expected. The mean number of narcotics taken was 4.89 ± 4.12 out of 10 (n=312). Patients who did not take narcotics reported good pain control, with a significantly lower mean pain level compared to patients who took narcotics (1.59 ± 1.37 vs. 2.59 ± 2.02; $p < 0.0001$). Patients who did not take narcotics were 2.12 times more likely to have reported "better pain control than expected" compared to those who took narcotics (OR = 2.12; 95%CI = [1.20, 3.75]; $p = 0.02$). A total of 316 (96.9%) patients did not require a refill of narcotics. Only seven patients (2.1%) required an ED visit for poorly controlled pain.

Conclusion: A multimodal pain control regimen using ten pills of prescribed narcotics was effective in controlling postoperative pain after cholecystectomy and routine hernia repairs. Multimodal pain control can be an effective alternative to traditional postoperative regimens and may help reduce the use of narcotic pain medications without negatively impacting patient experience in the home recovery period.

P47. Does The Weight Matter? Short Term Outcomes Of Lightweight Versus Heavyweight Three-Dimensional Anatomical Mesh In Inguinal Hernia Repair.

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Background: The decision to use mesh in inguinal hernia repairs is unanimous among surgeons, but the type of mesh used remains controversial. There is limited data looking at specific mesh-related complications, including seroma, hematoma, infections, chronic pain, and hernia recurrence. The objective of this study is to assess postoperative 90-day outcomes in lightweight (LW) and heavyweight (HW) anatomical mesh in minimally invasive inguinal hernia repairs.

Methods: A retrospective, single-center, hernia-specific database was queried for all adult minimally invasive inguinal hernia repairs with anatomical mesh (3-D Max, Bard, Inc, New Providence, NJ) from July 2016 to March 2021. Demographics and surgical outcomes were analyzed. Univariate analysis and multivariate logistic regression were performed.

Results: A total of 647 minimally invasive inguinal hernia repairs were performed with 423 (65.3%) using HW and 224 (24.7%) using LW mesh. Mean age was 55.3 (SD 14.3) for the LW and 57.1 (14.5) for the HW with no statistical difference between the groups (p = 0.124). There was no difference in mean BMI between the groups (26.9 □ 4.2 kg/m2 in the LW group and 27.1 □ 4.2 kg/m2 in the HW group; p=0.69). Prior inguinal hernia repair was similar between the groups. The laparoscopic approach was the most commonly used approach in both groups. TEP was the most commonly used surgical technique in both groups with no difference between the two. There was no difference in type of mesh fixation used in either group, with tacker being the most common. In addition, there was no difference in peritoneal closure between the groups. When analyzing cases with peritoneal closure, barbed suture was most commonly used. Mean operative time was 102.9 (□48.8) min in the HW group and 92.5 (□47) min in the LW group (p=0.009). There was no difference in postoperative ED visit (p=0.625), readmission rates (p=0.562), or postoperative complications between the two groups. Fifty patients presented with seroma within 90 days. There were 5 recurrences in each group and only 1 SSI in the LW within 90 days. Multivariate logistic regression was performed, and predictors of seroma formation included age (OR 1.02; CI 1-1.04; p=0.02) and Hypertension (OR 1.8; CI 1.03-3.4; p=0.039). HW mesh was not associated with seroma formation (OR 1.04; CI 0.5 – 1.9; p = 0.895). Similarly, HW mesh was not associated with surgical site occurrences (SSO) (OR 1.04; CI 0.5-1.8; p=0.872). Hypertension was associated with SSO (OR 1.74; CI 1-3.05; p=0.048)

Conclusion: Our study did not favor the use of LW or HW mesh when comparing postoperative complications or clinical outcomes. HW mesh was not associated with either seroma formation or SSO. Regarding seroma formation, associated factors included age and hypertension.

P48. Drain Versus No Drain Placement After Retromuscular Ventral Hernia Repair With Mesh: An ACHQC Analysis

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Background: Ventral hernia repair (VHR) is one of the most common procedures performed in the United States, and drains are used in over 50% of mesh repairs. However, there is little data regarding potential drain use complications to guide surgeon practice. Our study aims to investigate drains impact on surgical site occurrences (SSO) and infection (SSI) after open and minimally invasive retromuscular ventral hernia repair with mesh.

Methods: A retrospective review of prospectively collected data from the Abdominal Core Health Quality Collaborative (ACHQC) was performed to include adult patients who underwent elective ventral hernia repair with retromuscular sublay mesh placement. Univariate analysis was performed comparing two groups, drain and no drain, across preoperative, intraoperative, and postoperative timeframes. A logistic regression was performed to identify factors independently associated with increased SSO, SSOPI, SSI, readmission, and higher length of stay.

Results: ACHQC database identified 7,104 patients that underwent elective VHR with sublay mesh. Demographic and descriptive data are shown in Table 1. Most patients had M2 and M3 hernias (according to the EHS classification) in both groups (with Drain and no drain). Median Length of Stay (LOS) was 4 (IQR 2-6) in the drain group and 1 (IQR 0-2) in the no drain group ($p< 0.001$). Readmission rate was higher in the drain group (n=285; 5.9% vs n=79; 3.4%; $p< 0.001$). 30-day SSI and SSO were higher in the drain group (176; 3.7% vs 25; 1.1%; $p < 0.001$) and (473; 9.9% vs 292; 12.5%; $p < 0.001$) respectively. SSOPI was also higher in the drain group (241; 5.1% vs 45; 1.9%; $p< 0.001$). Logistic regression demonstrated drain use (OR 3.1, CI 2.57-3.72; $p< 0.001$) and open approach (OR 7.42, CI 6.24-8.86; $p< 0.001$) were associated with longer LOS. Logistic regression identified diabetes (OR 1.4, CI 1.2–1.7; $p < 0.001$) and smoking (OR 1.4, CI 1.1-1.8; $p=0.005$) as predictors of SSO, while use of a drain was protective (OR 0.65; CI 0.5-0.8; $p< 0.001$). For SSI, logistic regression showed diabetes (OR 1.5, CI 1.1–2.2; $p=0.006$) and open approach (OR 3.4, CI 2.1-5.7; $p< 0.001$) as predictors. Predictors of SSOPI were BMI (OR 1.04, CI 1.03 – 1.06; $p< 0.001$), DM (OR 1.7, CI 1.3 – 2.3; $p< 0.001$), and Open approach (OR 2.4, CI 1.6 – 3.6; $p< 0.001$).

Conclusion: Drain placement during retromuscular VHR with mesh was more likely to be used in open repairs and was predictive of decreased postoperative SSO occurrence but increased length of stay. Diabetes and open approach, but not drain use, were predictors of SSI.

	Drain (n=4761)	No Drain (n=2343)	P-value
Mean Age (SD)	58.3 (12.6)	57.3 (13.5)	0.002
Gender			
Female	2479 (52.1%)	1208 (51.6%)	0.704
Male	2282 (47.9%)	1135 (48.4%)	
Race			
American Indian or Alaskan Native	11 (0.233%)	8 (0.344%)	<0.001
Asian or Pacific Islander	25 (0.529%)	14 (0.601%)	
Black, not of Hispanic origin	363 (7.68%)	265 (11.4%)	
Hispanic	168 (3.55%)	153 (6.57%)	
Middle Eastern	59 (1.25%)	14 (0.601%)	
White, not of Hispanic origin	4102 (86.8%)	1874 (80.5%)	
Mean BMI (SD)	32.1 (6.49)	32.3 (6.92)	0.897
Diabetes Mellitus	974 (20.5%)	431 (18.4%)	0.043
Mean Size of defect (SD)	177 (151)	53.6 (59.8)	<0.001
Mean Hernia length (SD)	17.1 (7.12)	9.56 (6.50)	<0.001
Mean Hernia width (SD)	11.6 (6.15)	5.77 (3.33)	<0.001
Current smoker	400 (8.47%)	230 (9.90%)	0.054
Number of Meshes Used			
One Mesh	4511 (94.7%)	2301 (98.2%)	<0.001
Two Meshes	250 (5.25%)	42 (1.79%)	
Surgical approach			
MIS	765 (16.1%)	1635 (69.8%)	<0.001
Open	3995 (83.9%)	708 (30.2%)	
TAR procedure	3166 (66.6%)	547 (23.3%)	<0.001
Mesh type			
Biological tissue-derived	60 (1.26%)	7 (0.299%)	<0.001
Other/Unknown	1 (0.0210%)	1 (0.0427%)	
Permanent Synthetic	4489 (94.3%)	2306 (98.4%)	
Resorbable Synthetic	211 (4.43%)	29 (1.24%)	

P49. The Frequency And Risk Factors Of Chronic Postoperative Inguinal Pain In Japan: A Prospective, Longitudinal Nationwide Survey

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Background: Chronic postoperative inguinal pain (CPIP) is known to be the most debilitating complications after inguinal hernia repair, while very few evidence has been reported in Japan. To determine the frequency and risk factors of CPIP, we perform a prospective, longitudinal multicentre observational cohort study.

Methods: Between September 2018 and March 2021, patients aged 20 years or more who planned to undergo elective inguinal hernia repair at 22 community hospitals, not hernia specialized centers, in Japan were enrolled. This study was registered in UMIN-CTR (Registry number; UMIN000033936) prior to enrollment of the first subject. These patients would be followed up at 3 months after surgery (M) at outpatient clinic, and at 6M, 12M, and 24M by postal questionnaires. The key exclusion criteria were patients with femoral hernia, who planned to undergo surgery for recurrent hernia, and emergency surgery. The degree of pain was assessed using 11-point numerical rating scale (NRS). CPIP was defined that pain with an intensity of 4 or more on NRS was present at 3M or later. The primary endpoints were the frequency and risk factors of CPIP. The secondary endpoints included 1) sense of discomfort, paresthesia, and sexual pain at each time point, and 2) hernia recurrence.

Results: Finally, 2800 patients were enrolled. Of those, 2574 (91.9%), 2358 (84.2%), 2254 (80.5%), and 2130 patients (76.1%) answered questionnaires at 3M, 6M, 12M, and 24M, respectively. CPIP at 3M, 6M, 12M, and 24M was seen in 85 (3.3%), 72 (3.1%), 51 (2.3%), and 52 patients (2.4%), respectively. Multivariate analysis showed independent factors for CPIP at each time point as following; preoperative pain at rest for CPIP-3M (RR; 1.84, 95%CI; 1.07-3.16, P=0.028) and CPIP-6M (RR; 3.00, 95%CI; 1.63-5.50, P=0.0004), preoperative habitual intake of analgesics for CPIP-6M (RR; 3.73 95%CI; 1.63-8.56, P=0.0019), CPIP-12M (RR; 2.78 95%CI; 1.13-6.81, P=0.025), and CPIP-24M (RR; 2.98 95%CI; 1.35-6.55, P=0.007), no laparoscopic surgery for CPIP-12M (RR; 1.90, 95%CI; 1.08-3.35, P=0.026), and mesh fixation (RR; 4.17, 95%CI; 1.01-17.31, P=0.049) and history of transabdominal prostatectomy (RR; 2.32 95%CI; 1.14-4.73, P=0.020) for CPIP-24M. The proportion of patients reporting sense of discomfort was 22.5% at 3M, 21.4% at 6M, 18.0% at 12M, and 15.7% at 24M. The proportion of patients reporting hyperesthesia on the skin around the wound was 6.6% at 3M, 6.5% at 6M, 5.7% at 12M, and 4.9% at 24M. The proportion of patients reporting pain at ejaculation was 2.2% at 3M, 2.6% at 6M, 2.8% at 12M, and 3.3% at 24M. Hernia recurrence was observed in 1.1%, 1.5%, 2.3%, and 2.4% of patients at 3M, 6M, 12M, and 24M, respectively.

Conclusion: This is the first large prospective cohort study aimed to demonstrate the frequency of CPIP in Japan. Although its frequency is decreased over time, it can be problematic even at 2 years after surgery. Caution should be paid in patients with preoperative pain at rest, preoperative habitual intake of analgesics, and history of transabdominal prostatectomy. Laparoscopic surgery and/or technique without mesh fixation may be the option to avoid CPIP.

P50. Robotic Transversus Abdominis Release (Tar) In The Acute Setting: A Case Series

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Background: Traditional teaching for complex incisional hernias defer repair in the acute setting. However, robotic surgery has shown feasibility with reduced composite morbidity, decreased complications and lower mortality than open surgery. Here we describe a series of patients with incarcerated ventral hernias that underwent successful robotic TAR repair in the emergency setting.

Case 1: This was a 67-year old morbidly obese female with history of ongoing tobacco abuse who had a surgical history significant for a laparotomy and bowel resection for complicated diverticular disease with a colovesicular fistula and prior IPOM incisional hernia repair with PTFE mesh. She presented to the emergency department with a recurrent incarcerated hernia and small bowel obstruction. She was hemodynamically normal, CT imaging confirmed pathology and the patient underwent a robotic repair of multiple hernia defects measuring 20cm x 8.5cm in the craniocaudal dimension. The prior intraperitoneal mesh was explanted and both bilateral RR and TAR were performed. A 34cm x 26cm monofilament polypropylene non-absorbable mesh was used. No drains were placed. Four month follow-up complicated by seroma in the left abdominal wall. Two year postoperative visit demonstrated resolution of the seroma with no evidence of hernia recurrence.

Case 2: This was a 62-year old morbidly obese male with history of T3N0 colon cancer who previously underwent a low anterior resection 13 years prior. He presented to the ED hemodynamically stable with abdominal pain, lactic acidosis and an incarcerated ventral hernia causing a large bowel obstruction. CT scan confirmed a ventral hernia containing transverse colon. Operative findings revealed a M2W2 incisional hernia with a 7cm fascial defect. A bilateral RR and left TAR was performed. A 35cm x 22cm medium weight monofilament polypropylene non-absorbable mesh was placed. There were no complications at routine postoperative visit. Two year follow-up showed no recurrence.

Case 3: This was a 42-year old male patient with three prior ventral hernia repairs; two performed with an anterior approach with mesh, and the third via laparoscopic IPOM. The patient had been hospitalized recently with a recurrent small bowel obstruction. CT confirmed findings compatible with a wide neck umbilical hernia with a small bowel obstruction. Intraoperative findings revealed two intraperitoneal meshes splayed laterally with a 12cmx13cm defect containing incarcerated bowel. Both meshes were explanted, and a bilateral RR and TAR were performed. A 30cm x 26cm medium weight monofilament polypropylene non-absorbable mesh was placed. No drains were placed. There were no complications at routine postoperative visit. Thirty-seven week follow-up showed no recurrence.

Conclusion: Our case series demonstrates that the robotic TAR in the setting of an acute bowel obstruction is feasible. There are advantages in utilizing the robotic platform in more challenging cases. We also see improved short term postoperative outcome and no long term complications. However, no firm recommendations can be drawn from this. Future larger studies to assess the safety and long-term outcomes of rTAR in the acute setting are necessary to help guide the decision making process in the emergency treatment of complex ventral hernia.

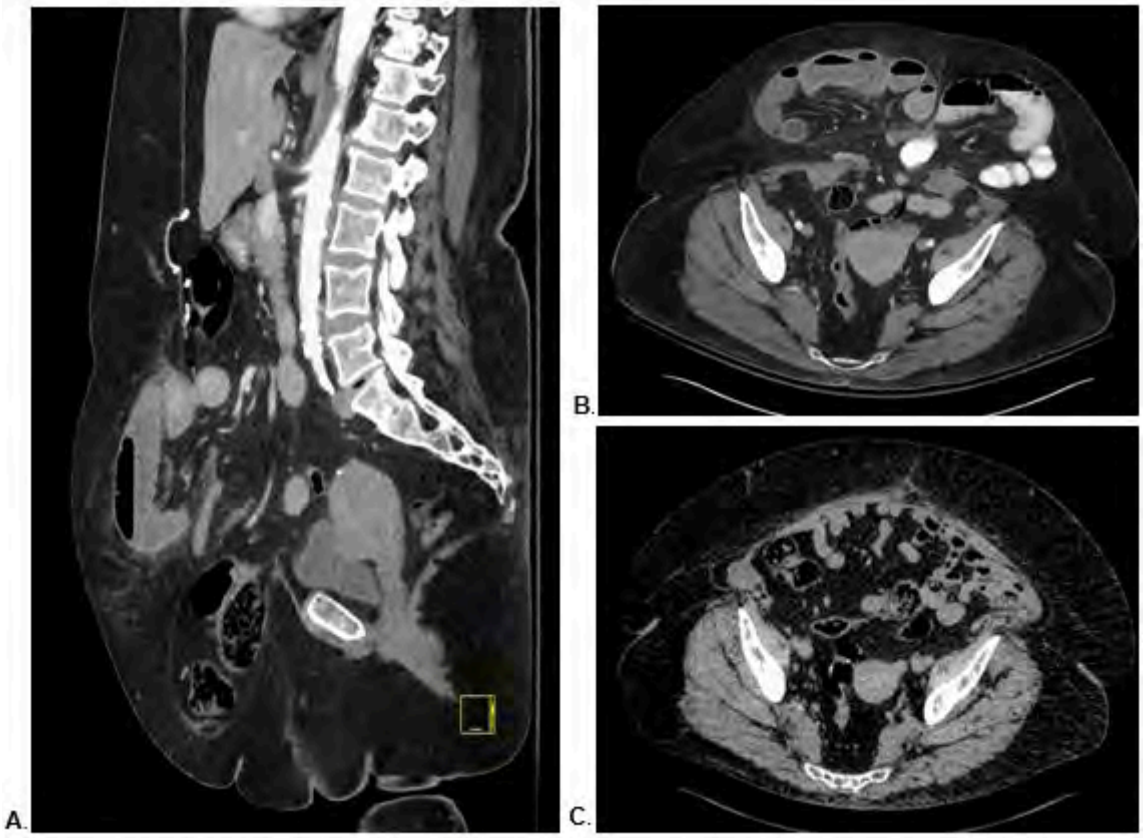

Figure A/B. A sagittal and axial view of Case 1 with prior mesh and multiple incisional ventral hernia. **Figure C** is a 2 year post repair.

Table 1. Operative Details

Operative Details	Medical Comorbidities	BMI	Hernia Grade	ASA Class	Operative time (min)	LOS (day)
Case 1	HTN, HLD, CAD, MI, PCI w/ Stent, Current Tobacco use, Hx of Breast	41.6	2	2	363	5
Case 2	HTN, HLD, OSA, Hx of Colon Ca	34.8	2	2	220	4
Case 3	HTN, HLD, OSA, T2DM, Current Tobacco use	40.8	3	3	358	1

Table 2. Overall Complications After Hernia Repair

Overall Complications After Hernia Repair	
SSO*	1
SSI	0
SSOPI	0
Recurrence	0
Av. Length of Follow-Up (weeks)	47

*SSO that occurred after Case 1 was a seroma that did not require procedural intervention

P51. Robotic Repair of Ventral Hernia Secondary to Semilunar Line Injury

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Background: We present a minimally invasive technique for repair of a semilunar line injury. Our patient is a sixty-two-year-old female who previously underwent an anterior lumbar interbody fusion. Approximately two months later, she presented to our office with a painful and enlarging left-sided abdominal wall bulge. CT evaluation showed a classic semilunar line injury with retracted, lateralized transversus abdominis and internal oblique muscles, as well as an attenuated left rectus muscle secondary to denervation injury.

Methods: The patient underwent a robotic retro muscular repair of the semilunar line injury via an enhanced total extraperitoneal approach. The proper retro muscular plane for transversus abdominis release (TAR) was reestablished. Careful dissection was performed to preserve the remaining neurovascular bundles supplying the rectus abdominis. The aberrant anatomy was defined, and the semilunar defect was reapproximated. Attenuated muscle was imbricated to obtain abdominal wall symmetry, and the repair was reinforced with a microporous polypropylene mesh.

The patient tolerated the procedure well, however her early post-operative course was complicated by infected retro muscular seroma adjacent to the mesh. She underwent percutaneous drain placement by interventional radiology. Cultures grew Methicillin Sensitive Staphylococcus Aureus. She was treated with a six-week course of intravenous antibiotics followed by a three-month course of oral suppressive antibiotics. She is currently eighteen months post procedure and is doing well without evidence of recurrent hernia or mesh infection.

Results: As surgeons become more familiar with robotic ventral hernia repair, there is increased utilization of advanced techniques of abdominal wall reconstruction. An unfortunate complication of an improperly performed TAR dissection is a semilunar line injury. These complications are difficult to treat, and outcomes of revision surgery are less than optimal (1).

Our patient's initial surgery was an anterior lumbar interbody fusion. The technique for anterior approach to the lumbar spine is, in essence, a TAR dissection performed from a caudal to cranial fashion (2). The resultant injury highlighted in this video is similar to the classic semilunar line injury seen after an improperly performed TAR dissection for abdominal wall reconstruction.

Conclusion: Our video highlights an important complication of transversus abdominis release. Surgeons should have thorough knowledge of abdominal wall anatomy prior to embarking on such procedures. It also provides an option for management of a post-operative infection with 18-month follow-up.

References:

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2. Allain J, Dufour T. Anterior lumbar fusion techniques: ALIF, OLIF, DLIF, LLIF, IXLIF. Orthop Traumatol Surg Res. 2020 Feb;106(1S):S149-S157. doi: 10.1016/j.otsr.2019.05.024. Epub 2019 Dec 6. PMID: 31818690.

P52. Failed Prehabilitation: Causes, Consequences and Conclusions

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Background: Prehabilitation of patients with ventral hernias, including reduction of risk factors and preconditioning of the abdominal wall, has proven beneficial in view of intra- and postoperative outcome.

