AHS | AMERICAN HERNIA SOCIETY℠

FINAL PROGRAM

AMERICAN HERNIA SOCIETY

2025 ANNUAL MEETING

September 4–6, 2025

Renaissance Nashville Hotel

www.americanherniasociety.org

#AHS25

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AHS
CME INFORMATION

Registered AHS attendees are eligible to apply for CME credits until October 21, 2025

Claim CME / Certificate of Attendance

Joint Accreditation Statement

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

Amedco LLC designates this live activity for a maximum of ***27.25 AMA PRA Category 1 Credits TM*** for physicians. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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. Max of 27.25 Accredited CE MOCs.

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AHS 2025 Nyhus-Wantz Award

Vedra Augenstein MD

Atrium Health

The **Nyhus-Wantz Award** is the highest honor of the American Hernia Society, recognizing a surgeon whose leadership, service, and contributions have profoundly shaped the field of hernia surgery. This award celebrates excellence in clinical expertise, education, mentorship, and volunteerism, honoring individuals whose impact has been both inspiring and transformative to the AHS community and beyond.

Past Recipients

2024	Yuri Novitsky MD
2023	Jorge Daes MD
2022	David C. Chen MD
2021	Conrad Ballecer MD
2020	Edward Felix MD
2019	Sergio Roll MD
2018	Robert Fitzgibbons MD
2017	Michael Rosen MD
2016	Bruce Ramshaw MD
2015	EHS Meeting – Milan, Italy
2014	B. Todd Heniford MD
2013	Brent Matthews MD
2012	Guy Voeller MD
2011	Raymond Read MD
2010	Arthur Gilbert MD

SCIENTIFIC PROGRAM

Thursday, September 4

7:30am - 8:30am
Broadway Ballroom - Mtg Space Level 1
Breakfast in Exhibit Hall

8:30am - 8:50am
Grand Ballroom 2&3 - Lobby Level
Welcome & Nyhus-Wantz Lecture
GHR Award/Sponsor Recognition
Introduction: Flavio Malcher Martins de Oliveira MD, MSc | Northwell Health
Recipient: Vedra Augenstein MD | Atrium Health

8:50am - 9:05am
Grand Ballroom 2&3 - Lobby Level
B. Todd Heniford Education Award
Introduction: David Chen MD | University of California Los Angeles
Recipient: B. Todd Heniford MD | Endeavor Abdominal Wall Health and Hernia Center

9:05am - 9:30am
Grand Ballroom 2&3 - Lobby Level
Remembering Professor Neil Smart
B. Todd Heniford MD | Endeavor Abdominal Wall Health and Hernia Center
Conrad Ballecer MD | Dignity Health Creighton Phoenix

9:30am - 9:45am
Project Updates
Yuri Novitsky MD | Columbia University Medical Center

9:45am - 10:30am
Grand Ballroom 2&3 - Lobby Level
Presidential Address
Introduction:
Vedra Augenstein MD | Atrium Health
On the Shoulders of Giants and a Pile of Books
Flavio Malcher Martins de Oliveira MD, MSc | Northwell Health

10:30am - 11:00am
Broadway Ballroom - Mtg Space Level 1
Morning Break in Exhibit Hall

11:00am - 12:00pm
Grand Ballroom 2&3 - Lobby Level
Past Presidents Mesh Use Algorithms
Moderators:
Bruce Ramshaw MD | CareSyntax
David Chen MD | University of California Los Angeles
Presenters:
Michael Rosen MD | Northwestern University
B. Todd Heniford MD | Endeavor Abdominal Wall Health and Hernia Center
Archana Ramaswamy MD | Loma Linda Veterans Administration Hospital
William Hope MD | Novant Health
Global Hernia Relief Travel Grant Announcement
Erwin van Geffen MD, PhD | Jeroen Bosch Hospital & Giel Koning MD, PhD | Euregio Hospital Nordhorn

11:00am - 12:00pm
Grand Ballroom 1
Abstract Session 1
Moderators:
Sullivan Ayuso MD | University of Texas at Austin
Dina Podolsky MD | Columbia University Medical Center
1. Psychological Factors Associated With Postoperative Pain in Inguinal Hernia Repair - A Systematic Review And Risk Factors Meta-Analysis
Carlos Balthazar da Silveira MD | Montefiore Medical Center
2. Single Incision Laparoscopic Surgery for Abdominal Wall Reconstruction: Result of Initial 100 Cases
Takeshi Nagahama MD | Kudanzaka Hospital

3. Absorbable Mesh Predisposes to Recurrence and Reoperation: A Comparative Study of Mesh Performance in Clean and Contaminated Ventral Hernia Repairs
Brandon Cowan MD | Kaiser Permanente
4. A Prospective, Multi-center Study of the Medtronic Hugo Robotic-assisted Surgery System in Inguinal and Ventral Hernia Repair: Enable Hernia Repair
David Chen MD | UCLA Health
5. Hernia Surgery Training Reimagined: From Inguinal to Flank Hernias – Revolutionizing Surgical Training with Realistic Cadaveric Hernia Model Creation
Carlos Balthazar da Silveira MD | St. Joseph's Hospital and Medical Center, Dignity Health
6. Outcomes Following Repair of Incisional Hernias After Orthotopic Liver Transplant Using Transversus Abdominis Release (TAR): An Institutional Review
Viemma Nwigwe MD | Columbia University

12:15pm - 1:00pm
Germantown 1
Lunch & Learn - Perspectives in Practice
Sponsored by BD

12:15pm - 1:00pm
Germantown 2
Lunch & Learn - Innovation Without Limits in Hernia Repair: Technology for Every Approach
Sponsored by Medtronic

12:15pm - 1:00pm
Germantown 3
Lunch & Learn - Transforming Your Practice Through Shared Decision Making-Perspectives from the UK to the US
Sponsored by TELABio

12:15pm - 1:00pm
Broadway Ballroom - Mtg Space Level 1
Attendee Lunch in Exhibit Hall

1:15pm - 2:15pm
Grand Ballroom 2&3 - Lobby Level
World Hernia Cup
Moderators:

Sabrina Drexel MD
Jonah Stulberg MD
Christiano Claus MD, PhD

Ipom Plus - Archana Ramaswamy MD
LIRA - Salvador Morales-Conde MD

Etep - Posterior Rectus Sheath Closure

YES - Igor Belyansky MD
NO - Victor Radu MD

Inguinal Repair Defect Closure

YES - Eduardo Parra Davila MD
NO - Jenny Shao MD

Inguinal Repair:

Large Sac Complete Dissection - Manuel Lopez Cano MD (ESP)

Sac Abandon - Vahagn Nikolian MD (USA)

1:15pm - 2:15pm
Grand Ballroom 1
Pain - How to Avoid It and What to Do in Difficult Cases
Moderators:
Monica Polcz MD | University of South Florida/Tampa General Hospital
Hatem Moussa | American Hospital Dubai
Barbora East MD | Motol Faculty Hospital

The Devil is in the Details: Technical Considerations to Prevent Pain
Wes Love MD | Prisma Health
An Ounce of Prevention: Regional Nerve Blocks
Kimberly Coughlin MD | Henry Ford St. John
Enhanced Recovery Pathways
Knut Borch MD | University Hospital of North Norway
Homeopathic Adjuncts: Examining the Evidence
Desmond Huynh MD | Cedars Sinai Health System
My Mesh Hurts…Now What?
Bonnie Lee MD | University of South Alabama

2:15pm - 3:30pm
Grand Ballroom 2&3 - Lobby Level
The Hernias We Struggle With
Moderators:
Barbora East MD, PhD | Motol Faculty Hospital
Flavio Malcher MD, MSc | Northwell Health
Mazen Al-Mansour MD | University of Florida

Paraesophageal Hernias – Pearls and Pitfalls
Paul Colavita MD | Carolinas Medical Center
Parastomal Hernia Care
Heidi Miller MD | Maine Medical Center
Fistulas and Chronic Mesh Infection Strategies
Robert Martindale MD, PhD | OHSU
Multi-Recurrent Inguinal Hernias
Brian Jacob MD | Laparoscopic Surgical Center
Chronic Groin Pain and Athletic Pubalgia
David Krpata MD | Cleveland Clinic
Atypical Hernias – Open and MIS Management
Salvatore Docimo DO, MBA | USF Health

2:15pm - 3:30pm
Grand Ballroom 1
Perioperative Hernia Care
Moderators:
Jenny Shao MD | University of Michigan
Erwin Van Geffen MD, PhD | Jeroen Bosch Hospital

Periperative Optimization, Predictive Models and Risk Stratification – The Data and the Current Trends
Kent Van Sickle MD | UT Health San Antonio
Using Radiology to Plan Your Next Case
Eric Pauli MD | Penn State Hershey Medical Center
Blocks, Medications and ERAS
Leandro Totti Cavazzola MD | Universidade Federal do Rio Grande do Sul
Preoperative Adjuncts to Complex AWR – PPP, Botox, Expanders, and More
Sullivan Ayuso MD | University of Texas at Austin
Postoperative Pathways and Physical Rehabilitation
Courtney Collins MD | The Ohio State University Wexner Medical Center

2:15pm - 3:30pm
Germantown 1
Abstract Session 2
Moderators:
Franceso Bianco MD | University of Illinois,
Chicago Sharon Bachman MD | Fairfax Medical Campus

7. The use of Sugammadex for Neuromuscular Blockade Reversal after Inguinal Hernia Repair: A Systematic Review and Meta-analysis
Ana Caroline Dias Rasador MD | Montefiore Medical Center
8. Significant Lowering of Hernia Surgeon Reimbursement and Work RVUs Due to 2023 CPT Coding Changes
Robert Wright MD, FACS | Meridian Surgery Center

9. Surgical Management of Lateral Hernias Using the Transversus Abdominis Release (TAR) Technique: A Systematic Review and Proportional Meta-analysis
Ana Dias Rasador MD | St. Joseph's Hospital and Medical Center, Dignity Health
10. Abdominal Wall Tension and Long-Term Outcomes after Posterior Component Separation with Transversus Abdominis Release
William Bennett MS, MD | Cleveland Clinic Foundation
11. Comparative Outcomes and Cost Analysis of Epidural Analgesia vs. ON-Q Pain Control in Open Abdominal Wall Reconstruction
Yash Jani BS | Medical College of Georgia
12. Impact of Obesity and Smoking on Reintervention Risk After Elective Umbilical Hernia Repair With Mesh –A Nationwide Study
Jeppe Fredberg | University of Copenhagen
13. An Evaluation of Management and Outcomes in Complex Abdominal Wall Reconstruction in Patients with Recurrent Hernias and Mesh Infections or Fistulas
Alynna Wiley MD | Atrium Health Carolinas Medical Center

3:30pm - 4:00pm
Broadway Ballroom - Mtg Space Level 1
Afternoon Break in Exhibit Hall

4:00pm - 5:15pm
Grand Ballroom 2&3 - Lobby Level
Ed Felix Birthday Session
Moderators:
Edward Felix MD
Meghan Melland-Smith MD | University of Toronto
Why is Knowledge of Anatomy So Important (Critical View)?
David Lourié MD | Huntington Health
eTEP: Why and How
Jorge Daes MD | Clinica Portoazul
Why MIS for Recurrent Open and Lap Hernias?
David Chen MD | University of California Los Angeles
Can Robotics Be the Answer for Surgeon Education?
Conrad Ballecer MD | Dignity Health Creighton Phoenix
Can MIS Handle Even Previous Misadventures?
Sharon Bachman MD | Fairfax Medical Campus

4:00pm - 5:15pm
Grand Ballroom 1
Hernia Centers, Specialization, and Practice Advancement – Why and How
Moderators:
J. Scott Roth MD | University of Kentucky
Dana Telem MD | University of Michigan
Lucian Panait MD, MBA | Minnesota Hernia Center
Salvatore Docimo DO, MBA | USF Health
Mentorship In a Center of Excellence
B. Todd Heniford MD | Endeavor Abdominal Wall Health and Hernia Center
Working with Industry Partners to Advance Hernia Care
William Cobb MD | Prisma Health
Specialty Designation in AWR – Where Are We and Where Do We Need to Go
Lucian Panait MD, MBA | Minnesota Hernia Center
Collaborative Research Ventures to Improve Hernia Care
Ben Poulose MD | The Ohio State University Wexner Medical Center
How to Create an Efficient Hernia Registry
Lars Jorgensen MD | Bispebjerg and Frederiksberg Hospital
Beyond the RVUs: Alternative Strategies for Reimbursement in Hernia Surgery
Leighton Belden MD | Sutter Health
Establishing a Private Practice: Pearls and Pitfalls
Shirin Towfigh MD | Beverly Hills Hernia Center

4:00pm - 5:15pm
Germantown 1
Abstract Session 3
Moderators:
Aali Sheen MD | Fortius Clinic, London
Kimberly Coughlin MD | Henry Ford St. John

14. Effect of Posterior Rectus Sheath Closure on Outcomes of Enhanced Total Extraperitoneal Ventral Hernia Repair
Daniel Halpern MD | New York University Long Island School of Medicine
15. Multidisciplinary Geriatric and Abdominal Wall Reconstruction Clinic Optimizes Outcomes of Older Patients to Young Patients: Propensity Matched Study
Alexis Holland MD | Atrium Health Carolinas Medical Center
16. Beyond the Tear: Heterotrophic Ossification Following Adductor Longus Tears
Alexa De la Fuente-Hagopian MD | Houston Methodist Hospital
17. Patient-Reported Urinary Incontinence Before and After Transversus Abdominus Release: Early Results from a Clinical Quality Assurance Initiative
William Bennett MS, MD | Cleveland Clinic Foundation
18. New Insights on the Subxiphoid Anatomy: Implications for Abdominal Wall Reconstruction
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario del Henares, Universidad Francisco de Vitoria
19. AI Revolution in Advanced Hernia Surgery: Transforming Surgical Workflow and Clinical Excellence
Ashvind Bawa Professor(Dr) | Dayanand Medical College and Hospital
20. Step-by-Step Reconstruction of a Complex Abdominal Wall Defect in a Contaminated Field: A Safe and Systematic Approach
Miguel Angel Garcia-Urena MD, PhD | Hospital Universitario del Henares, Universidad Francisco de Vitoria

5:15pm - 6:45pm
Grand Ballroom 2&3 - Lobby Level
Live-Cadaveric Dissection
Moderators:
David Lourié MD | Huntington Health
Andrea Pakula MD | Adventist Health Simi Valley
Shirin Towfigh MD | Beverly Hills Hernia Center
Assistant: Natalia Pascotini Pereira MD | Hospital São Luis Morumbi Cruz

Inguinal Anatomy, Lap Open IHR
David Chen MD | University of California Los Angeles
TAR
Conrad Ballecer MD | Dignity Health Creighton Phoenix
Preperitoneal EOR
Vedra Augenstein | Atrium Health

5:15pm - 6:45pm
Grand Ballroom 1
ACHQC Session
Moderator:
Courtney Collins MD | The Ohio State University Wexner Medical Center
Kaela Blake MD | University of Tennessee

Patient Optimization and Equitable Care - Finding Common Ground
Meghan Melland-Smith MD | University of Toronto
What Does Quality of Life Data Tell us Regarding Management of Occult Contralateral Hernias During MIS Inguinal Hernia Repair
Mazen Al-Mansour MD | University of Florida
The ACHQC from AWR Fellowship to Practice
Aldo Fafaj MD | Cleveland Clinic
Take Your Private Practice to the Next Level - What the ACHQC Can Do for You
Todd Harris MD | California Hernia Specialists
Beyond Hernias: Leveraging the ACHQC for Sustainability and Environmental Exposure Research
Benjamin Miller MD | Cleveland Clinic
Updates on Ongoing Registry-Embedded Clinical Trials
Clayton Petro MD | Cleveland Clinic

6:45pm - 7:45pm
Music City Ballroom
AHS Leadership & Trainee Reception

Friday, September 5

7:00am
Hernia Hustle: 5K Run/Walk through Nashville
Pre-registration required

7:30am - 8:15am
Germantown 1
On the Breakfast Menu
Sponsored by Intuitive

7:30am - 8:15am
Germantown 2
On the Breakfast Menu
Sponsored by Surgimesh

7:30am - 8:30am
Broadway Ballroom - Mtg Space Level 1
Attendee Breakfast in Exhibit Hall

8:30am - 10:00am
Grand Ballroom 2&3 - Lobby Level
All You Ever Wanted to Know About Anatomy
Moderators:
Brittany Mead MD | Rush University Leighton
Belden MD | Sutter Medical Group Jeremy
Warren MD | Prisma Health

Anatomy Illustrated, Ventral and Groin
Yohann Renard MD, PhD | Reims Champagne-Ardenne University
Anatomy of the Abdominal Wall / IPOM
Rana Higgins MD | Medical College of Wisconsin
Anatomy of a CT
Eric Pauli MD | Penn State Hershey Medical Center
Separation of Components
Eva Barbosa MD | São João University Hospital Center
Madrid Modification
Miguel Ángel García Ureña MD | Henares University Hospital
Essential Anatomy of Posterior Repairs
Edward Felix MD
Tissue Repairs
Andreas Koch MD | Day Surgery and Hernia Center Dr.Koch

8:30am - 10:00am
Grand Ballroom 1
Abstract Session 4
Moderators:
Jana Sacco MD | University of Florida Jacksonville
Vahagn Nikolian MD | OHSU

21. Where Have All the Female Surgeons Gone?
Barbora East | Motol University Hospital
22. Does a Surgeon's Specialty Training Affect Their Repair of Ventral Hernias? An Analysis of 73,000+ Operations in the ACHQC
Ian Kim BS | Beverly Hills Hernia Center
23. Hybrid Versus Robotic Assisted Abdominal Wall Reconstruction: A Single Center's Technique and Outcomes
Katherine Cordero MD | New York University Long Island School of Medicine
24. Anxiety and Depression Effect on Inguinal and Ventral Hernia Repair Outcomes
Sean McCarthy MD | University of North Carolina
25. Is Mesh Fixation Necessary in Retromuscular Ventral Hernia Repair? A Meta-Analysis

Claudia Theis MD | University of North Carolina
26. Multi-Institutional Outcomes following Novel Technique: Transabdominal Preperitoneal Ventral Hernia Repair with Rectus Aponeuroplasty (TAPPRA)
Shan Kalmeta MD | Oregon Health & Science University
27. The impact of Socioeconomic Status in Hernia Treatment: a Qualitative Systematic Review
Vitor Neves MD | Montefiore Medical Center
28. Self-Fixating Mesh versus Tack Fixation in Totally Extra Peritoneal Inguinal Hernioplasty: A Double-Blind Randomized Clinical Trial (SELFITAC TRIAL)
Tushar Mishra MBBS, MS, MNAMS, FACS | All India Institute of Medical Sciences Bhubaneswar, India
29. Robotic Repair of Post-Transplant Incisional Hernias: Outcomes in Complex Hernia Management Nisha Kapani MD | St. Joseph's Hospital and Medical Center, Dignity Health

9:15am - 11:15am
Germantown 1
Pseudo Live Surgeries Session 1
Moderators:
Christiano Claus MD, PhD | Nossa Senhora das Graças Hospital
Heather Bougard MD | New Somerset Hospital, Cape Town
Inguinal lap TAPP
Allan Morrell MD | Instituto Morrell
Inguinal R TEP
Flavio Malcher MD, MSc | Northwell Health
R TAR
Yuri Novitsky MD |Columbia University Medical Center
R TAPP
Andrea Pakula MD | Adventist Health Simi Valley

10:00am - 10:30am
Broadway Ballroom - Mtg Space Level 1
Morning Break in Exhibit Hall

10:30am - 12:00pm
Grand Ballroom 2&3 - Lobby Level
Fireside Chat
Moderators:
Jana Sacco MD | University of Florida Jacksonville
Salvatore Docimo DO, MBA | USF Health
Kathryn Schlosser MD | Beth Israel Deaconess - Plymouth
TAR
Sean Orenstein MD | OHSU
eTEP RS
Igor Belyansky MD | Luminis Health
Parastomal
Charlotte Horne MD | Mayo Clinic
Preperitoneal
Bola Aladegbami MD | Baylor Scott & White
PEH
Caitlin Houghton MD | Keck Medicine of USC

10:30am - 12:00pm
Grand Ballroom 1
My Resident & I
Moderators:
Conrad Ballecer MD | Dignity Health Creighton Phoenix
Bonnie Lee MD | University of South Alabama
William Cobb MD | Prisma Health
Robotics After Hours: rTAPP Repair of a Strangulated Hernia
Antoinette Hu MD | Penn State University
Hiatal Hernia Repair With Dor Fundoplication in a Patient with Situs Inversus Nick Hrdlicka MD | Mercer University
Robotic Hiatal Hernia Repair With Prior Tracheoesophageal Fistula
Jonathan Hughes DO, MPH | Texas Health
rTAPP Repair of a Thoracoabdominal Hernia
Alex Jannsen MD | Creighton Phoenix
rETEP with Unilateral TAR: Anatomy of a Port Site Hernia
Kyle Leong DO | Creighton Phoenix

Pediatric Ventral Hernia Repair With Mesh For Giant Omphalocele
Namratha Mylarapu MD | Atrium Health
Laparoscopic Left Flank Hernia Repair
Mary Oh MD | Houston Methodist
Prophylactic Mesh Based Colopexy To Prevent Stomal Prolapse
Nisha Rehman MD | Mayo Clinic Scottsdale
rTAPP Repair of an Incarcerated Scrotal Hernia
Sakura Horiuchi MD | Creighton Phoenix
Perineal Hernia Repair With Management of Iatrogenic Vaginal Injury Zach Weitzner MD | UCLA
rTAPP Dissection of a Moderate Ventral Hernia
Chelsea Yap DO | University of Florida
Hybrid Management of a Lumbar Hernia with Loss of Domain Alexa-Rae Pesce MD| Stonybrook University
Surgical Management of an Incidental Morgagni Hernia
Chi Zhang MD | Mayo Clinic Scottsdale

12:15pm - 1:00pm
Germantown 1
Lunch & Learn: Breaking Barriers: Advancing Hernia Pain Management in a Post-NOPAIN Era
Sponsored by Pacira
Panelists:
Vedra Augenstein MD |Atrium Health-Charlotte, NC
Reed Nelson, MD, MPH |Intermountain Health-St. George, UT
DeeDee Hu, PharmD, MBA |Select Medical Hospital- Temple, TX

12:15pm - 1:00pm
Germantown 2
Lunch & Learn
Sponsored by Mesh Suture

12:15pm - 1:00pm
Germantown 3
Lunch & Learn: Approved to Do What Others Can't: Why Surgeons are Rethinking Hernia Fixation *Sponsored by AMS/TELABio*
Clayton Petro, MD |Cleveland Clinic
Brian Smith MD, MSBS, FACS | Aliestetic Naples

12:15pm - 1:00pm
Broadway Ballroom - Mtg Space Level 1
Attendee Lunch in Exhibit Hall

1:15pm - 2:45pm
Grand Ballroom 2&3 - Lobby Level
AHS Roast: My Case is Better Than Yours
Moderators:
Jenny Shao MD | University of Michigan
Eric Pauli MD | Penn State Hershey Medical Center
IPOM Plus
Lucas Beffa MD | Cleveland Clinic
TAPP
Hatem Moussa MD | American Hospital Dubai
eTEP
Christiano Claus MD | Nossa Senhora das Graças Hospital
TARuP
Filip Muysoms MD | AZ Maria Middelares Ghent
rTAR
Paulo Barros MD | HerniaClinic
Open Parastomal
Jeremy Warren MD | Prisma Health
Open TAR
Yuri Novitsky MD | Columbia University Medical Center
Open Preperitoneal
Monica Polcz MD | University of South Florida/Tampa General Hospital

1:15pm - 2:45pm
Grand Ballroom 1
Abstract Session 5 - Best Abstracts
Moderators:
Alexandra Maki MD | Louisville Hernia and General Surgery
Aali Sheen MD | Fortius Clinic, London

30. 5 Years Results of the Randomized-Controlled ESTOIH Study
Rene Fortelny MD | Sigmund Freud Private University Vienna Austria

31. Long-Term Sustainability of Preoperative Optimization Compared to Non-Optimized Patients Following Open Abdominal Wall Reconstruction (OAWR)
Alexis Holland MD | Atrium Health Carolinas Medical Center

32. Revolutionizing Hernia Surgery: AI-Powered Digital 3D Reconstruction of CT Scans to Guide Decision-Making and Referral - A Proof-of-Concept Analysis
Carlos Balthazar da Silveira MD | St. Joseph's Hospital and Medical Center, Dignity Health

33. Does (Patient) Size Matter? The Impact of High Body Mass Index on Outcomes for Patients Undergoing Minimally Invasive Transversus Abdominis Release
Sullivan Ayuso MD | Endeavor Health

34. Distinguishing Abdominal Wall Denervation Injury from Normal Anatomy via Cross-Sectional Imaging
Alvaro Carvalho MD | Cleveland Clinic Foundation

35. Robotic Transversus Abdominis Release for a Large Incisional Hernia
Alexandra Janssen MD | St. Joseph's Hospital and Medical Center, Dignity Health

36. External Validation of the XGBoost Model for Predicting Incisional Hernia (IH) in Patients Undergoing Midline Laparotomy
Edgard-Efren Lozada-Hernandez | Regional Hospital of High Specialty of Bajio

37. Preperitoneal Enhanced-View Totally Extraperitoneal (PeTEP) Repair for Ventral and Incisional Hernia Repair: Early Multicenter Results
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario Puerta de Hierro

38. Risk Factors for Surgical Site Infection Following Hernia Repair with Transversus Abdominis Release
Matthew McGoldrick MD | Columbia University

2:45pm - 3:15pm
Broadway Ballroom - Mtg Space Level 1
Afternoon Break in Exhibit Hall

3:15pm - 4:30pm
Grand Ballroom 2&3 - Lobby Level
What Now? Complications Videos
Moderators:
Fillip Muysoms MD | AZ Maria Middelares Ghent
Heather Bougard MD | New Somerset Hospital, Cape Town
Presenters:
Jana Sacco MD | University of Florida Jacksonville
Hany Takla MD | Orlando Health
Mette Willaume MD | Zealand University Hospital, University of Copenhagen
Hector Valenzuela Apulche MD | Hospital Ángeles Andares

3:15pm - 4:30pm
Grand Ballroom 1
AHS/SSAT | Special Considerations in Hernias
Moderators:
Mazen Iskandar MD | BSW Texas Surgical
Specialists Alex Addo MD | Columbia University
Wendy Liu MD | Western Wisconsin Health Sullivan
Ayuso MD | University of Texas at Austin

Gender Differences in VHR
Richard Pierce MD | Vanderbilt University Medical Center

Umbilical Hernias in High Risk Populations
David Santos MD | MD Anderson Cancer Center

The Robot is Broken - Laparoscopic Strategies for Inguinal and Ventral Hernia Repair
Aali Sheen MD | Fortius Clinic, London

Hernias on Call
Brent Matthews MD | Atrium Health

Oncologic Patients and Hernias: Considerations and Solutions
Celia Ledet MD | University of Texas MD Anderson Cancer Center

Management of Abdominal Wall Peritoneal Metastases: Palliation and Reconstruction
Abhineet Uppal MD | Emory University

3:15pm - 4:15pm
Germantown 1
Quickshot Session
Moderators:
Robert Martindale MD, PhD | OHSU
Erwin Van Geffen MD, PhD | Jeroen Bosch Hospital

Q 1. Primary Parastomal Hernia Repairs Utilizing Mesh-Suture: A Multi-institutional Study
McKell Quattrone MD | Penn State Health Milton S. Hershey Medical Center
Q 2. Chronic Post-operative Inguinal Pain After Inguinal Hernia Repair: Comparing Lichtenstein, Open Preperitoneal, and Minimally Invasive Techniques
Hunter White MD | University of Tennessee, Knoxville
Q 3. First United States Experience with the Dexter Robotic Surgical System for Minimally Invasive Inguinal Hernia Repair
Ryan Broderick MD | University of California, San Diego
Q 5. Does Defect Size Matter? Risk of Venous Thromboembolism and Pulmonary Embolism After Ventral Hernia Repair
Oswaldo Subillaga MD | UMass Chan Medical School--Baystate Medical Center
Q 6. Biologic vs Synthetic Mesh in Ventral Hernia Repair: Are We There Yet? A Systematic Review and Trial Sequential Analysis
Diego Lima MD, MSc | Montefiore Medical Center
Q 7. Evaluating Socioeconomic Variations in Surgical Outcomes Following Complex Abdominal Wall Reconstruction
Tomas Tesfasilassie MD, MPH | Columbia University
Q 8. Impact of International Guidelines on Inguinal Hernia Management in Women: Are Surgeons Adhering to Best Practices?
Sarah Budney MD | University of Tennessee, Knoxville

4:30pm - 6:00pm
Grand Ballroom 2&3 - Lobby Level
Mock Court Session
Judge: Zach Adams
Jury:
Hatem Moussa MD | American Hospital Dubai Ileana
Geogloman MD | United Kingdom
Francesco Bianco MD | University of Illinois at Chicago
Alex Addo MD | Columbia University

Case #1: Placement of Mesh in an Infected Field
Presenter: Nicolas Quezada MD | Pontifical Catholic University of Chile
Do Not Put Mesh
Lawyer: J. Scott Roth MD | University of Kentucky
Put Mesh
Lawyer: Sabrina Drexel MD | Northwest Hernia Center

Case #2: Rectus Diastasis
Presenter: Dana Telem MD | University of Michigan
Repair It
Lawyer: Pete Santoro MD | ChristianaCare
Leave It – It's Aesthetic
Lawyer: Gabriel Arevalo MD | Houston Methodist Willowbrook

Case #3: Prophylactic Mesh
Presenter: Jana Sacco MD | University of Florida Jacksonville
Always Use It
Lawyer: Wendy Liu MD | Creighton University
Don't Bother – It Will Recur and We Don't Get Paid
Lawyer: Kaela Blake MD | University of Tennessee

4:30pm - 6:00pm
Grand Ballroom 1
Hernia Jeopardy
Hosts:
Talar Tejirian MD | BootyMD
Kent Van Sickle MD | UT Health San Antonio

6:00pm - 7:00pm
Broadway Ballroom
AHS Reception & Talent Show
Emcees: Eric Pauli MD | Penn State Hershey Medical Center & Talar Tejirian MD | BootyMD

7:00pm - 10:00pm
Pre-registration required - Bridge Lounge
AHS Congress Banquet

Saturday, September 6

7:00am - 7:45am
Germantown 1
AHS Research Collective: How to Design and Interpret Surgical Research
Networking event hosted by the AHS Grants Committee
Speaker: Michael Rosen MD | Northwestern University

7:00am - 7:45am
Belle Meade
AHS Core Yoga - Restore & Repair: Yoga for Surgeons
Pre-registration required

7:30am - 8:30am
Broadway Ballroom - Mtg Space Level 1
Attendee Breakfast in Exhibit Hall

8:30am - 10:00am
Grand Ballroom 2&3 - Lobby Level
When Things Go Wrong: Expert Surgeons Against the Wall
Moderators:
Clayton Petro MD | Cleveland Clinic
Sharon Shiraga MD | USC Keck School of Medicine
Rodrigo Galhego MD | Casa De Saude São Jose
Case Presentations
Agustin Alvarez MD | Clinica Santa Maria
Davide Lomanto MD, PhD | National University Health Megan Nelson MD | Mayo Clinic
Andrea Pakula MD | Adventist Health Simi Valley
Flavio Malcher MD, MSc | Northwell Health

8:30am - 10:00am
Grand Ballroom 1
Uncovering Hidden Gems Recent Abdominal Wall Surgery Publications
Moderators:
Jorge Daes MD | Clinical Portoazul
Knut Borch MD | University Hospital of North Norway
Presenters:
Andres Hanssen MD | Cirujano Bariátrico en Colombia Philippe Ngo MD | American Hospital of Paris Fernando Ferreira MD | Jose Mello Saude
Katherine Cordero MD | Universidad de Costa Rica

9:15am - 11:15am
Germantown 1
Pseudo Live Surgeries Session 2
Moderators:
Leandro Totti Cavazzola MD | Universidade Federal do Rio Grande do Sul
Luciana Guimaraes MD | Brazilian College of Surgery

Lap Ipum/Lira
Salvador Morales-Conde MD | University Hospital Virgen Macarena
PeTEP
Hector Valenzuela Alpuche MD | Hospital Ángeles Andares
R eTEP
Igor Belyansky MD | Luminis Health
R TAPP Umbo
Dina Podolsky MD | Columbia University Medical Center

10:00am - 11:15am
Grand Ballroom 2&3 - Lobby Level
Evolving Away from Halsted: Normalizing Health and Wellbeing in Surgery Moderators:
Talar Tejirian MD | BootyMD
Chip Barnes MD | Memorial Health University Physicians

Literature
Brian Jacob MD | Laparoscopic Surgical Center
Nutrition
Natalia Pascotini Pereira MD | Hospital São Luis Morumbi
Sleep
John Ewing MD | Advocate Health
Exercise
Knut Borch MD | University Hospital of North Norway
Ergonomics
Andrew Wright MD | University of Washington
Mindfulness
Ileana Geogloman MD | United Kingdom

10:00am - 11:15am
Grand Ballroom 1
Competitive Video Session
Moderators:
Hatem Moussa MD | American Hospital
Dubai Charlotte Horne MD | Mayo Clinic

V5. Robotic TAPP and Neurectomy for a Traumatic Flank Hernia and Traumatic Neuralgia
Benjamin Fung MD, FRCSC | Penn State Health Milton S. Hershey Medical Center
V1. Open Preperitoneal Ventral Hernia Repair after Deep Inferior Epigastric Perforator Flap Reconstruction: Video
Samantha Kerr MD | Atrium Health Carolinas Medical Center
V2. Robotic Unilateral TAR after Kidney Transplant and Failed IPUM
Nicole Salevitz MD, MHS | Creighton University, Arizona
V3. Stepwise Preperitoneal Approach for Semilunaris Blown-Out Hernia
Gabriel Arevalo MD | Houston Methodist Hospital
V4. Single-Dock Robotic Bilateral Transversus Abdominis Release via Inferior Approach
Jennifer Pan MD | New York University Long Island School of Medicine
V6. Robotic Transabdominal Preperitoneal Repair of a Bilateral TRAM Flap Hernia
Nisha Kapani MD | Creighton University, Arizona
V7. Robotic TAPP Repair of a Thoracoabdominal Hernia
Katie Hoener DO | Creighton University, Arizona

11:15am - 11:30am
Broadway Ballroom - Mtg Space Level 1
Morning Break in Exhibit Hall

11:30am - 1:00pm
Grand Ballroom 2&3 - Lobby Level
Plastic and Reconstructive Techniques in a Hernia Practice
Moderators:
Vahagn Nikolian MD | OHSU
Alexandra Maki MD | Louisville Hernia and General Surgery
Natalia Pascotini Pereira MD | Hospital São Luis Morumbi

Management of Complex Defects After TRAM, DIEP, and Other Plastic Surgery Flaps
John Fischer MD | Penn Medicine
Panniculectomy Basics and Beyond
Brittany Mead MD | Rush University
Diastasis Management – Open and MIS
Rodrigo Galhego MD | Casa De Saude São Jose
Collaborating With Plastic Surgery Colleagues, MILA and MAMI
Rodrigo Galhego MD | Casa De Saude São Jose
Skin and Soft Tissue Management Pearls
Antonio Espinosa de los Monteros MD | Instituto Nacional de Ciencias Médicas y Nutrición

11:30am - 1:00pm
Grand Ballroom 1
Abstract Session 6
Moderators:
Jonah Stulberg MD | The University of Texas Health Sciences Center of Houston
Bonnie Lee MD | University of South Alabama Health

39. Cranial Preperitoneal Extension of the Retromuscular Repair in Midline Hernias: The Madrid Rives Technique
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario del Henares, Universidad Francisco de Vitoria
40. Opioid Reduction through Prescribing Standardization in Outpatient Inguinal Hernia Repair
Michael Hanneman BS | Vanderbilt University Medical Center
41. One Size Does Not Fit All: BMI Versus Abdominal Circumference as a Proxy Measurement for Visceral Fat Volume
Tram Le MD | University of New Mexico Hospitals
42. Comparing Quadratus Lumborum and Transversus Abdominus Plane Blocks for Pain Control after Open Abdominal Wall Reconstruction
Alisa Khomutova MD | University of Tennessee, Knoxville
43. Treatment Strategies for Acute Nerve Entrapment Syndrome (ACNES): A Systematic Review, Meta-Analysis and Surgical Interventions Definition Study
Laura Cogua BS | Creighton University
44. Laparoscopic Enhanced Total Extraperitoneal Repair: A Viable Option for Concomitant Repair Of Inguinal And Ventral Hernia
Bhakti Dongare MD | Seth G.S. Medical College and KEM Hospital
45. The Financial Implications of Using Biologic and Biosynthetic Mesh in Clean Elective Ventral Hernia Repair
Ryan Howard MD, MS | University of Michigan
46. From Preoperative to Postoperative: The Effect of Gender on Ventral Hernia Repair
William T. Head MD | The Ohio State University Wexner Medical Center
47. The Use of AI Large Language Models in Postoperative Opioid Use in Ventral Hernia Repairs: There is a Place for AI as a Screening Assistant?
Raquel Nogueira MD | Montefiore Medical Center

1:00pm - 1:15pm
Grand Ballroom 2&3 - Lobby Level
Business Meeting Update & Awards

2:00pm
Soccer Surgeons: The Nashville Showdown (3v3 Tournament)
Ted Rhodes Field, Nashville
Pre-registration required

ePoster Directory

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Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario del Henares, Universidad Francisco de Vitoria
POD 2. Robotic Transversus Abdominis Release for a Large Incisional Hernia
Alexandra Janssen MD | St. Joseph's Hospital and Medical Center, Dignity Health
POD 3. Mind the Gap: Robotic Assisted Repair of a Pubic Symphysis Hernia after Pubic Symphysisectomy
Brian Hallis MD | University of Wisconsin
POD 4. Robotic Pauli Sugarbaker with Bilateral TAR for Repair of a Ventral and Parastomal Hernia
Nicole Salevitz MD, MHS | Creighton University, Arizona
POD 5. The Madrid Cross-Over: Madrid Rives e-TEP With Cranial Preperitoneal Access. A Novel Approach For Cranial E-TEP
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario Puerta de Hierro
P8. Incisional Perineal Hernia Repair With Myocutaneous Gracilis Flap
Fernando Ponce Leon MD, MSc, PhD, FACS | Instituto Prevent Senior
P9. Robotic Repair of an Incisional Iliac Hernia After Aortobifemoral Bypass
Simon Rodier MD | Mayo Clinic Rochester
P10. Preperitoneal Repair Using e-TEP access (PeTEP) for Ventral Hernias
Ashwin Thangavelu MS | Ashwin Hospital, India
P11. Robotic Transabdominal Repair of a Large Diaphragmatic Hernia Following Heart Transplant
Tarek Hassab MD, MSc | Johns Hopkins
P13. YouTube Videos on Minimally Invasive Inguinal Hernia Repair: Evaluating the Accuracy in Identifying the Myopectineal Orifice with a Validated Tool
Nicole Salevitz MD, MHS | St. Joseph's Hospital and Medical Center, Dignity Health
P14. Robotic Repair of a Large Morgagni Hernia with a Retrorectus Approach
Kristin Bremer MD | Albany Medical Center
P15. Open Preperitoneal Pauli Repair with Madrid Posterior Component Separation for Complex Parastomal Hernia
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario del Henares, Universidad Francisco de Vitoria
P16. From Pain to Performance: A Meta-Analysis of Surgical Approaches to Athletic Pubalgia
Carlos Balthazar da Silveira MD | Montefiore Medical Center
P17. Anterior Cutaneous Nerve Entrapment Syndrome: Robotic Assisted Mesh Explantation and Open Neurectomy
Saran Kunaprayoon MD | Mount Sinai Hospital
P18. rTAPP Repair of Superior Lumbar Hernia
Aparna Radhakrishna MD | One Brooklyn Health
P19. Continuous Use of Anticoagulants in Inguinal Hernia Repair – a Systematic Review and Meta-Analysis
Diego Lima MD, MSc | Montefiore Medical Center
P20. Comparison of Short- and Long-term Opioid Prescription after Robotic, Laparoscopic and Open Ventral Hernia Repair
John Ewing MD | Atrium Health Carolinas Medical Center
P21. From Imaging to Outcomes: Evaluating the Predictive Value of Preoperative CT for Complications in Ventral Hernia Repair – A Systematic Review
Diego Lima MD, MSc | Montefiore Medical Center
P22. Midterm Outcomes of Pauli Repair for Parastomal Hernia: Multicenter Case Series
Miguel Angel Garcia-Urena MD, PhD, FACS | Henares University Hospital
P23. Preoperative Botox Application For Complex Hernia Repair: Systematic Review And Meta-Analysis
Diego Lima MD, MSc | Montefiore Medical Center
P24. Is Quantity Quality? The Impact of Surgeon Volume on Outcomes in Inguinal Hernia Repair: a Qualitative Systematic Review
Diego Lima MD, MSc | Montefiore Medical Center
P25. Does Surgeon Volume Influence Outcomes in Ventral Hernia Repair? A Systematic Review
Diego Lima MD, MSc | Montefiore Medical Center
P26. Barriers to Postoperative Follow-Up: A Cox Proportion Analysis of Geographic, Financial, and Clinical Factors in Ventral Hernia Repair Outcomes
Tana Mardian BS | St. Joseph's Hospital and Medical Center, Dignity Health
P27. Five-Point Pain Trajectories After Inguinal Hernia Repair: A Comparative Study of Unilateral and Bilateral Procedures
Abirami Muthumani MD, MPH | Columbia University
P28. Comparison Between Sutures, Cyanoacrylate and Self-Gripping Mesh in Lichtenstein Hernia Repair: A Multi Arm Randomized Control Trial
Vijayakumar Chellappa MS | Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER)

