

Americas Hernia Society Quality Collaborative



AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

AHSQC Funding Disclosure

- Americas Hernia Society
- LifeCell, Bard-Davol, Insinhtra Medical, Covidien-Medtronic, Maquet, Intuitive Surgical

Does Bowel Prep Reduce Surgical Site Infections During Elective Ventral Hernia Repair?

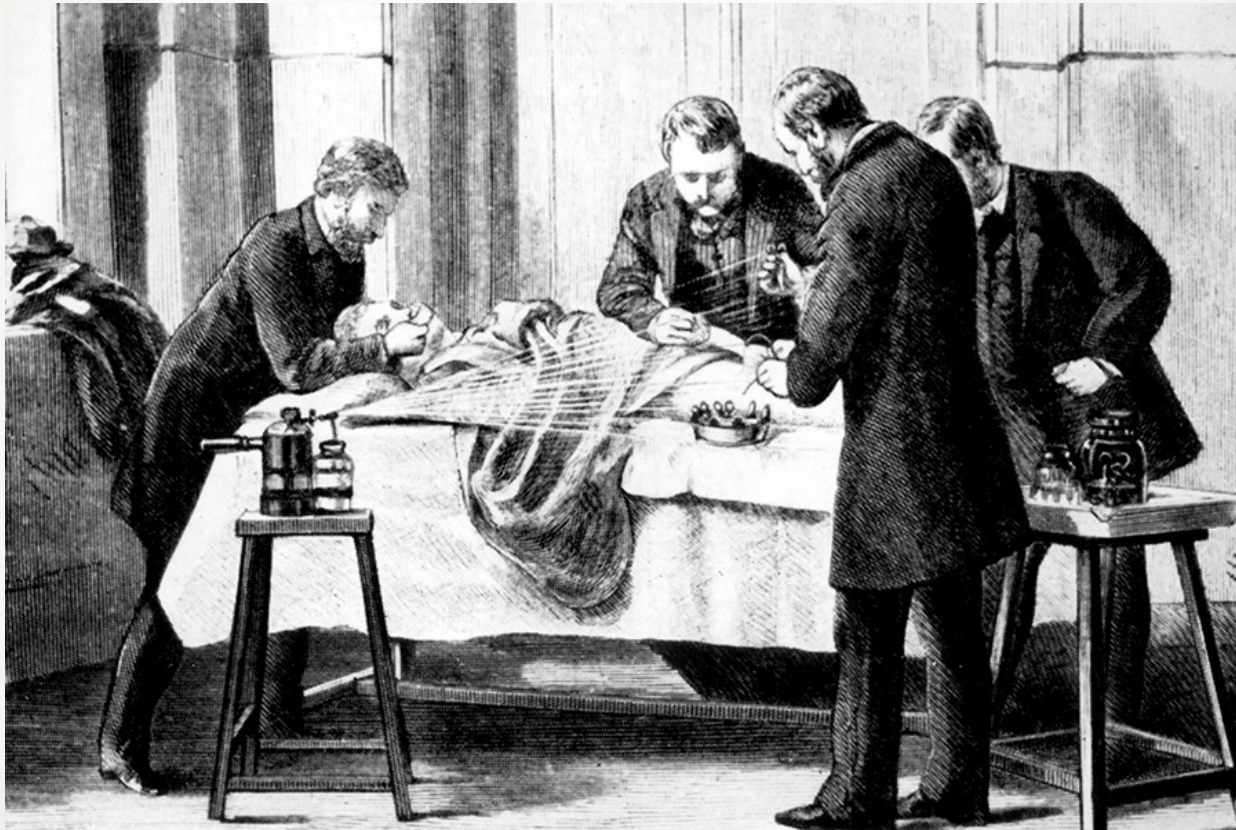
David Krpata, MD

Disclosures

- None



Asepsis



Aseptic Anastomosis

“Soiling unquestionably contributes to the mortality attending the circular sutures, particularly of the large bowel, but how important this factor is cannot be fully determined until it shall have been completely eliminated”

-Halsted, 1912

Bowel Prep

- Aseptic anastomosis
 - Technical approaches
 - Colonic decontamination
 - Fecal debulking
 - Bacterial eradication
 - Elemental diet & laxatives



Early Data

Efficacy of Preoperative Antimicrobial Preparation of the Bowel

RONALD LEE NICHOLS,* M.D., ROBERT E. CONDON,** M.D.,
SHERWOOD L. GORBACH,*** M.D., LLOYD M. NYHUS,**** M.D.

Ann. Surg. • Aug. 1972

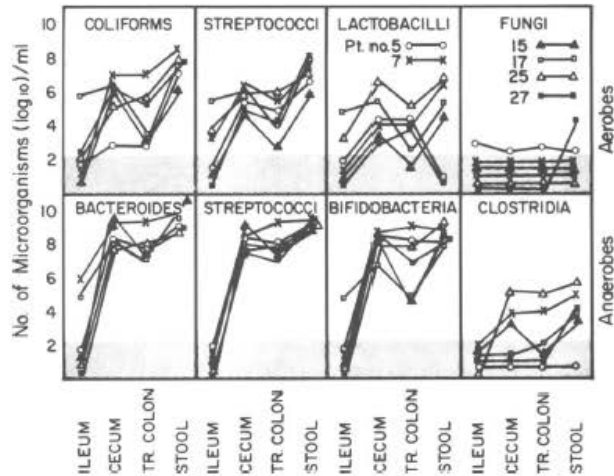


FIG. 1. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving neither mechanical cleansing nor antimicrobials.

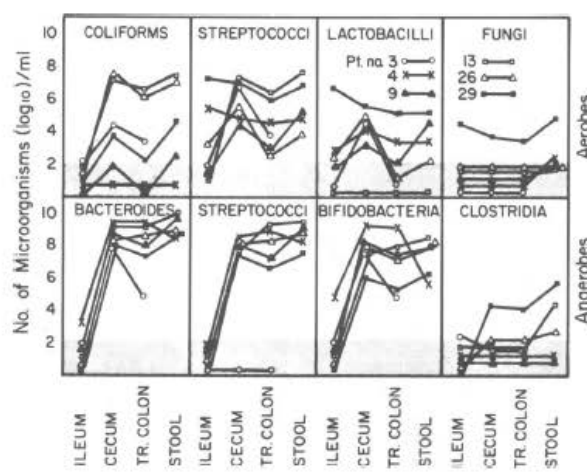


FIG. 2. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing with no antimicrobials.

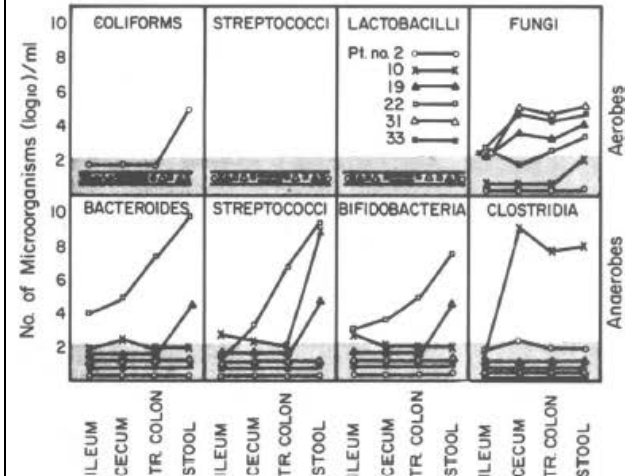


FIG. 5. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing and neomycin-phthalylsulfathiazole in combination.

Early Data

Efficacy of Preoperative Antimicrobial Preparation of the Bowel

RONALD LEE NICHOLS,* M.D., ROBERT E. CONDON,** M.D.,
SHERWOOD L. GORBACH,*** M.D., LLOYD M. NYHUS,*** M.D.

Ann. Surg. • Aug. 1972

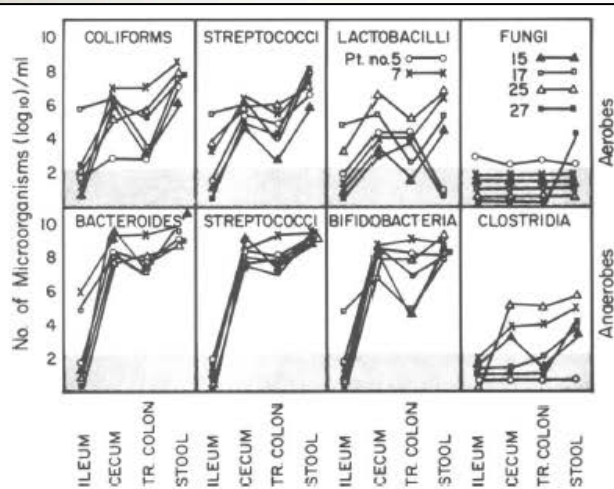
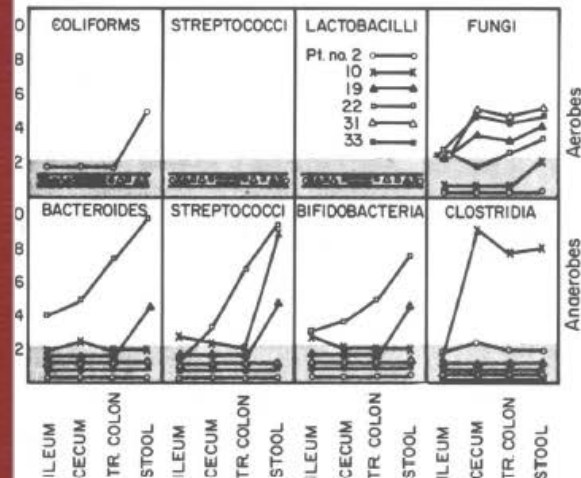


FIG. 1. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving neither mechanical cleansing nor antimicrobials.



5. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing and neomycin-sulfathiazole in combination.

NYHUS & CONDON'S HERNIA

FIFTH EDITION

ROBERT J. FITZSIMMONS, JR

A. OLSON GREENBURG

Early Data

Efficacy of Preoperative Antimicrobial Preparation of the Bowel

RONALD LEE NICHOLS,* M.D., ROBERT E. CONDON,** M.D.,
SHERWOOD L. GORBACH,*** M.D., LLOYD M. NYHUS,**** M.D.

Ann. Surg. • Aug. 1972

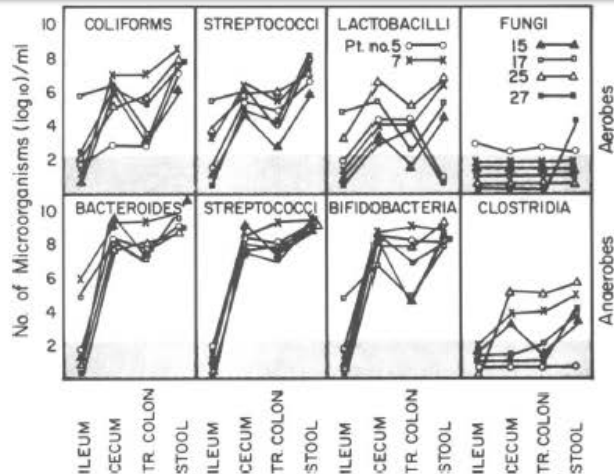


FIG. 1. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving neither mechanical cleansing nor antimicrobials.

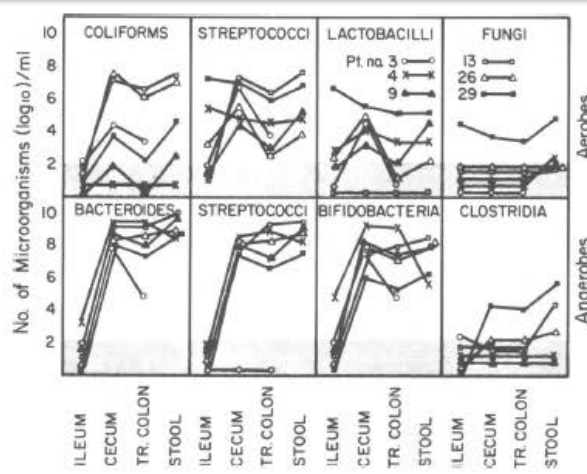


FIG. 2. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing with no antimicrobials.

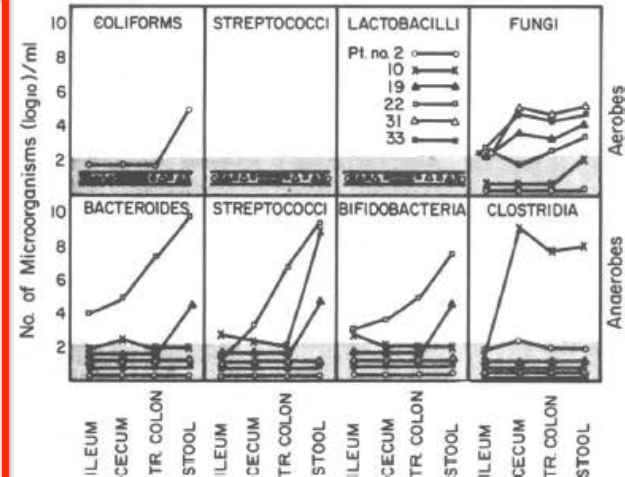


FIG. 5. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing and neomycin-phthalylsulfathiazole in combination.

No Prep

Mechanical Prep

Early Data

Efficacy of Preoperative Antimicrobial Preparation of the Bowel

RONALD LEE NICHOLS,* M.D., ROBERT E. CONDON,** M.D.,
SHERWOOD L. GORBACH,*** M.D., LLOYD M. NYHUS,**** M.D.

Ann. Surg. • Aug. 1972

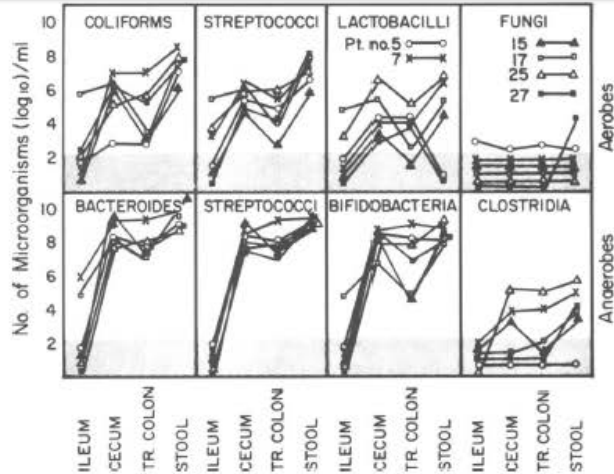


FIG. 1. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving neither mechanical cleansing nor antimicrobials.

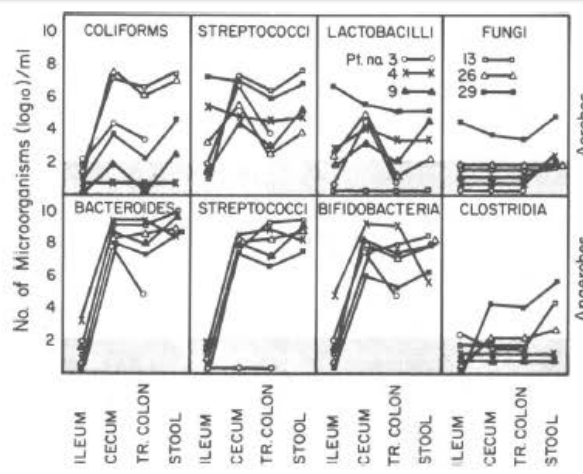


FIG. 2. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing with no antimicrobials.

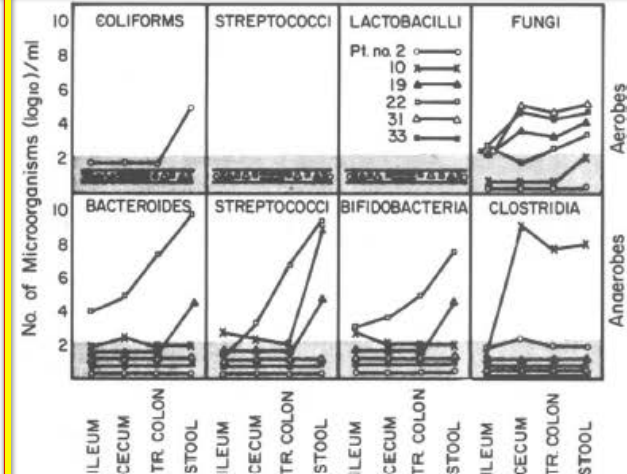


FIG. 5. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing and neomycin-phthalylsulfathiazole in combination.

No Prep

Mechanical Prep

Mechanical + Abx Prep

Early Data

Efficacy of Preoperative Antimicrobial Preparation of the Bowel

RONALD LEE NICHOLS,* M.D., ROBERT E. CONDON,** M.D.,
SHERWOOD L. GORBACH,*** M.D., LLOYD M. NYHUS,**** M.D.

Ann. Surg. • Aug. 1972

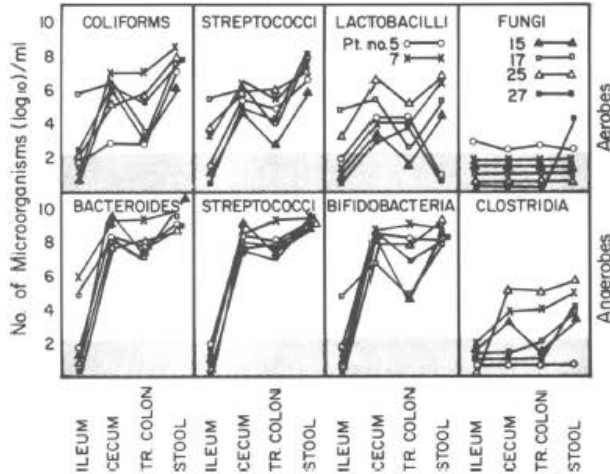


FIG. 1. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving neither mechanical cleansing nor antimicrobials.

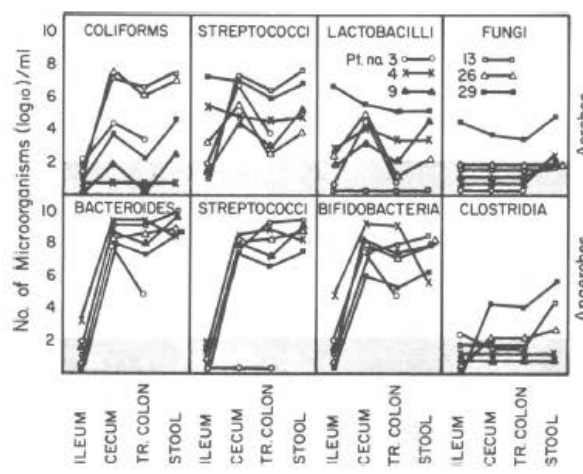


FIG. 2. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing with no antimicrobials.

