Welcome!
Americas Hernia Society Quality Collaborative

Quarter 3 Meeting and General Session

October 24, 2017

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Disclosures

Poulose (Vanderbilt):

Bard-Davol

-Research funds

Ariste Medical

-Consultant fee

Pfizer Medical

-Consultant fee

AHSQC

-Employee

Rosen (CCF):

Miromatrix, Intuitive

-Research funds

Ariste Medical

-Consultant fee

AHSQC

-Employee

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AHSQC Foundation Partners

To our current Foundation Partners:
-Thank you
(from the AHSQC team and our patients)

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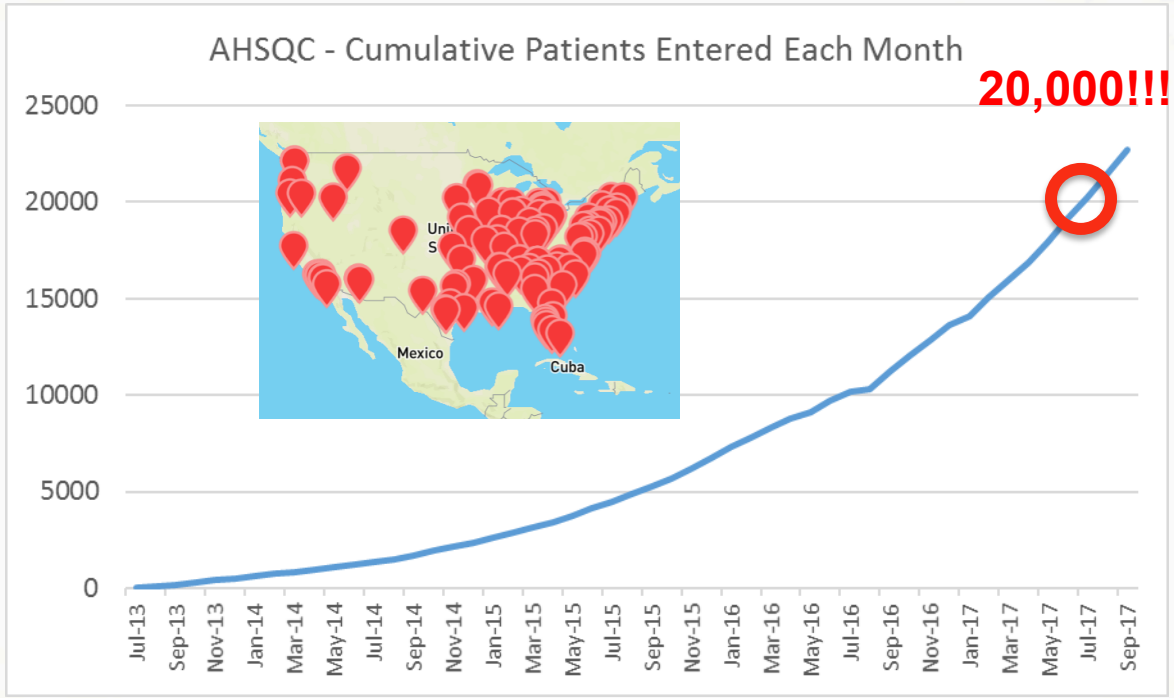
242 surgeons
294 sites
24,348 pts



*3,013 Inguinal Patients

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Data Request Process

Home FAQs News Patients Publications **Data** AHSQC Foundation Contact

Data Requests

Instructions for Accessing AHSQC Data for Research

- Data collected for quality improvement purposes in the AHSQC can be used for research in certain circumstances
- Any use of AHSQC data for research purposes should involve either your local or private Institutional Review Board (IRB)
- AHSQC surgeons and individually approved personnel can access your own patients' data any time for research by direct download from the AHSQC user interface. Please be aware that downloading information in this manner may include protected health information depending on your selections for export. Please follow your local institutional or practice policies regarding proper handling of protected health information.
- AHSQC surgeons can request summary analyzed research data for all AHSQC patients by completing the appropriate form below. The request is approved by the AHSQC Data Use and Publications Committee and analysis performed in partnership between the requesting surgeon or group and the AHSQC Data Coordination Center. Currently this service is provided free of charge to AHSQC surgeons in good standing.
- Members of industry and researchers can also request summary analyzed research data by completing the appropriate form below. Individual fees may apply.

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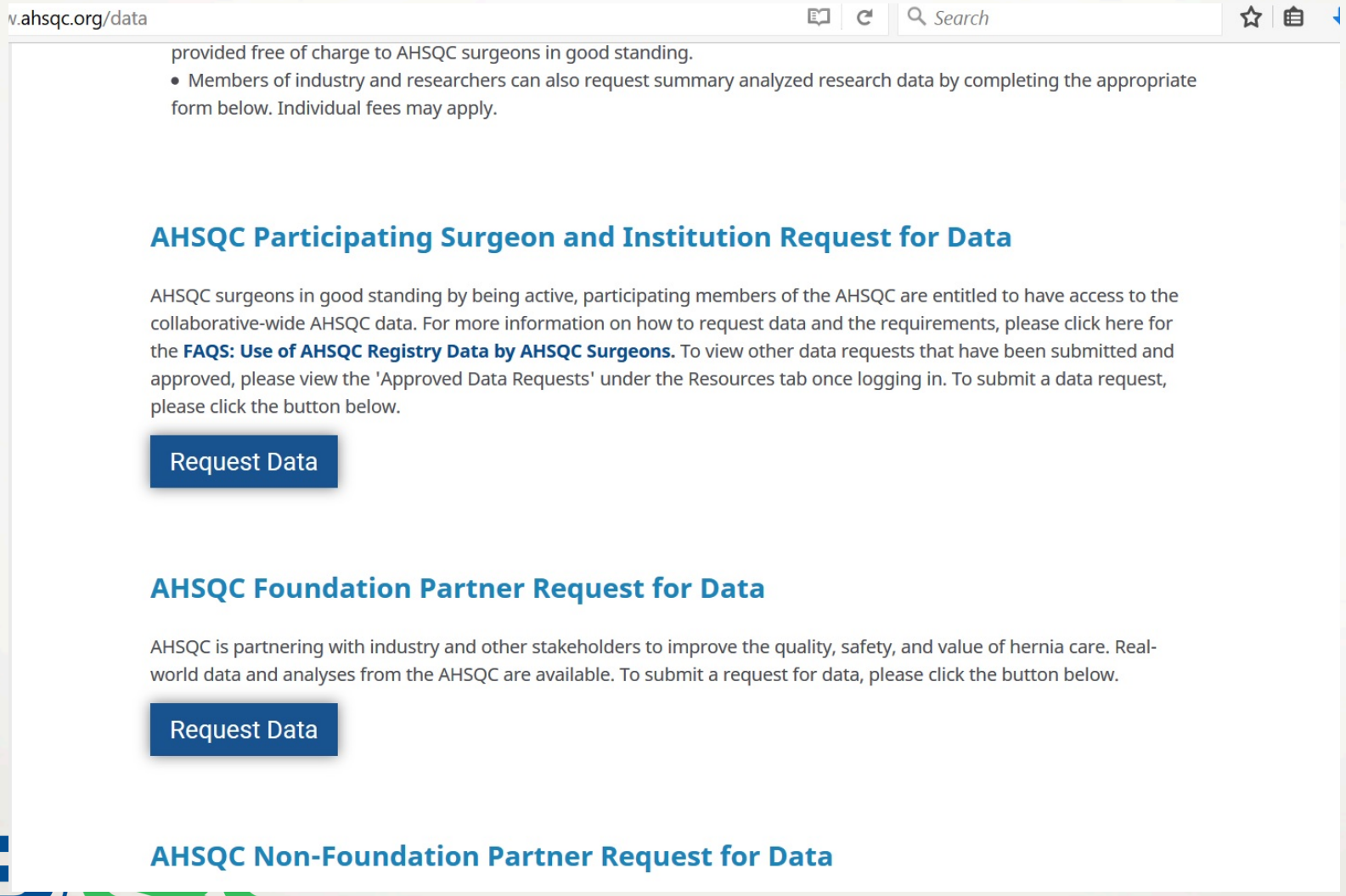
Surgeon/FP/Non FP Process



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Basic Information

-and-institution-data-requests 67% Search

Data Requests

AHSQC Participating Surgeon and Institution Request for Data

First Name *

Last Name *

Degree (if applicable)

Name of the Associated Institution *

Address *

Telephone Number *

Email Address *

Are you a member of the AHSQC leadership team or AHSQC Board of Directors? *

- Yes
- No

Title of Project (please be as specific as possible) *

Brief Project Proposal (list study population, comparison groups, primary outcome measure, and confounding factors) *

**This is a request for summary analyzed data, (biostatistical and IRB support are provided by the AHSQC Data Coordination Center)*

Is the data request for research? *

- Yes
- No

If yes: Do you have a local Institutional Review Board?

- Yes
- No

Note that local IRB approval is required before receiving analyzed data (usually Expedited review or Exemption for use of off the shelf analyzed data); if you do not have access to an IRB, the AHSQC Data Coordination Center can assist.

If no: What is the purpose of this request?

I am not aware of any requests by any for-profit entity for data, reports, or publications, using or consisting of the AHSQC data I am requesting. Please check here and type your full name & title to sign if this is correct

If a for-profit entity is requesting data, reports, or publications using or consisting of the AHSQC data, please check here and identify the data and entity:

Publications Committee

- Corey Deekan
- 12 Members: AHSQC volunteer surgeons
- 2 week maximum review
- Feasibility checklist
- Author feedback
- Data Analysis performed at Data Coordination Center (Vandy)

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Approved Data Requests Available On Web
31 Active Requests

Publication Committee Approved Data Requests

Primary Author	Title Requested	Date Approved	Manuscript Published
Vedra Augenstein, MD	Predicting surgical site complications	8/17/2016	
Ajita Prabhu, MD	Effect of epidural pain management on postoperative course of patients underoing ventral hernia repair	8/26/2016	Yes
Ajita Prabhu, MD	Laparoscopic intraperitoneal onlay mesh (IPOM) versus robotic IPOM	8/26/2016	
Ivy Haskins, MD	Resident Research Grant: Developement and validation of a ventral hernia decision support tool using the AHSQC	9/1/2016	
Thomas Gavigan, MD	Resident Research Grant: Prospective cohort study of patients undergoing parastomal hernia repair using the AHSQC	9/1/2016	
Michael Rosen, MD	Is there an association between the type of surgical hat worn during surgery and 30-day wound events?	9/21/2016	Yes
Michael Rosen, MD	The association of wound closure techniques with 30-day wound events	10/5/2016	
Jacob Greenberg, MD	A randomized trial of video-based collaborative learning approaches to improve outcomes in ventral hernia repair	10/5/2016	

Peer Review Publications Available

w.ahsqc.org/publications

Search

Home FAQs News Patients **Publications** Data AHSQC Foundation Contact

Publications

Peer Reviewed Publications

- Design and implementation of the Americas Hernia Society Quality Collaborative (AHSQC): improving value in hernia care. Poulose BK, Roll S, Murphy JW, Matthews BD, Todd Heniford B, Voeller G, Hope, WW, Goldblatt MI, Adrales GL, Rosen MJ. Hernia. 2016 Apr;20(2):177-89. doi: 10.1007/s10029-016- 1477-7.

- Standard laparoscopic versus robotic retromuscular ventral hernia repair. Warren JA, Cobb WS, Ewing JA, Carbonell AM. Surg Endosc. 2016 Jun 10. [Epub ahead of print]

- The clinical significance of postoperative tachycardia following ventral hernia repair. Haskins IN1, Krpata DM2, O'Rourke CP3, Rosenblatt S2, Rosen MJ2. Surgery. 2016 Aug;160(2):418-25. doi: 10.1016/j. surg.2016.02.030. Epub 2016 Apr 13.

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AHSQC Advocacy on a Governmental Level

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Abdominal Wall Reconstruction –AHSQC Definition Recognized by CMS

- **Ventral hernia repair with myofascial release (abdominal wall fascial layer separated from muscular layer)**
- Implications for QI, coding, and reimbursement
- Myofascial releases
  - Rives, Ramirez, Rives+TAR

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MDEpiNet

- MDEpiNet – FDA led initiative designed "…to improve medical device safety and effectiveness throughout the device life cycle"
- Global participation of clinical registries, academic centers, integrated health care systems, major public and private payors, prof societies, trade orgs, individual companies, Feds

Have Any Of You Heard This in Your Clinic?

- “What’s going on with all these bad meshes?”
- “Aren’t they tested in humans before you place them in us?”
- “All these mesh recalls have me scared”
- “Who is making sure these meshes aren’t making people sick?”
- “Is anyone working together to try and fix this?”

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Patients understand and accept when there might be a perceived problem, you work together to try and solve it.

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INFORMATION FOR PATIENTS

This information sheet tells you how your surgeon's participation in the Americas Hernia Society Quality Collaborative (AHSQC) aims to improve care for you and many other patients with hernias. The AHSQC is sponsored by the Americas Hernia Society Quality Collaborative Foundation (http://www.ahsqc.org/). Your surgeon will include your personal health information (such as your name, birthdate, address, and health care treatment) in the Americas Hernia Society Quality Collaborative confidential, secure data registry unless you request (as explained below) that your personal health information not be included. We hope you will allow your information to be included because doing so will help improve the quality of care for hernia patients.

- **What is the Americas Hernia Society Quality Collaborative (AHSQC)?**

->The AHSQC is a large group of surgeons with a specific interest in caring for patients with hernias. This unique group is committed to improving the quality of care for patients who undergo hernia surgery.

- **How does it work?**

-> During the routine care of your hernia, your surgeon collects information about you, your hernia, and how you do after hernia surgery as part of your confidential health care records.

-> Your surgeon will input information about you and your surgery into a confidential, secure registry maintained by the AHSQC. Only your surgeon, the AHSQC , and, in very limited circumstances, the United States Food and Drug Administration (FDA) will have access to any information that identifies you.

-> Your identifiable personal health information (such as your name, birthdate, address, and health care treatment information) must be entered into the registry in order to make it useful for your surgeon's and the AHSQC's quality improvement efforts and so that the scientific validity of registry data can be tested. If available, your surgeon will also enter your email address, cellular phone number, and mailing address. Your personal health information, in an anonymous form (meaning your identity cannot be matched to your information), is combined with anonymous information from hundreds (or thousands) of hernia patients like you so that it can be used by those interested in improving hernia care other than your surgeon and the AHSQC.

-> Your data may be provided to the FDA for the purpose of informing the use of particular medical devices used to care for patients with hernias. Data provided to the FDA is typically submitted in a de-identified form, although occasionally FDA may request access to your confidential health information under its regulatory authority to monitor public health. This information may not be completely anonymous; however, it will be kept in a secure location and any public reports or publications that are generated from the registry for FDA purposes will not contain information that will allow you to be personally identified. Any release of patient protected health information will only be performed consistent with applicable local, state and federal laws, regulations and institutional policies.

(Rev'd 04-2017)

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Short Term Goals

- No Hernia Left Behind
  - Big change in data collection
- Focus on Follow Up
  - Capture clinical follow when you see patients
  - PROs
  - Data Integration

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Evaluation of Fascial Release Techniques with Short and Long Term Follow Up

William W. Hope, MD

Associate Professor of Surgery

New Hanover Regional Medical Center

Wilmington, NC

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Disclosures

- CR Bard-Honorarium/Research Support (Speaking/Consulting/ Research)
- WL Gore-Honorarium/Research Support (Speaking/Consulting/ Research)
- Intuitive-Honorarium (Speaking/Proctoring)

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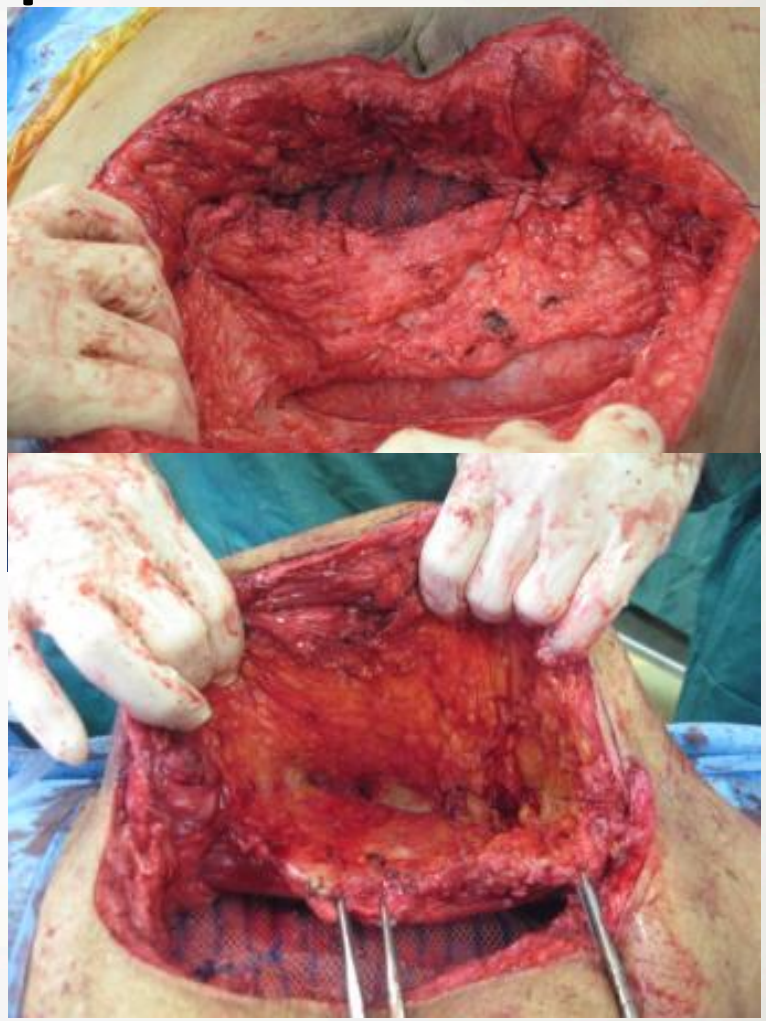
External oblique