P31. Concurrent Robotic Repair of Multiple Epigastric Hernias and Incidental Morgagni Hernia
Katerina Jou MD | Northwell Health
P32. Laparoscopic Peritoneal Sac Harvestment in Large Incisional Hernia Surgery to Avoid Unnecessary TAR
Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
P33. Determining the Minimal Clinically Important Difference of the Abdominal Hernia-Q
Salman Khan BS | University of Pennsylvania
P34. Carolinas Cross-Over For Lateral Hernias
Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario Puerta de Hierro
P35. Case Series of Intercostal Hernia Repair: Combined Open Duramesh Rib Approximation and Robotic Underlay Mesh Technique
Hannah Phelan MD | Corewell Health West Grand Rapids
P36. Contralateral Repair of Occult Inguinal Hernias During Minimally Invasive Inguinal Hernia Repair - Where Do We Stand? A Systematic Review
Diego Lima MD, MSc | Montefiore Medical Center
P37. Postoperative Opioid Use After Ventral Hernia Repair - A Familiar Yet Underexplored Land: A Systematic Review
Vitor Neves MD | Montefiore Medical Center
P38. The Association of Prolonged Postoperative Ileus and C-Reactive Protein Levels After Complex Abdominal Wall Reconstruction
Kayleigh Risser BA | Cleveland Clinic Foundation
P39. Outcomes Following Transversus Abdominis Release (TAR) Using Home-Plate Configuration for Mesh Placement: A Retrospective Analysis
Viemma Nwigwe MD | Columbia University
P40. Gender Disparities in Hernia Repairs: a Qualitative Systematic Review
Raquel Nogueira MD | Montefiore Medical Center
P41. Realistic Cadaveric Model for Ventral Hernia Repair: A Proof-of-Concept for Enhanced Surgical Training Nicole Salevitz MD, MHS | St. Joseph's Hospital and Medical Center, Dignity Health
P42. Trends in Female Representation at the American Hernia Society Annual Meeting: A 5-Year Review
Dishaben Patel BS | University of Michigan
P43. Robotic Explantation of Infected IPOM Mesh
Nicholas Nolan MD | Mayo Clinic Arizona
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Ana Dias Rasador MD | St. Joseph's Hospital and Medical Center, Dignity Health
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Kiyrie Simons BS | Meridian Surgery Center
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Maya Zorkot MD, MRCS | Chelsea And Westminster Hospital NHS Foundation Trust
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Ana Dias Rasador MD | St. Joseph's Hospital and Medical Center, Dignity Health
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Vitor Neves MD | Montefiore Medical Center
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Tomas Tesfasilassie MD, MPH | Columbia University
P50. Comparison of Surgical Outcomes in Abdominal Wall Hernia Repair: Hernia Center of Excellence surgeons vs. Non-Hernia Surgeons
Baraa Mohamed MD | Northeast Georgia Medical Center
P51. First Case Series Using Tissue Approximation System for Closure of Abdominal Wall Defects Using The Robotic Total Extraperitoneal Approach
Daryl Marx MD, FACS, FASMBS | Our Lady of the Lake Hospital Baton Rouge
P52. Robotic Bilateral Recurrent Groin Hernia Repair Using the HUGO™ Robotic-Assisted Surgery (RAS) System
Maria Irarrazaval MD | Pontificia Universidad Catolica de Chile
P53. Erector Spinae Plane Block for Ventral Hernia Repair
Patricia Marcolin MD | Federal University of the Southern Border
P54. Watchful Waiting vs. Early Repair for Asymptomatic Inguinal Hernia – Silent Hernia, Loud Debate: A Systematic Review and Meta-Analysis
Marina Eguchi MD | Montefiore Medical Center
P55. Subjective Workload in Operating Room Team Members During Robotic Hernia Procedures
Daphne Remulla MD | Cleveland Clinic Foundation
P56. Perinealhernia: Report of 3 Cases Managed Laparoscopically
Dwij Vyas MBBS | Seth G.S. Medical College and KEM Hospital

P57. Repeat Transabdominal Preperitoneal Inguinal Hernia Repair for Early Symptomatic Recurrence
Katherine Burhop MD | Hackensack University Medical Center
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Gabriel Arevalo MD | Houston Methodist Hospital
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Shan Kalmeta MD | Oregon Health & Science University
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Moshe Dudai MD | Ramat Aviv Medical Center and Hernia Excellence
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Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
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Sofia Piperno BS | University of Texas Medical Branch
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Emily Flom MD | Yale New Haven Hospital
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Georgia Lydon MD | Medical University of South Carolina
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Samantha Cervantes-Valadez MD | Houston Methodist Hospital
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Nicole Salevitz MD, MHS | Creighton University, Arizona
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McKinna Tillotson MD | Mayo Clinic Arizona
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Luis-Alberto Fernadez-Vazquez Mellado MD | IMSS Bienestar Hospital regional de Alta Especialidad del Bajio
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Kyle Leong DO | St. Joseph's Hospital and Medical Center, Dignity Health
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Danielle Cobb MD, FACS | Our Lady of the Lake Regional Medical Center
P75. Assessment of Abdominal Fascia Closure Youtube Videos Using a Standardized Evaluation Scale
Paul Zakarian BS | St. Joseph's Hospital and Medical Center, Dignity Health
P76. Robotic Management and Outcomes of Complex Traumatic Hernias in a Specialized Institute: A Single-Center Study
Sakura Horiuchi MD | St. Joseph's Hospital and Medical Center, Dignity Health
P77. Outcomes of Open and Robotic Lateral Hernia Management in a Center of Excellence: A Multivariate Regression Analysis
Harvey Wang BS | St. Joseph's Hospital and Medical Center, Dignity Health
P78. What a Surgeon Wants, What a Surgeon Needs: Creating a Surgeon-Informed Clinical Decision Support App for a Risk Prediction Model
Margaret Hornick MD | University of Pennsylvania
P79. Perioperative Safety and Efficacy of Inlay (Bridged) Repairs with Slowly Absorbable Mesh: A Retrospective Analysis
Eric Moyer MD | Penn State Health Milton S. Hershey Medical Center
P80. A Novel Approach for Intra Abdominal Minimally Invasive Diastasis Recti Plication Associated with Lipoabdominoplasty (I- MILA)
Pedro Trauczynski MD | ACSC Santa Isabel Hospital - Blumenau
P81. Through the Looking Glass: The use of Virtual Reality Equipment to Share and Preserve Open Hernia Technique
Jared Funston MD, FACS | AdventHealth Tampa
P83. A Challenging Case Outlining Maneuvers for Massive Ventral Hernia Repair with Loss of Domain Megan Mellandsmith MD | North York General Hospital, University of Toronto
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Tapasya Katta BS | University of Alabama at Birmingham

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Shih-Hsien Wang MD, PhD | ChangGung Memorial Hospital, Chiayi
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Ana Paula Courinho Barros De Brito MD | Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo
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Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
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Miguel Angel Garcia-Urena MD, PhD, FACS | Hospital Universitario del Henares, Universidad Francisco de Vitoria
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Maggie Bosley MD | Oregon Health & Science University
P93. The Ohio Protocol: A Novel Approach to Management of Parastomal Hernias – A Short-Term Case Series Analysis
William Head MD | The Ohio State University Wexner Medical Center
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Emma Bradley MD | Vanderbilt University Medical Center
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Alyssa Hartkorn DO | Inspira Medical Center
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Raquel Nogueira MD | Montefiore Medical Center
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Joao Pedro Kasakewitch MD | Montefiore Medical Center
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Kristin Bremer MD | Albany Medical Center
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Griffin Feinberg ScM | Brown University
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Paul Szotek MD, MBA, FACS | Indiana Hernia Center
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Moshe Dudai MD FACS | Ramat Aviv Medical Center and Hernia Excellence
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Emma Bradley MD | Vanderbilt University Medical Center
P103. Assessing the Impact on Groin Pain Using a Reinforced Tissue Matrix for Inguinal Hernia Repair
Paul Szotek MD, MBA, FACS | Indiana Hernia Center
P104. De Garengeot Appendectomy
Katherine Burhop MD | Hackensack University Medical Center
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Aali Sheen MD | Manchester University Foundation NHS Trust
P106. Stakeholder Informed Priorities for Quality Improvement in Abdominal Wall Hernia Repair Across a Statewide Collaborative
Anne Ehlers MD, MPH | University of Michigan
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Qian Wu MD | Huadong Hospital, Fudan University, Shanghai, China
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Arin Stowman BS | Columbia University
P110. Spigelian-Cryptorchidism Syndrome in an Adult
Saurabh Singla M.Ch | Dayanand Medical College and Hospital
P112. Closure of Peritoneal Defect With Falciform Ligament Flap During TAPP Repair
Cosman Mandujano MD | Montefiore Medical Center
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Katerina Jou MD | Northwell Health

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Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
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Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
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Wilson Penafiel MD | University of Kentucky
P117. Open Excision of Chronic Scrotal Seroma After Robotic Inguinal Hernia Repair
Jamie Benson MD | University of Wisconsin
P118. INKA Technique for Laparoscopic Hernia Repair: A Novel Extracorporeal Knotting Method for Structure Fixation
Hao-Chih Yang MD | ChangGung Memorial Hospital, Chiayi
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Nisha Rehman MD | Mayo Clinic Arizona
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Arjun Patel MD | Medical University of South Carolina
P121. The Use of Absorbable Mesh to Reinforce Classical Open Tissue Inguinal Hernia Repairs: A Preliminary Report of a Novel Technique
Vatsala Kapoor BS | St. Joseph's/Candler Hospital
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Bhakti Dongare MD | Seth G.S. Medical College and KEM hospital
P124. First Three Years of Robotic Surgery Experience in Brazil - Single Surgeon Data
Bruno Messias MD, PhD | Hospital Samaritano
P125. Mesh Transmigration in the Small Bowel Post Intraperitoneal Onlay Mesh Repair For Incisional Hernia Repair
Saurabh Singla M.Ch | Dayanand Medical College and Hospital
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Guy Voeller MD | Our Lady of the Lake Regional Medical Center
P127. Post-liver Transplant Incisional Hernia with Evisceration and Multiple Re-operations: Case Report
Ana Paula Courinho Barros De Brito MD | Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo
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Katerina Jou MD | Northwell Health
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Nitin Baste MS | SMBT IMS RC Dhamangaon Nashik
P132. Internal Hernias During Pregnancy
Ethan Slouha MD | St. George's University School of Medicine
P134. Laparoscopic eTEP with Monolateral TAR for Right Flank Incisional Hernia
Francesco Ferrara MD | University of Palermo, Italy
P135. Robotic Transversalis Abdominis Release for Incisional Hernia after Laparotomy Gastrorrhaphy and Feeding Jejunostomy
Chih-Ho Hsu MD, MS | Far Eastern Memorial Hospital
P136. Quadratus Lumborum Blocks for Pain Control following Open Ventral Hernia Repair: A Randomized Control Trial
Sarah Budney MD | University of Tennessee, Knoxville
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Salvatore Docimo Jr DO, FACS, FASMBS | Montefiore Medical Center
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Tushar Mishra MBBS, MS, MNAMS, FACS | All India Institute of Medical Sciences Bhubaneswar, India **P150. TAR with Retromuscular Sugarbaker Ileostomy Reinforcement on an Intestinal Transplant Recipient** Luciano Tastaldi MD | Cleveland Clinic Foundation

ORAL ABSTRACTS

4. A Prospective, Multi-center Study of the Medtronic Hugo Robotic-assisted Surgery System in Inguinal and Ventral Hernia Repair: Enable Hernia Repair

D Chen, J Greenberg, F Malcher, A Panchal, F Bianco, C Petro, S Hopson, S Docimo, E Wilson, P Giulianotti, M Rosen, J Berndtson, L Beffa, C Irwin, R Larue
UCLA Health

Background: Robotic-assisted surgery (RAS) has become pervasive throughout hernia repairs, yet limited competition exists to enhance value and drive innovation. The Enable Hernia Repair study, the first investigational device exemption study of robotic-assisted hernia repair in the US, evaluated the safety and effectiveness of the Hugo RAS system for hernia repair.

Methods: Enable Hernia Repair is a prospective, multicenter, single-arm study of the Hugo RAS system for use in inguinal and ventral hernia repair across seven US sites. The study enrolled 96 patients with inguinal hernias and 96 patients with ventral hernias. The primary safety endpoint is the rate of procedure- and/or device-related surgical-site events (SSEs) from first incision through 30 days post procedure. SSEs include the following: bleeding requiring transfusion; bowel injury; bowel obstruction; cellulitis; epigastric vessel injury; hematoma, seroma requiring procedural intervention; and surgical-site infection. The primary effectiveness endpoint is the surgical success rate, defined as the procedure not being converted from the Hugo RAS system to an open, laparoscopic procedure, or to another RAS system. The following secondary outcomes were also monitored: 30-day overall and major complication rates (Clavien–Dindo grades ≥I and ≥III), respectively; operative time; and 30-day readmission, reoperation, and recurrence rates. All serious adverse events were adjudicated by an independent clinical evaluation committee (CEC). Participants will be followed for two years post procedure.

Results: From April 2024 to February 2025, 193 participants underwent successful hernia repair with the Hugo RAS system, with 97 participants in the inguinal hernia cohort and 96 in the ventral hernia cohort. There were no conversions to open or laparoscopic procedures. The most efficient docking time was one minute and up to four Hugo RAS procedures were completed in one day. To date, there have been no intraoperative morbidities, adverse device effects, or mortalities. Endpoint follow-up is complete for 95% of participants, and independent CEC adjudication is in process for all study events. Statistical analyses for the primary safety and efficacy outcomes and key 30-day secondary endpoints will be presented according to the FDA-approved protocol.

Conclusion: This study demonstrates the safety and effectiveness of Hugo RAS, the first competitive robotic platform in the US, for inguinal and ventral hernia repair. Enrollment in Enable Hernia Repair is complete, with all procedures successfully performed using Hugo RAS without intraoperative morbidity, adverse events, or mortality. Results for the primary safety and effectiveness endpoints and 30 day outcomes will be presented for the first time at AHS 2025.

1. Psychological Factors Associated With Postoperative Pain in Inguinal Hernia Repair - A Systematic Review And Risk Factors Meta-Analysis

D Lima, C A Balthazar da Silveira, C Avelar, M Clara Morais, Y Biscola Da Cruz, R Nogueira
Montefiore Medical Center

Background: Inguinal Hernia Repair (IHR) is a common surgical procedure performed in the United States, with a higher incidence of postoperative pain and a risk of progressing to postoperative chronic pain (POCP). Due to its multifactorial nature — biological, psychological, and social — understanding of the complex experience of pain can help surgeons better predict outcomes. Given the significant role of psychological factors, especially in the context of the growing focus on mental health, this study aims to analyze how psychological disorders may serve as a risk factor for the development of postoperative pain after IHR.

Methods: We conducted a comprehensive online search using MEDLINE/PubMed, EMBASE, and Web of Science, from inception to March 2025, with no time or language filters applied. Our inclusion criteria encompassed studies concerning physiological risk factors and post-operative pain in patients undergoing IHR. This study was made under PRISMA guidelines for systematic reviews and meta-analysis. Our defined outcome was to analyze psychological disorders as a risk factor for chronic pain. To do this, we conducted an Odds Ratio (OR) analysis.

Results: A total of 3883 studies were identified. After screening, 32 full-text articles were assessed for eligibility, and 6 studies were included in the final analysis. Of the studies we reviewed, 3 were prospective and 3 were retrospective. Our sample size comprised 1037 patients who underwent IHR (minimally invasive or open), mostly males. The mean age was 55.54 years. We found variability in study design, sample size, and methodology, however, the role of anxiety and depression in the development of postoperative pain was consistently highlighted. Description of chronic pain was found in 17.55% of the patients (n = 182), in 5 studies. Meanwhile, Pinto et al. focused on describing acute postoperative pain. In addition, 4 studies described a history of anxiety and depression in patients, comprising 10.2% (n = 106). Psychological factors were described using scores in 4 studies. The study conducted by Miller et al. used the Depression Anxiety and Stress Scale (DASS-21), while Aasvang et al., Powell et al., and Pinto et al. used the Hospital Anxiety and Depression Scale (HADS) (Figure 1). Meta-analysis was only possible for the combined outcome of postoperative psychological factors, considering anxiety OR pain. Our results showed no statistically significant association between anxiety and chronic POCP (OR: 1.3224, 95% CI: 0.4013 - 4.3578, p = 0.646), with no significant heterogeneity among the studies, suggesting consistency in the results.

Conclusion: In our detailed evaluation, we were able to assess that 17% of the patients referred to having postoperative pain after IHR and around 10% of them had a history of anxiety or depression. Our meta-analysis found no association of anxiety as a risk factor for postoperative pain in IHR. However, more studies are needed to evaluate the association of depression as a risk factor.

Authors, (Year)	Dennis, 2007	Aasvang, 2010	Powell, 2012	Bugada, 2016	Pinto, 2017	Miller, 2022
Country	UK	Denmark	UK	Italy	Portugal	USA
Study Design	Retrospective	Prospective	Prospective	Prospective	Prospective	Retrospective
n (total)	48	464	135	194	135	61
Age (mean)	55.3	55.2	61.5	55.2	51.1	56
Gender (male)	42 (87.5%)	N/A	126	N/A	N/A	53 (87%)
Hernia Repair/Type	Laparoscopic and Open	Laparoscopic and Open	Laparoscopic and Open	Laparoscopic and Open	Laparoscopic and Open	MIS and Open
Anxious-Depressive Disorders (n)	1 (2%)	65 (14%)	N/A	17 (8.76%)	N/A	23 (37.7%)
HADS Anxiety	N/A	All: 2 (range 0-16) / Open: 4 (range 0-16) / Lap: 4 (range 0-15)	Pre-op: median 3 (IQR 1, 6) / 1-week Post-op: median 2 (IQR 1, 6)	N/A	Mean 4.91 (SD 3.44)	*DASS-21: 33% reported depression (n = 20) 27% reported anxiety (n = 16) 56% had a previous psychiatric disorder (n = 22): 21% depression (n = 13); 16% anxiety (n = 10)
HADS Depression	N/A	All: 1 (range 0-18) / Open: 1 (0-12) / Lap: 2 (0-18)	Pre-op: median 2 (IQR 1, 4) / 1-week Post-op: median 3 (IQR 1, 6)	N/A	Mean: 1.77 (SD 2.37)	
Postoperative Pain/ Chronic Pain	24 (50%)	55 (12.4%)	45 (39.5%)	18 (9.3%)	N/A	40 (65,6%)
Follow-up period	N/A	6 months	4 months	3 months	48 hours	N/A
Endpoint	Analyzed past history of chronic pain as a risk factor for the development of chronic pain after IHR	Analyzed the contribution of preoperative, intraoperative, and postoperative factors to the development of persistent postherniotomy pain in open vs laparoscopic surgery	Investigate psychological (cognitive and emotional) risk factors for chronic post-surgical pain after IHR.	Assess any predictive value of preoperative BMI, hypertension, anxious depressive disorders, and pro-inflammatory status on persistent post-surgical pain.	To examine the independent and joint contribution of pre-surgical demographic, clinical, and psychological variables as predictors of acute post-surgical pain intensity after IHR	Describe the prevalence of psychological disorders coinciding with CPIP

1. Hospital Anxiety and Depression Scale (HADS)
2. Depression Anxiety and Stress Scale 21 (DASS-21)

* Miller et al didn't report data by HADS scale. However, the patient's history was described using DASS-21. To follow the description of psychological factors, we decided to show the score here as it was used by the study

Figure 1. Baseline Characteristics

2. Single Incision Laparoscopic Surgery for Abdominal Wall Reconstruction: Result of Initial 100 Cases

T Nagahama
Kudanzaka Hospital

Background: The eTEP Rives-Stoppa repair is an established method for ventral hernia repair. However, some technically challenging procedures, such as midline crossover, exist. We introduced the Single Incision Laparoscopic Surgery (SILS) technique into Rives-Stoppa repair (SILS R-S repair) to address these challenges. From November 2016, 100 patients with incisional and primary ventral hernias underwent the SILS R-S method.

Methods: Initially, a small midline incision 3 cm in length was made 4-6 cm apart from the hernia orifice. Bilateral retro-rectus spaces were dissected under direct vision to accommodate the SILS device. Laparoscopic lateral dissection extended to the preperitoneal space and retro-rectus space. For European Hernia Society (EHS) W2 or W3 lesions, a bottom-up Transverse Abdominis muscle Release (TAR) was initiated by dissecting behind the arcuate line on both sides. Further dissection of the linea alba, retro-rectus space, and hernia orifice was performed using SILS. Defect closure of anterior and posterior rectus sheaths was accomplished using barbed sutures through a combination of SILS and direct suturing. Finally, a self-gripping mesh was inserted.

Results: The SILS R-S method was successfully performed on 100 patients. Surgery duration ranged from 93 to 421 minutes (mean 203 minutes), with hernia widths of 20-160 mm (mean 59 mm). Ninety-seven lesions were located on the midline, and 11 lesions emerged through the rectus muscle away from the midline. The method was also successfully completed for 7 lateral lesions. In the perioperative period, we encountered 4 wound infections (1 requiring surgical intervention) and 1 recurrence between the mesh and rectus muscle on the cranial side of the mesh, observed one year after the initial repair.

Conclusion: Recently, eTEP Rives-Stoppa repair (including robotic assistance) has been one of the most effective procedures for incisional hernia repair. However, certain technical challenges, such as midline crossover, can be obstacles for surgeons. In Japan, robot-assisted abdominal wall repair is not officially permitted by the social insurance system, necessitating laparoscopic management. Single Incision Laparoscopic Surgery is a technique characterized by simultaneously being a laparoscopic and an open surgical approach. The SILS R-S procedure offered extended preperitoneal dissection through eTEP and facilitated easier suturing and mesh handling through open surgery. Our method provides a solution for introducing Rives-Stoppa procedures for midline and lateral incisional hernias. The SILS TEP device and midline incision contributed to easier preparation of retro-rectus spaces and defect closure.

3. Absorbable Mesh Predisposes to Recurrence and Reoperation: A Comparative Study of Mesh Performance in Clean and Contaminated Ventral Hernia Repairs

S Patel, PH Chan, B Cowan, HA Prentice, K Sucher, EW Paxton, E Brill, R Bell, R Mostaedi
Kaiser Permanente

Background: Absorbable meshes (AM)—both synthetic and biologic—have gained popularity despite high costs and limited comparative data. Purported benefits over permanent mesh (PM) include resistance to contamination and protection against recurrence and reoperation. This study compares long-term outcomes after AM- and PM-based ventral hernia repairs in clean and contaminated wounds.

Methods: We conducted a retrospective cohort study using Kaiser Permanente's integrated electronic health record, a US-based multi-center healthcare system. Adult patients who underwent first-time elective ventral hernia repair with mesh between 2010 and 2023 were identified. PM repairs were 1:1 propensity score-matched to AM prior to outcome evaluation. Propensity scores were calculated by logistic regression using nearest neighbor matching with a caliper of 0.2; the model included age, gender, BMI, race, smoking status, ASA, chronic lung disease, diabetes, liver disease, operating surgeon annual repair volume, operative time, surgery approach (open vs minimally invasive), and wound class. Outcomes of interest were recurrence and reoperation during follow-up. Cumulative incidence of outcomes was calculated as 1 minus the Kaplan-Meier estimate at 10-years follow-up and the association between mesh type and outcomes was evaluated using multiple Cox proportional hazard regression. Subgroup analyses compared synthetic and biologic AM individually to PM. Secondary analysis evaluated mesh type and outcomes within different wound classes (1, 2, and 3/4).

Results: Of the 26,163 repairs meeting the inclusion criteria, AM was used in 1,620 (6.2%). Overall 10-year hernia recurrence rates were 34.9% for AM repairs and 20.2% for PM repairs, with corresponding 10-year reoperation rates of 9.6% and 7.3% for AM and PM repairs, respectively. After propensity-score matching, the final study sample included 1,227 AM repairs and 1,227 PM repairs. In the matched cohort, mean age and BMI were 61 years and 31.3 kg/m2, respectively; 60.6% were female; and 45.3% had an ASA≥3. Open surgical approaches were used in 77% of AM repairs and 82.6% of PM repairs. Distribution of the covariates were balanced across treatment groups with all having a standardized mean difference < 0.2. There were up to 12 years of follow-up, with a median of 6.8 and 5.8 years for AM and PM repairs, respectively. In adjusted analysis, AM had a higher risk of recurrence (hazard ratio [HR]=1.40, 95% confidence interval [CI]=1.19-1.64) and reoperation (HR=1.81, 95% CI=1.28-2.56) compared to PM (Figure). This was consistent when comparing biologic AM specifically to PM (recurrence: HR=1.34, 95% CI=1.08-1.67; reoperation: HR=1.78, 95% CI=1.14-2.78). Synthetic AM compared to PM had higher risk for recurrence only (HR=1.37, 95% CI=1.08-1.75) (Table 1).

In subset analysis comparing with PM (Table 2), AM had higher risk of recurrence in class 1 (HR=1.53, 95% CI=1.21-1.94) and class 3/4 (HR=2.31 [95% CI=1.08-4.94]) wound repairs and a higher risk of reoperation in class 1 (HR=1.65, 95% CI=1.01-2.70) and 2 (HR=1.76, 95% CI=1.01-3.06) wound repairs.

Conclusion: This large, propensity-matched cohort study suggests that the use of PM for ventral hernia repairs in contaminated surgical fields confers lower risk of recurrence and reoperation than AM repairs. The increased cost of AM does not add a benefit for hernia repairs in higher wound class.

Figure. Cumulative incidence of recurrence and reoperation following first elective ventral/incisional hernia repair with mesh after 1:1 propensity score matching permanent mesh (PM, red) to absorbable mesh (AM, green) repairs.

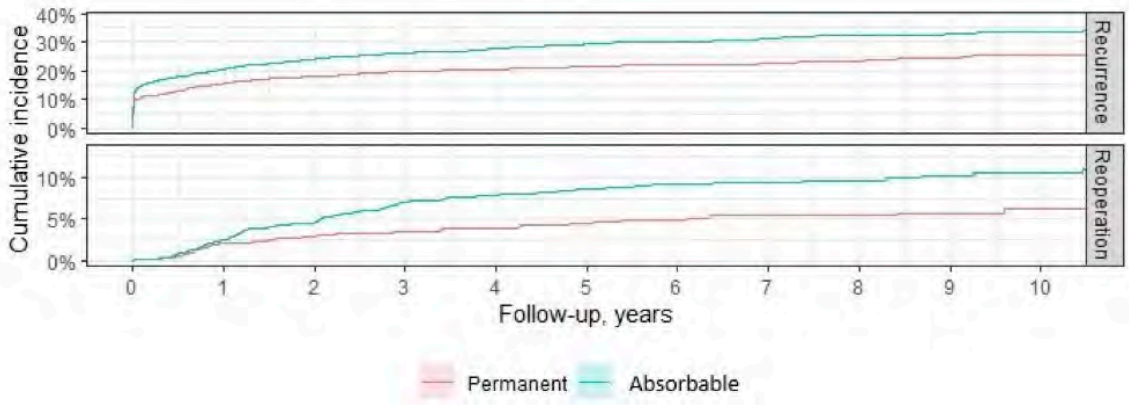


Table 1. Cumulative incidence of recurrence and reoperation and adjusted risk of outcomes following first elective ventral/incisional hernia repair with mesh, by mesh material. Repairs using permanent mesh were 1:1 matched to repairs using absorbable mesh.

		Incidence, n (%[a])		Adjusted[b]	
Absorbable mesh type	**Outcome**	**Absorbable**	**Permanent**	**HR (95% CI)**	**P**
All Absorbable (N=2,454)	Recurrence	361 (33.7)	253 (25.3)	1.40 (1.19-1.64)	**<0.001**
	Reoperation	100 (10.5)	51 (6.2)	1.81 (1.28-2.56)	**<0.001**
Synthetic Absorbable Mesh (N=1,030)	Recurrence	148 (37.8)	111 (26.6)	1.37 (1.08-1.75)	**0.010**
	Reoperation	39 (9.2)	23 (6.5)	1.53 (0.89-2.62)	0.123
Biologic Absorbable Mesh (N=1,424)	Recurrence	220 (34.1)	158 (29.5)	1.34 (1.08-1.67)	**0.008**
	Reoperation	63 (10.9)	31 (6.5)	1.78 (1.14-2.78)	**0.012**

CI=confidence interval. HR=hazard ratio.
[a] Calculated as one minus the Kaplan–Meier estimator at 10-years follow-up
[b] Cox regression model included age, body mass index, sex, ASA classification, current smoker, chronic pulmonary disease, diabetes (with and without complications), liver disease, surgeon volume, operative time, surgical approach, and wound class as covariates. Bold indicates statistical significance with $p<0.05$.

Table 2. Cumulative incidence of recurrence and reoperation and adjusted risk of outcomes following first elective ventral/incisional hernia repair by mesh material, stratified by wound classification. Repairs using permanent mesh were 1:1 matched to repairs using absorbable mesh.

		Incidence, n (%[a])		Adjusted[b]	
Wound class	**Outcome**	**Absorbable**	**Permanent**	**HR (95% CI)**	**P**
1 (N=1324)	Recurrence	183 (31.8)	119 (21.9)	1.53 (1.21-1.94)	**<0.001**
	Reoperation	55 (10.6)	31 (6.0)	1.65 (1.01-2.70)	**0.044**
2 (N=922)	Recurrence	139 (33.4)	107 (27.9)	1.26 (0.97-1.65)	0.087
	Reoperation	37 (10.1)	22 (6.4)	1.76 (1.01-3.06)	**0.045**
3/4 (N=210[c])	Recurrence	61 (48.9)	11 (20.2)	2.20 (1.08-4.49)	**0.030**
	Reoperation	11 (9.2)	4 (11.4)	1.38 (0.36-5.25)	0.641

CI=confidence interval. HR=hazard ratio.

[a] Calculated as one minus the Kaplan–Meier estimator at 10-years follow-up

[b] Cox regression model included age, body mass index, sex, ASA classification, current smoker, chronic pulmonary disease, diabetes (with and without complications), liver disease, surgeon volume, operative time, surgical approach, and wound class as covariates. Bold indicates statistical significance with $p<0.05$.

[c] 152 absorbable mesh repairs were matched to 58 permanent mesh repairs. The N was too small for the accurate estimation of the incidence.

5. Hernia Surgery Training Reimagined: From Inguinal to Flank Hernias – Revolutionizing Surgical Training with Realistic Cadaveric Hernia Model Creation

C Balthazar da Silveira, N Salevitz, A Rasador, H Grezenko, M Mahrer, A Mankin, P Wu, K Gray, J Mankin, V Deka, T Gillespie, H Soe-Lin, C Ballecer
St. Joseph's Hospital and Medical Center, Dignity Health

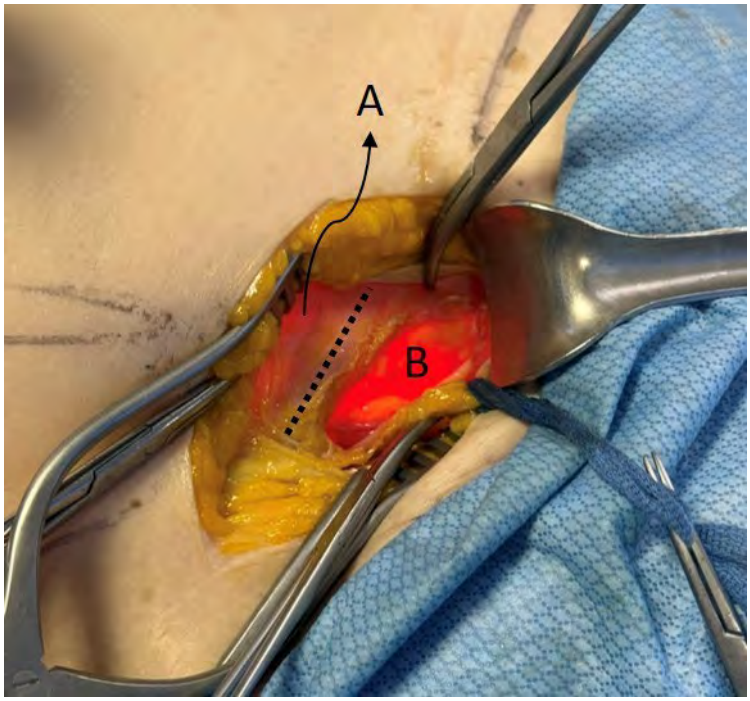
Background: Training in complex hernia surgeries presents significant challenges due to the lack of high-fidelity models. Despite advancements in technology, current training face the limitation of using cadavers with intact abdominal walls, not accurately reflecting the surgical anatomy, rarely presenting less common hernias as flank defects. We aimed to create a high-fidelity inguinal and flank hernia model in the Knowledge Donor (KD) Program.

Methods: The KD is a program based on whole-body donor simulation with mechanical ventilation and blood perfusion. For the inguinal hernia creation, an incision was made in the lower abdomen, followed by dissection up to the external oblique aponeurosis, similarly to a Lichtenstein technique. The dissection proceeds to the shelving edge, and the inguinal cord is dissected. The inguinal floor is incised to create both direct and indirect hernias, and a posterior dissection is performed around the fascial opening to increase the compliance. Laparoscopic inspection is used to visualize the defects created, and insufflation is done to increase the defect and create a bulging by simulating increased intra-abdominal pressure. For the flank hernia, two approaches can be used. For the open approach, a subcostal incision is made, and plane-by-plane dissection through the muscle fibers, up to the Transverse Abdominis (TA), is performed. The transversalis fascia is identified, and the defect is created by cutting the TA. For the laparoscopic creation of the flank hernia, a preperitoneal access is performed and the TA is widened and cut, with a preperitoneal dissection increasing the compliance. For both the approaches, following insufflation and laparoscopic inspection, defects are evaluated for bulging and anatomical accuracy.

Results: Creation of the right flank hernia was performed laparoscopically, with the first trocar at the left side. However, this access presented difficulties due to bowel adhesions, requiring a second port to reach the preperitoneal space. During preperitoneal dissection, peritoneal injuries were noted, requiring suturing. The right TA was widened and cut, leading to its inferior avulsion, creating a realistic flank defect. An open approach through left subcostal incision was made for the contralateral hernia creation. The incision was extended up to the TA, and an incision was done transversely to its fibers (Figure 1). After insufflation from 10mmHg to 15mmHg, the transversalis fascia was identified, and a transverse defect of 8 cm and vertical defect of 5 cm was identified (Figure 2). Intraperitoneal inspection through optic laparoscopy revealed a flank transillumination and bulging. For the inguinal hernia, a horizontal incision was made in the lower right abdomen, followed by dissection up to the inguinal floor, creating both direct and indirect hernias by cutting it (Figure 3). Laparoscopic inspection confirmed the defects. Despite minor peritoneal injuries during the laparoscopic flank hernia creation, all procedures were successfully completed.

Conclusion: Our high-fidelity hernia model provides a groundbreaking solution to the challenges faced in training for complex hernia surgeries. This model offers an opportunity for surgeons to

practice and teach, especially in complex and atypical hernias, marking a significant advancement in surgical education that can be employed to open and minimally invasive surgical training.



6. Outcomes Following Repair of Incisional Hernias After Orthotopic Liver Transplant Using Transversus Abdominis Release (TAR): An Institutional Review

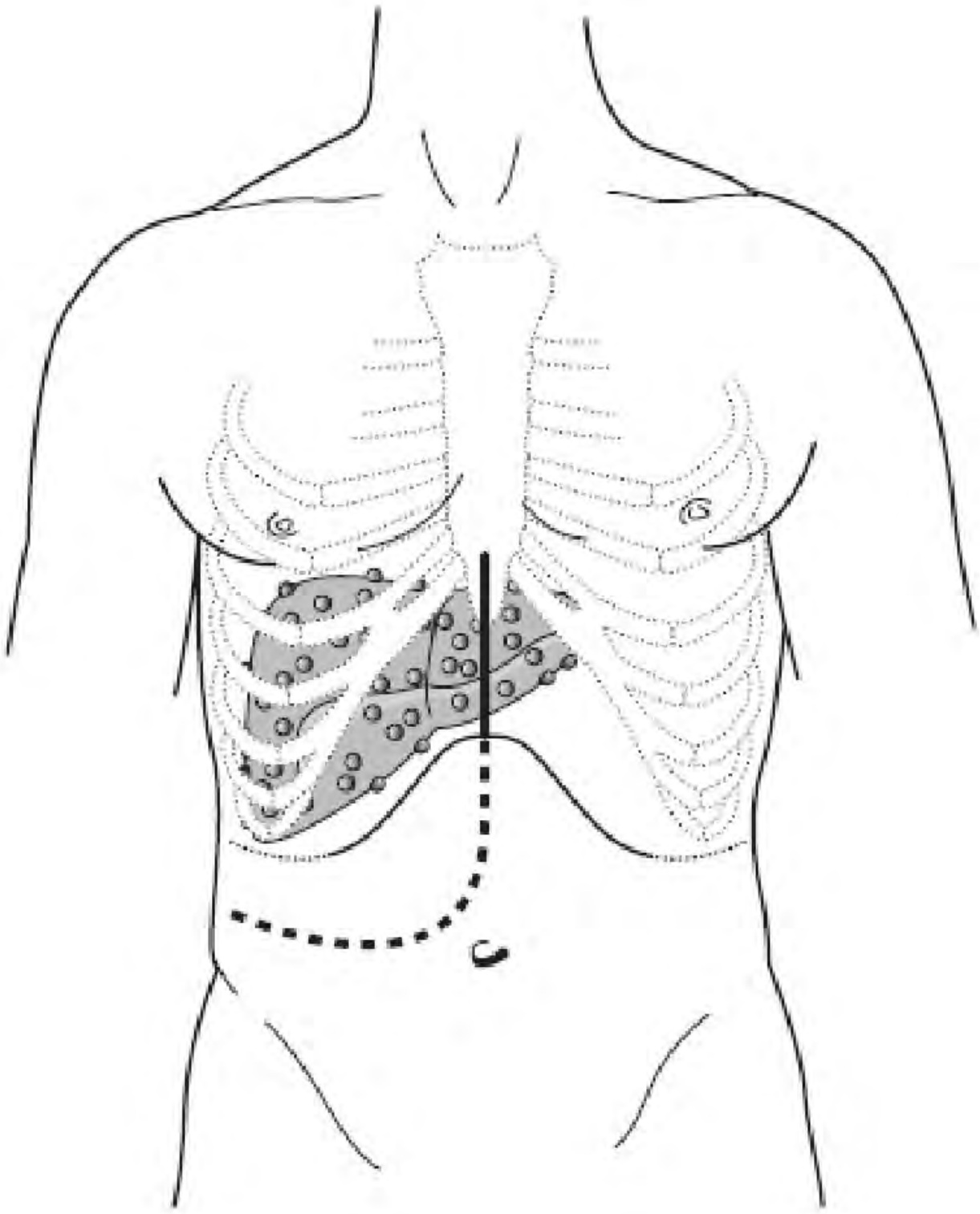
V Nwigwe, G Reeves, L Yan, S Mohamedaly, K Hopkins MD, A Addo, P George, D Podolsky, Y Novitsky
Columbia University

Background: Incisional hernia is a prevalent postoperative complication following orthotopic liver transplantation (OLT), primarily due to factors such as elevated body mass index (BMI), diabetes mellitus, and chronic immunosuppressive therapy. This unique patient cohort poses significant challenges for hernia repair, characterized by extensive defect sizes and continuous immunosuppression. The current literature provides limited data on this population's long-term outcomes of complex abdominal wall reconstructions. This study aims to address this gap by presenting comprehensive outcomes of posterior component separation with transversus abdominis release (TAR) performed at our institution.

Methods: A comprehensive retrospective review was conducted using our prospectively maintained database to identify patients with incisional hernias post-OLT who underwent complex abdominal wall reconstruction via posterior component separation with transversus abdominis release (TAR) from 2018 to 2024. Detailed demographic data and perioperative variables were meticulously analyzed through univariate analysis. The primary outcome was hernia recurrence, while secondary outcomes included surgical site morbidity and other postoperative complications.