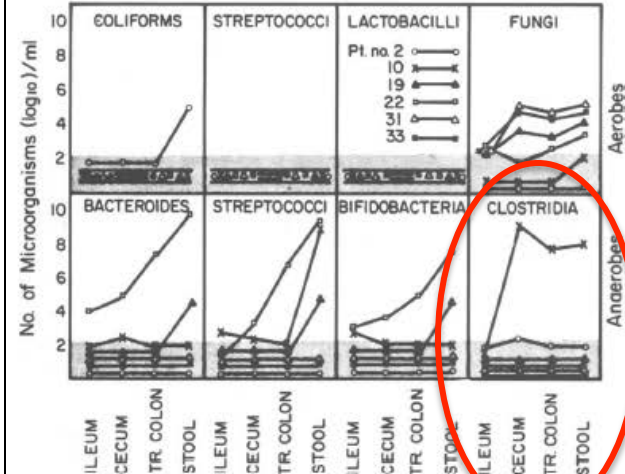


FIG. 5. Microflora of the ileum, cecum, transverse colon and stool in six patients receiving mechanical cleansing and neomycin-phthalylsulfathiazole in combination.

No Prep

Mechanical Prep

Mechanical + Abx Prep

Bowel Prep?

- 1980s-90s: Trauma literature rejects BP
- 1992: First RCT describing no benefit for BP
- Cochrane Review 2011:
 - 14 RCTs
 - 4,595 Patients

“... there is no statistically significant evidence that patients benefit from mechanical bowel preparation, nor the use of rectal enemas.”

Bowel Prep Dogma

Current practice in bowel preparation for colorectal surgery: a survey of the members of the Association of Coloproctology of GB & Ireland

R. J. Drummond*, **R. M. McKenna†** and **D. M. Wright‡**

*Tissue Injury Repair Group, University of Edinburgh, Edinburgh, UK, †Department of Orthopaedic Surgery, Western Infirmary, Glasgow, UK and ‡Department of General Surgery, Southern General Hospital, Glasgow, UK

Colorectal Disease © 2011

- 198 Surgeons
- > 40% still gave mechanical bowel prep for left colectomy

Bowel Prep Dogma

Current practice in bowel preparation for colorectal surgery: a survey of the members of the Association of Coloproctology of GB & Ireland

R. J. Drummond*, **R. M. McKenna†** and **D. M. Wright‡**

*Tissue Injury Repair Group, University of Edinburgh, Edinburgh, UK, †Department of Orthopaedic Surgery, Western Infirmary, Glasgow, UK and ‡Department of General Surgery, Southern General Hospital, Glasgow, UK

Colorectal Disease © 2011

- 198 Surgeons
- > 40% still gave mechanical bowel prep for left colectomy
- **What about Hernia Surgery!?!?**

Aims

- Determine the prevalence of bowel prep during elective ventral hernia repair
- Evaluate the impact of bowel prep on surgical site occurrences

Methods

- AHSQC Database
- Populations
 - Elective ventral hernia repair
 - Class I (clean) wounds considered separately from Class II/III (clean-contam, contaminated) wounds
- Comparison groups – Bowel prep yes/no

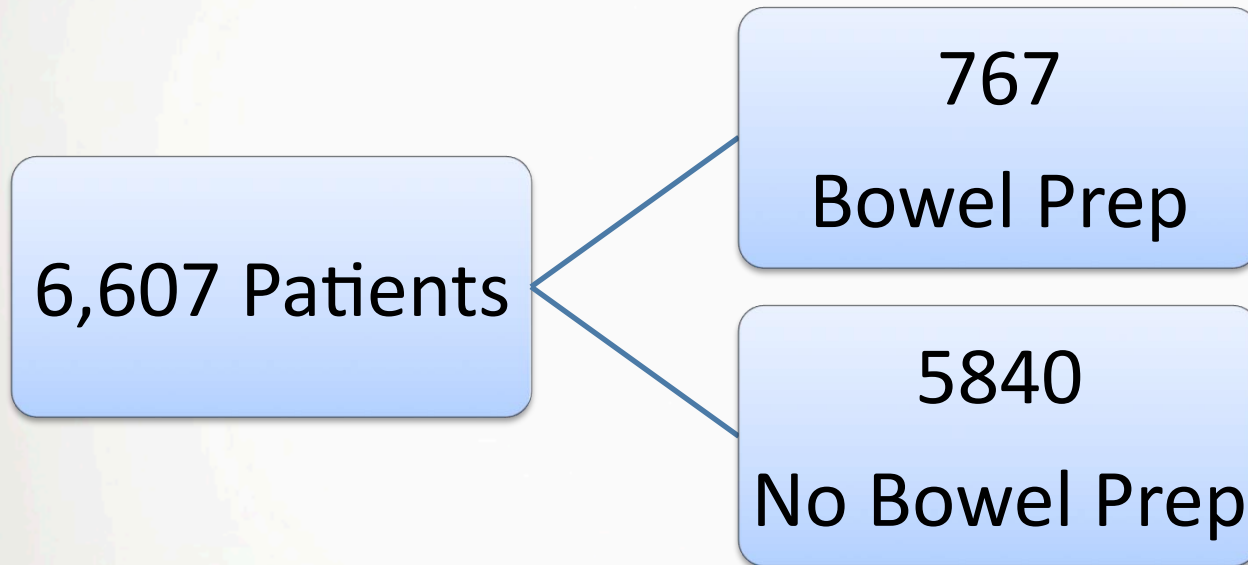
Methods

- Class I – Matched analysis (3:1 match)
 - Patients matched on:
 - ASA class
 - Hernia width
 - Hernia grade
 - History of abdominal wall infection
 - Open or laparoscopic repair
- Class II/III – Multivariate regression analysis

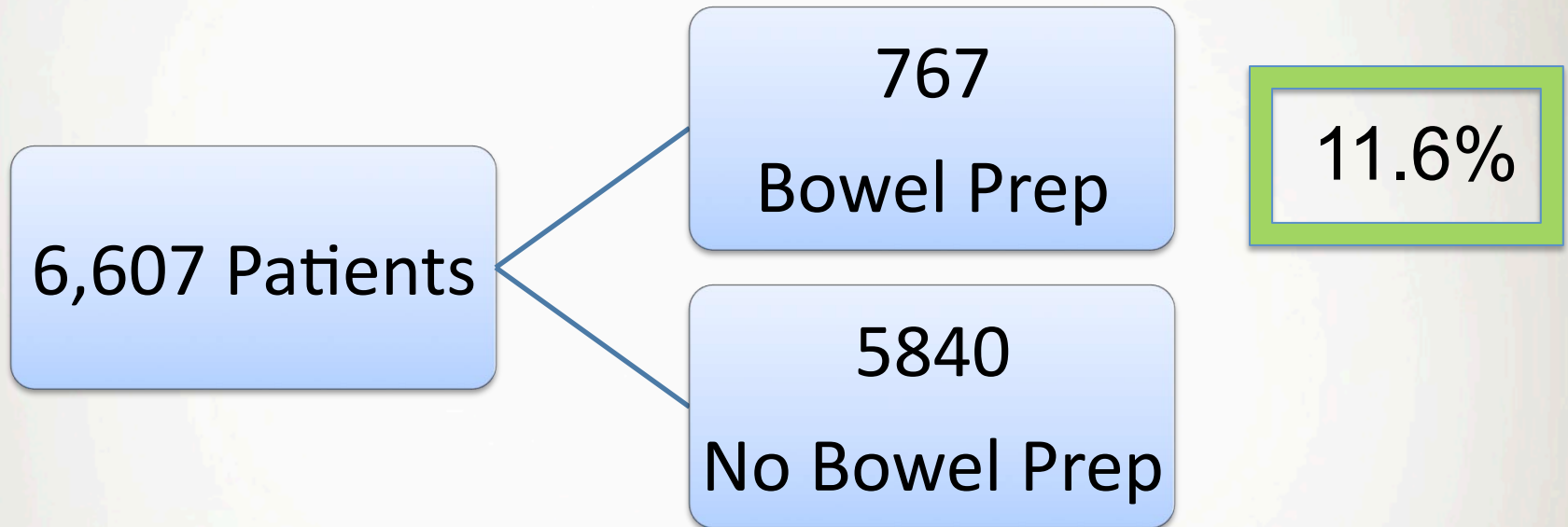
Outcomes Evaluated at 30 Days

- Surgical site infections (SSI)
- Surgical site occurrences (SSO)
 - Includes SSIs
 - Expanded wound events including seromas, wound cellulitis, fistulas
- Surgical site occurrences requiring procedural intervention (SSOPI)
 - SSOs needing wound opening, percutaneous drainage, operation, etc

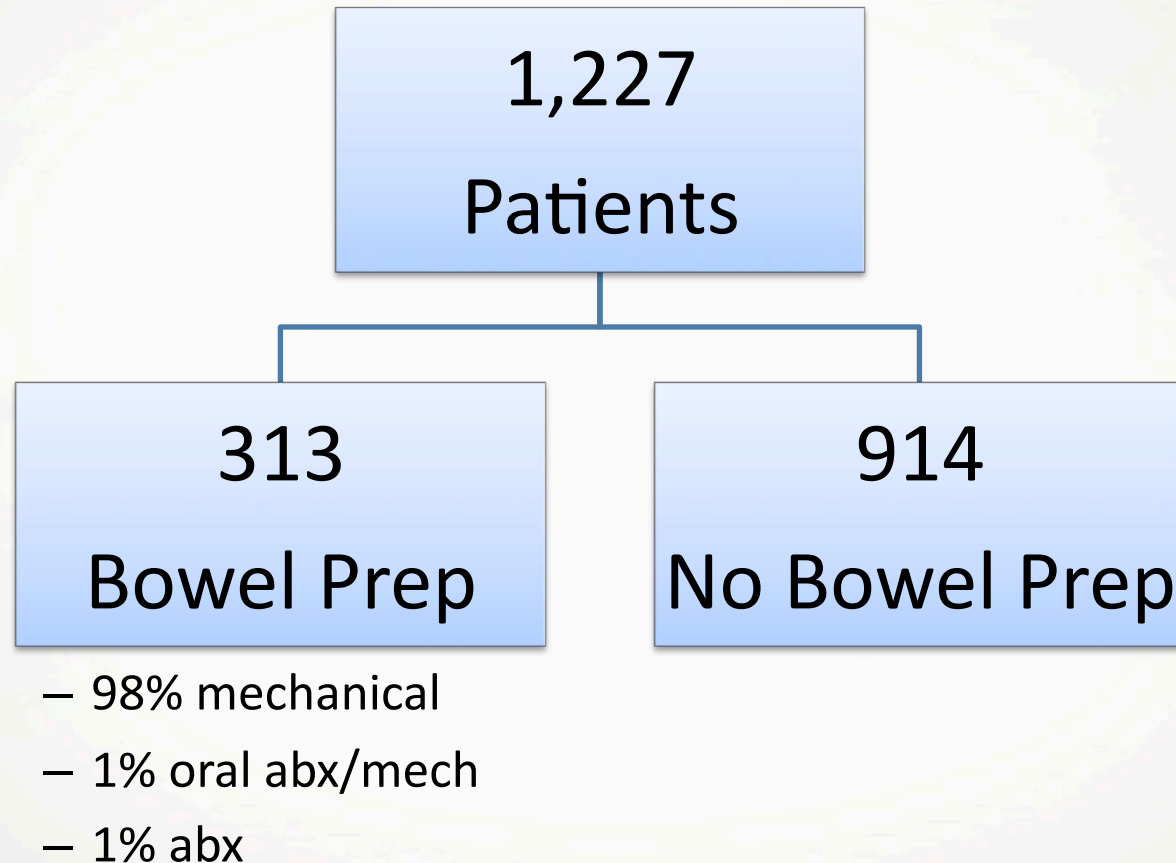
Results – Prevalence



Results – Prevalence



Class I Evaluation: Matched (3:1)



Results

- Class I evaluation (matched)- 1,227 patients
 - 313 patients with bowel prep
 - 914 matched controls without bowel prep
 - 98% mechanical, 1% oral abx/mech, 1% abx

Results – Class I Matched Study

Bowel Prep (n=313)

- Diabetes – 17%
- Hernia Grade 2 – 51%
- Laparoscopic – 13%
- History of abd wall infection – 23%

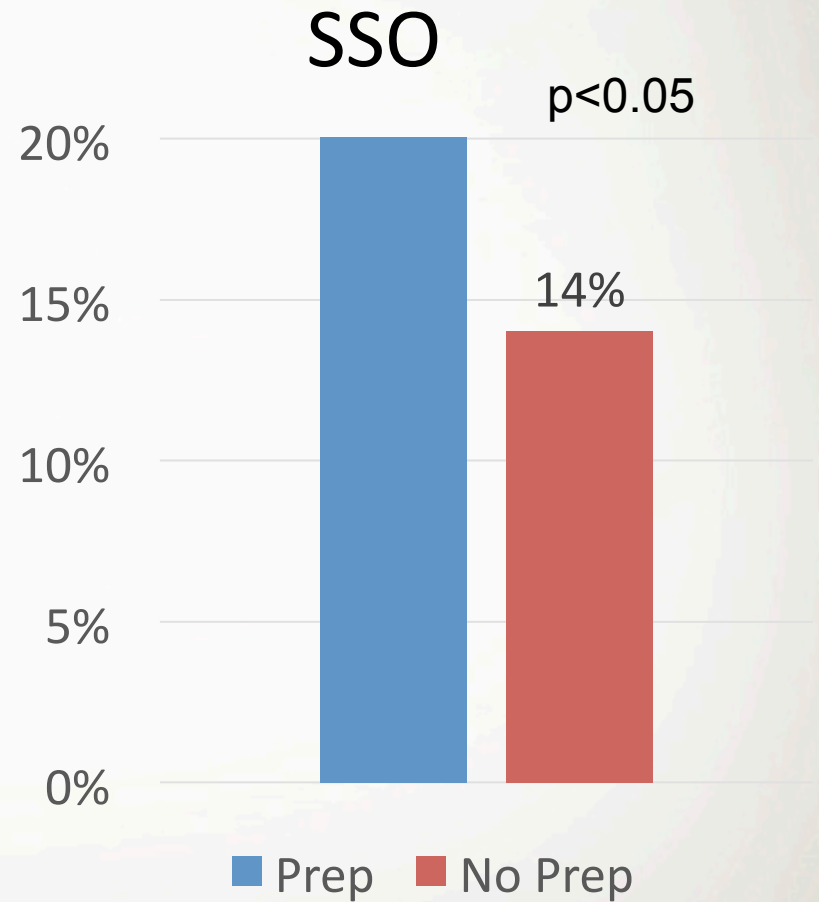
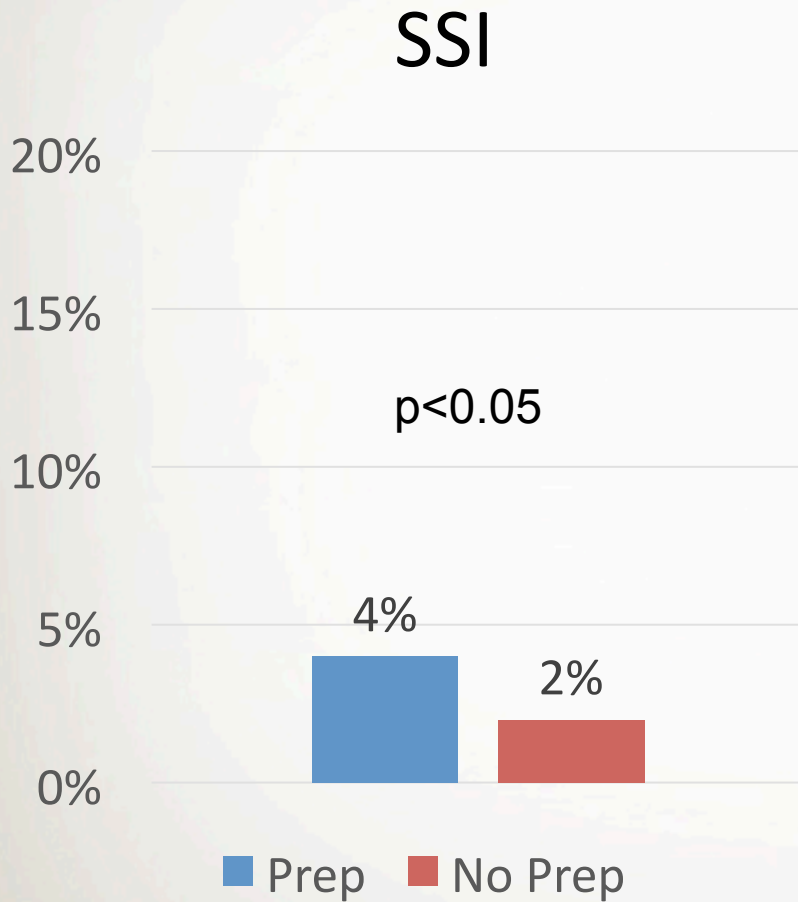
No Bowel Prep (n=914)

- Diabetes 20%
- Hernia Grade 2 – 52%
- Laparoscopic – 13%
- History of abd wall infection – 23%