- Advantages
  - Well described/studied
  - Easy to perform/reproducible
  - Provides good flap advancement
- Disadvantages
  - Subcutaneous dissection
  - Infection risk
  - ?Overutilized



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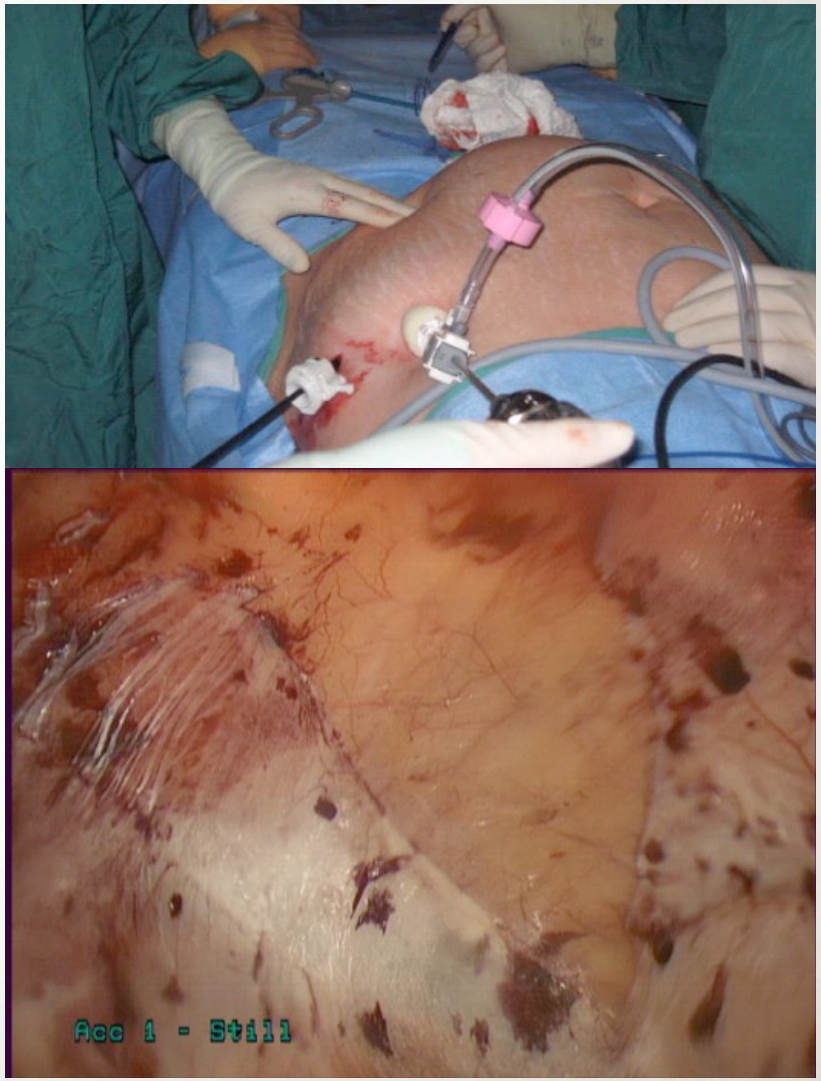
Ramirez OM, Ruas E, Dellon AL. “Components separation" method for closure of abdominal-wall defects: an anatomic and clinical study. Plast Reconstr Surg. 1990.
Albright, Diaz, Davenport, Roth. The component separation technique for hernia repair: a comparison of open and endoscopic techniques. American Surgeon. 2011

Endoscopic/Laparoscopic

- Goals
  - Minimize wound morbidity
  - Achieve same advancement of tissue
- Advantages
  - Does appear to achieve goals
- Disadvantages
  - Learning curve
  - Indications/cumbersome



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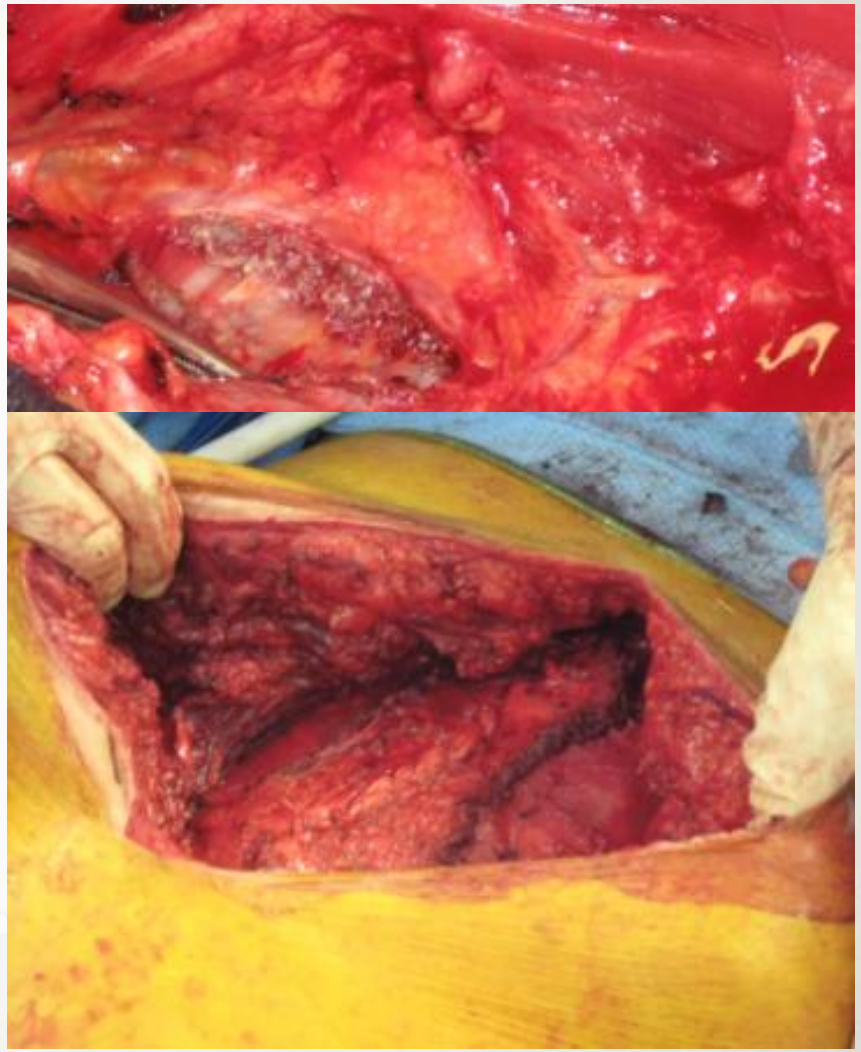
Posterior component separation

- Tranversus Abdominis Release
  - Recently described
  - Gaining popularity
- Goals
  - Minimize wound morbidity
  - Achieve component release
- Advantages
  - Seems to achieve goals
  - Wide overlap mesh
- Disadvantages
  - Long term outcomes/sequela data needed



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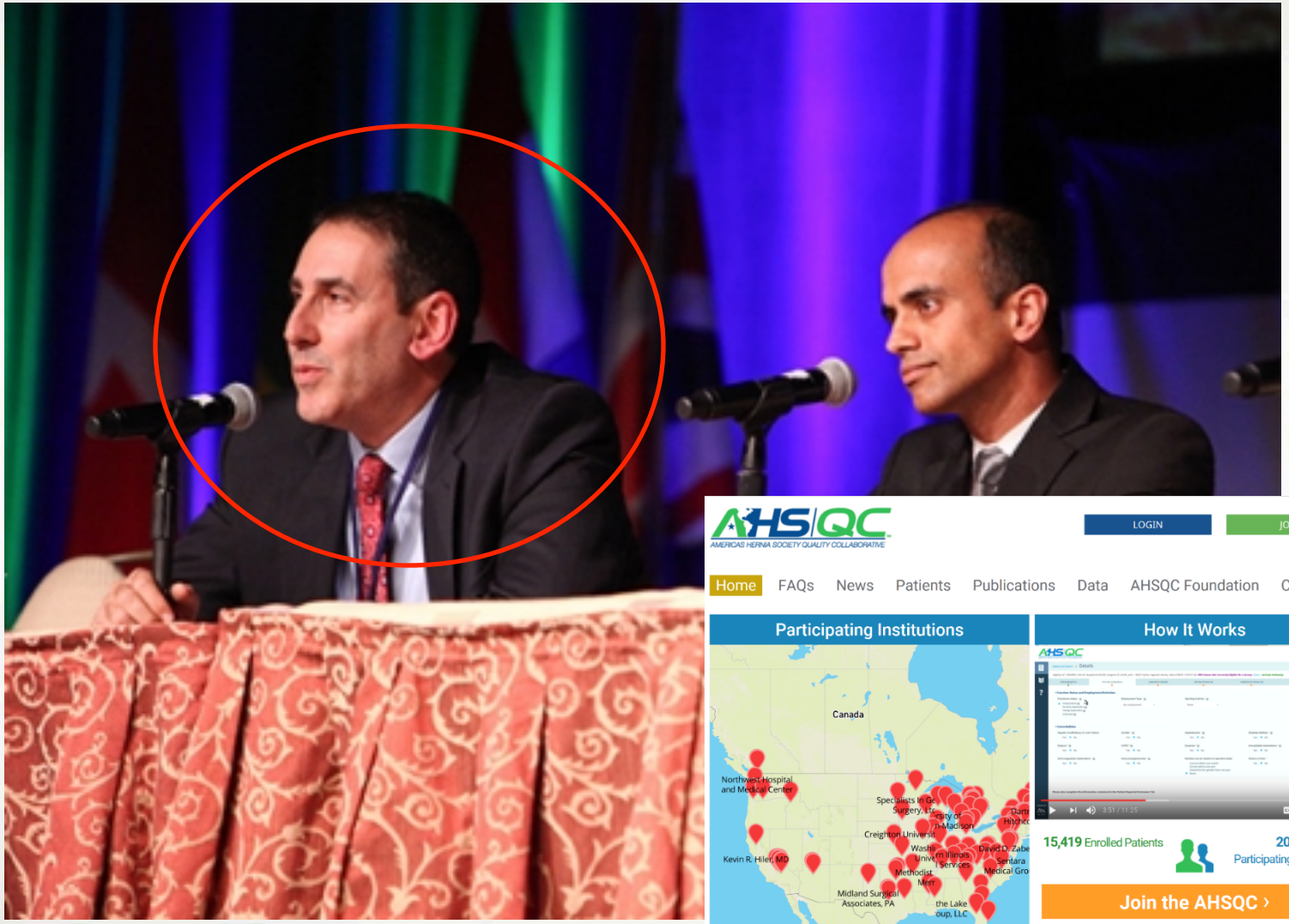
Novitsky, Yuri W., Heidi L. Elliott, Sean B. Orenstein, and Michael J. Rosen. "Transversus Abdominis Muscle Release: A Novel Approach to Posterior Component Separation during Complex Abdominal Wall Reconstruction." *The American Journal of Surgery* 204.5 (2012): 709-16. Web.



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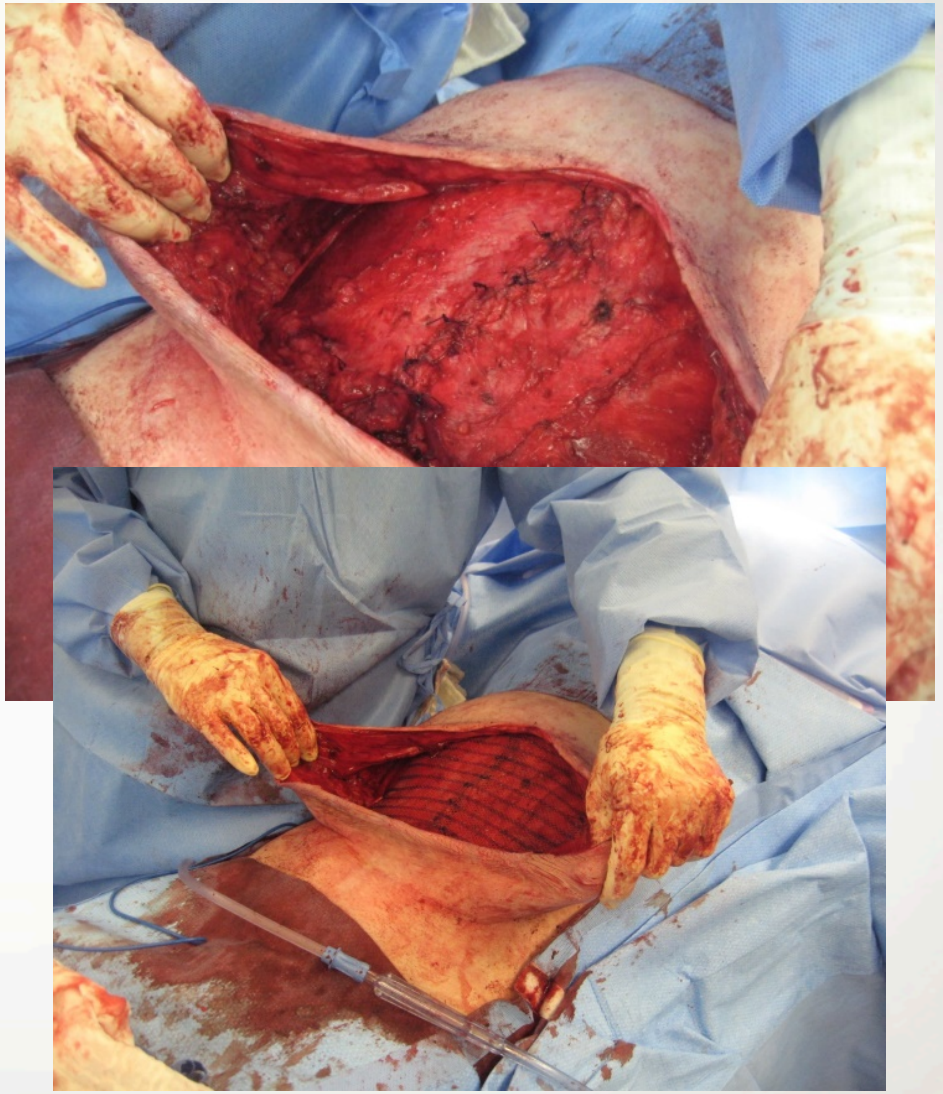
Question

- Myofascial Release
  - External oblique will have a higher Surgical Site Infection (SSI) rate then Tranversus Abdominis Release (TAR)



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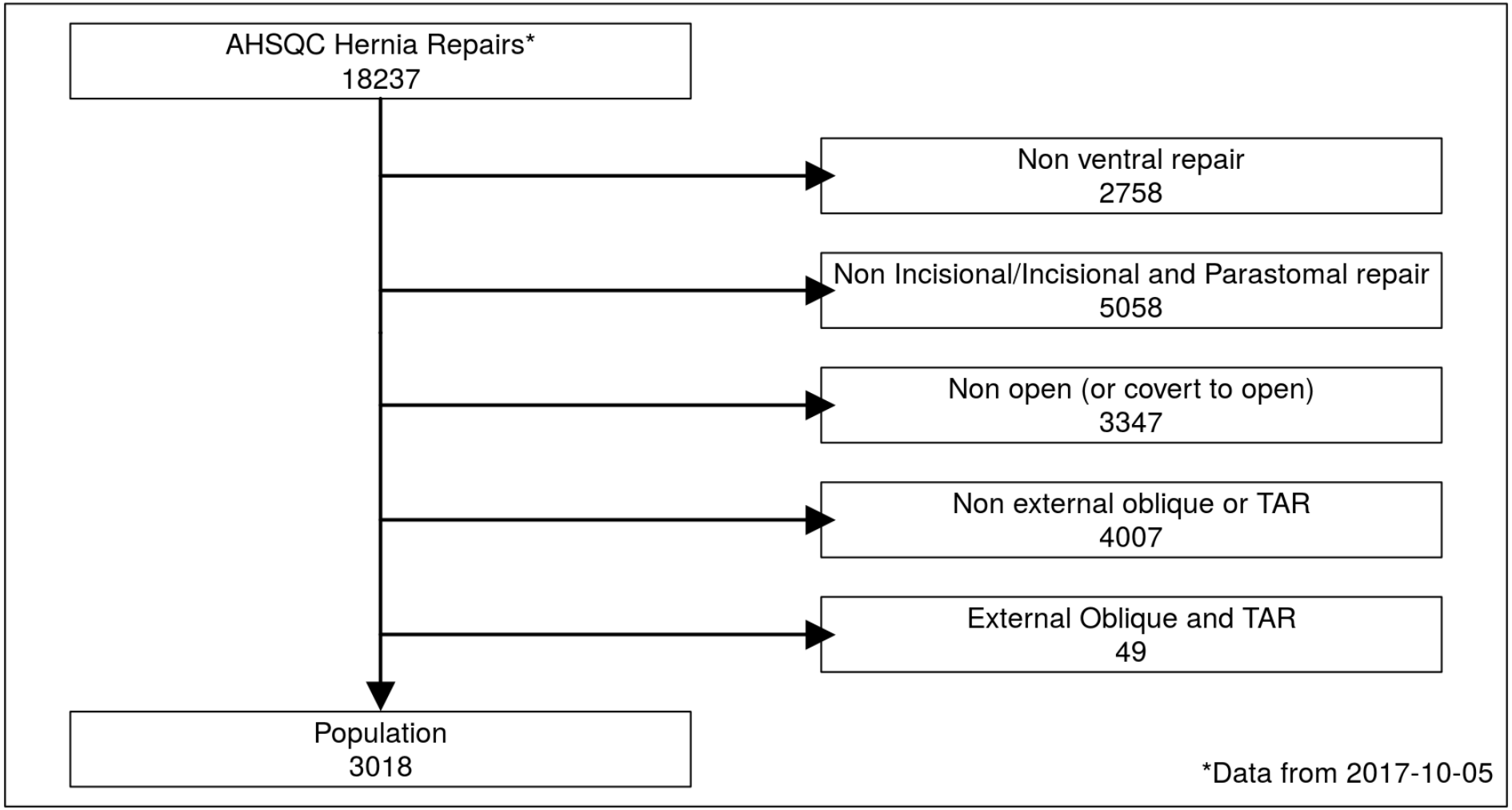
External Oblique vs TAR



