MAHEC | MOUNTAIN AREA HEALTH EDUCATION CENTER

How Much Overlap is Enough?

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Disclosures

Cox
- None

O'Connor
- Consultant – Intuitive Surgical
- Consultant – WL Gore

Study Overview

When fascia is closed, what mesh overlap is needed to minimize the risk of hernia recurrence?

- Retrospective review of the ACHQC database for cases between 2013-2022
- Ventral hernia repairs with permanent synthetic mesh
- Intact 1 year follow up

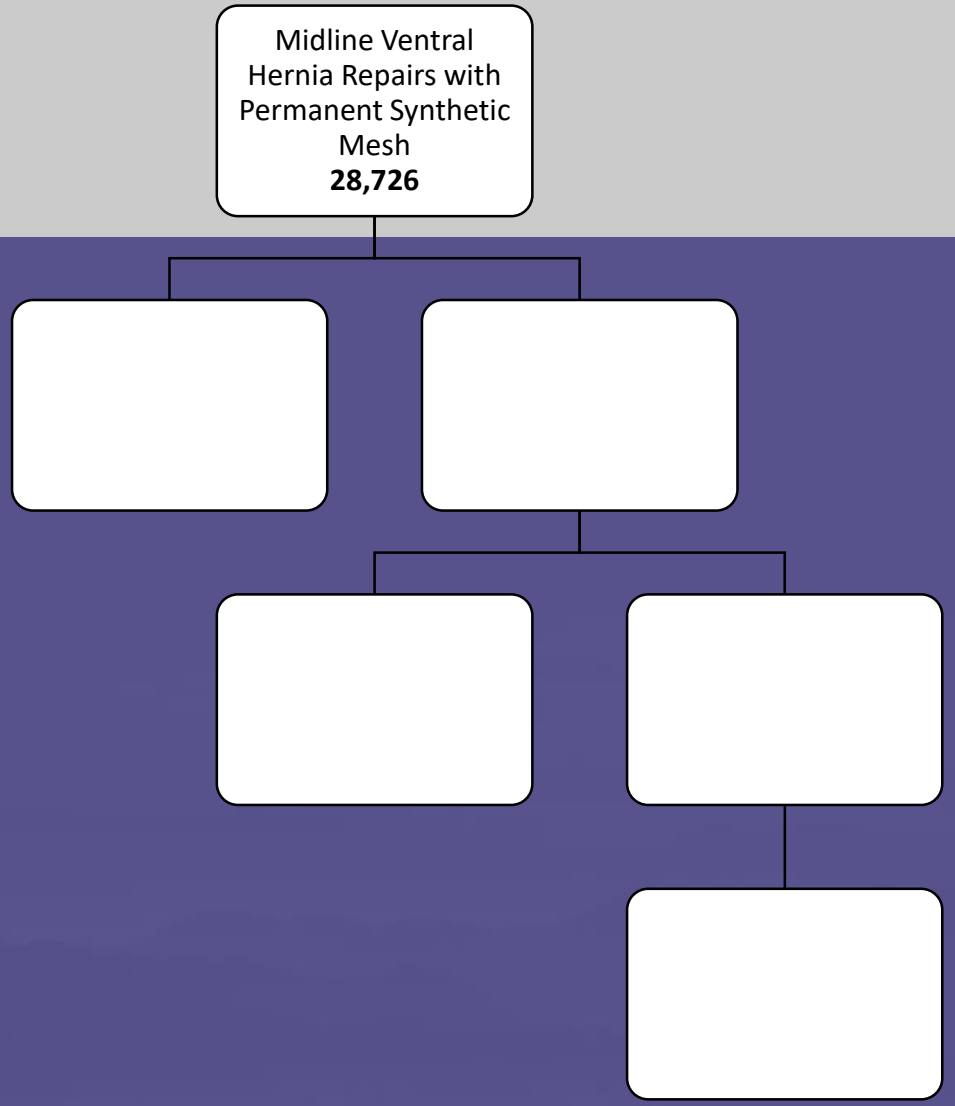
Study Overview

Primary Outcome: Pragmatic Recurrence at 1 year

Pragmatic Recurrence = as defined by the **consensus definition** of hernia recurrence, a composite of