Results: A total of 46 patients were identified, with a mean age of 59.05 ± 14.09 years and mean BMI of 28.65 ± 3.76 kg/m2. All patients were functionally independent, but most had an ASA Class of 3 (73.81 %) with moderate rates of hypertension (58.7%) and diabetes (26.09%). Almost one-third of these patients had a history of previous hernia repair (30.43 %). The mean hernia defect size was 194.74 ± 164.54 cm2 with the majority (60.87%) undergoing an open repair. The mean hospital stay was 4.53 ± 2.39 days. All patients were followed for an average length of 12.4 months. During this period, there were four hernia recurrences (8.70%). The readmission rate was low (8.70%). Only one patient required reoperation within 90 days of index operation; this was for acute fascial dehiscence. Surgical site infection rate was low (6.52 %), as were other surgical site occurrence rates. Non-surgical site complication rate was also low with three (6.52%) experiencing postoperative ileus and five (10.87%) experiencing acute kidney injury. There were no mortalities during this period.

Conclusion: To the best of our knowledge, this is the largest series of post-OLT patients who underwent complex abdominal wall reconstruction with TAR at a single institution. This study demonstrates that posterior component separation with transversus abdominis release (TAR) provides a robust and effective solution for the repair of complex incisional hernias in immunosuppressed patients post-OLT, showing durable results and low recurrence rates in the medium term. However, multi-center trials and larger patient studies are warranted to validate our findings and facilitate the development of standardized guidelines for managing complex hernias in challenging cohort.



Values	N= 46
Postoperative Outcomes	
Hernia recurrence (n, %)	4 (8.70 %)
Time to recurrence (days)*	47.78 ± 165.39
Length of stay (days)	4.53 ± 2.39
Mortality (n, %)	0 (0%)
Readmission (n, %)	4 (8.70 %)
Reoperation (n, %)	1 (2.17%)
Follow up period (months)	12.4 ± 15.2
Surgical site morbidity	
Surgical site infection (n, %)	3 (6.52 %)
Superficial	3 (6.52 %)
Deep	0 (0%)
Organ space	0 (0%)
Surgical site occurrences	
Non-healing incisional wound	1 (2.17%)
Seroma	1 (2.17%)
Infected seroma	0 (0%)
Hematoma	3 (6.52%)
Infected hematoma	0 (0%)
Exposed mesh	0 (0%)
Contaminated mesh	0 (0%)
Mesh infection	0 (0%)
Enterocutaneous fistula	0 (0%)

7. The use of Sugammadex for Neuromuscular Blockade Reversal after Inguinal Hernia Repair: A Systematic Review and Meta-analysis

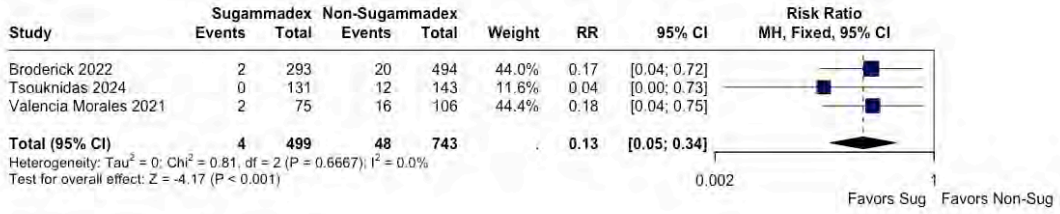
V Nikolian, AD Rasador, J Burmann, C Barros, J Kasmirski, NP Pascotini, DL Lima, ME Bosley
Montefiore Medical Center

Background: Post-operative urinary retention (POUR) is a common complication following inguinal hernia repair (IHR), and it can be significantly influenced by the type of neuromuscular blockade reversal medication used, especially acetylcholinesterase inhibitors. Among the available options for neuromuscular blockade reversal, Sugammadex has gained significant popularity due to its effectiveness, speed, and safety profile. Additionally, some studies suggest that it prevents POUR compared to acetylcholinesterase inhibitors. We aimed to perform a systematic review and meta-analysis to assess the POUR rates with the use of Sugammadex after IHR.

Methods: Pubmed, EMBASE, Cochrane, Lilacs, and Web of Science databases were systematically searched without date or language restrictions from inception to October 2024. The databases were searched for studies comparing Sugammadex with other medications for neuromuscular blockade reversal after IHR. The primary outcome was POUR.

Results: From 212 records, 3 retrospective cohort studies were included in our pooled analysis, totaling 1,242 patients. 499 (40.1%) patients were in the Sugammadex group, compared to 743 (59.9%) patients in the non-Sugammadex group. 135 (10.8%) patients underwent open IHR, compared to 45 (3.6%) patients who underwent minimally invasive repairs. Our meta-analysis revealed that the use of Sugammadex was associated with a significantly lower risk of POUR compared to other medications (RR 0.13; 95% CI 0.05, 0.34; $p< 0.001$), with a relative risk reduction of 87%.

Conclusion: Sugammadex is associated with a significantly lower risk of POUR following IHR when compared to other medications for neuromuscular blockade reversal following IHR. Despite its higher cost and decreased availability in some centers, the use of Sugammadex should be strongly considered as the preferred option to prevent POUR and minimize the need for hospital readmissions.


Study
Sugammadex Events
Sugammadex Total
Non-Sugammadex Events
Non-Sugammadex Total
Weight
RR
95% CI
Risk Ratio MH, Fixed, 95% CI
Broderick 2022 2 293 20 494 44.0% 0.17 [0.04; 0.72]
Tsouknidas 2024 0 131 12 143 11.6% 0.04 [0.00; 0.73]
Valencia Morales 2021 2 75 16 106 44.4% 0.18 [0.04; 0.75]
Total (95% CI) 4 499 48 743 . 0.13 [0.05; 0.34]
Heterogeneity: Tau² = 0; Chi² = 0.81, df = 2 (P = 0.6667); I² = 0.0%
Test for overall effect: Z = -4.17 (P < 0.001)
0.002
1
Favors Sug
Favors Non-Sug

8. Significant Lowering of Hernia Surgeon Reimbursement and Work RVUs Due to 2023 CPT Coding Changes

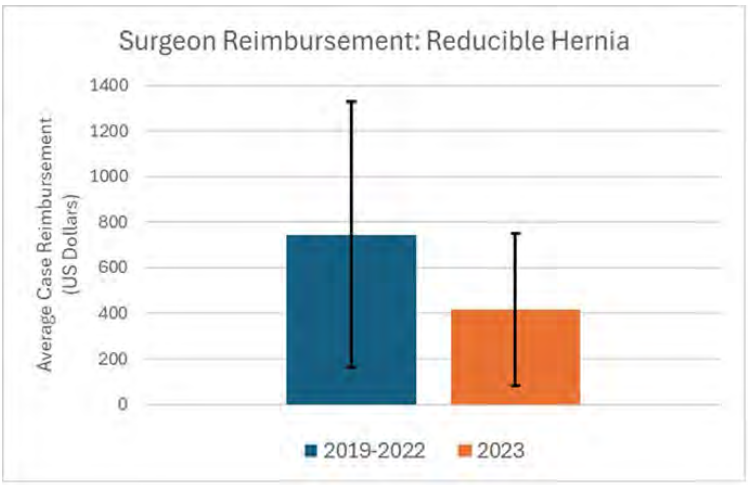
RC Wright, MD Horne, AB Dayley, EK Bialkowsky
Meridian Surgery Center

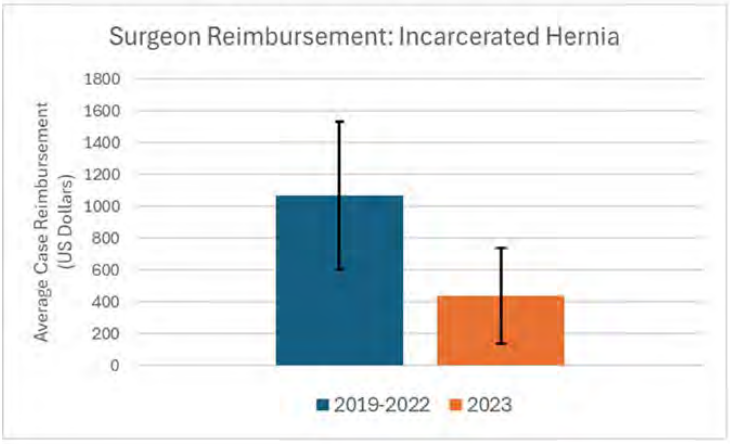
Background: In 2023, changes were made to the Current Procedural Terminology (CPT) codes for anterior abdominal hernia repair to more uniformly reimburse hernia repair and better reflect current practices. These changes were made to address a shift toward the outpatient setting however general surgeons may be negatively impacted. A retroactive analysis of an ambulatory surgery center compared the surgeon's average reimbursement from old CPT codes from 2019 to 2022 to new CPT codes in 2023 including the evaluation and management (E/M) services in the new 0-day global period. Average case reimbursement to the surgeon decreased significantly for incarcerated hernia repair (p = 0.01, -58.89% change) and to the surgical facility for reducible hernia repair (p = 0.004, -56.97% change) between the combined average of 2019 to 2022 and 2023. Average procedural work relative value units for hernias from 2019 to 2022 were found to decrease by 25.4% for incarcerated and 45% for reducible hernias compared to 2023. Further evaluation with a larger surgical facility is needed to confirm these findings.

Methods: This study was a retroactive analysis of financial data spanning 2019 to 2023 of a single ambulatory surgery center. The population consisted of initial abdominal wall hernia repairs as defined by annual CPT codes. A total of 528 cases across 18 different CPT codes for analysis (not including CPT code 49568 for mesh placement.) These years were chosen as the most immediate prior to 2023 despite the pandemic occurring during 2020 and 2021. The surgery center being studied remained open during the pandemic and performed surgeries in accordance with local health ordinances without experiencing a major decline in case number.

Results: Analysis of average case reimbursement from 2019 to 2022 as a whole compared to 2023 yielded statistical significance in incarcerated abdominal hernia repair only with average case reimbursement decreasing by 58.98% or $641.01 per case (p = 0.010, N = 21). Differences in reducible abdominal hernia repair were not found to be statistically significant but still show marked decrease, dropping $333.69 per case from the combined 2019 to 2022 average compared to 2023 (p = 0.0964, N = 19) . Procedural wRVUs for incarcerated hernias were found to have a -29.80%, -13.8%, -26.98%, and -28.44% change respectively for 2019-2022 compared to 2023. wRVUs for reducible hernias were found to have a -46.76%, -45.83%, -53.03%, and -49.4% change respectively for 2019-2022 compared to 2023. The 2019-2022 combined average procedural wRVUs was found to have a -25.4% change for incarcerated and -45% for reducible hernias.

Conclusion: This retroactive study showed that the average case reimbursement for incarcerated abdominal hernias from 2019 to 2022 compared to 2023 decreased with the change in CPT, causing surgeons to potentially lose thousands of dollars. The revised codes have not achieved their intended goal in the outpatient setting for uncomplicated hernias.


Surgeon Reimbursement: Reducible Hernia
Average Case Reimbursement (US Dollars)
1400
1200
1000
800
600
400
200
0
2019-2022
2023


Surgeon Reimbursement: Incarcerated Hernia
Average Case Reimbursement (US Dollars)
1800
1600
1400
1200
1000
800
600
400
200
0
2019-2022
2023

Average Procedural wRVUs						
	2019	2020	2021	2022	2019-22 Average	2023
Incarcerated	15.77	12.75	15.16	15.47	14.84	11.07
% change Incarcerated	-29.80%	-13.18%	-26.98%	-28.44%	-25.4%	n/a
Reducible	12.81	12.59	14.52	13.48	12.50	6.82
% change reducible	-46.76%	-45.83%	-53.03%	-49.4%	-45%	n/a

9. Surgical Management of Lateral Hernias Using the Transversus Abdominis Release (TAR) Technique: A Systematic Review and Proportional Meta-analysis

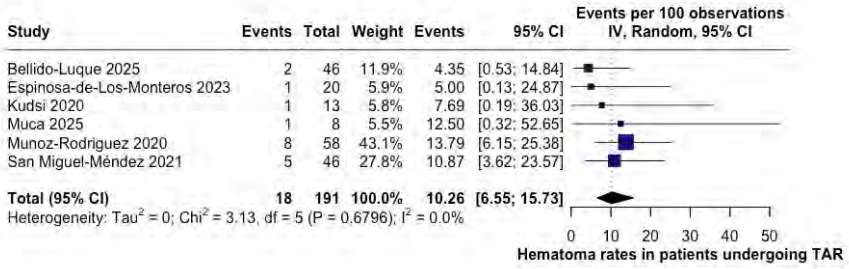
A Rasador, C Balthazar da Silveira, S Horiuchi, P Zakarian, V Deka, T Gillespie, C Ballecer
St. Joseph's Hospital and Medical Center, Dignity Health

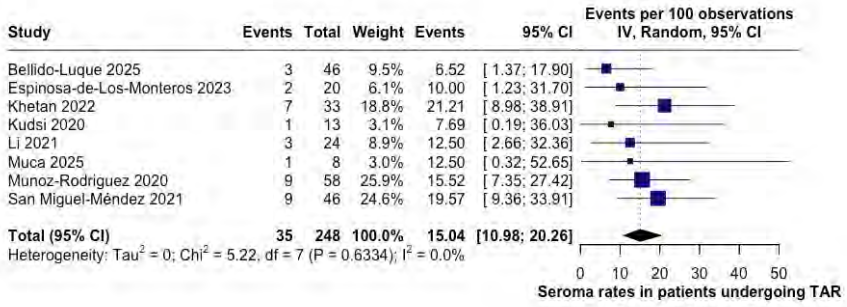
Background: Lateral hernia (LH) repair represents a surgical challenge due the anatomical complexities in achieving exposure and the need of an extensive posterior dissection to ensure appropriate mesh overlap. The transversus abdominis release (TAR) can be a useful technique in this scenario, allowing lateral and posterior dissection, and the creation of a large space for the placement of a large mesh with sufficient coverage. We aim to perform a systematic review and proportional meta-analysis to assess the use of TAR for the surgical management of LH.

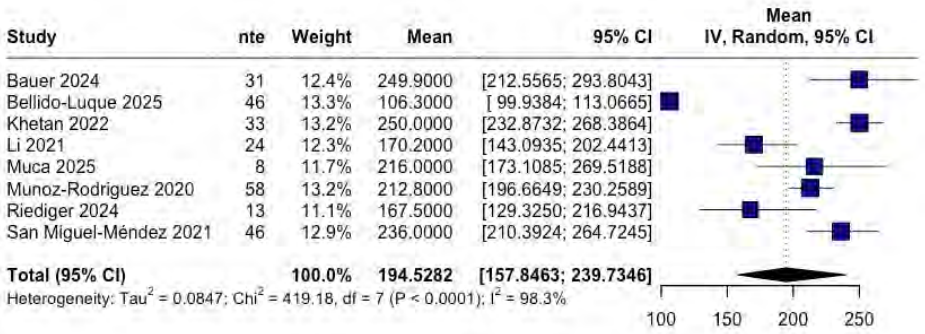
Methods: Pubmed, EMBASE, Cochrane, Web of Science, and Lilacs databases were systematically searched for studies assessing the use of TAR for the treatment of LH from inception to March 2025. The databases were searched without date or language restrictions. The following outcomes were analyzed: surgical site occurrences (SSO), surgical site infections (SSI), recurrence, postoperative ileus, hospital length of stay (LOS), operative time, and systemic postoperative complications. RStudio was used for the statistical analysis.

Results: From 3,892 records obtained, 11 studies were finally included in our analysis. 8 studies were retrospective cohorts, 1 was a case-control, and 2 were prospective cohort studies. 65 (21.4%) patients underwent robotic TAR, 136 (44.7%) patients underwent open TAR, and 70 (23%) patients underwent laparoscopic TAR. 10.26 per 100 patients (96% CI 6.55, 15.7) presented hematoma, 15.04 per 100 patients (95% CI 10.98, 20.26) presented seroma, and 14.04 per 100 patients (95% CI 9.22, 20.8) presented SSI. As for post-operative ileus, 6.52 per 100 (95% CI 2.7, 14.9) presented this outcome, 9.94 per 100 (95% CI 3.28, 26,43) presented systemic complications, and 2.86 per 100 (95% CI 0.92, 8.51) presented a recurrence within 1.5 years after surgery. The mean operative time was 194.5 minutes (95% CI 157.8, 239.7), and mean LOS was 3.8 days (95% CI 2.5, 5.9).

Conclusion: TAR represents an effective surgical treatment for LH, with a low risk of recurrence and short-term post-operative complications. Despite being time-consuming and requiring a high level of expertise from the operating surgeon, its benefits for the treatment of LH are significant. Learning and specializing in TAR is crucial for the lateral hernia repair, as it enables an effective treatment, leading to better outcomes and enhanced patient safety.


Study
Events
Total
Weight
Events
95% CI
Events per 100 observations
IV, Random, 95% CI
Bellido-Luque 2025 2 46 11.9% 4.35 [0.53; 14.84]
Espinosa-de-Los-Monteros 2023 1 20 5.9% 5.00 [0.13; 24.87]
Kudsi 2020 1 13 5.8% 7.69 [0.19; 36.03]
Muca 2025 1 8 5.5% 12.50 [0.32; 52.65]
Munoz-Rodriguez 2020 8 58 43.1% 13.79 [6.15; 25.38]
San Miguel-Méndez 2021 5 46 27.8% 10.87 [3.62; 23.57]
Total (95% CI) 18 191 100.0% 10.26 [6.55; 15.73]
Heterogeneity: Tau² = 0; Chi² = 3.13, df = 5 (P = 0.6796); I² = 0.0%
0
10
20
30
40
50
Hematoma rates in patients undergoing TAR


Study
Events
Total
Weight
Events
95% CI
Events per 100 observations
IV, Random, 95% CI
Bellido-Luque 2025 3 46 9.5% 6.52 [1.37; 17.90]
Espinosa-de-Los-Monteros 2023 2 20 6.1% 10.00 [1.23; 31.70]
Khetan 2022 7 33 18.8% 21.21 [8.98; 38.91]
Kudsi 2020 1 13 3.1% 7.69 [0.19; 36.03]
Li 2021 3 24 8.9% 12.50 [2.66; 32.36]
Muca 2025 1 8 3.0% 12.50 [0.32; 52.65]
Munoz-Rodriguez 2020 9 58 25.9% 15.52 [7.35; 27.42]
San Miguel-Méndez 2021 9 46 24.6% 19.57 [9.36; 33.91]
Total (95% CI) 35 248 100.0% 15.04 [10.98; 20.26]
Heterogeneity: Tau² = 0; Chi² = 5.22, df = 7 (P = 0.6334); I² = 0.0%
0
10
20
30
40
50
Seroma rates in patients undergoing TAR


Study
nte
Weight
Mean
95% CI
Mean
IV, Random, 95% CI
Bauer 2024 31 12.4% 249.9000 [212.5565; 293.8043]
Bellido-Luque 2025 46 13.3% 106.3000 [99.9384; 113.0665]
Khetan 2022 33 13.2% 250.0000 [232.8732; 268.3864]
Li 2021 24 12.3% 170.2000 [143.0935; 202.4413]
Muca 2025 8 11.7% 216.0000 [173.1085; 269.5188]
Munoz-Rodriguez 2020 58 13.2% 212.8000 [196.6649; 230.2589]
Riediger 2024 13 11.1% 167.5000 [129.3250; 216.9437]
San Miguel-Méndez 2021 46 12.9% 236.0000 [210.3924; 264.7245]
Total (95% CI) 100.0% 194.5282 [157.8463; 239.7346]
Heterogeneity: Tau² = 0.0847; Chi² = 419.18, df = 7 (P < 0.0001); I² = 98.3%
100
150
200
250

10. Abdominal Wall Tension and Long-Term Outcomes after Posterior Component Separation with Transversus Abdominis Release

B Miller, W Bennett, R Ellis, A Carvalho, N Brooks, K Woo, D Remulla, K Miles, L Beffa, D Krpata, A Prabhu, C Petro, M Rosen
Cleveland Clinic Foundation

Background: A tension-free closure is a central tenet of ventral hernia repair. However, data have demonstrated no association between fascial tension and early postoperative outcomes following posterior component separation (PCS) with transversus abdominis release (TAR), but the association of abdominal wall tension during hernia repair and long-term outcomes remains unknown. This study investigates associations between abdominal wall tension after PCS with TAR and long-term outcomes.

Methods: This is a post-hoc analysis of a prospective case series quantifying the tension changes on the abdominal wall during PCS with TAR. Patients within the 1-year follow-up window (+/- 6 months) or greater follow-up were included. A sterile tensiometer measured intraoperative fascial tension (in lbs) after each myofascial release. Bilateral measures were summed to determine the change in fascial tension during PCS with TAR and total fascial tension at closure. Outcomes included surgical site infection (SSI), surgical site occurrence (SSO), hernia recurrence, pain, and quality of life (QOL). Pain was assessed using the NIH Pain Intensity index short-form (PROMIS3a) and hernia-related quality-of-life survey (HerQLes) for disease-specific QOL. Hernia recurrence was determined via CT scan, documented physical exam, or patient-reported bulge in a hierarchical fashion.

Results: Of 100 patients from the original study, clinical and/or patient-reported follow-up was available for 69 patients. Median age was 60 years (IQR 53, 68), median defect width was 13cm (IQR 9.5, 15), median BMI was 32.3 kg/m2 (IQR 29.7, 37.1), and 55% were female. Median fascial tension at closure was 3.75 lbs (IQR 1.5, 8) and change from baseline was -5 lbs (IQR -9.5, -2.5). Hernia recurrence rate was 4.5% (n=3 of 66), SSI rate was 11.8% (n=4 of 34), SSO rate was 17.6% (n=6 of 34), and there were no reoperations for recurrence. At minimum of 1-year follow-up, linear (and logistic for binary outcomes) regression identified no relationship between change in fascial tension during PCS with TAR or fascial tension at closure and wound morbidity, hernia recurrence, pain, or QoL.

Conclusion: In this analysis of long-term outcomes after PCS with TAR, the fascial tension at closure was not associated with adverse clinical or patient-reported outcomes. The need for a tension-free closure during ventral hernia repair may be overstated.

Table 1. Linear regression of tension and patient-reported outcome measures, and logistic regression of tension and binary morbidity outcomes

		Fascial Tension at Closure				Change in Fascial Tension from Baseline			
	n	Slope	Intercept	R^2	p value	Slope	Intercept	R^2	p value
HerQLes	53	-0.59	75	0.021	0.31	-0.75	67	0.019	0.32
HerQLes, Change from Baseline	43	0.29	36	0.0032	0.72	-1.21	29	0.039	0.21
HerQLes Change from 30 days	41	0.17	21	0.0012	0.83	-1.07	15	0.039	0.21
PROMIS3a	56	0.019	36	0.00017	0.92	-0.35	34	0.036	0.16
PROMIS3a, Change from Baseline	45	-0.14	-8	0.0065	0.6	-0.1	-9	0.0023	0.75
PROMIS3a, Change from 30 days	42	0.36	-10	0.034	0.25	-0.36	-11	0.032	0.23
	n	OR	95% CI			OR	95% CI		
Recurrence	66	0.921	[-0.51, 0.101]			0.966	[-0.25, 0.23]		
Surgical Site Infection	34	1.053	[-0.12, 0.19]			0.911	[-0.29, 0.097]		
Surgical Site Occurrence	34	1.041	[-0.11, 0.17]			0.941	[-0.22, 0.102]		

11. Comparative Outcomes and Cost Analysis of Epidural Analgesia vs. ON-Q Pain Control in Open Abdominal Wall Reconstruction

D Zabel, Y Jani, I Radi
Medical College of Georgia

Background: Effective pain management is crucial in perioperative care, particularly in open abdominal wall reconstruction (OAWR). Epidural analgesia has been the gold standard for abdominal surgeries, but continuous peripheral nerve blocks such as ON-Q have gained popularity due to their potential advantages, including lower risks of hypotension and urinary retention. This study compares the perioperative outcomes and costs associated with epidural analgesia versus ON-Q pain control in OAWR.

Methods: A retrospective review of a prospectively maintained single-surgeon database (2012–2019) identified OAWR patients receiving either epidural analgesia or ON-Q pain control. Primary outcomes included hospital length of stay (LOS) and complication rates (infection, wound dehiscence). A cost analysis was conducted to estimate comparative costs of each modality using contemporary institutional pricing. Statistical significance was set at $p< 0.05$.

Results: Among 401 OAWR patients, 226 received epidural analgesia, and 175 received ON-Q. Mean LOS was significantly shorter in the ON-Q group (7.8 vs. 9.7 days, p0.05). Cost analysis estimated a total 3-day postoperative cost of $1,400–$3,300 for epidural analgesia versus $1,200–$2,400 for ON-Q. The shorter LOS in the ON-Q group suggests potential cost savings by reducing hospitalization days.

Conclusion: ON-Q pain control is associated with a significantly shorter hospital stay and comparable complication rates compared to epidural analgesia in OAWR. Cost analysis suggests potential financial benefits. Further prospective studies are needed to validate these findings and assess long-term outcomes.

TABLE-1: Demographic and Clinical characteristics of patients:

Characteristics	Unweighted n 401	Overall Mean or Proportion 100%
Categorical		
Gender		
Male	147	36.7
Female	254	63.3
Previous Hernia Repair		
No	155	40.2
Yes	231	59.8
Concomitant Procedure		
No	264	65.8
Yes	137	34.2
Clean/ Contaminated Status		
Clean	287	71.6
Clean/Contaminated	97	24.2
Contaminated	13	3.2
Dirty	4	1.0
Type of Incision		
Transverse	311	78.5
Vertical	85	21.5
Bridge		
No	311	96.9
Yes	10	3.1
Tobacco		
No	297	83.4
Yes	59	16.6
Epidural		
No	175	43.6
Yes	226	56.4
On Q		
No	226	56.4
Yes	175	43.6
Fascia Closure		
No	25	8.3
Yes	276	91.7
Infection		
No	244	86.2
Yes	39	13.8
Wound Breakdown		
No	237	83.8
Yes	46	16.2
Secondary OR		
No	223	78.0
Yes	63	22.0
Recurrence		
No	274	97.2
Yes	8	2.8
Continuous		
Age at OR (years)	401	56.9
BMI	389	35.4
OR time	374	218.0
Hernia Size	293	10.1
Length of Hs (days)	287	173.4

Characteristics	Epidural n = 226 (%)	On Q n = 175 (%)
Categorical		
Gender		
Male	80 (35.4)	67 (38.3)
Female	146 (64.6)	108 (61.7)
Previous Hernia Repair		
No	86 (39.8)	69 (40.6)
Yes	130 (60.2)	101 (59.4)
Concomitant Procedure		
No	157 (69.5)	107 (61.1)
Yes	69 (30.5)	68 (38.9)
Clean/ Contaminated Status		
Clean	162 (71.7)	125 (71.4)
Clean/Contaminated	50 (22.1)	47 (26.9)
Contaminated	10 (4.4)	3 (1.7)
Dirty	4 (1.8)	0 (0.0)
Type of Incision		
Transverse	190 (85.2)	121 (69.9)
Vertical	33 (14.8)	52 (30.1)
Bridge		
No	196 (96.1)	115 (98.3)
Yes	8 (3.9)	2 (1.7)
Tobacco		
No	173 (81.6)	124 (86.1)
Yes	39 (18.4)	20 (13.9)
Fascia Closure		
No	20 (14.9)	5 (3.0)
Yes	114 (85.1)	162 (97.0)
Infection		
No	189 (85.5)	55 (88.7)
Yes	32 (14.5)	7 (11.3)
Wound Breakdown		
No	188 (84.7)	49 (80.3)
Yes	34 (15.3)	12 (19.7)
Secondary OR		
No	170 (75.9)	53 (85.5)
Yes	54 (24.1)	9 (14.5)
Recurrence		
No	212 (96.4)	62 (100.0)
Yes	8 (3.6)	0 (0.0)
Continuous [Mean (SD)]		
Age at OR (years)	57.6 (12.5)	55. 9 (13.6)
BMI	35.3 (8.4)	35.6 (7.5)
OR time	262.0 (98.7)	164.7 (59.1)
Hernia Size	9.9 (3.5)	10.6 (3.9)
Length of f/u (days)	197.8 (237.1)	84.6 (74.7)
Length of Stay	9.7 (8.1)	7.8 (4.9)

Table – 3:

Characteristics	Epidural n = 226 (%)	On Q n = 175 (%)	p-value
Infection			0.5197
No	189 (85.5)	55 (88.7)	
Yes	32 (14.5)	7 (11.3)	
Wound Breakdown			0.4140
No	188 (84.7)	49 (80.3)	
Yes	34 (15.3)	12 (19.7)	
Secondary OR			0.1068
No	170 (75.9)	53 (85.5)	
Yes	54 (24.1)	9 (14.5)	
Length of Stay (days) (Mean (SD))	9.7 (8.1)	7.8 (4.9)	<.0001

Chi-square analyses focus on the association between the predictor (epidural and On Q) and the outcome variables (Infection, wound breakdown, and secondary surgery). There is no statistically significant association between the type of anesthesia and the outcome variables (p = 0.5197, 0.4140, and 0.1068).

We performed the Wilcoxon rank-sum test to compare the distributions of length of stay between epidural vs On Q patients. There is a statistically significant difference in length of stay between the two groups (p <.0001). Epidural patients tend to have longer hospital stay compared to On Q patients.

12. Impact of Obesity and Smoking on Reintervention Risk After Elective Umbilical Hernia Repair with Mesh – A Nationwide Study

J Fredberg, E Oma, F Helgstrand, JN Jørgensen
University of Copenhagen

Background: We wanted to thoroughly investigate the impact of obesity and smoking on reinterventions following elective primary umbilical hernia repair (UHR).

Methods: A retrospective nationwide study of patients who underwent UHR from 2011 to 2020. Complete follow-up was obtained on December 31. 2023, through nationwide registries, and complete scrutiny of medical files for patients, who underwent a reoperation. The primary and secondary outcomes were the impact of obesity (body mass index (BMI) >30 kg/m2) and smoking on risk of any reoperation, operation for recurrence and operation for non-recurrence complication. Multivariable analyses were performed using Fine-and-Gray competing risk analysis. Besides BMI and smoking status, mesh versus suture repair, sex, age and hernia size were included in the statistical models.

Results: Among 3,761 patients included 77,6% underwent mesh repair (open onlay: 44.6%, open sublay: 19.3%, or laparoscopic-intraperitoneal: 13.6%). Follow-up was 99.9%, median 4.8 years. A total of 640 (17.0%) were smoking patients: 120 (14.2%) had suture repair and 520 (17.8%) had mesh repair. Among non-smokers, mesh was associated with a significantly lower risk of any reoperation compared to suture repair (HR 0.60, 95% CI (0.39–0.91), p=0.016). However, this was not observed in smoking patients, where mesh demonstrated a non-significant higher risk compared to suture repair (HR 3.19 (0.75–13.5), p=0.110). Similarly, among non-smokers, mesh significantly reduced the risk of operation for recurrence compared to suture repair (HR 0.34 (0.19–0.63), p30: HR 0.74 (0.37–1.49), p=0.040). Among patients without obesity, mesh was associated with a significantly lower risk of reoperation for recurrence compared to suture repair (HR 0.39 (0.20–0.75), p=0.005), while a similar trend was observed in patients with obesity, (HR 0.40 (0.23–1.23), p=0.110). No significant differences were observed between mesh and suture repair in terms of non-recurrence reoperations, either among patients with (HR 1.16 (0.43–3.17), p=0.770) or without obesity (HR 1.52 (0.76–3.03), p=0.230).

Conclusion: In contrast to non-smokers, mesh repair in smoking patients was not associated with a decreased risk of operation for recurrence compared with suture repair. Furthermore, mesh repair in smoking patients was associated with an increased risk of operation for non-recurrence complications compared to suture repair, contrary to findings in non-smokers. Similar risks for reoperation after mesh versus suture repair were observed in patients with and without obesity. Smoking cessation seems pertinent to improve outcomes following UHR with mesh, while obesity appears to have a lesser impact on outcomes.

13. An Evaluation of Management and Outcomes in Complex Abdominal Wall Reconstruction in Patients with Recurrent Hernias and Mesh Infections or Fistulas

BT Heniford, A Wiley, N Mylarapu, A Holland, T Cox, G Scarola, S Ayuso, K Kercher, V Augenstein
Atrium Health Carolinas Medical Center

Background: Mesh infections and fistulas are one of the most complex and morbid complications in AWR. These issues frequently necessitate mesh explantation and are associated with high rates of reoperation and healthcare utilization. However, data on management strategies and long-term outcomes, particularly at the time of definitive hernia reconstruction, are limited. This study evaluates operative management and clinical outcomes in patients undergoing AWR in the setting of mesh infection and/or mesh fistula at a tertiary hernia center.

Methods: A prospectively maintained hernia database was queried for patients with a mesh infection or fistula who underwent AWR for a recurrent VH. Demographics, operative details, and postoperative outcomes were analyzed. Primary outcomes included recurrence of mesh infection and hernia recurrence. Secondary outcomes included wound complications, length-of-stay, and readmission.

Results: A total of 152 patients had a history of mesh infection or fistula and underwent abdominal wall reconstruction. All patients had a history of failed hernia repair. The mean age was 56.3±10.4 years with a mean BMI of 35.3±8.0 kg/m². Most were female (74.3%) and ASA Class II–IV (88.8%). Comorbidities included smoking history (45.4%), diabetes (34.2%), prior MRSA infection (34.9%), and immunosuppression (9.2%). A minority had a history of IBD or diverticulitis (5.3%). There were 6% with history of incomplete mesh or foreign body explantation resulting in chronic mesh infections. All cases were CDC Wound Class III and IV (22.4% and 77.6). Botulinum toxin A was used preoperatively in 7.2% of cases for loss-of-domain hernias.

The hernias were very large, averaging 261.8±165.6 cm2 and mesh size averaged 594.8±305.3cm2. During an average operative time of 213.6±99.6 minutes, complete mesh excision was achieved in 95.4% and only left due to being away from the infected field and the complexity of resection. Biologic or absorbable mesh was used in 77.6%, 2.0% were synthetic, and no mesh was placed in 20.4%. Most mesh (61.8%) was placed within the preperitoneal plane. Fascial closure was achieved in 94.8% of cases. Intraoperative enterotomy occurred in 5.9%. Wound management strategies in 38.9% of cases included a vac-assisted, delayed primary closure of skin and subcutaneous tissues or a negative pressure “French Fry” technique. Otherwise, 14.5% had a planned, continuous vacuum therapy for wound management. A new fistula was discovered intraoperatively in 25.7% of mesh infection cases. OR and total charges averaged $24,373±13,670 and $137,856±80,443.

Postoperatively, length-of-stay averaged 8.5±6.7 days. The 30-day readmission rate was 7.2%. Wound complications included wound breakdown (16.4%), wound cellulitis (10.5%), wound infection (21.7%), and seroma requiring intervention (19.1%). Only 10.5% required reopening of their wound. Notably, only 2.0% of patients experienced recurrent mesh infection, involving 2 of the 3 synthetic mesh placements. Hernia recurrence occurred in 5.3% with an average follow-up of 38.6±43.0 years.

Conclusion: Abdominal wall reconstruction for recurrent ventral in the setting of mesh infections and fistulas are highly complex operations. In this high-risk cohort, definitive hernia repair following mesh explantation was associated with moderate wound morbidity but low rates of recurrent infection and hernia recurrence, despite large defects and highly contamination rates. Complete mesh excision should be strongly considered.

14. Effect of Posterior Rectus Sheath Closure on Outcomes of Enhanced Total Extraperitoneal Ventral Hernia Repair

D Halpern, J Pan, T Brasileiro Silva Pacheco, K Cordero, D Halpern
New York University Long Island School of Medicine

Background: The enhanced total extraperitoneal (eTEP) approach to retro rectus ventral hernia repair (VHR) that has gained popularity in abdominal wall reconstruction [1]. Success of VHR is quantified both by recurrence, and the impact of hernia repair on the patient's quality of life (QoL) [2]. Midline bulge after hernia repair using the eTEP retro rectus technique has been well described [3], and it has demonstrated a decrease in patient QoL as measured by the HerQLes [4]. In our prior studies, we demonstrated that over one-fifth (22%) of patients that undergo eTEP retro rectus repair may experience a midline bulge, which presents as a diastasis on physical exam without evidence of diastasis or hernia recurrence on CT imaging [5,6]. The effect of posterior sheath closure on midline bulge after eTEP hernia repair has not been well described. Closure of the posterior sheath changes the shape of the retro rectus space, which we believe may impact diastasis after repair. We aimed to investigate the effect of posterior sheath closure upon the distance between semilunar lines and its resultant effect on postoperative midline bulge.

Methods: All patients underwent robotic eTEP retro rectus midline VHR with closure of the posterior rectus sheath. Intraoperatively, the width between the semilunar lines was measured and recorded before hernia defect closure, after closure of the anterior fascia (hernia defect), and after posterior rectus sheath closure. The mean differences between the semilunar lines before defect closure, after anterior fascial closure, and after posterior sheath closure were then analyzed. Diastasis and recurrence were also measured post-operatively.

Results: Twenty-three patients were included in the analysis. Mean patient age was 63.7 years old. 70% were male and 30% were female. The average BMI was 32. The average mesh length was 33.2cm [range 28-40cm]. The average mesh width was 16cm. Mean mesh area was 1,664.7cm2.

Hernia defect widths ranged from 2-10cm, with an average of 4.5cm. Hernia defect length ranged from 5.5cm-25cm with a mean of 12.1cm.

The mean distance between the semilunar lines before defect closure was 22.5cm. The mean width between semilunar lines after anterior closure was 20.4cm. After posterior rectus sheath closure, the mean distance between the semilunar lines was 17.2cm. The mean distance between semilunar lines decreased 5.56cm with both anterior closure (2.23cm) and posterior rectus sheath closure (3.33cm).

Average length of stay was 10.8 hours [range 6-28 hours]. There were no readmissions or hernia recurrences. Surgical site occurrence (SSO) was 8.7% (N&#3f2), There were no SSI or SSOPI. Post-operative bulging/ clinical diastasis occurred in 17% (N&#3f4) of patients. Average follow-up was 127 days.

Conclusion: Closing the anterior fascia without PRS closure decreases the distance between semilunar lines by 2.23cm. Closing the posterior sheath decreases the intraoperative width between the semilunar lines by an additional 3.33 cm. This allows for less width for mesh underlay but seems to have no effect on hernia recurrence and demonstrates a questionable trend toward a decrease in development of postoperative midline bulge (22% to 17%).

Table 1. Summary of Demographics, Operative Data, and Hernia Characteristics

	Characteristics	N = 23[1]
Demographics	**Age**	63.7 (8.6)
	Race	
	Hispanic	1 / 23 (4.3%)
	White	22 / 23 (96%)
	Gender	
	Female	7 / 23 (30%)
	Male	16 / 23 (70%)
	Body Mass Index (kg/m²)	32.0 (5.5)
	Smoking Status	
	Yes	2 / 23 (8.7%)
	Former	8 / 23 (35%)
	Never	13 / 23 (57%)
	Chronic Obstructive Pulmonary Disease	2 / 23 (8.7%)
	Hypertension	12 / 23 (52%)
	Diabetes	6 / 23 (26%)
	Immunosuppression	4 / 23 (17%)
	ASA Class	
	2	10 / 22 (45%)
	3	12 / 22 (55%)
	(Missing)	1
Operative	**Surgical Procedure**	
	RRRbilateTEP	20 / 23 (87%)
	RRRbilateTEP+(IHR)	1 / 23 (4.3%)
	RRRbilateTEP+(meshremovipom)	1 / 23 (4.3%)
	RRRbilateTEP+(RIHR)	1 / 23 (4.3%)
	Posterior RS Closure	
	Yes	23 / 23 (100%)
	Mesh Used	
	Yes	23 / 23 (100%)
	Mesh Size Length (cm)	33.2 (3.2)
	Mesh Size Width (cm)	16.0 (2.5)
	Mesh Area (cm²)	1,664.7 (318.3)
	Mesh Fixation	21 / 23 (91%)
	JP Drain Placement	15 / 23 (65%)
Hernia Characteristics	**Pre-Op Diastasis (Y/N)**	22 / 23 (96%)
	Measure of Pre-Op Diastasis	4.8 (1.4)
	(Missing)	6
	Clinical Post-Op Bulge/Diastasis (Y/N)	
	No	19 / 23 (83%)
	Yes	4 / 23 (17%)
	Hernia Grade	
	1	2 / 23 (8.7%)
	2	21 / 23 (91%)
	Hernia Defect Width (cm)	4.52 (1.99)
	Hernia Defect Length (cm)	12.1 (5.4)

[1]Mean (SD); n (%)

Table 2.	Semiluner Line Width					
	Before Closure (cm)	After Anterior Closure (cm)	Change After Anterior Closure (cm)	After Posterior Sheath Closure (cm)	Change After Posterior Closure (cm)	Change After Anterior and Posterior Closure (cm)
	26	22	4	19	3	7
	19	18.5	0.5	14	4.5	5
	18	17	1	14	3	4
	24	20	4	16	4	8
	23	21	2	17	4	6
	22	17	5	15	2	7
	22	19	3	14	5	8
	17	15	2	12	3	5
	21	19	2	15	4	6
	21.5	20	1.5	18	2	3.5
	26	24	2	21	3	5
	26	23.5	2.5	22	1.5	4
	21	21	0	18	3	3
	30	27	3	22	5	8
	21	20	1	17	3	4
Mean	22.5	20.26666667	2.233333333	16.93333333	3.333333333	5.566666667

Table 3. Postoperative Outcomes (30 Days)

	N = 23[1]
Length of Stay (Hours)	10.8 (6.5)
Follow Up (Months)	3.3 (3.31)
Readmission	
No	23 / 23 (100%)
Recurrence	
No	23 / 23 (100%)
Surgical Site Occurrence (SSO)	
No	21 / 23 (91%)
Yes	2 / 23 (8.7%)
Post-Op Diastasis Clinical	
No	19/23 (83%)
Yes	4/23 (17%)
Surgical Site Infection (SSI)	
No	23 / 23 (100%)
Surgical Site Occurrence Requiring Intervention (SSOPI)	
No	23 / 23 (100%)
Clavien-Dindo Classification	
0	22 / 23 (96%)
I	1 / 23 (4.3%)
[1]Mean (SD); n (%)	

15. Multidisciplinary Geriatric and Abdominal Wall Reconstruction Clinic Optimizes Outcomes of Older Patients to Young Patients: Propensity Matched Study

A Holland, W Lorenz, H Wilson, S Kerr, A Wiley, G Scarola, M Devane, V Augenstein, BT Heniford
Atrium Health Carolinas Medical Center

Background: Like obesity, diabetes, and tobacco use, advanced age is associated with higher risk for postoperative complications and increased length-of-stay (LOS) after abdominal wall reconstruction (AWR). Although age is not conventionally considered a modifiable risk factor, integrating Geriatric Medicine into a multidisciplinary AWR clinic aimed to optimize geriatric patients prior to AWR and improve short-term outcomes.