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Surgeon and site volume

		External Oblique	TAR	p-value: External Oblique vs TAR	Missing: External Oblique	Missing: TAR
Surgeons contributing data	N	67	111		0	0
Sites contributing data	N	50	79		0	0
Primary surgeon affiliation	N (%)			0.672[EP]	6 (17)	21 (19)
Academic		17 (57)	45 (49)			
Private		5 (17)	22 (24)			
Private practice with academic affiliation		8 (27)	24 (26)			

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Comorbidities

		External Oblique	TAR	p-value: External Oblique vs TAR	Missing: External Oblique	Missing: TAR
Prevalence of comborbidities		358 (82)	2130 (82)	0.845[EP]	0 (0)	0 (0)
Comorbidities	N					
Immunosuppressant		30	177		2 (<1)	16 (1)
Smoking (within 1 year)		54	278		2 (<1)	16 (1)
Nicotine use (within 1 year)		80	435		2 (<1)	16 (1)
Hypertension		217	1418		0 (0)	0 (0)
Diabetes mellitus		83	568		2 (<1)	16 (1)
Dyspnea		28	154		2 (<1)	16 (1)
COPD		47	240		2 (<1)	16 (1)
History of abdominal wall surgical site infection		150	767		2 (<1)	16 (1)
History of component separation		22	145		2 (<1)	16 (1)
History of open abdomen		112	403		2 (<1)	16 (1)
Current steriod use		11	57		3 (1)	19 (1)

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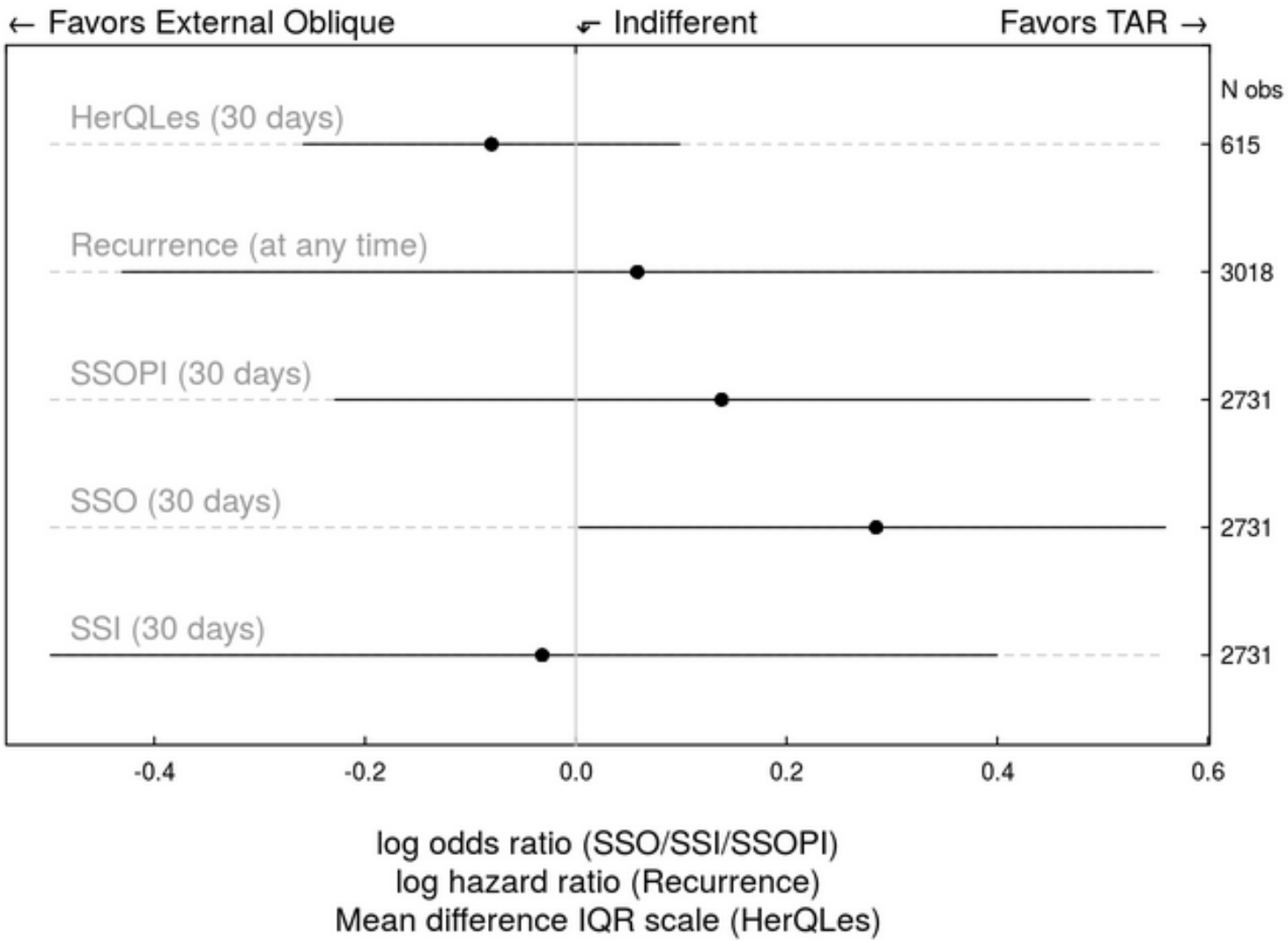

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SSI outcomes

		External Oblique	TAR	Missing: External Oblique	Missing: TAR
		27 (7)	162 (7)	46 (11)	241 (9)
Infection type	N				
Superficial SSI		16	112	0 (0)	2 (1)
Deep incisional SSI		10	45	0 (0)	2 (1)
Organ space SSI		2	9	0 (0)	2 (1)
Surgical site infection requiring treatment		27	161	0 (0)	0 (0)
Surgical site infection requiring procedural intervention		17	139	0 (0)	0 (0)
Treatments administered for SSI[cata]	N				
Oral antibiotics		15	76	0 (0)	0 (0)
IV antibiotics		12	56	0 (0)	0 (0)
Wound opening		14	103	0 (0)	0 (0)
Wound debridement		8	34	0 (0)	0 (0)
Suture excision		0	0	0 (0)	0 (0)
Percutaneous drainage		3	21	0 (0)	0 (0)
Partial mesh removal		1	2	0 (0)	0 (0)
Complete mesh removal		2	5	0 (0)	0 (0)

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Surgical Site Occurrences Requiring Procedural Intervention

		External Oblique	TAR	Missing: External Oblique	Missing: TAR
SSI/O requiring procedural intervention		48 (54)	234 (55)	347 (80)	2155 (83)
Treatments administered for SSI/O[cata]	N				
Oral antibiotics		26	151	0 (0)	0 (0)
IV antibiotics		17	72	0 (0)	0 (0)
Wound opening		27	164	0 (0)	0 (0)
Wound debridement		23	55	0 (0)	0 (0)
Suture excision		1	1	0 (0)	0 (0)
Percutaneous drainage		13	41	0 (0)	0 (0)
Partial mesh removal		1	3	0 (0)	0 (0)
Complete mesh removal		3	6	0 (0)	0 (0)

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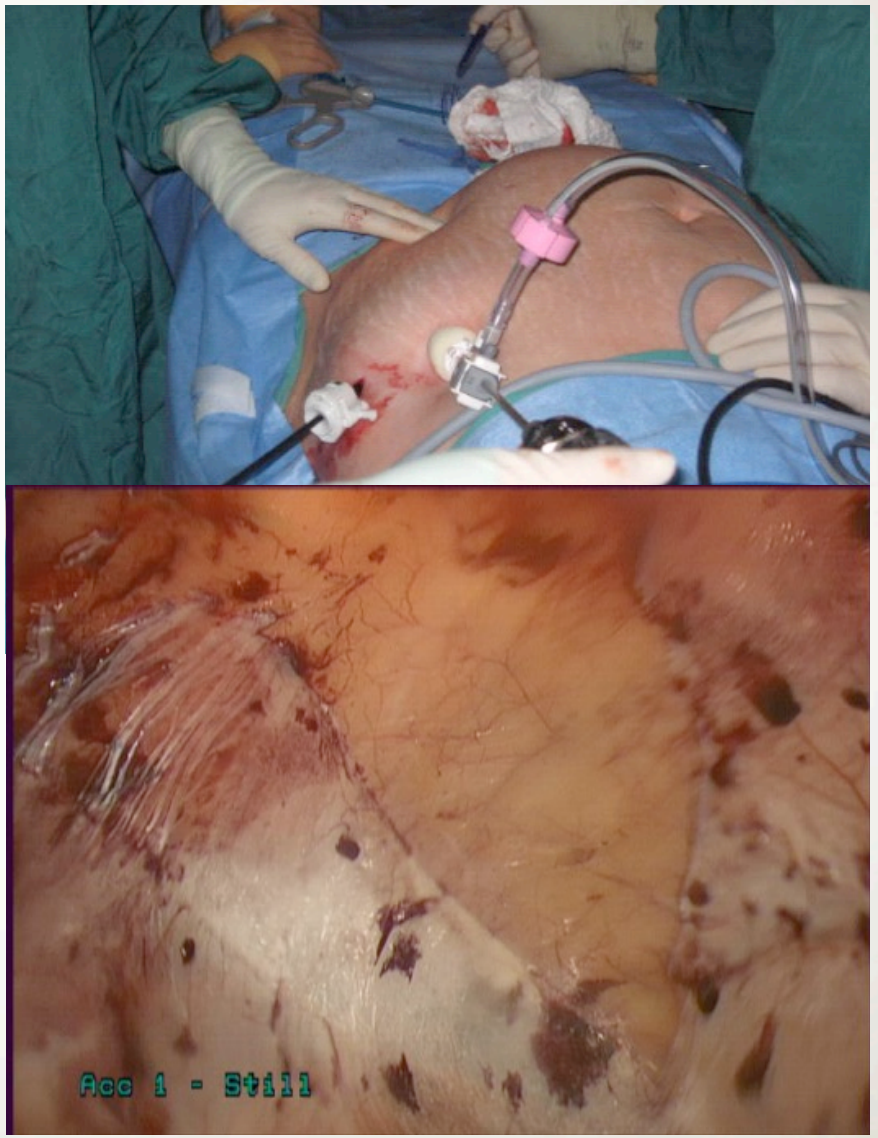
Question

- Myofascial Release
  - In External Oblique Release Endoscopic will have lower SSI



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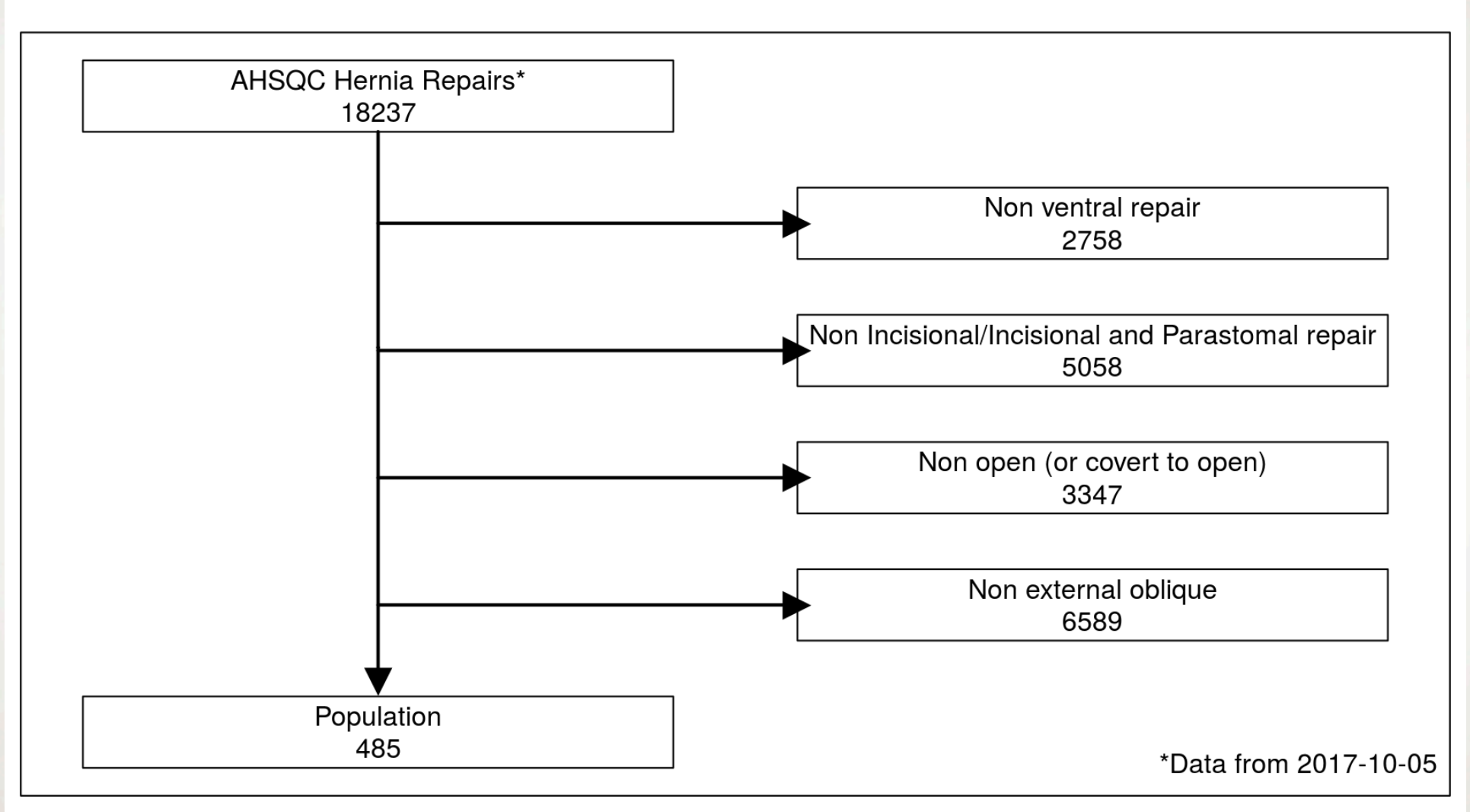
Endoscopic vs Open External Oblique



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Surgeon and site volume

		Open	Endoscopic	p-value: Open vs Endoscopic	Missing: Open	Missing: Endoscopic
Surgeons contributing data	N	67	6		0	0
Sites contributing data	N	50	6		0	0
Primary surgeon affiliation	N (%)			1.000[FE]	11 (16)	0 (0)
Academic		30 (54)	3 (60)			
Private		11 (20)	1 (20)			
Private practice with academic affiliation		15 (27)	1 (20)			

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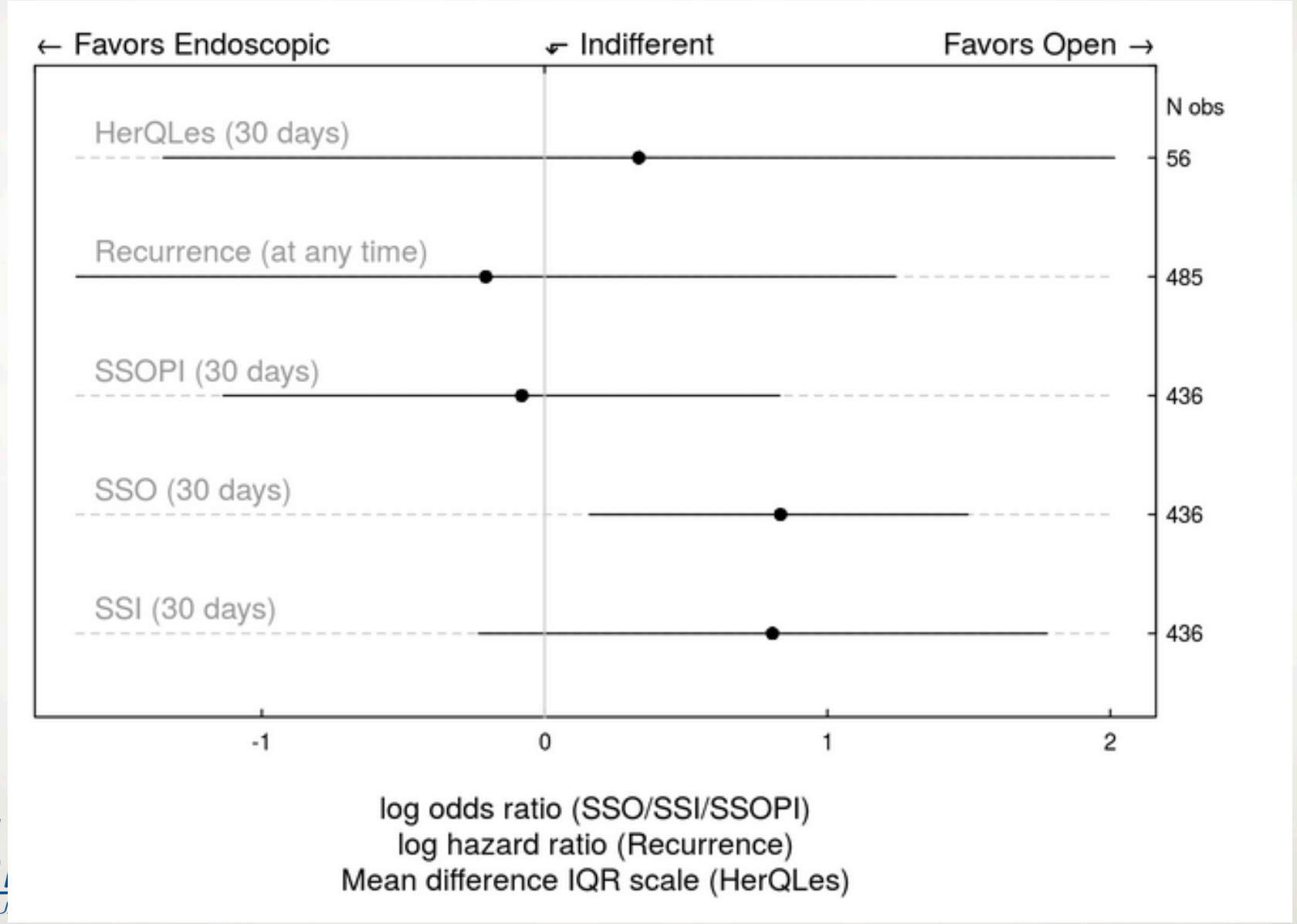
← Favors Endoscopic
Indifferent
Favors Open →
N obs
HerQLes (30 days)
56
Recurrence (at any time)
485
SSOPI (30 days)
436
SSO (30 days)
436
SSI (30 days)
436
-1
0
1
2
log odds ratio (SSO/SSI/SSOPI)
log hazard ratio (Recurrence)
Mean difference IQR scale (HerQLes)