The risk of acute complications, namely strangulation and bowel obstruction, however, increases over time and their manifestation leads to emergency surgery with need for more complex surgical procedures, increased rates of intra- and postoperative complications and techniques for hernia repair that differ from elective procedures and guidelines.

Methods: In early 2023 four consecutive patients with ventral hernias, initially enrolled in prehabilitation programs for modification of risk factors including weight loss, failed to reach the set goals before presenting to the emergency department of a tertiary care facility with strangulated hernias. All patients were operated on immediately. Patient history, demographic data, surgical procedures, inraoperative consequences, technique of hernia repair and postoperative course were evaluated.

Results: Three men and one female patient had been enrolled in prehabiltation programs for 0 to 6 months. 3 patients were initially seen by general surgeons, one by adedicated hernia surgeon. All had complained about at least moderate symptoms upon initial presentation.

Prior to surgery no reduction of body mass index was achieved and one patient gained weight. Due to the emergent presentation other risk factors could not be influenced in time and precoditioning of the abdominal wall was impossible. Only one patient was operated by a dedicated hernia surgeon and received intraoperative management as planned for the scheduled elective procedure according to guidelines. Bowel perforation and peritonitis required multiple returns to theatre for two patients and intensive care treatment for three. 3 patients suffered major complications including postoperative bleeding, surgical site infections and renal as well as respiratory failure with complicated respirator weaning and even need for tracheostomy in one case. Eventually all patients recovered but recurrence after suture repair in three of four cases must be expected.

Conclusion: Based on the results of these cases preliminary conclusions were drawn:

Patients with more than minimal symptoms may not qualify for time consuming prehabilitation, namely for prolonged attempts of weight loss. All patients should be monitired closely during the entire process. Emergency presentations are associated with a high risk of additional surgical procedures, increased rates of severe intra- and postoperative complications and hernia repair techniques that would be considered inadequate in elective settings and must be avoided. Furthemore timely preconditioning of the abdominal wall for the repair of large hernias, eg. with botulinom toxine, is usually impossible.

Patients with large or complex hernias and need for prehabilitation should therefore be seen by surgeons with extensive knowledge of abdominal wall repair as early as possible, who should then tailor the time line and goals of prehabilitation.

P54. Is There A Role For Botulinum Toxine In Inguinal Hernia Surgery? Case Report Of The Management Of A Giant Scrotal Hernia

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Background: Giant scrotal hernias yield specific challenges for patients and surgeond alike. Among them are the impossibility to reduce the hernia content into the abdominal cavity due to loss of domain and the risk of abdominal compartment syndrome.

The use of Botulinum toxine in ventral hernia surgery is well established but scarcely documented for inguinal hernias.

This report describes the management of a 72 y.o. male patient with symptomatic giant left sided scrotal hernia, concomitant right sided inguinal hernia and multiple medical conditions after prehabilitation and preconditioning of the abdominal wall by infiltration with botulinum toxine A. as well as follow-up of 1 year.

Methods: After clinical assessment by dedicated hernia surgeons and analysis of obtained CT-scans the patient was was scheduled for prehabilitative measures including smoking cessation, nutritional improvement, optimization of the multiple present cardiac co-morbidities and early open surgical repair of the smaller right sided inguinal hernia.

Lichtenstein repair on the right side was performed after two weeks and the oblique muscles of the abdominal wall were bilaterally infiltrated with a total 500 units of Botulinum toxine A in eight sites under sonography control.

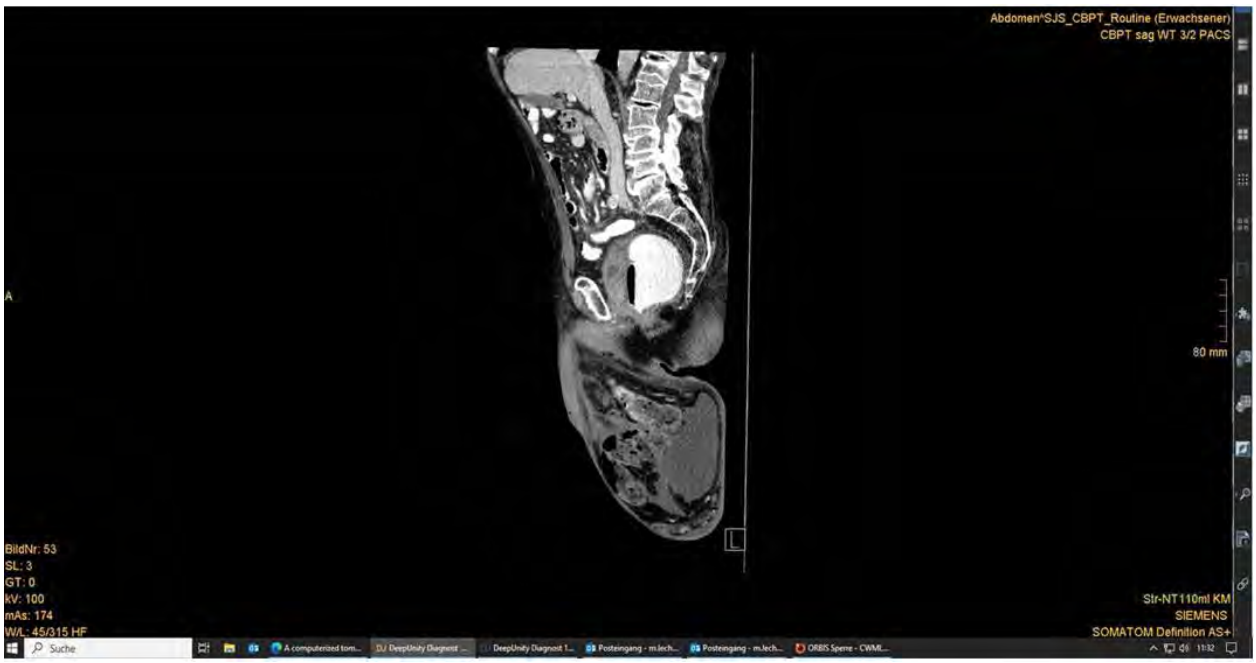
4 weeks later the large left sided hernia was reduced intraopertively and the defect repaired with Lichtensteins technique. Excessive scrotal skin was resected but neither laparotomy nor visceral resection became necessary despite the clinically evident loss of domain. The patient was transfered to an intermediate care (IMC) ward where intraabdominal pressure was monitored via indwelling urinary catheter.

Results: Postoperatively temporary acute on chronic renal failure and hemodynamic instability occured . Both were managed successfully and without need for hemofiltration. There was no evidence of intra-abdominal pressure elevation at any time and the patient was transferred to the surgical ward within days.

Left sided hematoma in the scrotum and right sided seroma in the groin were drained on the ward. The further course remained uneventful.

Shortly after surgically unremarkable 1-year follow-up the patient succumbed to his underlying cardiac conditions.

Conclusion: Despite not having a direct anatomical effect in the surgical field in the groin, botulinum toxine A has proven to be a valuable asset in the management of giant scrotal hernias with loss of domain. Reduction of hernia sac content into the abdominal cavity would otherwise demand visceral resection, surgical component separation or even staged closure of the abdomen to avoid or manage abdominal compartement syndrome. Swift prehabilitation of risk factors, timely surgery, thorough aftercare and standardized follow-up remain mainstays in the management of these cases.


Abdomen^SJS_CBPT_Routine (Erwachsener)
CBPT sag WT 3/2 PACS
A
80 mm
BildNr: 53
SL: 3
GT: 0
kV: 100
mAs: 174
W/L: 45/315 HF
Str-NT110ml KM
SIEMENS
SOMATOM Definition AS+

P56. Pre-Operative Adjuncts In Large Ventral Hernia With Loss Of Domain

R Punjani
Pooja Nursing Home

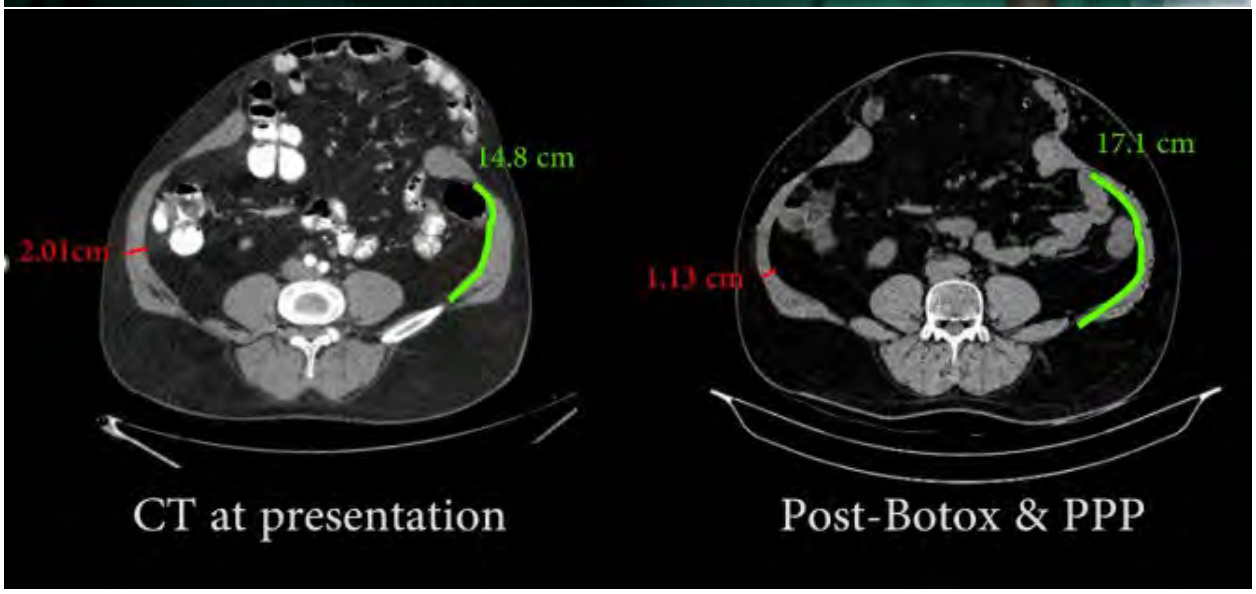
Background: Many cases of large ventral hernia have an element of loss of domain (LOD), at presentation. To facilitate Mid-line closure without intra-abdominal hypertension or abdominal compartment syndrome, per-operative adjuncts in the form of Injection Botox & Progressive Pneumoperitoneum (PPP) have been described.

We present further extension of our study of effectiveness of these adjuncts, presented in last AHS 2022 conference at Charlotte.

Methods: Out of 320 cases of Large ventral Hernia, needing AWR Procedures, 50 patients had documented Loss of Domain on Pre-op CT scan. 20 of them refused any pre-op adjunct procedures before AWR Procedure (Group 1). The remaining 30 patients had Pre-op Botox injections one month before AWR procedure. Out of 30 cases who had Pre-op Botox 12 patients did not opt for PPP (Group 2), while 18 cases, in addition, had Pre-operative PPP two weeks before AWR Procedure (Group 3). All 30 cases had follow-up CT scan before AWR procedure. The changes in lateral muscles, volumes & defect size were documented. Any side effects of these adjunct procedures were also noted. During AWR procedure, patients requiring bridging of Posterior & Anterior fascia were documented.

Results: Group 1 (20 cases) No adjunct: Bridging of posterior fascia was required in 5 cases while 3 cases needed anterior fascial bridging & 2 cases required bridging of both fasciae. Group 2 (12 cases) Only Botox: Bridging of posterior fascia in 2 cases, Anterior fascia in 3 cases. None had bridging of both fasciae. Group 3 (18 cases): Posterior fascia was bridged in 1 case while non required bridging for anterior fascia. There were no significant side effects with adjuncts.

Conclusion: We found that pre-op adjuncts are effective in myo-fascial medialization & closure of midline without any major side effects, especially when both adjuncts are combined.


14.8 cm
2.01cm
17.1 cm
1.13 cm
CT at presentation
Post-Botox & PPP

P57. A New Etiology Of Semilunar Line Diastasis And The Relation To Rectus Diastasis

M Dudai
Ramat Aviv Medical Center and Hernia Excellence

Background: Rectus Diastasis (RD) is a well-known pathology that only in the last decade has received research and attention as a problem that needs to be treated. Guidelines for RD like the recent European Hernia Society, created the clinical basis for the diagnosis and treatment of the problem. There is no reference in the guidelines or in the medical literature to the condition of Semilunar Line Diastasis (SLD). We want to bring our little experience with this new phenomenon and raise the issue for discussion.

Methods: The anatomical structure of the semilunar line (SL) is different in the areas above and below the Arcuate ligament, where the Posterior Rectus Sheet stops covering the back part of the rectus abdominis (RA). In the upper part, the SL is built from the connection of the posterior fascia of the RA to the fascia of Transvers Abdomini (TA) and the anterior fascia to the fascia of the External Oblique (EO), where the fascia of the Internal Oblique (IO) muscle is connected to both the anterior and posterior fascia of the RA. In the lower third of the RA, all the facias of the three abdominal muscles are connected only to the anterior fascia of the RA, a situation that causes weakness of the SL in the lower abdominal area.

Results: Following several cases in which we saw that after endoscopic surgeries for RD, a kind of swelling of the lower abdomen formed. A review of the CT showed that the patients also had SLD on both sides that was more clinically manifested after the surgery. We hypothesize that the closure of the separation of the Linea Alba (LA) led to increased tension in the weak SL areas and led to their protrusion. From examining our three individual cases, we can see some things in common: the separation in the SL is always accompanied by a separation in the LA, but smaller than it, the separation in the SL is bilateral and not symmetrical and one side is more prominent and leads to asymmetry of the lower abdomen, the patients always have Core Instability and it is very possible that it is aggravated by the addition of the SLD. From a systematic examination of the CT images of patients with RD, SLD can also be found in a small part.

Conclusion: There are no data in the medical literature regarding diagnosis or treatment of SLD. Recently, a group from Milan found an anatomical variation of the connection of the aponeurosis of the IO to the RA in SL only with a connection to its posterior fascia without splitting to the anterior as well. Following this, they began a study to test the effect of this and others in the region, on the development of RD and more. We add our report on the SLD phenomenon and raise the need to check this new etiology with its implications for RD, Core Instability, and the possible need for surgical repair together with the RD.

P58. Endoscopic TEP Repair Of Recurrent Hernias After Initial Laparoendoscopic Repair, Is This The Right Way

M Dudai
Ramat Aviv Medical Center and Hernia Excellence

Background: A serious complication of Hernia surgery is the recurrence of the Hernia. The guidelines of the various International Hernia Societies are that a recurrent hernia operated by an anterior open approach should be repaired by a posterior Laparoendoscopic approach. On the other hand, hernia surgery that was repaired using a posterior lapaoendroscopic approach is recommended to be repaired using an open anterior approach. We would like to discuss the last recommendation and present our experience with re-posterior TEP repair for Laparoendoscopy recurrent Hernia

Methods: The common guideline for anterior recurrent hernia repair with a posterior approach is accepted almost without question by most surgeons. The recommendation to repair posterior recurrence with an anterior approach is mainly based on the ease of operating in the anterior virgin region versus the difficulty encountered by the surgeon in the posterior need to separate the mesh from the wall and the elements in a narrow space. On the other hand, the posterior approach has the well-known advantages of the Laparoendoscopic surgeries, but there is another advantage. The edges of the mesh are not left exposed in front of the bowel in the defect area of the hernia like when it is repaired from anterior open approuch.

Results: For the past 10 years, we have been performing re-posterior repair for recurrent Hernia, first with the laparoscopic TAPP approach but later with endoscopic TEP and in about 60 cases we complete the operation successfully. Initially we had using the TAPP approach but it turned to TEP approach that allowed advantages of exposing the entire posterior groin wall. This exposure made it possible to identify all the hernias, even small ones that are not visible through the peritoneal cavity, as well as lipomas. The dissected mesh was left attached to the parietal peritoneum. At the beginning of our experiment, we separated the mesh from the pubis area medially to the lateral side, but with time we learned that it is easier to start in the most lateral area and progress in separation towards the medial side.

The operation takes longer and requires a lot of patience. Despite the difficulty, there were no significant complications or more than the standard surgeries. The course and recovery after the surgery were essentially the same and there was no recurrence of any of the hernias.

Conclusion: Repairing recurrent hernias requires a lot of skill and experience. In our experience there are advantages in re-repair recurrent Laparoendoscopic Hernia using the TEP approach. We have shown that despite the surgical difficulty, the repair can be performed safely and successfully. It is necessary to continue to monitor the results of many surgeries as well as to improve the Re-endoscopic technique.

P59. What Dose A General Surgeon Need To Know About The Spotsman Hernia And Athletes Pubalgia

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Ramat Aviv Medical Center and Hernia Excellence

Background: Only in 1980 Gilmore first described in England the sports groin injury. Steps to define the pathology behind the injury and the way of treatment have been taken since 2015 at conferences in Duha, Manchester, and Vienna. Sportsman Hernia (SH) and Athletes Pubalgia (AP) is a complex specific pathology involving two different medical fields: Sport Injury and Groin Hernia surgery. Sportsman Hernia is different from a Groin Hernia and must be diagnosed as such because the treatment and surgery are different.

Methods: SH is not a groin hernia where there is a defect in the abdominal wall, but rather traumatic athletic damage to the groin wall elements leading to weakness and loosening of the area and pain. The injury expands as the athlete continues in the athletic activity and involves the Pubic bones in the advanced stages, Athletes Pubalgia.

Results: The diagnosis based on a typical clinical history and mainly on a physical examination when the US and MRI imaging are not always diagnostic. SH has a chronic pattern of groin pain in sports activities and in advanced case can continue to the days after. It is important to remember this point, because in the inguinal hernia pain is only because of the herniation of content and is not chronic! Pain over 3 months that did not respond to conservative physiotherapy treatment, is indication for surgery. Nowadays most patients are amateurs doing personal sport activities and not professionals. The surgery is by the endoscopic TEP approach but is different from a regular groin hernia surgery. 26 years ago, I had developed the endoscopic TEP Inguinal Ligament Release Reinforce Technique for SH. The surgery must be completed like any sport injury with a dedicated athletics muscle rehabilitation program that ranges from 5-10 weeks depending on the severity of the injury. I have operated on more than 1100 athletes with the vast majority returning to sporting activity.

Conclusion: Treatment of SH requires unique expertise in the diagnosis and surgery of the groin injury, but also a follow-up system for performing the athletic muscles rehabilitation program. A general surgeon should know how to differentiate SH from Inguinal Hernia. The presence of chronic pain must light a red lamp and especially in the presence of a small inguinal hernia that is not the source of the pain. Performing surgery like a groin hernia without repairing the pain factors of the SH, will leave the patient with chronic pain after the surgery.

P62. Extended Total Extra-Peritoneal Approach For "Pauli" Robotic Retromuscular Sugarbaker Repair For Para-Urostomal Hernias: A Case Series

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Rutgers Robert Wood Johnson Medical School

Background: Parastomal hernias present a common, yet complex problem following urinary diversion ileal conduit surgery. Various surgical techniques exist for management with no consensus on optimal management. We describe an Extended Total Extra-Peritoneal (eTEP) approach for robotic-assisted laparoscopic "Pauli" repair (Sugarbaker repair in the retrorectus plane using a transversus abdominis release) for patients with parastomal hernia after ileal conduit urinary diversion surgery.

Methods: Three patients who had all undergone radical cystectomy and ileal conduit urinary diversion for bladder cancer years earlier and subsequently developed parastomal hernia, underwent elective parastomal hernia repair. The retro-muscular space was accessed directly on the contralateral side and developed across the midline. Unilateral transverse abdominus release lateral to the urostomy was performed to create a large space for mesh repair. The defect in anterior rectus fascia was right-sized and the defect in the posterior rectus sheath was lateralized. Large mesh reinforcement in the retro-muscular plane was performed.

Results: All patients were discharged within 23 hours with no signs of hernia recurrence on post-operative follow up. One patient experienced a post-operative a seroma in the subcutaneous hernia space that was managed with a percutaneous drain with complete resolution. Overall, all the patients tolerated the procedure well with minimal or no signs of post-operative complications.

Conclusion: This series demonstrates the feasibility of eTEP approach for the Pauli repair in select patients. All patients had reducible hernias with adequate conduit length on CT to allow for Sugarbaker repair. As advanced hernia repairs move out of the peritoneum, this may represent a better minimally invasive approach than traditional intraperitoneal repairs. This technique allows for parastomal herniorrhaphy in an extraperitoneal space with a minimally invasive approach with minimal hospital stay and wound morbidity.

P63. Surgical Expertise And Risk Of Long-Term Complication After Groin Hernia Surgery - A Patient-Reported National Register Study

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Background: Inguinal hernia repair is common with more than 20 million repairs worldwide each year. There is little knowledge about the relation between level of surgical expertise and outcome of groin hernia surgery. The aim of this study is to assess the risk of reoperation because of recurrence, chronic pain and patient satisfaction of patients operated by resident surgeons vs specialist surgeons.

Methods: This register-based and questionnaire study is based upon prospectively registered data from The Swedish Hernia Registry (SHR) as well as patient reported data one year after the operation, between 1st September 2012 and 31st December 2018. Level of expertise of the surgeon is classified as specialist surgeon or resident surgeon under training. To determine independent risk factors for long-term complications a binary logistic regression analysis was used.

Results: Out of 103 117 inguinal hernia repairs registrered in the SBR 62 176 operations were eligible for this study. In total 1518 (2.4%) patients were reoperated because of recurrence, 9586 (15.4%) patients suffered from chronic pain and 3350 (5.4%) were dissatisfied with the operation. The 17 494 patients operated by a resident surgeon were less dissatisfied (OR) 0.89 (95% CI 0.80-0.99) than patients operated by specialist surgeons. Type of physician did not act as a significant risk factor in reoperation for recurrence nor chronic pain.