Methods: A prospectively maintained database from a tertiary hernia center was queried for patients 65 and older who saw a Geriatrician in the multidisciplinary AWR clinic prior to open AWR between 7/2020-8/2024. Optimized geriatric patients were matched to patients younger than 65 on procedure year, ASA score, BMI, and hernia defect size, as well as exact matches on tobacco use, CDC wound classification, primary or recurrent hernia, and repair technique. Preoperative characteristics, intraoperative details, and postoperative medical and surgical outcomes between optimized geriatric patients and younger patients were compared.

Results: A total of 100 pairs were matched. Average age of the geriatric cohort was 73.0±5.0 years compared to 49.5±7.7 years for the younger group (p0.99), CDC clean wounds (77.0% vs. 77.0%; p>0.99), and recurrent hernias (54.0% vs. 54.0%; p>0.99). There were no statistical differences between the geriatric and younger patients' match criteria, except BMI (29.0±4.7kg/m2 vs. 31.7±6.2kg/m2; p< 0.01. Geriatric patients were more comorbid with higher rates of COPD (12.0% vs. 0.0%; p< 0.01), steroid use (14.0% vs. 5.0%; p=0.03), and mean number of comorbidities (5.1±2.5 vs. 4.0±2.5; p< 0.01). Hernia complexity was similar between groups as exhibited by biologic mesh use (16.0% vs. 25.0%; p=0.29), preperitoneal mesh placement (86.0% vs. 99.0%; p=0.19), fascial defect closure (94.0% vs. 99.0%; p=0.12), and component separation (37.0% vs. 51.0%; p=0.05).

Postoperatively, geriatric patients had shorter average LOS (4.9±5.4 vs. 5.8±6.7 days; p0.99), sepsis (0.0% vs. 1.0%; p>0.99), myocardial infarction (5.0% vs. 2.0%; p=0.28), ICU admission (5.0% vs. 2.0%; p=0.45), and reintubation for respiratory failure (2.0% vs. 0.0%; p=0.50). Rates of wound complications (14.0% vs. 19.0%; p=0.34), reoperation (4.0% vs. 9.0%; p=0.25), and readmission (6.0% vs. 8.0%; p=0.58), and were not statistically different between the geriatric and younger patients. Total hospital charges adjusted for inflation were comparable between the optimized geriatric patients and younger cohort ($108,333±90,080 vs. $92,119±53,818; p=0.14).

Conclusion: A comprehensive geriatric assessment integrated into a multidisciplinary AWR clinic preoperatively optimized older patients before OVHR. Although total hospital charges were slightly higher in the geriatric group, a reduction in wound complications, reoperations, and readmissions may offset these costs, supporting the cost-effectiveness of preoperative geriatric optimization. This preoptimization improved both short-term medical and surgical outcomes in geriatric patients and were comparable to healthier patients who were greater than 20 years younger.

16. Beyond the Tear: Heterotrophic Ossification Following Adductor Longus Tears

A De la Fuente Hagopian, S Cervantes Valadez, M Nungesser, A Echo
Houston Methodist Hospital

Background: Heterotopic ossification (HO) is a condition characterized by the formation of mature bone tissue in extra-skeletal soft tissues. Adductor longus tears are common injuries, particularly in sports that require sudden changes in direction. Heterotopic ossification in the adductor longus muscle is a recognized, although relatively uncommon, complication following avulsion injuries. Literature suggests HO is associated with chronic injuries secondary to trauma. This report aims to identify factors leading to HO in patients with adductor longus tears.

Methods: We conducted a 4-year retrospective review of 132 patients diagnosed with adductor longus tears who ultimately underwent surgery for definite treatment.

Patients with confirmed adductor longus tears independent of their etiology and temporality were included. Patients with other musculoskeletal conditions or prior groin surgeries were excluded.

Data collected included patient demographics, mechanism of injury, time to diagnosis, treatment modalities (conservative vs. surgical), and functional outcomes, including return to sport time, and pain scores using a visual analog scale (VAS) postoperatively. We utilized Magnetic Resonance to confirm diagnosis.

Results: Of the 132 patients included in this study 87 (66%) patients had a partial adductor longus tear and 45 (34%) presented to clinic with a complete adductor longus tear. We considered chronic muscular trauma when initial symptoms were >6 months prior to first consult. Conservative management, including rest, physiotherapy, and non-steroidal anti-inflammatory drugs (NSAIDs), was initially employed in all cases.

However, all patients ultimately underwent surgical excision due to persistent pain, functional impairment, and failure to return to sport. Patients who underwent surgery demonstrated significantly improved VAS pain scores and range of motion at 6 months post-operatively compared to those managed conservatively.

From the 45 patients with complete tears 10 (22%) were found to have HO and confirmed preoperatively by MRI, out of this subgroup, 6 patients had acute injuries (6 months). None of the patients with partial avulsions were found to have HO regardless of temporality.

Conclusion: Our findings suggest that HO formation in adductor tears may be a consequence of complete avulsions independent of temporality of the injury. Surgical excision provides significant functional improvement and pain relief in these patients.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17. Patient-Reported Urinary Incontinence Before and After Transversus Abdominus Release: Early Results from a Clinical Quality Assurance Initiative

A Prabhu, W Bennett, A Carvalho, K Woo, D Remulla, J Castano, K Miles, B Miller, L Beffa, D Krpata, C Petro
Cleveland Clinic Foundation

Background: Abdominal wall reconstruction (AWR) with transversus abdominus release (TAR) is a hernia repair technique for large ventral defect closure, notable for the dissection and union of multiple potential spaces to allow implantation of large mesh prostheses. A frequent operative step is extension of retromuscular dissection into the prevesical space. Violation of this plane could adversely impact post-operative continence, which has been demonstrated in urologic literature. No data yet characterize urinary incontinence following TAR. In response to patient questions regarding post-operative urinary incontinence and to enhance shared decision-making discussions, this quality assurance/quality improvement (QA/QI) initiative sought to characterize aggregate rates of pre- and post-operative urinary incontinence for patients undergoing TAR in our practice.

Methods: In this QA/QI initiative at a high-volume AWR practice, all outpatient clinic patients who previously underwent AWR with TAR or who were consented for AWR with TAR were given the Urinary Distress Inventory Short-Form (UDI-6) as part of standard practice starting January 2025. Strict adherence to institutional regulations for QA/QI practices required that no identifiable data were maintained outside of the medical record, nor were data sought for research purposes. In addition to medical record documentation, a deidentified QA record including only gender, age, pre-/post-operative status, and UDI-6 responses was maintained. Age was rounded to the nearest even year to ensure deidentification. Urinary incontinence was defined as a UDI-6 score >/=33.3, consistent with prior literature. Simple descriptive statistics were generated for patient characteristics and aggregate rates of pre- and post-operative incontinence were compared via chi-square test and students t test, as appropriate; alpha set at 0.05.

Results: A total 97 surveys were recorded in the QA record. Median approximate age was 62 years (IQR 53, 70), most records were from female patients (60.4%), most surveys were from the preoperative period (59.75%, n=58), and there were no differences in age or gender between groups. Overall, the median UDI-6 score was 16.7% (IQR 5.5%, 33.3%) and 26.8% of responses indicated urinary incontinence. The preoperative rate of urinary incontinence of 36.2% was statistically greater than the 15.4% rate observed in postoperative patients (p=0.0284), with an odds ratio of 3.039 (95% CI 2.739, 8.394). The median preoperative score was 19.44 (IQR 5.56, 40.28) and the median postoperative score was 11.11 (IQR 5.56, 27.78), these were not statistically different (p=0.0983).

Conclusion: These early results from a QA/QI initiative are suggestive against the hypothesized adverse effect of AWR with TAR on urinary incontinence following retropubic dissection. The data, however, are limited by a small sample size and the constraints of non-research QA/QI projects which prohibit the collection of identifiable data or systematic research practices. These

results should be considered with larger sample sizes and within the context of formal, prospective research methodology.

18. New Insights on the Subxiphoid Anatomy: Implications for Abdominal Wall Reconstruction

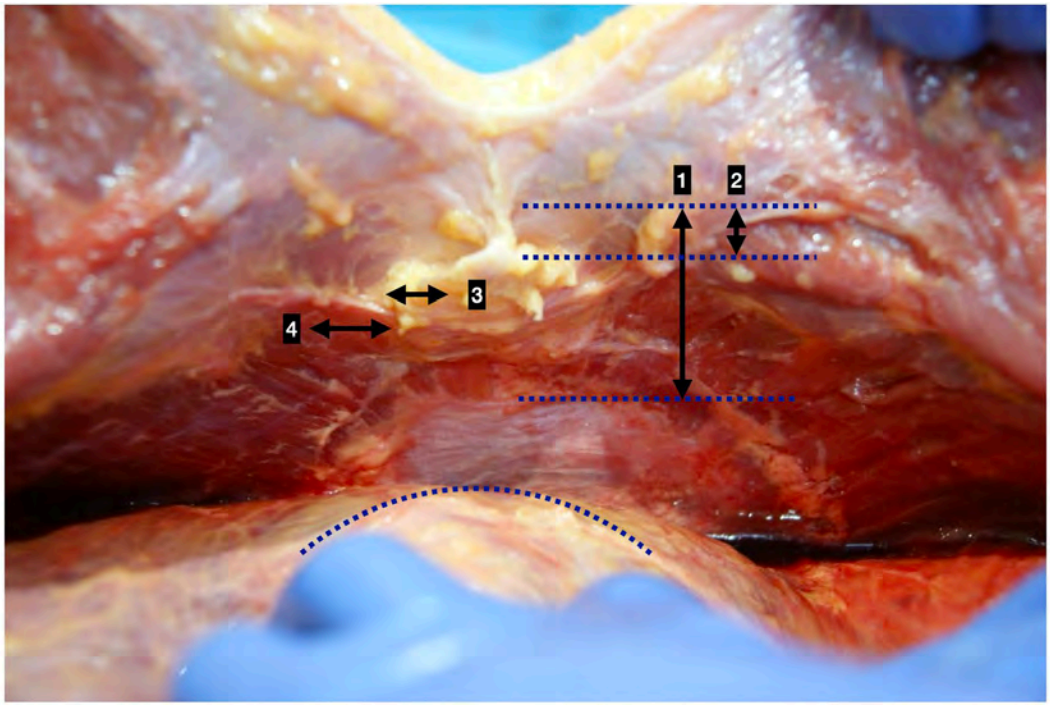
MA Garcia-Urena, D Lourie, J Lopez-Monclus, LA Blazquez, U Dietz, A Robin, M Medina, JP Garcia-Hernandez, J Munoz-Rodriguez, L Roman, S Morejon
Hospital Universitario del Henares, Universidad Francisco de Vitoria

Background: A precise understanding of the subxiphoid anatomy is critical for the safe cranial extension of preperitoneal and retromuscular dissections in complex abdominal wall reconstruction. However, traditional anatomical descriptions often fail to provide a comprehensive view of this region, leading to potential surgical challenges and complications. This study aims to redefine the subxiphoid anatomy and propose a standardized dissection technique to optimize surgical outcomes.

Methods: A prospective observational study was conducted on 34 fresh-frozen cadaveric torsos. Dissections were performed to evaluate the diaphragmatic insertions, fascial layers, and vascular structures of the subxiphoid region (figures). Additional anatomical assessments were carried out in four specimens through en bloc resection of the anterior thoracoabdominal wall and mediastinal dissections. Measurements of key anatomical structures were recorded (figure), and a systematic approach to subxiphoid dissection was developed.

Results: A previously underappreciated set of diaphragmatic fibers (pars abdominalis) was consistently observed inserting into the posterior rectus sheath, forming a myoaponeurotic anterior arch (Phoenix sign). The transversalis fascia was found to continue into the fascia diaphragmatis, facilitating preperitoneal dissection. Preserving a fatty ball attached to the xiphoid proved essential to preventing injury to the pars abdominalis. Additionally, transitioning from a retromuscular to a preperitoneal plane through a horizontal incision 6 cm below the xiphoid minimized diaphragmatic fiber disruption.

Conclusion: The subxiphoid region contains a complex yet consistent anatomical framework crucial for safe retromuscular and preperitoneal dissections. Recognizing and preserving key anatomical structures, such as the pars abdominalis and the fatty epigastric rhomboid, may help reduce surgical complications and optimize reconstructive outcomes. Our findings provide a refined anatomical basis for improving subxiphoid surgical techniques, particularly in the context of robotic and laparoscopic approaches.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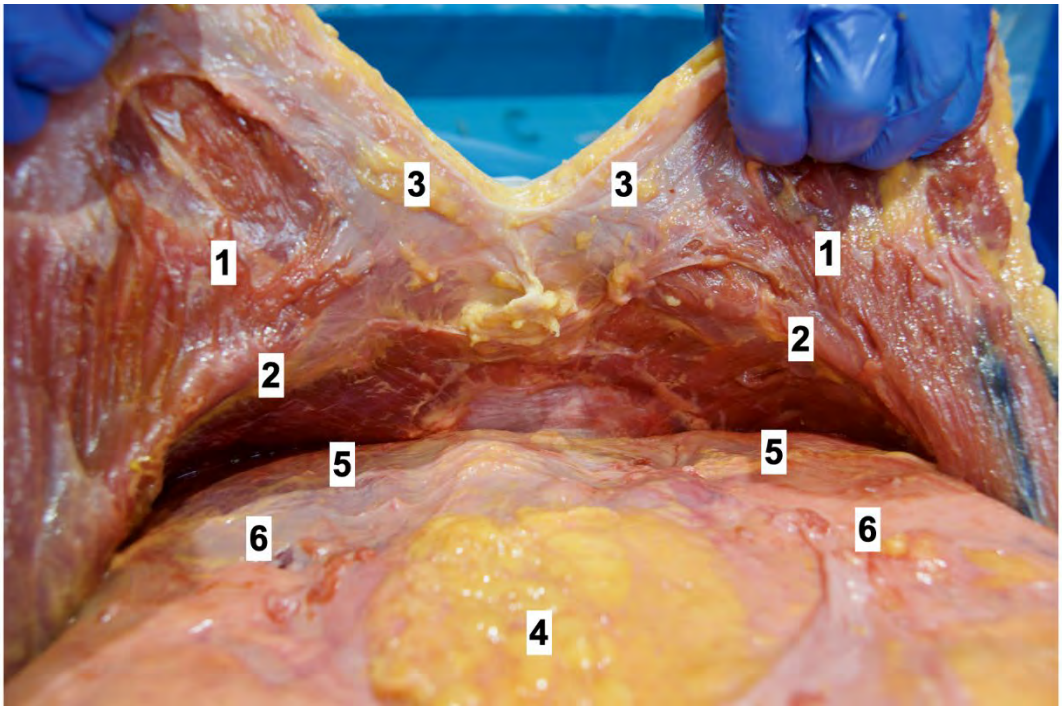
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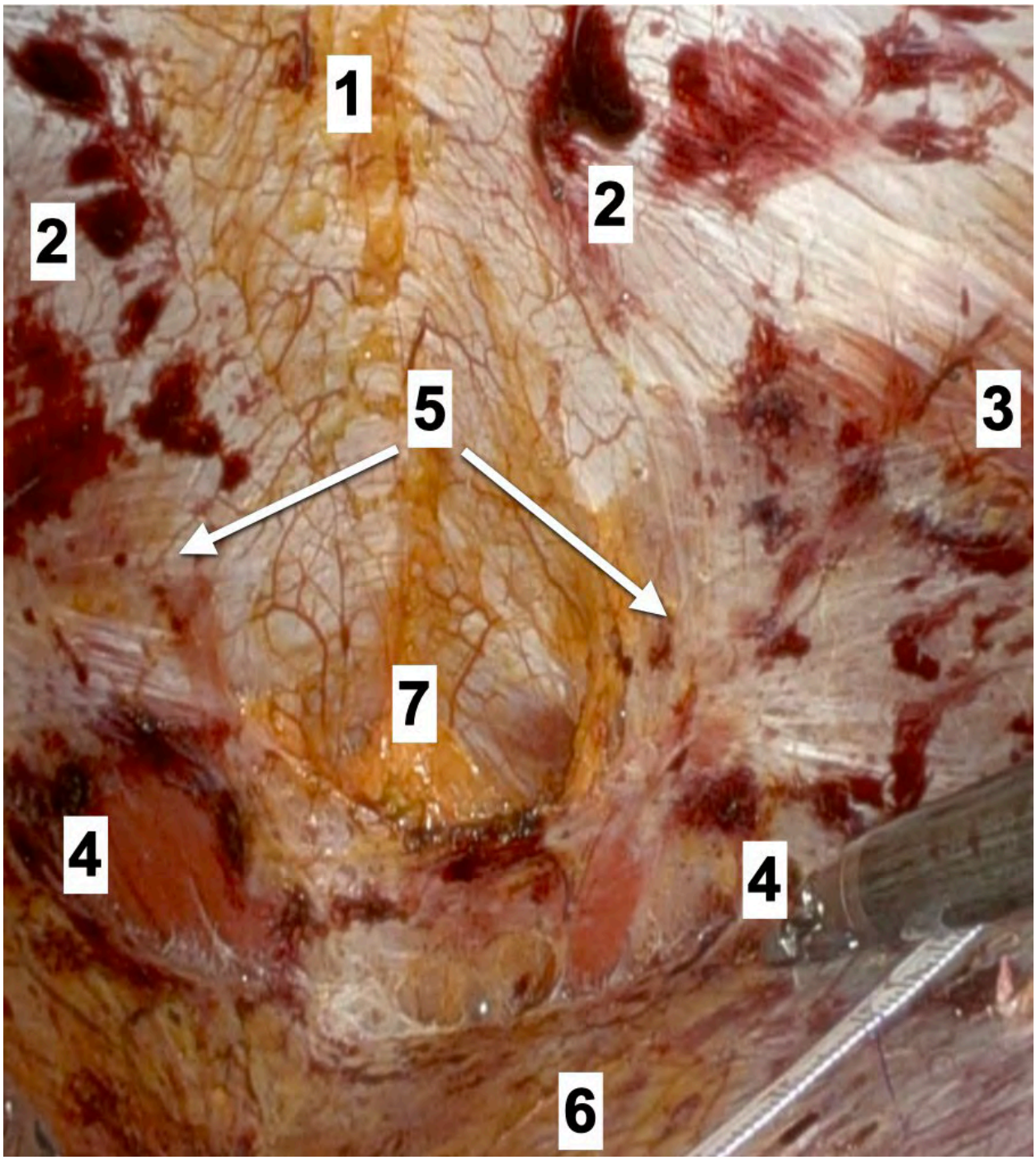
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19. AI Revolution in Advanced Hernia Surgery: Transforming Surgical Workflow and Clinical Excellence

A Bawa, A Virk, A Tickoo, H Chahal, A Singh
Dayanand Medical College and Hospital

Background: Artificial intelligence (AI) is revolutionizing modern surgery by providing novel possibilities for enhancing patient care, surgical planning, and operative procedures.[1] In advanced hernia surgery and abdominal wall reconstruction, the increasing complexity of cases necessitates intelligent systems to optimize surgical workflows.[2] This abstract presents a next-generation framework for AI integration into hernia surgical practice, based on a pilot implementation in our high-volume surgical care unit where both complex and elective hernia surgeries are routinely performed.

Methods: Our framework identifies five critical domains where AI demonstrates transformative potential:
Intelligent Clinical Documentation: Advanced natural language processing systems achieve 85-93% accuracy in extracting clinical data from surgical documents, transforming surgical conversations into comprehensive notes while potentially restoring 12-15 hours of surgeon time weekly. O'Brien's systems effectively identify early signs of postoperative complications through automated surgical note analysis[3].
Precision Consent Process: Multimodal AI platforms generate personalized risk assessments incorporating patient-specific anatomical visualizations and comorbidity profiles. This elevates informed consent from a legal formality to a meaningful shared decision-making process, particularly valuable for complex hernia cases with multiple surgical approaches.
Augmented Differential Diagnosis: AI algorithms automatically detect hernia characteristics, measure defect dimensions, and assess tissue quality—transforming planning for complex ventral hernia repairs where traditional imaging interpretation leaves critical variables undefined.
Enhanced Surgical Planning: Our approach incorporates iPad-based image annotation for preoperative planning, allowing surgeons to digitally annotate, measure, and mark key anatomical structures and planned intervention areas. This digital approach integrates with our workflow while providing superior visualization compared to traditional methods. Research shows that structured digital planning approaches can significantly improve surgical team communication and procedural efficiency.[7],[8]
Immersive Surgical Education: The NANEP model for umbilical hernia repair demonstrates high accuracy in distinguishing between skill levels, while specialized systems achieve 68.7% accuracy in identifying procedure stages during robotic inguinal hernia repairs.[9],[10] These platforms adapt to individual learning patterns, accelerating the acquisition of technical expertise.

Results: Our pilot implementation integrates cutting-edge generative AI tools (ChatGPT, Claude, Google Gemini) into daily surgical workflows, transforming routine tasks such as clinical documentation, patient education materials, and literature reviews. These continuously-updated AI assistants have fundamentally changed how surgeons in our unit access and process information, enabling rapid generation of structured operative notes, personalized consent documents, and evidence-based treatment rationales. Successful clinical integration

requires: (1) seamless EHR interoperability; (2) interdisciplinary collaboration between surgeons and technical specialists;[11] (3) surgeon-led implementation preserving clinical autonomy; and (4) incremental adoption beginning with documentation and consent processes that offer immediate workflow benefits. Initial experience shows promising improvements in documentation efficiency, preoperative planning accuracy, and trainee skill acquisition, with minimal disruption after the initial implementation phase.

Conclusion: Strategic AI integration represents a paradigm shift in hernia surgery—not through automation that replaces surgical judgment, but through augmentation that enhances surgical capability.[12] Our framework provides a blueprint for implementation that fundamentally transforms surgical workflow while elevating patient care. The time for theoretical discussion has passed; hernia surgeons now have both the opportunity and responsibility to shape AI's application in their specialty through thoughtful clinical implementation.

20. Step-by-Step Reconstruction of a Complex Abdominal Wall Defect in a Contaminated Field: A Safe and Systematic Approach

MA Garcia-Urena, M Medina, J Lopez-Monclus, LA Blazquez, A Robin, J Rodriguez-Munoz, L Roman, A Aviles, M de Luca, P Lopez
Hospital Universitario del Henares, Universidad Francisco de Vitoria

Background: Managing complex abdominal wall defects in a contaminated setting remains a surgical challenge. This video demonstrates a step-by-step approach to reconstructing a large incisional hernia with mesh infection due to an enterocutaneous fistula, using a posterior component separation technique with preperitoneal reinforcement.

Methods: An 84-year-old frail man with a history of open suprapubic prostatectomy, emergency midline laparotomy, and postoperative evisceration treated with an onlay mesh developed a large infected incisional hernia. CT imaging revealed a 15 cm fascial defect with small bowel adherent to the skin and a concomitant right inguinal hernia.

Results: An incision was made along the previous scar, and early opening of the hernia sac allowed controlled adhesiolysis. The infected mesh, integrated into the sac, was carefully dissected using sharp dissection aided by saline infiltration. A fistulous connection between the mesh and a bowel loop was identified and repaired with interrupted absorbable sutures. The infected mesh and affected skin were completely excised.

Once the contamination was controlled, the surgical field was refreshed with antiseptic irrigation, and new instruments and gloves were used. A retrorectus approach was employed, preserving parts of the hernia sac for strategic dissection planes. The posterior rectus sheath was incised bilaterally, and the retrorectus dissection was extended laterally until reaching the neurovascular bundle. Below the arcuate line, the preperitoneal plane was carefully developed to avoid vascular injury. The right inguinal hernia was reduced, and the spermatic cord structures were parietalized.

A Madrid posterior component separation was performed by sequentially incising the posterior rectus sheath while maintaining peritoneal integrity using a controlled lateral release technique. The pretransversalis plane was accessed, extending the dissection up to the chondrocostal border and subxiphoid area while preserving Conze's fatty triangle. The posterior layer, formed by the peritoneum and posterior rectus sheath, was closed with absorbable sutures.
For reinforcement, a 25 x 40 cm reinforced tissue matrix, pre-soaked in gentamicin solution, was tailored in a Stoppa configuration to cover the preperitoneal space and retroinguinal regions. Cooper's ligament sutures were used as the only fixation point. To facilitate midline closure, a fascial traction device was applied for 30 minutes, followed by running closure of the anterior layer. A vertical panniculectomy was performed to optimize wound healing, and a closed vacuum dressing was applied. The patient recovered uneventfully without surgical site occurrences. This video highlights the critical steps in safely managing a contaminated abdominal wall reconstruction while minimizing the risk of infection and optimizing long-term outcomes.

Conclusion: This case demonstrates a systematic approach to complex hernia repair in a contaminated field, incorporating advanced dissection techniques, strategic mesh placement, and intraoperative decision-making to enhance surgical success.

21. Where Have All the Female Surgeons Gone?

B East, K Pospisilova, M Vohlidalova, H Marikova, J Vosmik, R Markova-Volejnockova
Motol University Hospital

Background: Women pursuing a career in surgery face numerous obstacles, many rooted in systemic prejudice and gender bias. A persistent glass ceiling creates an environment dominated by senior male surgeons, structured by and for men, making it challenging for women to thrive. In such a setting, female trainees often lack role models, experience exclusion, and face unequal opportunities for career advancement. Additionally, harassment, discrimination, and unequal pay contribute to their underrepresentation in surgical specialties. Although 75% of medical graduates are women, they constitute only 12% of general surgeons. Alarmingly, 60% of female trainees leave surgical training after maternity leave, and many of those who complete training eventually leave academic hospitals.

This toxic environment does not only harm female surgeons—it also negatively impacts patient care, particularly for female patients. Studies suggest that diverse teams improve clinical outcomes, yet a system that systematically excludes women from leadership and decision-making roles risks reinforcing gender biases in treatment approaches and diminishing the quality of care women receive.

Methods: This mixed-methods study combines qualitative and quantitative sociological research. We conducted in-depth interviews with 20 young doctors to capture their lived experiences during specialist training. Based on these insights, we developed a survey, which was completed by 297 respondents.

Results: Respect & Equal Treatment: Only 20% of female trainees felt they were treated with respect, while 38% reported no perceived difference in treatment based on gender.
Training & Mentorship: Female trainees reported having 50% fewer opportunities to develop competencies, train effectively, or receive mentorship compared to their male colleagues.
Gender Pay Gap: While the majority of male respondents felt adequately compensated, only half of the female trainees shared this view. Even after adjusting for all variables, the gender pay gap reached 16%.

Workplace Harassment: One-third of female trainees reported being the target of sexually inappropriate jokes, and 10% experienced unwanted physical contact from a superior.
Impact on Patient Care: A hostile and exclusionary work environment not only limits the professional development of female surgeons but also negatively affects female patients. Gender-diverse teams have been shown to improve patient outcomes, yet the systematic underrepresentation of women in surgery may lead to biased treatment protocols and gaps in women's healthcare.

Conclusion: Our study highlights a widespread culture of disrespect in surgical training, disproportionately affecting female trainees. The male-dominated leadership structure fosters an environment where gender bias, harassment, and unequal opportunities persist, creating a self-perpetuating cycle in which men with similar attitudes continue to recruit to leadership positions.

This issue extends beyond surgeons—it directly impacts the quality of care female patients receive. An exclusionary, toxic culture limits the voices and perspectives shaping surgical practice, reinforcing gender biases in patient management and clinical decision-making. A cultural shift is urgently needed, yet internal efforts alone are unlikely to drive meaningful change. External interventions—such as policy changes, institutional accountability, and structured mentorship programs—are crucial to breaking this cycle and ensuring both equity for female surgeons and better healthcare outcomes for female patients.

22. Does a Surgeon's Specialty Training Affect Their Repair of Ventral Hernias? An Analysis of 73,000+ Operations in the ACHQC

S Towfigh, I Kim
Beverly Hills Hernia Center

Background: It is well established that ventral hernias may be managed via a variety of surgical approaches. We were interested to determine whether and in what way a surgeon's specialty training influences their surgical approach.

Methods: The Abdominal Core Health Quality Collaborative (ACHQC) was surveyed for adult patients undergoing ventral hernia repairs (VHR) from 2013 to 2023. Surgeon specialties were categorized as Acute Care/Trauma (ACS), General Surgery (GS), and Minimally Invasive Surgery (MIS). Variables analyzed included preoperative characteristics, operative details, and postoperative outcomes. Quality of life was measured via scaled HerQLes score at 30 days and 6 months. Descriptive statistics and proportional analysis were used to compare groups, with significance at $p < 0.05$.

Results: During the 11-year study period, 73,241 VHR were performed, primarily by GS (56.3%), MIS(28.1%), and ACS (15.1%). Most operations were by academically affiliated surgeons; ACS were mostly academic (76.3%), while GS had most private practice (36.1%).
Preoperative characteristics were comparable across groups: average 56.2 years, 53.9% male, and 31.8 kg/m² BMI. ASA classifications III–IV were more common with ACS (52%) than GS (49.9%) or MIS (41.1%, $p < 0.05$). The mean hernia width and length were 5.82cm and 8.24cm, respectively. Mesh was used in 82%. Very large meshes (≥30 cm) were most likely to be used by ACS (10.1%, $p < 0.05$) compared to GS (7.1%) and MIS (4.3%). Operative techniques were nearly identical across the three groups, with open surgery being the most commonly used approach (avg. 63.95%), followed by robotic (25.82%) and laparoscopic techniques (10.22%).
At 30 days, pain at rest improved in 66.3% of patients overall. Pain during activity improved most under MIS surgeons (76.6%, $p < 0.05$) vs. ACS (63.5%) and GS (58.8%). On average, 21.2% of patients reported worsened pain at 30 days. One-year recurrence was highest among ACS patients (16.8%, $p < 0.05$), compared to GS (10.9%) and MIS (11.9%).
Quality-of-life improvements (HerQLes scores) were greatest in ACS patients at 30 days; 43.9% achieved moderate-to-major improvement (score difference ≥20) compared to GS (32.5%) and MIS (27.6%, $p < 0.05$). At 6 months, GS had the most improvement (62.8%, $p < 0.05$), surpassing ACS (55.1%) and MIS (54.6%).

Conclusion: We show that surgical specialty does not significantly affect the types of operations performed. Among surgeons in the ACHQC, baseline demographic and clinical characteristics were similar across surgical specialties. Significant differences emerged in postoperative outcomes, with Acute Care/Trauma surgeons having the greatest short-term quality-of-life improvement but the highest long-term recurrence rates. This may be related to the critical situation of their patient population. Our study implies that with modern surgical training, patients can expect a consistent treatment of their hernia, at least among surgeons with interest in hernias that follow their patients on the ACHQC.

23. Hybrid Versus Robotic Assisted Abdominal Wall Reconstruction: A Single Center's Technique and Outcomes

HH Liu, D Halpern, R Wilson, K Cordero, DK Halpern
New York University Long Island School of Medicine

Background: Robotic transversus abdominis release (roboTAR) has become a standard approach for complex abdominal wall reconstruction. Limitations of the approach include patients with larger hernia defects, patients requiring extensive mesh explantation, or patients requiring scar revision or panniculectomy. These patients usually undergo an open approach to abdominal wall reconstruction. Open TAR is associated with increased wound morbidity, increased cost, and increased hospital length of stay. A novel approach combines the elements of open and robotic surgery to allow for a hybrid approach to transversus abdominis release (hybrid TAR) in selected patients. The hybrid TAR approach has been demonstrated to be a favorable option for the management of large and complex incisional hernia repairs unsuitable for roboTAR. We sought to compare the short-term outcomes of hybrid TAR to roboTAR. We hypothesize that the hybrid approach will replicate similar outcomes to a robotic component separation and hernia repair, despite the added open component.

Methods: A single-center retrospective analysis was conducted of all patients with a primary and recurrent ventral hernia repair by a single surgeon from January 1, 2015 to January 1, 2025. Patients undergoing roboTAR were compared to patients undergoing hybrid TAR. The hybrid technique involves a robotic retro muscular dissection followed by robotic closure of the posterior elements. The robot is then undocked, and a skin incision is made. A hernia mesh is placed, and anterior fascial closure is performed via an open approach. Any redundant skin or hernia sac is resected.

Results: A total of 30 patients were analyzed (13 hybrid TAR vs 17 roboTAR). ASA class 3 patients underwent hybrid repair more often than purely robotic hernia repair (54% vs 35%), without statistical significance. Chronic Obstructive Pulmonary Disease (COPD) was significantly more prevalent in the hybrid group (50%) compared to the robotic group (0%) ($p = 0.011$). All hybrid patients had drains (100%), while only 35% of robotic patients required drains ($p< 0.001$). Hernia defect width was larger in the hybrid group ($\bar{x}$=5.1cm) compared to the robotic group ($\bar{x}$=11.7 cm); $p< 0.03$. Hernia size area was also significantly larger in the hybrid group ($\bar{x}$=262.8cm²) compared to robotic group ($\bar{x}$=177.2cm²); $p=0.059$. Large mesh size (35x22cm to 45x34cm), was more prevalent in the hybrid group than in the robotic group (67% vs 60%), without statistical significance. There was no significant difference in LOS, SSO, SSI, SSOPI, readmission or recurrence at 30-day follow up.

Conclusion: Compared to roboTAR, the width differed significantly for hybrid technique. The combined area did not reach statistical significance, but may indicate possible trend towards difference. There are no significant differences in length of stay (LOS) or complications at the 30-day follow-up, while providing similar or slightly enhanced mesh defect coverage for larger hernia defects.

Table 1. Demographics

Characteristics	Overall, N = 30[1]	Procedure Type: Abdominal Wall Reconstruction		p-value[2]
		Hybrid, N = 13[1]	Robotic, N = 17[1]	
Age	62.6 (11.4)	61.5 (12.4)	63.4 (10.9)	0.56
Race				0.49
Non-White	2 / 30 (6.7%)	0 / 13 (0%)	2 / 17 (12%)	
White	28 / 30 (93%)	13 / 13 (100%)	15 / 17 (88%)	
Gender				0.71
Female	19 / 30 (63%)	9 / 13 (69%)	10 / 17 (59%)	
Male	11 / 30 (37%)	4 / 13 (31%)	7 / 17 (41%)	
Body Mass Index (kg/m^2)	31.6 (7.0)	33.7 (7.1)	30.2 (6.8)	0.14
(Missing)	1	1	0	
Smoking Status				>0.99
Current	5 / 30 (17%)	2 / 13 (15%)	3 / 17 (18%)	
Former	14 / 30 (47%)	6 / 13 (46%)	8 / 17 (47%)	
Never	11 / 30 (37%)	5 / 13 (38%)	6 / 17 (35%)	
Chronic Obstructive Pulmonary Disease	3 / 23 (13%)	3 / 6 (50%)	0 / 17 (0%)	**0.011**
(Missing)	7	7	0	
Hypertension	22 / 30 (73%)	10 / 13 (77%)	12 / 17 (71%)	>0.99
Diabetes	9 / 30 (30%)	5 / 13 (38%)	4 / 17 (24%)	0.44
ASA Class				0.31
2	17 / 30 (57%)	6 / 13 (46%)	11 / 17 (65%)	
3	13 / 30 (43%)	7 / 13 (54%)	6 / 17 (35%)	

[1]Mean (SD); n / N (%);[2]Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test

Table 2. Operative Details

Characteristics	Overall, N = 30[1]	Procedure Type: Abdominal Wall Reconstruction		
		Hybrid, N = 13[1]	Robotic, N = 17[1]	p-value[2]
Mesh				
Yes	30 / 30 (100%)	13 / 13 (100%)	17 / 17 (100%)	
Mesh Size Group[a]				>0.99
Small	6 / 17 (35%)	4 / 12 (33%)	2 / 5 (40%)	
Large	11 / 17 (65%)	8 / 12 (67%)	3 / 5 (60%)	
(Missing)	13	1	12	
Drain	19 / 30 (63%)	13 / 13 (100%)	6 / 17 (35%)	**<0.001**

[1]n / N (%);[2]Fisher's exact test; [a]Mesh Size Group: Small = 25x20 cm to 33x26 cm, Large = 35x22 cm to 45x34 cm

Table 3. Hernia Characteristics

Characteristics	Overall, N = 30[1]	Procedure Type: Abdominal Wall Reconstruction		
		Hybrid, N = 13[1]	Robotic, N = 17[1]	p-value[2]
Hernia Grade				0.90
1	2 / 30 (6.7%)	1 / 13 (7.7%)	1 / 17 (5.9%)	
2	20 / 30 (67%)	8 / 13 (62%)	12 / 17 (71%)	
3	7 / 30 (23%)	4 / 13 (31%)	3 / 17 (18%)	
4	1 / 30 (3.3%)	0 / 13 (0%)	1 / 17 (5.9%)	
Hernia Defect Width	13.2 (3.9)	15.1 (3.8)	11.7 (3.3)	**0.03**
Hernia Defect Length	15.8 (5.0)	16.3 (6.3)	15.5 (3.8)	1.0
Hernia Size Area	214.3 (109.3)	262.8 (142.8)	177.2 (54.5)	0.059

[1]n / N (%); Mean (SD); [2]Fisher's exact test; Wilcoxon rank sum test; Wilcoxon rank sum exact test

Table 4. Postoperative Outcomes

Postoperative Outcomes	Overall, N = 30[1]	Procedure Type: Abdominal Wall Reconstruction		p-value[2]
		Hybrid, N = 13[1]	Robotic, N = 17[1]	
Length of Stay (LOS)				0.48
1	12 / 28 (43%)	3 / 11 (27%)	9 / 17 (53%)	
2	2 / 28 (7.1%)	1 / 11 (9.1%)	1 / 17 (5.9%)	
3	8 / 28 (29%)	3 / 11 (27%)	5 / 17 (29%)	
4	4 / 28 (14%)	2 / 11 (18%)	2 / 17 (12%)	
6	1 / 28 (3.6%)	1 / 11 (9.1%)	0 / 17 (0%)	
7	1 / 28 (3.6%)	1 / 11 (9.1%)	0 / 17 (0%)	
(Missing)	2	2	0	
Readmission				
No	29 / 29 (100%)	12 / 12 (100%)	17 / 17 (100%)	
(Missing)	1	1	0	
Reoperation				
No	30 / 30 (100%)	13 / 13 (100%)	17 / 17 (100%)	
Recurrence				
No	30 / 30 (100%)	13 / 13 (100%)	17 / 17 (100%)	
Surgical Site Occurrence (SSO)	3 / 30 (10%)	2 / 13 (15%)	1 / 17 (5.9%)	0.56
Surgical Site Infection (SSI)				
No	30 / 30 (100%)	13 / 13 (100%)	17 / 17 (100%)	
SSO Requiring Procedural Intervention (SSOPI)				
No	30 / 30 (100%)	13 / 13 (100%)	17 / 17 (100%)	
Clavien-Dindo Complication Grade				0.56
0	27 / 30 (90%)	11 / 13 (85%)	16 / 17 (94%)	
I	3 / 30 (10%)	2 / 13 (15%)	1 / 17 (5.9%)	

[1]n / N (%)

[2]Fisher's exact test

24. Anxiety and Depression Effect on Inguinal and Ventral Hernia Repair Outcomes

S McCarthy, M Mostellar, V Heh, S Mazzola Poli de Figueiredo
University of North Carolina

Background: There is a steady rise in mental health disorders within the United States, the two most common being anxiety and depression. Given this rise, it is becoming more common for these disorders to be present in surgical patients. Depression and anxiety's effect on surgical outcomes has been previously studied across other surgical specialties but few regarding abdominal wall surgery. Particularly, no studies have shown the effect of these comorbidities in patient reported outcomes (PROs), which are increasingly being utilized in outcomes research as well as primary outcomes in randomized controlled trials. In this study, we investigated whether anxiety and depression can influence postoperative complications, particularly PROs, in patients undergoing ventral and inguinal hernia repairs.