SSI/SSO outcomes

		Open	Endoscopic	Missing: Open	Missing: Endoscopic
		24 (6)	8 (14)	48 (11)	1 (2)
Infection type	N				
Superficial SSI		14	6	1 (4)	0 (0)
Deep incisional SSI		8	2	1 (4)	0 (0)
Organ space SSI		2	0	1 (4)	0 (0)
Surgical site infection requiring treatment		24	8	0 (0)	0 (0)
Surgical site infection requiring procedural intervention		18	2	0 (0)	0 (0)
Treatments administered for SSI[cata]	N				
Oral antibiotics		11	8	0 (0)	0 (0)
IV antibiotics		11	3	0 (0)	0 (0)
Wound opening		13	2	0 (0)	0 (0)
Wound debridement		7	2	0 (0)	0 (0)
Suture excision		0	0	0 (0)	0 (0)
Percutaneous drainage		4	0	0 (0)	0 (0)
Partial mesh removal		1	0	0 (0)	0 (0)
Complete mesh removal		1	1	0 (0)	0 (0)

SSO/PI

		Open	Endoscopic	Missing: Open	Missing: Endoscopic
Surgical site occurrences exclusive of SSI (SSO-EI)		67 (18)	19 (33)	48 (11)	1 (2)
SSO-EI complication type[cata]	N				
Seroma		12	7	0 (0)	0 (0)
Infected Seroma		4	1	0 (0)	0 (0)
Hematoma		5	0	0 (0)	0 (0)
Infected Hematoma		0	0	0 (0)	0 (0)
SSO-EI requiring treatment		47	12	0 (0)	0 (0)
SSO-EI requiring procedural intervention		39	6	0 (0)	0 (0)
Treatments administered for SSO-EI[cata]	N				
Oral antibiotics		15	8	0 (0)	0 (0)
IV antibiotics		13	2	0 (0)	0 (0)
Wound opening		18	3	0 (0)	0 (0)
Wound debridement		19	5	0 (0)	0 (0)
Suture excision		1	0	0 (0)	0 (0)
Percutaneous drainage		10	1	0 (0)	0 (0)
Partial mesh removal		1	0	0 (0)	0 (0)
Complete mesh removal		2	1	0 (0)	0 (0)
Surgical site infection or occurance (SSI/O)		79	20	48 (11)	1 (2)
SSI/O requiring treatment		59	13	0 (0)	0 (0)
SSI/O requiring procedural intervention		48 (61)	6 (30)	348 (81)	38 (66)
Treatments administered for SSI/O[cata]	N				
Oral antibiotics		22	9	0 (0)	0 (0)
IV antibiotics		17	3	0 (0)	0 (0)
Wound opening		25	3	0 (0)	0 (0)
Wound debridement		22	5	0 (0)	0 (0)
Suture excision		1	0	0 (0)	0 (0)
Percutaneous drainage		13	1	0 (0)	0 (0)
Partial mesh removal		1	0	0 (0)	0 (0)
Complete mesh removal		2	1	0 (0)	0 (0)

Summary

- External oblique not associated with increased SSI compared to TAR
- External Oblique releases have more SSO but not clinically significant (no difference in interventions for SSO)
- Endoscopic external component separation does not impart a decrease in wound related complications (SSI/SSO)
  - In fact SSO higher in endoscopic vs open but not clinically significant (no difference in interventions)

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Conclusion

- Commonly held belief of increased SSI with external myofascial release compared to TAR not supported
- Commonly held belief of decreased SSI with endoscopic external myofascial release compared to open not supported
- No difference in recurrence rates/Quality of life
  - 1 YEAR RECURRENCE DATA!!

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-Venous Thromboembolic Events in AWR- Is there an opportunity for quality improvement?

Luciano Tastaldi, MD

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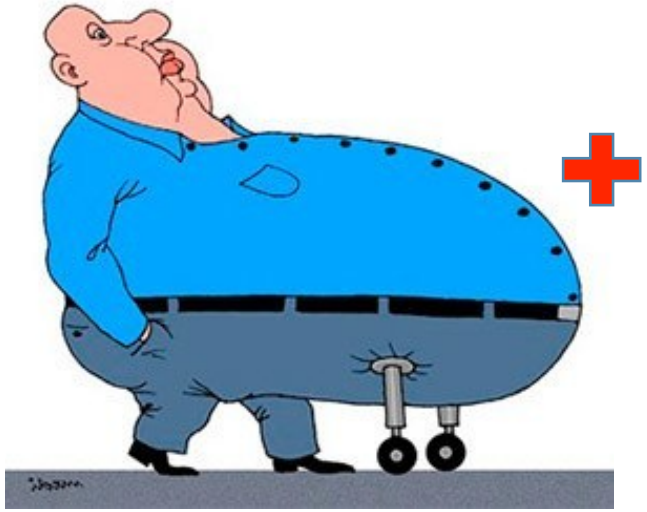
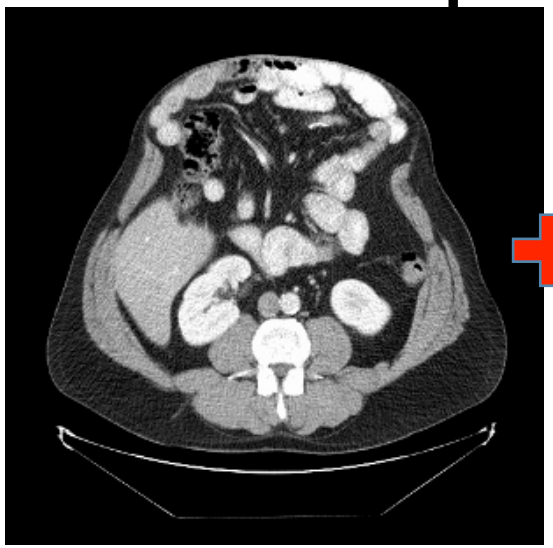
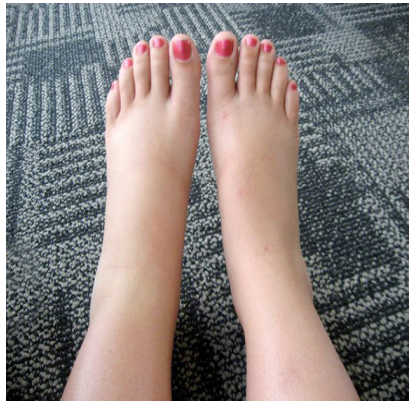
What the problem is?

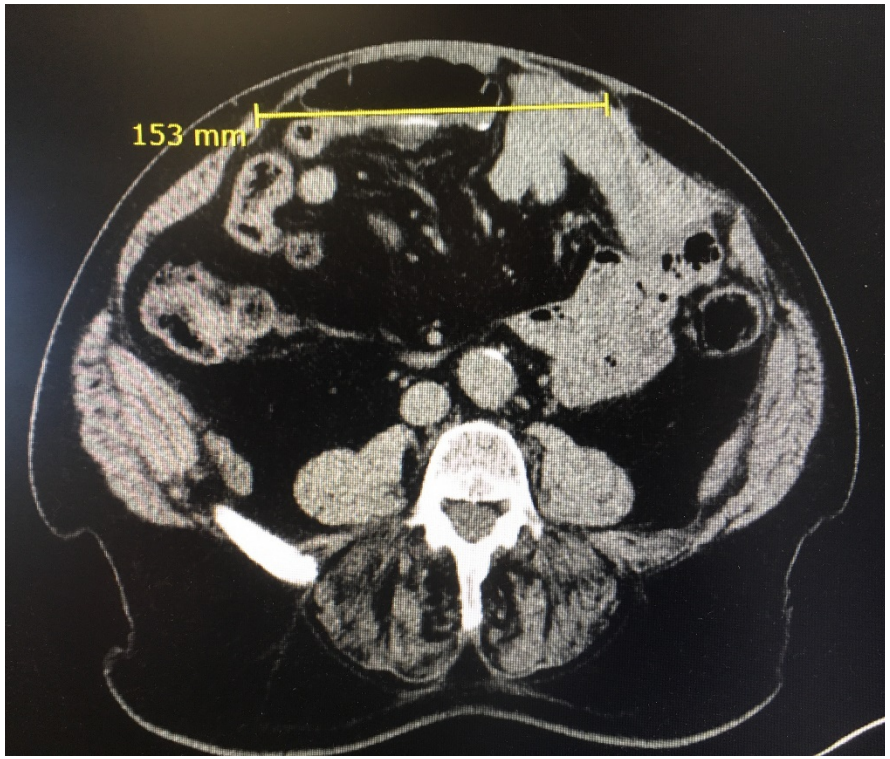






The common AWR patient (in the best case scenario...)

- 66-year old Male, BMI 27
- 15cm Hernia
- Clean Wound
- No comorbidities
- No previous history of DVT
- No signs of Chronic Venous Insufficiency



Usual Risk Stratification Tools

AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

EVANSTON NORTHWESTERN HEALTHCARE

Thrombosis Risk Factor Assessment

Joseph A. Caprini, MD, MS, FACS, RVT
Louis W. Begley Professor of Surgery, Northwestern University
The Feinberg School of Medicine;
Professor of Biomedical Engineering, Northwestern University;
Director of Surgical Research, Evanston Northwestern Healthcare
Email: j-caprini@northwestern.edu
Website: venousdisease.com

Patient's Name:_____ Age: ___ Sex: ___ Wgt:___lbs

Choose All That Apply

Each Risk Factor Represents 1 Point

- ☐ Age 41-60 years
- ☐ Minor surgery planned
- ☐ History of prior major surgery (< 1 month)
- ☐ Varicose veins
- ☐ History of inflammatory bowel disease
- ☐ Swollen legs (current)
- ☒ Obesity (BMI > 25)
- ☐ Acute myocardial infarction
- ☐ Congestive heart failure (< 1 month)
- ☐ Sepsis (< 1 month)
- ☐ Serious lung disease incl. pneumonia (< 1 month)
- ☐ Abnormal pulmonary function (COPD)
- ☐ Medical patient currently at bed rest
- ☐ Other risk factors_____

Each Risk Factor Represents 2 Points

- ☒ Age 60-74 years
- ☐ Arthroscopic surgery
- ☐ Malignancy (present or previous)
- ☒ Major surgery (> 45 minutes)
- ☐ Laparoscopic surgery (> 45 minutes)
- ☐ Patient confined to bed (> 72 hours)
- ☐ Immobilizing plaster cast (< 1 month)
- ☐ Central venous access

Each Risk Factor Represents 3 Points

- ☐ Age over 75 years
- ☐ History of DVT/PE
- ☐ **Family history of thrombosis***
- ☐ Positive Factor V Leiden
- ☐ Positive Prothrombin 20210A
- ☐ Elevated serum homocysteine
- ☐ Positive lupus anticoagulant
- ☐ Elevated anticardiolipin antibodies
- ☐ Heparin-induced thrombocytopenia (HIT)
- ☐ Other congenital or acquired thrombophilia
  If yes:

Type_____

***most frequently missed risk factor**

Each Risk Factor Represents 5 Points

- ☐ Elective major lower extremity arthroplasty
- ☐ Hip, pelvis or leg fracture (< 1 month)
- ☐ Stroke (< 1 month)
- ☐ Multiple trauma (< 1 month)
- ☐ Acute spinal cord injury (paralysis)(< 1 month)

For Women Only (Each Represents 1 Point)

- ☐ Oral contraceptives or hormone replacement therapy
- ☐ Pregnancy or postpartum (<1 month)
- ☐ History of unexplained stillborn infant, recurrent spontaneous abortion (≥ 3), premature birth with toxemia or growth-restricted infant

Total Risk Factor Score **5**

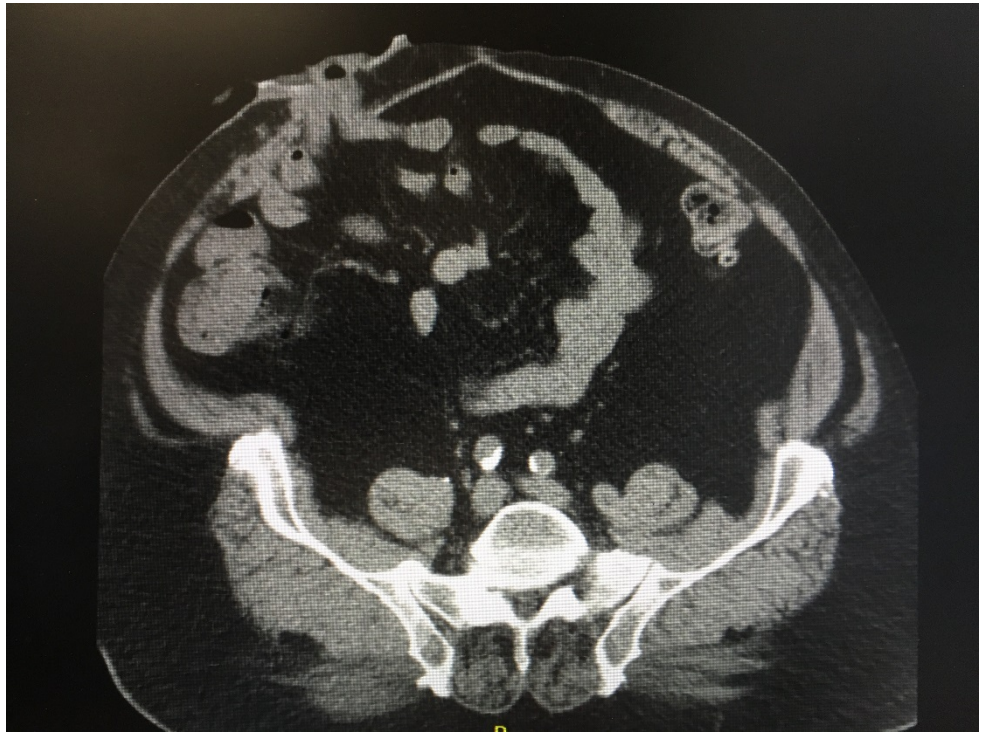
Risk Score	Prophylaxis	Duration	VTE rate
0 [lowest]	Early Ambulation	During Hospitalization	<0.5%
1-2 [low]	Either compression boots OR Prophylactic anticoagulation	During Hospitalization	1.5%
3-4 [moderate]	Compression boots AND Prophylactic anticoagulation	During Hospitalization	3.0%
5-8 [high]	**Compression boots AND Prophylactic anticoagulation**	7-10 days total	**6.0%**
>8 [highest]	**Compression boots AND Prophylactic anticoagulation**	30-days total	**6-18%**

Be CLOT Aware

Know Your Caprini Score And Save Your Life

The common AWR patient (In a worse, but not unsual, case scenario...)

- 57-year old female, BMI 35
- IBD
- Midline + Parastomal Hernia 15cm
- Diabetes, Hypertension
- No previous history of DVT
- Visible Varicose Veins



Usual Risk Stratification Tools

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Patient's Name:_____ Age: ___ Sex: ___ Wgt:___lbs

Choose All That Apply

Each Risk Factor Represents 1 Point

- [x] Age 41-60 years
- [ ] Minor surgery planned
- [ ] History of prior major surgery (< 1 month)
- [x] Varicose veins
- [ ] History of inflammatory bowel disease
- [x] Swollen legs (current)
- [x] Obesity (BMI > 25)
- [ ] Acute myocardial infarction
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- [ ] Sepsis (< 1 month)
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- [ ] Medical patient currently at bed rest
- [x] Other risk factors_____

Each Risk Factor Represents 2 Points

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- [ ] Elevated serum homocysteine
- [ ] Positive lupus anticoagulant
- [ ] Elevated anticardiolipin antibodies
- [ ] Heparin-induced thrombocytopenia (HIT)
- [ ] Other congenital or acquired thrombophilia

If yes:
Type_____
***most frequently missed risk factor**

For Women Only (Each Represents 1 Point)

- [ ] Oral contraceptives or hormone replacement therapy
- [ ] Pregnancy or postpartum (<1 month)
- [ ] History of unexplained stillborn infant, recurrent spontaneous abortion (≥ 3), premature birth with toxemia or growth-restricted infant

Total Risk Factor Score **8**

Risk Score	Prophylaxis	Duration	VTE rate
0 [lowest]	Early Ambulation	During Hospitalization	<0.5%
1-2 [low]	Either compression boots OR Prophylactic anticoagulation	During Hospitalization	1.5%
3-4 [moderate]	Compression boots AND Prophylactic anticoagulation	During Hospitalization	3.0%
5-8 [high]	**Compression boots AND Prophylactic anticoagulation**	7-10 days total	**6.0%**
>8 [highest]	**Compression boots AND Prophylactic anticoagulation**	30-days total	**6-18%**

Be CLOT Aware

Know Your Caprini Score And Save Your Life

Hernia-Specific Risk Stratification Tool

Creation and validation of a condition-specific venous thromboembolism risk assessment tool for ventral hernia repair

Christopher J. Pannucci, MD, MS,a Marten N. Basta, BA,b John P. Fischer, MD,b and Stephen J. Kovach, MD,b Salt Lake City, UT, and Philadelphia, PA

Surgery. 2015 Nov;158(5):1304-13. doi: 10.1016/j.surg.2015.04.001. Epub 2015 May 7

- NSQIP 2005-2013 – VHR
- 113.873 patients
- Simplified, hernia-specific, 30-day VTE risk assessment tool
- Comparable risk prediction with fewer items when compared to traditional tool (i.e Caprini Score)

One point factors

- ☐ Age 45-65
- ☐ ASA class 3
- ☐ BMI ≥ 35
- ☐ Functional status-partial or total dependence
- ☐ GI/intra-abdominal procedure
- ☐ Concurrent panniculectomy
- ☐ Open ventral hernia repair
- ☐ CDC wound class II or higher