Conclusion: Resident surgeons have more satisfied patients 1 year after groin hernia surgery but level of expertise did not affect risk of reoperation for recurrence nor chronic pain.

In Sweden resident surgeons are upholding the standard compared to specialists despite lower experience in the surgical field.

P64. Early Outcomes of Biologically-Derived Grafts in Minimally Invasive Ventral Hernia Repairs

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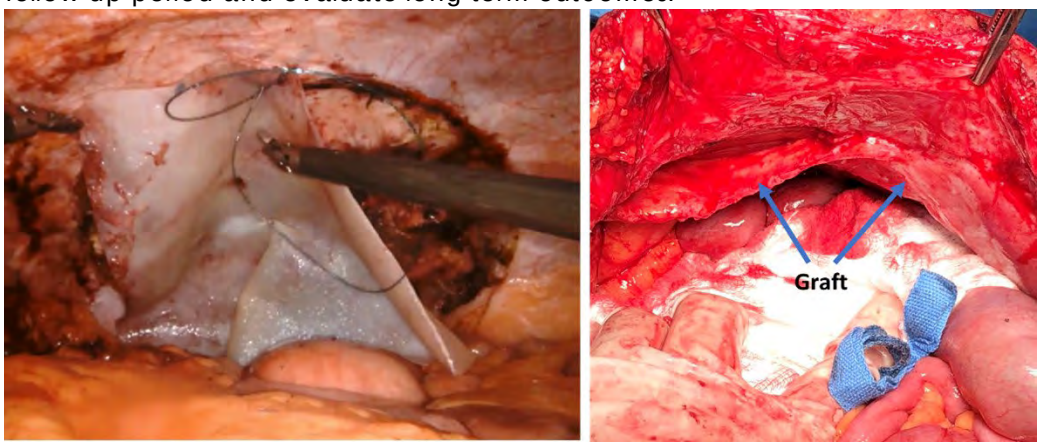
Surgical Healing Arts; Integra LifeSciences Corp

Background: Recent published literature and advanced surgical techniques have suggested that synthetic mesh is suitable for reinforcement of many clinical incisional hernias. However, there are instances based on case presentation, available surgical approach, and individual patient preferences where a biologically-derived surgical graft may be desired for reinforcement. Unfortunately there is limited clinical data definitively exploring the use of these materials in this setting. Biologically-derived grafts have typically not been extensively utilized in laparoscopic or robotic procedures due to difficulty with suturing and their thickness which can prohibit delivery through a trocar. A biologic graft derived from porcine urinary bladder matrix (Gentrix®, Integra LifeSciences Corp) is roughly a quarter of the thickness of standard acellular dermal matrix (ADM) grafts and thus facilitates minimally-invasive delivery for surgical procedures. We conducted a retrospective review of all patients from 2017-2022 that received reinforcement of ventral or incisional hernias with a biologically-derived graft using a laparoscopic or robotic approach to assess early clinical outcomes.

A total of 21 patients were identified from review of electronic medical records at a single surgical center that underwent minimally invasive repair with a biologic graft. Hernias were an average of 5.9 cm in length and all were CDC Class 1, but 52% were incarcerated and 9.5% had severe adhesions. All hernias were primarily closed and reinforced with a UBM biologic graft. Two of the cases were completed laparoscopically and the remaining 19 were completed robotically. The average length of stay in the hospital was 2.2 days. After an average follow up period of 58.7 days (range 8-301), there were no SSOPIs and only 1 SSI (4.8%). Hernia recurrence confirmed by clinical assessment was only identified in one patient (4.8%) at 301 days. Of note, one patient that had previously received an IPOM repair of an incisional hernia developed an unrelated bowel obstruction in the lower pelvis that required an open procedure to repair the bowel. As seen in the attached figure, at approximately one year post-operatively the biologic graft was seen superiorly as a vascularized tissue that felt similar to fascia and had minimal attachments to the underlying viscera. Collectively, these early results suggest promising outcomes when a biologic graft is utilized in robotic and laparoscopic incisional hernia repair. Prospective follow up with these patients is currently ongoing to lengthen the post-operative follow up period and evaluate long term outcomes.



P65. Incidence of Undiagnosed Contralateral Inguinal Hernia Determined at the Time of Laparoscopic Inguinal Herniorrhaphy in Adults

M Zia, L Morris, J Long, P Reardon
The Houston Methodist Hospital

Background: Contralateral inguinal exploration of the asymptomatic side is a routine practice for many pediatric surgeons because of the high incidence of occult inguinal hernias in the pediatric patient population. In adults, contralateral inguinal exploration is not a common practice because of the increased morbidity and the presumed low incidence of asymptomatic contralateral inguinal hernias. Laparoscopic inguinal herniorrhaphy offers the advantage of contralateral inguinal exploration without additional incisions or significant morbidity. This study was undertaken to determine the incidence of undiagnosed contralateral inguinal hernia determined at the time of laparoscopic inguinal herniorrhaphy performed in adults.

Methods: A retrospective review of patient records revealed 276 patients that had undergone laparoscopic inguinal herniorrhaphy. One hundred seventy nine unilateral repairs were performed, and 97 bilateral repairs were performed.

Results: The average age was 50 ± 14.6 years; the male to female ratio was 19.4:1. Fifty-two patients did not undergo contralateral inguinal exploration and were, therefore, excluded. Of the 224 patients that underwent bilateral inguinal exploration, 127 unilateral and 97 bilateral inguinal hernia repairs were performed. Sixty-two patients that underwent bilateral inguinal herniorrhaphy had a pre-operative diagnosis of bilateral inguinal hernias. In contrast, 35 bilateral repairs were performed for an undiagnosed, asymptomatic contralateral inguinal hernia. Of the 162 patients that had a pre-operative diagnosis of unilateral inguinal hernia, 21.6% (35/162) had an undiagnosed, asymptomatic contralateral inguinal hernia.

Conclusion: Laparoscopic examination of the asymptomatic contralateral inguinal region will identify a significant number of previously undiagnosed groin hernias with minimal morbidity and minimal extra operating time. A significant proportion of these occult defects will progress to symptomatic hernias if left untreated. The avoidance of a second operation results in cost savings to the patient, as well as a second anesthetic event.

P67. Incidence of Postoperative Complications Among Patients with Active or Resolved COVID-19 Undergoing Elective Abdominal Wall Reconstruction

G Wagner, M Bald, P Peacock, F Aguilera-Galviz, J de la Torre
University of Alabama at Birmingham

Background: There is little known about the incidence of postoperative complications among patients with COVID-19 positivity undergoing elective surgical operations. The purpose of this study was to identify differences in post-operative complications following elective abdominal wall reconstruction (AWR) in patients diagnosed with COVID-19 as compared to patients presenting pre-pandemic.

Methods: A single-institution, retrospective chart review was performed of patients who underwent AWR with component separation technique and placement of acellular dermal matrix between January 2017-September 2022. Patients were stratified by date: pre-COVID-19 (1/2017-12/2019) and post-COVID-19 (1/2020-9/2022). All patients with a confirmed positive Covid-19 diagnosis were also identified. Data collected included demographics, clinical characteristics, and complications. Complications were classified as major (requiring readmission or needing surgical intervention) and minor. Univariate and multivariate analyses were performed.

Results: 168 patients were included. The mean age was 54 and mean BMI was 33. There were 75 patients who underwent surgery pre-COVID and 93 patients after. 16/93 (17%) had a positive COVID-19 test prior to surgery or during perioperative period. These two groups were risk matched. COVID-19 patients had no significant increase in postoperative complications. Major complications occurred in 13.3% in the pre-COVID group and 7.5% in the post-COVID. COVID-19 patients were more likely to be younger (48 vs 57, p=0.049); and more likely to have a shorter length of stay in the hospital (3 vs 5.8; p=0.038).

Conclusion: During the pandemic, there was no associated increase in postoperative complications in our case series of patients undergoing AWR with component separation and acellular dermal matrix. Specifically, we did not find significantly increased rates of hematoma, deep vein thrombosis, or pulmonary embolism in COVID-19 convalesced patients undergoing AWR.

DEMOGRAPHICS AND COMPLICATIONS – COVID POSITIVE PATIENTS				
		Pre-COVID	COVID positive	P-Value
Total patients		75	16	
Gender	Female	52 (70%)	8 (50%)	0.061
	Male	23(30%)	8 (50%)	0.061
Race	White	62 (82%)	13 (81%)	0.046
	African American	11 (15%)	3 (19%)	0.39
	Hispanic	2 (3%)	0 (0%)	0.241
Smoker		7 (9%)	1 (6.2%)	0.35
Diabetes		18 (24%)	4 (25%)	0.46
Hypertension		43 (57%)	8 (50%)	0.304
History of liver transplant		5 (6.6%)	2 (12.5%)	0.20
Heart Disease		13 (17%)	1 (6.25%)	0.13
Age in years		56.8	48.2	**0.049**
BMI		34	31.6	0.063
Preop albumin		4.4 /0.39	4.3 /0.35	0.15
Operative time		252/ 85	235.5 /64	0.18
Preoperative hemoglobin		13.3/ 1.47	12.83 / 1.89	0.17
Postoperative hemoglobin		11.2 / 2.25	11.42 / 1.89	0.34
Length of stay		5.8	3	**0.038**
Hematoma		4 (5.3%)	0 (0%)	0.172
Skin Necrosis		14 (18.6%)	1 (6.25%)	0.112
Infection		5 (6.6%)	1 (6.25%)	0.475
Dehiscence		2 (2.6%)	0 (0%)	0.254
Seroma		15 (20%)	4 (25%)	0.32
DVT		4 (5.3%)	0 (0%)	2.254
PE		1 (1.3%)	0 (0%)	0.321
Additional operation		10 (13.3%)	3 (18.7%)	0.287

P68. Computed Tomography Measurements To Predict Need For Robotic Transversus Abdominis Release: A Single Institution Analysis

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Background: For patients undergoing open Rives-Stoppa abdominal wall reconstruction (AWR), the radiographic rectus width to hernia width ratio (RDR) has been shown to predict ability to close fascial defect without additional myofascial release. However, it is unknown whether the RDR is applicable for patients undergoing robotic AWR. We aimed to examine various CT measurements to determine their usability in predicting the need for transversus abdominis release (TAR) in robotic AWR.

Methods: We performed a retrospective cohort study of 137 consecutive adult patients with midline ventral hernias who underwent elective robotic retrorectus AWR with or without TAR from June 2018 to December 2022 at our institution. We excluded patients with M1 or M5 hernias based on EHS classification, lateral or flank hernias, or patients who underwent conversion to open or hybrid repairs requiring open fascial closure. The CT measurements we examined were hernia width (HW), hernia width/abdominal width ratio (HW/AW), and RDR (Figure 1). Abdominal wall width (AW) was measured transversely between the lateral aspect of the external oblique muscles at the level of the aortic bifurcation. Multivariate analysis was performed to identify factors independently associated with requiring TAR. Receiver operating characteristic (ROC) curve as well as area under the curve (AUC) analyses were calculated to determine the accuracy of the various CT measurements in predicting the need for any TAR and bilateral TAR.

Results: Average HW for the cohort was 6.9cm and average BMI was 33.8. 96% of patients were classified under CDC wound class 1. Fifty-eight (42%) patients required a TAR with 32 (23%) undergoing unilateral TAR and 26 (19%) undergoing bilateral TAR. There was a trend towards patients undergoing TAR having increased rates of prior hernia repair (51.7 vs 35.4%, p = 0.08). Patients undergoing TAR had a significantly higher average HW and HW/AW (7.5 vs 6.3cm, 0.23 vs 0.19, p 0.3, and HW > 10cm yielded high specificity in determining need for any TAR (97.5% vs 96.2% vs 92.4%) or bilateral TAR (95.5% vs 94.6% vs 92.8%).

Conclusion: History of prior hernia repair in our cohort of patients undergoing robotic AWR was shown to be a risk factor for requiring TAR. CT measurements have some predictive value in determining additional myofascial release in robotic AWR. Further prospective analysis is needed to determine the optimal predictive model for additional myofascial release in this patient population.

Figure 1: CT measurements and calculations for a patient who required bilateral TAR

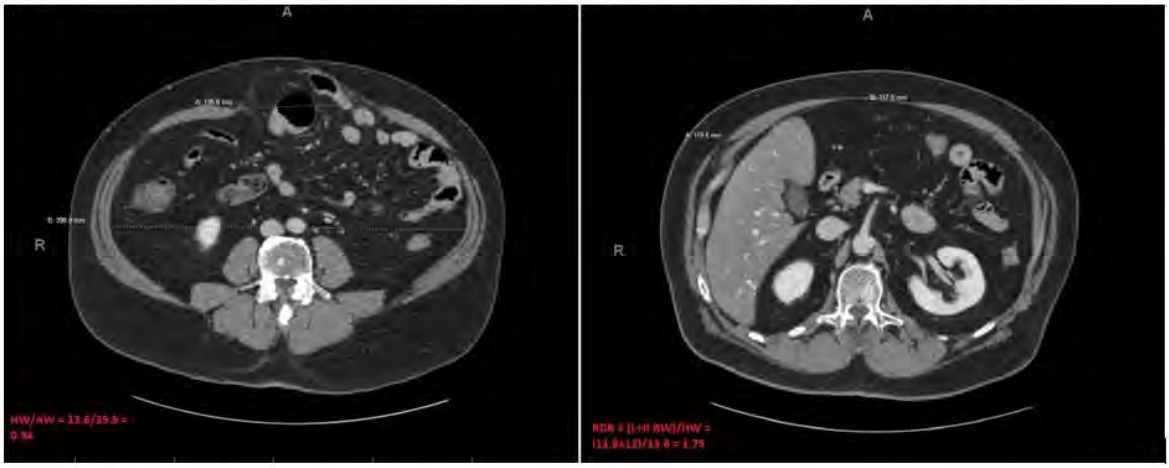

Figure 2:

AUC values for various CT measurements to predict need for any TAR and bilateral TAR

	AUC (any TAR)	AUC (bilateral TAR)
RDR	0.684	0.714
HW/AW	0.669	0.693
HW	0.667	0.681

P69. Effectively Managing Complex Grade II-IV Abdominal Wall Hernias with the Innovative T-Line Hernia Fixation System

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Background: Complex and recurrent abdominal wall hernias have high rates of recurrence exceeding 60% despite modern repair approaches and careful patient selection. Since anchor point failure is often associated with a recurrent hernia, the T-Line Hernia Fixation System was invented to enhance mesh fixation and thus reduce hernia recurrence. The T-Line Hernia Fixation System consists of a polypropylene hernia mesh with integrated mesh sutures that provide ~3X greater anchoring strength, where the mesh sutures can be used to anchor the mesh or be used independent of the mesh to close fascia and provide additional fascia support. With rapid clinical uptake, the mesh has been implanted as an onlay and sublay and used in open and robotic cases. Consequently, more than 3,800 mesh sutures have been implanted worldwide without reports of pain or significant adverse events.

Methods: The T-Line Hernia Fixation System was used in a series of complex ventral hernia repairs, including patients with multiple recurrent hernias, patients with BMI>35, flank hernias, and lumbar hernias. Operative details, age, sex, BMI, OR time, blood loss, follow-up, pain, hernia recurrence rates, and adverse events were recorded.

Results: The T-Line Hernia Fixation System has been used in 18 patients over the past 30 months (November 2020 – April 2023). There were 12 woman, average age of 62 years (25 – 83), BMI = 35 (24 - 51), OR time = 300 mins, estimated blood loss = 80 ml, with a mean follow up of 16 ± 11 months. All patients did well with 2 seromas reported in the onlay cases (13%) and one superficial SSI (7%) reported. No hernia recurrences have been reported to date, and there is 1 case of significant pain of undetermined etiology.

Conclusion: Complex recurrent abdominal wall hernias remain a difficult problem in abdominal wall reconstruction with recurrence rates exceeding 60%. Prosthetic anchor point failure has been hypothesized to contribute to many hernia recurrences. In this study, with 6 patients having more than 2 years of follow-up, the T-Line Hernia Fixation System with its novel anchoring technology has yielded no hernia recurrences nor increased post-operative pain. These data suggest that enhanced soft tissue fixation may significantly reduce the recurrence rate following complex ventral hernia repair. However, further clinical experience and longer follow-up is needed to definitively determine the value of this novel tool for abdominal wall reconstruction.

P70. The University of Illinois at Chicago Technique for TAPP inguinal hernia repair performed with the daVinci single post system

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Background: The novel daVinci Single Port (SP) System is an emerging technology that is redefining the boundaries of single-incision surgery. It enables the surgeon to control three instruments and an endoscope through a single incision of less than 3 cm. Moreover, the daVinci SP instruments are designed with an "elbow-and-wrist" technology that enables a wide range of movement and improved triangulation.

Methods: We describe the UIC step-by-step transabdominal inguinal hernia repair with the preperitoneal patch technique performed with the daVinci SP system (SP-TAPP).

Results: A mini-laparotomy of 2.2 cm is created at the level of the umbilicus and the system is docked and targeted to the pelvic area. The peritoneum is incised at about 2 cm on top of the inguinal internal ring. The preperitoneal space is bluntly dissected and the hernia sac is identified and detached by the spermatic cord or round ligament. The dissection of the peritoneal flap is continued until a complete exposition of the Cooper's ligament medially, the crural ring inferiorly, and the external iliac vessels laterally is obtained. A 3D mesh is inserted. The peritoneal flap is closed with a running suture. The fascia defect is closed with interrupted sutures and the skin with subcuticular running suture.

Conclusion: Robotic SP-TAPP inguinal hernia repair is a new but rather feasible technique that expands the application of single-incision surgery.

P71. Surgical Sleuthing: Differentiating Inguinal vs. Spigelian Hernia

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Background: We present a rare case of an inguinal hernia masquerading as a Spigelian hernia. Our patient is a 90-year-old lady without prior trauma or abdominal surgeries who presented to our clinic with complaints of worsening left lower quadrant pain due to the increasing size of a chronically incarcerated, non-obstructing, ventral hernia. Imaging is notable for a left lower quadrant Spigelian hernia. Laparoscopic reduction and evaluation of the left lower quadrant intra-parietal hernia is notable for an inguinal hernia instead of a previously evaluated Spigelian hernia on imaging. This was easily reduced and repaired via a pre-peritoneal flap with a 15x16cm polypropylene mesh. The patient tolerated the procedure well, discharged on post-operative day 2, and was doing well on the post-op follow up visit in clinic. The uniqueness of this rare case involved diagnosing intra-operatively an intra-parietal inguinal hernia dissecting cephalad while previously masquerading on imaging as a Spigelian hernia. Fortunately, it was easily reduced and repaired laparoscopically.

P72. Ventral Hernia Surgery: the Impact of Surgeon and Patient Gender on Documentation and Outcomes

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Background: Recent literature has demonstrated that female surgeons have similar, if not slightly better outcomes compared to male surgeons, however this has not been studied among hernia surgeons, specifically. However, studies have shown women patients to have worse outcomes than their male counterparts for many reasons, including, on average, women have a history of more prior abdominal surgeries than men. We hypothesized that women surgeons would have highly-detailed operative reports and better patient outcomes, while women patients would have poorly-detailed operative notes and more complications than men patients.

Methods: Operative reports from a medical-legal database were obtained and those describing ventral hernia repair (VHR) were included. Previously identified factors deemed important for inclusion in a VHR operative report and complications such as surgical site infection (SSI), reoperation, or recurrence were extracted. The names of the surgeon and patient were collected. The surgeon was searched online to determine their gender. The patient's gender was determined based on their name, and those with gender-neutral names were excluded. A target score of 70% was established a priori as a highly-detailed report. Fischer's exact test was used to compare categorical variables.

Results: 1,011 operative reports were reviewed and 982 were included in the study. There were 626 (63.7%) operative notes for women patients and 93 (9.5%) operative notes dictated by women surgeons. For surgeon gender, there was no difference in the percentage of highly-detailed operative notes dictated by women vs men surgeons (33.3% vs 36.2%, p=0.650) or in complication rate (73.1% vs 73.6%, p=0.902).For patient gender, there was also no difference in the percentage of highly-detailed notes dictated for female vs male patients (35.1% vs 37.4%, p=0.487) or in complication rate (74.6% vs 71.6%, p=0.348).

Conclusion: There was no difference in quality of operative notes or complication rate between women and men hernia surgeons, however less than 10% of the surgeons were female. Additionally, although female patients had fewer highly-detailed operative reports and had more complications, neither was statistically significant.

P73. Ultrasound-Guided Quadratus Lumborum Blocks Prior To Abdominal Wall Reconstruction: A Retrospective Cohort Study

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Background: Quadratus lumborum blocks (QLB) have been shown to reduce somatic and visceral pain in the T9-L4 regions. Using ultrasound guidance, local anesthesia injected deep to the anterior fascia of the quadratus lumborum in the lumbar position can spread cephalad along the arcuate ligaments to reach the thoracic paravertebral space. This provides analgesia to the somatic nerves and thoracic sympathetic trunk in the intercostal and paravertebral spaces. QLB have been successfully used to reduce pain for a variety of surgeries, including cesarean section, nephrectomy and inguinal hernia repair. However, few studies have examined their use in patients undergoing abdominal wall reconstruction (AWR). The aim of this study is to investigate the outcomes of patients who receive QLB prior to AWR.

Methods: A single institution, retrospective analysis was performed to evaluate the outcomes of patients who received QLB prior to undergoing open AWR. All adult patients undergoing open bilateral transversus abdominis release who received pre-operative ultrasound-guided QLB between October 2022 and April 2023 were included. The main outcomes examined were total morphine milligram equivalents (MMEs), mean daily MMEs, and length of stay. Results were analyzed using demographic information.