Methods: Patients who have undergone ventral and inguinal hernia repairs with 30-day follow up available were identified within the Abdominal Core Health Quality Collaborative. Using a 1:2 propensity score algorithm, patients without mental health disorders were matched with a cohort of patients with anxiety or depression undergoing inguinal and ventral hernia repair. The groups were matched based on confounders (age, sex, ethnicity, BMI, ASA class, nicotine use, opioid use, and functional status). Postoperative outcomes and patient reported outcomes (PROs) including HerQLes, PROMIS and EuraHS scores were analyzed.

Results: There were 4059 patients undergoing ventral hernia repair and 2605 patients undergoing inguinal hernia repair, of which 1585 (35.3%) and 884 (33.9%) had diagnosis of depression and anxiety respectively. The only statistically significant difference in post operative outcomes between the control and anxiety and depression groups was less surgical site occurrences requiring procedural intervention (SSOPI) in the control group within the ventral hernia repair group(3.6% vs 4.9%, p=0.039).
Overall, our study found worse PROs in patients with depression and anxiety compared to the control group. Within the ventral hernia group, HerQLes quality of life scores were higher at baseline and 30 days when comparing the control vs depression and anxiety group (44.2 vs 38.3, p=0.0011; 61.7 vs 58.3, p=0.0292 respectively). PROMIS pain T scores were lower at baseline and 30 days when comparing control vs depression and anxiety group (46.3 vs 49.4, p< 0.0001; 46.3 vs 43.5 p=0.0004).
For inguinal hernias, EuraHS QoL score for pain and restriction were lower in the control vs depression and anxiety groups at baseline (7 vs 9, p=0.0099; 12 vs 15, p=0.0239). At 30 days, EuraHS QoL score was also lower for the control group for pain (3 vs 4; p=0.0171) and overall quality of life (13 vs 15, p=0.018).

Conclusion: This is the first study to show that depression and anxiety are associated with worse PROs in patients undergoing ventral and inguinal hernia repair. There were worse PROs within the anxiety and depression group compared to control for both hernia types. It is important to take this into consideration when evaluating PROs in patients with these comorbidities and control for anxiety and depression when analyzing PROs in future studies.

Table1: Depression or Anxiety in matched cohort for Ventral Hernia Repair Outcomes					
		Overall N=4509	Depression or Anxiety N=1585	Control N=2924	P-Value
HerQLes score at baseline.		41.7	38.3	44.2	**0.0011**
HerQLes score at 30-days.		60	58.3	61.7	**0.0292**
PROMIS pain T score at baseline.		46.3	49.4	46.3	**<.0001**
PROMIS pain T score at 30 days		46.3	46.3	43.5	**0.0004**
30-day SSI	No	4341 (96.3%)	1515 (95.6%)	2826 (96.6%)	0.0715
	Yes	168 (3.7%)	70 (4.4%)	98 (3.4%)	
30-day SSO or SSI requiring procedural intervention	No	4327 (96.0%)	1508 (95.1%)	2819 (96.4%)	**0.039**
	Yes	182 (4.0%)	77 (4.9%)	105 (3.6%)	

Table 2: Depression or Anxiety in matched cohort for Inguinal Hernia Repair Outcomes					
	N	Overall N=2605	Depression or Anxiety N=884	Control N=1721	P-Value
EuraHS QoL score for pain at baseline	1377	8 (3, 14)	9 (4, 15)	7 (3, 14)	**0.0099**
EuraHS QoL score for restriction at baseline	1360	13 (4, 25)	15.0 (4.0, 27.0)	12.0 (3.0, 24.0)	**0.0239**
EuraHS QoL score for esthetical at baseline	1374	8 (3, 11)	8 (3, 12)	8 (3, 11)	0.3808
EuraHS overall QoL score at baseline	1377	28 (15, 47)	31.0 (16.0, 50.0)	27.0 (15.0, 45.0)	**0.0121**
EuraHS QoL score for pain at 30-days	1640	3 (1, 7)	4 (1, 8)	3 (0, 7)	**0.0171**
EuraHS QoL score for restriction at 30-days	1602	5 (0, 18)	6 (0, 20)	4 (0, 16)	0.071
EuraHS QoL score for esthetical at 30-days	1639	3 (0, 8)	3 (0, 8)	2 (0, 7)	0.3136
EuraHS overall QoL score at 30-days	1641	13.7 (4.7, 30)	15.0 (5.0, 33.8)	13.0 (4.0, 28.0)	**0.018**

Legend	
EuraHS	European Hernia Society Quality of Life scores. [Lower number indicates higher quality of life]
HerQLes	Hernia-Related Quality of Life Survey. [Higher number indicates higher quality of life]
PROMIS pain T score	Patient-Reported Outcomes Measurement Information System Pain Score. [Lower number indicates higher quality of life]
QoL	Quality of Life
PRO	Patient Reported Outcome.
SSO	Surgical Site Occurrence. [Any complication following surgery]
SSI	Surgical Site Infection. [Wound infection complication]

25. Is Mesh Fixation Necessary in Retromuscular Ventral Hernia Repair? A Meta-Analysis

S Mazzola Poli de Figueiredo, C Theis, N Christodoulou, V Andrade Nunes, P Marcolin, A Graziani e Sousa
University of North Carolina

Background: Retromuscular ventral hernia repair (RVHR) is a well established and increasingly popular technique for mesh placement, offering favorable recurrence and complication rates. However, the role of mesh fixation in RVHR remains unclear, as some have questioned its effect on reducing recurrence and could potentially increase postoperative pain. We performed a systematic review and meta-analysis to compare outcomes of RVHR with and without mesh fixation.

Methods: PubMed, Scopus, and the Cochrane Library were systematically searched through February 2025 for studies comparing mesh fixation versus non-fixation in RVHR. Primary outcomes were hernia recurrence and postoperative pain. Secondary outcomes included surgical site infection (SSI), seroma, hematoma, reoperation operative time, length of hospital stay, and quality of life. Risk of bias was assessed using RoB-2 and ROBINS-I tools. Meta-analyses were conducted using random-effects models in R Studio. PROSPERO registration ID CRD420250654686, registered February 2025.

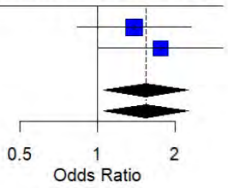
Results: From 761 records identified, three studies met inclusion criteria, totaling 1571 patients (1084 with fixation, 487 without). We found no significant difference in recurrence at 30 days (OR 1.27; 95% CI 0.16–9.88; p = 0.97) or 1 year (OR 1.06; 95% CI 0.65–1.72; p = 0.82). Early postoperative pain was significantly higher in the fixation group (OR 1.54; 95% CI 1.06–2.24; p = 0.02), though differences resolved by 3 months. Hematoma was also more frequent with fixation (OR 5.18; 95% CI 1.18–22.68; p = 0.03). There were no significant differences in SSI (OR 1.62; p = 0.18), seroma (OR 0.79; p = 0.37), or reoperation (OR 0.53; p = 0.11). Likewise, operative time, length of hospital stay, and quality of life survey, showed no relevant differences between groups.

Conclusion: Our systematic review and meta-analysis identified no difference in recurrence, SSI, or long term outcomes between mesh fixation and non-fixation in RVHR. However, fixation was associated with increased early postoperative pain and a higher risk of hematoma. These findings support a selective rather than routine use of mesh fixation in RVHR.

Postoperative Pain – Forest Plot (Fixation vs No Fixation)

Study	Experimental Events (Fix)	Experimental Total (Fix)	Control Events (No Fix)	Control Total (No Fix)	OR	95%-CI	Weight
ETEMAD, 2020	81	897	20	299	1.38	[0.83; 2.30]	54.7%
ELLIS, 2023	39	162	25	163	1.75	[1.00; 3.06]	45.3%
Total (common effect, 95% CI)		**1059**		**462**	**1.54**	**[1.06; 2.24]**	.
Total (random effect, 95% CI)					**1.54**	**[1.06; 2.24]**	**100.0%**

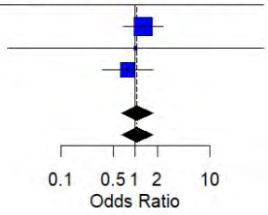
Heterogeneity: $Tau^2 = 0$; $Chi^2 = 0.37$, df = 1 (P = 0.5428); $I^2 = 0.0\%$



RECURRENCE IN 1 YEAR

Study	Experimental Events (Fix)	Experimental Total (Fix)	Control Events (No Fix)	Control Total (No Fix)	OR	95%-CI	Weight
ETEMAD, 2020	49	897	13	299	1.27	[0.68; 2.38]	60.6%
BUENO-LLEDO, 2017	0	25	0	25	1.00	[0.02; 52.36]	1.5%
ELLIS, 2023	12	162	15	163	0.79	[0.36; 1.74]	37.8%
Total (common effect, 95% CI)		**1084**		**487**	**1.06**	**[0.65; 1.72]**	.
Total (random effect, 95% CI)					**1.06**	**[0.65; 1.72]**	**100.0%**

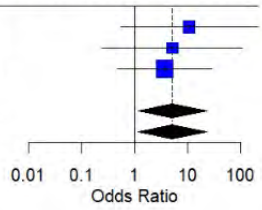
Heterogeneity: $Tau^2 = 0$; $Chi^2 = 0.86$, df = 2 (P = 0.6517); $I^2 = 0.0\%$



Hematoma – Forest Plot (Fixation vs No Fixation)

Study	Experimental Events (Fix)	Experimental Total (Fix)	Control Events (No Fix)	Control Total (No Fix)	OR	95%-CI	Weight
BUENO-LLEDO, 2017	4	25	0	25	10.67	[0.54; 209.64]	24.6%
ELLIS, 2023	2	162	0	163	5.09	[0.24; 106.92]	23.5%
ETEMAD, 2020	11	897	1	299	3.70	[0.48; 28.78]	51.8%
Total (common effect, 95% CI)		**1084**		**487**	**5.18**	**[1.18; 22.68]**	.
Total (random effect, 95% CI)					**5.18**	**[1.18; 22.68]**	**100.0%**

Heterogeneity: $Tau^2 = 0$; $Chi^2 = 0.33$, df = 2 (P = 0.8479); $I^2 = 0.0\%$



26. Multi-Institutional Outcomes following Novel Technique: Transabdominal Preperitoneal Ventral Hernia Repair with Rectus Aponeuroplasty (TAPPRA)

VC Nikolian, SL Kalmeta, ME Bosley, G Salgado-Garza, R Prymak, AD Parmar, A Shmelev
Oregon Health & Science University

Background: While minimally invasive abdominal wall reconstruction is still in the early stages of adoption, the transabdominal pre-peritoneal (TAPP) ventral hernia repair has become a common procedure among surgeons. The TAPP approach offers advantages including defect closure, extraperitoneal mesh, and minimal need for penetrating mesh fixation. In the setting of large defects, many surgeons instead elect to utilize a retromuscular approach with myofascial advancement flaps to relieve tension on anterior fascial closure. The concept of a robotic transabdominal pre-peritoneal repair with concurrent rectus aponeuroplasty (TAPPRA) has been introduced as an opportunity to offload tension, utilize extraperitoneal mesh placement, and close larger defects while primarily preserving the retromuscular plane.

Methods: This is a retrospective multi-institution cohort study that includes patients who underwent TAPPRA repair between November 2023 and January 2025. Patient demographics and comorbidities, intraoperative hernia characteristics, mesh characteristics, and post operative outcomes were evaluated. Descriptive statistics were used to assess outcomes.

Results: Forty-one patients underwent TAPPRA approach for incisional and/or recurrent ventral hernias across three academic hernia centers. The median case duration was 173 min with no significant intraoperative complications noted. Average width was 6.2 cm (IQR 4.5 – 7.0 cm), and the average hernia length was 8.8cm (IQR 5.0 – 11.0 cm). Most common mesh utilized was macroporous polypropylene (85.4%). Average mesh dimension was 19.5 x 20.9 cm. Concurrent inguinal hernia repair was performed in 2 (7.3%) cases. The majority (83%) of patients were discharged within 24 hours of their procedure. Antibiotics were prescribed for surgical site infections in 3 (7.3%) cases. Regarding surgical site occurrences, there was 1 (2.4%) hematoma and 4 (9.8%) seromas – 1 seroma required procedural intervention. There was 1 pulmonary embolism, and otherwise no significant postoperative complications noted. Average follow up duration was 60 days.

Conclusion: We describe the use of a novel ventral hernia repair technique, TAPPRA, and assess outcomes from operations performed at multiple intuitions. The work here demonstrates that the TAPPRA approach is safe, feasible, and associated with appropriate short-term outcomes for repair of moderate sized incisional hernias.

27. The impact of Socioeconomic Status in Hernia Treatment: a Qualitative Systematic Review

D Lima, V dos Santos Neves, S Wagemaker Viana, G Lyons, C Daleaste Wilmsen, R Nogueira, D Camacho
Montefiore Medical Center

Background: Hernias are among the most common surgical conditions worldwide. However, access to optimal treatment remains disproportionately distributed. Therefore, socioeconomic disparities play a critical role in determining whether patients receive timely surgical intervention, access to minimally invasive techniques, or suffer from postoperative complications due to delayed or suboptimal care. This study aims to evaluate the impact of economic disparities on the treatment of multiple types of hernia, including inguinal, incisional, ventral and diaphragmatic hernias. We assessed how factors such as insurance coverage, socioeconomic status and healthcare access influence surgical approach and postoperative outcomes

Methods: This systematic review was conducted following PRISMA guidelines. A comprehensive search was conducted using MEDLINE/Pubmed, EMBASE, Web of Science, Cochrane Library, and LILACS, from inception until March 2025 without any filter applied. A search strategy was created using the following MeSH terms: ("socioeconomic") AND ("disparities") AND ("hernia"). Our inclusion criteria comprise studies related to socioeconomic disparities in ventral, incisional, and inguinal hernia repair. A qualitative assessment of included studies was made using the Cochrane Risk of Bias tool, ROBINS-I, for Non-randomized Studies of interventions.

Results: A total of 56 studies were identified and, after screening and full paper analysis, 23 studies were included in this review. According to 19 studies, patients with public insurance, such as Medicaid and Medicare, were more likely to present with complicated hernias, including incarceration and strangulation, and experienced longer hospital stays compared to those with private health insurance holders. All included studies (n=23) showed that insurance status also influenced postoperative outcomes, that publicly insured patients facing increased risks of complications, prolonged hospitalization, non-routine discharge and mortality. Additionally, patients with public insurance were associated with significantly increased odds of undergoing early hernia repair. Conversely, privately insured and higher-income patients had shorter hospital length of stay (LOS), lower complication rates, and greater utilization of advanced and technological surgical approaches. Furthermore, in accordance with 17 included studies, geographic disparities affected access to specialized hernia centers considering out-of-state patients had to travel significantly longer distances compared to in-state patients to receive a definitive treatment.

Conclusion: This systematic study demonstrates significant racial and socioeconomic disparities in hernia repairs. According to our results, public insurance holders patients' or lower incomers, faced higher complication rates, more emergent presentations, and worse outcomes, including increased mortality and readmissions. Moreover, they used to have less access to minimally invasive and robotic techniques. Nevertheless, privately insured and higher-income patients received more timely and advanced health care. Thus, these inequities highlight systemic barriers in healthcare access.

Main outcomes

Author	year	study design	sample size	hernia type	Private insurance	Public Insurance
Alexis M. Holland et al.	2024	prospective cohort	544	ventral	177	19
Y. W. Novitsky et al.	2013	retrospective cohort	16,000	ventral	-	-
Kimberly Bowman et al.	2010	retrospective cohort	321	ventral	264	27
Juan E. Sola et al.	2010	retrospective cohort	5,128	diaphragmatic	1,503	1,049
Yuqi Zhang et al.	2023	retrospective cohort	127,940	ventral	-	127,940
Maria F. Nunez et al.	2019	retrospective cohort	264,484	inguinal, umbilical, femoral	68,785	40,863
Talar Tatarian et al.	2022	retrospective cohort	280,064	inguinal, femoral, umbilical, ventral	187,700	88,469
Sara Sakowitz et al.	2024	retrospective cohort	236,215	strangulated	57,215,885	215,909
Robert M. Handzel et al.	2023	retrospective cohort	29,475	incisional	11,318	3,802
Brett M. Tracy et al.	2020	retrospective cohort	559	incisional	242	88
Mazen R. Al-Mansour et al.	2023	cross-sectional	5,638	ventral	-	-
James W. Feimster et al.	2023	retrospective cohort	214,089	ventral, inguinal	-	120
S. Docimo Jr. et al.	2020	retrospective cohort	238,349	ventral, inguinal, umbilical	31,187	6,384
A. Gupta et al.	2020	retrospective cohort	580	ventral	-	-
Sara M. Maskal et al.	2023	retrospective cohort	39,494	ventral	2,693	347
Ryan D. Hoffman el al.	2021	retrospective cohort	245,930	incisional	89,450	26,000
Louis A. Perkins et al.	2024	cross-sectional	15,683	ventral, inguinal	1,793	751
Maha Mourad et al.	2024	retrospective cohort	30,927	inguinal	6,503	257
Troy Marxen et al.	2022	retrospective cohort	478	incisional	-	-
David E. Wang et al	2021	retrospective cohort	7,253	ventral, incisional	3,015	881
Jonathan L. Hills-Dunlap et al.	2019	retrospective cohort	25,877	umbilical	11,596	14,143

28. Self-Fixating Mesh versus Tack Fixation in Totally Extra Peritoneal Inguinal Hernioplasty: A Double-Blind Randomized Clinical Trial (SELFITAC TRIAL)

TS Mishra, PK Sasmal, H. Harshavardhana, P Kumar, S Mohanty, S Mohakud
All India Institute of Medical Sciences Bhubaneswar, India

Background: Chronic inguinodynia after hernia surgery can be vexing, spelling disaster for the patient and trouble for the surgeon. The preperitoneal position of mesh in a laparoscopic hernia repair (LHR) had the potential to obviate this unwanted problem. However, concerns regarding the possibility of recurrence due to mesh migration prompt the surgeons to fix the mesh, which is often implicated in groin pain, defeating the purpose of a LIHR. This is despite the European Hernia Society guidelines recommending against routine use of fixations and using the less traumatic glue fixation whenever feasible, although it is costly and still not being widely used, unlike a tacker, which is the most common method of fixation. Self-fixating meshes have all the merits of glue fixation, including secure fixation below the iliopubic tract while eliminating the need for tackers in LIHR, including avoiding the cost of the glue or the tacker. We hypothesized that the use of self-fixating meshes could preclude the risk of tack-related pain while ensuring adequate fixation. This study aimed to assess the safety and feasibility of using self-fixating mesh in LIHR, in terms of procedural time, intraoperative complications, postoperative pain, and quality of life.

Methods: A double-blind randomized clinical trial was conducted on 112 adult male patients undergoing LHR, with 56 in tackers and 56 in the self-fixating arm. Patients were followed for three months postoperatively to assess outcomes. The primary outcomes were postoperative pain (Visual Analog Scale, VAS) and quality of life (Carolina Comfort Scale, CCS). Secondary outcomes included operative time, mesh deployment time, postoperative complications, and inflammatory response, which was assessed using white blood cell count (WBC) and erythrocyte sedimentation rate (ESR) as markers of surgical trauma.

Results: Median operative duration and mesh deployment time were similar between groups ($p > 0.05$). Postoperative VAS pain scores, CCS quality of life scores, and analgesic requirements showed no significant differences ($p > 0.05$). Postoperative complications were comparable, in both arms. The peritoneal breach was more common in the self-fixating arm, although it was not statistically significant, and there were no other major intraoperative complications. WBC and ESR increased significantly postoperatively in both groups (p 0.05). No early recurrence was observed at the end of the three-month follow-up period.

Conclusion: Self-fixating mesh is a safe alternative to tack fixation in LIHR, with comparable postoperative pain and QoL index scores. Although the cost analysis was not done in this study, obviating the need for tackers or glue could potentially decrease the cost significantly and immensely benefit low and middle-income country setups. Long-term follow-up is necessary to compare the recurrence rates in the self-fixating arm versus tack fixation.

TABLE 1: INTRAOPERATIVE OUTCOMES

	TACKERS	SF	p VALUE
Operative duration * (in minutes)	76(33)	65(42)	0.436[a]
Mesh deployment time * (in minutes)	11(3)	11(5)	0.343[a]
Intraoperative complications			
Peritoneal injury	25(44.6%)	34(60%)	0.107[b]
Bowel injury	0	0	
Bladder injury	0	0	
Nerve injury	0	0	
Inferior epigastric vessel injury	1(1.7%)	0	0.495[c]
Iliac vessels injury	0	0	

*Continuous variables are represented as median (interquartile range), Nominal variables are expressed in frequency (proportion), [a]Mann- Whitney U test, [b] Pearson's Chi- squared test, [c] Fisher's exact test

Table 2. Quality of life –Carolina Comfort Scale:

	TACKERS	SF	p VALUE
6HR	40(13)	41(15)	0.195[a]
24HR*	30.24+9.85	33.00+12.43	0.198[b]
48HR	22(8)	23(10)	0.272[a]
7TH DAY	10(7)	10(5)	0.402[a]
1ST MONTH	0.00(1)	0.00(2)	0.406[a]
3RD MONTH	0.00(0)	0.00(0)	0.509[a]

All continuous variables are expressed in median (IQR) unless specified,*Continuous variables are expressed in mean ± standard deviation, [a]Mann- Whitney U test, [b]unpaired t test

29. Robotic Repair of Post-Transplant Incisional Hernias: Outcomes in Complex Hernia Management

N Kapani, C Balthazar da Silveira, Ana Rasador, N Salevitz, V Deka, T Gillespie, C Ballecer
St. Joseph's Hospital and Medical Center, Dignity Health

Background: Post-transplant incisional hernias (PTIH) are a common complication in transplant patients, arising due to chronic immunosuppression, associated comorbidities, and the type of incisions used, most commonly lateral. PTIH repair is complex, frequently requiring abdominal wall reconstruction techniques, including transversus abdominis release (TAR). The robotic platform offers enhanced anatomical identification and precision, particularly in cases where the dissection plane is limited and complex, improving surgeons' dexterity. Our objective was to evaluate the management and outcomes of robotic surgery for the repair of complex PTIH.

Methods: Patients referred to our institution's hernia center from December 2019 to January 2024 with a history of solid organ transplantation were identified through a review of medical records. Those who underwent robotic surgery for PTIH were selected for the study. Our institution's protocol includes preoperative rehabilitation and preoperative imaging-based surgical planning for all patients. The decision to perform TAR was based on hernia size, the presence of loss of domain, and patient's anatomy. Data on patient demographics, hernia characteristics, and perioperative factors were collected. Outcomes included intraoperative and postoperative complications such as conversion to open surgery, length of hospital stay (LOS), surgical site infection (SSI), surgical site occurrence (SSO), clinical complications, chronic pain or discomfort, bulging, and recurrence. Statistical analysis was performed using R software.

Results: A total of 24 patients who underwent robotic repair of PTIH were identified. Of these patients, 10 (41.7%) had a history of liver transplantation, while 14 (58.3%) had received a kidney transplant. All patients had lateral hernias, with 19 (79.2%) presenting with flank hernias, including six L2-L3 Flank-Iliac (19.4%) hernias, three L2-L4 Flank-Lumbar (9.7%) hernias, four L1-L2 Subcostal-Flank (12.9%) hernias, and one Subcostal-Flank (3.2%) hernia. Additional lateral hernias included one L3 Iliac (3.2%), one L1 Subcostal (3.2%), two M1-L1 Epigastric-Subcostal (6.5%), and one Subcostal bilateral (3.2%) hernias. Eight patients (33.3%) had a recurrent hernia. Among the cohort, 20 patients (83.3%) required TAR, three patients (12.5%) underwent simultaneous midline incisional hernia repair, and three (12.5%) had synchronous umbilical hernia repair. The mean defect width was 16.5 (6.4) cm, and the mean mesh area was 520 (436-750) cm^2. No intraoperative complications or conversions to open surgery were observed. The median LOS was 2 (1-3.5) days. One patient (4.2%) presented to the emergency department for acute kidney injury and Clostridium difficile infection but did not require readmission. Early postoperative complications included three cases (12.5%) of urinary retention and three patients (12.5%) requiring supplemental oxygen, with no severe complications. Seven patients (29.2%) experienced surgical site occurrences (SSOs), including five (20.8%) with superficial seromas and two (8.3%) with hematomas. Only one (4.2%) seroma required percutaneous drainage. No hernia recurrences were noted during a follow-up of 11.2 (3.3-14.3) months. However, three patients (12.5%) developed robotic port-related hernias and chose non-operative management, while one (4.2%) patient experienced chronic abdominal pain.

Conclusion: Robotic repair of PTIH is an effective approach, demonstrating low complication rates and hernia recurrences at medium-term follow-up. The use of TAR in complex cases enhances surgical experience and dexterity, especially in lateral hernias.

30. 5 Years Results of the Randomized-Controlled ESTOIH Study

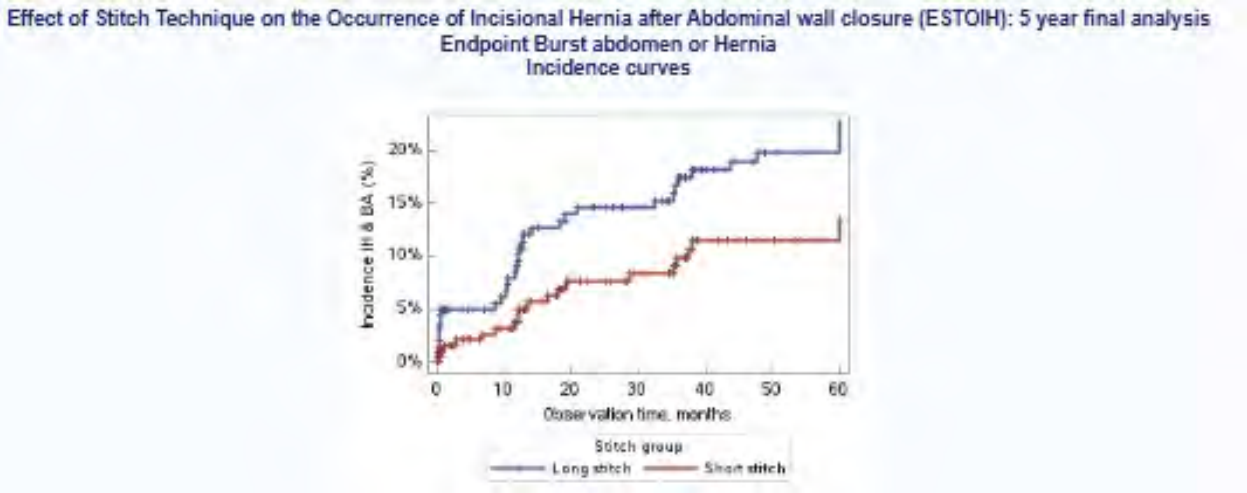
R Fortelny, M Albertsmeier
Sigmund Freud Private University Vienna Austria

Background: According to the updated EHS and AHS guidelines, the use of a slowly absorbable suture with a continuous suturing technique in short stitch is recommended for elective midline closure in order to achieve a lower incidence of incisional hernia compared to the long stitch technique. However, the implementation of the short suture technique is still a major issue.

Methods: The aim of this randomized study has been to compare the short-stitch technique for midline laparotomy closure with the long-stitch closure using an ultra-long-term absorbable elastic suture of poly-4-hydroxybutyrate (MonoMax®). After a follow-up of 1 and 3 years, an analysis has now been performed after 5 years. A total of 425 patients from 9 centers undergoing elective midline laparotomy were randomly assigned to receive wound closure using either the short-stitch (n = 215) or long-stitch (n = 210) technique, with MonoMax® suture material.

Results: After a 5-year follow-up, the incidence of incisional hernia in the short-stitch group was 9.25%, compared to 14.2% in the long-stitch group, as per the intention-to-treat (ITT) analysis. Although the difference was not statistically significant, the short-stitch technique demonstrated a markedly better outcome compared to the long-stitch technique. The gap between the two groups remained consistent over the 1-, 3-, and 5-year follow-up periods, as determined by Kaplan-Meier survival analysis.

Conclusion: The short-stitch technique, as demonstrated in the ESTOIH study, offers significant advantages, including a low rate of wound infection and incisional hernias. These findings suggest that combining the short-stitch technique with a long-term absorbable, highly elastic suture material such as MonoMax® may produce synergistic benefits, making it a promising option for elective midline laparotomy closure.



31. Long-Term Sustainability of Preoperative Optimization Compared to Non-Optimized Patients Following Open Abdominal Wall Reconstruction (OAWR)

A Holland, S Kerr, A Wiley, W Lorenz, G Scarola, S Ayuso, V Augenstein, BT Heniford
Atrium Health Carolinas Medical Center

Background: Obesity, poorly controlled diabetes mellitus (pcDM), and tobacco use are known risk factors for complications after open abdominal wall reconstruction (OAWR), including wound complications, infection, and hernia recurrence. Thus, preoperative optimization (preoptimization) in the form of weight loss (WL), glycated hemoglobin (HbA1c) control, and smoking cessation mitigate these risks and improve overall health of patients undergoing OAWR. Anecdotally, it is thought that prehabilitated patients return to their prior habits postoperatively, so the aim of this study was to assess the long-term sustainability of preoptimization when compared to non-optimized patients following OAWR.

Methods: A prospective, single-institution hernia database was queried for both optimized and non-optimized OAWR patients. Preoptimization was defined as patients with BMI ≥25kg/m2 who lost ≥10lbs, pcDM patients who improved their HbA1c ≤7.2, and smokers who quit tobacco ≥4 weeks before surgery. Patients' weight, HbA1c, and smoking status were recorded at initial consultation, date of surgery, and most recent follow-up. These data were compared to non-optimized patients. Standard statistical analyses were performed in addition to a correlation analysis, repeated measures analysis, and a McNemar's test to evaluate the significance of preoptimization.

Results: In the WL analysis, 256 optimized patients were compared to 286 non-optimized patients. Average preoperative WL was greater in the optimized patients (26.1±17.1vs.1.0±5.2lbs;p< 0.001). Although postoperative WL was less in the optimized patients (+2.0±27.1vs.4.2±19.1lbs;p< 0.001), their net WL was markedly greater (24.0±31.9vs.5.2±19.4lbs;p< 0.001) over 42.0±36.2vs.63.0±43.7 months of follow-up.

Postoperatively, 47.3% of optimized patients continued WL with a total of 83.2% staying below their consultation weight. There was a positive correlation between surgery weight and most recent weight (r=839;p< 0.001). On repeated measures analysis, preoptimization resulted in a 4.6x greater net WL compared to non-optimized patients (p=0.001).

In pcDM, 51 were optimized; 45 were not. Average HbA1c at initial consultation was not statistically different (8.5±1.6vs.8.5±1.2;p=0.35). The optimized patients had significantly lower HbA1c at time of surgery (6.5±0.6vs.8.2±0.9;p< 0.001) and most recent follow-up (6.9±1.5vs.8.4±1.7;p< 0.001) over 43.0±36.1vs.57.5±35.4 months of follow-up.

On repeated measures analysis, preoptimization decreased HbA1c by 2.0 (p< 0.001). Postoperatively, HbA1c increased by 0.5 (p=0.158) for a net decrease by 1.5 (p< 0.001). Postoperatively, 63.2% of optimized patients maintained HbA1c ≤7.2 with 95.8% of these continuing to decrease their HbA1c after surgery while only 22.2% of non-optimized patients improved their postoperative HbA1c ≤7.2.

Of smokers at initial consultation, 70 successfully quit and 67 did not. Postoperatively, 58.6% of the optimized patients continued to abstain at most recent evaluation, over an average of 28.1±34.1 months. Of non-optimized patients, only 14.9% quit smoking postoperatively. On McNemar's test, 60.7% of smokers at initial consultation transitioned to former smokers at their most recent follow-up (0.607,95%CI[0.513,0.693];p< 0.001).

Conclusion: Preoptimization leads to significant longevity of health maintenance years after OAWR. Of optimized patients, 83.2% of overweight patients remained less than their original weight; 63.2% of diabetics maintained HbA1c ≤7.2; and 58.6% of smokers maintained cessation. Non-optimized patients were less likely to achieve these goals on their own. These results exemplify the value of a surgeon's influence on patients' overall health, which endures beyond hernia repair.

32. Revolutionizing Hernia Surgery: AI-Powered Digital 3D Reconstruction of CT Scans to Guide Decision-Making and Referral - A Proof-of-Concept Analysis

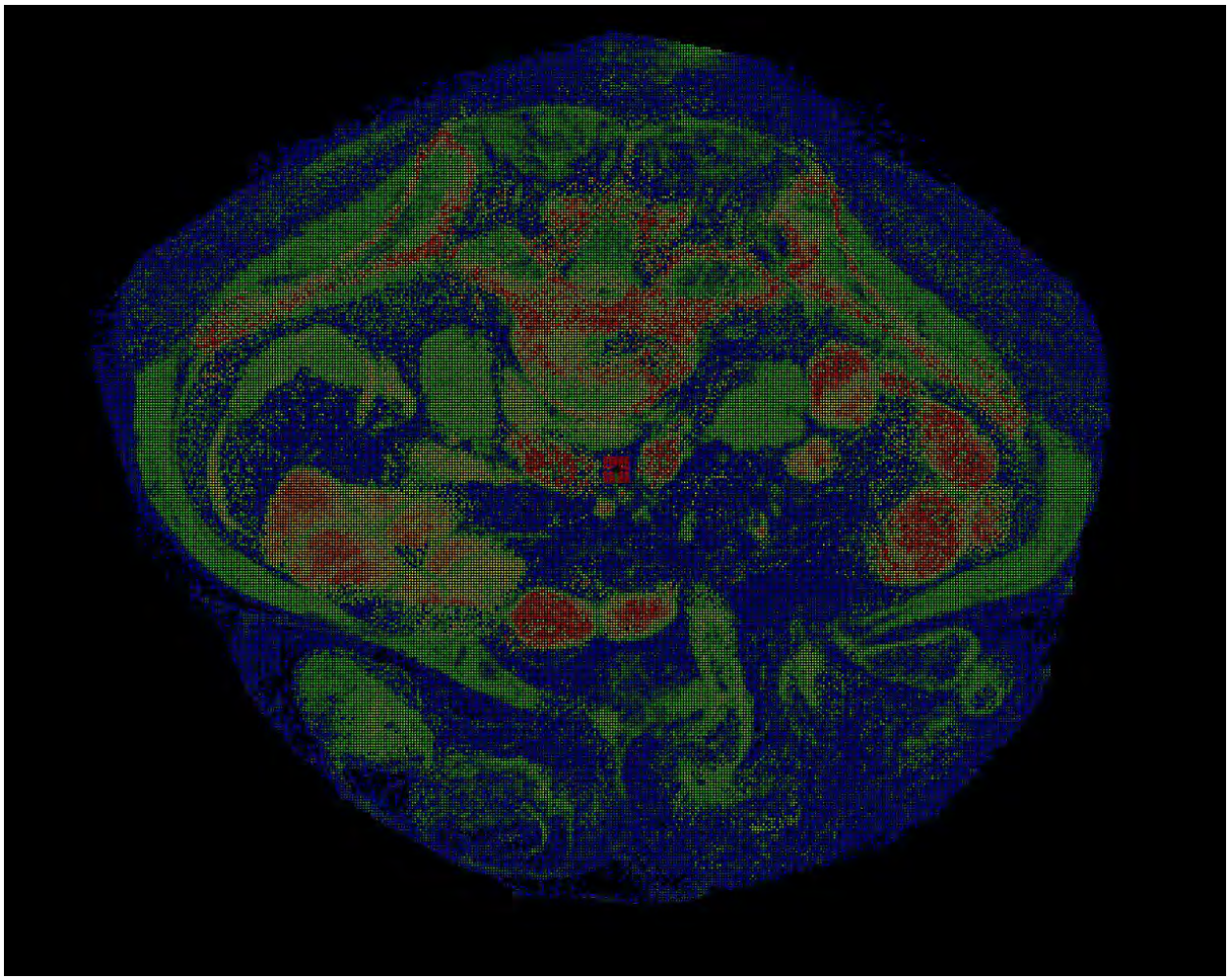
C Balthazar da Silveira, G Yildirim, V Deka, H Soe-Lin, T Gillespie, C Ballecer
St. Joseph's Hospital and Medical Center, Dignity Health

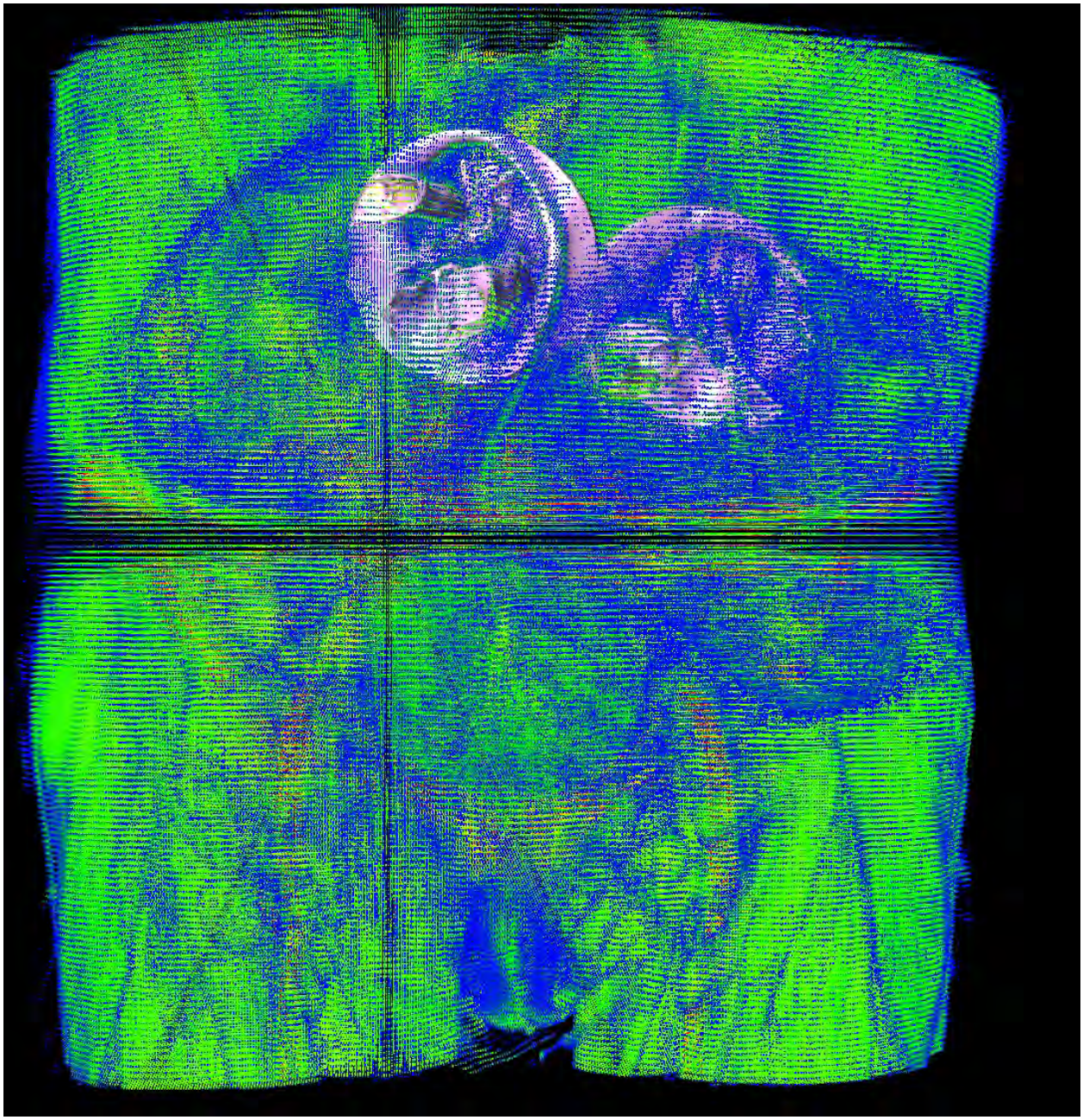
Background: Non-hernia specialist surgeons may face difficulty in accurately identifying key anatomical parameters such as hernia volume, hernia-to-neck ratio, and the necessity for complex procedures based on their evaluation of a 2D CT scan of a complex hernia, even if the scan is color-enhanced using specialized software (Figure 1). To address this challenge, a machine learning model capable of reconstructing 2D CT images into 3D representations, providing detailed hernia volumes, could aid in decision-making, including the potential referral of the patient to a specialist surgeon.