Two point factors

- ☐ Age > 65
- ☐ ASA class 4 or 5
- ☐ SIRS or sepsis
- ☐ History of recent surgery (30 days)

Three point factors

- ☐ Operative time ≥ 195 minutes

Four point factors

- ☐ Inpatient surgery

Total Risk Score _____

Creation and validation of a condition-specific venous thromboembolism risk assessment tool for ventral hernia repair

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- ☒ Open ventral hernia repair
- ☐ CDC wound class II or higher

Two point factors
- ☒ Age > 65
- ☐ ASA class 4 or 5
- ☐ SIRS or sepsis
- ☐ History of recent surgery (30 days)

Three point factors
- ☒ Operative time ≥ 195 minutes

Four point factors
- ☒ Inpatient surgery

Total Risk Score **10**

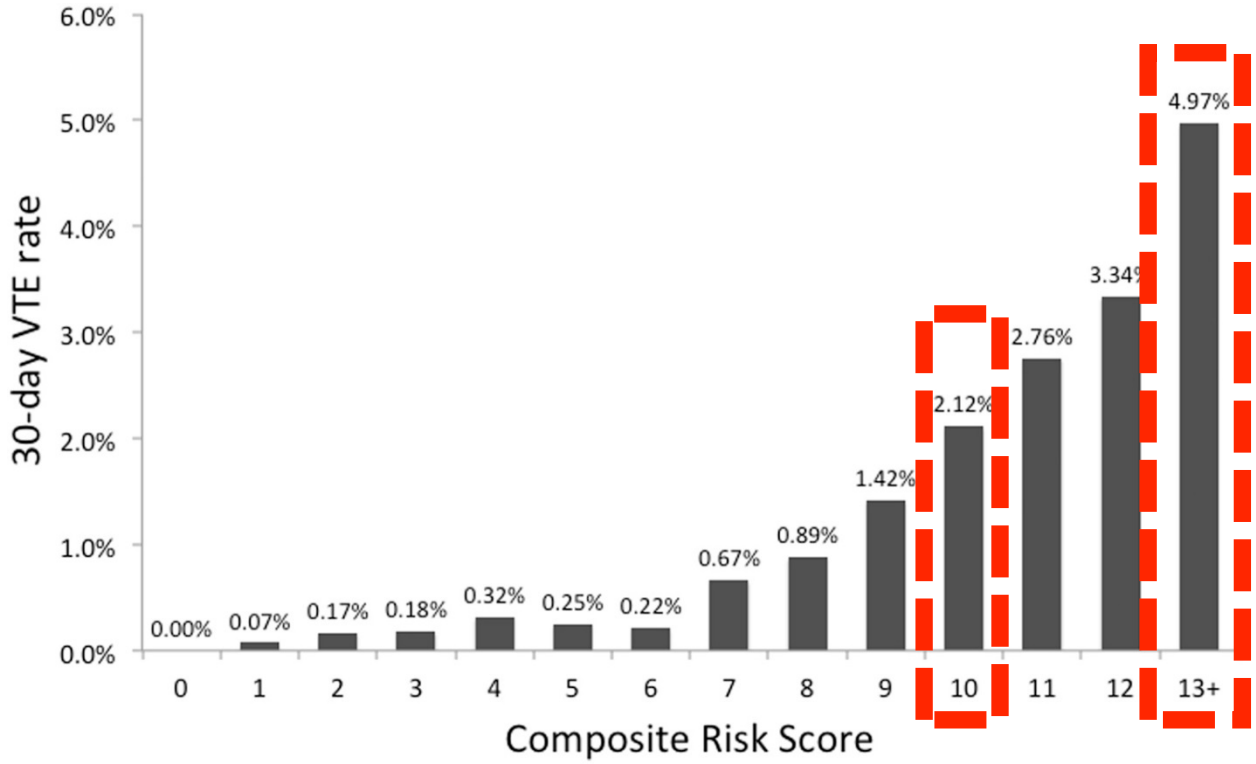
One point factors
- ☐ Age 45-65
- ☐ ASA class 3
- ☒ BMI ≥ 35
- ☒ Functional status-partial or total dependence
- ☒ GI/intra-abdominal procedure
- ☒ Concurrent panniculectomy
- ☐ Open ventral hernia repair
- ☐ CDC wound class II or higher

Two point factors
- ☒ Age > 65
- ☒ ASA class 4 or 5
- ☐ SIRS or sepsis
- ☐ History of recent surgery (30 days)

Three point factors
- ☒ Operative time ≥ 195 minutes

Four point factors
- ☒ Inpatient surgery

Total Risk Score **13**



Bottomline - The AWR patient :

Comorbid patients

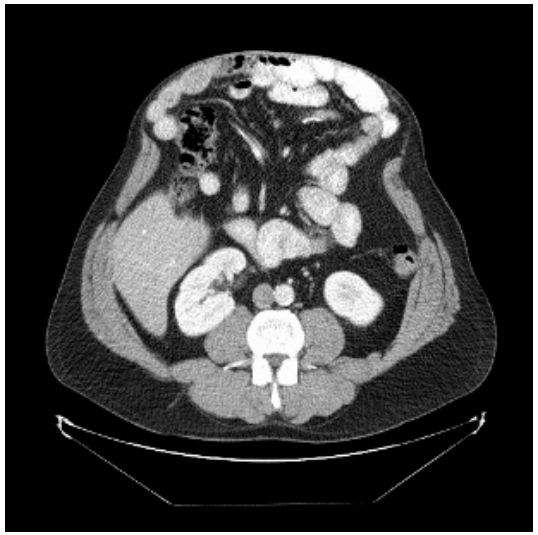
+

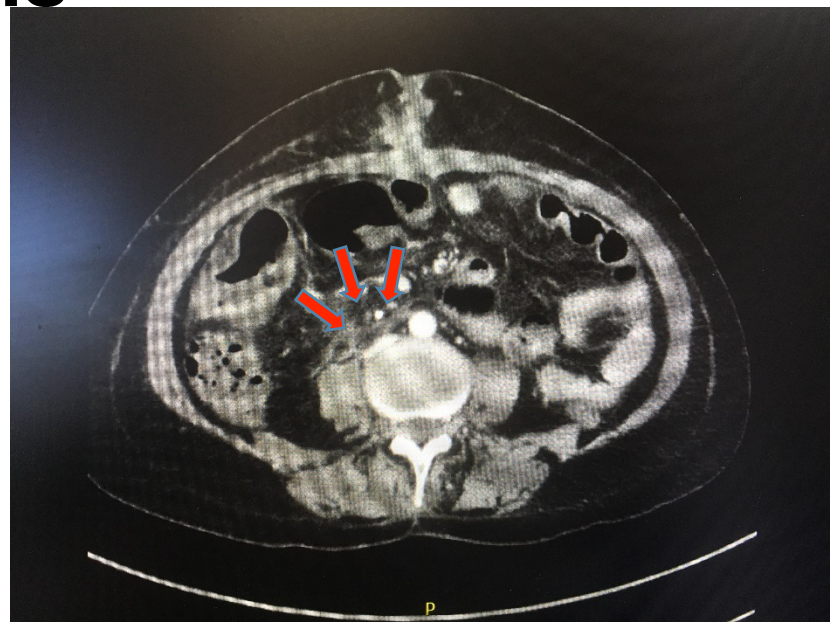
Multiple risk factors

+

Major Operations

+





HIGH RISK

But How High?

The size of our problem (CCF)

HERNIAS > 15CM	DVT	PE
366	**12 (3.27%)**	**13 (3.55%)**

HERNIAS > 10CM	DVT	PE
674	12 (1.78%)	13 (1.92%)

Is it just us?

The size of our problem (AHSQC)

HERNIAS > 15CM	DVT	PE
1264	23 (1.81%)	35 (2.77%)

HERNIAS > 15CM	DVT /PE
1264	**47 (3.72%)**

90 surgeons / 64 centers – rates 0 to 50%

Higher Volume Surgeons (>20 cases)

- 18 Surgeons/11 centers
- 74% of the cases
- Responsible for 85% of the VTE events
- **85% Events Happening During Hospital Stay**

Higher Volume (>20) n=933 Hernias>15cm
DVT/PE = 4.3%

This is everyone's problem…

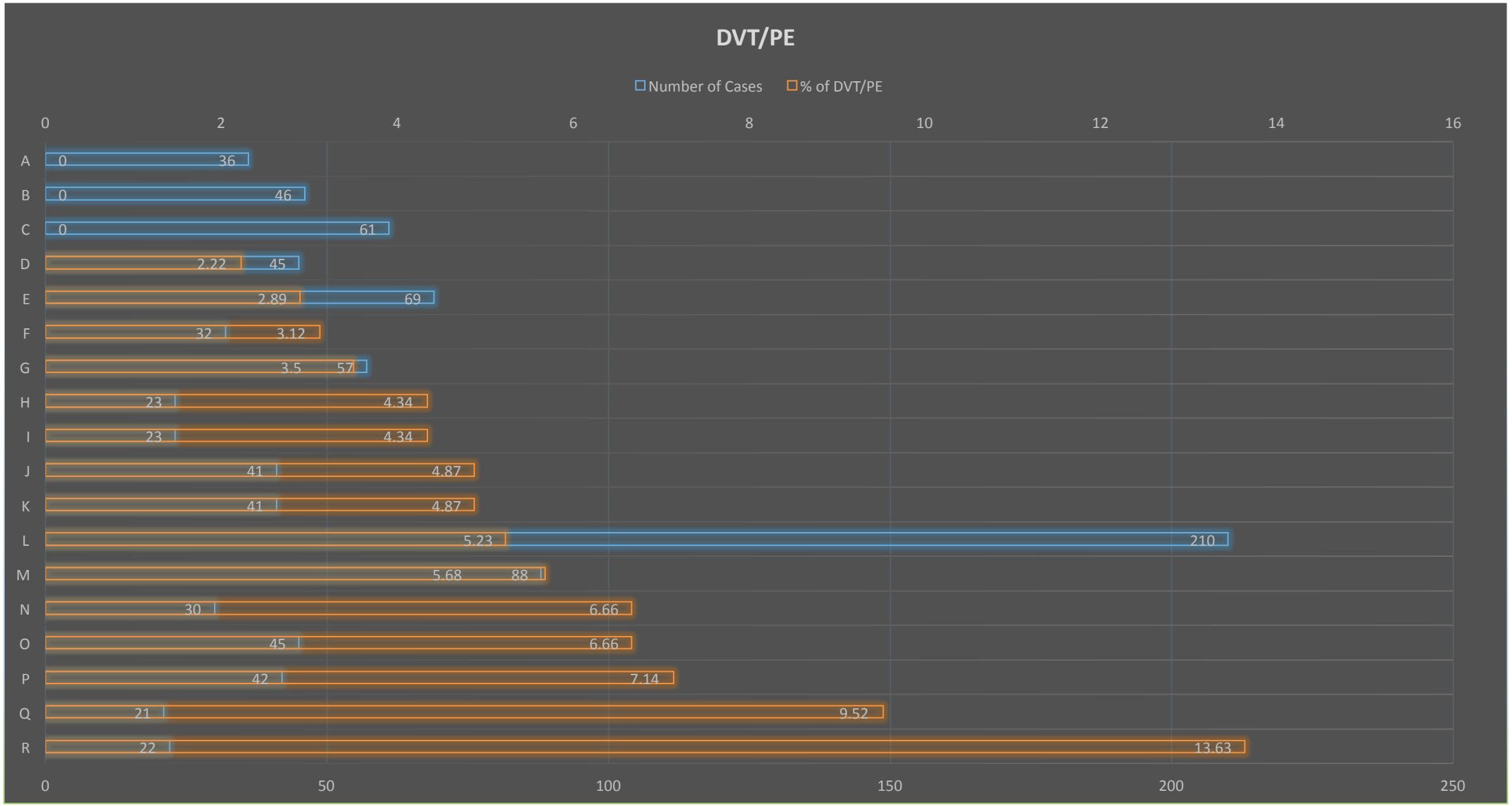
Comparing to Bariatric literature...

- Helm et al. (2017) – NSQIP data – 59.424 surgeries **– 0.5%** - ***80% after hospital discharge***
- Nimeri et al. (2017) - NSQIP data 2010-2016 – **(0.25% to 0.45%)**
- Aminian et al. (2017) – NSQIP data – **(0.22%) -** ***85% after hospital discharge***
- Froehling et al. (2013) – Open RYGB **– 0.3% (7d)** to **1.9% (30d)**
- Banka et al. (2012) – 41.094 Open RYGB – **1.4%**

AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

High Volume (>20) n=933

DVT/PE = 4.29%



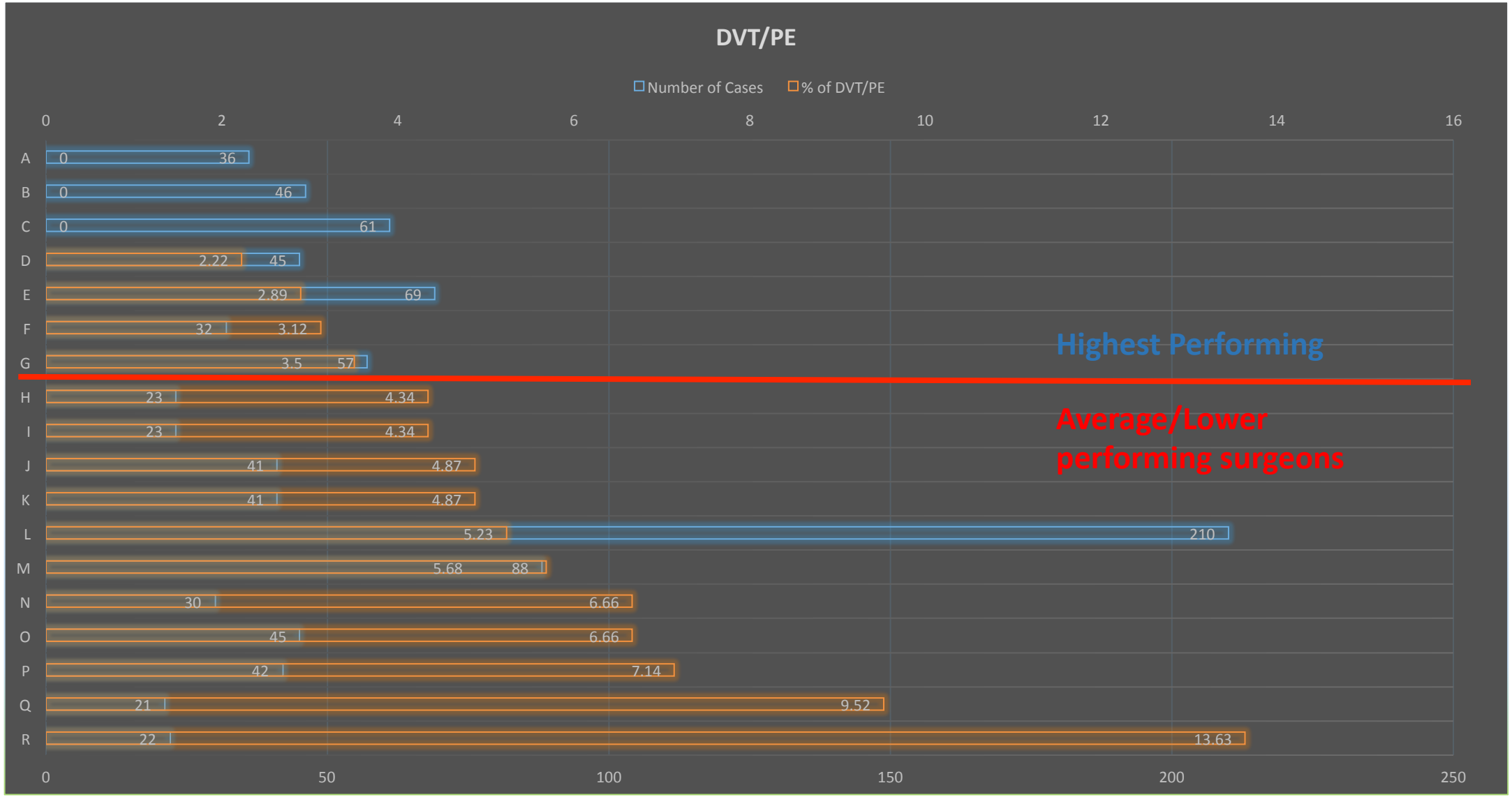
Variable	No VTE n=893	VTE n=40	P-Value
BMI	34.4±6.7	35.7±6.7	0.22
H. Width	19.1±5.3	19.9±6.3	0.44
Epidurals	475 (53.5%)	21 (52.5%)	>0.99
Anticoagulant Therapy	72 (8%)	4 (10%)	0.56

+ No Difference: *Age, gender, Morbid Obesity, Diabetes, Functional Status, Steroid Use, COPD, Smoking, ASA Class, CDC Wound class, Recurrent Hernia, OR time, Intraop complication*

AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

High Volume (>20) n=933

DVT/PE = 4.29%



Variable	Highest Performing (7) n=393	Average/Lowest Performing (11) n=540	p-value
Recurrent	**220 (56%)**	**344 (63.7%)**	**0.02**
Diabetes	**83 (21%)**	**164 (30%)**	**0.002**
ASA Class III/IV	**297 (76%)**	**479 (88%)**	**<0.001**
CDC Wound Class 2-3-4	145 (37%)	194 (36%)	0.008
LOS	7.3±5.7	7.9±6	0.089
BMI	33.9±6.5	34.9±6.8	0.03
OR time	4.4±0.8	4.2±0.8	<0.001

+ No Difference: *Age, gender, Morbid Obesity, Steroid Use, COPD, Hypertension, IBD, Hernia type, Epidurals use, H. width, Anticoagulant therapy, Intraoperative complications , Functional Status*

-Investigating the Problem at home -

While developing an ERAS pathway...