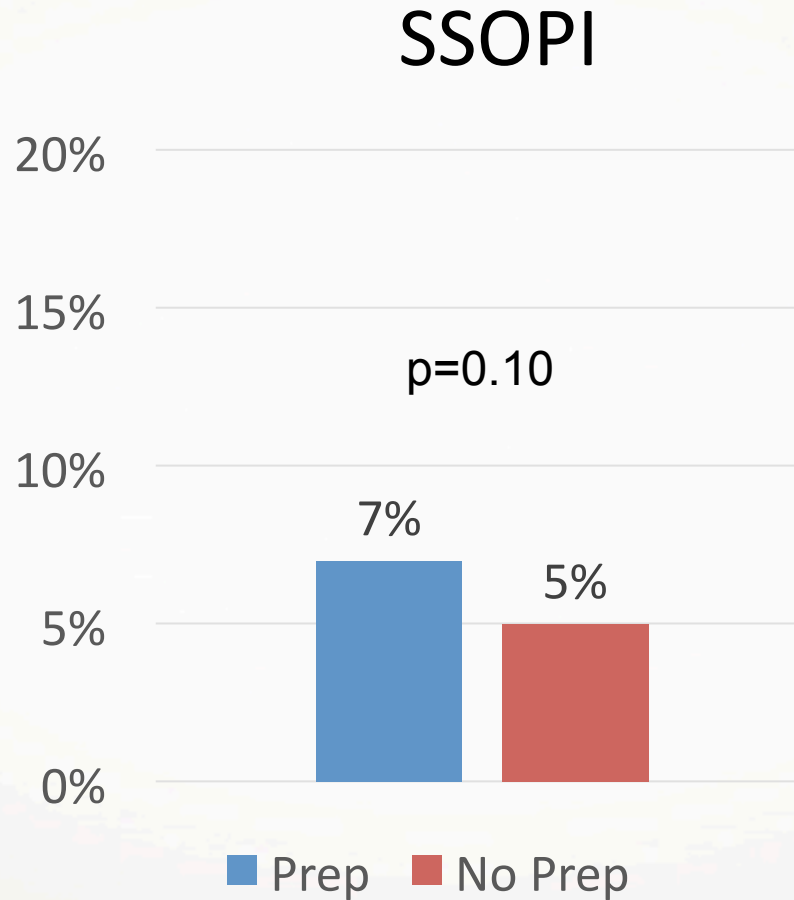
Results – SSI/SSO

	<u>Bowel Prep</u>	
	Yes (n=313)	No (n=914)
SSIs	14 (4%)	21 (2%)
SSOs	68 (22%)	129 (14%)

Results – Class I Matched Study



Results – Class I Matched Study



Class I – SSI/SSO Model

	Odds Ratio	95% Confidence Interval
BMI	1.18	1.06-1.31
Hernia Width	1.21	0.90-1.63
Bowel Prep	1.76	1.25-2.49
OR Time (> 2 Hrs)	1.09	0.69-1.72
DM	1.23	0.83-1.80
Laparoscopic	1.78	1.04-3.03
Myofascial Release	0.73	0.47-1.13
Recurrent Hernia	0.96	0.69-1.33
Hx of Infection	1.48	1.03-2.21
Drains Used	0.98	0.58-1.67

Class I – SSI/SSO Model

	Odds Ratio	95% Confidence Interval
BMI	1.18	1.06-1.31
Hernia Width	1.21	0.90-1.63
Bowel Prep	1.76	1.25-2.49
OR Time (> 2 Hrs)	1.09	0.69-1.72
DM	1.23	0.83-1.80
Laparoscopic	1.78	1.04-3.03
Myofascial Release	0.73	0.47-1.13
Recurrent Hernia	0.96	0.69-1.33
Hx of Infection	1.48	1.03-2.21
Drains Used	0.98	0.58-1.67

Class I – SSOPI Model

	Odds Ratio	95% Confidence Interval
Bowel Prep	1.64	0.95-2.82
DM	2.49	1.45-4.27
Laparoscopic	0.87	0.28-2.68
Myofascial Release	0.58	0.31-1.07
Drains Used	0.37	0.16-0.90

Class I – SSOPI Model

	Odds Ratio	95% Confidence Interval
Bowel Prep	1.64	0.95-2.82
DM	2.49	1.45-4.27
Laparoscopic	0.87	0.28-2.68
Myofascial Release	0.58	0.31-1.07
Drains Used	0.37	0.16-0.90

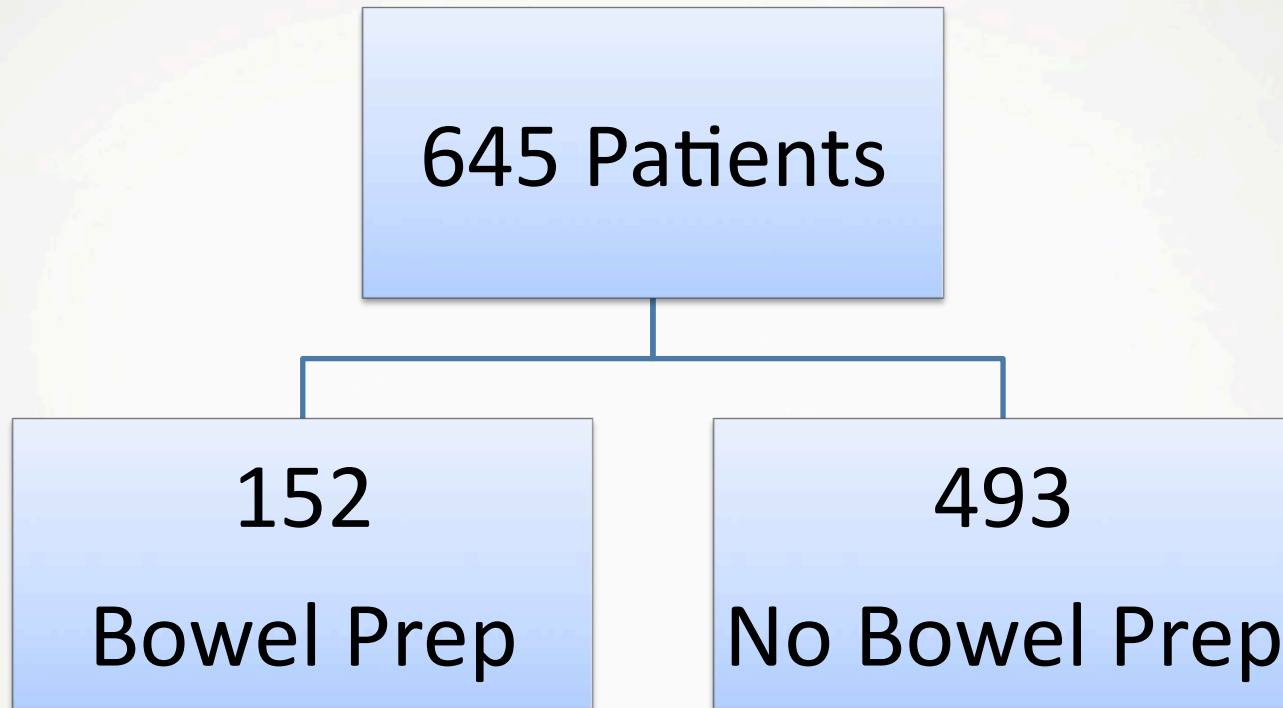
Class I – SSOPI Model

	Odds Ratio	95% Confidence Interval
Bowel Prep	1.64	0.95-2.82
DM	2.49	1.45-4.27
Laparoscopic	0.87	0.28-2.68
Myofascial Release	0.58	0.31-1.07
Drains Used	0.37	0.16-0.90

Results – Class II/III

- Class II/III evaluation – 645 patients
 - 152 patients with bowel prep
 - 493 patients without bowel prep
 - 73% mechanical, 25% oral abx/mech, 2% abx

Class II/III Evaluation



- 73% mechanical
- 25% oral abx/mech
- 2% abx

Results – Class II/III Study

Bowel Prep (n=152)

- Diabetes - 19%
- ASA 3 – 66%
- Current smoker – 16%
- Mean BMI 31.2

No Bowel Prep (n=493)

- Diabetes 24%
- ASA 3 – 66%
- Current smoker – 12%
- Mean BMI 32.8

Results – Class II/III Regression

- Bowel prep not associated with wound events (SSI, SSO, or SSOPI) controlling for:
 - BMI
 - OR time
 - Myofascial release
 - COPD
 - Steroids
 - Drain use

Conclusion

Bowel prep does not appear to reduce surgical site infections and may actually increase SSI/SSO in elective ventral hernia repairs. As a result, bowel preps should be omitted from the pre-operative preparation of elective ventral hernia repairs.

Thank You



**Making Your Data
Work For You!**

Onlay Repair of V/I Hernias; Maybe Chevrel was Correct

Guy Voeller, MD, FACS

Professor of Surgery

University of Tennessee Health
Science Center

Disclosures

- None relative to this talk

Onlay

- Godara and Pardeep – 2006
- Prospective in 100 patients
- Comparing sublay (S) and onlay (O)
- Hernia 10 cm or less

Godara (cont)

- Complications 22% (S) and 15% (O)
- Wound problems similar
- Mean stay was 6.8 days (S) and 4.6 days (O)
 $p < 0.001$
- Time off work 4.5 weeks (S) and 2.8 weeks (O)
 $p < 0.05$
- No recurrence in either group at 2 years

Onlay

- Licheri – Hernia 2008
- 64 patients over 10 years
- True Chevrel
- 26% had seroma and wound issues
- No deep infections or mesh loss
- 2 recurrences
- Onlay technique is safe, easy to perform and reliable.

Onlay

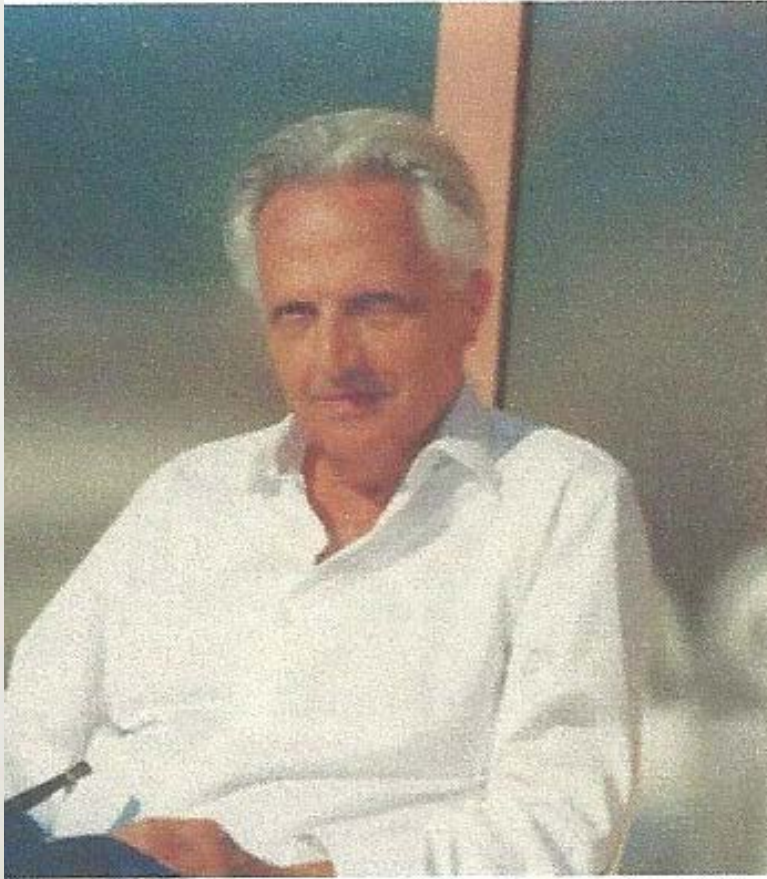
- Kingsnorth WJS 2008
- Chevrel-type onlay with fibrin glue
- Glue for seroma, NOT fixation
- Used components separation in 18%
- IH > 10cm
- 116 patients
- 15 month f/u
- RR 3.4%

Onlay

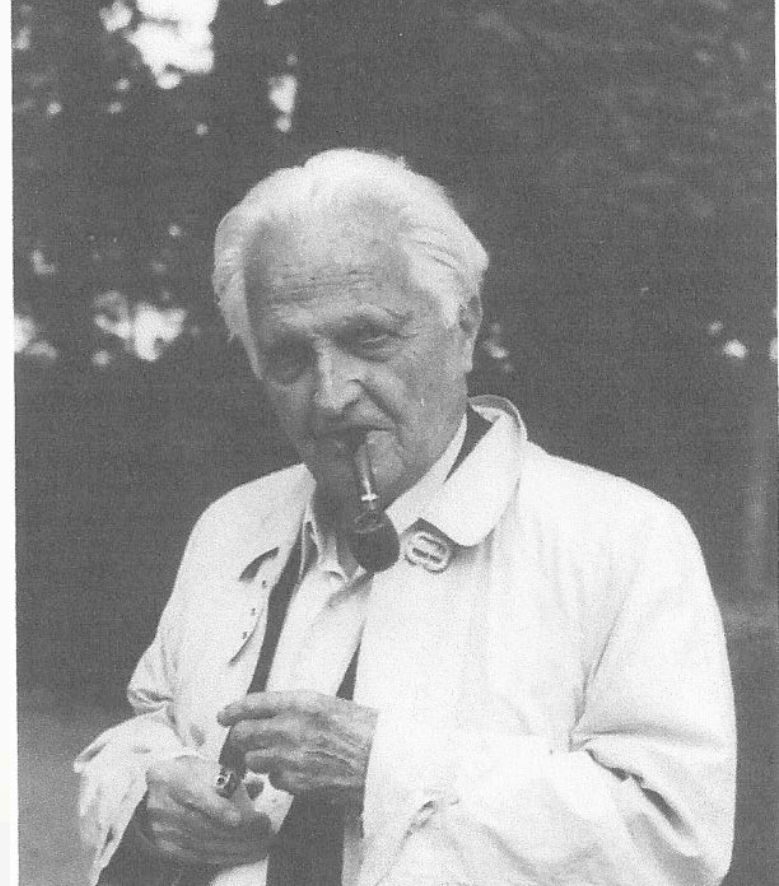
- Andersen 2009 – BMC - Denmark
- Consecutive patients from 1995 – 2007
- 92 patients; 56 patients with 100% follow-up
- Mean f/u was 3 years
- Complication rate was 13%
- No loss of mesh
- Recurrence rate was 13%
- Low RR and CR with onlay repair

Rives Retrorectus Repair

Dr Rives 1992



Dr Rives 2009



Gilbert, Wantz and Stoppa

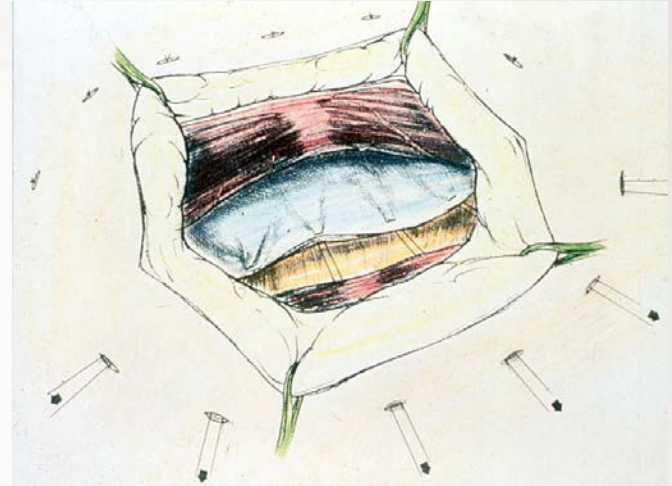


Eugene Mangiante, M.D.



UTHSC

- Introduced to the USA at laparoscopic V/I course in Memphis in 1995 as basis for our suture-based lap repair
- Lectured and taught all over the USA about our lap repair and Rives repair was disseminated to surgeons in the USA



Wanted the mesh behind the defect but only had uncoated mesh to work with. This required placing it between the muscle and posterior sheath.

RIVES REPAIR

Flament

- Rives repair
- 258 cases over 4 years
- Excellent long-term results in 95%
- 2 deaths
- 6.2% recurrence

Cobb and Carbonell

- JACS April 2015
- Retrospective 7 year experience
- 255 Rives retrorectus repair
- Average BMI 32.2 kg/M²

Cobb and Carbonell (cont)

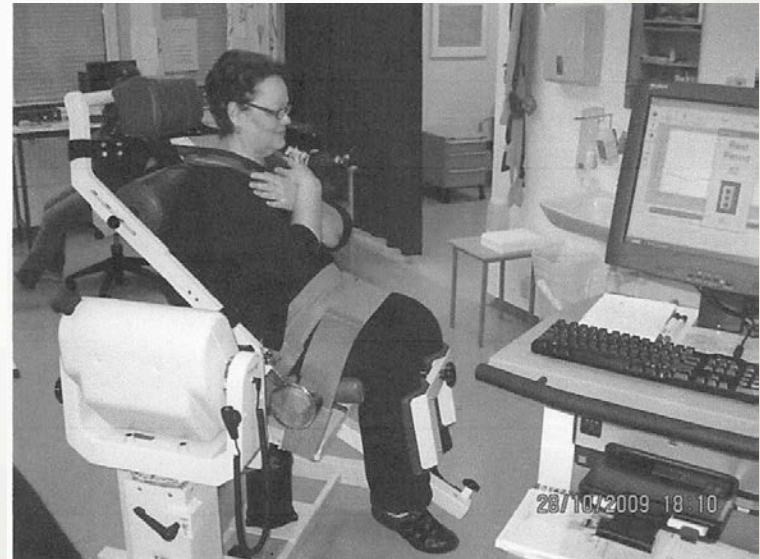
- Defect size ave. was 181.4cm²
- 48% were recurrent repairs
- Wound events in 37.7%
- SSI in 19.6%; RR 16.9%

ONLAY, UNDERLAY, SUBLAY

No rationale for one method over
the other

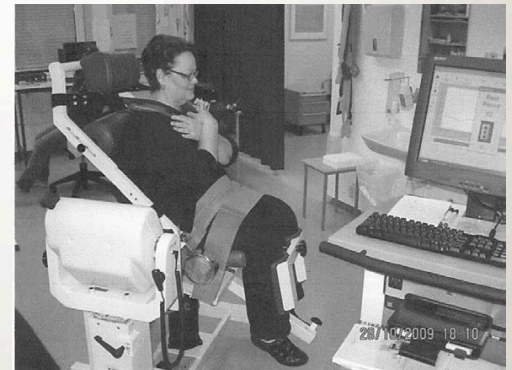
Johansson

- Hernia 2011
- 24 patients with large (6-10cm) or giant (>10cm) ventral hernia

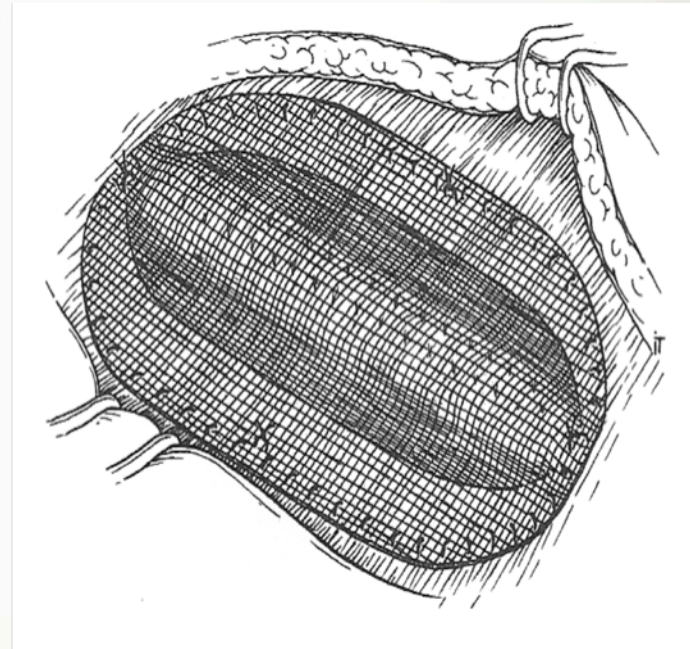
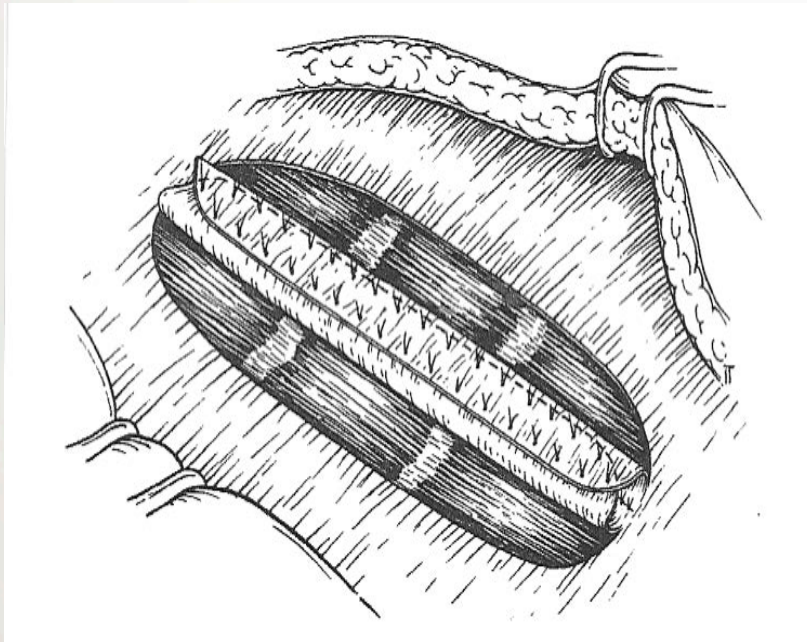


Johansson (cont.)