Methods: The CT scans used in this study were all of complex incisional hernias from patients who had undergone Transversus Abdominis Release (TAR) and were likely to require a hernia specialist. Our objective is to provide a proof of concept for a software applied to hernia surgery that can automatically identify anatomical parameters from 2D CT scans and reconstruct the image into a 3D model. Ten 1mm resolution CT scans were used for this study. For each patient, the abdominal region soft tissue structures were segmented using specialized digital-twin software (Minerva, Vent Creativity, New York, NY), and automatically clustered muscle regions were identified for discontinuities. The regions of interest were then measured by the automatic system to identify boundary regions in 3D (Figure 2). The resulting 3D shapes can be used to guide decisions on reattachment versus mesh coverage, as determined by expert surgeons, or even indicate if a specialist surgeons should be consulted.

Results: For all tested cases, the average size and shape of the hernia regions was 38±10mm and generally oval outline. The final automatized 3D model was able to provide highly visible hernia defects, even if more than one defect was present (Figure 2). Each muscle boundary was well defined for muscle reattachment or mesh decision from the medical image. A more refined imaging analysis can be performed to delineate the muscle layers, providing actionable information for surgeons. This includes details such as lateral abdominal wall muscles, mesh-to-defect ratios, pre and post-botox measurements, and the relationship to the Carbonell equation for each defect. This process is automated, enabling non-expert surgeons with limited experience in interpreting complex CT scans to access critical insights for decision-making. This automatic AI tool can also be combined with deep learning to provide post-operative insights on complication risks based on pre and postoperative CT scans, also providing insights on ideal mesh size and surgical techniques.

Conclusion: It is important to understand the complexity and overall dimensions of a hernia for initial diagnosis for expert versus generalist surgeon intervention. Furthermore, complex cases and need for specialists' referral can be achieved based on this tool proof of concept for hernia surgery. This proposed system can analyze cost/benefit of botox, mesh sizes, and other interventions for best short and long term recovery options based on deep learning CT scan insights. It has the potential to be developed as a tool that can help non-hernia specialists to define when a specialized hernia center referral is needed.





33. Does (Patient) Size Matter? The Impact of High Body Mass Index on Outcomes for Patients Undergoing Minimally Invasive Transversus Abdominis Release

JG Linn, SA Ayuso, M Burt, JN Rwigema, DG Anderson, K Kuchta, MB Ujiki, HM Hedberg, SP Haggerty
Endeavor Health

Background: Obesity increases the rate of postoperative wound complications for patients undergoing open abdominal wall reconstruction (AWR) and predisposes patients to hernia recurrence. While minimally invasive surgery (MIS) techniques minimize wound morbidity, the exact degree to which this occurs in AWR remains unknown. The aim of this study is to compare clinical outcomes for patients undergoing MIS transversus abdominis release (TAR) with body mass index (BMI) below and above 35 kg/m2, which is a common optimization point for open AWR.

Methods: A prospectively maintained single-institution hernia database was queried for patients undergoing bilateral MIS TAR from 2018-2024. Basic demographics, operative characteristics and postoperative outcomes were reviewed. A univariate analysis was performed to compare outcomes for patients with a BMI =35 kg/m2 (high BMI). The primary outcomes were 30-day surgical site infection (SSI) and hernia recurrence. Patient quality of life (QoL) at 3 weeks and 6 months were also evaluated using the Surgical Outcomes Measurement System (SOMS) and the Carolinas Comfort Scale (CCS). Standard statistical methods were used. Statistical significance was set at $p < 0.05$.

Results: There were 128 patients who underwent MIS TAR, 72 in the low BMI group and 56 in the high BMI group. The mean BMI for each group was 28.2+/-3.6 kg/m2 and 41.5+/-4.6 kg/m2, respectively (p0.05).

Conclusion: Despite having larger and more complex hernias, the high BMI MIS TAR group did not have increased rates of short-term infectious complications or hernia recurrence compared to the low BMI group. MIS TAR appears to be a safe and effective operation for patients with a BMI □ 35 and may allow surgeons to liberalize BMI cutoffs for patients who are amenable to this approach; however, longer term follow up is needed.

34. Distinguishing Abdominal Wall Denervation Injury from Normal Anatomy via Cross-Sectional Imaging

A Carvalho, W Bennett, K Woo, D Remulla, K Miles, B Miller, L Beffa, D Krpata, C Petro, A Prabhu
Cleveland Clinic Foundation

Background: While clinical presentations may appear similar, muscular laxity from abdominal wall denervation injury and lateral ventral incisional hernias have distinct etiologies and management. That said, no clear criteria exist to help surgeons diagnose abdominal wall denervation injury and cross-sectional imaging can look similar to normal morphology in the absence of a myofascial defect. We aimed to identify objective CT characteristics of abdominal wall denervation injury compared to contralateral healthy abdominal tissue, and further compare these changes against those observed in lateral ventral incisional hernias.

Methods: A retrospective review of the medical record was supplemented with natural language processing to identify patients with lateral abdominal wall disease using the key words: "semilunar", "denervation", and "bulge." Patient CT scans were reviewed to exclude midline defects >4cm, Tanaka volume-ratios greater than 20%, lumbar hernias, and bilateral disease. Remaining images were blindly reviewed by 3 abdominal wall surgeons in a majority rules-consensus fashion to characterize patients as having denervation injury or lateral hernia. Abdominal wall components on the symptomatic side were compared against contralateral 'healthy' controls. Axial and coronal measurements of the external oblique (EO), transversus abdominis (TA) muscles, TA-EO distance (thickness), and lateral abdominal wall muscle area were recorded at the level of the widest abdominal bulge. Percent of lateral wall muscle myosteatosis was measured using Hounsfield units (HU) attenuation within the intermuscular adipose tissue range (IMAT, HU:-190 to -30). Comparisons between symptomatic and healthy sides were made, as were comparisons between denervation and lateral hernia defects morphologic changes. Alpha predetermined was at 0.05.

Results: We identified 12 patients with abdominal wall denervation injury and 14 with lateral ventral incisional hernias. Compared against contralateral abdominal wall tissue, ipsilateral denervation injury was correlated with statistically significant increases in EO (p=0.0027) and TA (p=0.01) axial length, thinner abdominal wall musculature (p=0.0003), greater coronal TA length (p=0.0387), decreased HU attenuation (p=0.0387), and increased percentage of intermuscular adipose content (p=0.0242; Table 1). When considered as percent changes from symptomatic to asymptomatic sizes, comparison of denervation injury and lateral hernia defects demonstrated differences in morphologic profiles. Rather than increases in axial EO and TA length in denervation-injured musculature (median increases of 16% and 24%, respectively), lateral hernias demonstrated respective median decreases of 5% (p=0.002) and 4% (p=0.04; Table 2). Coronal TA length, which demonstrated a median increase of 43% in denervation injuries, also demonstrated a median decrease (-57%) in lateral hernias (p=0.0004).

Conclusion: Abdominal wall morphology following denervation injury can be characterized by thinner, longer lateral abdominal wall musculature with increased intermuscular lipid deposition when compared with unafflicted contralateral musculature. Our data suggest these changes

are distinct from the morphologic changes observed for lateral ventral hernias which result in shorter, thicker muscles without evidence of lipid deposition.

Image 1. Area histogram, length and thickness measurements of the lateral abdominal wall of a patient with denervated right side report on CT-scan.

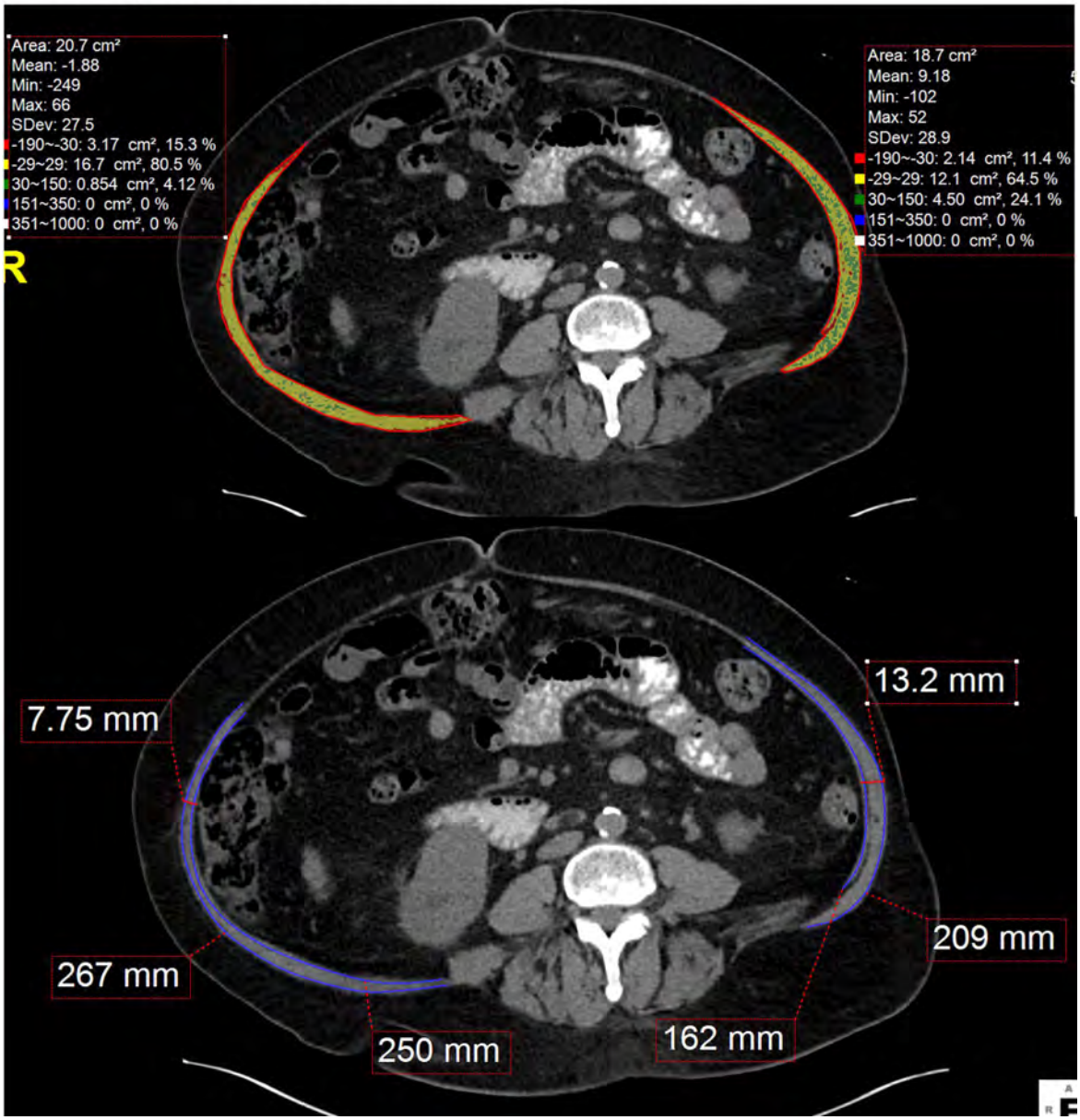


Table 1. Comparative Analysis of Ipsilateral Denervation Injury vs Contralateral Healthy Abdominal Wall Morphology

	Ipsilateral Denervation Injury			Contralateral Abdominal Wall			
n=12	Median	IQR 1	IQR 3	Median	IQR 1	IQR 3	p
EO length, mm	247.5	223	259.5	196	173.3	214.3	0.0027
TA length, mm	238.5	186.3	256.3	157.5	134.5	184	0.01
Lateral Wall Thickness, mm	7.035	5.178	9.628	19.15	11.7	24.2	0.0003
Coronal EO, mm	325	243.5	406.3	229	182	334.8	0.0597
Coronal TA, mm	252	227.5	396.5	193	136	269.3	0.0387
Mean Hu (HU)	-17.5	-34.6	10.75	9.32	-5.89	18.73	0.0387
IMAT (% of lateral abdominal wall)	33.3	14.83	59.73	15.8	10.46	26.63	0.0242
LAMA (% of lateral abdominal wall)	46.5	28.53	51.88	52.65	38.4	61.95	0.1474
NAMA (% of lateral abdominal wall)	11.18	2.895	36.45	32.95	13.43	47.8	0.0887

EO: External Oblique length, TA: Transversus abdominis, IMAT: intermuscular adipose tissue, LAMA: low-attenuation muscle area, NAMA: normal attenuation muscle area

Table 2. Comparative Analyses of Changes Across Diseased and Healthy Abdominal Wall CT Morphology for Denervation Injury vs Unilateral Lateral

	Unilateral Denervation			Unilateral Semilunar Hernia			
	median	IQ1	IQ3	median	IQ1	IQ3	p
Axial EO % change	16.83	1.55	27.43	-5.52	-39.64	11.06	0.0026
Axial TA % change	24.7	1.75	49.65	-4.025	-24.74	18.51	0.0485
Axial TA-EO distance	-56.8	-69.67	-44	14.2	-12.75	46.64	0.0005
Coronal EO %change	29.61	16.97	39	-23.43	-54.09	15.93	0.0008
Coronal TA %change	43.83	11.11	101.7	-57.34	-76.35	-9.088	0.0004
IMAT %change	9.875	-30.19	143.1	-50.18	-70.38	-2.948	0.0226

EO: External Oblique length, TA: Transversus abdominis. %change = (symptomatic measure – contralateral asymptomatic measure) / contralateral asymptomatic measure

35. Robotic Transversus Abdominis Release for a Large Incisional Hernia

C Ballecer, A Janssen
St. Joseph's Hospital and Medical Center, Dignity Health

Background: The management of large incisional hernias remains a significant challenge in abdominal surgery, often requiring complex techniques to achieve optimal outcomes. The introduction of the transversus abdominis release has revolutionized the way surgeons approach complex hernia cases. This video submission demonstrates the use of robotic technology to perform a transversus abdominis release in a patient with a large recurrent incisional hernia. Specifically, the video provides an in-depth look at the steps involved in performing a robotic transversus abdominis release, emphasizing key anatomical landmarks and anatomical relationships. The presentation also includes the patient's preoperative exam, preoperative preparation including prehabilitation, as well as the postoperative exam and recovery. The recorded footage comes from a real-life patient case and is narrated with the aim of providing reliable, reproducible steps and surgical technique to contribute to the growing body of abdominal wall reconstruction.

36. External Validation of the XGBoost Model for Predicting Incisional Hernia (IH) in Patients Undergoing Midline Laparotomy

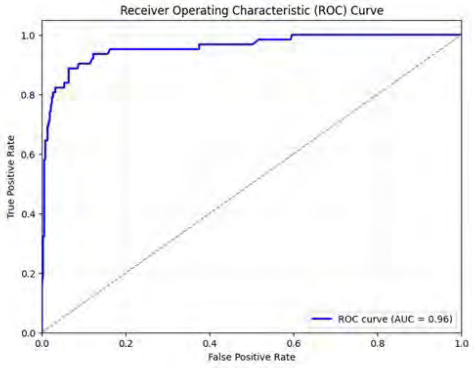
EE Lozada-Hernandez, R Reynoso Gonzalez, GV Martinez-Gonzalez
Regional Hospital of High Specialty of Bajio

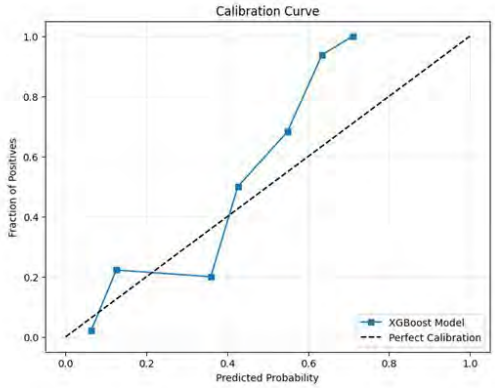
Background: The primary complication following laparotomy is incisional hernia. Various scales exist to predict its occurrence, each with differing diagnostic performance, which is why none have become the standard. The objective of this study is to externally validate a model developed using artificial intelligence with the XGBoost machine learning technique. This validation aims to ensure the model's utility in different environments and patient populations than those in which it was originally developed.

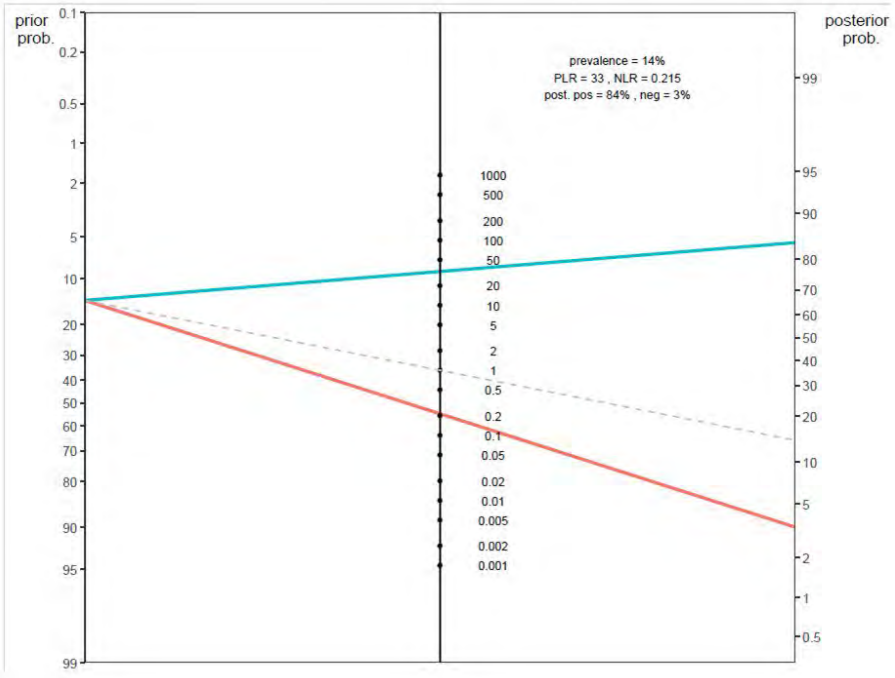
Methods: A prospective, longitudinal, and observational cohort validation study was conducted. Patients over 18 years of age who underwent exploratory midline laparotomy, either emergently or electively, between January 2020 and January 2023 were included. Follow-up was conducted for a minimum of 24 months. Key metrics, including sensitivity, specificity, and AUC-ROC, were evaluated to assess the model's effectiveness. Once the model had undergone proper internal validation, a web application was developed: https://hi-eelh-app-1035249958862.us-central1.run.app/

Results: A total of 438 patients were included in the final analysis, of whom 62 developed incisional hernia (IH), representing 14.2% of the cohort. The variables that significantly influenced the occurrence of this complication included age, colon surgery, previous surgery, anemia, BMI, and the risk of surgical site infection (SSI). The model's performance metrics were as follows: ROC-AUC: 0.883 ± 0.015, Accuracy: 0.941 ± 0.010, Recall: 0.79 ± 0.052, Positive Predictive Value (PPV): 0.84 ± 0.043, Negative Predictive Value (NPV): 0.963 ± 0.013, F1 Score: 0.81 ± 0.025, and Specificity: 0.97 ± 0.013. These results demonstrate the model's robust predictive capability for identifying patients at risk of IH.

Conclusion: The results of this study demonstrate that the XGBoost model is highly effective in predicting the risk of incisional hernia (IH) in patients undergoing midline laparotomy. The model's performance metrics closely align with those of the development model, indicating its robustness and reliability. These findings confirm the model's utility in clinical settings and its generalizability to different patient populations. The strong predictive performance and consistency with the development model underscore its potential as a valuable tool for identifying high-risk patients.


Receiver Operating Characteristic (ROC) Curve
True Positive Rate
False Positive Rate
ROC curve (AUC = 0.96)


Calibration Curve
Fraction of Positives
Predicted Probability
XGBoost Model
Perfect Calibration


prior prob.
posterior prob.
prevalence = 14%
PLR = 33 , NLR = 0.215
post. pos = 84% , neg = 3%

37. Preperitoneal Enhanced-View Totally Extraperitoneal (PeTEP) Repair for Ventral and Incisional Hernia Repair: Early Multicenter Results

JM Munoz-Rodriguez, L Roman-Garcia de Leon, J Lopez-Monclus, A Robin Valle de Lersundi, LA Blazquez-Hernando, M Medina-Pedrique, M De Luca, M Fernandez-Rodriguez, D Melero-Montes, C Fidalgo-Martinez, V Vaello Jodra, R Soto-Gomez, MA García-Urena
Hospital Universitario Puerta de Hierro

Background: Minimally invasive techniques are increasingly employed in the repair of abdominal wall defects. This study evaluates early outcomes of the total preperitoneal/pretransversalis enhanced-view totally extraperitoneal (PeTEP) technique in the treatment of primary ventral hernias (PVHs) with rectus diastasis and incisional hernias (IHs).

Methods: A prospective observational study was conducted in three university hospitals between October 2023 and February 2025 using data from a multicenter database. The PeTEP approach was performed via either a caudal route through the preperitoneal Retzius space or a cranial route involving dissection of the preperitoneal fatty rhomboid. Both approaches included extension of the dissection through the preperitoneal and transversalis planes, reaching laterally to the semilunar lines and caudally to the pubis. In cases of lateral hernias, dissection extended beyond the ipsilateral semilunar line to ensure adequate mesh overlap.

Results: A total of 54 patients underwent elective endoscopic PeTEP hernia repair. Of these, 14.5% underwent a caudal and 85.5% a cranial approach; 10.9% of procedures were performed robotically. Hernia types included 44.5% PVHs, 46.3% midline IHs, and 9.3% lateral IHs. Concomitant hernias were present in 57.4% of patients. According to the EHS "W" classification, defects were categorized as W1 in 22.2%, W2 in 29.7%, and W3 in 3.7% of cases. The mean defect area was 12.79 ± 18.78 cm^2, with an average mesh size of 523.88 ± 259.01 cm^2. Surgical site occurrences (SSOs) were observed in 5.6% of cases (one seroma, two superficial hematomas). No surgical site infections or hernia recurrences were reported at a mean follow-up of 7.7 ± 3.9 months.

Conclusion: The PeTEP technique appears to be a safe, effective, and reproducible option for the repair of PVHs with rectus diastasis, as well as midline and lateral IHs. It enables wide preperitoneal mesh placement without violation of the retromuscular plane or the need for posterior component separation, including in lateral defects. Further studies with larger cohorts and longer follow-up are warranted to validate these encouraging early outcomes.

38. Risk Factors for Surgical Site Infection Following Hernia Repair with Transversus Abdominis Release

MT McGoldrick, V Nwigwe, G Reeves, A Stowman, M Muller, L Yan, S Mohamedaly, K Hopkins, A Addo, P George, D Podolsky, Y Novitsky
Columbia University

Background: Posterior component separation with transversus abdominis release (TAR) has been widely adopted as the most comprehensive surgery for complex hernia repair and abdominal wall reconstruction. However, surgical site infection (SSI) following TAR presents a unique risk: infection in the setting of permanent mesh placement can result in significant morbidity, including wound complications and chronic infections. The aim of this study was to further characterize the patient and operative risk factors associated with SSI after TAR.

Methods: We conducted a retrospective review of our institutional database to compare patients who developed SSI within 90 days of TAR to those who did not. Operative cases between 2018 and 2024 were included. Demographic data, patient comorbidities, operative factors, and other postoperative outcomes were compared between these groups. Univariate logistic regression was used to identify variables significantly associated with post-operative SSI. These variables, in addition to basic patient characteristics and known risk factors for SSI, were included in a multivariate logistic regression.

Results: Our study included 387 patients, of which 37 (9.6%) developed an SSI. Patients who developed an SSI were similar to those who did not in most respects, including median age (59.9 vs. 61.4 years, p = 0.48), gender (51.4% vs. 44.7% male, p=0.78), median BMI (30.9 vs. 32.9, p=0.29), nicotine use (8.1 vs. 5.1% current smokers, p=0.61), immunosuppressant use (10.8% vs. 12.6%, p=0.96), history of abdominal wall SSI (18.9% vs. 13.1%, p=0.47), and prevalence of medical comorbidities, including diabetes (24.3% vs. 21.4%, p=0.84). The CDC wound class of patients who developed SSI was more likely to be clean-contaminated or contaminated (24.3% vs. 11.4% and 5.4% vs. 1.7%, p=0.021). SSI was also associated with concurrent plastic surgery procedures such as panniculectomy (21.6% vs. 8.1%, p=0.037), longer median operative times (261.5 vs. 291.2 minutes, p=0.026), and a larger hernia defect (354.2 vs. 263.5 cm2, p=0.007). Reoperation for wound complication was also significantly more common amongst patients with SSI (37.8% vs. 0%, p< 0.001). In univariate logistic regression, operative time, hernia area, CDC wound class, non-healing wound, hematoma, and panniculectomy were significantly associated with SSI. In multivariate regression, post-operative hematoma (OR 9.07, p=0.009) and non-healing wounds (OR 3.88, p=0.01) remained significantly associated with SSI when adjusting for all other factors. CDC wound class (OR 2.27, p=0.065) and concurrent panniculectomy (OR 2.96, p=0.061) may be associated with SSI, but these associations did not reach statistical significance in our model.

Conclusion: The incidence of SSI is similar after TAR when compared to other abdominal surgeries in literature review. Our findings further highlight the importance of meticulous perioperative hemostasis and post-operative wound management following TAR to reduce the risk of subsequent SSI. Concurrent soft tissue procedures such as panniculectomy, although often

necessary for tension-free closure and reduction of dead space, should be undertaken with caution to reduce the potential risk of SSI.

Table 1: Patient characteristics, operative factors, and other outcomes relevant to wound complications following hernia repair with transversus abdominis release. Categorical variables are presented as *n (% of group)* and continuous variables are presented as *median (Lower IQR – Upper IQR)*. P values greater than 0.1 are indicated by *N.S.* and P values less than 0.05 are bolded.

n (% total)	No SSI 350 (90.4%)	SSI 37 (9.6%)	*p*
Patient Characteristics			
Age (years)	61.4 (49.0 - 73.8)	59.9 (45.1-74.8)	*N.S.*
Gender			
Male	156 (44.7)	19 (51.4)	*N.S.*
Female	193 (55.3)	18 (48.6)	
BMI	32.9 (31.0 - 34.2)	30.9 (29.5 - 32.3)	N.S.
Nicotine Use			
Former Smoker	96 (27.4)	8 (21.6)	N.S.
Active Smoker	18 (5.1)	3 (8.1)	
Prior Mesh Infection			
Prior	21 (6.0)	4 (10.8)	N.S.
Active	3 (0.9)	1 (2.7)	
Recurrent Hernia	182 (52.0)	24 (64.9)	*N.S.*
Prior Abdominal Wall SSI	46 (13.1)	7 (18.9)	*N.S.*
History of Open Abdomen	42 (12.0)	1 (2.7)	*N.S.*
Congestive Heart Failure	12 (3.4)	0 (0.0)	*N.S.*
COPD	22 (6.3)	0 (0.0)	*N.S.*
Hypertension	190 (54.3)	22 (59.5)	*N.S.*
Diabetes	75 (21.4)	9 (24.3)	*N.S.*
Ascites	7 (2.0)	0 (0.0)	*N.S.*
Immunosuppressant Use	44 (12.6)	4 (10.8)	*N.S.*
Operative Factors			
Emergency Surgery	6 (1.7)	0 (0.0)	*N.S.*
Operative Approach			
Open	272 (77.7)	32 (86.5)	N.S.
Robotic	52 (14.9)	2 (5.4)	
Hybrid/Converted to Open	26 (7.4)	3 (8.1)	
CDC Wound Class			
Clean	304 (86.9)	26 (70.3)	**0.021**
Clean-Contaminated	40 (11.4)	9 (24.3)	
Contaminated	6 (1.7)	2 (5.4)	
Concurrent Procedure			
Plastic Surgery	318 (90.9)	8 (21.6)	**0.037**
GI/HPB Procedure	34 (9.7)	6 (16.2)	*N.S.*
ECF Takedown	8 (2.3)	0 (0.0)	*N.S.*
Parastomal Hernia Repair	9 (2.6)	1 (2.7)	*N.S.*
Urologic/Gynecologic	12 (3.4)	2 (5.4)	*N.S.*
Operative Time (minutes)	261.5 (183.7-339.2)	291.2 (291.2 - 359.6)	**0.026**
Hernia Area (cm^2)	272.0 (118.0 - 425.1)	354.2 (181.7 - 526.7)	**0.007**
Visceral Injury During Case	15 (4.3)	4 (10.8)	*N.S.*
Bowel Resected After Injury	9 (2.6)	2 (5.4)	*N.S.*
Prior Mesh Present	111 (32.0)	14 (37.8)	*N.S.*
Subcutaneous Flap Creation	43 (12.3)	9 (24.3)	0.074
Primary Fascial Closure	342 (97.7)	35 (94.6)	*N.S.*
Subcutaneous Drain Placed	274 (78.3)	32 (86.5)	*N.S.*
Retromusclar Drain Placed	322 (92.0)	35 (94.6)	*N.S.*
Other Outcomes			
Hernia Recurrence	12 (3.4)	1 (2.7)	*N.S.*
Reoperation for Wound Complication	3 (0.9)	14 (37.8)	**<0.001**

Table 2: Multivariate logistic regression for surgical site infection following transversus abdominis release. Included are key patient characteristics (age, gender), known risk factors for surgical site infection (BMI, nicotine use, prior abdominal wall SSI, diabetes, and immunosuppressant use), and additional variables associated with surgical site infection in univariate analysis (operative time, hernia area, CDC wound class, non-healing wound, hematoma, and panniculectomy).

	Odds Ratio	95% Confidence Intervals	*p*
Patient Characteristics			
Age	0.99	0.96 - 1.02	0.471
Gender	1.12	0.47 - 2.65	0.788
BMI Class	1.28	0.84 - 1.98	0.255
Nicotine Use	0.94	0.44 - 1.85	0.861
Prior Abdominal Wall SSI	0.99	0.28 - 2.92	0.988
Diabetes	0.94	0.29 - 2.61	0.905
Immunosuppressant Use	0.63	0.11 - 2.45	0.545
Operative Factors			
Operative Time	1.01	0.99 - 1.01	0.456
Hernia Area	1.01	0.99 - 1.01	0.478
CDC Wound Class	2.27	0.90 - 5.29	0.065
Panniculectomy	2.96	0.89 - 8.97	0.061
Other Outcomes			
Post-Op Hematoma	9.07	1.53 - 48.05	**0.009**
Non-Healing Wound	3.88	1.33 - 10.81	**0.010**

39. Cranial Preperitoneal Extension of the Retromuscular Repair in Midline Hernias: The Madrid Rives Technique

MA Garcia-Ureña, M De Luca, M Medina, L Roman Garcia de Leon, J Muñoz Rodriguez, J Lopez Monclus, A Robin Valle de Lersundi, L Blazquez Hernando, A Casanova, S Morejon, V Vaello, C Martinez

Hospital Universitario del Henares, Universidad Francisco de Vitoria

Background: This is a modification of the original retromuscular approach of Rives-Stoppa-Wantz for midline hernia reconstruction. Inspired by the Madrid Posterior Component Separation, itself an evolution of the TAR, this novel approach preserves the safety and efficacy of the original one while offering two key advantages: (1) maintaining the anatomical and functional integrity of the cranial portion of the posterior rectus sheath (PRS) and (2) enabling a wider cranial dissection, essential for achieving greater overlap in M1-M2 hernias.

Methods: This retrospective study included all patients who underwent the Madrid Rives procedure, electively or emergently, via open or laparoscopic approach. Demographic, perioperative, and postoperative variables were analyzed.
Technically, the PRS incision is halted 6 cm below the xiphoid process, along with the bilateral retromuscular dissection of Rives. Cranial dissection then proceeds preperitoneally at the midline and pretransversalis laterally. From the subxiphoid region, dissection may continue as far as the central tendon of the diaphragm, when necessary. The Rives retromuscular plane and the preperitoneal are connected via a horizontal section of the PRS, making an "artificial epigastric arcuate line" allowing for mesh placement.

Results: Between January 2015 and September 2024, 100 patients underwent surgery (82 open, 18 laparoscopic). Of these, 94 were elective and 6 emergent. The mean patient age was 63.3 years, with a BMI of 29.3 kg/m² (range 18–42).
According to the European Hernia Society (EHS) classification, primary defects were SMALL (10 cm) in 20. Based on the Ventral Hernia Working Group (VHWG) classification, 39 cases were grade 1, 43 grade 2, 14 grade 3, and 4 grade 4. The Carolinas Equation for Determining Associated Risks (CeDAR)score was 30% in 42. The mean number of previous defect repair attempts was 1 (range 0–4).
A total of 20 surgical site occurrences (SSOs) were recorded, of which 9 required procedural intervention (SSOPI). There were 5 cases of surgical site infection (SSI), 4 superficial and 1 deep. During a mean follow-up of 24 months (range 6–73), 3 CT-scan-confirmed recurrences and 4 cases of bulging were observed.

Conclusion: The Madrid Rives technique enables safe and effective retromuscular-preperitoneal reconstruction of midline hernias. It provides two major advantages over the original technique: (1) preservation of the cranial PRS, maintaining its innervation and diaphragmatic fibers; and (2), preperitoneal-pretransversalis-pre fascia diaphragmatis dissection, creating a broader plane for optimal mesh placement, ensuring adequate overlap in M1-M2 defects. By incorporating principles from the Madrid Posterior Component Separation to the Rives technique, it offers a more anatomical cranial approach.

40. Opioid Reduction through Prescribing Standardization in Outpatient Inguinal Hernia Repair

M Hanneman, JL Rogers, J Broucek, RA Pierce, JF Bradley
Vanderbilt University Medical Center

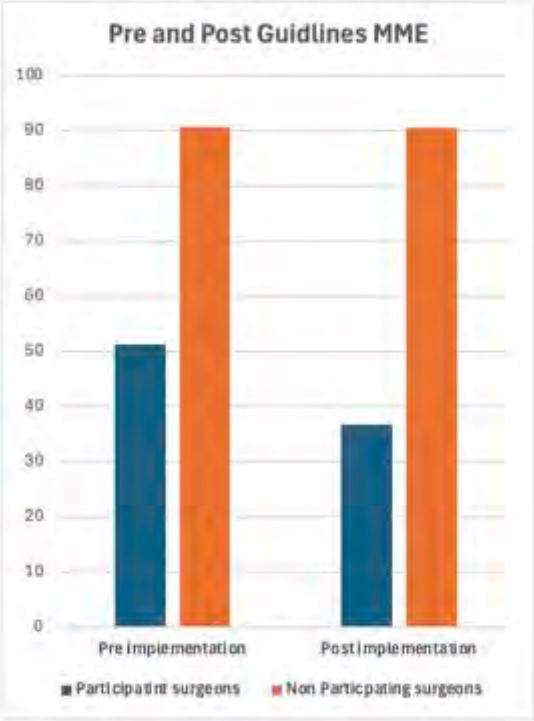
Background: Opioid overprescription following outpatient surgical procedures has contributed to an epidemic, with many patients receiving more medication than necessary for adequate pain control. Previous studies have highlighted significant variability in opioid prescribing practices for inguinal hernia repair, often leading to unused medications and an increased risk of diversion. Our institution implemented guidelines to standardize opioid prescribing recommendations after inguinal hernia repair. This study aims to evaluate the impact of standardizing prescription guidelines on opioid prescribing patterns, measuring changes in morphine milligram equivalents (MMEs).

Methods: This study employs a retrospective and prospective cohort design to evaluate the effectiveness of standardized opioid prescribing guidelines. The protocol was based on recent prescribing recommendations and patient reported use of prescribed narcotics at our institution (taking less than 5 tablets of oxycodone 5mg). The new guidelines were to prescribe no more than 5 tablets of oxycodone 5mg for any outpatient inguinal hernia repair. Acetaminophen 500mg TID and ibuprofen 800mg TID were also prescribed in patients without contraindications (Figure 1). Adult patients (≥18 years) undergoing inguinal hernia repair at our institution between January 1, 2024, and December 31, 2024, were included. Patients with a diagnosis of opioid use disorder, active enrollment in a pain clinic, or an opioid prescription within 90 days before surgery were excluded. Two high volume hernia surgeons working to reduce opioid prescribing adopted the guidelines. Retrospective data was collected from January 1, 2024, to June 30, 2024, before implementation of the guidelines, while prospective data was gathered from July 1, 2024, to December 31, 2024, following its introduction. Prescription data were extracted from an internal database. Nonparticipating surgeons opioid prescribing data was also collected for outpatient inguinal hernia repair. The primary outcome measure was the change in MMEs prescribed before and after implementation of the tool.

Results: A total of 316 patients met inclusion criteria and were evaluated. The average age was 46.3 years. There were 289 males (91.4%) and 27 females (8.6%). 81.9% were white, 7.3% Black/African American, 6.1% Hispanic, 3.2% Native Hawiian/ Other Pacific Islander, and 1.6% other. In the surgeons adopting the guidelines, the pre implementation group prescribed 51.2 MMEs per patient and 36.8 MMEs per patient in the post implementation. The nonparticipating surgeons averaged 90.7MMEs pre implementation and 90.6 MMEs per patient post implementation. Within the surgeons using the guidelines, the difference between pre and post go live was 32.73%. There was no change in the non-participating surgeons during the same timeframe.

Conclusion: With the introduction of the standardization of prescribing guidelines, we were able to see a substantial decrease in overall MMEs prescribed after inguinal hernia repair. Even among surgeons with comparatively low MME prescribing habits, use of a standardized guideline based on updated national recommendations and historical patient use was able to

substantially reduce MME. Future studies will include use of other multimodal agents to be able to offer patients a non-opioid post operative course after inguinal hernia repair.



Prescribing Guidelines for Inguinal hernia repair

Less than 5 tablets of oxycodone 5mg*
Acetomenaphin 500mg TID for 3 days**
Ibuprofen 800mg TID for 3 days**

** In opioid naive patients*
*** If not contraindicated*

Figure 1

41. One Size Does Not Fit All: BMI Versus Abdominal Circumference as a Proxy Measurement for Visceral Fat Volume

TQ Le, P Sandoval-Eddy, A Gutierrez, D Hussain, A Abrums, LE McClain
University of New Mexico Hospitals

Background: Ventral hernia repairs are among the most common abdominal surgical procedures; despite advances in repair technique, recurrence rates of up to 18.8% are cited. Well-established risk factors for recurrence include body mass index (BMI) and visceral fat volume (VFV), with VFV demonstrating a significantly positive correlation with recurrence and post-operative complications. However, determining VFV currently requires sophisticated software and time-consuming calculations that are not readily available to providers. Here, we evaluate the utility of abdominal circumference (AC), compared to BMI, as a more accurate predictor of VFV in certain ventral hernia patient populations.

Methods: We included patients over 18 with a ventral hernia demonstrated on computed tomography imaging from September 2023 to December 2024. VFV was calculated using OsiriX imaging processing software with measurements taken at the second lumbar vertebral level. AC was measured at the umbilicus. Patient BMI, ethnicity, insurance, and physical address were collected in clinic.

Data was analyzed using linear regression models with correlation coefficients in Microsoft Excel between VFV and both BMI and AC. We stratified patients by gender, ethnicity, insurance type, and distance from the referred tertiary care center. Patients were stratified by insurance into those who primarily had Medicare/Medicaid and those with other primary forms of insurance, and they were stratified by zip code into those living within 100km from the referred center and those living beyond 100km.

Results: Of the included 90 patients with ventral hernias, 45 (50%) were male, 45 (50%) were female, and 43 (47.8%) identified as Hispanic or Latinx. Male patients overall had stronger AC:VFV (0.60) and BMI:VFV (0.60) correlations compared to females (0.28, 0.27). The AC:VFV correlation was stronger among Hispanic males (0.71) compared to non-Hispanic males (0.56). Conversely, Hispanic females had a weaker correlation (0.27) compared to their non-Hispanic counterparts (0.47). The BMI:VFV correlation differences were smaller between ethnic groups, with Hispanic males demonstrating a slightly stronger correlation (0.69) than non-Hispanic males (0.53) and Hispanic females demonstrating a slightly weaker correlation (0.26) than non-Hispanic females (0.36). Patients with Medicare/Medicaid had stronger AC:VFV (0.75) and BMI:VFV (0.73) correlations than patients who had other types of insurance (0.35, 0.25). There were stronger AC:VFV (0.45) and BMI:VFV (0.35) correlations among those living within 100km compared to correlations among those living beyond 100km (0.06, 0.03).