- Different protocols for prophylaxis among 5 surgeons at the same institution
- Great variation in prescription orders, doses
- Minucious investigation when an event occur: rare missing doses of Heparin Postoperatively
- No investigation on preoperative Heparin missing doses

- 18 Surgeons Contacted via Secure Email
- Asked for detailed VTE prophylaxis protocols
- Circumstances when the protocol is not followed or modified
- Eventual problems with compliance
- 100% Response Rate

Dear Dr.XXXXXXXXXXXXX,

As part of the quality improvement endeavor of the Americas Hernia Society Quality Collaborative, we are examining the rates of venous thromboembolic events after abdominal wall reconstruction. We went through QC data patients who underwent abdominal wall reconstruction, with a hernia width greater or equal than 15 centimeters and 30-day follow-up completed, and we are comparing rates of deep venous thrombosis (DVT) and pulmonary embolism (PE) among participating sites and surgeons. This way, we aim to investigate differences between institutional and individual surgeon protocols for prophylaxis of these events, and therefore analyze if there is an opportunity for quality improvement in case one of the centers/surgeons present with a lower rate of events when compared to the overall AHSQC rates.

We are contacting you because you are considered a high volume surgeon for abdominal wall reconstruction in the AHSQC, and had input at least 20 cases that meet inclusion criteria for our analysis.

You have reported in the QC, four events in two patients, as follows:

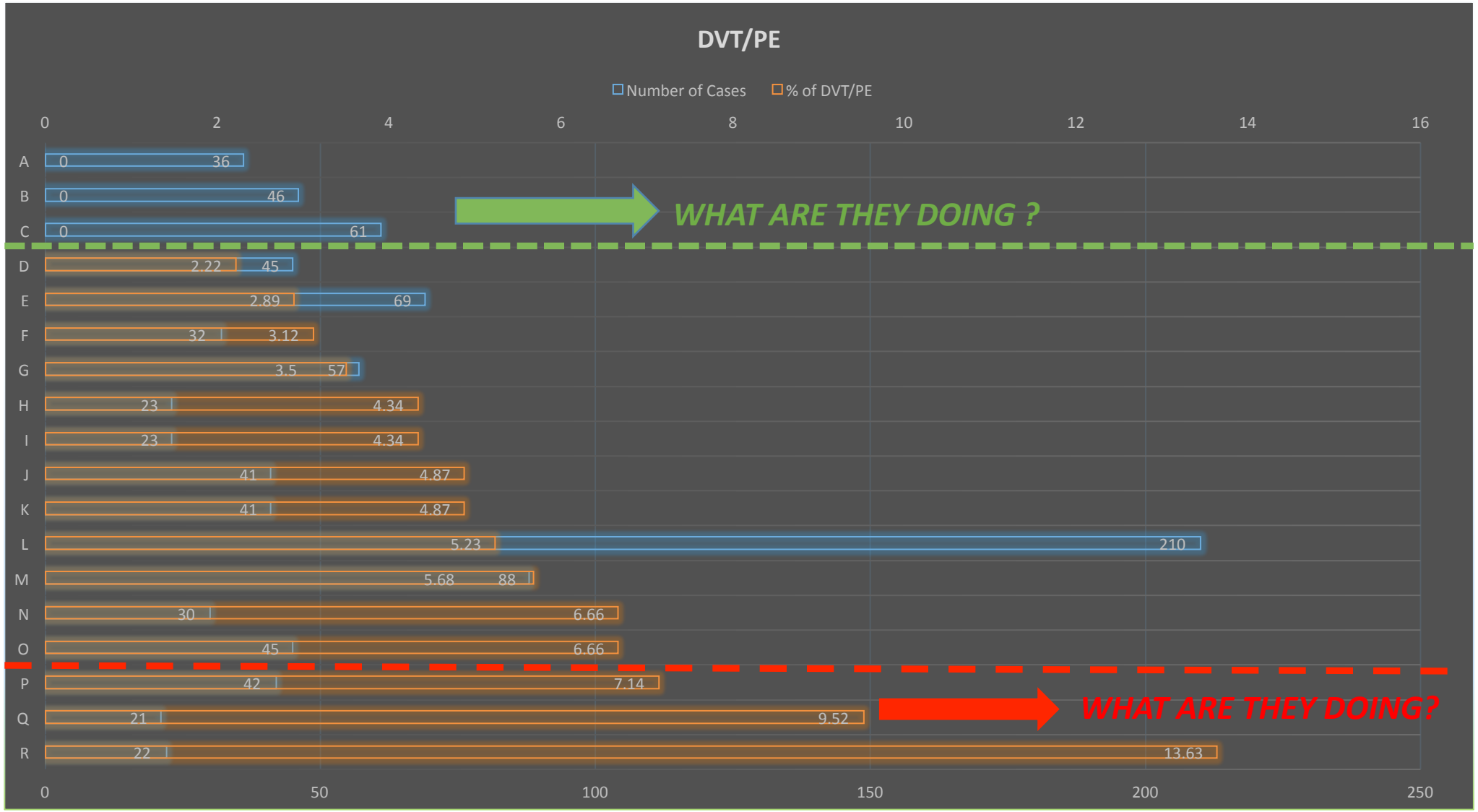
Patient	DVT	PE
1.	Yes	Yes
2.	Yes	Yes

We would like to know the following from you:

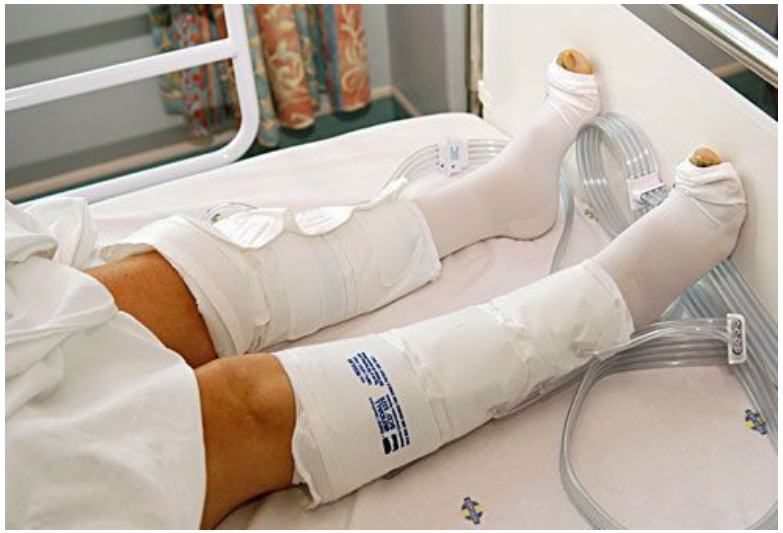
1. **Which is your protocol for venous thromboembolic events prophylaxis?** Could you detail your interventions in:
   Please details all mechanical (i.e., compression socks / intermittent compression devices, etc.) and pharmacological interventions (type of heparin, dose, duration of prophylaxis, etc.) in your protocol.

Preoperative	Intraoperative	Postoperative (in hospital)	After discharge

AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE



SCD's - 100% Use



INTRA-OP

POST-OP – ENTIRE LENGTH OF STAY

No problems with Compliance

Post-op Heparin - 100% Use

LDUH Post-op	78% (14)
LMWH Post-op	22% (4)

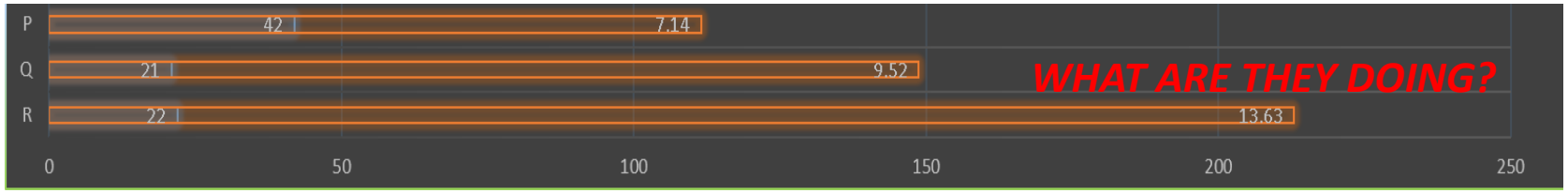
Some Compliance Problems: **2 Centers –** ***All patients with VTE events had missed one or several doses during hospitalization***

Mandatory Pre-op Heparin dose - 83% Use

5000ui Heparin SC	94.5% (7)
40mg Enoxaparin	5.5% (1)

Lots of Compliance problems **– No orders; Administration Hold due to Transfer to OR; Delayed Administration (after induction)**

Selective Pre-op Heparin dose – 17 % Use



Selective use
(High-Risk patients only)

Problems with Compliance

FREQUENT MISSING/DELAYED DOSES

- Hold due to Transfer
- Administration after anesthesia or at the end of the case

Use of Risk Stratification Tools / Extended Prophylaxis

3 Surgeons	17%
Caprini>5	Enoxaparin 14 days
Caprini>5	Enoxaparin 30 days
Prior History of VTE	Enoxaparin or Apixaban 14 days

Physical Therapy – 1 Surgeon

- Preoperative Education/Counseling
- Exercise Instructions – Supervised and Self Driven
- In-Hospital PT
- Post-discharge PT

Physical Therapy – 1 Surgeon

C 0 61 WHAT IS HE DOING ?

x5

x5

x5

Variable	Highest Performing (7) n=393	Average/Lowest Performing (11) n=540	P-Value
Mandatory Pre-op heparin	7 (100%)	8 (73%)	0.25
Post-op LDUH	4 (57%)	10 (91%)	0.25
Post-op LMWH	3 (43%)	1 (9%)	0.25
Extended Prophylaxis	1 (14%)	1 (9%)	>0.99
Physical Therapy	1 (14%)	0	0.39
Bleeding Requiring Transfusion	2 (0.5%)	8 (1.5%)	0.2

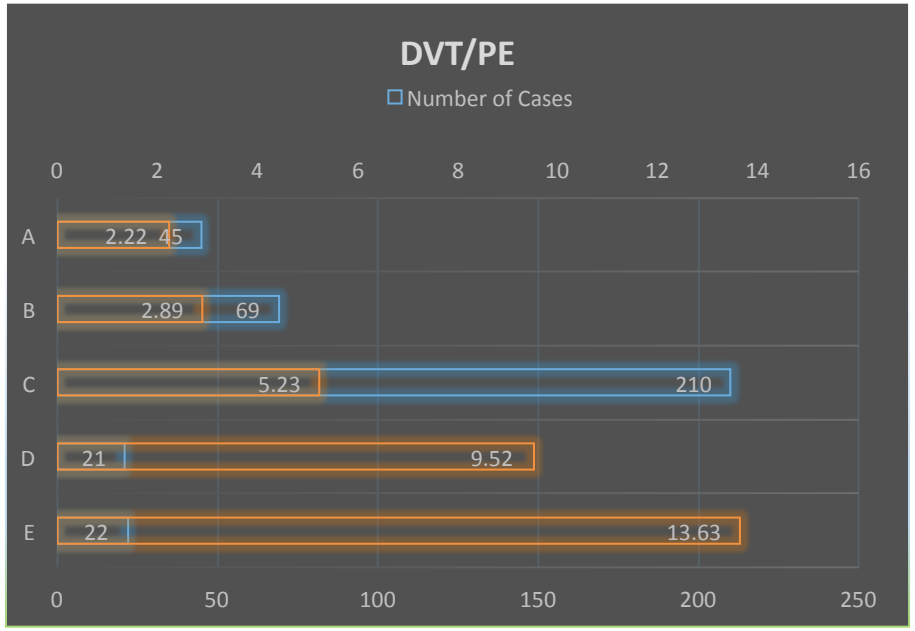
Low numbers – Interpret with care...

We need to do something...

- Standardized our protocols
- Active participation of the attending checking pre/postop orders
- Patient education / counseling
- QI project in the QC

Current Protocol
5000UI Heparin SC pre-op
Orders and Administration verified during safety huddle
No Epidurals – Switch TAP Blocks
Enoxaparin 40mg QD– weight adjust if needed Starting in night of surgery
SCD Intra-op
SCD Post-op – at least 18h/day
Early Mobilization
Constant Encourage for Ambulation

AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

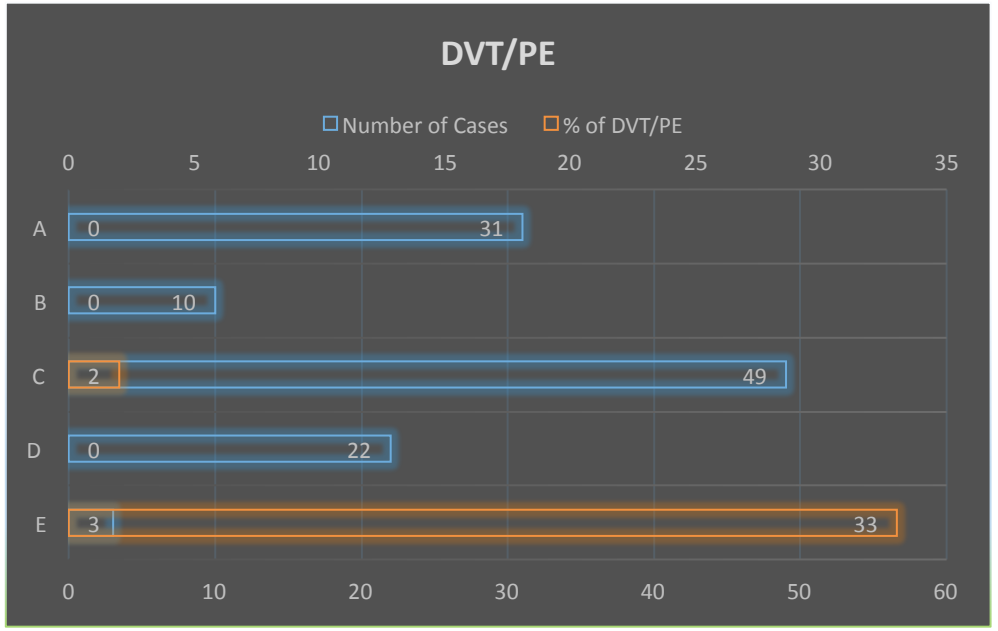


366 cases

VTE - 18 (4.9%)

Bleeding requiring transfusion – 7 (1.9%)

5-month period



115 cases

VTE - 2(1.73%)

Bleeding requiring transfusion – 1 (0.9%)

Suggested VTE Prevention Strategy

5000UI Heparin SC pre-op
Orders and Administration verified by the surgeon during safety huddle
Avoid Epidurals – Switch to **TAP Blocks**
Enoxaparin 40mg QD **BMI>40 – Enoxaparin 40mg BID**
SCD Intraop
SCD Postop – **at least 18h/day**
Early Mobilization / Ambulation
Supervised Exercises (Family, Nursing, Resident, Medical Student)
Consider Extended Prophylaxis in selected patients (Highest risk/BMI>40)

AHSQC RECOMMENDATIONS

- Educate your Patient
- Take active part in prevention
- Check, check, check...
- PE: **Low threshold to diagnose and treat**
- Let us know what you think – tastall@ccf.org
- Let’s track evolution together and see if we are in the right way...

Cleveland Clinic
Digestive Disease & Surgery Institute

Updates in General Surgery

January 12 – 15, 2018

Vail Marriott Mountain Resort, Vail, CO

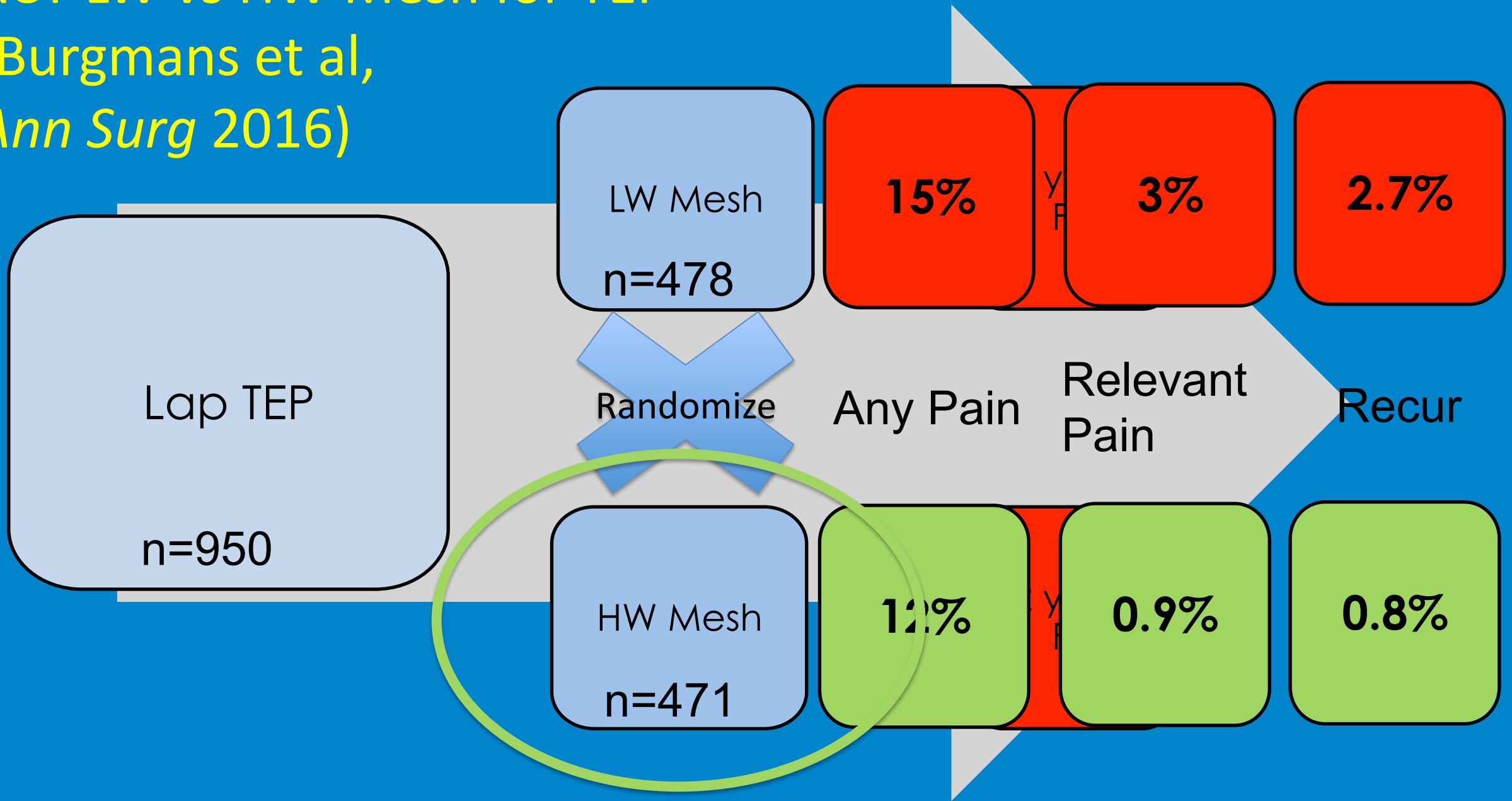
AHSQC Inguinal Hernia Module Update

We Can Do Some Things Better Together Than As Individuals

- Common way to track patients
- Learn from each other and our patients while we take care of them
- Have a voice with the FDA, CMS, payers, hospitals
- MOC Part IV
- Show you are helping the greater good for hernia

AHS/QC℠
AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

RCT-LW vs HW Mesh for TEP (Burgmans et al, *Ann Surg* 2016)



Should You Switch to Heavyweight Mesh…?