Results: A total of 25 patients were included in the analysis. 20 patients had a midline incisional hernia, 4 patients had both midline and parastomal hernias, and 1 had both midline and bilateral inguinal hernias. The average age was 60 (39-82 ±12.8), average BMI was 30.7 (22.5-41.6 ±4.7), and 52.0% (13 of 25) were male. The average hernia defect width was 11.1 cm (4.0-20.0 ±4.7) and length was 14.4 cm (4.0-25.0 ±6.3). 18 (72%) were clean cases, and 7 (28.0%) were clean-contaminated cases. The average length of stay was 5.20 days (1.4-11.30 ±2.18). The average total MME for the hospital stay was 376.8 mg (6.0-1965.5 ±495.2) per patient with an average mean daily MME requirement of 63.45 mg (1.76-275.2 ±72.5) per patient. No adverse events related to QLB were identified.

Conclusion: Pre-operative QLB were safely used in patients undergoing complex AWR for large incisional hernias. QLB can be considered a good alternative to epidural catheters and other peripheral nerve blocks for post-operative pain control. However, prospective studies are needed to further assess its efficacy and utility for this patient population.

P74. Robotic Mesh Plug Removal x2

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Ascension St. John Hospital

Background: 66 year old male who presented with left groin pain after a previous history of two plug & patch repairs. He has a small recurrence on the left and was taken by a different surgeon for robotic repair. They encountered the plugs, so sent him to me. They did fix a right inguinal hernia robotically.

His symptoms were more concerning for plug pain, rather than pain from his small recurrence. So the plan was to remove his plugs at this time.

P75. Chemical Denervation for Reconstruction of Abdominal Wall in a 2-year-old patient with Eagle Barrett (Prune Belly) Syndrome

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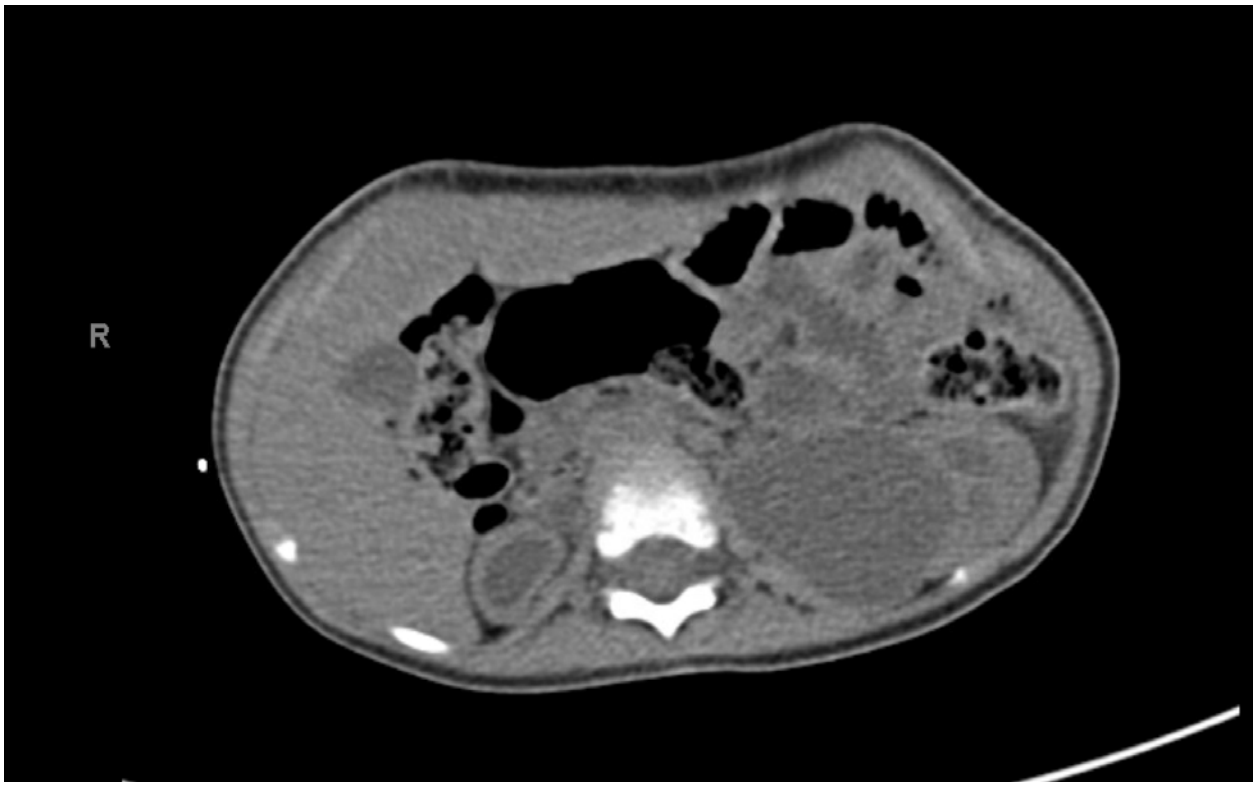
Background: Eagle Barrett or Prune Belly Syndrome (EBS) is a rare congenital condition, with an incidence of 1/30,000-40,000, comprising of hypoplastic or absent abdominal wall musculature, cryptorchidism, and urinary collecting system abnormalities. Long-term outcomes after abdominal wall reconstruction in this patient population are limited and the size of the defect varies widely among patients. We present a case of a two-year-old boy who had difficulty with balance due to the size of his abdominal wall defect. At our institution, we have one of the largest series of adult patients post chemodenervation and abdominal wall reconstruction and have been using this strategy for over a decade. Our team used preoperative chemodenervation of the patient's anterolateral abdominal wall with botulinum toxin-A (BTA) one month before surgery to allow for elongation and relaxation of the oblique musculature. The denervation was performed using CT and ultrasound guidance under sedation and anesthesia monitoring.

Methods: Intraoperatively, subcutaneous flaps were created by pediatric plastic surgery to allow for exposure of the oblique musculature. The rectus abdominus musculature was absent and the defect width was 70% of the diameter of the entire abdomen. Urology performed a bilateral orchiopexy. A preperitoneal plane was developed and reconstructed. The hernia repair was buttressed with a biologic mesh. The oblique musculature was brought to contralateral oblique musculature over the mesh, allowing for full closure and muscle coverage of the defect. Redundant skin was resected, and skin flaps and umbilicus were reconstructed.

Results: The patient had no postoperative complications. He received adequate postoperative pain control and was managed by the pediatrics service until his discharge on postoperative day five. His balance improved and he has had no defect recurrence with ten-month follow up. Our team's approach for management of large abdominal wall defects has not been described in pediatric literature before; furthermore, chemodenervation has not been described for abdominal wall reconstruction in children. Although there are limited data on the long-term effectiveness of abdominal wall reconstruction in this setting, it is important to be aware of chemodenervation as an option to aid in the closure of large abdominal wall defects. As children grow, these hernia defects increase in size due to oblique abdominal wall contraction.

Conclusion: Repairing defects earlier allows for optimal reconstruction of anterior abdominal wall anatomy, optimization of respiratory, urinary, and defecation mechanics, balance and core strength and physical appearance.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P76. Preperitoneal Mesh Repair of a Large Multiply Recurrent Hernia in a Contaminated Field

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Background: The patient was a 49-year-old male with a BMI of 29, history of Crohn's disease, COPD, and recent tobacco use who presented for management of a multiply recurrent large ventral hernia and recurrent enterocutaneous fistula. Abdominal CT scan shows a large midline hernia extending over the right iliac crest with areas of adhered bowels deep to the EC fistula external opening.

Methods: The patient was given antibiotic and heparin prophylaxis, laid supine, and placed under general endotracheal anesthesia. The abdomen was prepped and draped in sterile fashion. An elliptical incision was created sharply, and the subcutaneous tissue is dissected with cautery.

Once a mesothelial or preperitoneal layer is encountered, the "preperitoneal" space is developed. With blunt dissection, pressure is initially directed towards the anterior abdominal wall and a rolling or sweeping motion is used to separate the peritoneum from the abdominal wall. With the peritoneum is under gentle tension, larger adhesions are identified and released using cautery.

Sharp dissection is used near areas of bowel. In areas with significant peritoneal adhesions, portions of the posterior transversalis fascia are dissected down to stay extra-peritoneal. The transverse abdominis muscle was left intact. A circumferential preperitoneal dissection is completed from the xiphoid superiorly, lateral abdominal wall on both sides, and to the space of Retzius inferiorly.

The pedicle of skin and EC fistula tract are further isolated. Adhered loops of bowel are dissected away, ultimately revealing a single loop of involved bowel near the patient's previous ileocolonic anastomosis. The proximal limb of this bowel is divided using a blue-load 75mm GIA stapler. The mesentery is clamped, divided sharply, and ligated before dividing the distal EC fistula limb with a stapler.

Proximal and distal bowel loops were aligned, and an enterotomy is made on the proximal limb. A side-to-side small bowel anastomosis is created using a blue-load 75 mm GIA stapler to create the anastomosis. The common channel is closed with a blue-load TA stapler and oversewn with Lemberted silk sutures. The mesenteric defect is closed with silk sutures

The peritoneum was closed with a running Vicryl suture. Due to contamination inherent to an EC fistula, a biologic porcine derived acellular derived matrix was chosen for this case. A 30 by 30 cm biologic mesh was placed in a diamond position in the preperitoneal space. Fixation was achieved to the xiphoid and the pubis using PDS suture. Transfacial sutures are placed laterally.

Figure of 8 sutures are used to approximate a midline portion of thin, scarred fascia. While this fascia will not contribute much mechanical reinforcement, it helps isolate the mesh from subcutaneous tissue, potentially reducing risk of mesh infection.

Due to the contaminated operating field, a subcutaneous wound vacuum system is used. This was changed at bedside on post-op day 2 and the patient was taken to the operating room again on post-op day 4 for delayed primary closure. The patient remained admitted until bowel function returned and was discharged on post-op day 8 after an uneventful hospital course.

P79. Intraperitoneal Onlay Mesh Repair Of Interparietal Hernia With Defect Closure Following Failure Of Rives-Stoppa Repair Of Large Midline Ventral Hernia

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Background: A 63-year-old female patient was referred by her family physician to a general surgeon for investigation and management of large hernia. On examination, the patient was found to have a palpable bulge, and ventral hernia was diagnosed. The patient underwent elective open ventral hernia repair.

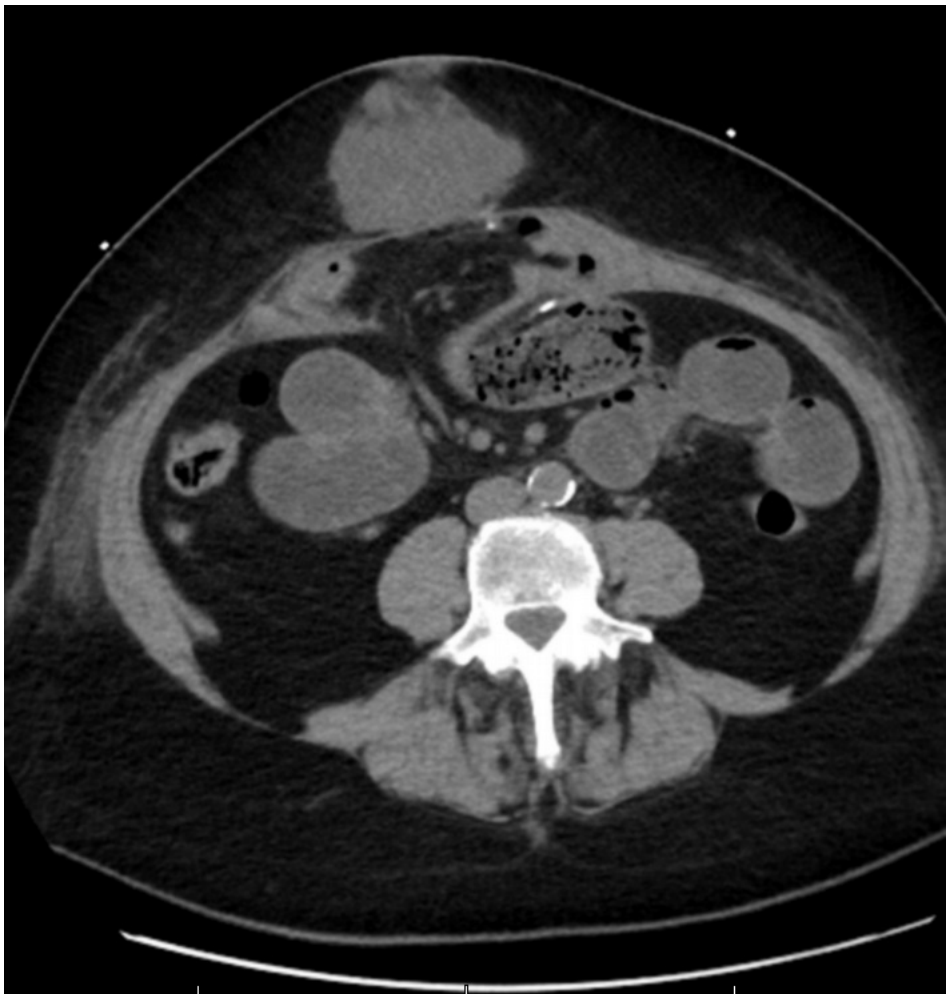
Methods: Upon dissecting the anterior sheath, a large midline hernia at the umbilicus was identified, along with a second upper off midline defect and multiple other defects. The hernial sac was excised and repair was conducted using a technique of bilateral component separation with the posterior sheath separated anteriorly and inferiorly using Echelon powered linear stapler. Transversus abdominus was mobilised medially and the posterior sheath was sutured closed. A 15cm x 15cm Progrip mesh placed in the rectorectus plane and the anterior sheath was closed. A drain was placed, the fat and skin layers were sutured closed, and the patient was discharged home the following day.

Results: The day following discharge the patient developed nausea & vomiting. This continued for two weeks and the patient experienced increasing abdominal distension and crampy abdominal pain, and presented to the local emergency department. Computed tomography (CT) scan of the abdomen and pelvis revealed recurrence of midline anterior abdominal wall hernia commencing at the right inferior aspect of the mesh repair and extending superiorly through midline abdominal wall defect, and resultant small bowel obstruction (see Figure 1).

An open revision procedure was conducted. On inspection, a split in the peritoneum below the level of the staple line of the where the original mesh ended (and below the arcuate line) was found which had caused an interparietal hernia. Haematoma was evacuated and herniated small bowel in the retrorectus plane was reduced. Small bowel adhesions were dissected off carefully. There was no perforation to small bowel however a small area of potential damage to mesentery was identified and, out of an abundance of caution, a 10cm segment of ileum was resected and a side-to-side anastomosis created. The parachute technique was used to place a 15 x 20cm piece of Phasix mesh intraperitoneally as a barrier to cover the whole defect and the peritoneum was closed. The patient made an uneventful recovery was discharged home 7 days later, and she remained well at 6 week follow up.

Conclusion: Interparietal hernia should be considered as a differential diagnosis in patients with presenting with nausea & vomiting and can be more difficult to diagnose clinically than other types of hernias, and imaging should be considered. Intraperitoneal onlay mesh with defect closure is a viable management option in cases of Rives-Stoppa repair failure.

*Caption for images: Figure 1: Axial (a) and sagittal (b) CT images demonstrating recurrence of midline abdominal wall hernia, commencing at the right inferior aspect of the mesh repair and extending superiorly through midline abdominal wall defect.

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P80. Cord Lipoma In Inguinal Hernia Surgical Repair: A Prospective Study

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Background: Cord lipomas are frequent findings in laparoscopic inguinal hernia surgeries in male patient. Lipoma symptomatology and the benefit of its resection in the inguinal hernia scenario are secondary as they overlap with the primary hernia pathology. Current recommendations are to reduce the fat content when present. This study aims at assessing the incidence of cord lipomas in a single inguinal hernia reference site and its relationship with the patient's symptoms, characteristics of the hernia undergoing surgery and postoperative endpoints.

Methods: Prospective cohort of male patients who underwent laparoscopic or robotic inguinal hernia surgery at a single reference site between January 2022 and January 2023, consent form was accepted by ethical board and applied in the patients . Data collection included in the program Red Cap. Statistical analysis using the program SPSS version 25.0, Person's chi-square test for heterogeneity at a 0.05 significance level.

Results: A total of 141 hernias was analyzed. According to the European Society Inguinal Hernia Classification, 64 (45.4%) lateral, 27 (19.1%) medial, and 50 (35.5%) mixed. Among the mixed ones, 15 (10.6%) showed an indirect hernial sac and 35 (24.8%) showed the indirect component, which was only the inguinal cordon lipoma. 12 (8.5%) hernias showed only inguinal cord lipoma. 5 hernias were recurrence, and among them, 3 were by laparoscopic and were corrected via robotic technique. The incidence of cordon lipoma was 64.5%. The presence of the indirect hernia sac with the inguinal lipoma cord was not of statistical significance (p = 0.479). Obese patients (BMI >=30) corresponded to 39 hernias; among them, lipoma was present in 9 (71.9%). Obesity and the presence of lipoma were not of statistically significant (p=0.453). Preoperative pain was more frequent in patients with indirect hernia sac (70.9% x 51.9%) with p = 0.079. The surgical site occurrence (SSO) index was 9.2% and none of them required intervention. No recurrence were noted in the segment assessed. The occurrences of surgical site with the presence of lipoma (p = 1) and also the presence of indirect hernia sac (p = 0.36) were not of statistical significance.

Conclusion: In literature, lipoma presence is heterogeneous and ranges from 20–70% of inguinal hernia corrections. This prospective cohort conducted in a single site with a significant number of cases shows a high incidence of 64.5%, showing the importance of a surgical exploration for lipoma as a mandatory time in laparoscopic or robotic hernia surgery. This prospective cohort did not show statistical significance in the presence of lipoma with preoperative pain symptomatology; however, 8.5% of the operated hernias were represented only by lipoma. When inguinal lipoma cord are abandoned in laparoscopic or robotic inguinal hernia surgery, they can be interpreted as a recurrence in the postoperative phase and may result in symptoms and be found in control imaging. Complete resection of the lipoma in this prospective cohort proved to be beneficial and was not related to major surgical site occurrences.

P84. Laparoscopic Inguinal Hernia Repair With Mesh Fixation Using Tisseel®/Tissucol® (Fibrin Sealant) Versus Histocryl® Lapfix Glue

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Background: Minimally invasive laparoscopic inguinal hernia repair is the accepted preferred option for both surgeons and patients. The range of options available for mesh fixation include absorbable or non-absorbable tackers, the use of tissue glues, self-fixating mesh and no fixation. A recent meta-analysis did not demonstrate superiority with any technique in terms of recurrence, but atraumatic or no fixation does show a reduced incidence of chronic post operative pain. The use of Cyanoacrylate glue has been proven beneficial in use of closure of abdominal and inguinal skin wounds but there are a paucity of studies comparing its benefit over other tissue glues in laparoscopic inguinal mesh fixation.

A retrospective efficacy and cost-effective analysis was undertaken comparing laparoscopic inguinal hernia surgery using a totally extraperitoneal technique (TEP) with fibrin sealant (Tisseel/ Tissucol) mesh fixation against Histoacryl glue (LapFix) to ensure any cost saving did not adversely affect the outcome.

Methods: Standard technique was used to repair inguinal hernias using the Manchester Groin Repair with a balloon spacemaker using a lightweight 15 by 12 cm mesh with glue fixation. ParietexTM (Medtronic) mesh fixated with Tisseel/Tissucol (Baxter) was compared to MerigrowTM (Meril Life) mesh fixated with LapFix® (BBraun)

Results: A total of 213 cases using Tissucol were compared to 34 cases using LapFix. 59% were bilateral repairs and 41% unilateral. There was no difference in the distribution of uni/bilateral repairs in the 2 groups (p=0.551). No difference was observed in the median age and gender (p=0.566 and p=0.139 respectively), with almost 100% male patients in each group. Daycase surgery was offered in the majority of patients (median length of stay was 0 in both groups), which was in keeping with key performance indicators in groin hernia surgery. Early recurrence rates did not differ between the groups. Seroma risk remained low in both groups with 3/34 (9%) in LapFix and 10/213 (5%) in the Tissucol arm (p=0.317). Cost comparison demonstrated as expected the MerigrowTM mesh and LapFix® combination was significantly more cost effective (£104 per case and £36,400 per year for a single surgeon use).

Conclusion: This is a non-inferiority trial demonstrating satisfactory outcomes of mesh fixation using LapFix glue against the broadly used Tissucol but with a lower overall cost. The combination of non-inferior outcomes and lower cost makes LapFix a reasonable option during an era when cost-efficiency is becoming one of the major aims of any healthcare system.

P85. Robotic-assisted Right Inguinal Mesh Removal with Subsequent Hernia Repair

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Background: We offer the case of a 75 y.o. male with past medical history significant for open right inguinal hernia repair with pre-peritoneal mesh placement as well as prostate cancer treated with radiation. He presented to clinic complaining of chronic right groin pain and urinary retention as well as a symptomatic recurrent right inguinal hernia. Pre-operative imaging revealed recurrent right and new left inguinal hernias. He was taken to the operating room for robotic-assisted right inguinal mesh removal with subsequent bilateral inguinal hernia repair.

Methods: Upon entering the abdomen, the previously placed mesh was visible in the preperitoneal space and was densely adhered to the overlying inferior epigastric vessels and bladder. The lateral aspect of the mesh was dissected in a lateral to medial direction to the level of the inferior epigastric vessels. The medial aspect of the mesh was also dissected with assistance from our urology colleagues to safely free the mesh from the bladder. Indocyanine green (ICG) was utilized to identify the external iliac artery and vein. The medial umbilical ligament was transected with electrocautery which improved exposure for further iliac vessel dissection. A small portion of the mesh was circumferentially adhered to the inferior epigastric vessels and was left in place.