Conclusion: Both AC and BMI are overall strong predictors of VFV in males, and especially Hispanic males, and poor predictors in females. Socioeconomic factors may also influence the predictability of both AC and BMI on VFV, as demonstrated by the strong positive correlations among Medicare/Medicaid patients and relatively strong correlations among patients who live

closer to the referred facility. Overall, AC and BMI demonstrate similar predictability of VFV, with AC having a slightly more positive correlation.

Although limited by sample size, our preliminary data indicate that BMI and AC may both serve as accurate proxy measurements for VFV in specific patient populations. Further investigation is warranted to determine whether either measurement correlates more strongly with VFV and how gender, ethnicity, and socioeconomic parameters play a role in these correlations.

Parameter Compared to VFV	Gender	Ethnicity	N	Correlation Coefficient
Abdominal Circumference	Male	Total	45	0.60012
		Hispanic	20	0.70651
		Non-Hispanic	25	0.55844
	Female	Total	45	0.27816
		Hispanic	23	0.26568
		Non-Hispanic	22	0.47168
BMI	Male	Total	45	0.60324
		Hispanic	20	0.69453
		Non-Hispanic	25	0.53237
	Female	Total	45	0.26693
		Hispanic	23	0.26012
		Non-Hispanic	22	0.36372

Parameter Compared to VFV	Insurance Type	N	Correlation Coefficient
Abdominal Circumference	Medicare/Medicaid	27	0.74808
	Other	63	0.34988
BMI	Medicare/Medicaid	27	0.72778
	Other	63	0.24648

Parameter Compared to VFV	Distance from Tertiary Care Center	N	Correlation Coefficient
Abdominal Circumference	<100 km	69	0.44772
	>100 km	21	0.05524
BMI	<100 km	69	0.35394
	>100 km	21	0.03399

42. Comparing Quadratus Lumborum and Transversus Abdominus Plane Blocks for Pain Control after Open Abdominal Wall Reconstruction

A Khomutova, S Budney, M Phillips, G Mancini, M Mancini, K Kleppe, A Fafaj, KE Blake
University of Tennessee, Knoxville

Background: Transversus abdominus plane (TAP) blocks are one of the most frequently used regional blocks to decrease post-operative pain after ventral hernia repair (VHR). However, quadratus lumborum (QL) blocks can provide wider abdominal wall sensory blockade compared to TAP blocks, which may result in improved post-operative pain control and decreased hospital length of stay. Many studies have examined TAP blocks for VHR, but no published literature compares the efficacy of TAP versus QL blocks for open VHR. Our primary aim was to evaluate the difference in hospital length of stay and post-discharge opioid use between patients receiving QL vs. TAP blocks after open VHR.

Methods: A retrospective analysis of the Abdominal Core Health Quality Collaborative (ACHQC) was conducted for all patients who underwent elective, open ventral hernia repair between January 1, 2023 and December 31, 2023. Post-discharge opioid consumption and length of hospital stay were compared between patients who received TAP versus QL blocks. Additionally, 30-day complications, readmissions, and patient-reported outcomes were compared between the two groups. Cohorts were matched using a 3:1 propensity score model.

Results: After propensity score matching, a total of 168 patients undergoing open VHR met the inclusion criteria. Of these, 75% received TAP blocks and 25% received QL blocks. Most patients were female (60%) with an average BMI of 33 kg/m2 and the majority received transversus abdominis myofascial releases, retromuscular mesh, and fascial closure. The median hernia width was similar between TAP (13 cm, IQR 8-17 cm) and QL (12 cm, IQR 6-16 cm) groups (p = 0.4). There was no difference in median length of hospital stay for patients receiving TAP vs. QL blocks (both groups: 4 days, IQR 3-6 days, p = 0.3) There was also no difference in 30-day patient-reported opioid consumption after discharge with about half of each group (51% TAP vs. 48% QL, p = 0.4) consuming 4 or less opioid tablets after hospital discharge. Patient-reported pain scores and overall quality of life at 30-days also did not differ between the two groups.

Conclusion: This is the first study to compare the outcomes of QL and TAP blocks for patients undergoing open VHR. There was no difference in pain control between each group as measured by hospital length of stay, post-discharge opioid consumption and pain scores. Prospective research is needed to further determine the efficacy of QL blocks for this patient population, including analyzing hospital opioid consumption and type of local anesthesia given.

43. Treatment Strategies for Acute Nerve Entrapment Syndrome (ACNES): A Systematic Review, Meta-Analysis and Surgical Interventions Definition Study

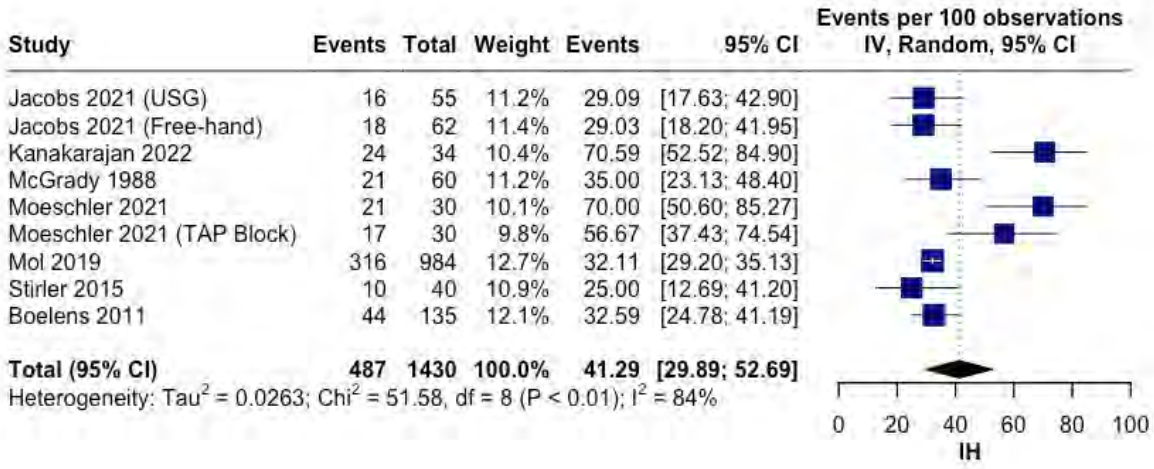
C Balthazar da Silveira, S Gulati, R Easter, V Deka, T Gillespie
St. Joseph's Hospital and Medical Center, Dignity Health

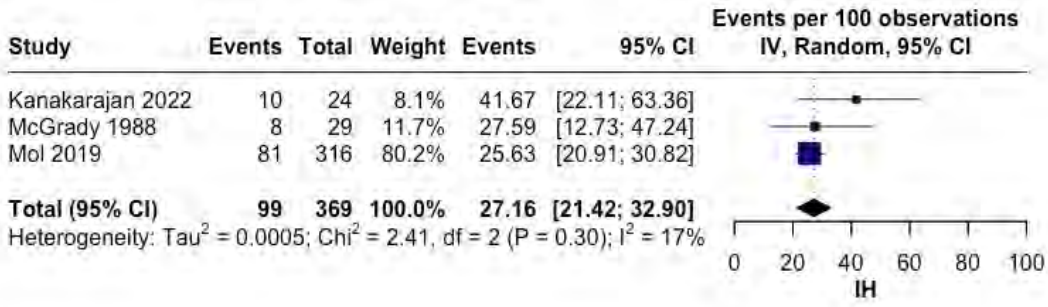
Background: Acute Nerve Entrapment Syndrome (ACNES) is a pain disorder caused by the entrapment of intercostal nerve branches at the rectus abdominis muscle. Diagnosis is based on chronic pain, localized pain, abnormal physical examination findings, and exclusion of other causes. Risk factors include prior abdominal surgery, trauma, obesity, and anatomical variations. While conservative treatments like analgesics, nerve blocks, and physical therapy are effective, surgery may be needed for refractory cases. However, there is a lack of data analyzing each individual intervention results, and also defining the available surgical techniques. This meta-analysis evaluates the outcomes of conservative and surgical treatments for ACNES, and define the surgical intervention techniques.

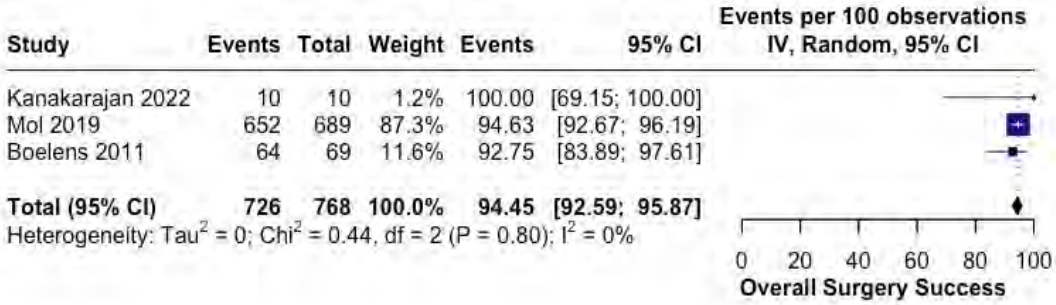
Methods: We searched Cochrane, Scopus, Embase, and PubMed/MEDLINE for studies on conservative or surgical interventions for ACNES. Outcomes assessed included success rates of conservative therapies, pain relief after injections, recurrence after conservative success, and surgical outcomes, including success rates, recurrence, and complications. Subgroup analyses examined ultrasound-guided versus free-hand injections and local anesthetic with corticosteroids versus local anesthetic alone. A proportional meta-analysis was performed using R software.

Results: Of 826 studies screened, 19 met the criteria, involving 2,083 patients. Conservative therapy success was 41.29 per 100 patients. Sustained pain relief after the first and second injections was 13.45% and 13.32%, respectively. The recurrence rate after initial success was 27.16%. For the surgical intervention, the overall success was 94.45%, with a 34.63% recurrence rate after the first surgery. Subsequent surgeries had high success rates, and complications were rare. The subgroup analysis showed no significant differences in outcomes for ultrasound-guided or corticoid-added injections. The pooled analysis of studies on surgical interventions primarily focused on anterior and posterior neurectomy approaches. We propose a definition based on three surgical approaches: (1) Open superficial neurectomy, performed without opening the anterior rectus sheath; (2) Deep anterior neurectomy, achieved through an open incision in the anterior rectus sheath followed by neurectomy; and (3) Robot-assisted posterior neurectomy, performed via a totally extraperitoneal approach, with access to the retrorectus space at the medial rectus border, slightly lateral to the Linea Alba. This procedure may be recommended for patients with refractory pain following anterior neurectomy or those experiencing severe pain, particularly when cosmesis or functional outcomes are not a primary concern.

Conclusion: Conservative therapy for ACNES has a high recurrence rate, but surgery provides high success rates, especially after subsequent operations. A stepwise approach, starting with conservative treatment, is effective. There is a lack of surgical techniques standardization, and we propose a definition with three techniques. The choice for the adequate technique must consider patient expectations on pain, cosmetic, and functional outcomes.


Study
Events
Total
Weight
Events
95% CI
Events per 100 observations
IV, Random, 95% CI
Jacobs 2021 (USG) 16 55 11.2% 29.09 [17.63; 42.90]
Jacobs 2021 (Free-hand) 18 62 11.4% 29.03 [18.20; 41.95]
Kanakarajan 2022 24 34 10.4% 70.59 [52.52; 84.90]
McGrady 1988 21 60 11.2% 35.00 [23.13; 48.40]
Moeschler 2021 21 30 10.1% 70.00 [50.60; 85.27]
Moeschler 2021 (TAP Block) 17 30 9.8% 56.67 [37.43; 74.54]
Mol 2019 316 984 12.7% 32.11 [29.20; 35.13]
Stirler 2015 10 40 10.9% 25.00 [12.69; 41.20]
Boelens 2011 44 135 12.1% 32.59 [24.78; 41.19]
Total (95% CI) 487 1430 100.0% 41.29 [29.89; 52.69]
Heterogeneity: Tau² = 0.0263; Chi² = 51.58, df = 8 (P < 0.01); I² = 84%
0
20
40
60
80
100
IH


Study
Events
Total
Weight
Events
95% CI
Events per 100 observations
IV, Random, 95% CI
Kanakarajan 2022 10 24 8.1% 41.67 [22.11; 63.36]
McGrady 1988 8 29 11.7% 27.59 [12.73; 47.24]
Mol 2019 81 316 80.2% 25.63 [20.91; 30.82]
Total (95% CI) 99 369 100.0% 27.16 [21.42; 32.90]
Heterogeneity: Tau² = 0.0005; Chi² = 2.41, df = 2 (P = 0.30); I² = 17%
0
20
40
60
80
100
IH


Study
Events
Total
Weight
Events
95% CI
Events per 100 observations
IV, Random, 95% CI
Kanakarajan 2022 10 10 1.2% 100.00 [69.15; 100.00]
Mol 2019 652 689 87.3% 94.63 [92.67; 96.19]
Boelens 2011 64 69 11.6% 92.75 [83.89; 97.61]
Total (95% CI) 726 768 100.0% 94.45 [92.59; 95.87]
Heterogeneity: Tau² = 0; Chi² = 0.44, df = 2 (P = 0.80); I² = 0%
0 20 40 60 80 100
Overall Surgery Success

44. Laparoscopic Enhanced Total Extraperitoneal Repair: A Viable Option for Concomitant Repair Of Inguinal And Ventral Hernia

B Dongare, S Rege
Seth G.S. Medical College and KEM hospital

Background: Incidence of both inguinal and ventral hernias has increased significantly over the years, with umbilical hernia being more commonly associated with inguinal hernias . International guidelines exists for surgical management of either ventral or inguinal hernias repair however no such guidelines are established for concomitant repair of these types of hernias. Various options available are open repair of both the hernias , laparoscopic inguinal hernia repair with open ventral hernia repair , minimal access repair of both would entail ventral hernia by intraperitoneal onlay mesh repair (IPOM plus) and inguinal hernia tackled by mesh placement in pre peritoneal plane leading to mesh placement in different planes , trans abdominal pre peritoneal (TAPP) repair for both ventral as well as inguinal hernia and enhanced total extraperitoneal repair (eTEP) for both ventral and inguinal hernia with mesh placement in same plane. This study aims at analysing the feasibility of laparoscopic enhanced total extraperitoneal repair for concomitant ventral and inguinal hernias

Methods: A prospective study was carried out at a tertiary referral centre from march 2021 till March 2024 following the institutional ethics committee approval and informed consent. All patients who underwent concomitant ventral hernia primary or incisional , with or without diverication of recti and inguinal hernia repair with laparoscopic enhanced total extraperitoneal repair were included. Patients who were converted to other procedures were excluded. All the demographic data of 76 patients with their intraoperative data and post operative complications and follow up were digitally stored.

Results: Out of 76 patients subjected to concomitant ventral and inguinal hernia repair by laparoscopic enhanced total extraperitoneal repair, 74 were males and 2 females, 61 patients had bilateral inguinal hernias and 15 patients had unilateral inguinal hernia, 57 patients had primary umbilical hernia and the rest had incisional hernia, 44 patients with defect size 2-4 cm , 25 patients with defect size upto 6 cm while 7 patients had defect size of more than 6 cm .Rectus diastasis was there in about 23 patients. The average operative time was 100.8 minutes with about 11 patients requiring posterior component separation. The postoperative pain analysed on VAS score was about 6 after 8 hours while came down to 3 without requirement of additional analgesics in 24 hours. Average hospital stay was 2.9 days.

Conclusion: Laparoscopic enhanced total extraperitoneal repair is indeed a good option for concomitant repair of ventral and inguinal hernia due to feasibility of propylene mesh placement in same plane for both the repairs, cost effective, lesser post operative intrabdominal complications and early post operative recovery with less morbidity due to pain.

45. The Financial Implications of Using Biologic and Biosynthetic Mesh in Clean Elective Ventral Hernia Repair

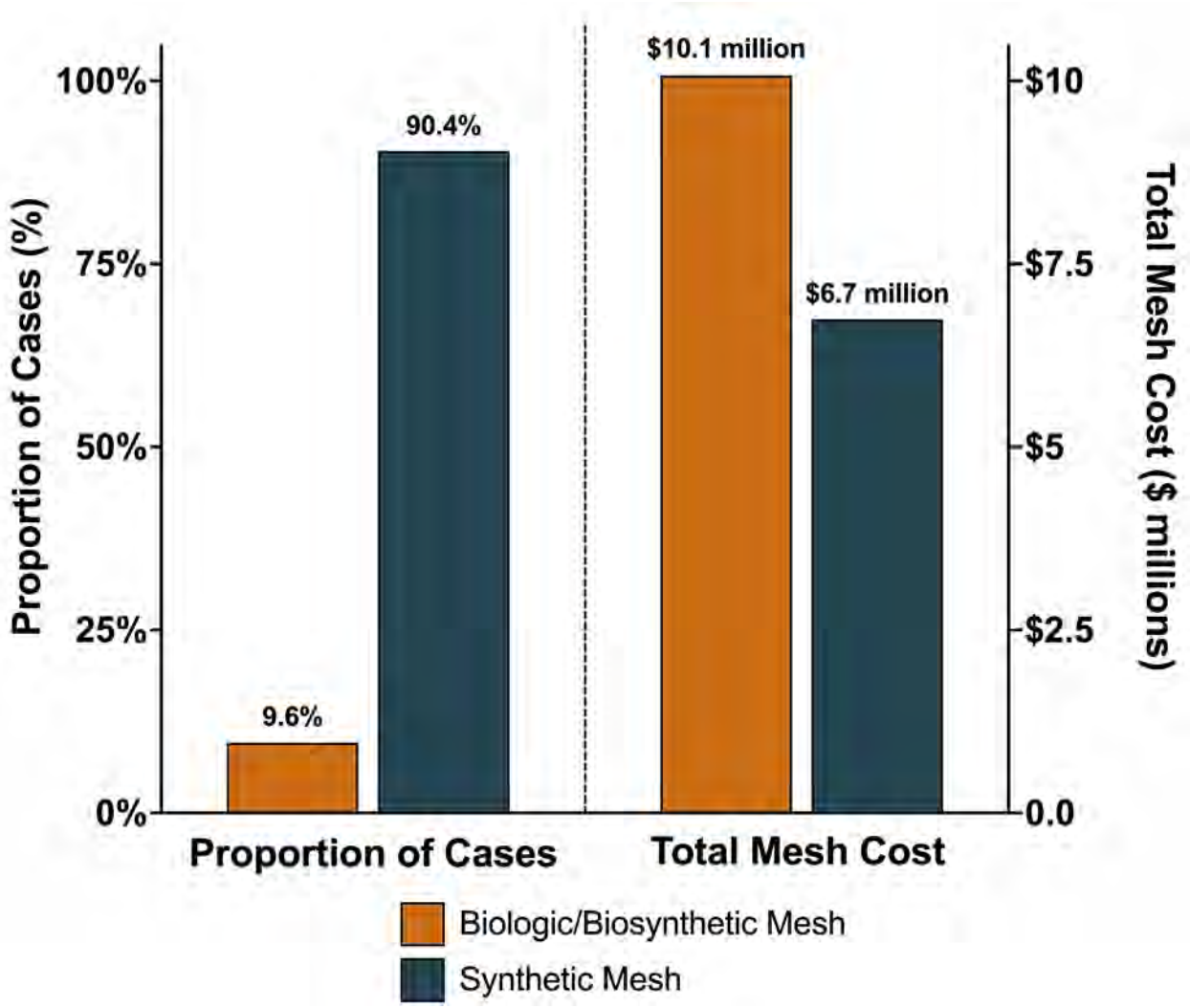
R Howard, C Mullens, L Schoel, A Hallway, A Ehlers, D Telem
University of Michigan

Background: Although evidence-based practice guidelines recommend using permanent synthetic mesh in elective ventral hernia repair with a clean wound classification, biologic and biosynthetic mesh continues to be used in these cases. While the clinical implications of this practice include increased risk of hernia recurrence, the impact on the health system is less clear. Therefore, we performed the following study to understand the financial implications of using biologic and biosynthetic mesh in clean, elective ventral hernia repair.

Methods: We used a statewide clinical registry to identify adults who underwent elective ventral hernia repair with mesh between 2021-2024. Only cases with clean wound classifications were included. The main exposure was mesh type, which was classified as biologic/biosynthetic and synthetic. The main outcome was mesh cost, which was obtained from our institution's surgical purchasing manager, our institution's standard charges database, and available medical supplier directories. Multivariable logistic regression was performed to assess the association between patient characteristics and mesh type. Descriptive analysis was performed to calculate mesh cost and estimate the potential cost savings if synthetic mesh had been used in all cases.

Results: 13,082 patients underwent elective, clean ventral hernia repair with mesh. Mean age was 55.7 (13.8) years, 5,382 (41.1%) patients were female, and median hernia width was 3.0 (interquartile range 2-4) cm. Biologic or biosynthetic mesh was used in 1,249 (9.6%) cases, with the most common brands being SepraMesh (2.8%), Phasix (1.8%), and Synecor (1.6%). Biologic or biosynthetic mesh was more likely to be used in patients with a higher body mass index (OR 1.02 [95% CI 1.01-1.03]), patients with non-midline hernias (OR 1.45 [95% CI 1.12-1.86]), laparoscopic repairs (OR 3.18 [95% CI 2.68-3.78]), and repairs with component separation (OR 2.46 [95% CI 1.94-3.13]). The mean cost of biologic and biosynthetic mesh was 1,314.7% higher than synthetic mesh ($8,063.72 [95% CI $649.00 - $20,774.04] vs. $570.00 [95% CI $100.05 - $1,028.48], P<.001]). The total cost of biologic and biosynthetic mesh in this cohort was $10.1 million compared to a total cost of synthetic mesh of $6.7 million. Therefore, despite only accounting for 9.6% of cases, biologic and biosynthetic mesh accounted for 59.9% of total mesh cost (Figure). Based on the mean cost of each mesh type, we estimate that approximately $9.4 million would have been saved if synthetic mesh had been used in all cases.

Conclusion: Despite accounting for only a small proportion of cases, the use of biologic and biosynthetic mesh in clean, elective ventral hernia repair represents a significant source of cost. Insofar as all available evidence suggests that synthetic mesh is safe and appropriate in these cases, these results suggest that efforts to reduce biologic and biosynthetic mesh use in these cases could achieve substantial cost savings without negatively affecting patients.


100%
75%
50%
25%
0%
Proportion of Cases (%)
90.4%
9.6%
$10.1 million
$6.7 million
$10
$7.5
$5
$2.5
0.0
Total Mesh Cost ($ millions)
Proportion of Cases
Total Mesh Cost
Biologic/Biosynthetic Mesh
Synthetic Mesh

46. From Preoperative to Postoperative: The Effect of Gender on Ventral Hernia Repair

CE Collins, CM Collins, L Huang, M Blackman
The Ohio State University Wexner Medical Center

Background: Sex-based differences in anatomy and physiology along with gender bias all come in to play during a patient's surgical course. The effect of gender on preoperative optimization and operative decision making, which are important for optimal outcomes in elective ventral hernia repair, are relatively unknown. We chose to evaluate the impact of gender on preoperative presentation, operative decision making and postoperative outcomes in patients undergoing elective ventral hernia repair.

Methods: A retrospective cohort study using the Abdominal Core Health Quality Collaborative database to identify adults (≥ 18 years old) undergoing elective ventral hernia repair with mesh from January 2016 to December 2023. Treatments of interest were preoperative body mass index (BMI), smoking status, and type-2 diabetes mellitus (T2DM). Outcomes of interest included postoperative complications, readmission, reoperation and hernia recurrence. Wilcoxon and Pearson tests were used.

Results: A total of 2971 subjects were identified, of which 1439 (48%) were male and 1532 (52%) were female. Females were more likely to identify as a racial minority (16% vs 23%, $p < 0.001$) and had higher BMI (35 vs 33, $p < 0.001$). Males were more likely to present with liver failure (3% vs 1%, $p = 0.04$), be on anti-platelet (23% vs 17%, $p < 0.001$), anti-coagulant (10% vs 8%, $p = 0.03$) or immunosuppressant (8% vs 6%, $p = 0.01$) medications. There was no difference between age, T2DM, dialysis, chronic obstructive pulmonary disease (COPD), heart failure, ASA class or current smoking status between sexes. Females had hernias with greater length (12cm vs 8cm, $p < 0.001$) and width (8cm vs 5cm, $p < 0.001$). Most cases in both sexes were clean or clean-contaminated (98% vs 98%). More females required operative times of greater than two hours (69% vs 53%, $p < 0.001$) while men were more likely to have open operations (58% vs 57%, $p = 0.02$). Females were more likely to undergo a concomitant procedure (20% vs 12%, $p < 0.001$), specifically obstetric/gynecologic surgery (13% vs 1%, $p < 0.001$), have drains placed (55% vs 42%, $p < 0.001$) and undergo creation of subcutaneous flaps (21% vs 17%, $p = 0.004$). There was no difference in intra-operative complication between sexes. Regarding 30-day outcomes females were more likely to be readmitted (6% vs 4%, $p = 0.001$), have a surgical site infection (SSI) (6% vs 3%, $p < 0.001$), surgical site occurrence (18% vs 14%, $p = 0.003$), and require procedural intervention (8% vs 4%, $p < 0.001$). There was no difference in medical complications or one-year recurrence between sexes.

Conclusion: Females presented with higher BMI and larger hernias than men, but overall comorbidity and smoking status were similar between sexes. Operative courses differed with females having longer and more complicated operative courses. Females had higher 30-day readmission, SSI, and SSO than males. Further analysis is needed to determine the effect of these differences on surgical outcomes.

47. The Use of AI Large Language Models in Postoperative Opioid Use in Ventral Hernia Repairs: There is a Place for AI as a Screening Assistant?

D Lima, R Nogueira, V dos Santos Neves, Y Biscola Da Cruz, G Lyons, S Wagemaker Viana, T Souza e Silva, F Malcher, D Camacho
Montefiore Medical Center

Background: In the wake of artificial intelligence (AI), there is a growing desire to explore its potential to accelerate the research process. AI's ability to operate vast amounts of data at an unprecedented speed, identify patterns, and mimic human intelligence and behavior has driven an interest in testing the effectiveness of this tool in academic research. Despite its promises, a debate has arisen regarding the limitations of its use and the veracity of the information it produces. To evaluate the efficiency and accuracy of AI as a screening assistant and compare its ability to our human manual screening, we experimented with the use of AI as a tool for literature search in the context of postoperative opioid use in ventral hernia repair (VHR).

Methods: A systematic search was conducted by humans across MEDLINE/PubMed, EMBASE, and Web of Science. Subsequently, a search strategy was defined and applied to access the results. Three authors were designed to perform the manual screening and the full review of the articles selected at Covidence, a web-based tool for systematic reviews. Meanwhile, two prompting techniques were elaborated, "standard/zero-shot" and "chain of thoughts", and were tested by two other authors in the AI platform of choice; Chat GPT 4.o (Figure 1). First, we built a direct command to AI search the same databases and bring the results related to postoperative opioid use in VHR. The results were verified to check their existence. Second, a more specific and carefully constructed chain of actions was created for AI to follow. We shared our systematic review project, and gave the same results list accessed with the search strategy defined. Instructions to use keywords, and synonymous and not to be so rigorous regarding the meaning of the words were given. With this, we aimed to minimize hallucinations, gaps of knowledge, and lack of history that could limit AI actions. We crossed the results of our screening and full-text review to the Chat GPT selection, assessing the matching articles and identifying disparities.

Results: 5400 studies were manually screened and 20 were fully reviewed. 6 studies met the criteria and were ultimately included. In comparison, the first prompting technique generated a list of 12 studies in response to our command. However, after verification, all of them were proved fabricated, and no DOI was found (Figure 2). The second technique, AI generated a list of 104 papers from the same 5400 studies screened. 9 overlapped with our human-selected studies, and 4 were ultimately included in the final analysis. However, 3 selected articles from our manual screening were not included in the AI-generated list (Figure 3).

Conclusion: While AI shows the potential to process data at an unimaginable speed, its use as a screening assistant, highlights a critical limitation. Therefore, AI-assisted screening can be used as a supplementary tool, but not replace human reviewers in the screening action for a systematic review.

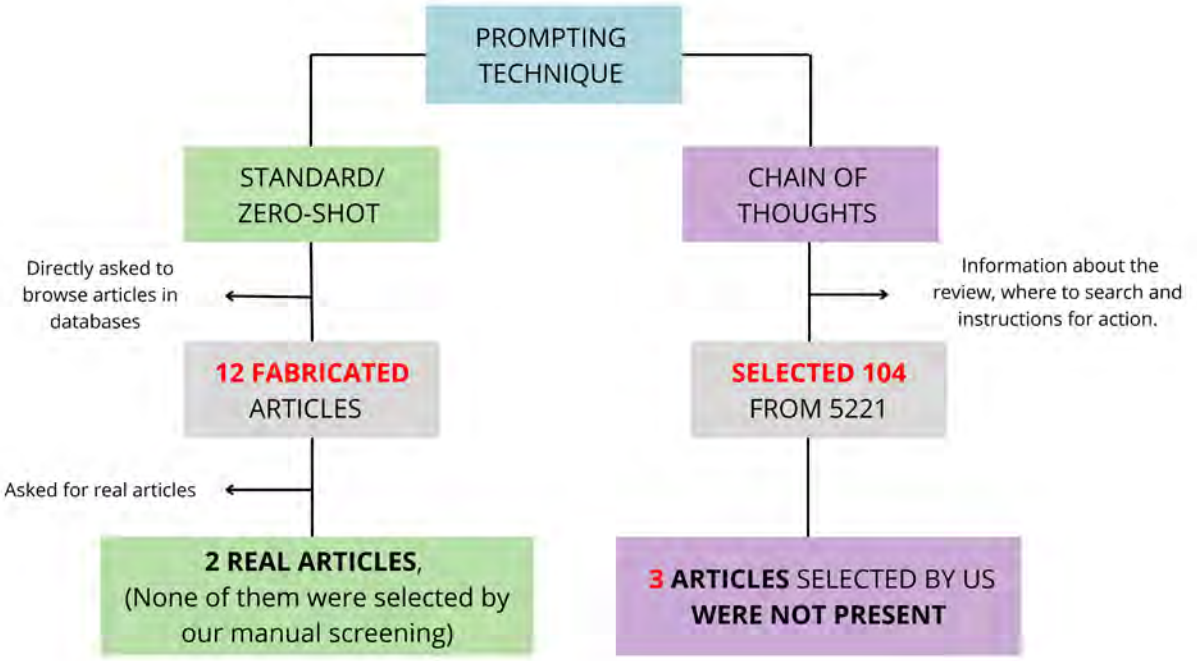


Figure 1. Methods workflow: testing prompting techniques on CHAT GPT 4.o

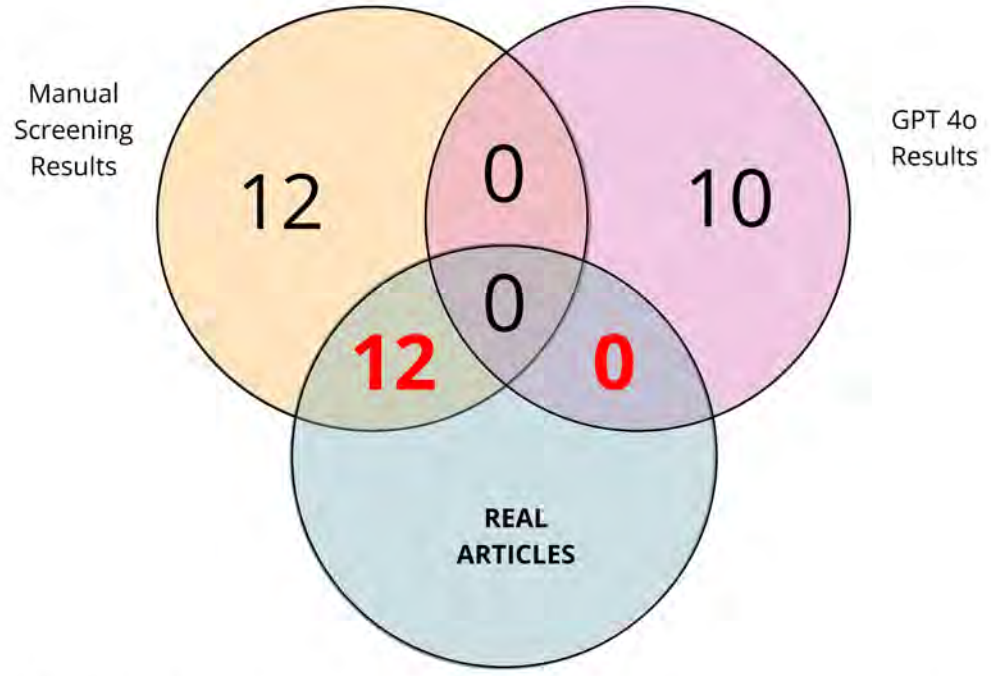


Figure 2. Venn diagram of "Standard/Zero-Shot" prompting results

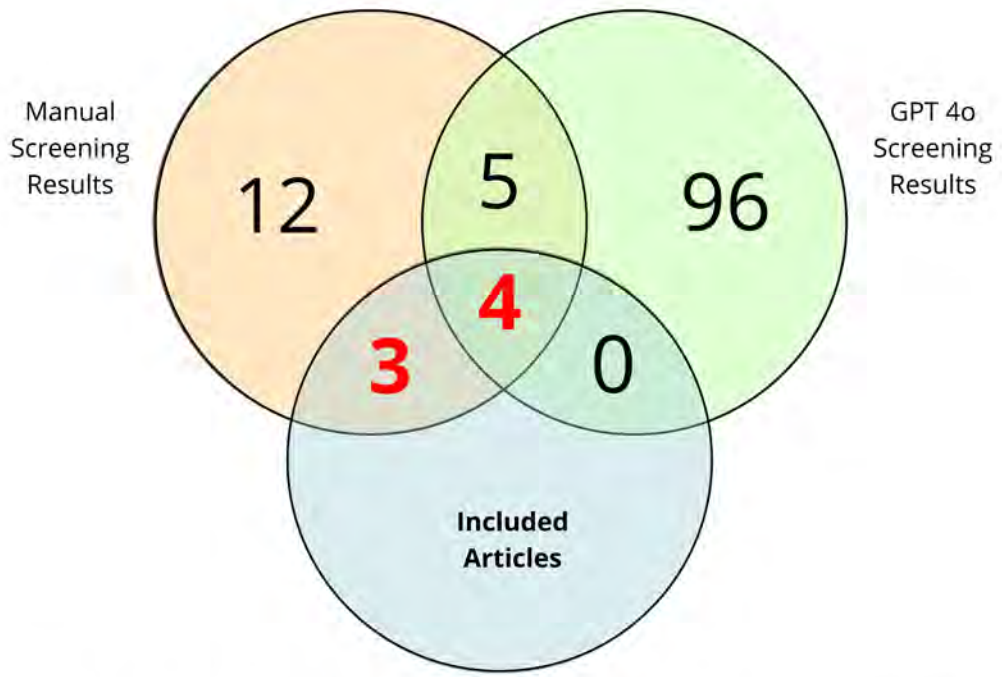


Figure 3. Venn diagram of "Chain Of Thoughts" prompting results

QUICKSHOT ABSTRACTS

Q 1. Primary Parastomal Hernia Repairs Utilizing Mesh-Suture: A Multi-institutional Study

EM Pauli, M Quattrone, ED Moyer, T Huy, B Fung, K Marrero, EM Sodomin, VV Alli, DC Chen
Penn State Health Milton S. Hershey Medical Center

Background: Primary parastomal hernia (PH) repairs are often necessitated by patient and hernia factors but are traditionally associated with high recurrence rates. Mesh-suture is a novel material that may facilitate more durable primary PH repairs. We evaluated the short-term effectiveness of mesh-suture PH repair.

Methods: A retrospective review of prospectively collected data was performed from May 1, 2023-February 28, 2025 for patients undergoing primary PH repair with mesh-suture at two high-volume centers. Descriptive analyses of patient and hernia characteristics were performed. Primary outcomes included post-operative and mesh-suture related complications.

Results: Thirty-nine patients (Mean age 61 years-old, BMI 29.9kg/m2, 67% female) were included, with a mean defect size of 15.0cm2 (±10.5cm2). Mean post-operative follow-up was 160 days (±151days). The majority of stomas were colostomies (51.2%) repaired with interrupted figure-of-eights (66.7%). Complications included: ileus (12.8%), obstruction (20.5%), surgical site occurrences (SSO) (28.2%), surgical site infections (SSI) (12.8%) and SSO/SSI requiring procedural intervention (12.8%). There were twelve recurrences (30.8%), all after 30-days, with a mean recurrence time of 160 days (±129days). Five patients required reoperation for recurrence: two underwent mesh-based repairs and three were re-repaired primarily with mesh-suture without additional recurrence. Two additional patients required reoperation during the follow-up period: one for peristomal skin excision due to local irritation and one patient required stoma dilation and stent placement for a stoma stricture that was unrelated to the hernia repair. There were no incidents of mesh-suture infection, erosion, adhesions or suture sinus formation. No patients required reoperation for mesh-suture removal.

Conclusion: Mesh-suture is a safe alternative to traditional suture for parastomal herniorrhaphy, without evidence of mesh-suture related complication, and similar short-term recurrence rates to prior literature. This represents a temporizing management option in non-optimized patients requiring repair. Additional long-term follow-up is required.

Q 2. Chronic Post-operative Inguinal Pain After Inguinal Hernia Repair: Comparing Lichtenstein, Open Preperitoneal, and Minimally Invasive Techniques

H White, S Budney, K Kleppe, G Mancini, M Phillips, M Reinhorn, M Goldman, K Blake, A Fafaj
University of Tennessee, Knoxville

Background: Chronic postoperative inguinal pain (CPIP) is generally defined as pain lasting more than 3 months after surgery. There is a varying incidence of CPIP in the literature, ranging from 0 to 63%, largely due to inconsistent definitions for CPIP. However, considering the number of inguinal hernia repairs performed annually worldwide, this is a significant complication. To date, there is no long-term data comparing the rates of CPIP after three main techniques for inguinal hernia repair. The aim of this study was to compare the risk for developing CPIP between Lichtenstein, open preperitoneal (OPP), and minimally invasive surgery (MIS) techniques.

Methods: We conducted a retrospective review of the Abdominal Core Health Quality Collaborative of all patients who underwent elective, clean, non-recurrent, unilateral inguinal hernia repair with mesh between January 2014 and December 2023 who had at least 6-month follow-up. The procedures included were Lichtenstein, open preperitoneal (transinguinal preperitoneal or transrectus sheath preperitoneal), and minimally invasive surgery (laparoscopic or robotic). The primary outcome was the rate of CPIP, defined by the validated EuraHS QoL pain domain score ≥ 3 measured at ≥ 6 months postoperatively, based on prior publications. The secondary outcomes were intraoperative details, wound complications, restriction of activity, and hernia recurrence at a maximum follow-up of 5 years. A propensity score model was implemented to address potential treatment choice bias.

Results: The study included 1,910 patients (Lichtenstein: 326, OPP: 346, MIS: 1,238). The majority of patients were male (91%) and the median BMI was 26 (24-28) kg/m2. After propensity score matching, there were no differences in baseline pain scores between the groups. At six months and two years follow-up, the rate of CPIP was significantly higher for the Lichtenstein (19% at 6 months, 22% at 2 years) and MIS groups (19% at 6 months, 14% at 2 years) when compared with the OPP (6% at 6 months, 6% at 2 years) group ($p< 0.001$ and $p=0.003$, respectively). The rates of CPIP between the groups at 1, 3, 4 or 5 years after surgery showed no significant difference. At 6-month follow-up, there were more patients who reported restriction domain scores of 5 or higher in the MIS (12%) and Lichtenstein (14%) groups vs the OPP group (4%) ($p=0.003$). There were no differences in restriction domain scores or hernia recurrence at 1, 2, 3, 4, or 5-year follow-up. There were no differences in recurrence at 1, 2, 3, 4 or 5-year follow-up.

Conclusion: This is the first study with long-term follow-up to compare CPIP after Lichtenstein, OPP, and MIS techniques. The OPP group was associated with less CPIP at 6 months and 2-year follow-up when compared to the Lichtenstein and MIS groups. However, longer follow-up determined no difference in rates of CPIP, restriction, or recurrence between all groups.