- Did the patients in the study look like your patients?
  - Mean BMI 25kg/m^2 (standard deviation 2.7kg/m^2)
  - Observed chronic pain rate of 12-15% at 2 years
- If your chronic pain rate at 2 years is 5%
  - Regardless of mesh type->you probably shouldn't switch mesh
- If your chronic pain rate at 2 years is 20%
  - And you use LW mesh->switch to HW
  - And you use HW mesh->something else is going on

Preliminary Inguinal Hernia Characteristics AHSQC-Unilateral

	Open (n=885)	Laparoscopic (n=848)	Robotic-Assisted (n=357)
Total Surgeons (n)	89	68	52
Private Pract (%)	59	71	85
Median Age (y)	65	60	63
BMI (kg/m^2)	26	26	27

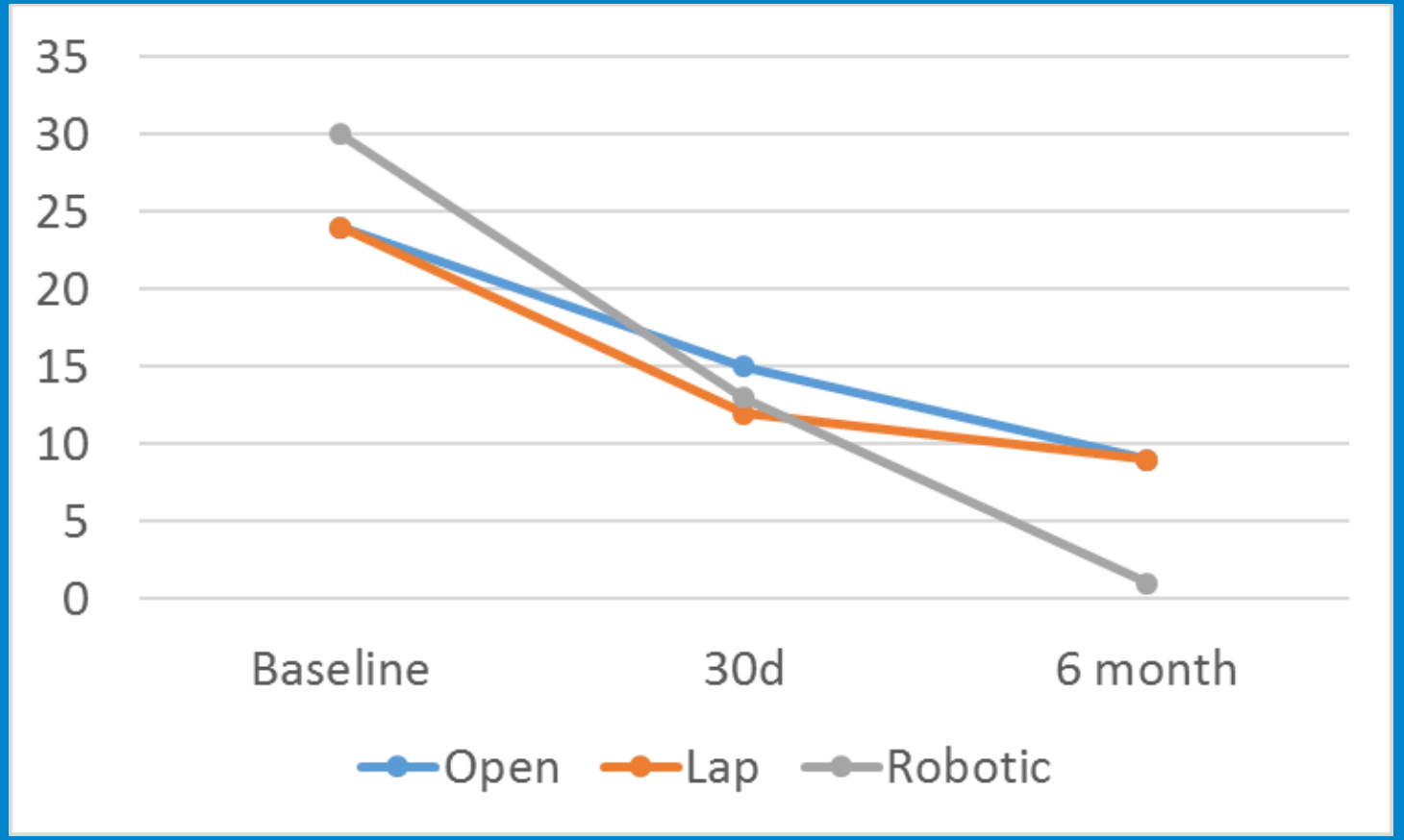
Preliminary Inguinal Hernia Periop Outcomes AHSQC-Unilateral

	Open (n=885)	Laparoscopic (n=848)	Robotic-Assisted (n=357)
Intra-Operative (n)	3	4	2
Non-wound (%)	2	2	3
SSI (n)	2	0	0
SSO (%)	4	7	2
SSOPI (n)	4	1	2

Table 5: Operative characteristics

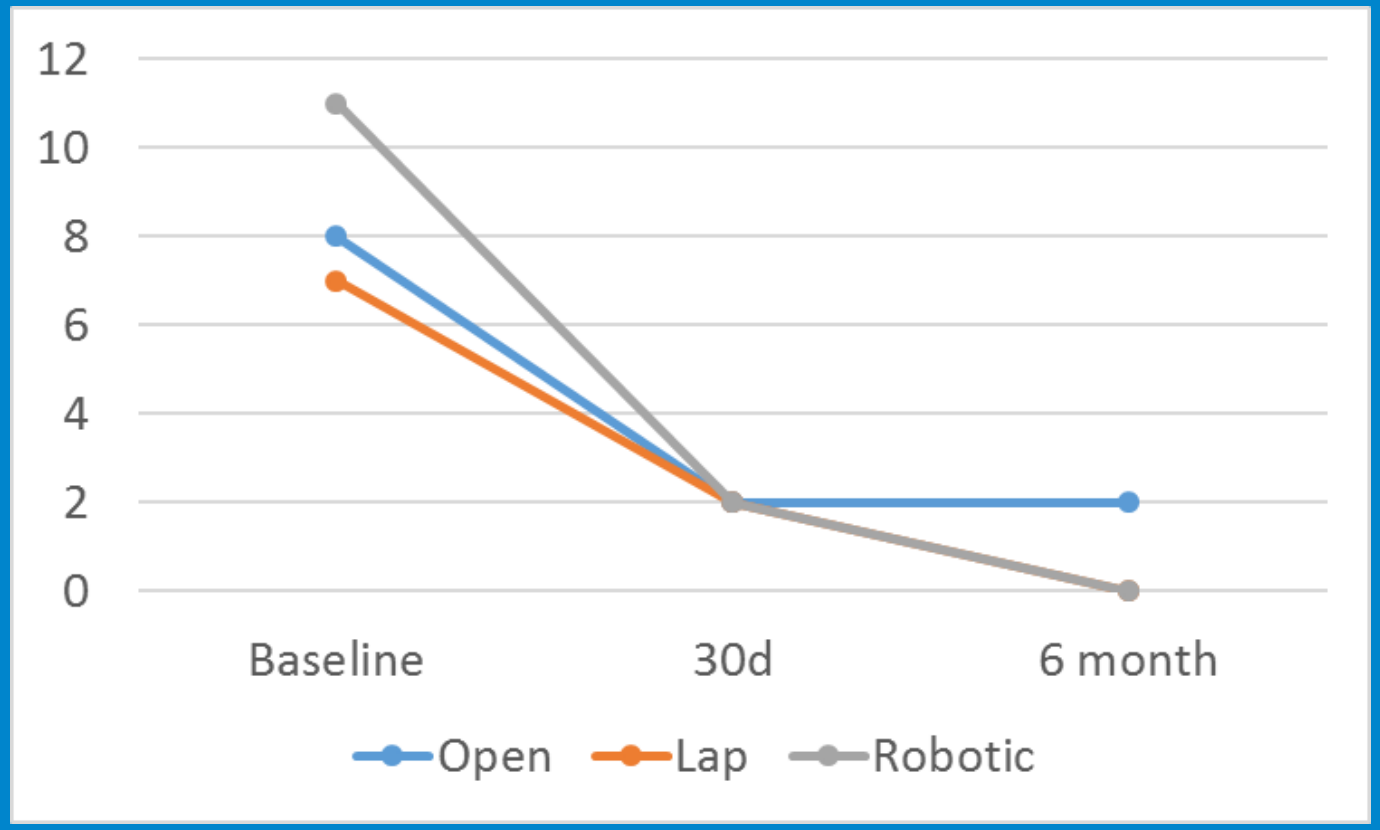
		Unilat Open	Unilat Lap	Unilat Rob	Bilat Open	Bilat Lap	Bilat Rob	Bilat Mixed
Operative time	N (%)							
0-59 min		397 (45)	506 (60)	113 (32)	5 (8)	92 (25)	46 (18)	0 (0)
60-119 min		412 (47)	309 (36)	207 (58)	28 (46)	223 (60)	122 (49)	2 (22)
120-179 min		52 (6)	27 (3)	18 (5)	18 (30)	52 (14)	58 (23)	6 (67)
180-239 min		12 (1)	4 (<1)	7 (2)	5 (8)	4 (1)	16 (6)	1 (11)
240+ min		12 (1)	2 (<1)	12 (3)	5 (8)	1 (<1)	7 (3)	0 (0)

Preliminary Inguinal Hernia EuraHS QoL (Overall) AHSQC-Unilateral



Lower Scores Better

Preliminary Inguinal Hernia EuraHS QoL (Pain) AHSQC-Unilateral



Lower Scores Better

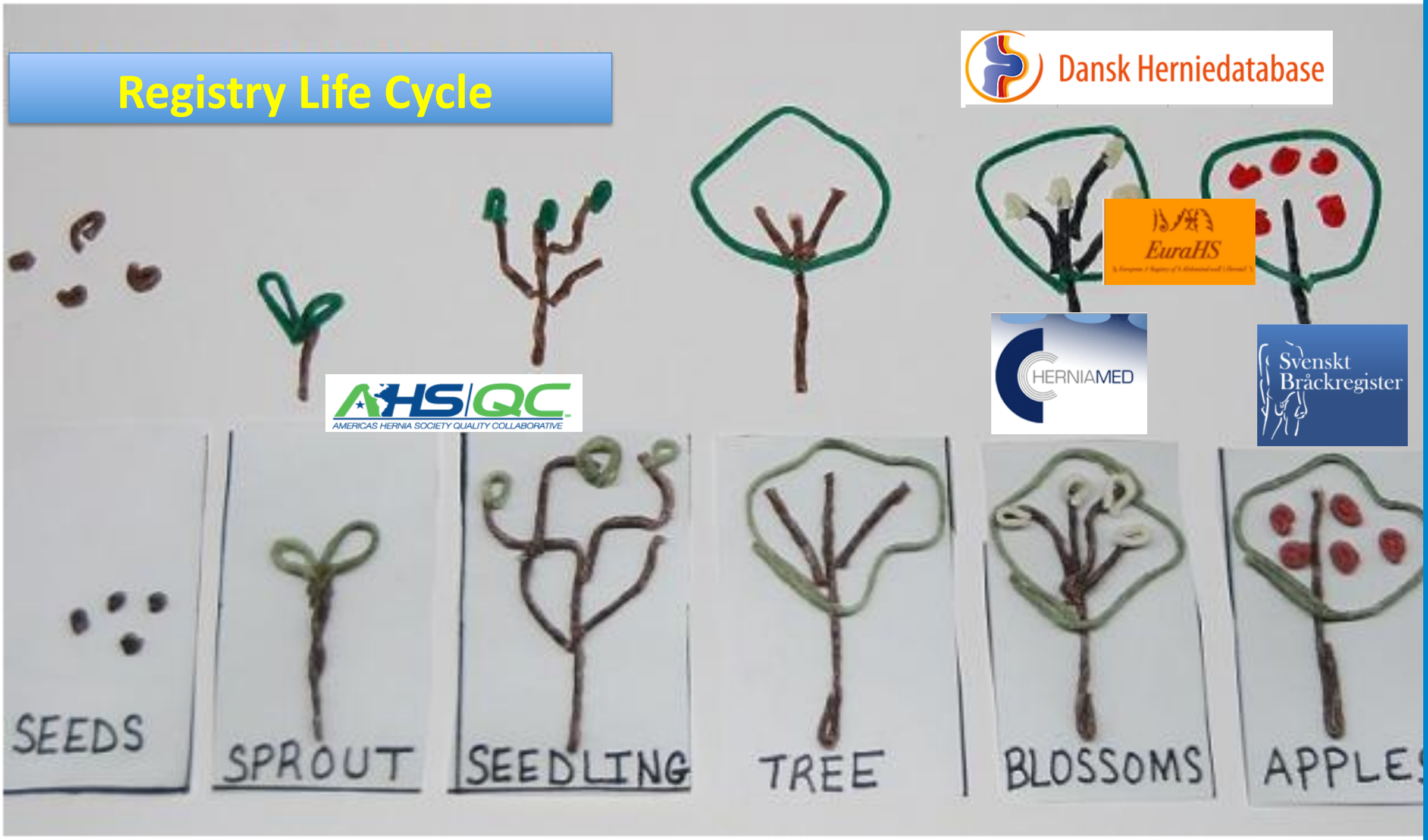
Table 6: Intra-operative complications

		Unilat Open	Unilat Lap	Unilat Rob	Bilat Open	Bilat Lap	Bilat Rob	Bilat Mixed
Any intra-op complications		3 (<1)	4 (<1)	2 (1)	0 (0)	1 (<1)	0 (0)	0 (0)
Specific complications[cata]	N (%)							
Hemorrhage requiring transfusion		0	0	0	0	0	0	0
Peritoneal access injury		1	0	0	0	0	0	0
Bowel injury		0	0	1	0	1	0	0
Bladder injury		1	1	0	0	0	0	0
Liver injury		0	0	0	0	0	0	0
Gastric injury		0	0	0	0	0	0	0
Major vascular injury requiring intervention		0	0	0	0	0	0	0
Other		0	2	1	0	0	0	0

Table 9: Post-operative through 30 day outcomes

		Unilat Open	Unilat Lap	Unilat Rob	Bilat Open	Bilat Lap	Bilat Rob	Bilat Mixed
Subject re-encounters[cata]	N (%)							
Clinic		141 (22)	123 (18)	100 (40)	7 (18)	57 (19)	38 (22)	3 (38)
Emergency room		16 (2)	13 (2)	7 (3)	0 (0)	12 (4)	5 (3)	0 (0)
Re-admission within 30 days		6 (1)	3 (<1)	3 (1)	0 (0)	3 (1)	5 (3)	0 (0)
Reported reasons for re-admission[cata]	N							
Pain		1	0	0	0	0	0	0
Prosthetic related complication		0	0	0	0	0	0	0
Wound complication		0	0	0	0	0	0	0
Bleeding complication		1	0	0	0	1	0	0
Thrombotic complication (non-cardiac)		1	0	0	0	0	0	0
Gastrointestinal complication		1	1	1	0	2	2	0
Other (NOT AVAILABLE)								
Reoperation		3 (<1)	0 (0)	2 (1)	0 (0)	2 (1)	3 (2)	0 (0)
Reoperation type[cata]	N							
Unrecognized bowel injury		0	0	0	0	0	0	0
Major wound complication		1	0	0	0	0	1	0
Postoperative bleeding		1	0	0	0	1	0	0
Early recurrence		0	0	1	0	0	0	0
Bowl obstruction		0	0	1	0	1	2	0
Mesh excision		0	0	0	0	0	0	0
Unrelated intraabdominal pathology		1	0	0	0	0	0	0
		0 (0)	2 (<1)	1 (<1)	0 (0)	0 (0)	0 (0)	0 (0)

Registry Life Cycle



Dansk Herniedatabase

EuraHS

HERNIAMED

Svenskt Bråckregister

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ANNALS OF SURGERY
A MONTHLY REVIEW OF SURGICAL SCIENCE SINCE 1885

Lichtenstein Versus Total Extraperitoneal Patch Plasty Versus Transabdominal Patch Plasty Technique for Primary Unilateral Inguinal Hernia Repair: A Registry-based, Propensity Score-matched Comparison of 57,906 Patients.

Köckerling, Ferdinand MD; Bittner, Reinhard MD; Kofler, Michael; Mayer, Franz MD; Adolf, Daniela PhD; Kuthe, Andreas MD; Weyhe, Dirk MD

Objective: Outcome comparison of the Lichtenstein, total extraperitoneal patch plasty (TEP), and transabdominal patch plasty (TAPP) techniques for primary unilateral inguinal hernia repair.

Background: For comparison of these techniques the number of cases included in meta-analyses of randomized controlled trials is limited. There is therefore an urgent need for more comparative data.

Methods: In total, 57,906 patients with a primary unilateral inguinal hernia and 1-year follow up from the Herniamed Registry were selected between September 1, 2009 and February 1, 2015. Using propensity score matching, 12,564 matched pairs were formed for comparison of Lichtenstein versus TEP, 16,375 for Lichtenstein versus TAPP, and 14,426 for TEP versus TAPP.