- 8 IPOM, 8 sublay, 8 onlay
- All with previous surgeries
- Measured strength with Biodex 4 one yr later
- No SS difference in abdominal wall strength between the 3 groups



Chevrel - Onlay



Rectus Sheath

- Rath and Chevrel
- 30 fresh cadavers
- posterior sheath significantly less resistant than normal linea alba –esp. below umbilicus
- PS is first to sustain the action of increased IAP

Rectus Sheath (cont.)

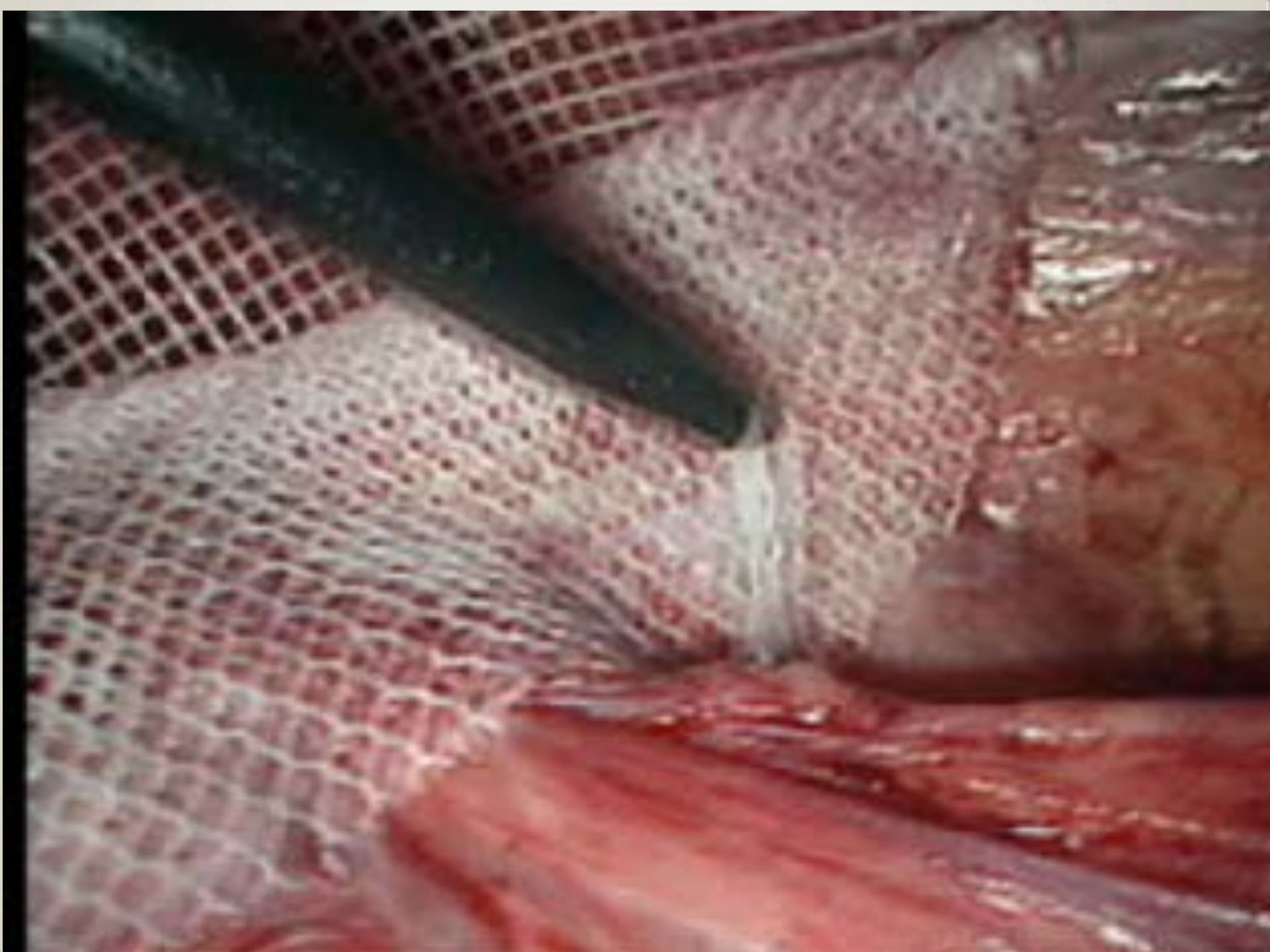
- Resistance for PS is 2.5-3.6kg/cm²
- Resistance for PPM is 17kg/cm² initially and rises by 210% at 30 days after surgery
- The PS can give way and expose viscera to mesh

CHEVREL

- Onlay position of the mesh allows its tension to be determined at the moment of fixation
- The biologic glue has an IMMEDIATE effect on fixation of the prosthesis
- If the mesh becomes infected it can almost always be salvaged
- Onlay mesh will not contact viscera as sublay can

Chevrel - Onlay

- 143 IH with onlay and fibrin glue
- Glue over midline closure
- PPM and polyester
- 1-20 yr. f/u with 93% f/u
- 2.7% superficial wound infections
- No mesh lost
- 4.9% RR



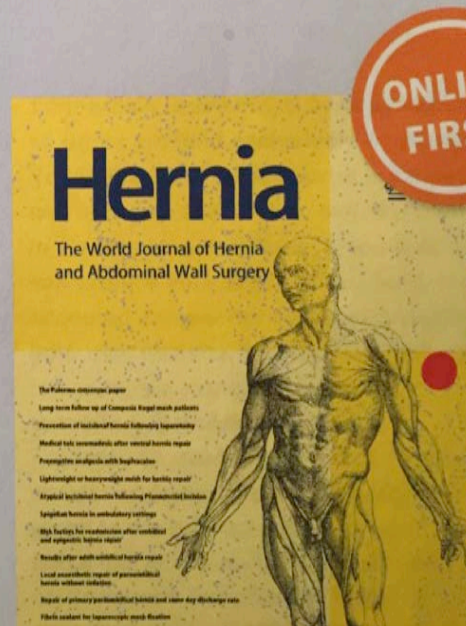
Biomechanical evaluation of fixation properties of fibrin glue for ventral incisional hernia repair

**N. Stoikes, J. Sharpe, H. Tasneem,
E. Roan, E. Paulus, B. Powell, D. We
C. Handorf, E. Eckstein, T. Fabian &
G. Voeller**

Hernia
The World Journal of Hernia and
Abdominal Wall Surgery

ISSN 1265-4906

Hernia
DOI 10.1007/s10029-013-1163-y



Biomechanics of Adhesives

Mechanical fixation is a function of tissue strength and suture/tack strength; whereas, adhesive fixation is a function of surface area alone

What The Science Tells Us

- Adhesives have appropriate fixation strength
 - Not necessarily stronger but strong enough
- More reproducible application and failure with adhesive
- Better load sharing with adhesive
- Less contraction
- Similar histology
- Mechanical fixation weakens mesh

American Surgeon

Preliminary Report of a Sutureless Onlay Technique for Incisional Hernia Repair Using Fibrin Glue Alone for Mesh Fixation

NATHANIEL STOIKES, M.D., DAVID WEBB, M.D., BEN POWELL, M.D., GUY VOELLER, M.D.

From the Department of Surgery, University of Tennessee Health Science Center, Memphis, Tennessee

The Rives repair for ventral/incisional (V/I) hernias involves sublay mesh placement requiring retrorectus dissection and transfascial stitches. Chevrel described a repair by onlaying mesh after a unique primary fascial closure. Although Chevrel fixated mesh to the anterior fascia with sutures, he used fibrin glue for fascial closure reinforcement. We describe an onlay technique with mesh fixated to the anterior fascia solely with fibrin glue without suture fixation. From January 2010 to January 2012, 50 patients underwent a V/I hernia onlay technique with fibrin glue mesh fixation. Records were reviewed for technical details, demographics, mesh characteristics, and postoperative outcomes. Primary fascial closure with interrupted permanent suture was done with or without myofascial advancement flaps. Onlay polypropylene mesh was placed providing 8 cm of overlap. Fibrin glue was applied over the prosthesis and subcutaneous drains were placed. Mean age was 62.4 years. Mean body mass index was 30.1 kg/m². Average mesh size was 14.5 cm × 19.1 cm. Mean operative time was 144.4 minutes (range, 38 to 316 minutes). Mean discharge was postoperative Day 2.9 (range, 0 to 15 days). Morbidity included eight seromas, one hematoma, and three wound infections. Seventeen patients required components separation. Mean follow-up was 19.5 months with no recurrences. This is the first series describing fibrin glue alone for mesh fixation for V/I hernia repair. It allows for immediate prosthesis fixation to the anterior fascia. Early results are promising. Potential advantages include less operative time, less technical difficulty, and less long-term pain. A prospective trial is needed to evaluate this approach.

Surg Endosc

DOI 10.1007/s00464-015-4647-2



Sutureless onlay hernia repair: a review of 97 patients

Charles P. Shahan¹ · Nathaniel F. Stoikes¹ · David L. Webb¹ · Guy R. Voeller¹

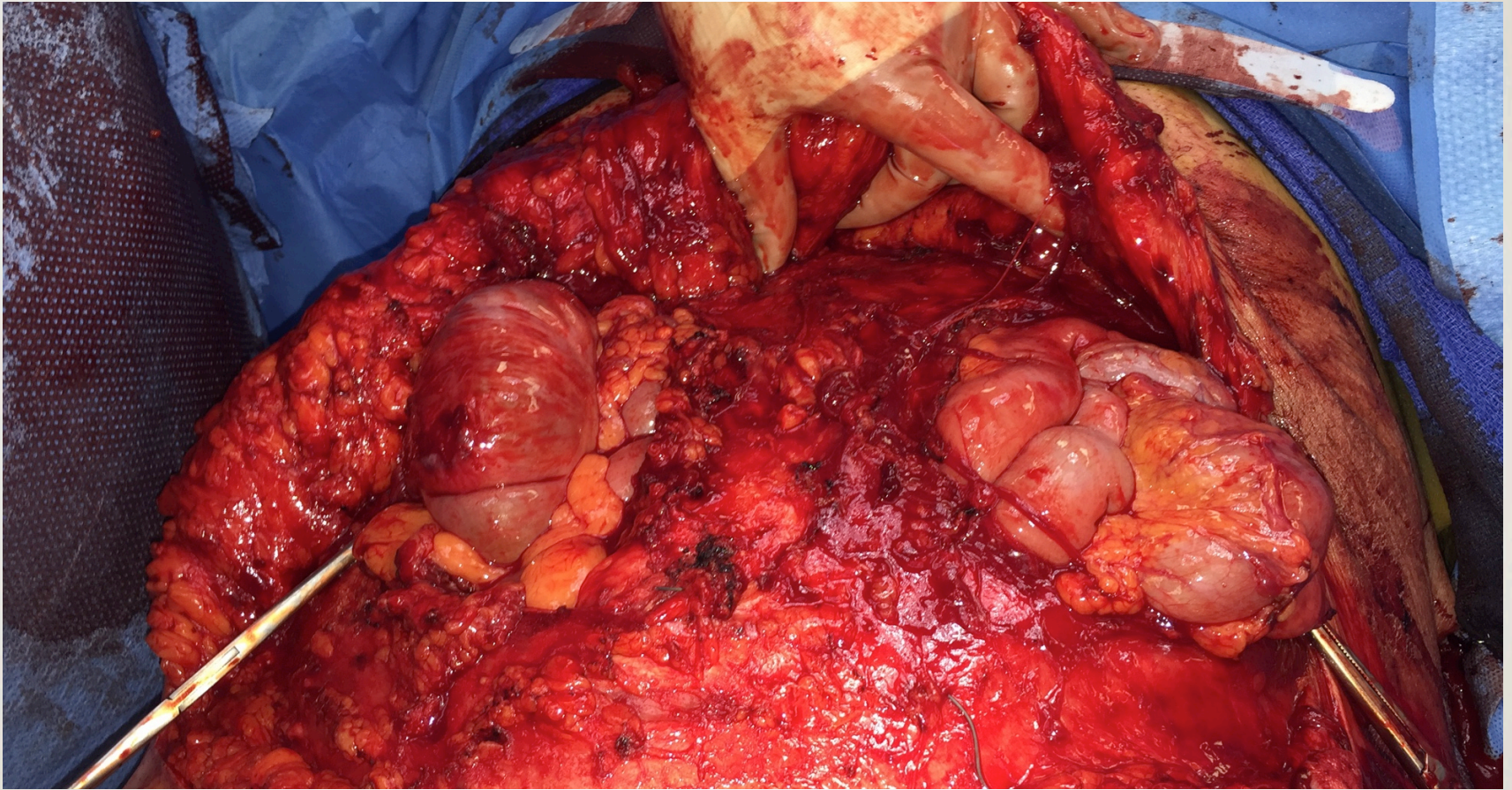
Received: 20 April 2015 / Accepted: 24 October 2015



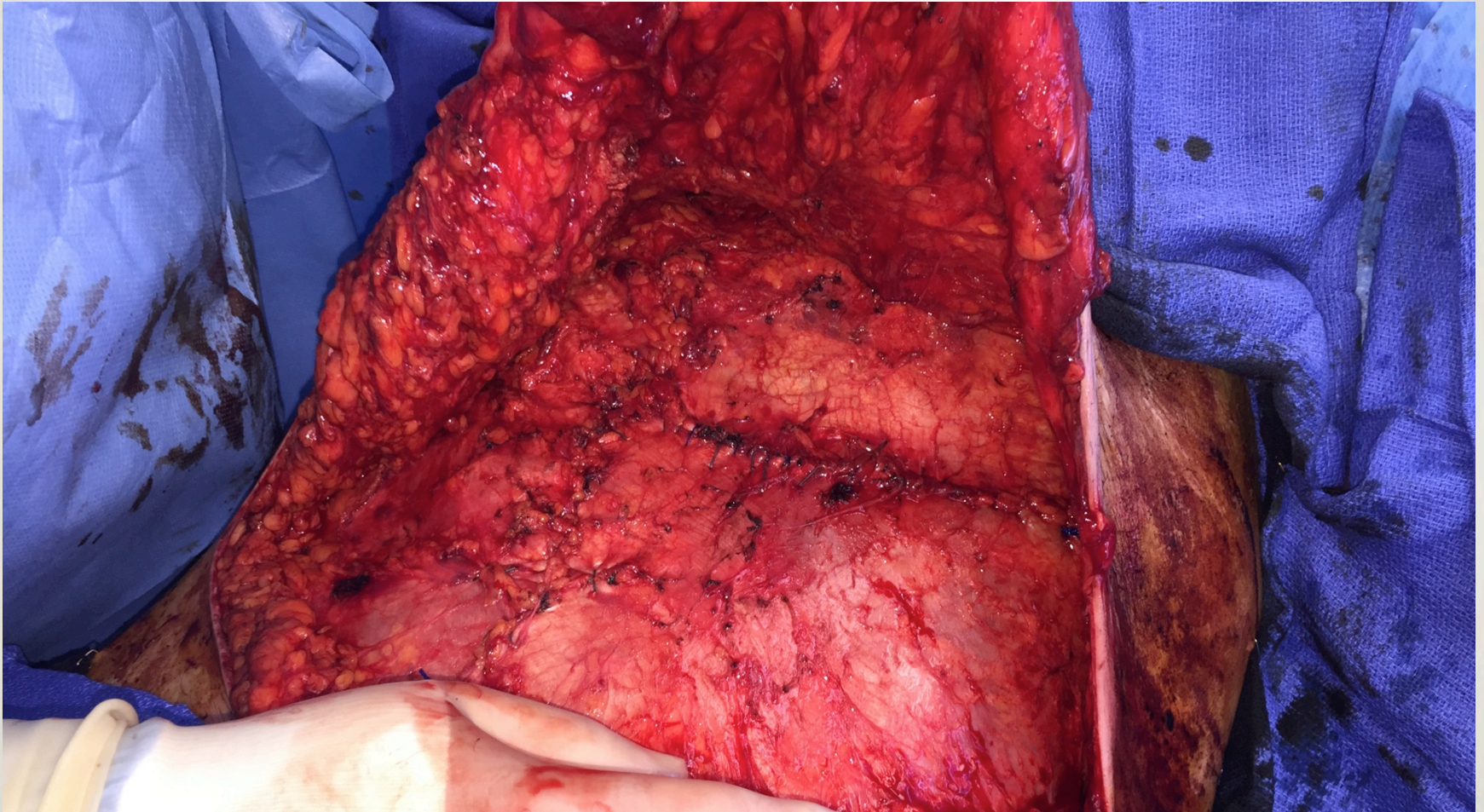
AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE



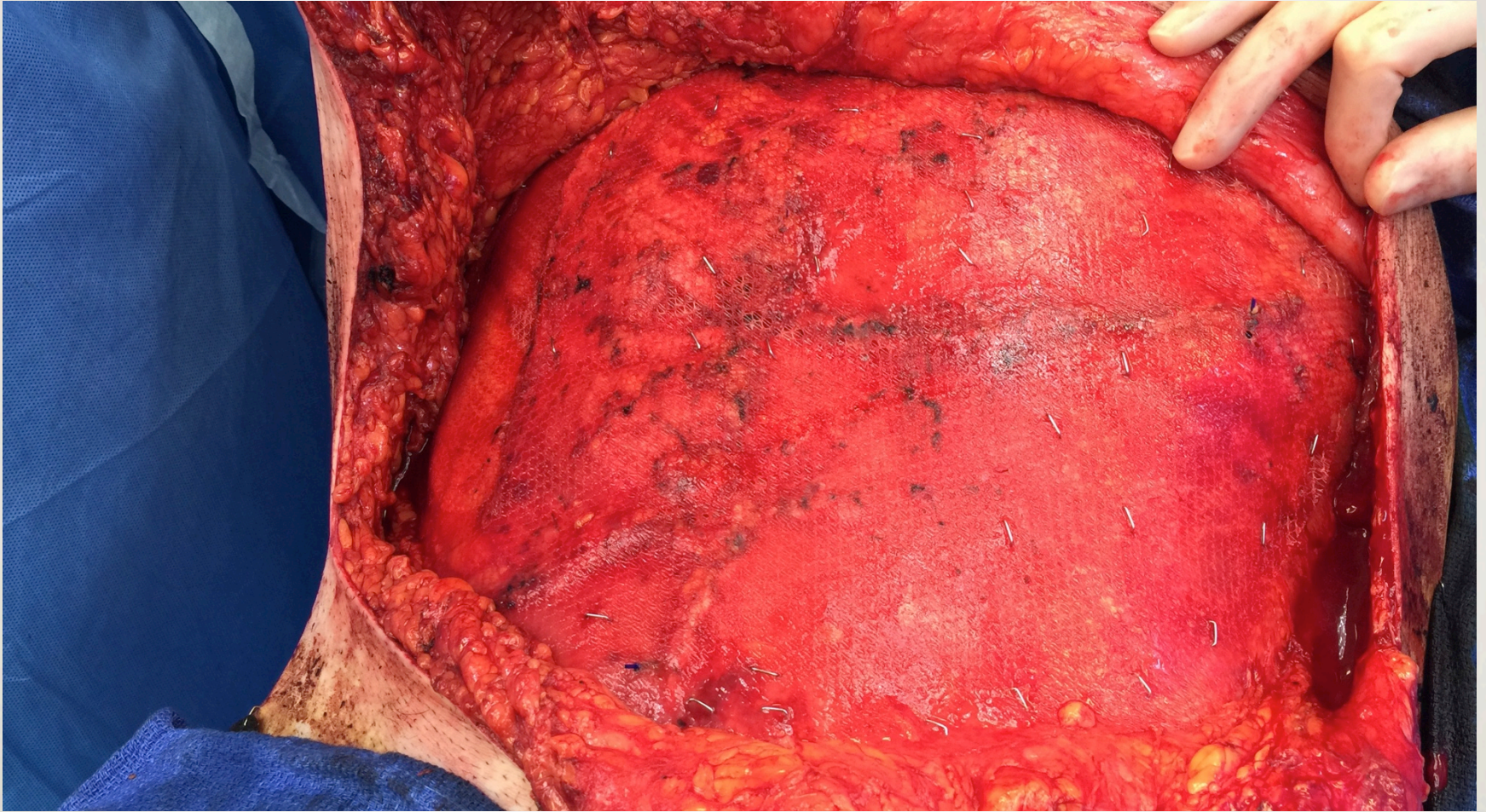
2 large defects



Closure with Release



Medium Weight Mesh



Postop



Postop



AHSQC

Methods

- Population
 - Class I (clean) wounds, open procedures
- Matched cohort study with two comparison groups
 - Onlay+adhesive fixation
 - Sublay
- Patients matched on gender, operating room time > 2hrs, BMI, hernia width, VHWG grade

Methods – Pre-study Power Calculation

- Historical rate of onlay SSI 20%
- Known rate of sublay SSI 6%
- Using 2 controls (sublay) for every 1 onlay patient, need minimum:
 - 87 onlay patients
 - 174 sublay patients
- For 85% power

Methods - Summary

Ventral
Hernia Repair

*elective, class I
(clean) wounds,
open cases*

Onlay+Adhesive
vs Sublay
(matched)

SSI

Results

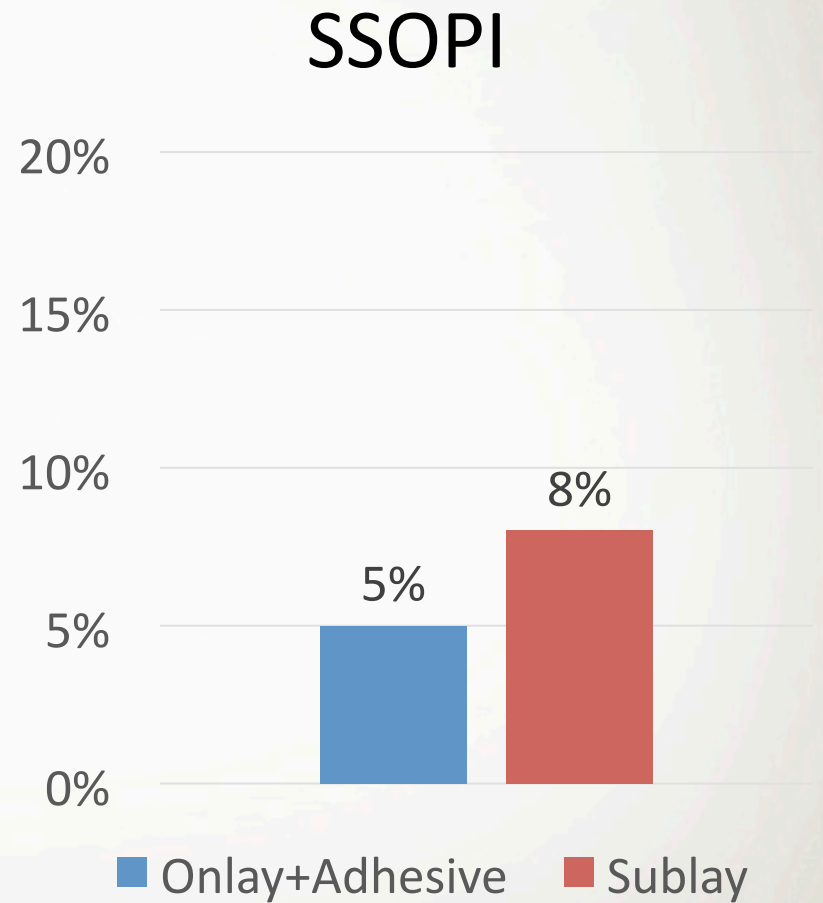
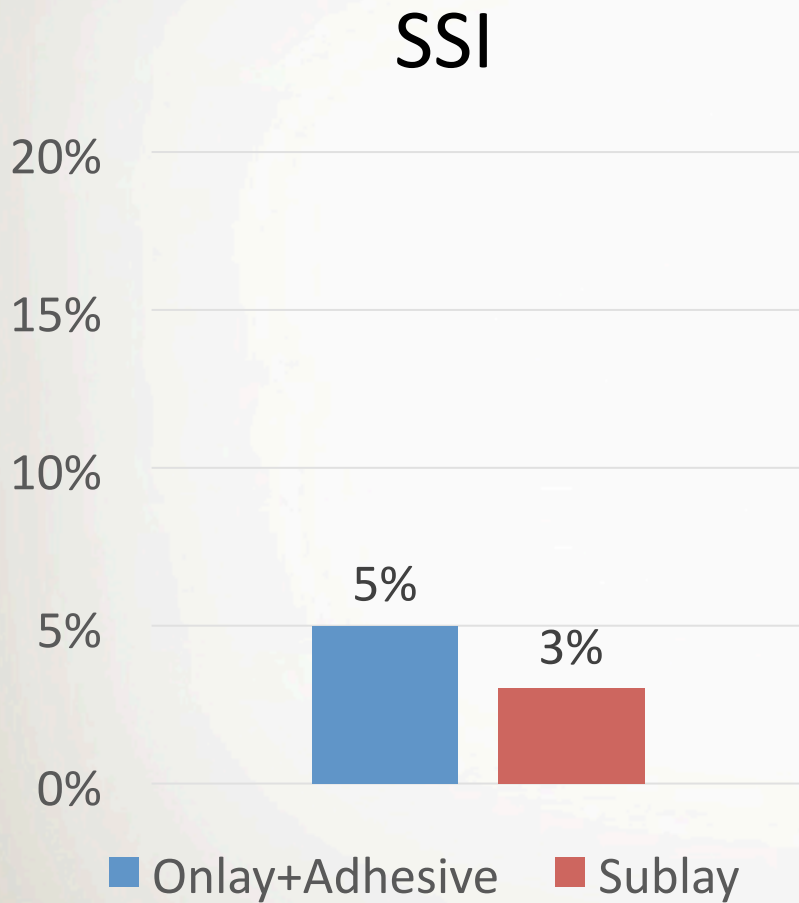
- 91 patients in onlay+adhesive group
- 171 patients in sublay group
 - 23% intraperitoneal
 - 30% preperitoneal
 - 29% retromuscular
 - 18% retromuscular+preperitoneal

Results

	Onlay+Adhesive	Sublay
Mean Age (years)	62	57
% Women	43%	44%
BMI	29.9	29.5
Current smoker	2%	6%
Diabetic	12%	11%

(p=NS)

Results – Primary Outcome



Results – SSOs

	Onlay+Adhesive	Sublay
Total	12%	16%
Wound cellulitis	0%	4%
Non-healing wound	0%	1%
Seroma	5%	5%

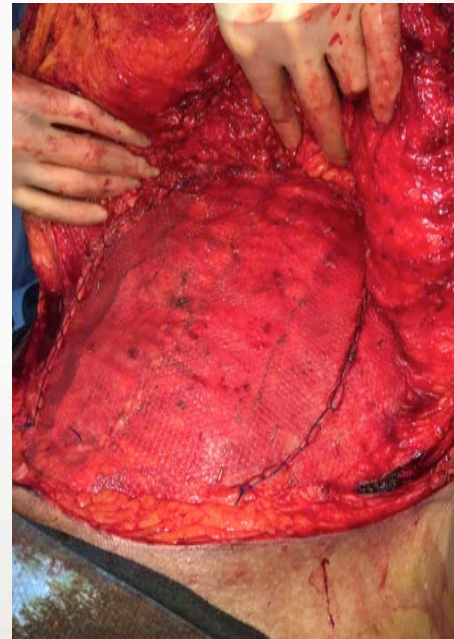
(p=NS)

Onlay with Fibrin Glue Fixation

- Simple and easy – pain dramatically less
- Not for every patient or hernia; technique CRITICAL
- Immediate fixation of very inexpensive mesh
- Stress immediately taken off of midline closure
- Can be done in non-midline hernias

Chevrel

- Fibrin glue allows immediate fixation of the prosthesis over its entire surface, giving the effect of an instantaneous repair, and thus avoiding a delay during which many recurrences occur



Thank you



AMERICAS HERNIA SOCIETY QUALITY COLLABORATIVE

Chlorhexidine Scrub in Ventral Hernia Repair: Helpful or Harmful?

Ben Poulose

Disclosures

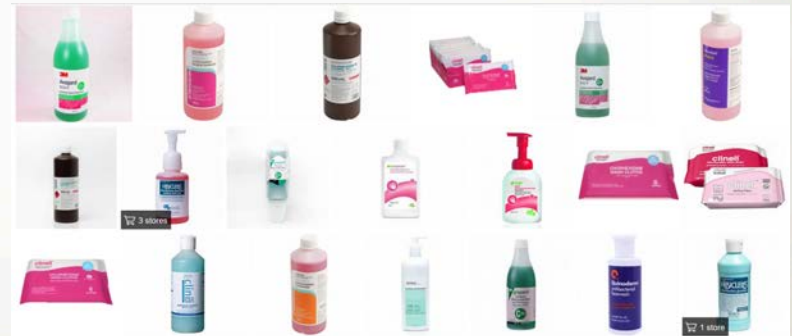
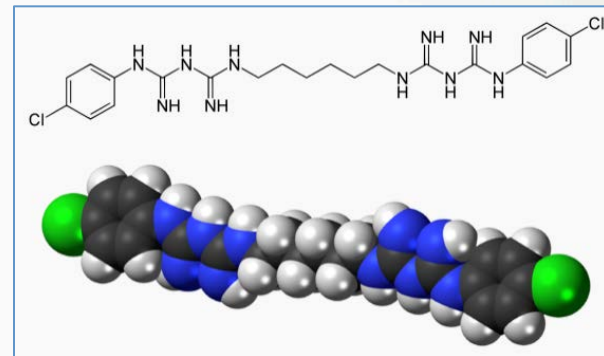
- Research Support
 - Bard Davol
- Consultant
 - Ariste Medical
 - Pfizer

Background

Beneficial Effects

- Topical antiseptic
- Significantly reduces microbial skin burden
- Shown to reduce SSIs in orthopedic, cardiothoracic, obstetrical procedures
- Incorporated into many preoperative protocols as a means to reduce wound events

Chlorhexidine Gluconate (CHG)



Rationale

- We aimed to evaluate the use of prehospital CHG scrub in patients undergoing ventral hernia repair and its impact on 30 day postoperative wound outcomes

Methods

- Population
 - All patients undergoing ventral hernia repair
- Two comparison groups
 - Prehospital CHG scrub
 - No prehospital CHG scrub
- Outcomes: 30 day postoperative wound events (SSI, SSO, SSOPI)

Methods – Analysis

- Analysis 1 – multivariate logistic regression predicting odds for wound events controlling for multiple factors
- Analysis 2 – similar analysis using propensity score modeling

Methods – Propensity Score

- Propensity scores help ‘balance the playing field’ of the two groups (prehospital CHG scrub vs no prehospital CHG scrub) across many different factors
- Greatly increases the number of factors you can balance on compared to more traditional methods

Results – Analysis 1

3,924 patients met inclusion criteria

	Prehosp CHG (n=2,209)	No Prehosp CHG (n=1,715)
Mean Age (years)	58	57
% Women	54%	54%
BMI (kg/m ²)	31.9	31.5
Current smoker	12%	13%
Diabetic	20%	19%
COPD	7%	10%*

*(p<0.05)

Results – Analysis 1

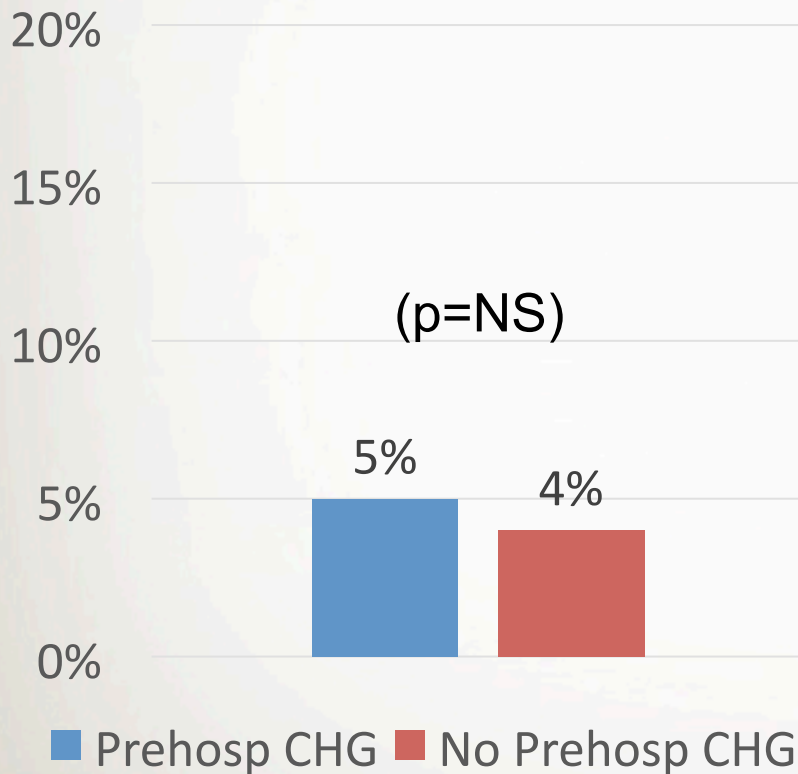
3,924 patients met inclusion criteria

	Prehosp CHG (n=2,209)	No Prehosp CHG (n=1,715)
Mean Hernia W (cm)	6*	5
OR Time >2hrs	60%*	50%
Myofasc Release	47%*	38%
Class II/III	15%	18%*