Q 3. First United States Experience with the Dexter Robotic Surgical System for Minimally Invasive Inguinal Hernia Repair

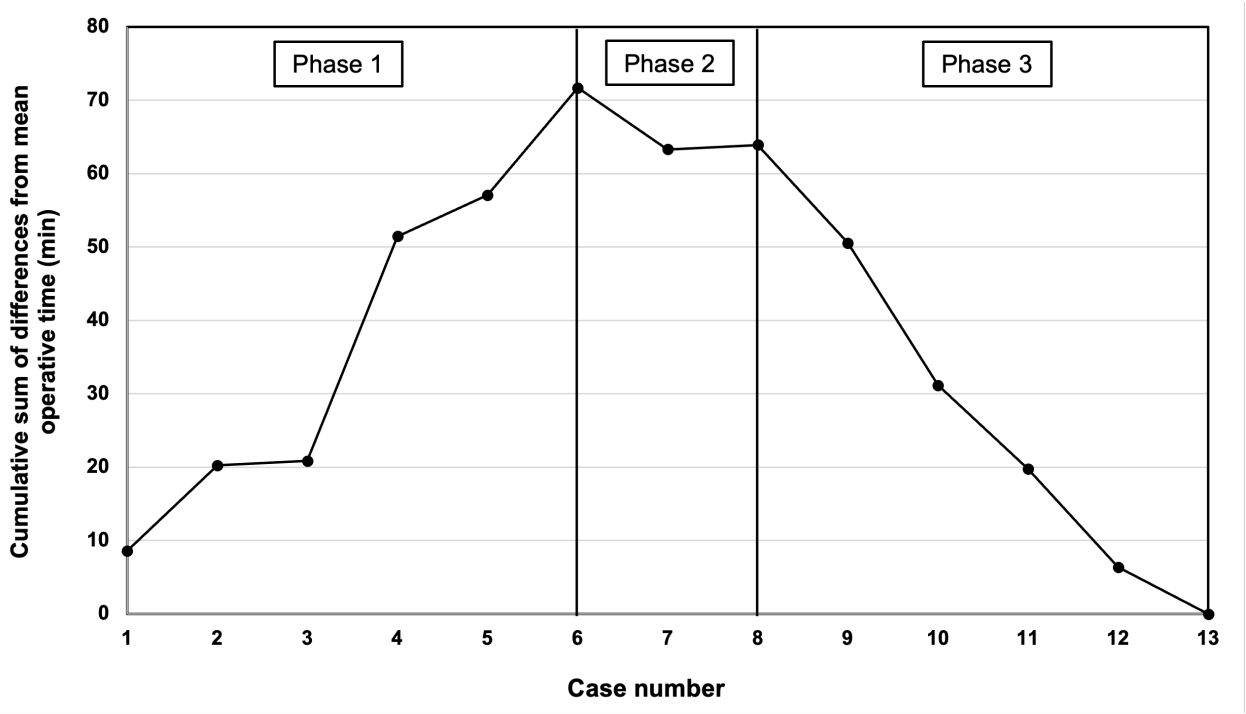
G Jacobsen, R Broderick, G Spurzem, J Reeves, H Hollandsworth, B Sandler
University of California, San Diego

Background: The safety and feasibility of robotic-assisted transabdominal preperitoneal inguinal hernia repair (rTAPP) has been established with single cart, multi-arm platforms. There is a relative paucity of data on the use of open-console, multi-cart platforms for rTAPP. The Dexter robotic surgical system was recently approved by the United States Food and Drug Administration for inguinal hernia repair and consists of a sterile surgeon's console, two robotic instrument arms, and one robotic laparoscope arm. The objective of this study was to confirm the clinical performance and perioperative safety of Dexter for rTAPP and present the first case series using this platform in the United States.

Methods: A retrospective review of a prospectively maintained database identified patients who underwent elective unilateral rTAPP by two experienced robotic hernia surgeons using the Dexter system. All cases were completed using three standard laparoscopy trocars in an ambulatory surgery center. Both 2D and 3D laparoscopes were used in the case series. Primary outcomes included intraoperative complications, device malfunctions, and 30-day morbidity, readmission, and reoperation rates. Secondary outcomes included skin-to-skin operative time, console time, and incision to dock time. Cumulative sum analysis (CUSUM) of operative time, which graphically depicts the cumulative sum of differences from the total sample mean, was used to assess surgeon learning curve with the system. Continuous variables were reported as a mean and standard deviation.

Results: A total of 21 patients were identified. Mean age was 61.2 (13.0) years, mean BMI was 25.8 (3.5) kg/m2, and 90.5% (N=19) of patients were male. Six cases (28.6%) were performed using a standard 2D laparoscope. All patients were discharged on the day of surgery. There were no intraoperative complications, device malfunctions, or conversions to open. 30-day morbidity, readmission, and reoperation rates were 0%. Mean skin-to-skin operative time was 61.2 (16.2) min, mean console time was 46.8 (18.3) min, and mean incision to dock time was 7.1 (2.3) min. Three phases were identified by the inflection point of the CUSUM curve for one surgeon who completed 13 cases. Phase 1 represents the initial learning curve, ending at case 6. Phase 2 from cases 6 to 8 characterizes achievement of expert competence. Phase 3 represents proficiency with the system in the post-learning period, ending at case 13.

Conclusion: We present the first case series from the United States using the Dexter robotic system for minimally invasive inguinal hernia repair. This study confirms the clinical performance and perioperative safety of the device using both 2D and 3D laparoscopes. The learning curve for an experienced robotic hernia surgeon with the system was 6 cases.


Phase 1
Phase 2
Phase 3
Cumulative sum of differences from mean operative time (min)
Case number
0
10
20
30
40
50
60
70
80
1
2
3
4
5
6
7
8
9
10
11
12
13

Q 5. Does Defect Size Matter? Risk of Venous Thromboembolism and Pulmonary Embolism After Ventral Hernia Repair

O Subillaga, A Pérez Coulter, J Wu
UMass Chan Medical School--Baystate Medical Center

Background: Ventral hernia repair (VHR) is a common operation performed approximately 400,000 times a year in the United States. In 2023, the American Medical Association introduced new Current Procedural Terminology classification that change the way in which VHRs are coded. The new codes include all approaches and categorize by fascial defect size as follows: 10cm. Venous thromboembolism (VTE) and pulmonary emboli (PE) represent preventable postoperative complications with significant morbidity. We studied the association between postoperative VTE/PE and size of the fascial defect. Secondary outcomes include postoperative complications by both defect size and hernia recurrence status.

Methods: We conducted a retrospective cohort study of adult patients. Using the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) dataset we identified patients from 2023 that met inclusion criteria with CPT codes for VHRs. We stratified by hernia defect size, type and severity. Descriptive statistics were calculated. Continuous measures are shown as mean/standard deviation (SD) and categorical as frequencies/percentages. Relative risk was modeled by logistic regression to examine the associations between fascial defect size and postoperative outcomes. Post hoc analysis was conducted to characterize postoperative outcomes by initial presentation versus recurrence.

Results: A total of 12,947 VHRs were recorded during the last quarter of 2023: 5,950 (46%) 10cm. Mean age (SD) was different among the three cohorts: 53.55 (14.41), 57.05 (13.82), and 59.12 (12.79) respectively (p< 0.001). Similarly, mean BMI (SD) was different: 30.93 (6.30), 33.24 (7.19), and 33.15 (7.13), respectively (p< 0.001). The increased fascial defect groups were associated with increasing rates of diabetes, heart failure, hypertension, and immunosuppressive medications (p< 0.001). Sepsis was present in similar rates in all groups: 18 (0.3%), 23 (0.4%), and 4 (0.3%) (p=0.12).

There were 29 (0.2%) instances of VTE identified: 6 (0.1%), 10 (0.2%), and 13 (0.8%) for 10cm respectively (p10cm. The relative risk (95% CI) of PE compared to 10cm. Table 2 summarizes the relative risks by defect size.

Post hoc analysis showed a higher incidence of PE (20 [0.2%] vs 7 [0.5%], (p=0.01) for recurrent hernias compared to initial presentation. However, the rate of VTE was similar between these two groups: 5 (0.4%) and 24 (0.2%) (p=0.24). Table 3 summarizes the post hoc analysis.

Conclusion: While the unadjusted relative risk of both VTE and PE was higher the bigger the fascial defect, adjusting for patient demographics and medical history only revealed an association between increasing risk of PE and fascial defect >10cm.

Table 1. Postoperative outcomes by fascial defect size

	<3cm	3-10cm	>10cm	P value
N (%)	5,956 (46%)	5,444 (42%)	1,547 (12%)	
Length of stay, mean (SD)	0.55 (2.05)	1.03 (2.55)	2.89 (3.65)	<0.001
VTE, n (%)	6 (0.1)	10 (0.2)	13 (0.8)	<0.001
PE, n (%)	5 (0.1)	10 (0.2)	12 (0.8)	<0.001
Superficial SSI, n (%)	79 (1.3)	102 (1.9)	49 (3.2)	<0.001
Deep SSI, n (%)	9 (0.2)	23 (0.4)	14 (0.9)	<0.001
Organ Space SSI, n (%)	19 (0.3)	27 (0.5)	27 (1.7)	<0.001
Renal insufficiency, n (%)	9 (0.2)	16 (0.3)	10 (0.6)	<0.001
Pneumonia, n (%)	14 (0.2)	33 (0.6)	26 (1.7)	<0.001
UTI, n (%)	21 (0.4)	32 (0.6)	12 (0.8)	0.06
Death, n (%)	6 (0.1)	13 (0.2)	8 (0.5)	<0.001

VTE= venous thromboembolism, PE= pulmonary embolism, SSI=surgical site infection, UTI= urinary tract infection

Table 2. Relative risk of postoperative complications by fascial defect size

	3-10cm	>10cm
VTE, (95% CI)	1.05 (0.38, 2.92)	2.45 (0.88, 6.77)
PE, (95% CI)	1.62 (0.55, 4.83)	3.59 (1.18, 10.91)
Renal insufficiency, (95% CI)	1.20 (0.53, 2.70)	0.67 (0.25, 2.70)
Pneumonia, (95% CI)	1.63 (0.84, 3.18)	1.72 (0.82, 3.61)
UTI, (95% CI)	1.54 (0.84, 2.82)	1.70 (0.78, 3.74)
Organ space SSI, (95% CI)	1.20 (0.64, 2.23)	1.95 (1.00, 3.80)

VTE= venous thromboembolism, PE= pulmonary embolism, SSI=surgical site infection, UTI= urinary tract infection

Table 3. Post hoc analysis of postoperative complications comparing initial presentation to recurrent hernias

	Initial	Recurrent	P value
N (%)	11,583 (89.5%)	1,364 (10.5%)	
VTE, n (%)	24 (0.2)	5 (0.4)	0.24
PE, n (%)	20 (0.2)	7 (0.5)	0.01
Superficial SSI, n (%)	193 (1.7)	37 (2.7)	0.01
Deep SSI, n (%)	31 (0.3)	15 (1.1)	0.00
Organ Space SSI, n (%)	56 (0.5)	17 (1.2)	0.00
Renal insufficiency, n (%)	28 (0.2)	7 (0.5)	0.07
Pneumonia, n (%)	54 (0.5)	19 (1.4)	0.00
UTI, n (%)	52 (0.4)	13 (1.0)	0.01
Death, n (%)	24 (0.2)	3 (0.2)	0.92

VTE= venous thromboembolism, PE= pulmonary embolism, SSI=surgical site infection, UTI= urinary tract infection

Q 6. Biologic vs Synthetic Mesh in Ventral Hernia Repair: Are We There Yet? A Systematic Review and Trial Sequential Analysis

D Lima, G Magalhães Albuquerque, A Graziani e Sousa, R Nogueira, D Camacho
Montefiore Medical Center

Background: Ventral hernia repair is one of the most frequently performed surgical procedures. However, the selection of the most appropriate mesh type remains a subject of considerable debate. Although biologic mesh is widely utilized in such cases, particularly for contaminated ventral hernia repair (VHR), its high cost and association with long-term hernia recurrence pose significant concerns regarding its long-term efficacy. In contrast, synthetic mesh presents a more cost-effective alternative; however, its effectiveness in these complex clinical scenarios has not been rigorously evaluated. Moreover, the current body of evidence regarding the choice of mesh for VHR in contaminated fields remains insufficient. Given these limitations, this study aims to systematically evaluate and analyze existing data on the comparative efficacy and safety of biologic versus synthetic mesh in VHR

Methods: A comprehensive online search was conducted across databases (PubMed/MEDLINE, EMBASE, Web of Science, and Cochrane Library) from January 2000 until January 2025. Randomized controlled trials (RCTs) exclusively comparing biologic and synthetic mesh in patients undergoing ventral hernia repair were included, with no restrictions on language. The primary outcomes were surgical site occurrence (SSO), surgical site infection (SSI), reoperation and hernia recurrence. Secondary outcomes included hematoma and seroma formation, operative time (OT), and length of stay (LoS). Trial sequential analysis (TSA) was performed using TSA Software 0.9.5.10 Beta (Copenhagen Trial Unit, Center for Clinical Interventional Research).

Results: A total of 762 studies were screened, and 16 studies were fully reviewed. 4 RCTs, and 758 patients were included in the TSA (Figure 1). 48% of patients had Wound Classification II-IV,, and 83.4% were submitted to an open procedure. In the TSA, only OT reached the required information size (RIS), suggesting conclusive evidence, favoring synthetic mesh for this outcome (Figure 2). For the other outcomes, including SSO, SSI, reoperation, hernia recurrence, seroma formation, hematoma, and LOS, the required sample size was not met, indicating that further evidence is needed to draw firm conclusions.(Figure 3) Individual studies did not meet the proper sample size for outcomes of interest.

Conclusion: Biologic and synthetic mesh demonstrated comparable results in VHR across multiple clinical parameters. However, the TSA indicated that only OT reached the RIS, providing conclusive evidence favoring synthetic mesh by demonstrating a significantly shorter duration of surgery. For all other outcomes, the analysis suggests that current evidence remains inconclusive regarding the superiority of either mesh type.

Author year	*Surgical Approach*	*Sex (F/M)*		*Age (years)*		*Follow-up (years)*	*Recurrent hernia Biologic/Synthetic*	*Mesh Type*	*Mesh Position*	*Hernia Area, cm²*		*Hernia Length, cm*		*Hernia Width, cm*		*Wound Classification I,%*	*Wound Classification II - IV,%*
		Biologic	*Synthetic*	*Biologic*	*Synthetic*					*Biologic*	*Synthetic*	*Biologic*	*Synthetic*	*Biologic*	*Synthetic*		
Miserez 2021	Open RM and Laparoscopic, no components separation	63/65	61/64	60.10 ± 12.6	58.54 ± 13.8	3	13 (10%) / 14 (11%)	Biologic: Extracellular matrix of porcine small intestine submucosa (Surgisis Gold) Synthetic: Polypropylene heavy weight (Bard mesh), composite mesh (Composix), and ePTFE mesh (GORE DUALMESH PLUS)	Sublay (RM)	N/A	N/A	6.4 ± 3.1	6.1 ± 2.6	5.2 ± 2.2	4.9 ± 1.8	Biologic: 100 Synthetic: 100	Biologic: 0 Synthetic: 0
Harris 2021	Open, ACS	47/35	50/33	55.0 ± 11.5	55.5 ± 11.1	2	56 (68%) / 48 (58%)	Biologic: Porcine acellular dermal matrix (Strattice) Synthetic: Polypropylene medium weight (Bard soft, Ventralight ST)	Onlay, sublay (RM), underlay	247 ± 208	258 ± 193	N/A	N/A	N/A	N/A	Biologic: 67 Synthetic: 70	Biologic: 33 Synthetic: 30
Olavarria 2021	Open RM, PCS	23/21	26/17	51 ± 11	51 ± 9.9	1	18 (41%) / 17 (40%)	Biologic: Porcine acellular dermal matrix Synthetic: Polypropylene medium weight	Sublay (RM)	44.6 ± 33.3	47 ± 16.9	6.6 ± 2.6	8.2 ± 2.6	6 ± 1.3	6 ± 1	Biologic: 34 Synthetic: 30	Biologic: 66 Synthetic: 70
Rosen 2022	Open RM, PCS, TAR	71/56	65/61	63.59 ± 2.9	63.54 ± 2.7	2	67 (53%) / 59 (47%)	Biologic: Porcine acellular dermal matrix (Strattice) Synthetic: Polypropylene medium weight (Bard soft)	Sublay (RM)	N/A	N/A	21.9 ± 1.3	22.8 ± 1.7	14 ± 0.8	13.9 ± 0.8	Biologic: 0 Synthetic: 0	Biologic: 100 Synthetic: 100

RM – Retromuscular; ACS – Anterior components separation; PCS – Posterior components separation; TAR – Transversus Abdominis Release; ePTFE – expanded Polytetrafluoroethylene; PP – Preperitoneal; IP – Intraperitoneal

Table 1) Baseline characteristics of included studies

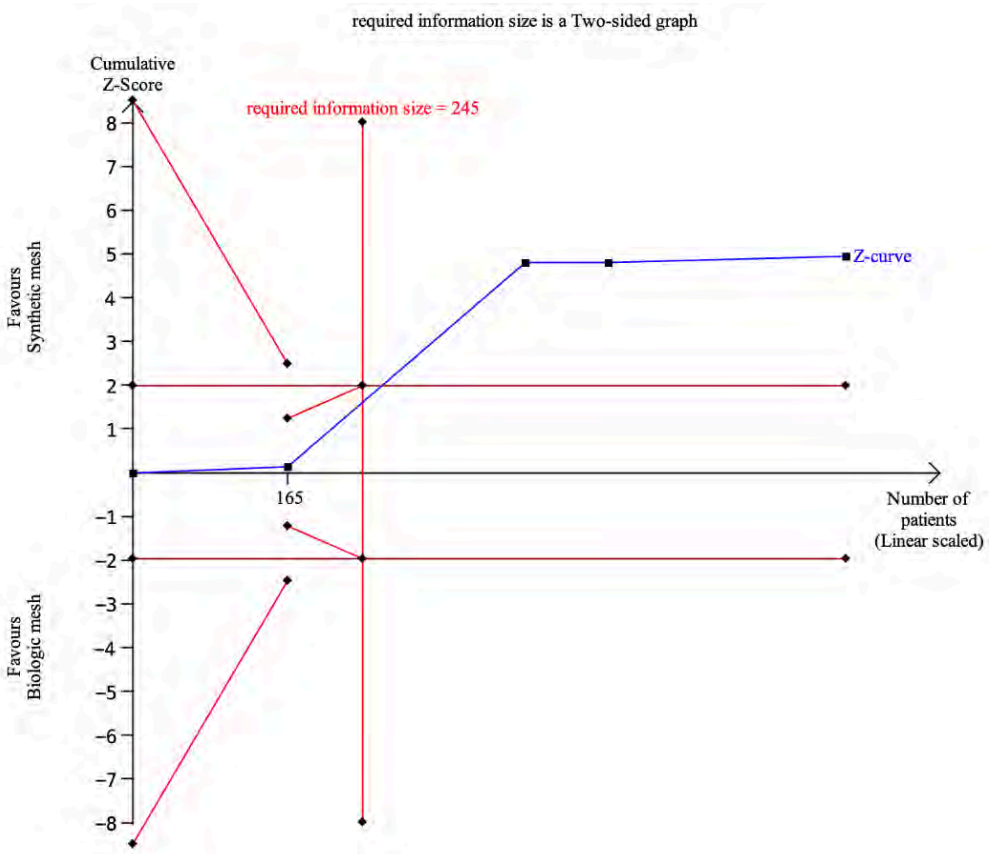


Fig 2 Trial Sequential Analysis of operative time achieved the required size information, confirming statistical significance

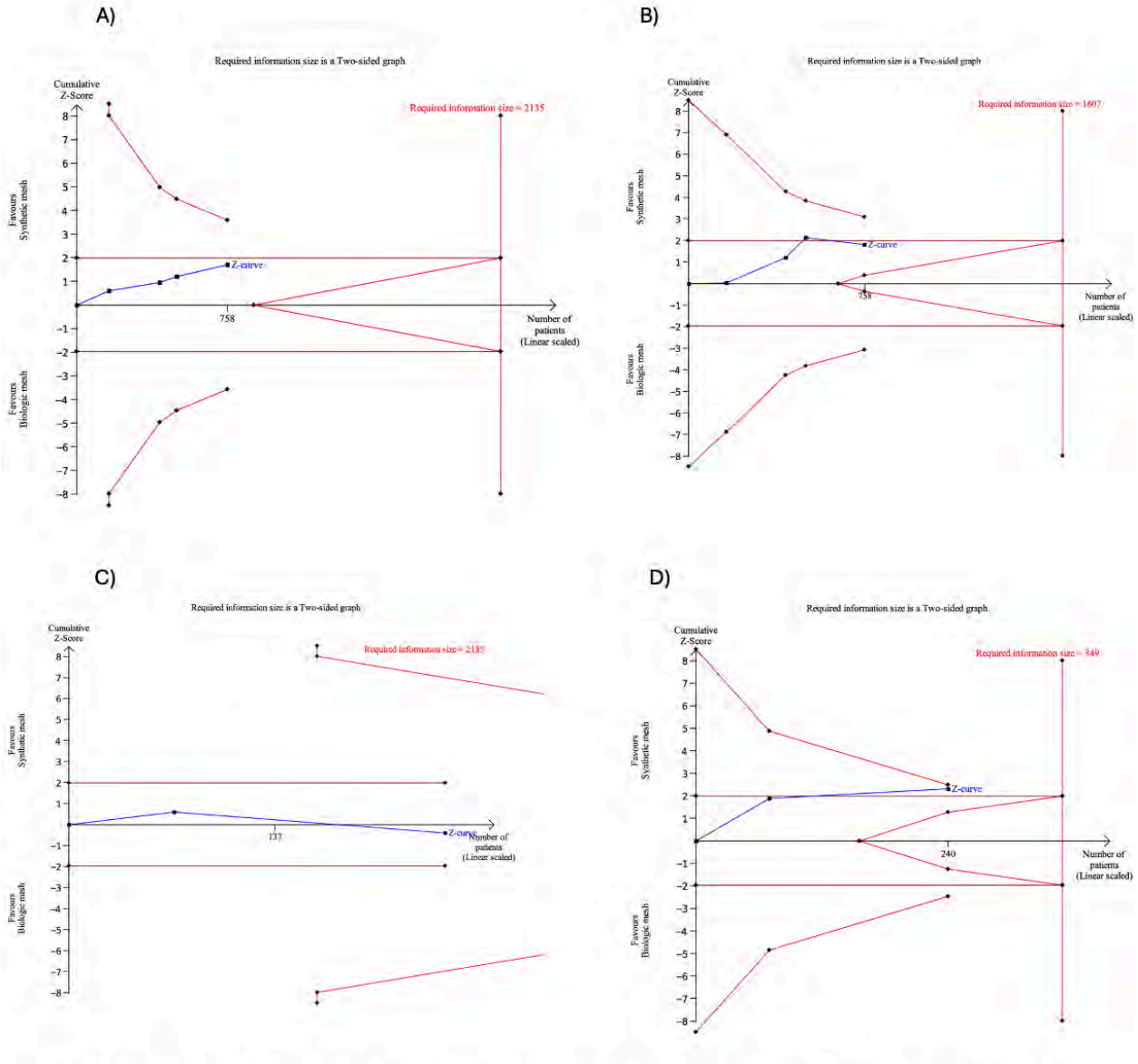


Fig 1 Trial Sequential Analysis for the primary outcomes. The required information size was not achieved for: (A) surgical site infection, (B) surgical site occurrences, (C) reoperation, and (D) recurrence rates.

Q 7. Evaluating Socioeconomic Variations in Surgical Outcomes Following Complex Abdominal Wall Reconstruction

T Tesfasilassie, V Nwigwe, A Dimagli, G Reeves, A Stowman, M McGoldrick, M Muller, L Yan, S Mohamedaly, K Hopkins, A Addo, P George, D Podolsky, Y Novitsky
Columbia University

Background: Socioeconomic disparities impact access to healthcare and patient outcomes. Patients from lower socioeconomic status (SES) backgrounds often encounter barriers to care, potentially leading to differences in postoperative results. Investigating the relationship between SES and outcomes in complex abdominal wall reconstruction (CAWR) can provide valuable insights into healthcare inequities and inform strategies to enhance patient care. This study examines whether SES influences postoperative outcomes following CAWR.

Methods: A retrospective analysis was performed on patients who underwent hernia repair with transversus abdominis release (TAR) between 2018 and 2024 at a tertiary hernia center. SES was assessed using patients' zip-code data, correlating it with census-based median household income figures. Patients were categorized into three SES groups: lower SES (households with incomes below two-thirds of the national median household income, $155,438). We analyzed demographic, perioperative, and postoperative variables across SES groups using univariate statistical methods. The primary outcome assessed was hernia recurrence with secondary outcomes assessing surgical site morbidity.

Results: A total of 229 patients with zip-code data were included. Most of the patients (N=147) were classified as middle SES. They were followed postoperatively for a median length of 14.3 months (IQR 2.9 – 47.3). There were no significant differences in age, BMI, functional status, ASA class, comorbidities, or smoking status between the groups. Hernia defect size was similar (180 vs. 225 vs 200 cm^2, p=0.6). Hernia recurrence rate (6.3% vs. 4.8% vs. 0%, p=0.8), length of stay (5 vs. 4 vs. 5 days, p=0.6), reoperation rate (6.3% vs. 2.0% vs. 0%, p=0.2), and readmission rate (8.9% vs. 5.4% vs. 0%, p=0.5) also remained comparable. No difference was also observed in surgical site occurrence rates (32% vs. 22% vs. 0%, p=0.2), including surgical site infection (7.8% vs. 10% vs 0%, p=0.7), seroma (6.3% vs. 1.4% vs. 0%, p=0.14), hematoma (3.8% vs. 2.7% vs. 0%, p=0.7), and mesh infection (0%). However, patients from low SES backgrounds had a significantly higher prevalence of chronic pain (28% vs. 11% vs. 0%, p=0.03).

Conclusion: SES was not associated with differences in demographics, hernia recurrence, surgical site morbidity, or readmission rates following CAWR. However, the elevated prevalence of chronic pain among low SES patients may suggests underlying factors that extend beyond surgical outcomes. Addressing disparities in chronic pain management through improved access to comprehensive postoperative care and support services could enhance recovery and quality of life for socioeconomically disadvantaged populations. Further research is warranted to investigate the drivers of chronic pain disparities and develop targeted interventions.

Q 8. Impact of International Guidelines on Inguinal Hernia Management in Women: Are Surgeons Adhering to Best Practices?

S Budney, C Horne, C Collins, J Shao, D Podolsky, J Sacco, S Drexel, M Phillips, G Mancini, K Kleppe, A Fafaj, K Blake
University of Tennessee, Knoxville

Background: Femoral hernias occur more often in women and are more likely than inguinal hernias to incarcerate and strangulate. Since no clinical or diagnostic tests can reliably distinguish inguinal from femoral hernias, the International Guidelines for Groin Hernia Management published in 2018 strongly recommends that women with a groin hernia undergo a minimally invasive surgery (MIS) with mesh placement. Surgeon adherence to these guidelines is unknown. This study aims to evaluate if the management for women undergoing groin hernia repair changed after these guidelines were published.

Methods: A retrospective analysis of the Abdominal Core Health Quality Collaborative registry was conducted for all women who underwent unilateral, non-recurrent groin hernia repair between 2014 – 2024 in a clean, elective setting. The primary outcome was the rate of MIS approaches (robotic and laparoscopic) compared to open surgery before and after 2019 (one year after guideline publication). This allowed time for more widespread implementation. Secondary outcomes were the incidence of identifying a femoral hernia for MIS and open groups and the factors associated with a higher likelihood of performing a MIS repair.

Results: A total of 2,375 women undergoing groin hernia repair met the inclusion criteria (n = 579 before, and n = 1796 after guideline dissemination). Demographics and operative details were similar in both groups. There was no difference in the rate of MIS approaches after guideline dissemination (61.7%) compared to before (60.1%) [p = 0.495]. In both cohorts, significantly more femoral hernias were identified during MIS groin hernia repair compared to an open approach [Before 2019: 27.6% vs. 20.3%, (p = 0.048, NNT 13), After 2019: 31.0% vs. 16.9%, (p = 0.001, NNT 7)]. Compared to academic and private practices, hybrid groups (private practice with an academic affiliation) had a higher likelihood of performing a MIS approach (OR 1.26, CI 1.04 – 1.53) and private practices had the lowest likelihood (OR 0.70, CI 0.56 – 0.88). Patients with ASA IV and/or poor functional status had a higher likelihood of undergoing open repair.

Conclusion: There was no change in the surgical management of women undergoing groin hernia repair after the 2018 HerniaSurge Guidelines were published, which strongly recommends a MIS approach. Significantly more femoral hernias are identified during a MIS approach compared to open, raising the concerns for missing femoral hernias in a large proportion of women undergoing open surgery. More education, training, expertise, and widespread adoption of these guidelines is essential for managing women with groin hernias. Additional studies examining the reason for poor guideline concordant care is also needed.

VIDEO ABSTRACTS

V1. Open Preperitoneal Ventral Hernia Repair after Deep Inferior Epigastric Perforator Flap Reconstruction: Video

A Holland, S Kerr, W Lorenz, A Wiley, G Scarola, BT Heniford
Atrium Health Carolinas Medical Center

Background: The incidence of postoperative abdominal hernia or bulge after deep inferior epigastric perforator (DIEP) flap reconstruction for breast cancer is about 3-5%. Bulges may be secondary to true hernias at the donor site or an eventration as a result from abdominal wall denervation. This video demonstrates an open preperitoneal hernia repair after DIEP flap.

Methods: The patient was a 56-year-old female with a history of breast cancer who underwent DIEP flap reconstruction in 2015. She subsequently developed an abdominal bulge and presented to a high-volume tertiary hernia center for management. This intraoperative video demonstrates an open preperitoneal ventral hernia repair (OVHR) with diastasis repair and mesh placement.

Results: Preoperative CT imaging reveals a dysfunctional lower abdominal wall with a small right sided defect and extensive bilateral eventration secondary to her prior surgery. To begin the operation, her prior incision is excised, and subcutaneous flaps are raised superiorly and inferiorly. Next, the bulges are identified and palpated laterally. The left sided laxity is opened revealing the underlying peritoneum. The preperitoneal dissection is begun by carefully peeling the peritoneal layer down off of the overlying fascia in the space of Retzius. This is started with electrocautery and careful blunt dissection with the Bovie tip. Once the dissection moves laterally, greater blunt dissection with the surgeon's fingers can be done. Remaining entirely extraperitoneal, the dissection is then carried up to the subxiphoid space. This dissection is completed circumferentially, reaching the right sided defect. There were no holes in the peritoneum to close and no viscera was encountered during the entire dissection.
Once the preperitoneal dissection is complete, gloves, drapes, and instruments are changed, and a large, midweight, macroporous polypropylene mesh is brought onto the field. The mesh is placed in the preperitoneal plane and secured at the pubis, xiphoid, and each side with a transfascial suture.

Once the mesh is secured, the defects can then be addressed. This patient had dysfunctional rectus muscles but functional lateral abdominal wall muscles bilaterally, acting like a diastasis. The edges of the attenuated fascia are marked and sutured together in an imbricating fashion, medializing her obliques. Next, the right sided true hernia defect was closed with a slowly absorbable suture. Finally, the left defect, which was the eventration that we opened to complete our preperitoneal flap, is also closed, bringing the lateral fascia to the lateral edges of rectus. This achieves apposition and leaves no area of weakness.

Two drains are placed. Her subcutaneous flaps are brought together, and the skin is closed with deep dermal sutures, staples, and a negative pressure incisional vacuum.

Conclusion: This video demonstrates the functional defect that can occur after DIEP flap reconstruction for breast cancer and a durable method of repair. The preperitoneal approach

allows a very large mesh to be placed without the confines of the rectus muscle as well as prevents any contact with the underlying viscera. This patient was discharged on postoperative day four and now over 8 months later, she is doing well without complication.

V2. Robotic Unilateral TAR after Kidney Transplant and Failed IPUM

N Salevitz, C Ballecer
Creighton University, Arizona

Background: Here we present a case of a robotic unilateral transversus abdominis release after two living donor kidney transplants and a failed IPUM. The patient is a gentleman in his 60's and his last kidney transplant was in 2020 and he underwent IPUM with bone anchors 3 years before our initial visit. His hernia recurred in his left lower quadrant. His CT scan showed prior tacks and crumpled mesh with the recurrence laterally which is where we most commonly see IPUM failures as these repairs can often not reach laterally enough to prevent recurrence.

Methods: We began by placing him in the lazy right lateral decubitus with ports through his right rectus. There were some mild omental adhesions, not bowel-containing, and these were easily taken down leaving us with a large complex hernia in the left lower quadrant. We began our TAR with incision of the posterior sheath and retrorectus dissection carried below the arcuate line. We proceeded retrorectus dissection until we were at the EIT junction and started the bottoms up TAR by making a pre-peritoneal/pre-transversalis cave and incising medial to the neurovascular bundles. We next proceeded with Novitsky-style TAR by incising the posterior lamella of internal oblique and the aponeurotic portion of the TA until we reached transversalis fascia. This was carried laterally and superiorly, hooking all muscle fibers of the TA and prying the transversalis fascia off the bottom side of the TA so no muscle fibers were left on the posterior elements.

We began addressing the hernia itself and attempted to recruit as much hernia sac as we could although we did practice some sac abandonment during this process. We chose not to remove the prior mesh as it was providing support for our posterior elements and would risk destroying the posterior sheath with removal. Additionally, it provided a nice guide as we moved laterally to show the planes.

We continued our dissection laterally to retroperitoneal fat and healthy intact TA muscle as well as down into the pelvis into the space of Retsius. Lastly, we addressed the most posterior part of the hernia which was sitting up against the transplanted kidney. Knowing the hilum sits on the medial side of the kidney, we attempted to go up and over and hug the lateral sidewall as much as possible until the posterior ridge of the hernia was sufficiently cleared for mesh placement.

Results: We closed the hernia itself with several compounded suture lines as it was quite large and had multiple septations, all in the hopes of restoring normal anatomy of the TA. We closed the posterior sheath in a similar manner with barbed suture. We measure the space and chose a 20x38 heavyweight prolene mesh and made sure it was tucked laterally around the kidney. This was secured with suture and fibrin glue. The peritoneal flap was closed and the dissection sac desufflated.

Conclusion: The patient has done well with good functional return and no recurrence to date.

V3. Stepwise Preperitoneal Approach for Semilunaris Blown-Out Hernia

G Arevalo, L Hernandez, M Reader, S Martinez, R Brummer
Houston Methodist Hospital

Background: This video demonstrates the repair of a semilunar line blowout hernia with loss of domain at the L1-L3 level. We present a stepwise approach for open preperitoneal repair using a horizontal incision. The previous subcostal scar serves as an optimal access point to reach the ipsilateral retrorectus, subcostal, posterolateral, and pelvic spaces, avoiding the need for a new midline incision.

The procedure begins with dissection in the preperitoneal space, allowing for a seamless transition into key anatomical planes. Superiorly, the dissection extends into the subcostal plane, separating the peritoneum from the diaphragm.

Posterolaterally, the approach continues to the psoas muscle, with mobilization of the kidney off the retroperitoneum.

Inferiorly, dissection proceeds into Retzius and Boros spaces. Medially, the transition into the retrorectus space completes a circumferential dissection, enabling extensive mesh overlap and minimizing the risk of recurrence.

Additionally, excising lateral redundant soft tissue allows for a single-incision approach, optimizing exposure and wound management. Preoperative patient optimization with chemodenervation is also demonstrated in this technique.

V4. Single-Dock Robotic Bilateral Transversus Abdominis Release via Inferior Approach

J Pan, D Halpern, T Pacheco, DK Halpern
New York University Long Island School of Medicine

Background: Robotic transversus abdominis release (roboTAR) has become a standard for repair of complex ventral hernias. In this patient with a large incisional ventral hernia, we present a unique approach to bilateral eTEP (extended totally extraperitoneal) roboTAR performed with a single robotic docking from a caudal to cranial approach (bottoms-up single-dock). We have strived to highlight the anatomy to make the video as educational as possible.

V5. Robotic TAPP and Neurectomy for a Traumatic Flank Hernia and Traumatic Neuralgia

B Fung, K Marrero, E Moyer, M Quattrone, E Pauli, E Sodomin
Penn State Health Milton S. Hershey Medical Center

Background: Traumatic flank hernias are rare hernias that can occur after blunt trauma and can be challenging to fix due to proximity to bony prominences and lumbosacral nerve plexuses. Traumatic hernias, and other hernias, can sometimes present with neuralgia prior to surgery, which suggests nerve injury. Failure to address neuralgia at the time of hernia surgery may cause chronic pain symptoms to persist. In this video, we present a case of a traumatic right flank hernia with concurrent neuralgia due to injury of the right ilioinguinal and iliohypogastric nerves.

Methods: The patient is a 55M who had an MVC 1 year prior, leading to a 3cm x 10cm right flank hernia containing retroperitoneal fat that was not addressed at the time of the index trauma. He suffered from severe right groin neuralgia in the year leading up to his surgery. His pain mapping and targeted nerve injections confirmed the presence of right ilioinguinal and iliohypogastric neuralgia.

Results: We proceeded with a robotic TAPP flank hernia repair with mesh and concurrent right ilioinguinal and iliohypogastric neurectomy, which successfully repaired his hernia and resolved his neuralgia.

Conclusion: In the video, we highlight the evaluation, key anatomy, and technical considerations for successful retroperitoneal neurectomies and current hernia repair.

V6. Robotic Transabdominal Preperitoneal Repair of a Bilateral TRAM Flap Hernia

N Kapani, C Ballecer
Creighton University, Arizona

Background: A 50s-year-old female presented to the clinic with complaints of lower abdominal pain, reduced ability to perform activities of daily living due to pain, and chronic nausea. Her past medical history includes obesity and type 2 diabetes mellitus. Surgical history is notable for bilateral transverse rectus abdominis myocutaneous (TRAM) flap reconstruction following mastectomy, multiple cesarean sections, and prior gastric sleeve surgery with attempted abdominal hernia repair. TRAM flap procedures, while previously common for autologous breast reconstruction, have fallen out of favor due to the increased risk of abdominal wall hernias resulting from weakened musculature.

Methods: Following successful preoperative rehabilitation, including sleeve gastrectomy and improved physical fitness, the patient was scheduled for robotic transabdominal preperitoneal repair of her abdominal wall defect. The previous hernia repair attempted during her bariatric surgery was deemed inadequate. The primary goal of this operation was to prevent bowel incarceration, likely the cause of her symptoms.

Given the absence of rectus muscles available for midline approximation, the surgical objective was to achieve transverse closure of the defect. The procedure began with the dissection of a peritoneal flap, which was significantly scarred and difficult to mobilize. The peritoneum was incised well below the anticipated cephalad extent of the scar to facilitate exposure. Dissection proceeded in a systematic manner: The left side was dissected down to the Space of Bogros. The right side was dissected down to the Space of Bogros. The midline apex, where the incarcerated bowel and hernia sac were located, was then connected to both side flaps. To enhance flap mobility, the round ligament was divided. The previously placed mesh was sutured to the lower edge of the fascia to help close the defect. A large, heavyweight mesh was used to cover the bilateral myopectineal orifices, ensuring comprehensive reinforcement of the abdominal wall. The repair was further strengthened by bilateral giant prosthetic reinforcement of the visceral sac in the lower abdomen. The patient was discharged on postoperative day one.

Results: Postoperatively, the patient demonstrated significant improvement in symptoms, with reduced abdominal pain and nausea, and an overall enhancement in quality of life.

Conclusion: For large ventral hernia defects following TRAM flap reconstruction, the primary surgical goal should be defect closure rather than rectus muscle approximation. This approach optimizes functional and symptomatic outcomes while minimizing complications.

V7. Robotic TAPP Repair of a Thoracoabdominal Hernia

K Hoener, C Ballecer
Creighton University, Arizona

Background: The case of a thoracoabdominal hernia poses a unique challenge for hernia repair due to the anatomic interface between the diaphragm, transversus abdominis and costal margin. In order to reconstitute normal anatomy and restore patients' to their previous functional status, all three layers must be returned to their normal anatomic relationship. Additionally, involvement of the pleura in the hernia defect often necessitates meticulous dissection and awareness of possible pitfalls.

Methods: Here we present the case of a 70s year-old gentleman with a left thoracoabdominal hernia containing spleen that developed after a coughing episode. The patient was an avid skier and desired repair due to concerns for possible future splenic injury. Upon evaluation of the hernia defect we found that the diaphragm was disrupted resulting in an area of bare pleura. During dissection in this area, the left hemithorax was entered however due to the large hole in the pleura, there were no hemodynamic consequence. The pleural defect was ultimately closed by re-approximating the diaphragm, transversus abdominis and costal margin in their normal anatomy configurations thereby concurrently closing the hernia defect. A heavy weight mesh was used to re-enforce the repair.

Results: The patient did well post operatively and within 4 weeks following surgery was able to return to his normal activities, including skiing.

Conclusion: Thoracoabdominal hernias are challenging to repair due to the need to restore the normal anatomic relationship between the diaphragm, transversus abdominis and costal margin. One common pitfall is injury to the pleura and entering the thoracic cavity. By increasing the size of the pleural defect we are able to avoid hemodynamic consequences allowing time for the hernia repair and to ultimately close the connection between the chest and abdominal cavities. By restoring normal anatomy and using a heavy weight mesh we are able to provide a durable hernia repair that allows patients to return to their baseline functional status.

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