Results: Comparison of Lichtenstein versus TEP revealed disadvantages for the Lichtenstein operation with regard to the postoperative complications (3.4% vs 1.7%; $P < 0.001$), complication-related reoperations (1.1% vs 0.8%; $P = 0.008$), pain at rest (5.2% vs 4.3%; $P = 0.003$), and pain on exertion (10.6% vs 7.7%; $P < 0.001$). TEP had disadvantages in terms of the intraoperative complications (0.9% vs 1.2%; $P = 0.035$). Likewise, comparison of Lichtenstein versus TAPP showed disadvantages for the Lichtenstein operation with regard to the postoperative complications (3.8% vs 3.3%; $P = 0.029$), complication-related reoperations (1.2% vs 0.9%; $P = 0.019$), pain at rest (5% vs 4.5%; $P = 0.029$), and on exertion (10.2% vs 7.8%; $P < 0.001$).

Conclusions: TEP and TAPP were found to have advantages over the Lichtenstein operation.

The Future

- Help answer the relevant questions
- Registry data reflects real life
- Point out issues early (lap tissue repair, mesh removal after posterior)
- Techniques, published studies, guidelines will come and go and change
- The registry is only as good as the data and needs to be a reflection of the whole
- Keep participating and help us grow together

AHSQC Perioperative Bundle for Abdominal Wall Reconstruction

Ajita Prabhu, MD FACS

Cleveland Clinic Comprehensive Hernia Center

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Disclosures

- Research Support
  - Intuitive Surgical
- Honoraria
  - Bard Davol
  - Medtronic
  - Cooper Surgical
- Advisory Board
  - Medtronic

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Full Disclosure

- Congratulations! It is finally time to reap rewards from hard work and collaboration of 200 surgeons.
- My favorite topic in hernia surgery
- Time to “I the Q” (YES!!!!!)

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What The Heck Is The AHSQC Bundle???

- Group of best practices for AWR
- Derived from analyses of data contributed to AHSQC since its inception in 2013
- Opportunity to examine our practices and discover/correct our misconceptions
- Evidence-based recommendations from peer-reviewed publications

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Stages of Care

- Preoperative
  - Staph decolonization
  - Bowel preparation
  - DVT/PE Prophylaxis
- Intraoperative
  - Drains
  - TAP Blocks
- Postoperative
  - Epidural Analgesia

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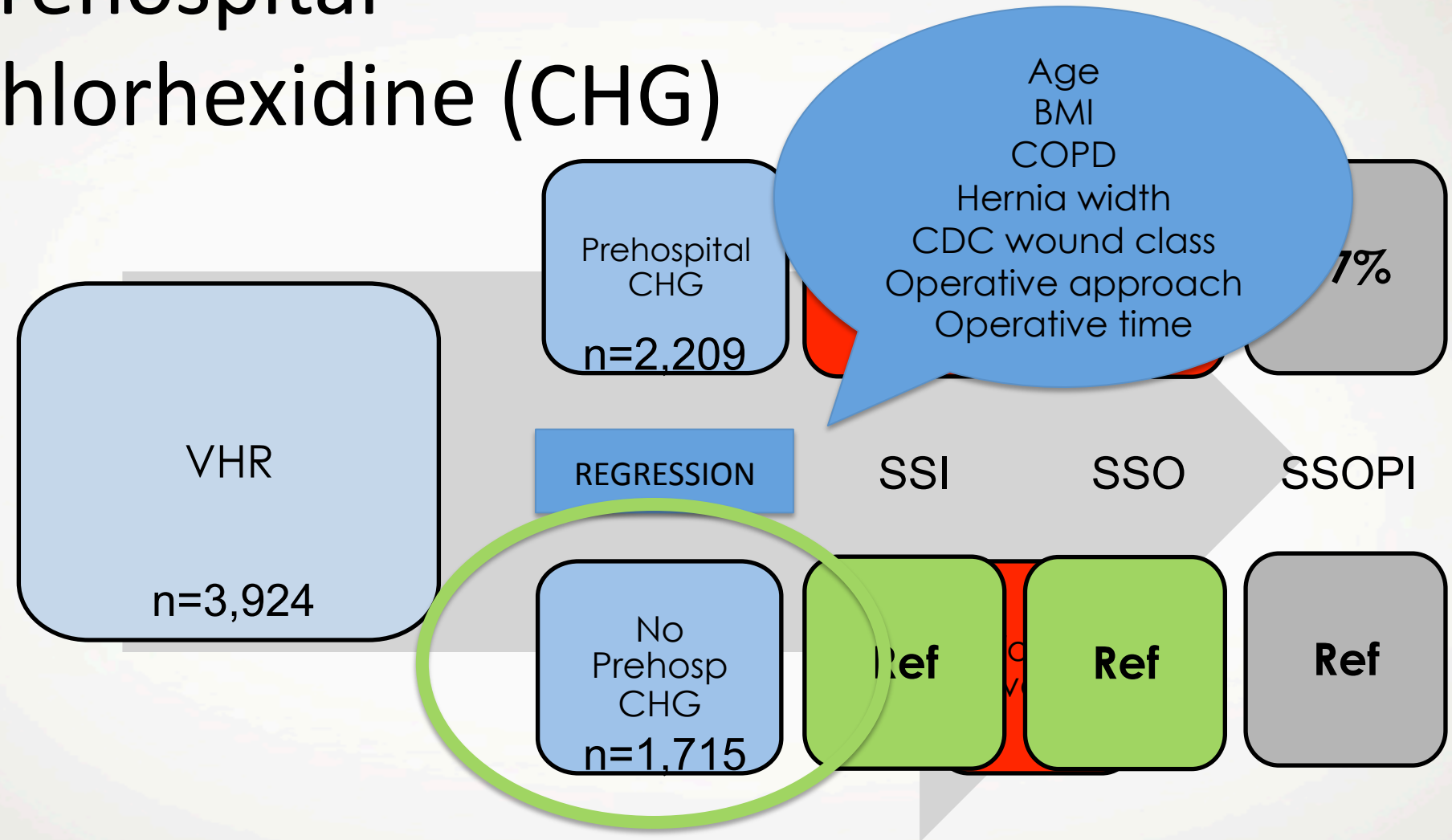
Prehospital Chlorhexidine (CHG)



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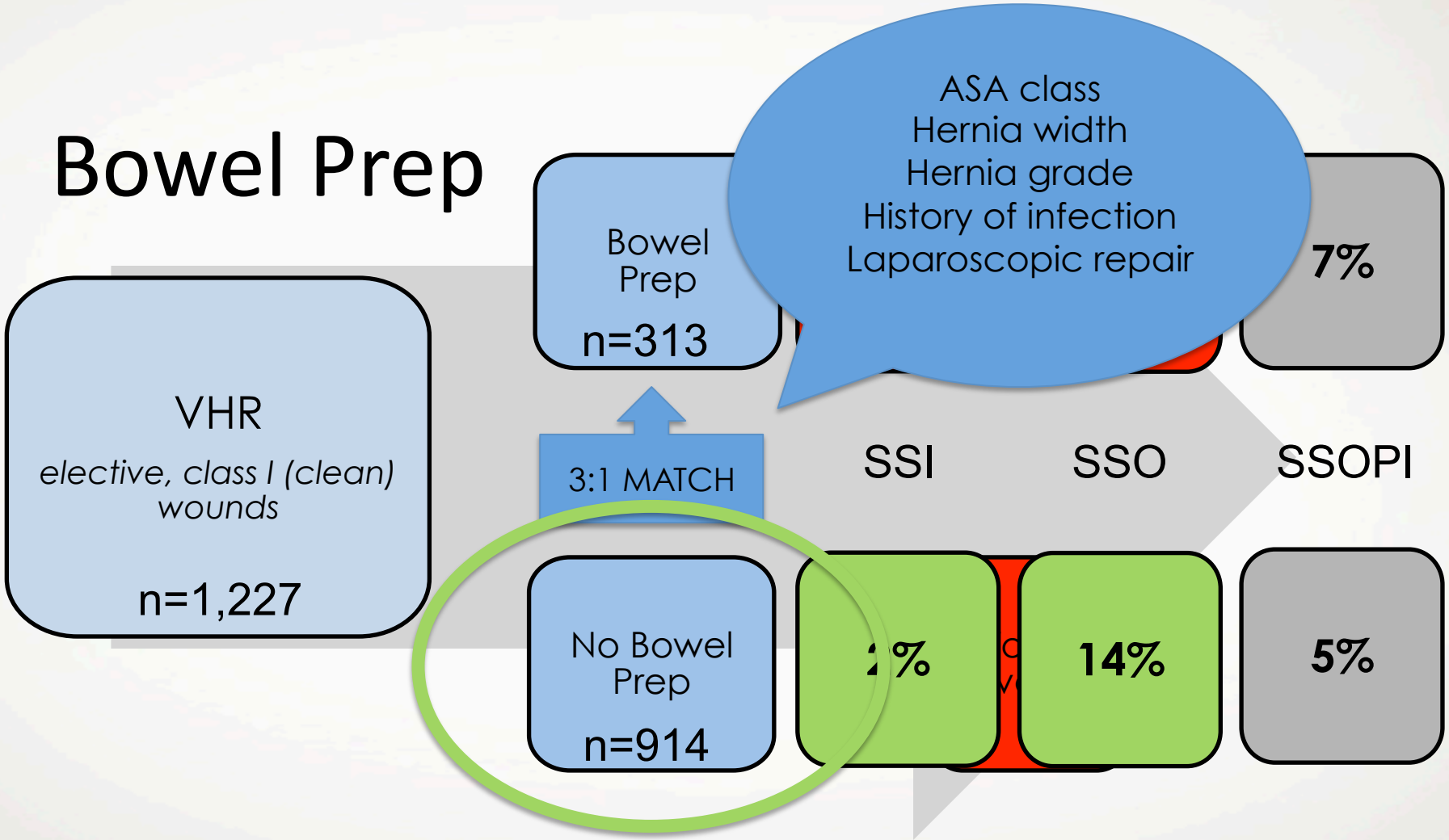
Bowel Prep



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Suggested VTE Prevention Strategy

5000UI Heparin SC pre-op
Orders and Administration verified by the surgeon during safety huddle
Avoid Epidurals – Switch **TAP Blocks**
Enoxaparin 40mg QD **BMI>40 – Enoxaparin 40mg BID**
SCD Intraop
SCD Postop – **at least 18h/day**
Early Mobilization / Ambulation
Supervised Exercises (Family, Nursing, Resident, Medical Student)
Consider Extended Prophylaxis in selected patients (Highest risk/BMI>40)

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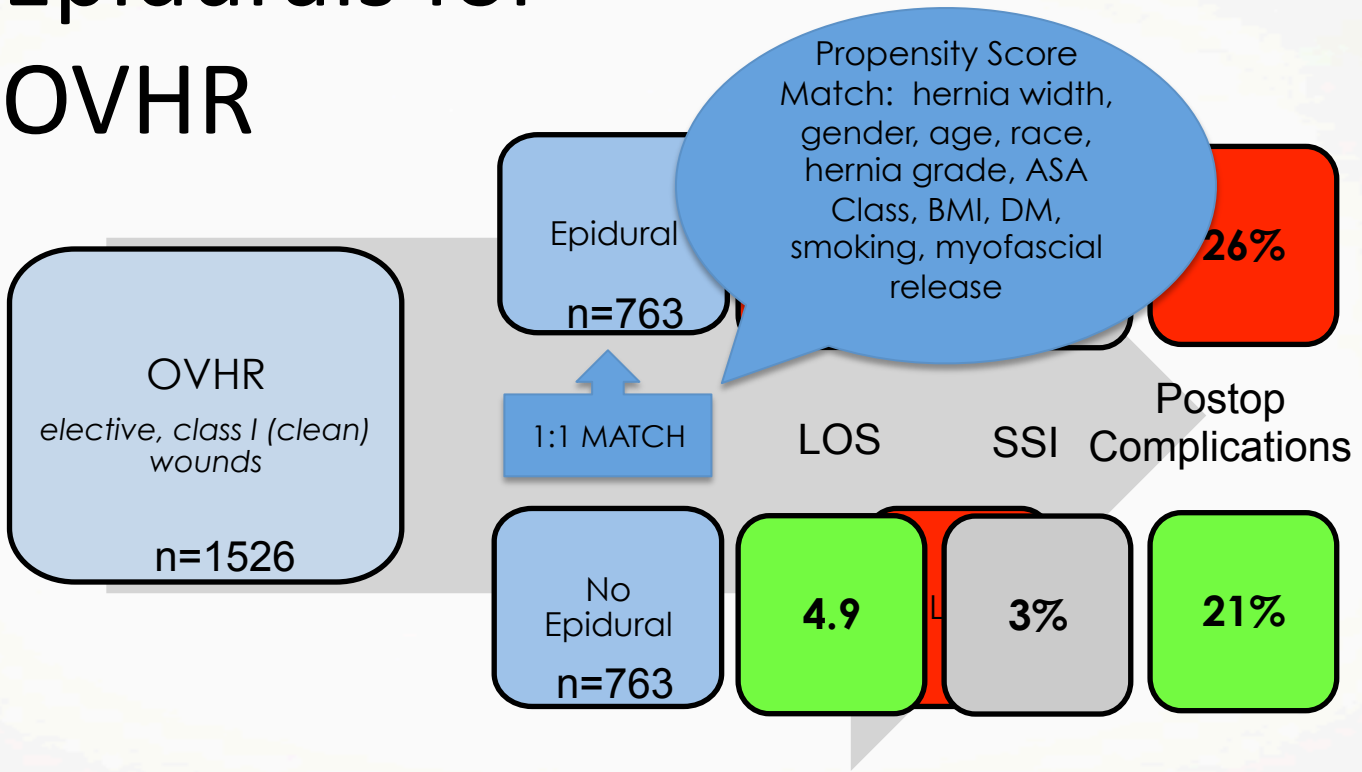
Epidurals for OVHR



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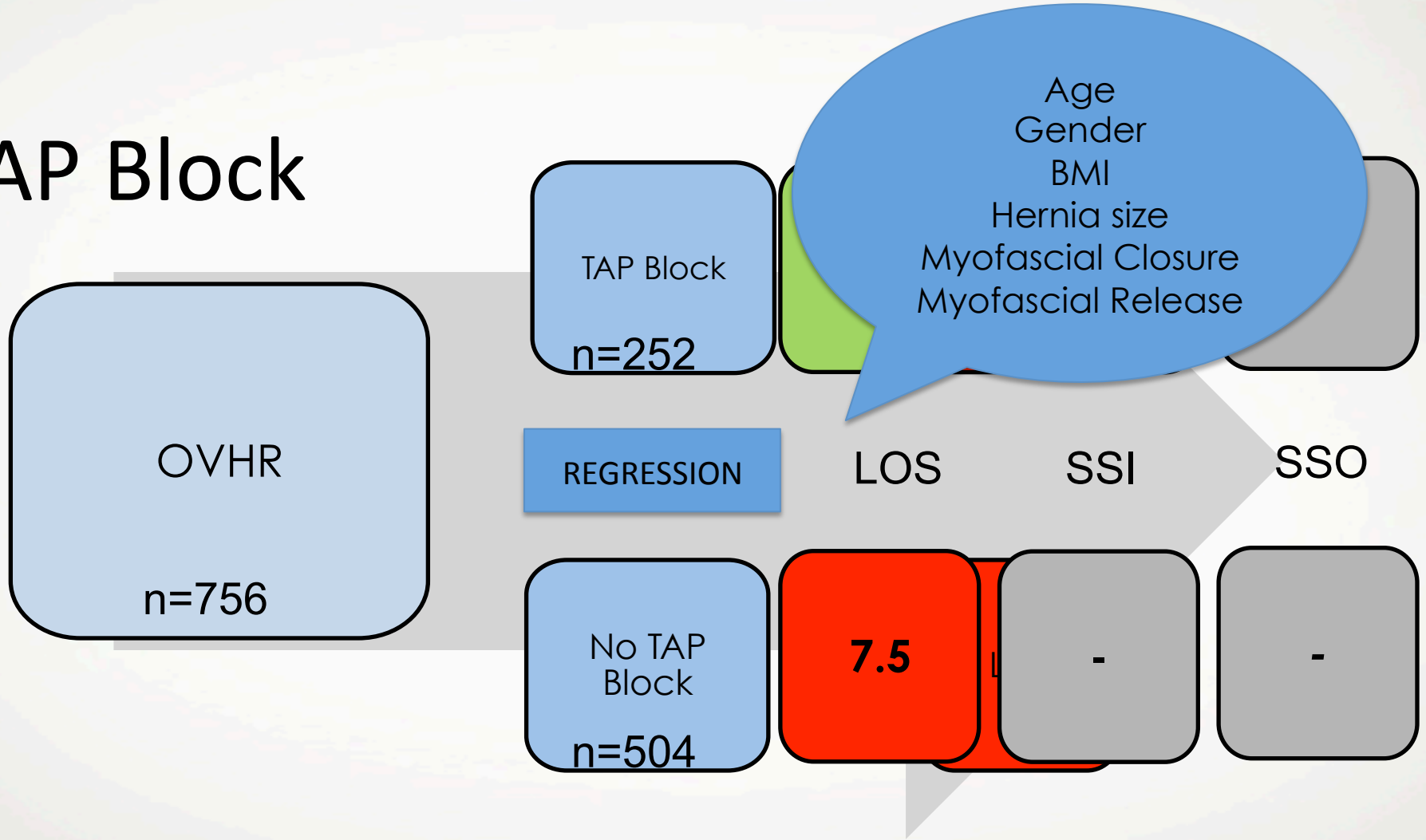
TAP Block



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Stages of Care

- Preoperative
  - Staph decolonization – **Avoid CHG scrub at home**
  - Bowel preparation – **Abandon preop bowel prep**
  - DVT/PE Prophylaxis – **QI Opportunity**
- Intraoperative
  - Drains – **Do not contribute to wound morbidity**
  - TAP Blocks – **May confer an advantage for LOS**
- Postoperative
  - Epidural Analgesia – **No benefit for LOS**

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AHSQC ORACLE

Ivy Haskins

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Data Collection/Variables Free Discussion

Ajita Prabhu

AHS|QC SM
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