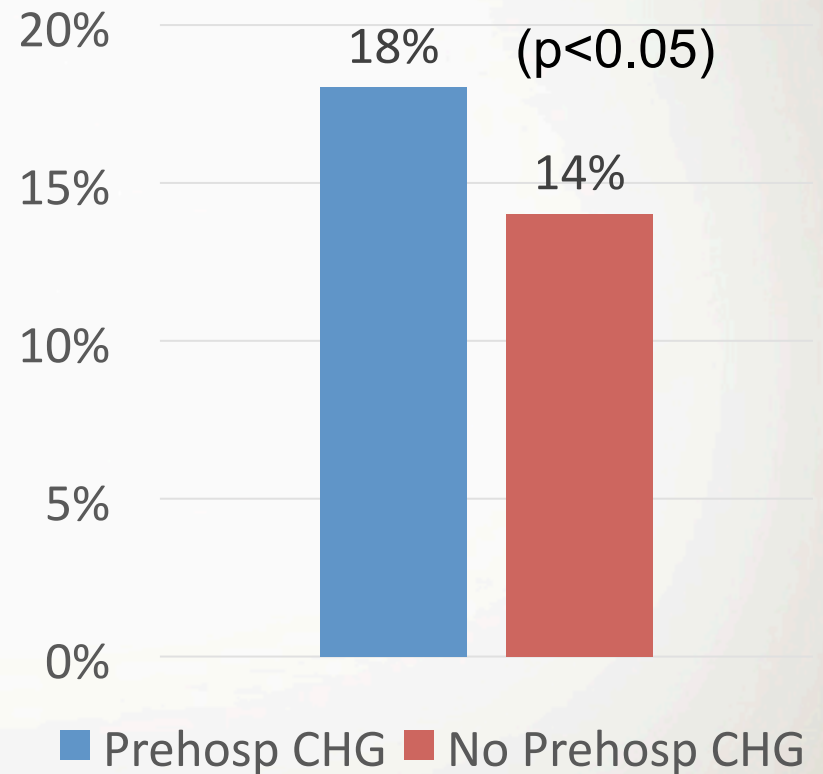
*(p<0.05)

Results – Analysis 1, Wound Outcomes (Unadjusted)

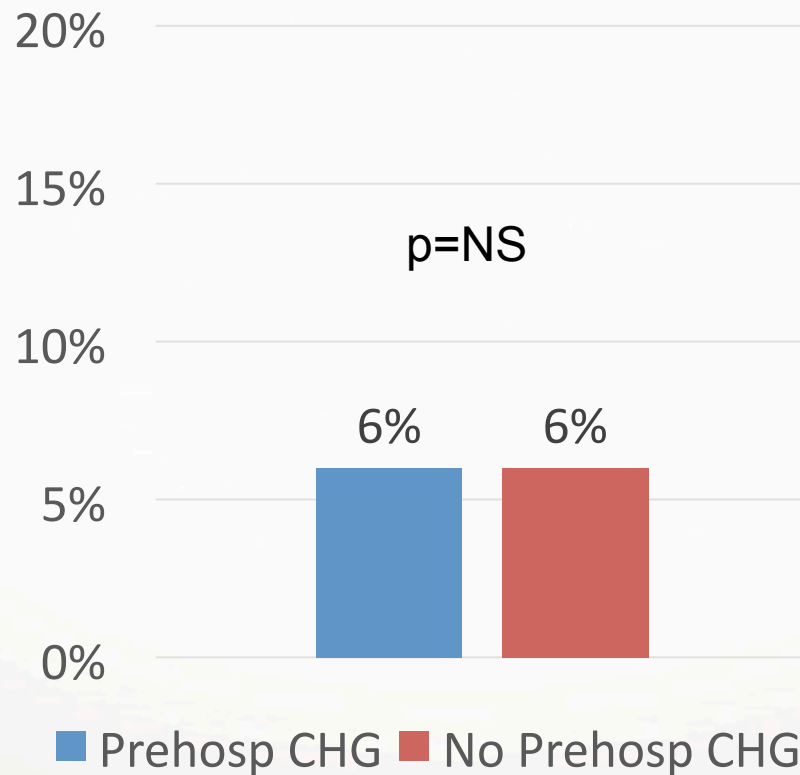
SSI



SSO



Results – Analysis 1, Wound Outcomes (Unadjusted) SSOPI



Results – Analysis 1, Adjusted Odds Ratios for Prehosp CHG Scrub

	Odds Ratio	95% Confidence Int
SSI	1.49	(1.05-2.11)*
SSO	1.34	(1.11-1.61)*
SSOPI	1.07	(0.80-1.42)

*p<0.05

*Prehosp CHG scrub use associated with increase in wound events

Results – Analysis 2 (PS Score)

No PS Score Model

	Odds Ratio	95% Confidence Int
SSI	1.49	(1.05-2.11)*
SSO	1.34	(1.11-1.61)*
SSOPI	1.07	(0.80-1.42)

PS Score Model

	Odds Ratio	95% Confidence Int
SSI	1.49	(1.05-2.12)*
SSO	1.36	(1.12-1.64)*
SSOPI	1.06	(0.79-1.42)

*p<0.05

*No change in conclusions

Summary

- Prehospital CHG scrub does not reduce wound events after ventral hernia repair and likely increases SSIs and SSOs

Conclusion

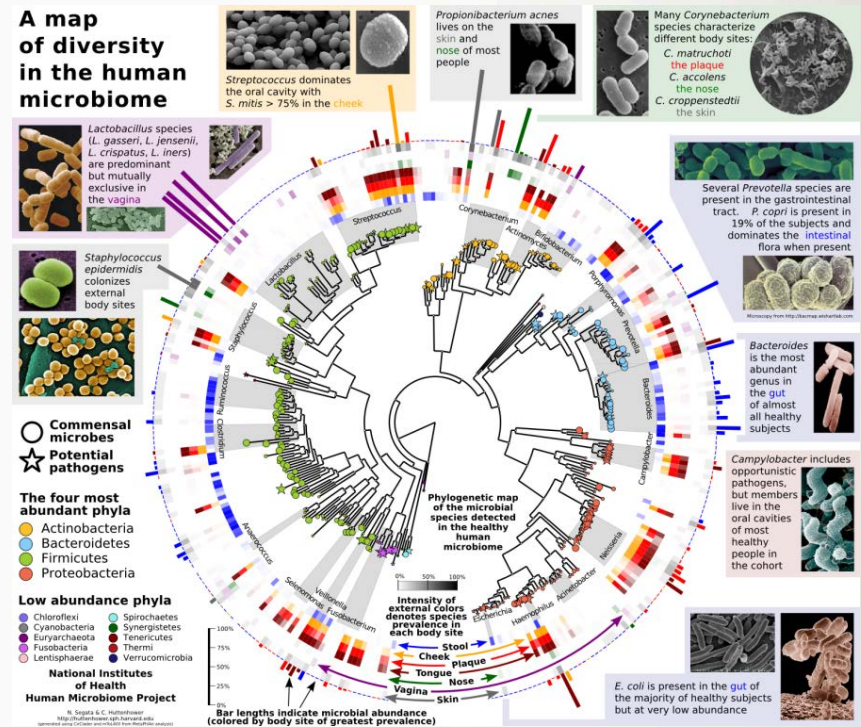
- Prehospital CHG scrub should not be used in the ventral hernia population
- First epidemiologic evidence that alterations of skin bacteria may actually be harmful

Is There More to this Story?

- CHG – bactericidal
 - 1 minute exposure->0.05% CHG results in >5-log reduction in selected bacteria
- Are we killing GOOD bacteria?
- Human skin – largest organ of human body
 - Skin microbiome critical for host immune response

Skin Microbiome

- Skin-largest human organ
- Many commensal organisms of skin provide vital functions that human genome has not developed
- Delicate balance between host and microorganism



Are We Guilty of This?



Effect of Closed Suction Drains on Surgical Site Occurrences After Open Retromuscular Ventral Hernia Repair

Alfredo M. Carbonell, D.O.

Michael J. Rosen, M.D.

William S. Cobb, M.D.

Jeremy A. Warren, M.D.

William W. Hope, M.D.

Sharon E. Phillips, MSPH

Benjamin K. Poulouse, M.D.

Disclosure

- Honoraria received:
 - Intuitive Surgical
 - W.L. Gore and Associates
 - Maquet Medical
 - AdvaTec

Background

- Controversial
- Drains cause infection
- Drains reduce seroma
- Data lacking

Methods

- Population
 - Open retromuscular sublay ventral hernia repairs
- Cohort study with two comparison groups
 - Retromuscular drain use
 - No retromuscular drain use
- Outcomes: 30 day postoperative wound events (SSI, SSO, SSOPI)

Methods – Analysis

- **Analysis 1** – multivariate logistic regression predicting odds for wound events controlling for multiple factors
- **Analysis 2** – matched analysis using 2:1 match for retromuscular drain use versus no drain use
 - Patients matched on gender, elective status, wound class, hernia grade, and hernia width

Results – Analysis 1

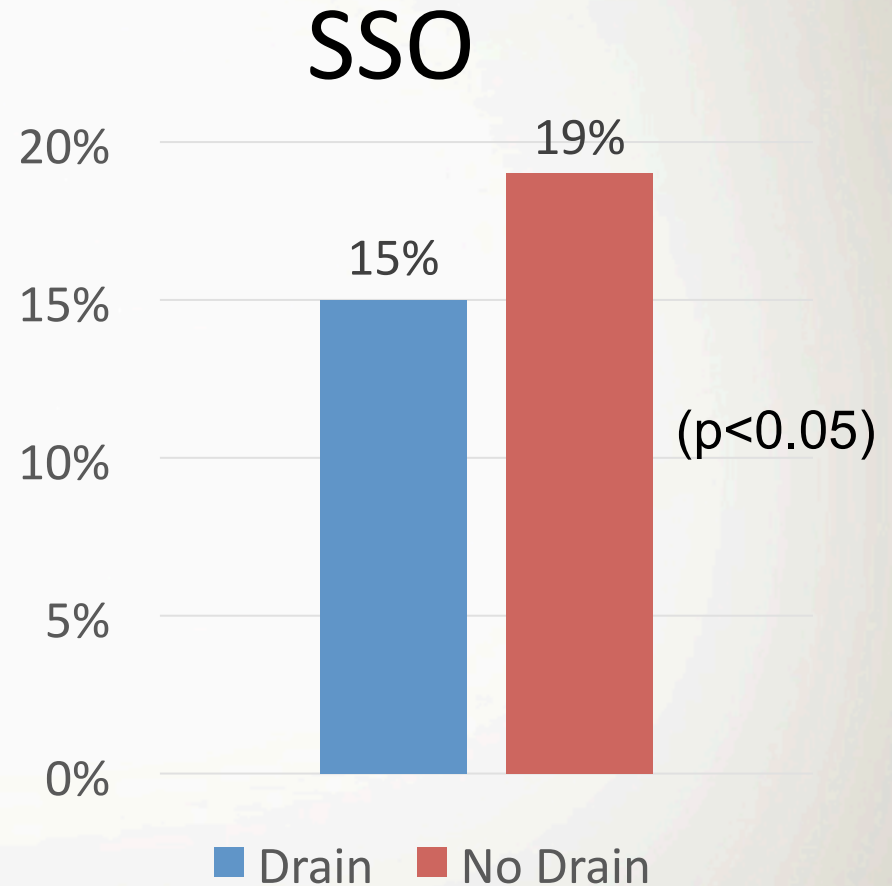
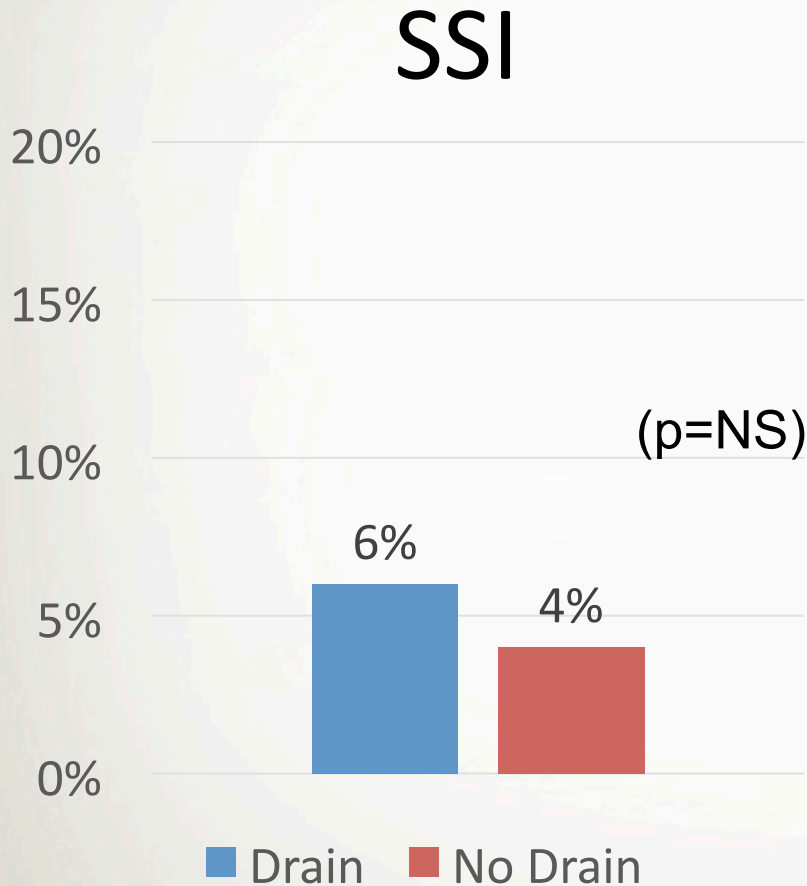
1,100 patients met inclusion criteria

	Drain (n=915)	No Drain (n=185)
Mean Age (years)	60	57
% Women	54%	52%
BMI (kg/m ²)	32.7	30.8*
Current smoker	10%	12%
Diabetic	22%	18%
OR Time >2hrs	90%	48%*
TAR	75%	59%*

*(p<0.05)

Results – Analysis 1

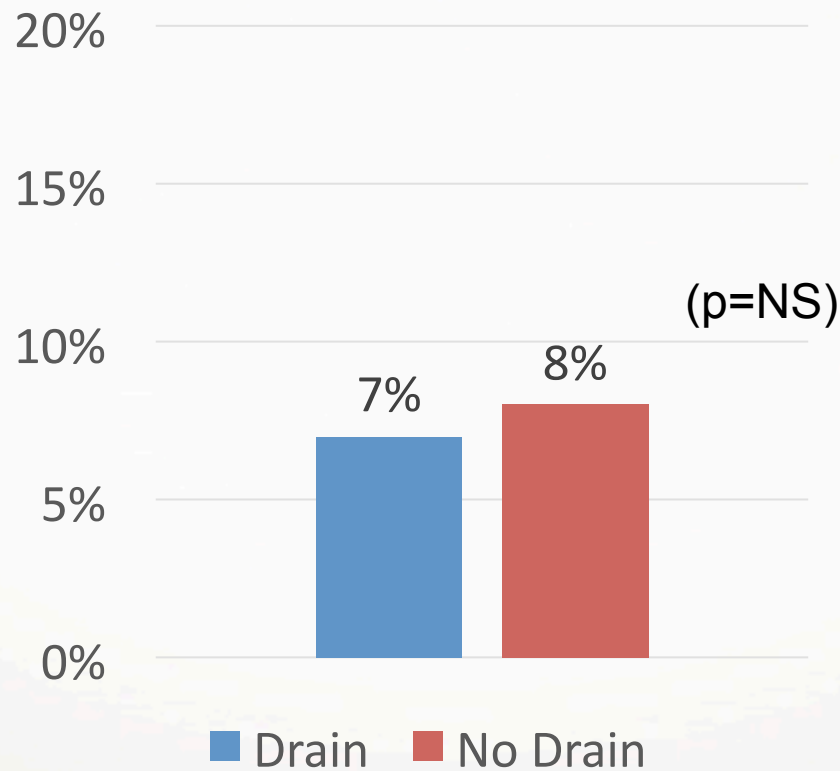
Wound Outcomes (Unadjusted)



Results – Analysis 1

Wound Outcomes (Unadjusted)

SSOPI



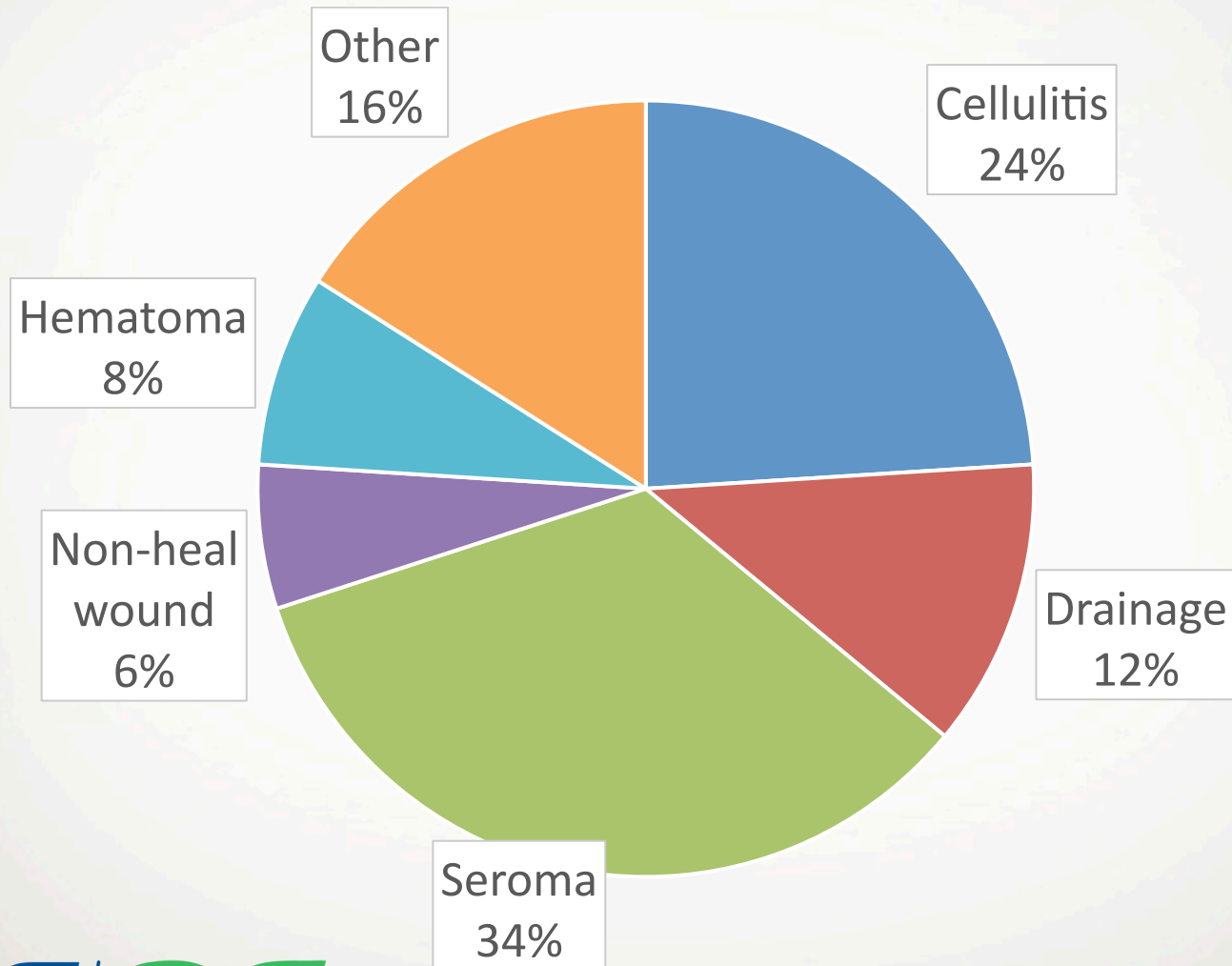
Results – Analysis 1

Adjusted Odds Ratios for Retromuscular Drain Use

	Odds Ratio	95% Confidence Int
SSI	1.27	(0.58-2.80)
SSO	0.59	(0.35-0.99)*
SSOPI	0.60	(0.31-1.13)