Results: Following the removal of the right inguinal mesh, the right hernia dissection was completed in its entirety so that the critical view of the myopectineal orifice was achieved. A peritoneal flap was then created on the left side in a standard fashion; this was joined with the existing space on the right to allow for adequate mesh overlap at the midline. The direct hernia defect on the left was identified and the sac was dissected free. The remainder of the left-sided dissection was completed and the critical view of the myopectineal orifice was again achieved. Two contoured polypropylene mesh were placed into the preperitoneal space.

A spigelian hernia at the inferior aspect of the semilunar line was identified during the initial right-sided dissection and was closed in a running fashion with 0 barbed suture. The mesh was then secured in place in the midline at the point of mesh overlap, Cooper's ligament, as well as on the superior and lateral aspect of the mesh allowing for adequate coverage of the inguinal and spigelian hernias. The peritoneal flaps were closed in a running fashion with 3-0 barbed suture using Connell technique.

A defect in the peritoneal flap, which had been resected with the mesh, was also closed with a 3-0 barbed suture in a running fashion. Prior to the conclusion of the operation a bilateral transversus abdominis plane block as well as a bilateral ilioinguinal block was performed.

Conclusion: The patient was discharged home from the PACU and seen in clinic four weeks postoperatively. He was recovering well and noted complete resolution of his chronic right groin pain as well as a significant improvement in his urinary retention.

P86. A Case Series of Enteroprosthetic Fistula; The Octopus Sign

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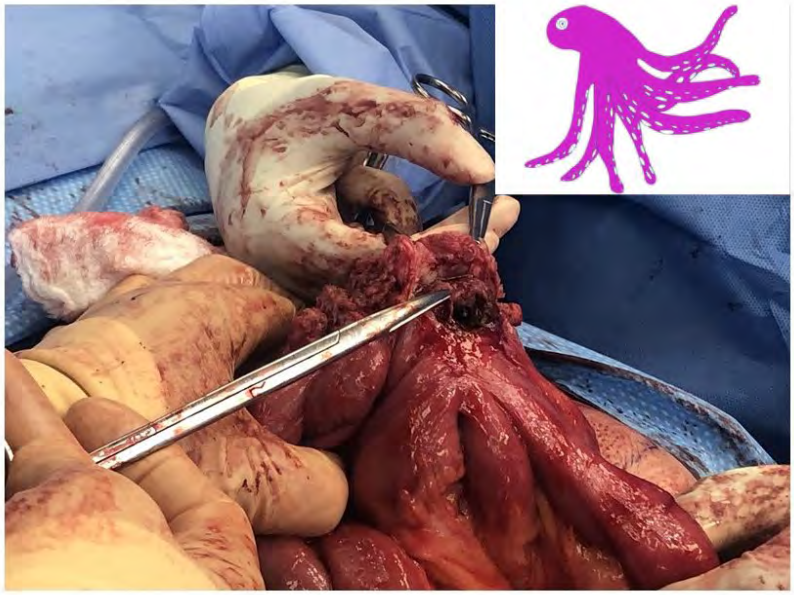
Background: Complications from hernia repair are largely dependent on the circumstances surrounding the repair. The location of the hernia, the urgency of the repair, and involvement of other anatomy are all relevant to the risk of complications. Hernia recurrence is reduced with use of mesh. Mesh type, location, and approximation of native tissue have all affected recurrence rates. One of the most feared risks of intraperitoneal mesh utilization is mesh erosion and fistulation. We sought to review our experience with complications of intra-abdominal mesh and development of entero-prosthetic fistula.

Methods: Retrospective review of a preexisting database revealed only three cases of entero-prosthetic fistula. Patient demographics, previous mesh location, operative characteristics, degree of contamination, degree of resection of abdominal wall prosthesis, need for temporary ostomy, abdominal reconstruction techniques and outcomes were reviewed.

Results: All patients had previous intra-abdominal mesh placement at least one year prior. All underwent resection of the fistula, complete mesh explantation, and bowel resection with primary anastomosis without a diverting stoma. Two patients underwent elective surgery and proceeded to definitive abdominal wall reconstruction at the time of fistula resection. One presented with a nonhealing wound and enterocutaneous fistula one year after emergent bowel resection and mesh repair of a strangulated hernia, while the other was found to have an incidental entro-prosthetic fistula at the time of planned abdominal wall reconstruction. The third patient presented emergently with an abdominal wall abscess. The mesh and colon were resected en-bloc with the infected portion of the abdominal wall. Bowel continuity was restored with primary anastomosis and the abdominal wall fascia was closed primarily. The patient returned to the OR on post operative day twelve with a small bowel obstruction and was found to have an infected hematoma in the abdominal wall. The hematoma was drained, and the bowel obstruction resolved with conservative treatment.

The management of entero-prosthetic fistula is challenging. It occurs more commonly with intraperitoneal mesh location and may take years to develop. Early presentation of fistula in the second patient in our series was likely due to anastomotic dehiscence after the initial emergent surgery. Principles of surgery involve resection of the involved viscera with explanation of the prosthesis, control of contamination and then reconstruction based on intraoperative assessment. Intraoperative findings often reveal multiple loops of bowel adherent to the area of fistula. The loops of bowel appear to fall out of the mesh has the appearance of the pods of an octopus, a finding which we call the 'Octopus Sign'. Maintaining the octopus sign during dissection by Isolating the mesh with the fistula and relevant anatomy then eviscerating the contents en-bloc may help reduce contamination.

Conclusion: Enteroprosthetic fistula is an uncommon occurrence after hernia repair. Presentation can vary from asymptomatic, insidious GI ulceration to overt infection. An 'Octopus sign' is commonly found at surgical exploration. The decision to proceed with definitive hernia repair at the time of fistula takedown are dictated by the degree of intraoperative contamination, patient level of optimization, and the surgeon's comfort level.



operative case	SSI	SSO	SSOPI	Clavien dindo	ASA	PMH	BMI	Smoking ppy	Hba1c	LOS	previous hernia repairs
case 1	0	0	0	I (readmission)	3	afib, osa, htn	25.9	0	8.4	8	2
case 2	0	0	0	0	3	depression, htn, obesity, osa	38	0	7.2	7	3
case 3	1	1	1	IIIb (infected hematoma)	3	htn, hld, dm, gerd, desmoid tumors	32.5	32.5	5.5	4	3

P87. Retro-rectus Ventral Hernia Repair Using T-Line Hernia Mesh: A Multi-Surgeon Case Series

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Background: The T-Line Hernia Mesh is an innovative synthetic, polypropylene mesh with mesh suture extensions that is specifically designed to prevent anchor point failure by evenly distributing tension across the mesh construct. Previous studies have demonstrated the durability of onlay ventral hernia repair with T-Line hernia mesh, but outcomes of retrorectus application of this surgical mesh have not been characterized. This case series illustrates the first clinical application of the T-Line Hernia mesh in the retrorectus plane.

Methods: A two-surgeon retrospective consecutive case series was conducted between January 2020 and January 2022. Patient demographics, hernia characteristics, and 30-day outcomes, including cellulitis, seroma, hematoma, wound dehiscence, readmission, reoperation, and hernia recurrence were recorded.

Results: Five patients were identified who underwent ventral hernia repair with retrorectus T-Line Mesh placement (Table 1). Past medical history included hypertension in three patients (60.0%) and diabetes mellitus in two patients (40.0%). No patients were immunosuppressed. Median operative time was 160.5 minutes (IQR ± 24.5), with a median hernia defect size of 76.6 cm2 (IQR ± 5.0) (Table 1). The median mesh size was 240.0 cm2 (IQR ± 100.0) with a median mesh-to-defect ratio of 4.49 (IQR ± 2.49). The initial follow-up was at a median of 23.4 days (IQR ± 16). No patients experienced intraoperative complications, 30-day recurrence, or 30-day complications.

Conclusion: In this multi-surgeon consecutive case series, the T-Line Hernia Mesh is noted to be a safe and effective option for abdominal wall reconstruction in the retrorectus plane.

P88. Robotic Transversus Abdominis Release With HUGO-RAS, Our First Experience

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Background: Robotic TAR has shown to decrease risk of complications rate and length of hospital stay when compared to open approach. The aim of is video is to show the surgical technique of TAR using the HUGO-RAS.

Methods: Female patient, 55 years old with personal history of a Roux-en-Y gastric bypass and a revisional surgery eight years later that evolved with surgical site infection. She consulted for an incisional hernia: M1-M3, W3. Due to the size of the hernia defect and the narrow rectus abdominis muscles the patient had, a robotic TAR was decided.

Results: Trocar placement was done as showed in the video. The lysis of bowel adhesions was completed allowing assessing the full extent of the hernia sac. We made an incision in the medial border of the rectus posterior sheath. We continued the dissection to caudal, respecting the umbilical ligaments and communicating the preperitoneal fat of the umbilical ligaments to the retrorectal space. We continued the dissection of the retrorectal space to cephalic respecting the neurovascular bundles. After separating the retrorectal space, an incision was made to the posterior lamella of the internal oblique muscle and the division of the transversus abdominis muscle was initiated with the bottom up approach. The transversus abdominis was dissected off the posterior sheath laterally. The sub xiphoidal fat was dissected since it was a very high hernia. Once one side was completed, the contralateral side was performed in the same fashion.

The closure of the posterior sheath was performed with a non-absorbable barbed suture. Then the anterior midline was closed also with a non-absorbable barbed suture. When the whole dissection was completed, the mesh was placed with no wrinkles or folds.

Conclusion: Robot instrumental is very comfortable and precise for the dissection in the TAR technique and represents a valid alternative for patients with big ventral hernias offering reduced hospital stay and possibly less surgical site complications.

P89. Preoperative Progressive Pneumoperitoneum for Repair of Symptomatic Diaphragmatic Hernias with Loss of Domain: A Case Series

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Background: A diaphragmatic hernia (DH) consists of a protrusion of abdominal contents into the thorax due to a defect in the diaphragm. Congenital diaphragmatic hernias (CHD) are developmental defects of the diaphragm that are usually evident at birth and rarely reported in adults. Whereas paraesophageal hernias (PEH) are a result of widening of the diaphragmatic crura at the esophageal hiatus and are a common cause for gastrointestinal obstructions and gastroesophageal reflux disease (GERD) in adults. In either case, massive hernias that have remained outside the abdominal cavity for prolonged duration cannot simply be reduced into the abdominal cavity due to loss of abdominal domain. In this case series, we present successful repair of 2 CHD and 1 PEH with associated loss of abdominal domain.

Methods: The first case is a 52-year-old male with worsening cough who was found to have a large left diaphragmatic hernia. Initial thoracoscopic reduction and repair was unsuccessful. The second case is a 41-year-old female with abdominal discomfort and constipation who was found to have a large left diaphragmatic hernia. The last case is a 43-year-old female with dysphagia and chest pain who was found to have a large type IV paraesophageal hernia. An abdominal robotic assisted approach with preoperative progressive pneumoperitoneum (PPP) was successful at reducing the hernia and repairing the defect in all 3 cases.

Results: CDH is infrequent in the adult population and is either found incidentally or when the disease process has progressed to affect adjacent organs. On the other hand, PEH can commonly be a source of GERD or gastrointestinal obstructive symptoms in adults. In patients with smaller body habitus and a late presentation of either CDH or PEH, a significant percentage of the abdominal contents can occupy the chest and produce a loss of abdominal domain. Similar to how PPP can be utilized for repair of large ventral hernias with loss of abdominal domain, it can also be utilized to repair large diaphragmatic hernias.

Conclusion: In adults who present with either CDH or PEH with loss of abdominal domain, PPP may be utilized to facilitate a successful minimally invasive reduction and repair.

P90. Effect Of SSI On The Occurrence Of Incisional Hernia (IH) In Prophylactic Techniques In Midline Laparotomy. Systematic Review And Meta-Analysis

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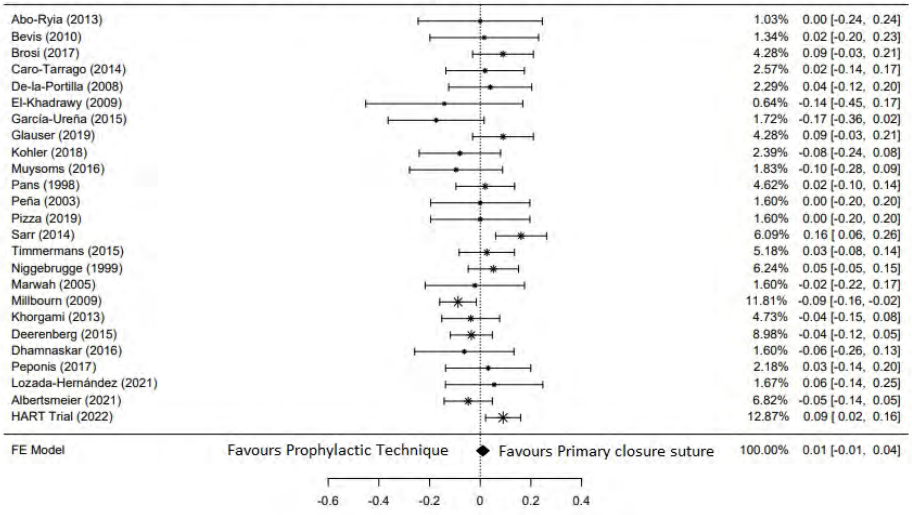
Background: IH is one of the main complications after laparotomy with an incidence of 10-23% and 40% in high-risk groups. The prevention of this complication currently focuses on the use of mesh prophylactically or modification in closure technique. The objective of the study is to evaluate the prevalence of SSI in the prophylaxis study and to determine the impact that SSI has on the appearance of this complication.

Methods: the meta-analysis was performed according to the PRISMA guidelines. The primary objective was to determine the prevalence of SSI and secondarily to determine the impact of SSI on the appearance of IH, only clinical trials were included. The risk of bias was analyzed and the randomized effects model was used to determine statistical significance.

Results: 29 studies were identified, and 9 were excluded (7 with mesh and 2 with modification closure) because they did not report the occurrence of SSI. Thus, a total of 20 studies were analyzed, 12 with the use of mesh and 8 with the modification in the technique closure. 4847 patients were included. The global prevalence of SSI was 9.88%, being higher in the groups in which some prophylactic method is performed 10.61 vs 9% in the usual closure without statistical difference (OR 1.19 95% CI 0.98 -1.44 p=0.07) A sensitivity analysis was performed by groups, in the comparison mesh vs usual closure, the prevalence of SSI was higher in the group that used 10 mesh vs 6.7% (OR= 1.55 IC at 95% 1.13-21 . P=0.0007) and in the comparison between the modification in the closure technique vs the usual closure it was 11 vs 10. 6% with no statistically significant difference (OR=1.04 95% CI 0.82-1.33 p=0.69). Only two studies reported the direct relationship between the occurrence of SSI and IH in which the modification in the closure technique was used and it was found that 38.5% of the patients who developed hernia had SSI, while those who did not develop hernia only 9.4 % submitted it. Hence, the fact of having SSI increases the risk of having IH as a complication with an OR 5.9 95% CI 3.4-10.3 p= 0.0001.

Conclusion: 31% of prophylaxis studies do not report SSI as an associated complication. The overall prevalence of SSI in prophylaxis studies was 9.88%, this prevalence is higher when the mesh is used as a prophylaxis measure, the presence of SSI increases the risk of IH, an association that must be taken with reservation since only two studies report this direct relationship.

Forest Plot: Surgical Site Infection in Prophylactic techniques Vs Primary closure technique



P91. Pre-Operative Application Of Botulinum Toxin For Ventral Hernia Repair Improve The Outcomes

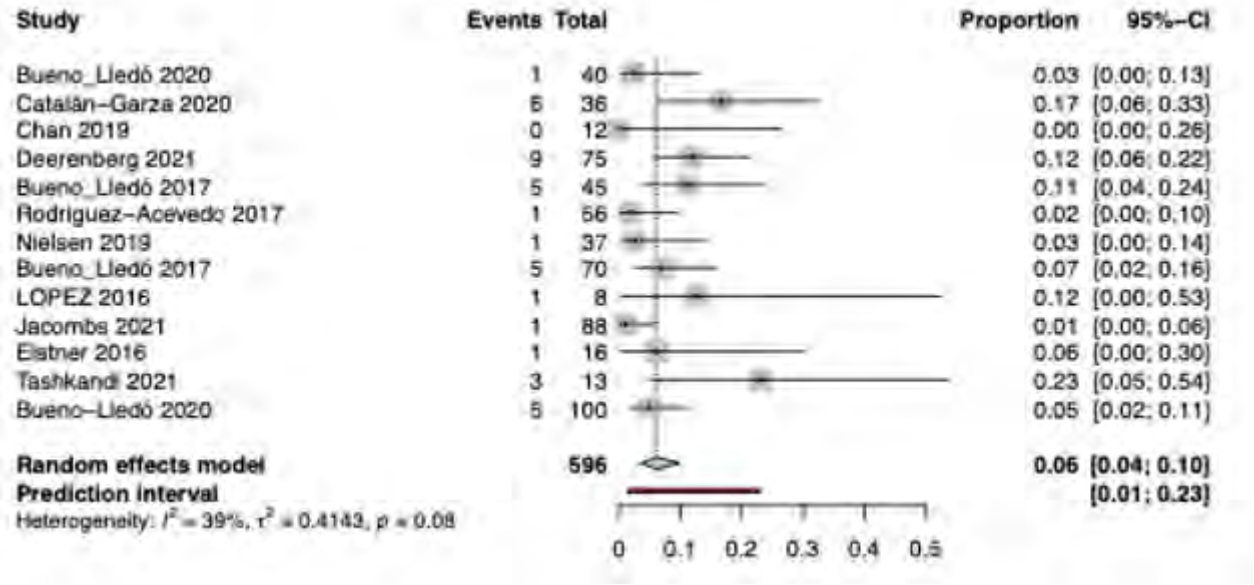
E Dias, G Rondini, P Amaral, J Macret, L Pivetta, J Carvalho, S Roll
Santa Casa de Misericórdia de São Paulo

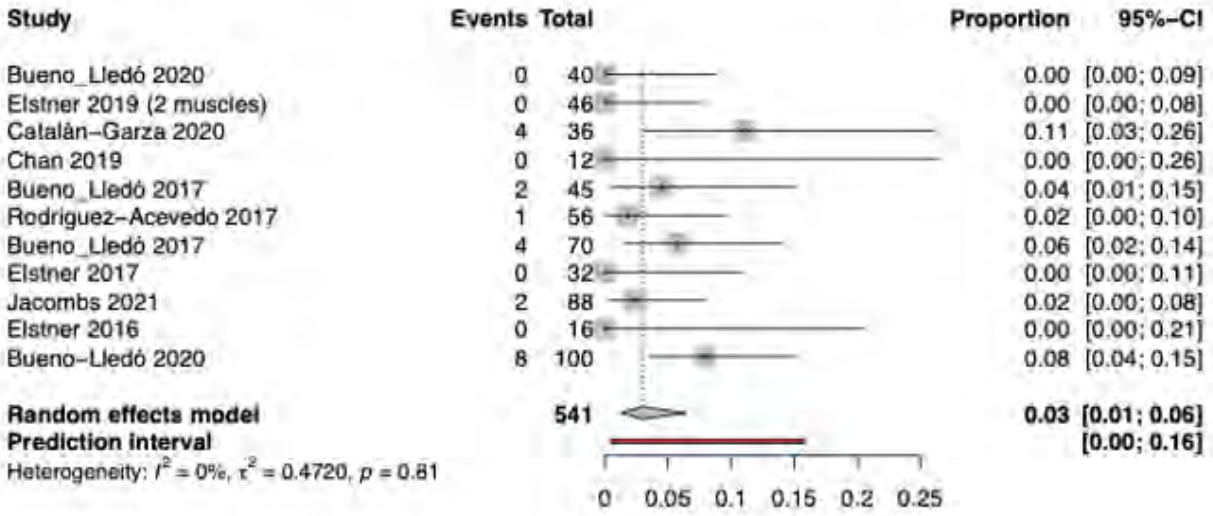
Background: Surgical repair of large hernia defects requires detailed pre-operative planning, particularly in cases with loss of domain. This situation often hampers mid-line reconstruction, even after component separation, when the size of the hernia is disproportional to the volume of the abdominal area. In this case, other strategies may be needed to place the viscera back into the abdominal cavity after reducing the hernia sac. The administration of botulinum toxin prior to the surgical procedure has been indicated as an adjunct for more complex cases. This results in stretching of the lateral musculature of the abdomen, allowing midline approximation. In addition, the application of botulinum toxin alone has been investigated as a means of downstaging in the management of ventral hernias, thereby precluding component separation and enabling primary closure of the midline by placement of mesh within the retromuscular space using the Rives Stoppa technique.