*Retromuscular drain use protective against SSOs (p<0.05); no increase in wound events overall

Breakdown of SSOs



Results – Analysis 2 (Matched)

- Size discrepancy between drain/no drain groups, matched analysis performed
- 2:1 match performed matching on gender, elective status, wound class, hernia grade, and hernia width
- 357 patient with retromuscular drains
- 181 patients without retromuscular drains

Results – Analysis 2 (Matched)

	Drain (n=357)	No Drain (n=181)
Mean Age (years)	58	57
% Women	52%	53%
BMI (kg/m ²)	31.1	31.0
Current smoker	8%	12%
Diabetic	20%	18%
OR Time >2hrs	84%	48%*
TAR	75%	60%*

*(p<0.05)

Results – Analysis 2 (Matched)

	Drain (n=357)	No Drain (n=181)
SSI	4%	3%
SSO	13%	19%
SSOPI	6%	7%

(p=NS)

Summary

- Drains are being used in more complex cases
 - Higher BMI
 - Longer OR time
 - More TAR
 - Larger defect width?
- Drains may protect against SSO
 - Cellulitis
 - Seroma

Conclusion

- Drains **do not** increase the risk of wound complication
- Drain use is safe in the open retromuscular sublay repair of incisional hernias

Surgical Coaching for Performance Improvement

Jacob A. Greenberg, MD, EdM

Assistant Professor of Surgery

University of Wisconsin

Madison, WI



Disclosures

Medtronic

Research Support
Speakers Bureau
Consultant

Bard-Davol

Research Support
Consultant

Miromatrix Medical

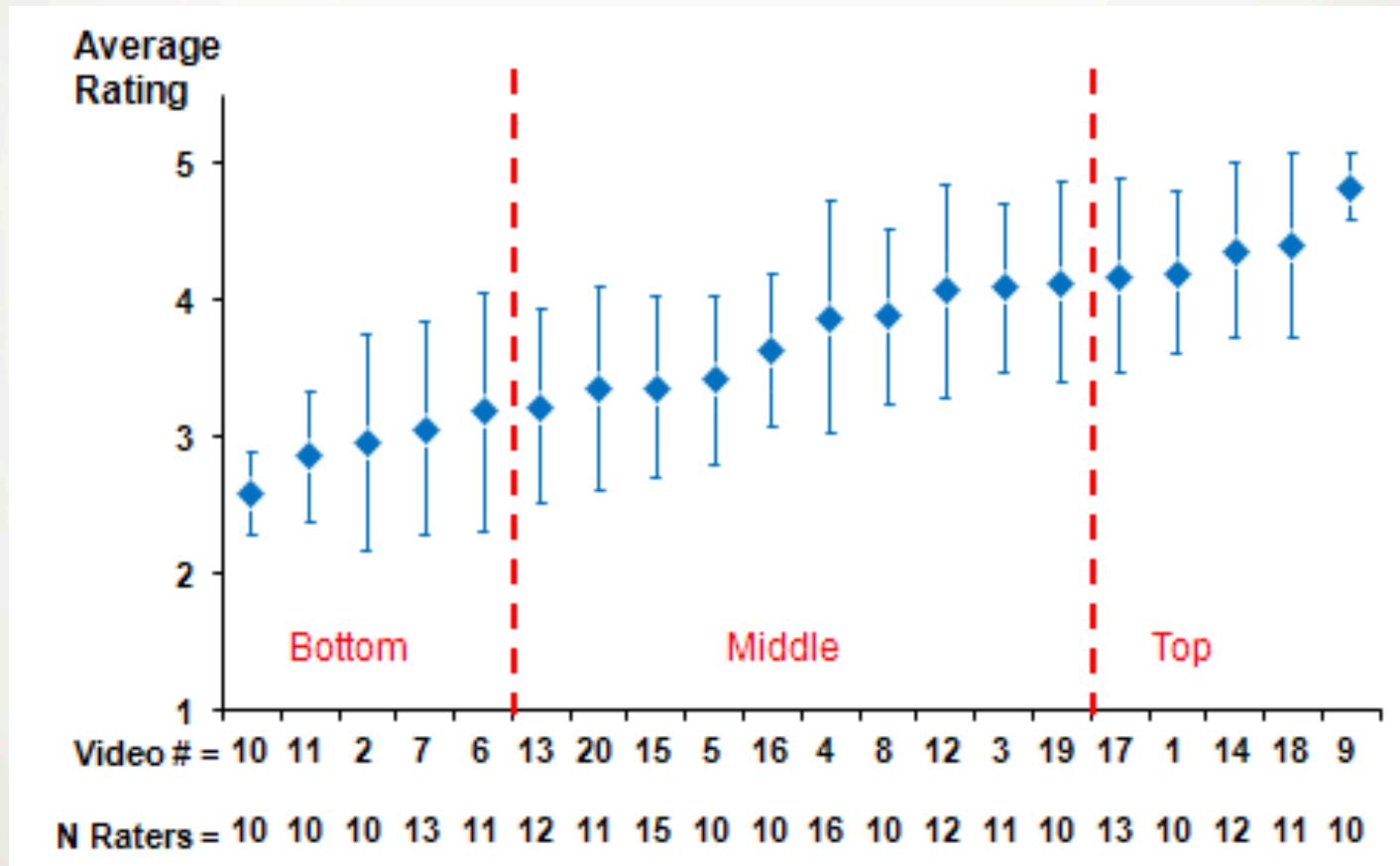
Research Support

Acknowledgments

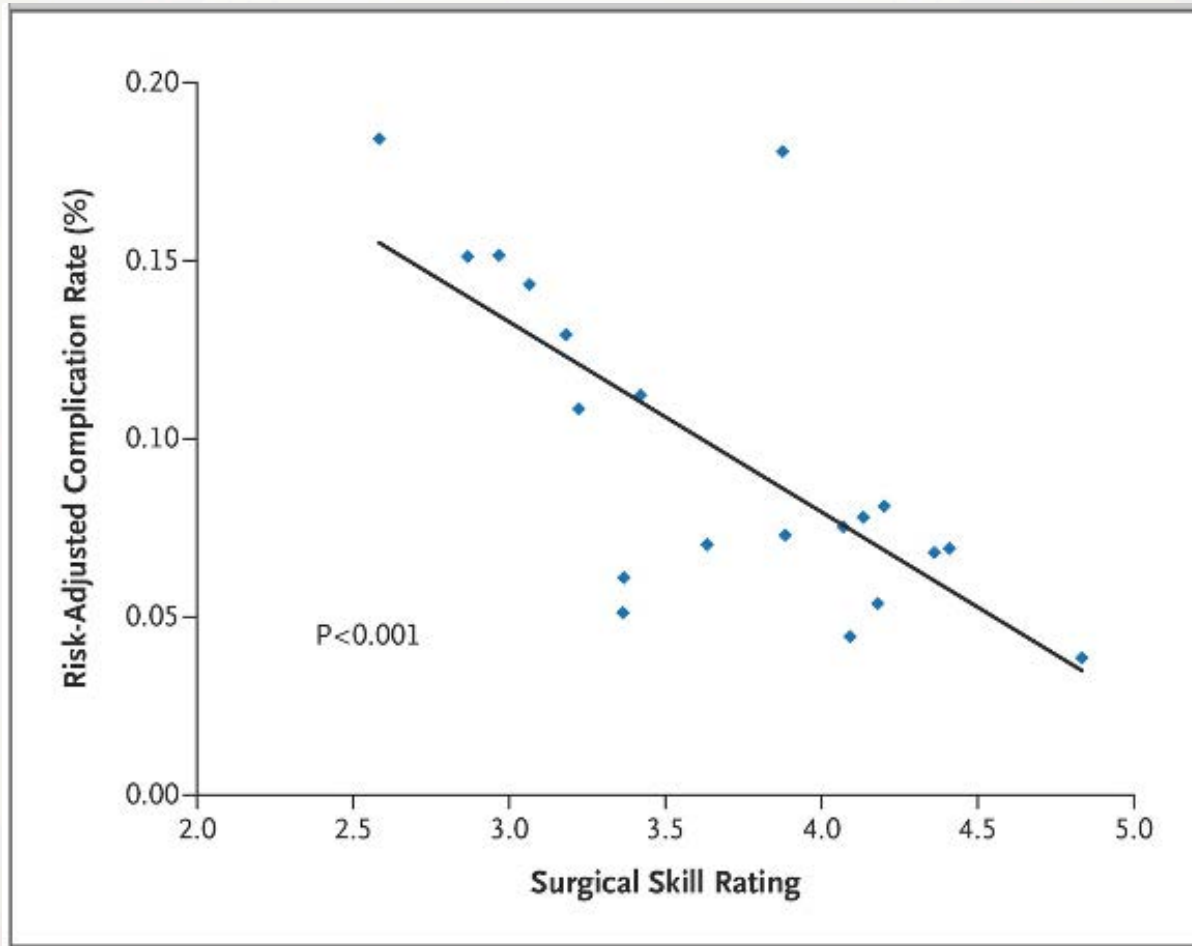
- Caprice Greenberg, MD MPH
 - Professor of Surgery
 - John Morgridge Chair of Health Services Research
 - Director of Wisconsin Surgical Outcomes Research Program
 - Vice Chair of Research University of Wisconsin



Variation in Surgeon Technical Skill



Variation in Surgeon Technical Skill



Performance Improvement

- Current Approaches
 - Regionalization
 - Selective Referrals
 - Systems of Care
 - Fellowships
 - Subspecialization
 - Quality Collaboratives
 - Social Media

Surgical Coaching



Annals Of Medicine

Personal Best

*Top athletes and singers have coaches.
Should you?*

Atul Gawande



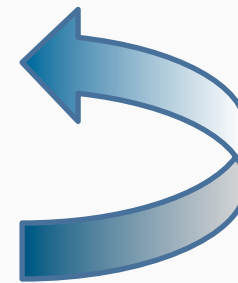
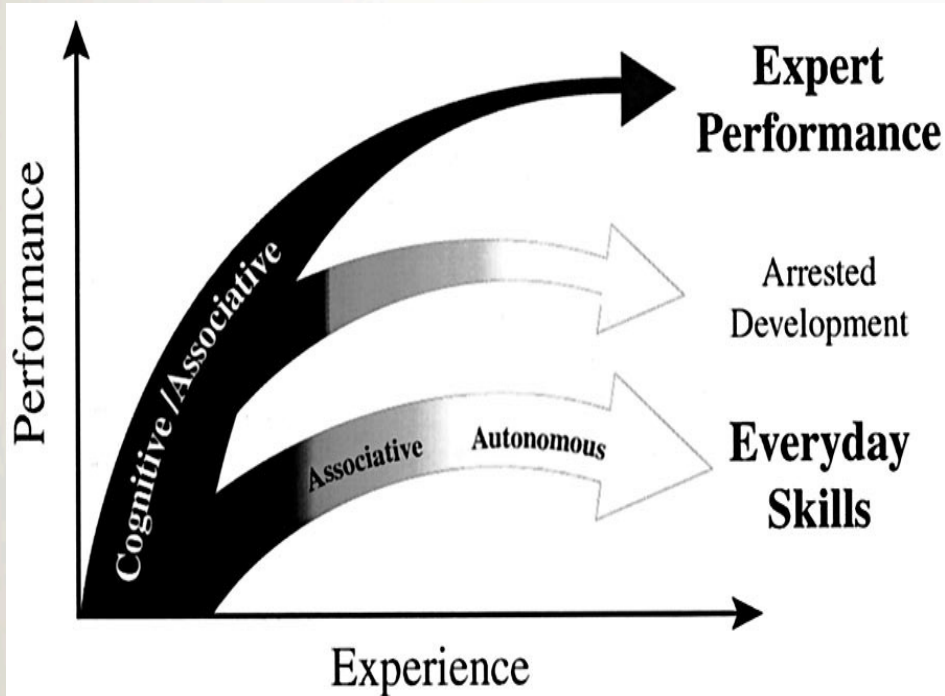
JACS 2012; 214: 115-124.

EDUCATION

Postgame Analysis: Using Video-Based Coaching for Continuous Professional Development

Yue-Yung Hu, MD, MPH, Sarah E Peyre, EdD, Alexander F Arriaga, MD, MPH, Robert T Osteen, MD, FACS, Katherine A Corso, MPH, Thomas G Weiser, MD, MPH, Richard S Swanson, MD, FACS, Stanley W Ashley, MD, FACS, Chandrajit P Raut, MD, FACS, Michael J Zinner, MD, FACS, Atul A Gawande, MD, MPH, FACS, Caprice C Greenberg, MD, MPH, FACS

Avoiding the “Proficiency Plateau”



Goal of Coaching: Transition from Arrested Development, where most clinicians exist, to Expert Performance

Surgical Coaching for Students

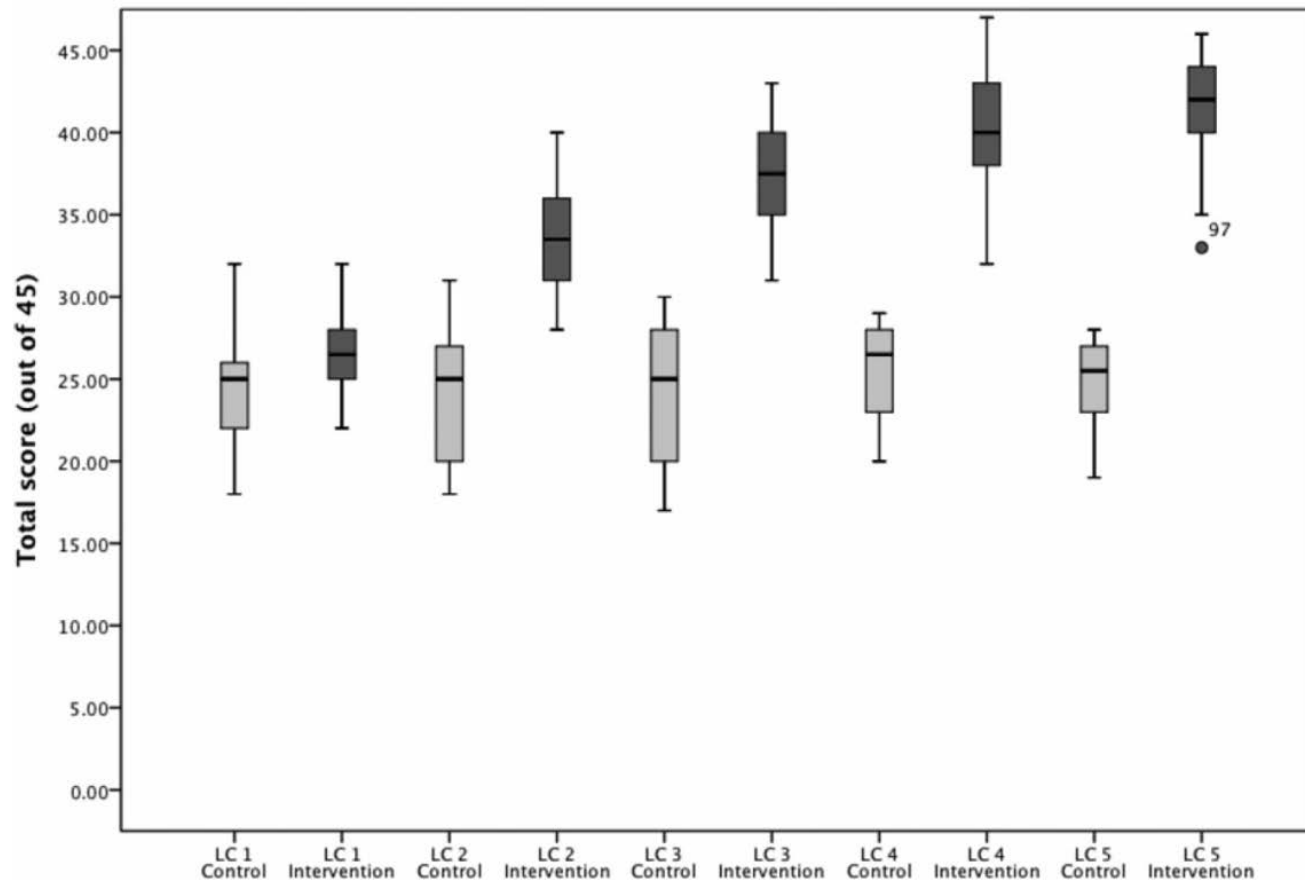


FIGURE 3. The quality of virtual reality laparoscopic cholecystectomy performance as assessed by OPRS.²⁵

Surgical Coaching for Trainees

TABLE 4. OSATS⁹, BOSATS¹⁰ Scores, and Error Counts Between and Within Groups

	CT	CSC	<i>P</i> (Between Groups)
OSATS			
BL	20 (17.5–25.5)	21.5 (17–22.75)	0.531
PT	24 (19.5–26.5)	27 (25.75–30.75)	0.065
<i>P</i> value (within group)	0.137	0.008*	
BOSATS			
BL	3.45 (3.05–3.63)	3.3 (3.06–3.60)	0.948
PT	3.60 (2.98–3.70)	3.90 (3.68–4.30)	0.017*
<i>P</i> value (within group)	0.438	0.008*	
Technical error			
BL	15 (7–21)	16 (11.5–20.5)	0.649
PT	18 (13–21)	10 (7–13)	0.003*
<i>P</i> value (within group)	0.313	0.008*	