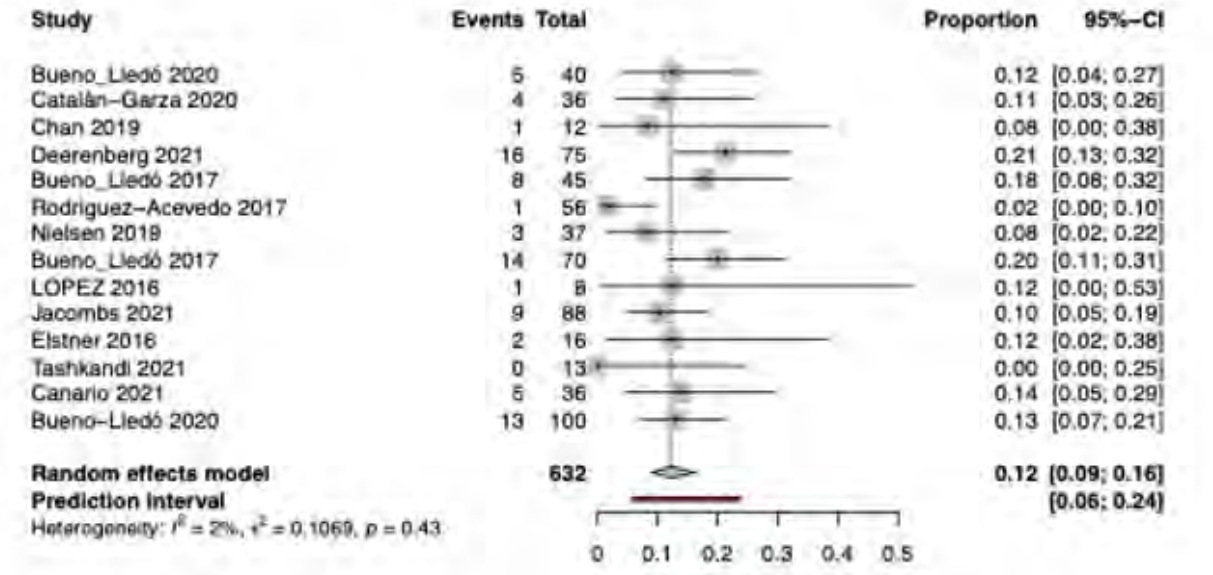
Methods: Systematic review of the literature for observational studies involving patients undergoing pre-operative application of botulinum toxin for ventral hernia repair was conducted according to the PRISMA guidelines.

Results: Advance of the lateral musculature of the abdomen by an average of 4.11 cm with low heterogeneity, as well as low rates of surgical site infection (SSI) - 0,06, surgical site occurrences (SSO) - 0,12 and recurrence - 0,03.

Conclusion: Pre-operative application of botulinum toxin for ventral hernia repair promoted an increase in the length of the lateral musculature of the abdomen which can help improve the outcomes of morbidity and recurrence.




Study
Events Total
Proportion 95%−CI
Bueno_Lledó 2020 0 40 0.00 [0.00; 0.09]
Elstner 2019 (2 muscles) 0 46 0.00 [0.00; 0.08]
Catalán−Garza 2020 4 36 0.11 [0.03; 0.26]
Chan 2019 0 12 0.00 [0.00; 0.26]
Bueno_Lledó 2017 2 45 0.04 [0.01; 0.15]
Rodriguez−Acevedo 2017 1 56 0.02 [0.00; 0.10]
Bueno_Lledó 2017 4 70 0.06 [0.02; 0.14]
Elstner 2017 0 32 0.00 [0.00; 0.11]
Jacombs 2021 2 88 0.02 [0.00; 0.08]
Elstner 2016 0 16 0.00 [0.00; 0.21]
Bueno−Lledó 2020 8 100 0.08 [0.04; 0.15]
Random effects model 541 0.03 [0.01; 0.06]
Prediction interval [0.00; 0.16]
Heterogeneity: I^2 = 0%, τ^2 = 0.4720, p = 0.81
0 0.05 0.1 0.15 0.2 0.25


Study
Events Total
Proportion 95%−CI
Bueno_Lledó 2020 5 40 0.12 [0.04; 0.27]
Catalán−Garza 2020 4 36 0.11 [0.03; 0.26]
Chan 2019 1 12 0.08 [0.00; 0.38]
Deerenberg 2021 16 75 0.21 [0.13; 0.32]
Bueno_Lledó 2017 8 45 0.18 [0.08; 0.32]
Rodriguez−Acevedo 2017 1 56 0.02 [0.00; 0.10]
Nielsen 2019 3 37 0.08 [0.02; 0.22]
Bueno_Lledó 2017 14 70 0.20 [0.11; 0.31]
LOPEZ 2016 1 8 0.12 [0.00; 0.53]
Jacombs 2021 9 88 0.10 [0.05; 0.19]
Elstner 2016 2 16 0.12 [0.02; 0.38]
Tashkandi 2021 0 13 0.00 [0.00; 0.25]
Canario 2021 5 36 0.14 [0.05; 0.29]
Bueno−Lledó 2020 13 100 0.13 [0.07; 0.21]
Random effects model 632 0.12 [0.09; 0.16]
Prediction interval [0.06; 0.24]
Heterogeneity: I^2 = 2%, τ^2 = 0.1069, p = 0.43
0 0.1 0.2 0.3 0.4 0.5

P92. Transversus Abdominis Release (TAR) Procedure: A Retrospective Analysis Of An Abdominal Wall Group In A Public Hospital In Brazil

J Macret, J Carvalho, L Pivetta, E Dias, P Amaral, H Ribeiro, S Roll
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Background: The surgical treatment of patients with complex ventral hernias is challenging. Transversus abdominis release allows the closure of large defects, showing good results in terms of recurrence, and postoperative and intraoperative complications. We aim to report our group experience with TAR procedure in a public hospital in São Paulo- Brazil. We describe our results regarding in hospital, post-discharge early and late complications, including the number of readmissions and reoperations.

Methods: Retrospective data from all patients who underwent TAR procedure from January 2013 to December 2022 was collected. All patients were identified in a prospectively maintained database. Data included pacients characterists- sex, age, BMI-, Abdominal wall defects - classified according to the EHS ventral Hernia classification- and outcomes of interest The outcomes of interest were wound events- surgical site occurrence (SSO), surgical site infection (SSI) and Surgical site occurrences requiring procedural intervention (SSOPI), readmissions and reoperations. These outcomes were divided into in-hospital complications, early (30 days) complications.

Results: A total of 58 patients were included. 60% of patients were male. Abdominal wall defects were classified with EHS ventral Hernia classification having only W2 and W3 defects. The median length of hospital stay was 5.2 days.

In-hospital complications occurred in 3 patients, that evolved with pulmonary thromboembolism. These events led us led us to review the pre- and post-operative prophylactic anticoagulation protocol in our unit. After that we were able to avoid this complication and we haven´t reported any case of thromboembolism since 2020.

Early complications occurred in 16 of patients (16/58; 27,5%). The surgical site occurrences (SSO) occurred in 7 patients. Six seromas and one hematoma, all of them resolved on an outpatient basis, without interventions. Surgical site infection (SSI) occurred in four cases, treated with oral antibiotic therapy, without hospital readmission. There were four cases of surgical site occurrences requiring procedural intervention (SSOPI)- two subcutaneous abscesses and wound dehiscence.

Late complications occurred in three cases (3/58; 5,1%)- three retromuscular collection. All of them needed readmission for surgical drainage.

The recurrence rate is 3.4% (2/58). Both recurrences occurred in the first year after the procedure.

Conclusion: The analysis of our data allowed the identification of some of the main complications after TAR procedure, allowing the introduction of measures to improve postoperative results.

P93. Endoscopic Surgical Skill Qualification System In Japan: Actual And Proven Performance In Hernia Surgery

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The Japan Society for Endoscopic Society (JSES)

Background: In Japan, Endoscopic Surgical Skill Qualification System managed by the Japan Society for Endoscopic Surgery, is implemented from 2004.

Laparoscopic inguinal hernia repair (TAPP, TEP) is positioned as a low difficulty level operation under general surgery field and is examined.

A main application qualification to the system can demand creating of the list of a specified operative cases and to participate in an education seminar about endoscopic surgery additionally, and so on, in the person who is doing training of endoscopic surgery Surgeon acquisition for longer than 2 years after the Board Certified.

A specified case quantity is to have the operative experience of 20 cases of a high-difficulty level or, experience of above 5 examples of a high-difficulty level operation and also 45 examples of a low difficulty level operation.

Candidates submit 3 no edited videos of the endoscopic surgery that went recently for indirect hernia with the diameter of orifice above 1.5 cm in a male-sex, with a suture/ligation scene video.

About to examine candidates' capability based on the written applications and videos. Which video data to examine among 3 pieces is decided randomly by the judging committee side.

Two hernia-specified referees from the judging committee examine one candidate. When the **Results** of judgements don't agree, an extra referee will examine newly and fixes the result of an examination.

An evaluation standard is estimated within 60 points of common standards, 40 points by an organ (hernia), and 100 points in amount. Equal to or more than 70 points become a pass.

An acceptance rate in hernia in 2022 was 23%.

The Nationwide Survey of Endoscopic Surgery in Japan reports recurrence rates of inguinal hernia after endoscopic surgery is 5% in TEP in and 4% TAPP in 2012-2013, 2.0% in TEP and 1.3% in TAP in 2018～2019, what is improved after the period.

It's no exaggeration to say that the Qualification System has played a big part.

The Endoscopic Surgical Skill System, which has no other examples, is introduced.

P94. Biomechanical And Histological Characterization Of A Biocompatible Adhesive Used For Atraumatic Hernia Mesh Fixation In A Long-Term Porcine Model

M Lopes, E Bitton, M Pereira, L Mc Crum, S Roth, F Berrevoet
TISSIUM

Background: Hernia repair is one of the most common surgical procedures performed worldwide. While various techniques and materials have emerged in the past years, most repairs still necessitate the use of penetrating fixation, such as tacks and/or sutures, that have been associated with post-operative pain. To overcome this challenge, surgical glues have been developed; however, current products struggle to achieve the ideal balance between usability, biocompatibility, and fixation strength.

Methods: To address the limitations of existing products, TISSIUM has developed a biocompatible and biodegradable light-activated adhesive for hernia mesh fixation. Made of two naturally occurring compounds (glycerol and sebacic acid), the TISSIUM adhesive provides a strong, robust repair while enabling atraumatic fixation.

This study demonstrates the strength and quality of repair when using the TISSIUM adhesive to perform hernia mesh fixation in an IPOM scenario. IPOM placement was selected because of its high fixation strength requirements, making it the most challenging procedure to evaluate a mesh fixation technology.

Forty (40) animals were included in this GLP study. Two (2) midline excisional defects were created in each animal. Defects were left open and subsequently repaired using composite polyester-based mesh fixed with TISSIUM adhesive or resorbable tacks as a control. The animals were divided into three groups and followed for 1 (n=13), 3 (n=13) and 6 (n=14) months. At each sacrifice timepoint, one repair (caudal) per animal was sent for biomechanical evaluation (using burst ball) and the other repair (cranial) was reserved for histology analysis.

Results: At each timepoint, all meshes remained in place with no signs of recurrence observed. Additionally, the TISSIUM adhesive burst ball data demonstrated equivalent repair strength as compared to resorbable tacks (1mo: 810±207 N vs 728±229 N (P=0.40); 3mo: 684±193 N vs 799±201 (P=0.34); 6 mo: 928±312 N vs 974±302 N (P=0.84)). Histological analysis revealed mild fibrous tissue, almost completely mesothelialized, with a moderate to marked tissue ingrowth of similar incidence for both groups. At all timepoints, the local inflammatory reaction was mild and overall, no necrosis or mineralization of the mesh was observed. The ranked irritancy score confirmed the microscopic observations and further categorized the TISSIUM adhesive as a non-irritant in comparison to resorbable tacks.

Conclusion: In this long-term porcine study, the TISSIUM adhesive demonstrated equivalent fixation strength to resorbable tacks while allowing similar tissue ingrowth within the mesh, low levels of inflammation, and an excellent local and general tissue tolerance.

P95. Repair of TRAM Flap Hernias Utilizing Component Separation and Biologic Mesh Reinforcement

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University of Alabama at Birmingham

Background: Transverse rectus abdominis myocutaneous (TRAM) flaps are an appealing option for women undergoing autologous breast reconstruction. However, donor site morbidity is common, with one of the most common complications being abdominal wall hernia formation, which can occur in up to 20-40% of patients. Surgical treatment of TRAM flap hernias can be challenging, and recurrence rates are high. Component separation is a well-described technique for the management of large ventral hernias. However, utilizing component separation to address TRAM flap hernias has not been described in current literature.

Methods: A single-institution retrospective review was conducted of 328 patients who underwent hernia repair between 2012 and 2020 by a single surgeon. All patients who underwent component separation for TRAM flap hernia repair with at least 6 months of follow-up during the study period were included. Data was collected pertaining to each patient's demographics, clinical and operative characteristics, and postoperative outcomes. Surgical technique was reviewed, and outcomes were evaluated.

Results: A total of 6 cases were identified for inclusion. Of this cohort, all were female, mean BMI was 30.7 (± 9.5), and average follow-up period per patient was 30.9 months. 5 patients (83%) had undergone bilateral TRAM flaps and 1 (16%) had undergone unilateral TRAM flap. Prior hernia repair attempts ranged from 0-8 with an average of 2.1 attempts. In addition to component separation, repairs were also reinforced with a biologic mesh onlay (n=3, 50%), underlay (n=1, 16%), or both (n=1, 16%). Mean length of hospital stay was 4.8 days (± 2.4). 2 patients (33%) had minor wound complications within 4 months of surgery, with 1 (16%) developing a post-operative infection and 1 (16%) developing wound necrosis. Of the 6 patients included, none required ICU admission, readmittance within 4 months, or reoperation. No patients had evidence of recurrence for the duration of the study period.

Conclusion: Component separation is a well-described technique for the management of large and complex hernias. In this study, we report the successful use of component separation with biologic mesh reinforcement for repair of TRAM flap hernias in 6 patients. The efficacy of this approach is highlighted by the successful repair of hernia in a patient who had undergone 8 previous hernia operations. Based on our experience with this cohort of patients, we encourage surgeons to consider component separation as a definitive treatment technique for the management of TRAM hernias.

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2. Pinell-White, XA, Kapadia, SM, and Losken, A, The management of abdominal contour defects following TRAM flap breast reconstruction. Aesthet Surg J 2014;34(2):264-71.

P96. Outcomes of Abdominal Wall Reconstruction when Utilizing Vicryl Mesh for Posterior Sheath Reconstruction

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University of Pittsburgh Medical Center

Background: Abdominal wall reconstruction may restore abdominal wall structure and function in patients with large ventral hernias. Posterior component separation (PCS) with transversus abdominis release (TAR) has become the standard for hernias previously deemed "unfixable."

Absorbable Vicryl (polyglactin) mesh may be incorporated into the posterior fascia to separate permanent mesh and viscera in a PCS with TAR when the posterior fascia has defects that cannot be reapproximated primarily. This study examines outcomes of hernia repair with TAR with and without Vicryl mesh placement.

Methods: Between March 2018 and August 2021, 184 patients underwent elective ventral hernia repair with TAR. 28 patients received a Vicryl mesh implant (Vicryl group), and 156 did not (non-Vicryl group). The primary outcomes were surgical complications including hematoma, wound dehiscence, surgical site infection (SSI), and death. We also examined hospital admissions and ED visits within 1-30 days and 31-90 days from the repair. Data was collected for at least three months post-operatively, with an average follow-up of 19 months.

Results: There were no significant demographic differences between groups. There were no statistically significant differences between readmission or ED visits between groups. Complication rates did not differ significantly between groups for any variables. SSI appeared more common in the Vicryl group but did not reach statistical significance.

Conclusion: In our study, the addition of absorbable mesh appears to be an acceptable adjunct to traditional PCS with TAR in the elective setting.

P97. Laparoscopic Repair of Central Mesh Fracture After TRAM Flap

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University of Wisconsin

Background: A 57-year old female was referred to surgery for a low midline incisional hernia. She has a remote history of bilateral mastectomy with bilateral transverse rectus abdominis myocutaneous (TRAM) flap and immediate abdominal wall reconstruction with onlay heavyweight synthetic mesh. Years after that surgery the patient underwent low anterior resection through a lower midline laparotomy. Reapproximation of the midline was performed with absorbable monofilament suture. The patient noted hernia formation approximately 6 months after her midline laparotomy causing a bulge, discomfort, and intermittent GI symptoms. She was referred to our hernia center for evaluation. Other pertinent surgical history included laparoscopic appendectomy and laparoscopic total hysterectomy with bilateral salpingo-oophorectomy. The patient's medical history was otherwise notable for diabetes (HgbA1c 5.6), obesity (BMI 30), and being a nonsmoker.

Methods: On exam, the fascial defect was palpable with a reducible hernia. CT of the abdomen/pelvis showed a bowel-containing hernia. The decision was made to approach the repair laparoscopically. The abdomen was entered under Optiview at Palmer's point. Two additional 5mm ports were placed under visualization. The hernia contents were easily reduced. The edges of the onlay mesh were visible in the defect; the defect measured 15cmx7cm. The decision was made to repair the defect primarily with nonabsorbable suture and underlay mesh. A 12mm port was placed in the midline through which two barbed sutures and a 20.3cmx15.2cm piece of ventralight ST mesh were introduced. With insufflation pressure dropped the midline defect was reapproximated. The mesh was then fixated in the underlay fashion using transfascial sutures and absorbable tacks.

Results: The patient tolerated this well and was discharged home the same day. At follow up the next week, she had minimal pain, regular bowel movements, and was tolerating diet.

Conclusion: Management of the abdominal wall in a patient with history of TRAM flap is challenging. The combination of muscle loss and mesh reconstruction creates a suboptimal abdominal wall for future surgeons. Subsequent laparotomy in this patient population requires careful consideration be paid to the integrity of the anterior fascia as well as the mesh during closure. In particular, the mesh prosthetic represents a significant component of abdominal wall integrity, reapproximation of the synthetic material with nonabsorbable suture is required to durably close the abdominal wall. In our video we demonstrate a technique for management of hernia formation in these patients.

P98. Mesh Removal Outcomes in Patients with Mesh Implant Illness

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Background: Most hernia repairs in the US are mesh-based. This practice is supported by research showing superiority of outcomes compared to tissue-based repairs. However, we have shown a small but growing population of patients with mesh-related systemic reactions, known as Mesh Implant Illness (MII). Common symptoms include: bloating, swelling, fatigue, headache, rash, fibromyalgia, and joint pain. As yet, there is no standard of care for this population. We report our outcomes of applying complete mesh removal as part of the treatment for suspected MII.

Objective: To analyze expected outcomes after mesh removal in patients with suspected MII.

Participants: All patients undergoing mesh removal for suspected MII were included. Their perioperative and postoperative outcomes were prospectively collected.

Results: Between 2013 and 2023, 52 patients were surgically treated for suspected MII. Average age was 46 years, 54% were female and average BMI was 25 kg/m2. A personal or family autoimmune disorder was known in 24% of patients.

Complete mesh removal was performed in 100% of patients, via open (36.5%), laparoscopic (13.5%) and robotic (50%) approaches. Of the implants removed, 80% contained polypropylene, 14% contained polyester, 8% contained ePTFE, and 10% included a cadaveric biologic component. Following mesh removal, 31% required no further hernia repair, 48% underwent tissue-based repair, 2% had polypropylene mesh implanted, 2% had polyester mesh implanted, and 17% had a hybrid mesh implanted.

Upon short-term followup averaging 10 days, MII-related symptoms improved in 62% of patients after mesh removal. By long-term followup averaging 2 years, 74% of patients reported resolution of their MII-related symptoms [Figure 1]. Males were more likely to resolve their symptoms than females (91.7% vs 60.0%), though this did not reach statistical significance. Type of repair after mesh removal was also not significantly associated with improvement or resolution of MII-related symptoms.

Conclusion: We have previously reported on our growing experience with MII, reported on risk factors for MII, and outlined systemic symptoms to help diagnose MII in patients after hernia mesh implantation. In patients with suspected MII, complete mesh removal is a surgical option. We show that with careful patient selection, nearly 3 out of 4 patients can have resolution of their MII symptoms within 2 years, with nearly ⅔ showing improvement after mesh removal within the first 10 days. It is unclear why some patients showed no improvement after mesh removal. It may be because they indeed did not have MII or because their systemic response to the mesh implant has permanently impacted their autoimmune system. More research is required for this developing disorder, with the goal of eventually reducing, preventing, and resolving MII.

Figure 1: Rash as a physical manifestation of mesh implant illness. Findings before (A) and after (B) mesh removal.

P99. Robotic Management of a Multiply Recurrent Large Inguinoscrotal Hernia

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Background: Inguinal hernias with large scrotal components and multiply recurrent hernias have long posed challenges for durable repair. Robotic approaches have proved advantageous in this setting due to the ability to control all instruments lending improved retraction and visualization, more precise dissection of scarred tissue planes, and ability to achieve sufficient dissection of the myopectineal orifice to accommodate a large piece of mesh. Here we present the case of a 39 year-old male with history of a multiply recurrent inguinal hernia with a large scrotal component status post two failed open repairs and one failed laparoscopic repair. Utilizing a 4-port robotic transabdominal preperitoneal (rTAPP) approach we were able to offer a MIS repair achieving the Critical View of the Myopectineal Orifice as described by Drs Jorge Daes and Edward Felix.

On examination the patient had a L3 hernia per the European Hernia Society (EHS) classifications of inguinal hernias. CT scan of the abdomen and pelvis revealed an inguinoscrotal hernia containing omentum, small and large bowel.

Methods: EHS guidelines propose to perform anterior repair after laparoscopic failure, or laparoscopic repair after open recurrence. Given history of multiple failed attempts of both laparoscopic and open techniques, we elected to proceed with a robotic four-port set up to ensure adequate retraction and visualization. We proceeded in the standard fashion with preliminary zone 1 dissection in the true preperitoneal plane, identifying the top of the hernia and transitioning to the pretransversalis plane in zone 2. The volcano sign was identified in zone 3 as the hernia became apparent and the sac was parietalized. The addition of the fourth robotic arm was crucial during this dissection to provide adequate retraction which may be further assisted by suturing the pseuodsac if present to the abdominal wall. The sac is ultimately dissected out of the scrotum to reduce all visceral contents. In this patient, we did encounter mesh placed from a previous laparoscopic hernia repair. There was no evidence of meshoma and it did not appear to be contributing to the patient's inguinal pain hence the decision to forego removal was made. A transcrotal drain was placed and the hernia defect was not closed. A large 17 x 23 cm prolene heavy weight mesh was well secured in the myopectineal orifice. Critical view of the myopectineal orifice was achieved prior to mesh placement. The patient did well post operatively and was discharged home on post operative day one with the trans-scrotal drain in place.

Results: On one week follow up in clinic the patient reported overall improvement in pain and bowel function. As expected and counseled, the patient did develop a large scrotal seroma which was managed conservatively and the transcrotal drain was removed.

Conclusion: By utilizing a robotic approach allowing for the ability to control all instruments including the camera, working and two retracting arms, and lending the ability to sufficiently dissect the myopectineal orifice to accommodate a large heavyweight piece of mesh, we were able to provide a durable hernia repair for a large multiply recurrent inguinoscrotal hernia.

P101. Clinical Safety and Performance of Synthetic ParieteneTM DS Composite Mesh in Ventral Hernia Repair: Two-Year Prospective Study Results

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Background: In ventral hernia repair procedures, synthetic meshes are the standard of care to provide additional support to weakened or damaged tissues. Parietene™ DS Composite Mesh is a composite mesh presenting a permanent macroporous polypropylene textile on the parietal side – providing long-term reinforcement of soft tissues - and an absorbable synthetic film on the visceral side - designed to minimize tissue attachment to the mesh.

This study aimed to assess the Parietene™ DS Composite Mesh clinical safety and performance at 24 months following primary ventral and incisional hernia repair.

Methods: This is a prospective, single-arm, multicenter, non-randomized 2-year study including adults undergoing intraperitoneal onlay mesh repair for ventral hernias using Parietene™ DS Composite Mesh. Patients were enrolled at 6 US sites and evaluated at discharge and 1-month, 3-months, 12-months, and 24-months postoperatively. Primary endpoint was to assess the incidence of hernia recurrence at 12 months; secondary endpoints included assessment of hernia recurrence at 1, 3 and 24 months, procedure and/or device related adverse events, and patients reported quality of life (QoL). Surgeon satisfaction with the mesh was also evaluated.

Results: Among the 125 patients included in the study, 70 were treated for primary hernias and 55 for incisional hernias; 68 underwent traditional laparoscopy, 56 were treated with robotically-assisted laparoscopy and 1 with open surgery. One hundred sixteen (92.8%) patients presented with comorbidities, the most common being obesity (n=81, 64.8%), hypertension (n=62, 49.6%), diabetes mellitus (n=16, 12.8%), heart disease (n=10, 8%) and renal dysfunction (not requiring dialysis) (n=7, 5.6%). In 120 evaluable subjects, 4 (3.3%) hernia recurrences were reported within the 12-month follow-up (1 primary ventral and 1 incisional after robotically-assisted surgery, 1 primary ventral and 1 incisional after laparoscopy). At 24 months, no additional hernia recurrences were reported. No adverse events solely related to mesh were reported. Patients experienced an overall improvement in QoL at both 12- and 24-months post-surgery, as compared to baseline and/or 1 month. For ≥95% of procedures, surgeons rated their experience handling the mesh, mesh deployment, and introduction into the working cavity as easy or very easy.

Conclusion: This study confirms the clinical safety and performance of Parietene™ DS Composite Mesh within the 24-month follow-up in patients treated for ventral hernia repair with intraperitoneal placement. Moreover, patients experienced a significant improvement in QoL and surgeons were highly satisfied with the mesh.

P102. Outcomes of Abdominal Wall Reconstruction in Patients with a Previous Kidney Transplant

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Background: In a typical patient population, incisional hernia repairs exhibit low rates of long-term hernia recurrence and acceptable yields of postoperative complications. Recent data has shown the number of kidney transplants in the United States exponentially increased in recent years, with over twenty-four thousand operations performed in 2019 alone. The ten-year survival rate of renal transplant patients has continued to increase leading to more successful transplants today than ever before. Studies have suggested variable rates for the incidence of incisional hernias in this population, though, ranging from 1.8% to 3.2%. Abdominal wall reconstructions are complicated in this patient population due to the proximity of the hernia to the transplanted kidney as well as these patients being on immunosuppressants. However, there is a paucity of literature focusing on the safety and efficacy of abdominal wall reconstructions solely in the renal transplant population. This study aims to focus on the outcomes of transplant recipients requiring an abdominal wall reconstruction for incisional hernia repair performed by a single surgeon.

Methods: A retrospective analysis of the interventions and outcomes of patients with a previous kidney transplant undergoing an abdominal wall reconstruction at the UAB Department of Surgery from January 1st, 2012 to December 31st, 2021 was performed. The patients were stratified into data collection groups based on demographics, comorbidities, transplant, and hernia repair techniques, as well as complications following the procedures. Complications included the formation of a hematoma, seroma, development of skin necrosis, post-operative infection, and/or recurrence of surgical management. The primary outcome measure was the rate of complications and recurrence in the year following incisional hernia repair. An age-match control group of non-transplanted patients with an incisional hernia was used to compare to the renal transplanted group. Statistical analysis included t-tests and chi-square tests where appropriate using SPSS.

Results: In this particular study, we investigate the rate of complications in a high-risk complex patient population that developed an incisional hernia in a time period of ten years. We use several different criteria such as length-of-stay, laboratory data trends, and pulmonary function testing to measure the safety and efficacy of flap and/or mesh repairs in abdominal wall reconstructions. These measures were compared to an age match control in order to study the differences in outcomes and recurrences in the kidney transplant population. We will also discuss in detail how these interventions and complications compared with previous studies on incisional hernia repairs.

Conclusion: There is an increasing number of patients living with successful renal transplants, yet outcomes of correlated incisional hernias in this population have not been specifically optimized in the existing literature. Clear patient selection and medical management can pose as important of a factor as surgical techniques in managing complex comorbid patients. This report presents the surgical management and outcomes of a growing complex patient population at UAB.

P103. Robotic Repair of Parahiatal Diaphragmatic Hernia

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Background: In the often-cited classification system for hiatal hernias, modified from Akerlund's original 1927 description, a type II paraesophageal hernia is defined as a hiatal hernia in which the gastroesophageal junction is in the abdomen, but the gastric fundus herniates alongside the distal esophagus into the mediastinum through the diaphragmatic hiatus. This classification system was invented based upon the appearance of the gastroesophageal junction and gastric fundus as seen in oral-contrast plain-film studies. In truth, type II paraesophageal hiatal hernias do not exist. Rather, these hernias are actually parahiatal diaphragmatic hernias, a condition in which a normal hiatus anchors the gastroesophageal junction in the abdomen, and a separate diaphragmatic defect is present to the left of the left crus of diaphragm. Parahiatal hernias are extremely rare. We present a case of a primary non-traumatic parahiatal hernia repaired with a trans-abdominal robotic approach. During the dissection, we found an anomalous draining vein that took origin in the left gastric/coronary vein system and drained into the hemiazygous system through the center of the diaphragmatic hernia. We wondered if the penetration of the diaphragmatic muscle by the vein, presumably present at birth, represented an area of weakness that grew into a parahiatal hernia over time as the patient aged. It is important for foregut surgeons to be aware of parahiatal hernias, as most are initially misdiagnosed as a paraesophageal hernia and this could be quite confusing in the operating room to the unsuspecting surgeon.

P104. Novel Ipsilateral Enhanced-View Total Extraperitoneal Approach for Repair of Incisional Flank Hernia

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University of Wisconsin

Background: Enhanced-view total extraperitoneal (eTEP) approach is a well described technique for robotic transversus abdominis release (TAR). Lateral docking with port placement just medial to the semilunar line is the most common approach. For midline hernias, this works well as both posterior rectus sheaths need to be dissected. For unilateral flank hernias, lateral docking results in unnecessary dissection of the contralateral rectus. Here we describe a medial docking approach from the ipsilateral rectus for unilateral flank hernia to avoid unnecessary dissection of the contralateral rectus sheath.

Methods: A 71M presented with left flank incisional hernia resulting from an open left partial nephrectomy for renal cell carcinoma in 2019. On exam he had a large reducible defect. After review of imaging, the patient was offered a robotic repair. Because this was an isolated flank hernia we elected to use an eTEP approach, docking from the ipsilateral rectus. Optical trocar access was used to enter the medial border of the ipsilateral retrorectus plane and two additional ports were placed inferiorly just lateral to the linea alba. The space was dissected bluntly toward the linea semilunaris. In the upper abdomen the medial insertion of the transversus precludes a traditional top down TAR from this position. Therefore we proceeded with a bottom up TAR. We dissected lateral in the space of Bogros until we identified the inferior border of the arcuate line. Here we incised the posterior rectus sheath working to identify the posterior lamella of the transversalis fascia. We carried this plane cranially until we identified the transversus abdominis muscle as it began to insert medial to the semilunar line in the mid abdomen. We carried this above the costal margin and then lateral to the psoas muscle, encountering the flank defect along the way. After complete reduction, the defect measured 7x10cm, in zones L1-L2-L4. #1 nonabsorbable vloc suture was used to close the defect. A 25cm x 20cm bard soft mesh with transfascial fixation was used to augment the repair. The patient tolerated surgery well and was discharged on POD 1.

Results: At follow-up the patient was doing well, resuming regular activities and no longer reported flank discomfort.

Conclusion: eTEP is a valuable approach to the treatment of flank hernias. While this technique works well, current descriptions of the technique requires dissection in the contralateral unaffected side to gain access. In this video we demonstrate a novel ipsilateral docking strategy that avoids unnecessary contralateral dissection and permits a full unilateral TAR on the affected side. Additional benefits of this technique are that it brings the ports closer to the defect to avoid running out of arm length. It also raises the angles of the ports above the underlying viscera when operating on a patient in the decubitus position. This allows additional lateral dissection without having to manually retract the posterior layer. We believe this is an advantageous modification of the well-accepted eTEP technique specific for flank hernias.

P105. An Observational Study On The Comparative Analysis Of TAPP And TEP: A Single Center Experience Of 105 Patients.

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Background: Inguinal hernia repair remains one of the commonest surgical procedure performed in the elective setting. TAPP (Trans abdominal Preperitoneal) and TEP (Totally extra peritoneal) are the two well established laparoscopic methods of inguinal hernia repair. However, doubts still exit about their relative merits and risks. In this study, we are sharing our observation on the comparative analysis of TAPP versus TEP.

Methods: This retrospective analysis was carried out on 105 cases of inguinal hernia, repaired laparoscopically over a period of last 2 years. Patients with in the age group of 20-60 years, operated for primary unilateral inguinal hernia using either TAPP or TEP were included in this study. All the repairs were done by a single surgeon in the same unit having more than 3 years of experience in laparoscopic hernia repair.

Results: Among 105 patients, who underwent laparoscopic hernia repair, 53 were operated by TAPP and 52 by TEP. There was no significant visceral or vascular injury in the either group. Mean duration of surgery in TAPP group was 103.43±12.24 and in TEP group 89.83±14.25 minutes. ($p < 0.0001$) Mean hospital stay was 2.47±0.79 and 2.0±0.65 days in TAPP and TEP groups. ($p=0.001$). Patients in TAPP group were able to return to their work after 14.30±1.60 and in TEP after 13.73± 1.24days. ($p=0.04$).

Conclusion: Both TAPP and TEP are well established methods for laparoscopic hernia repair. In terms of outcome, we observed that TEP requires less operative time and associated with a relatively shorter hospital stay and earlier return to work.

Table – 1. Postoperative hospital stay & time to return to work in TAPP & TEP

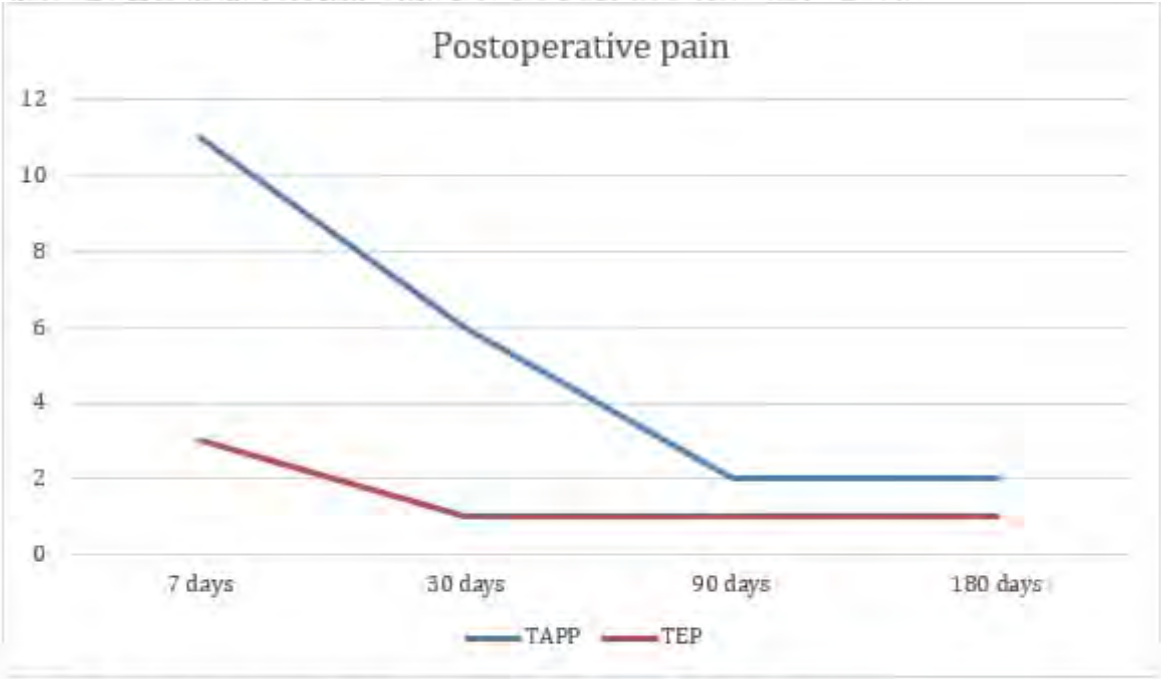

Table-2. Postoperative pain requiring analgesics after TAPP & TEP

P106. Robot-Assisted Abdominal Wall Reconstruction After Trauma Laparotomy and Vicryl Mesh Abdominal Closure

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Brown University

Background: Emergency exploratory laparotomy for trauma remain a frequent occurrence and are a significant cause of morbidity including incisional ventral hernia. In cases of extensive traumatic injury, some patients will undergo absorbable mesh or "planned hernia" closure due to a number of causes, including massive resuscitation, multiple required operations, or open abdomen. In this patient population, minimally-invasive hernia repair is underutilized but increasing in frequency of use.

We demonstrate the efficacy of minimally-invasive ventral incisional hernia repair in a trauma patient with an extensive and complicated hospital course due to trauma.

P107. Laparoscopic Reduction And Repair Of An Incarcerated Inguinoscrotal Hernia

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Background: Inguinoscrotal hernias are usually repaired using the open approach as they tend to be more challenging and often cannot be successfully reduced using a minimally invasive approach. However, with sufficient expertise, laparoscopic repair, which has shown to have better outcomes overall, is possible as we report in this case.

We present the case of a 68-year-old male with a past medical history of hypertension, COPD and paroxysmal atrial fibrillation and a past surgical history of sleeve gastrectomy 5 years ago, who presented to us with a large left inguinal hernia which, he stated, had gotten worse over the last few months, and complained that it had started to limit his mobility due to its increased size. On physical examination, the hernia was found to be non-reducible. CT scan confirmed that the patient had a left-sided large inguinoscrotal hernia with the ureter kinked in it, following which he was scheduled for an elective surgical repair.

Methods: The surgery was performed via the laparoscopic approach with 1 optical trocar inserted supraumbilically and the 5mm trocars inserted along the transverse umbilical line uneventfully. The peritoneal flap was opened using blunt dissection and the hernia contents which mostly consisted of preperitoneal fat but no intestines, were successfully reduced. The dissection was eventually proceeded laterally towards the psoas muscle to allow for complete dissection of the entire fat until the cord structures were clearly visible following which a 16x12cm mesh was placed to close the defect which was identified to be a very large indirect inguinal hernia. A small umbilical hernia was also discovered during the procedure which was repaired primarily with transfascial sutures.

Results: The patient tolerated the surgery well and remained stable post-op. He was discharged on day 2 of surgery with no post-op complications. On follow-up he has been doing well with no additional complains and is tolerating diet without any nausea or vomiting.

Conclusion: Minimally invasive surgery appears to be a safe approach for repair of inguinoscrotal hernias, even in cases where the hernia is incarcerated or non-reducible, both in terms of quality of the repair and an overall better post-operative course.

TECHNICAL POINTS: Minimally invasive approach for inguinoscrotal hernias allows you to have a better and wider field of vision thus allowing for a better mesh placement. It has also shown to have better post-op outcomes overall but with less pain compared to the open approach. However, the success of the repair for such a hernia does require some experience and expertise on the surgeon's part.

P108. Simultaneous Complex Abdominal Wall Repair And Intestinal Closure. A Case Report

L Vejarano Lezama, L Huillca Nuñez, C Velasquez Hawkins
Clinica Sanna

Background: After abdominal surgery, the incidence of ventral hernia is estimated to be 2-20%. In addition, many of these patients have an ostomy and need intestinal restitution surgery. the importance of performing both procedures in 1 time is discussed.

Methods: A 53 year old male patient with history of testicular seminoma (orquiectomy+radiotherapy), retroperitoneal lymphadenectomy, and ileostomy for bowel obstruction. Over the years, he have developed paraostomal hernia and complex ventral hernia. Neoadjuvant therapy with botulinum toxin and preoperative pneumoperitoneum was performed. Ostomal reversal surgery and abdominal wall reconstruction with synthetic mesh placement with TAR technique were the surgery. The patient evolves favorably fulfilling controls without presenting any complications so far.

Results: Currently, complex hernia surgery and stomal reversal remain controversial in the way they are treated. Many groups of experts suggest performing it in 2 stages to avoid the complications of each procedure, however in recent years thanks to the advancement of technology and the specialized groups, performing both procedures in 1 stage has gained importance and it is considered an option in selected cases.

Conclusion: The evolution of abdominal wall surgery and hernia specialist have allowed the wise selection of patients for stomal reversal and wall reconstruction procedures to be performed in just 1 time with a low rate of complications.

P109. Botulunim Toxin Type A followed by TAR (Transversus Abdominal Release) with Abdominoplasty as the Best Combination for Big Hernia Repair

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Background: The current incidence of incisional hernia is up to 11%. Botulinum toxin type A shows atrophy in the extrafusal and intrafusal muscle fibers. With the addition of Muscle Paralysis and improving strength, it is possible to perform an effective posterior component separation.

Methods: Fifty-nine patients were analyzed over 1 year in the General Surgery and Plastic and Reconstructive Surgery Service, patients with midline abdominal wall hernias, using the effective reconstruction algorithm, placing by ultrasound-guided botulinum toxin in the muscle transverse, 1 month later performing TAR, with Abdominoplasty for skin flap management, and comparing with the control group that did not apply botulinum toxin.

Botox is a neurotoxin derived from the bacterium Clostridium botulinum (botulinum toxin type A) that has been observed at the sensory level causing atrophy in the extrafusal and intrafusal muscle fibers. Repair of the abdominal wall after incisional hernias has been a great challenge with recurrence rates of 11%. Performing the release of the transverse muscle has a recurrence of 6%, as well as the compensation of skin flaps are ideal for proper management.

Results: Within the observed analyzes, the results were divided into trans-surgical (99% of the patients closed the midline), immediate post-surgical (Pain, Seroma and Infection < 1%) and late (with < 3% recurrence) in the experimental group.

Conclusion: Within the study, we will be able to analyze that lowering the recurrence rate < 3% in patients properly protocolized, is translated as an adequate and totally reproducible method in our environment.

P111. Endoscopic Management of an Incarcerated Spigelian Hernia

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Background: Spigelian hernias are a rare form of abdominal wall hernias presenting with an incidence of 0.12% to 2%. It is more common in women over the age of 60 years and is known to occur in individuals who have conditions leading to raised intraabdominal pressure or weakening of the abdominal fascial layers. Several studies suggest that about 27% of Spigelian hernia will incarcerate and this will require immediate surgical intervention depending on the presentation. A 76-year-old lady presented with a painful lump at the right lower abdomen since a few days. No other constitutional symptoms were reported. She denied any comorbidities and was on no medication that would contraindicate a general anaesthetic. On Examination she had a 2cm tender non reducible lump at the right Spigelian line. A CT scan revealed a break in the right side of the abdominal wall consistent with a Spigelian Hernia.

Methods: She underwent a repair using a laparoscopic, totally extraperitoneal technique (TEP). This was undertaken as a day case surgery with the hernia containing extraperitoneal fat only. The video demonstrates surgery with balloon dissection, medial to lateral dissection displaying the ilio-pectineal (cooper's) ligament and reduction of the hernia.

Results: The defect was covered with a mesh and fixated with Tisseel fibrin sealant. On her 4th week outpatient follow up she recovered well with only a small seroma at the previous site of the Spigelian hernia.

Conclusion: We demonstrate an efficient way to perform a Laparoscopic totally extraperitoneal (TEP) technique for an incarcerated Spigelian Hernia.

P112. Robotic Repair of a Coughing-Induced Left Flank Hernia

M Josephson, T Xu, R Higgins
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Background: Spontaneous flank hernia development is exceedingly rare in the absence of previous surgical intervention or trauma to the area. Our patient presented with a coughing-induced left flank hernia, a unique etiology in the development of a flank hernia. Imaging demonstrated disrupted internal oblique and transversus abdominis muscles with an intact external oblique.