Self-Reflection

	OSATS	BOSATS
Control	rho=-0.45, p=0.27	rho =0.46, p=0.25
Surgical Coaching	rho = 0.78, p=0.013	rho =0.85, p=0.004

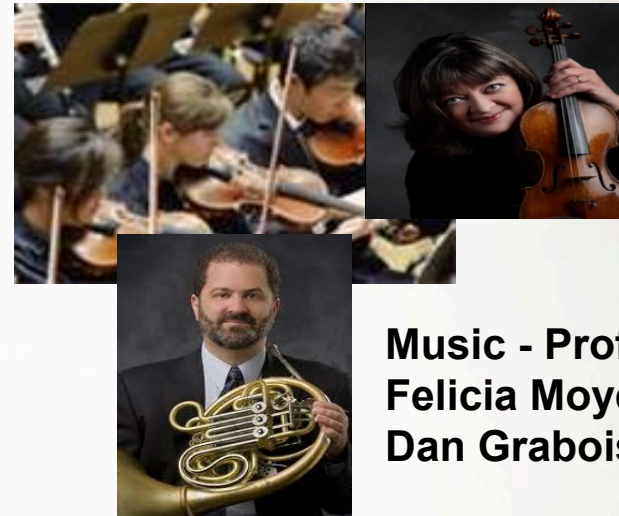
Expert Surgeon ≠ Expert Coach

- Peer coaching requires a frame of mind and perspective that often conflicts with the traditional surgical approach
- Mental models that may challenge surgeons
 - Be a co-learner instead of an expert
 - Be willing to explore different techniques and thought processes

Surgical Coaching



**Athletics - Coaches Bret Bielema,
Bo Ryan, Lamont Paris**

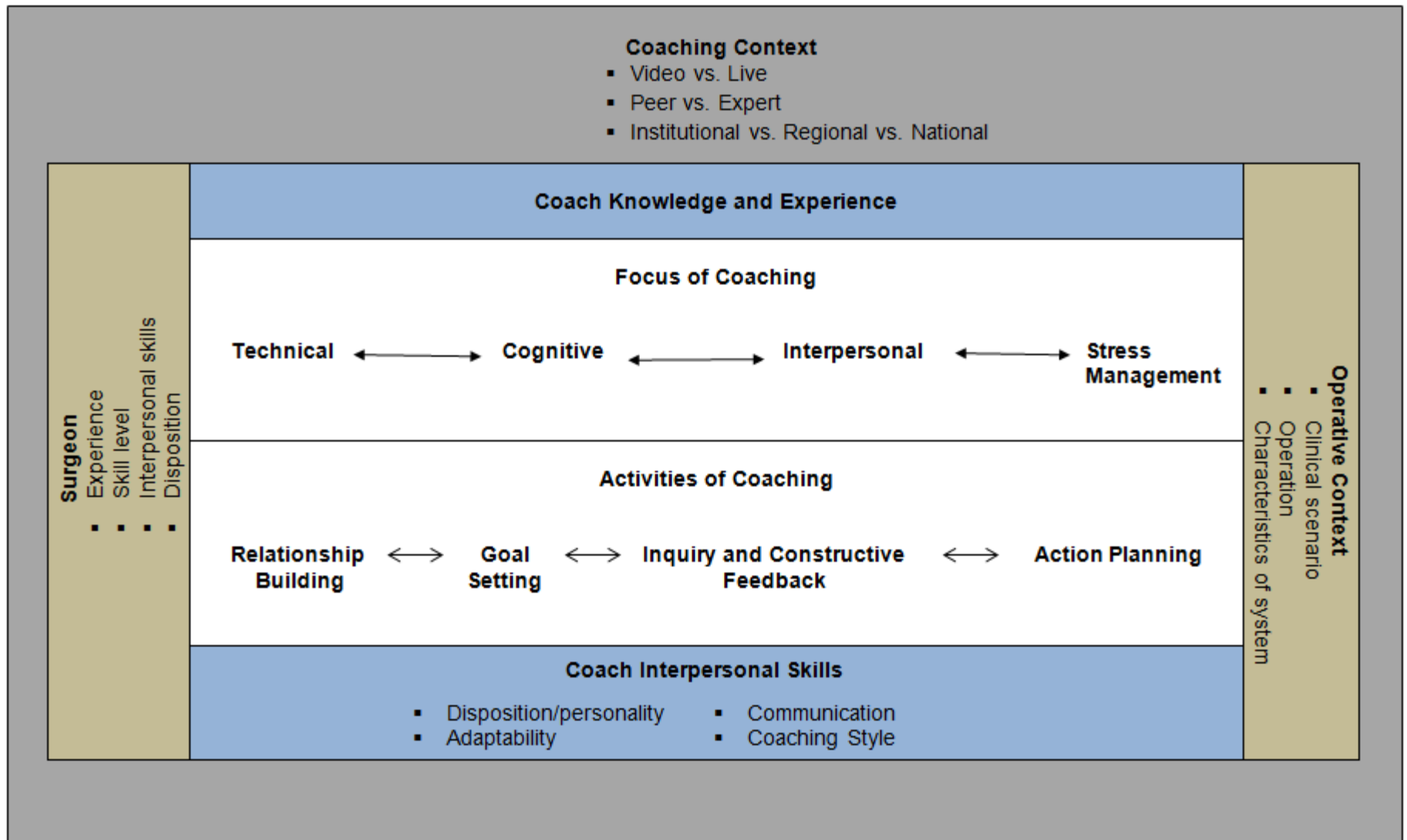


**Music - Professors
Felicia Moye &
Dan Grabois**



**Education - Professor Hala
Ghousseini, Nicole Hester North**

The Wisconsin Framework



Current Coaching Programs



Project ADOPT

WI Surgical Coaching Program

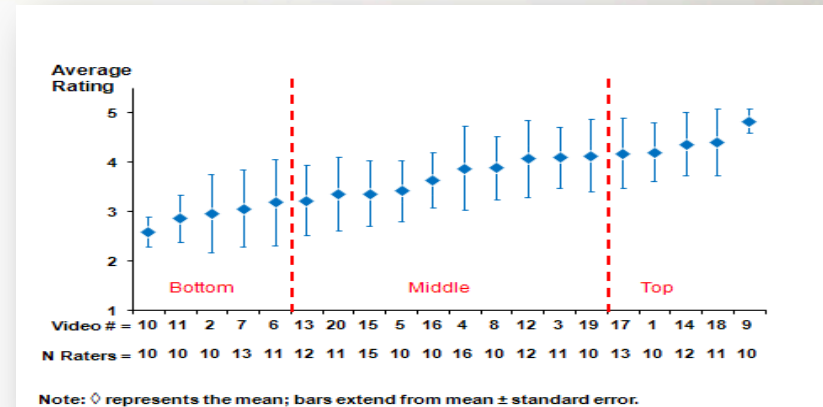
- QI Initiative with Wisconsin Surgical Society
- Peer nomination to identify coaches
- 4 hour training program and resource manual
- Recruit 10 surgeons (coachees) to participate
- Video record an operation based on individual goals
- 1 hour coaching sessions within 14 - 30 days
- Repeat quarterly for 1 year

MBSC Coaching Project

- **Aim 1:** To design and implement a video-based peer coaching program in MBSC
- **Aim 2:** To evaluate the impact on peer ratings of surgical skill (based on OSATS)
- **Aim 3:** To evaluate the impact on risk-adjusted complications

Who are the Coaches?

- Select coaches from among the top performers
- Train using the Wisconsin Surgical Coaching Program
- Everyone participates



Project ADOPT

- Assuring and Defining Outcomes Through Procedural Training
- International program to increase adoption of laparoscopic procedures sponsored by Medtronic
- UW site is focused on adoption of TEP for inguinal hernia repair
 - Recruit surgeons who perform open hernia repair but have basic laparoscopic skills for other procedures
 - Train coaches who are respected surgeons performing high volume of TEP

Surgical Coaching and the AHSQC

- Performance improvement in ventral/incisional hernia surgery
 - Surgical Coaching
 - Asynchronous Video-Based Feedback
- Focus on a broad variety of hernia procedures
 - Laparoscopic
 - Robotic
 - Open

Surgus™



Surgical Coaching and the AHSQC

- 8/16 Participants
- 5 Peer Nominated Coaches
 - Conrad Ballecer, MD
 - Alfredo Carbonell II, MD
 - Kent Kercher, MD
 - Brent Matthews, MD
 - Michael Rosen, MD
- Interested in this and future projects?
 - Join the AHSQC
 - Email
 - Me (greenbergj@surgery.wisc.edu)
 - Shelby Dunstan (shelby@americanherniasociety.org)
 - Sudha Pavuluri Quamme (Pavuluri@surgery.wisc.edu)



Coach Resource Manual

*Prepared for AHSQC
2016*

Summary

- Coaching has potential to improve performance throughout surgical careers
- Incorporate concepts of adult learning theory
 - Self-assessment and individual goal oriented
 - Facilitate transfer into practice
- Address variation in performance
- Improve quality, safety and outcomes
- This is just the beginning!

Questions?

greenbergj@surgery.wisc.edu



@WisconsinHernia

AHSQC

Conclusions and Discussion

AHSQC Committees

- Publications and Data Use Committee
 - Chair: Corey Deekan, Ph.D.
- Variables and Definitions Committee
 - Co-Chairs: Ajita Prabhu, M.D., Eric Pauli, M.D.

Publications and Data Use Committee

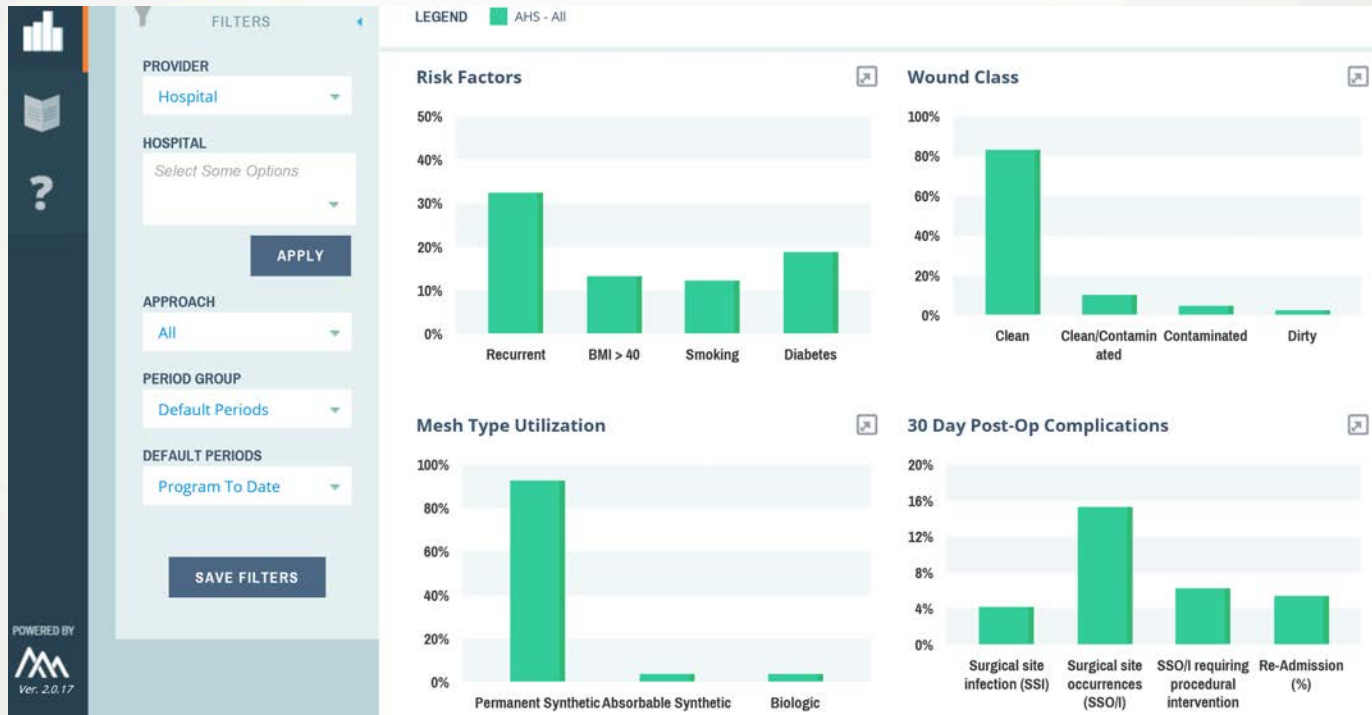
New Meshes or Fixation Products

- Send to benjamin.poulose@vanderbilt.edu or shelby@americanherniasociety.org

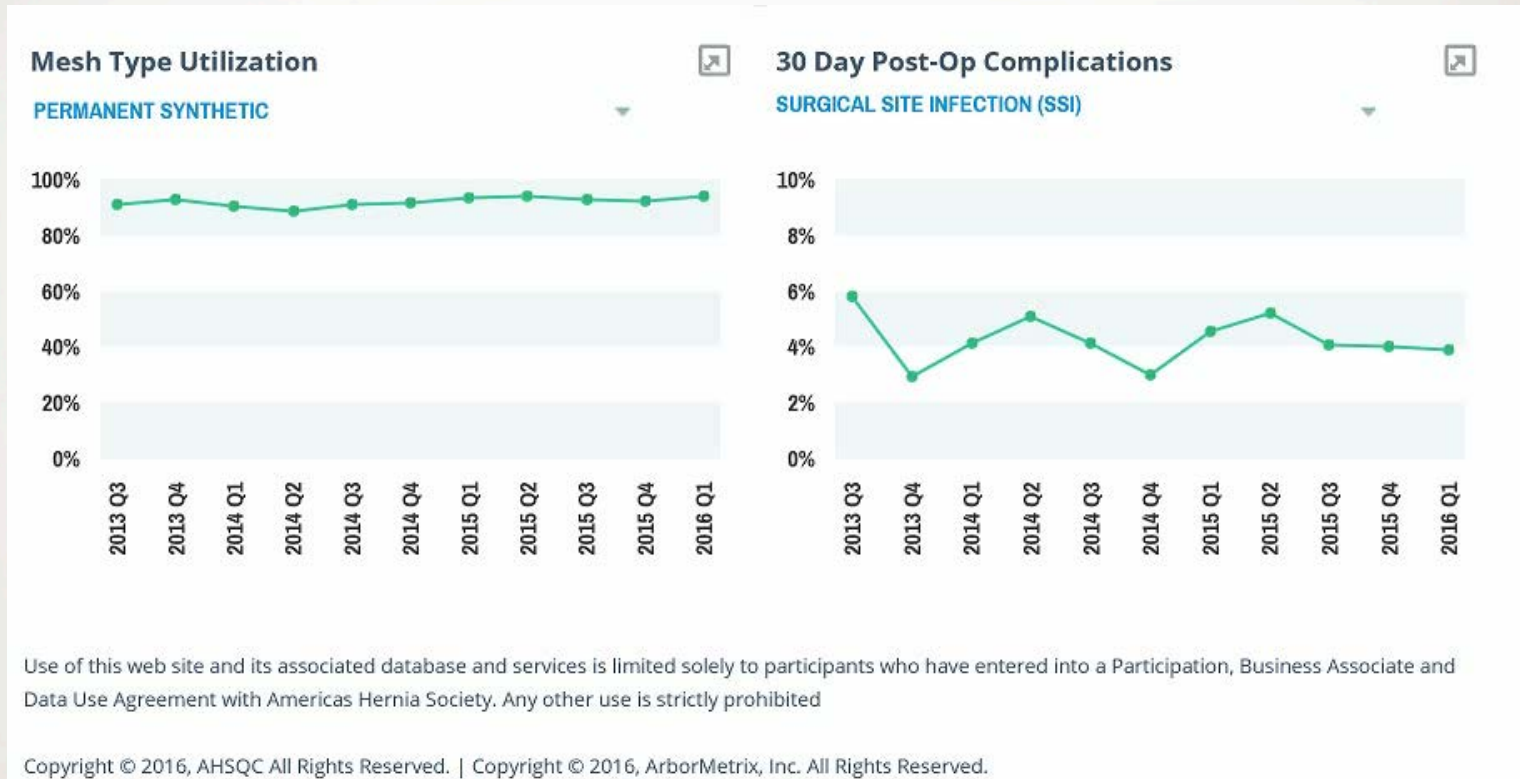
Data Requests

- AHSQC members with minimum 25 cases entered including complete 30 day follow up have access to entire AHSQC dataset for research and QI
- AHSQC Data Coordination Center handles IRB and analysis
- Submit requests to Shelby@americanherniasociety.org

You Can Access Your Data Anytime



You Can Access Your Data Anytime



Definitions and Variables Committee Update

Changes Over the Past Year

- Variables – additions and modifications
 - HbA1c variable
 - “More Than One Mesh” option
- Format changes
 - Additional Procedures changed to systems based format
- Streamlining the user interface
 - Flow of data entry under Operative Details
 - Modified user alerts for patient followup

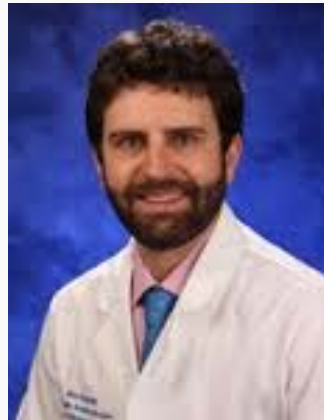
Ongoing Work

- Developing a modular interface to select more than one hernia type and enter data accordingly
- Modifying Patient List screen to return to most recent entries rather than the beginning of the user database
- Rectus Diastasis variable

New Committee Members



Jeff Blatnik, MD



Eric Pauli, MD



Ajita Prabhu, MD



Steve Rosenblatt, MD

Questions?

epauli@hmc.psu.edu

ajita.prabhu@UHhospitals.org

Conclusions from the AHSQC

Things You Can Do on Monday

- Avoid bowel preps for ventral hernia repair
- Learn the Voeller onlay technique
- Don't use prehospital chlorhexidine scrub for ventral hernia repair patients
- Use drains for retromuscular repairs – probably best to remove early
- Join the AHSQC www.ahsqc.org

This is NOT Just a Registry

- It's a collaborative
- Make a change
 - Surgical Coaching
 - Early Readmission Reduction Effort (update ACS 2016)

Thanks

- Our patients
- Shelby Dunstan
- Our surgeons
- FDA
- AHSQC Foundation
- See you at ACS!



Gold Level Foundation Partners



Silver Level Foundation Partners