Methods: We performed a robotic preperitoneal repair of a left flank hernia. We utilized four total port sites for robotic arm instrument placement and mesh insertion. The defect was closed primarily, and a 15x20cm piece of macroporous PTFE permanent mesh was selected for the repair.

Results: At a two-week follow up visit, our patient reported improvement of left flank pain compared to preoperative evaluation. CT imaging demonstrated an intact left flank hernia repair with contiguous abdominal wall musculature.

Conclusion: Coughing-induced left flank hernia is a unique etiology of an already infrequent location of hernia presentation. We performed a successful preperitoneal robotic left flank hernia repair with mesh with notable improvement in symptoms postoperatively.

P113. The Sundial: A Novel Open Ventral Hernia Repair Technique

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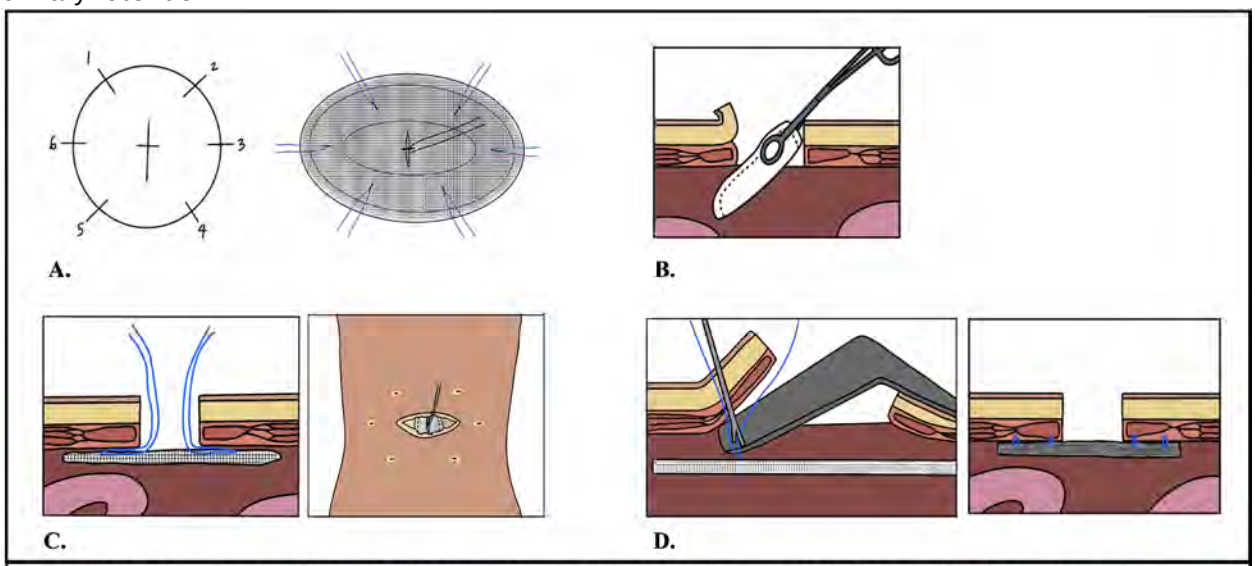
Northwell Health

Background: Nearly one-quarter of all individuals are born with or will develop a ventral hernia in their lifetime. Ventral hernia repair remains one of the most common general surgery operations, with approximately 400,000 operations performed every year. There are numerous ways to repair these hernias including open, laparoscopic and robotic-assisted techniques, each with distinct advantages. Regarding the preferred repair method, there is a strong recommendation to tailor it based on both patient and hernia characteristics, as well as local resources. Their algorithm recommends that small defects measuring less than 1 cm be repaired with a preperitoneal mesh with a 2-cm overlap or by primary repair with non-absorbable or slowly absorbable suture. Larger hernias measuring 1-4 cm should be repaired via open (preperitoneal flat mesh with 3-cm overlap) or laparoscopic (preperitoneal or retromuscular mesh with 5-cm overlap) technique. We describe our novel surgical technique, along with our preoperative approach and postoperative management of patients undergoing elective open ventral hernia repair, using what we coined the Sundial Technique. We have performed this surgery in just over 390 patients with recurrence in just 9, or 0.02% of our sample, demonstrating a durable repair. The principal tenets rely upon securing pre-sutured mesh to the peritoneum via trans-fascial sutures using a suture passer and a Sawyer retractor. We are therefore able to avoid the traditional large midline incision typically used during open repair allowing patients to undergo same-day surgery, decrease the risk of wound complications, and avoid the numerous complications associated with general anesthesia, including cardiopulmonary issues and increased risk of urinary retention.



A. Schematic for the Prolene suture placement on the mesh. Highlighted areas demonstrate the markings placed on the mesh. Mesh after being tagged with Prolene and Vicryl sutures.
B. The use of a Foerster sponge forcep to place the mesh into the abdomen.
C. Proper placement of the mesh. The highlighted areas demonstrate the locations of the stab incisions made to bring up the Prolene sutures.
D. The use of a suture passer and Sawyer retractor to bring the Prolene sutures from the mesh through the abdominal wall. Two circumferential rings of Prolene sutures are used to secure the mesh to the fascia.

Figure 1.

Demographics			
Total (n)		394	
Gender (n,%)			
	Female	214	0.54
	Male	177	0.45
Age			
	Female	58.39	
	Male	61.81	
BMI			
	16-26	60	0.15
	27-37	229	0.58
	38-64	98	0.25
Predictors of Recurrence (n,%)			
	Constipation	15	0.02
	Diastasis Recti	125	0.20
	Smoker	41	0.07
	Asthma	16	0.03
	Heavy Lifting	28	0.05
	COPD	22	0.04
	Recurrence	51	0.08
	Chronic Cough	4	0.01
	BPH	20	0.03
	Previous Repair	48	0.08
	Cirrhosis	2	0.00
	Pregnancy	2	0.00
	Obesity	247	0.40
Postoperative Complications			
	Recurrence	9	0.02
	Infection	2	0.01

Figure 2.

P114. Long-term Outcomes of Ventral Hernia Repair Using a New Prosthetic Mesh

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Background: Synecor® (W.L. Gore and Associates, Flagstaff, AZ) is a new permanent synthetic mesh made of a combination of an absorbable synthetic component and a permanent synthetic component that can be used intraperitoneally or within the abdominal wall layers. Currently, there are little data on long-term outcomes related to this mesh product. The purpose of this project is to review our medical center's outcomes using Synecor mesh in ventral hernia repair.

Methods: We retrospectively reviewed all patients at our single medical center undergoing ventral hernia repair using Synecor® mesh included in the Americas Hernia Society Quality Collaborative (AHSQC) database from April 2016 through September 2019. Demographic, perioperative, and short and long-term outcomes (surgical site infection [SSI], surgical site occurrence [SSO], surgical site occurrence requiring procedural intervention [SSOPI]), reoperation, and recurrence rates were reviewed, and descriptive statistics were calculated. Patients were divided based on the use of the preperitoneal and intraperitoneal mesh.

Results: A total of forty-eight patients who underwent ventral hernia repairs using Synecor mesh met study inclusion criteria. Preperitoneal mesh was used in 19 patients with an average age of 58 years (range 42-77 years) and 68% Caucasian. At least 1 comorbidity was present in 74%. Type of surgery included 14 patients undergoing open hernia repair, 3 undergoing laparoscopic converted to open and 2 patients undergoing robotic repair. Retrorectus repair was performed in 13 patients and 5 patients underwent TAR. Outcomes included 30-day complications occurred in 5 patients (26.3%), readmission in 1 patient (5.3%), and reoperation in 3 patients (15.8%). At an average follow up of 2.3 years hernia recurrences occurred in 2 patients (10.5%). Intraperitoneal mesh was used in 29 patients with an average age of 59 years (range 34-78 years) with 62% female, and 86% Caucasian. At least 1 comorbidity was present in 21 patients. Outcomes included 30-day complication in 9 patients (31%), readmission in 5 patients (17.2%), and reoperation in 6 patients (20.7%). At an average follow-up of 3.1 years hernia recurrence was noted in 1 patient (3.4%).

Concusion: Synecor mesh is a new synthetic mesh that can be used for ventral hernia repair in an open, laparoscopic, or robotic approach. Long-term results show low recurrence rates with complication and reoperation rates similar to previous studies.

P116. Treatment Strategies For Ventral Hernia While Botox Cannot Be Used In Japan

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Background: In recent years in Japan, in the treatment theory for ventral hernia, only discussions on new surgical methods, such as e-TEP of retro-rectus repair, have tended to precede.

Methods: We will review the surgical outcomes of 77 MILOS cases (54 scarred hernias, 3 white line hernias, 19 umbilical hernias, and 1 Spigel hernia) from April 2020 to March 2022 at Saiseikai SUITA Hospital Hernia Center and verify treatment strategies.

Results: The mean age was 66.0 (21-87), BMI was 25.2 (14.87-36.0), and diameter of the orifice was 4.54cm (horizontal). The positions were M2, 3, and 4/5, 7, 41, and 20, and L2/3 in 9 cases. The mean operative time was 103.3 minutes (25-280), and the postoperative hospital stay was 4.0 days (1-16). Recurrence was observed in 3 cases. (Observation period 1-36 months)

In the cases with the large size of the hernial orifice, especially long after their onsets, shortening of not only the rectus muscles but also the lateral muscles is significant and prevents abdominal wall closure. Although we have no choice but to rely on the component separation instead of BOTOX which is not approved for use in the treatment of ventral hernia in Japan, we are concerned about the impact of transverse abdominis muscle amputation (TAR) on convolution movement of trunk (D M Urquhart , P W Hodges, Eur Spine J. 2005 May; 14(4):393-400) and believe that it should be kept to the minimum necessary. So physical therapy and nutritional guidance has been introduced preoperatively for the purpose of improving the mobility of trunk muscles and weight loss since March 2022. Before these introductions, TAR was applied to 17.1% (6/35), but after the introduction, it was only 5.9% (2/34). (Among 69 median lesions)

In open abdominal surgery after the use of mesh, we experienced a case of wound infection. So abdominal wall closure with detachment of the posterior surface of the rectus abdominis muscle and without mesh was performed based on preoperative informed consent (39 cases).

No recurrence is observed at this moment. (Observation period 1-23 months)

Conclusion: The possibility of restructuring the therapeutic concept for ventral hernia was suggested.

P117. Traumatic Hernia Due To A Bull Horn

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Background: Post-traumatic hernias due to a bull horn are a rare pathology that are characterized by a traumatic bull horn, the absence of a previous hernia in the same location and the integrity of the skin. It is a contained evisceration that must to be suspected in patients with high energy injures. These patients have to be treated as a politrauma patient and have to be diagnosed with high resolution imaging test such as the CT scan. The treatment is an emergency surgery to rule out visceral lesions. Hernioplasty is the technique of choice with very few recurrences registered.

P118. Analysis of Cost Drivers for Ventral Hernia Repair and Infected Mesh Removal

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Background: Although synthetic mesh has proven benefits in reducing hernia recurrences, infrequent mesh infections are both morbid and expensive. The purpose of this study is to identify factors during index hernia repair, the postoperative care period, and at the time of infected mesh removal that are associated with increased costs.

Methods: A review of databases was performed to identify patients that underwent ventral hernia repair (VHR) and reoperation for infected mesh removal. Patient demographic and operative details for both procedures were obtained. Charts were reviewed up to 180 days following infected mesh removal. Cost data was analyzed for differences in clinical outcomes. Analysis for significant correlations in variables affecting financial differences was also performed.

Results: 33 patients underwent both VHR and removal of infected mesh over the 11-year timeframe, both at the University of Kentucky. The average cost of the index VHR was 19,058 (+/- 20,792), ranging from 3,926 to 100,411 with a median cost of 12,274. Interim costs averaged 10,045 (+/-21,262), range 0 to 114,659, median 657. Infected mesh removal costs averaged 33,147 (+/- 30,777), range 2,301 to 158,103, median 23,841. In the first 180 days after mesh removal, costs averaged 7,052 (+/- 12,875), ranged from 0 to 45,990, median 1,832. There were no differences between interim and post-removal costs when adjusted for sex, ASA class, BMI, mesh type, or surgical approach. There were no significant correlations between interim costs, post-removal costs, age, duration of initial VHR repair, mesh size, initial defect size, laparoscopy, or BMI as a continuous variable.

Conclusion: This is extremely valuable information and is important as one of the first attempts to quantify the costs of VHR explantation due to mesh infection, looking at interim costs. Costs of VHR and subsequent infected mesh removal are unpredictable, with no readily apparent cost drivers. With no significant difference in costs associated with surgical approach or timeline between mesh implantation and removal, a value-based approach to management and removal of infected mesh should involve clinical decision making based upon clinical circumstances.

Figure 1

Sex			***New mesh****	
	Female	16	***Known n=32***	Yes	14
	Male	17		No	18
ASA Class			***Mesh Type***	
	ASA I-II	14		Synthetic	26
	ASA III	17		Biologic	4
	ASA IV	2		Bioresorbable	3
Body Mass Index (BMI)			***Mesh Removal Timeframe***	
	BMI ≤ 30 kg/m2	4		Early removal (< 6 mo.)	15
	BMI 31-40 kg/m2	18		Late removal (> 6 mo.)	18
	BMI > 40 kg/m2	7			
Initial VHR Method			***Mesh Removed***	
	Laparoscopy	5	***Known n=26***	Total mesh removal	18
	Open Repair	28		Partial mesh removal	8

* Index VHR cost data was available for 32 of the 33

Period	Visit Type	No. Patients w/ Visit Type	Visits Mean	Visits SD	Total Costs Mean	Total Costs SD
1-Index VHR	Therapeutic Inpatient	32	1	0	$ 16,572	$ 17,438
2-Interim	Clinic Encounter	31	15.2	22	$ 1,310	$ 2,280
	ED Encounter	13	4.2	6.4	$ 1,577	$ 1,469
	Imaging Outpatient	2	1.5	0.7	$ 2,543	$ 3,596
	Therapeutic Inpatient	23	2.6	1.9	$ 26,834	$ 29,604
	Therapeutic Outpatient	11	3	3.2	$ 4,909	$ 6,254
	Total		7.8	15.1	$ 9,217	$ 19,485
3-Removal	Therapeutic Inpatient	30	1	0	$ 36,141	$ 30,709
	Therapeutic Outpatient	3	1	0	$ 3,206	$ 1,525
	Total	33	1	0	$ 33,147	$ 30,777
4-Post	Clinic Encounter	33	6.6	6.3	$ 401	$ 1,079
	ED Encounter	6	1.3	0.5	$ 416	$ 285
	Imaging Outpatient	2	1	0	$ 757	$ 614
	Therapeutic Inpatient	18	1.4	0.7	$ 12,871	$ 15,070
	Therapeutic Outpatient	5	5	8.4	$ 5,703	$ 7,310
	Total Costs		4.3	5.5	$ 4,335	$ 9,809
Total	Clinic Encounter	64	10.7	16.4	$ 841	$ 1,810
	ED Encounter	19	3.3	5.4	$ 1,211	$ 1,330
	Imaging Outpatient	4	1.3	0.5	$ 1,650	$ 2,345
	Therapeutic Inpatient	103	1.4	1.1	$ 23,917	$ 25,918
	Therapeutic Outpatient	19	3.2	4.8	$ 4,849	$ 5,875
	Total	209	4.6	10.2	$ 12,627	$ 21,429

P119. A Case of Obstructive Uropathy Secondary to Inguinoscrotal Hernia

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Background: Inguinoscrotal hernias with ureteral involvement are an unusual occurrence. Thorough preoperative assessment of hernia contents is important to be able to plan for successful management. Even with planned management by a general surgeon, the case was considered complex and required referral to hernia specialist.

Case report: A 44-year old gentleman presented with findings of bilateral inguinal hernia. Reports indicated that patient was not aware of his inguinal hernia until physical exam as described by a doctor. Preoperative assessment was significant for evidence of large left inguinoscrotal hernia with ureter extending down into the scrotum causing subsequent left hydronephrosis in addition to findings of a right inguinal hernia, irreducible umbilical hernia, and abnormal kidney function based on lab work. An initial attempt to repair with stent placement within the left ureter proved unsuccessful due to the tortuous nature of the ureter within the hernia sac. He ultimately had a successful robotic assisted laparoscopic transabdominal preperitoneal inguinal hernia repair, or TAPP, with mesh placement after reduction of ureter out of the scrotal sac. Prior to this surgery, urology was also planned to be available for any complications. Surgery was difficult due to his body habitus with BMI of 54.93 and retroperitoneal hernia contents, resulting in prolonged operation time. The mesh on the left was made five centimeters longer to provide more overlap due to herniation contents. He recovered well as based on follow up one month after surgery.

Conclusion: Inguinoscrotal hernias with ureteral involvement are infrequent but critical variances to consider to prevent complications like iatrogenic injury or need for multiple surgeries. The patient did not have clinical symptoms relating to obstructive uropathy. Even with known knowledge from CT of presence of ureter within hernia, initial surgery was aborted due to inability to stent the ureter and subsequent discomfort with repairing a ureteral inguinal hernia. A robotic TAPP approach with mesh placement was effective.

P121. Robotic Right Flank Incisional Hernia Repair with Unilateral Transversus Abdominis Release

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Background: The patient is a 48-year-old male presenting with a right flank incisional hernia. In 2020, the patient underwent a laparoscopic converted to open right adrenalectomy for a ganglioneuroma. He followed up at his 1-year post-operative evaluation and was found to have a painful right-sided mass. The patient's medical history was otherwise notable for hypertension, obesity (BMI 31), and being a former smoker (quit 23 years ago). He had no other surgical history.

On exam, there was a mildly tender palpable reducible bulge along the patients' right flank near to his prior incision. CT of the abdomen/pelvis showed a right flank incisional-hernia containing bowel that projected through the transversus and internal oblique fascias and was contained within the external oblique fascia. There was also evidence of denervation injury to the right rectus. The decision was made to approach the repair robotically. The abdomen was entered under Optiview at Palmer's point. Two other ports were placed under visualization in the lower midline and right lower quadrant. Adhesiolysis was performed and the hernia contents were reduced without complication. We then entered the medial boarder of the right retrorectus advancement flap and carried this out to the semilunar line. We created our transversus abdominis myofascial advancement flap and carried this lateral out to the psoas muscle. We then closed the anterior fascia with #1 non-absorbable V-Loc suture and re-approximated the internal oblique fascia, which added strength to the lateral muscle, and essentially repaired the hernia defect. We then placed a 25cm x 20cm Bard soft mesh, allowing defect coverage with greater than 5cm overlap in all directions, and fixated the mesh using transfascial sutures. We closed the posterior layer with a running 2-0 absorbable V-Loc suture. The patient tolerated this well and he was discharged home on post-operative day 1. At follow-up four weeks later, the patient reported that he was doing very well, getting back to regular activities, and his prior right-sided pain associated with the hernia was gone.

P122. Double Prosthetic Repair Technique In Lumbar Hernia

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Background: Lateral abdominal wall hernias are rare defects but and fewstudies show support towards a standard protocol for repair; sandwich technique or double prosthetic repair is a possible technique.

Methods: Placement of a mesh in preperitoneal and intermuscular area, attached to a bony landmark y transparietal knots.

Conclusion: The double prosthetic repair technique is effective for lumbar eventrations, even though we are still missing evidence to determine which of its three variables is ideal.

P125. Robotic Repair Of Incarcerated Incisional Hernia With Bowel Obstruction Using Posterior Rectus Release

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Background: Incisional hernia is one of the most common complications following abdominal surgery, with a reported incidence of 3–13%.

Incarcerated ventral or incisional hernias with bowel obstruction are usually treated with open surgical technique. The laparoscopic Minimally invasive surgery (MIS) approach is challenging due to the dilated bowel obscuring adequate exposure and limiting space needed for laparoscopic maneuvers.

Here we present a case of a large incarcerated incisional hernia with a high-grade small bowel obstruction that was treated successfully with a Robotic-assisted technique with the use of Posterior Rectus sheath release.

Methods: A 50-year-old female with a previous history of multiple previous abdominal surgeries including laparoscopic Roux en Y Gastric Bypass, laparoscopic repair of perforated GJ anastomotic ulcer with Graham patch and ventral hernia repair, presented to the ER with a 1-day history of abdominal pain, nausea, and vomiting. She was found to have a large incarcerated incisional hernia in the midline. CT scan confirmed the presence of the hernia, along with small bowel obstruction. There were no clinical or radiological signs of strangulation. The patient received adequate fluid resuscitation and NG tube decompression.

Robotic IPOM ventral hernia repair with posterior rectus sheath release was successfully performed.

Results: The patient recovered well post-op and was discharged home on POD 2. The patient presented 2 weeks later with mild abdominal pain. CT performed at that time showed a small seroma, with intact hernia repair. This was managed conservatively.

Conclusion: Robotic surgery is increasingly used in acute care surgery. This case highlights the fact that Robotic surgery can be performed successfully even in incarcerated ventral/incisional hernia with mesh placement.

Posterior rectus sheath release can be used for adequate closure of the midline fascia.

P126. Best Practices for Pre-optimization Before AWR

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Pooja Nursing Home

Background: Pre-Operative optimization is very important if one wants to have a durable hernia repair, especially with large ventral hernia needing Abdominal Wall Reconstruction (AWR)

Unoptimized patients go through a vicious cycle of Surgical site infection, Readmission, Recurrence & Reoperation.

Lot of factors are being discussed which are needed to be taken care of like Obesity, Smoking, Diabetes, Nutrition, Sarcopenia & Surgical site contamination.

With our experience now going over a decade, we have protocolized the preparation before major AWR.

We would like to present “Best Practices for Pre-Optimization”, based on evidence.


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