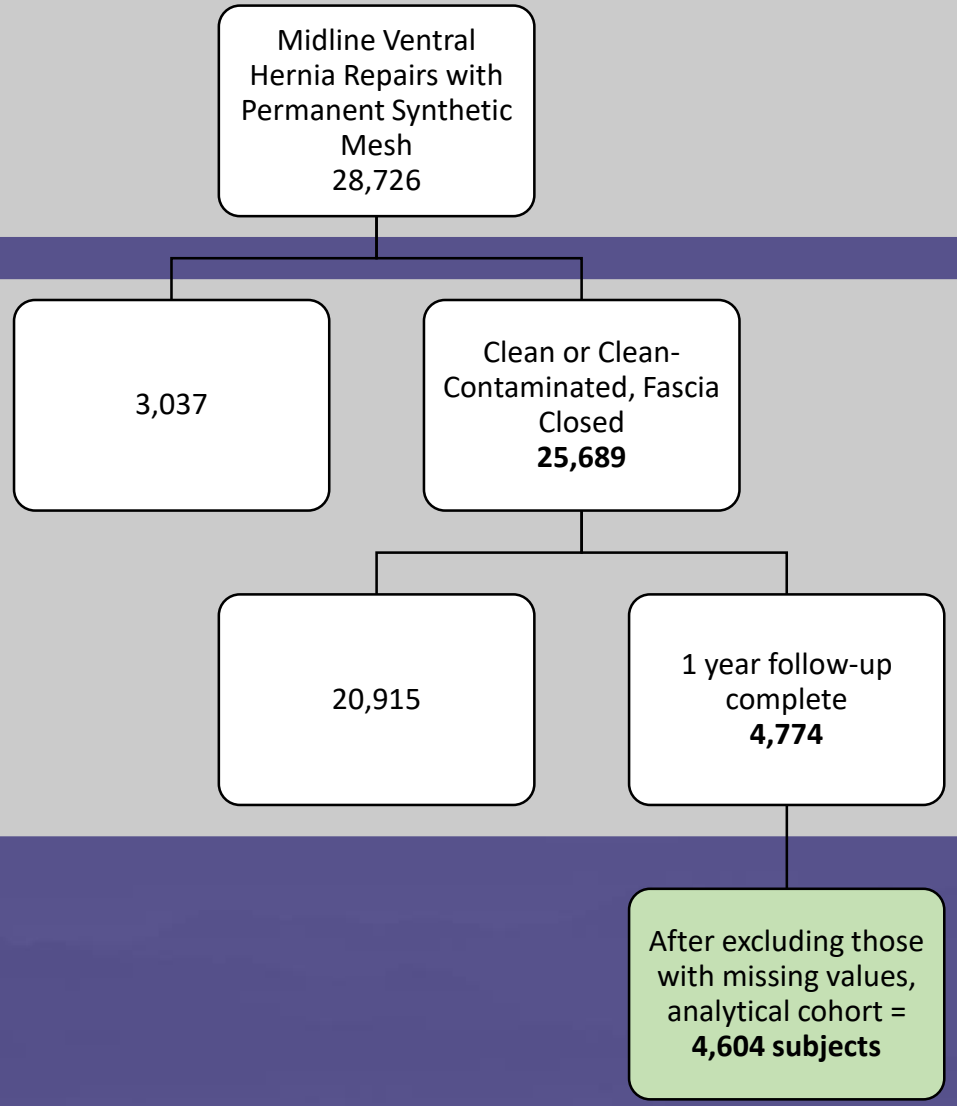
- **Patient reported outcomes** (HerQLes / PROMIS Pain 3A)
- **Imaging**
- **And clinical examination**

Inclusion


Midline Ventral Hernia Repairs with Permanent Synthetic Mesh
28,726

Inclusion

Exclusion



Exclusion:

- **Wound class 3 or 4**
- **Absorbable/biologic mesh**
- **Multiple pieces of mesh**

Description of Analytical Cohort

	***N* = 4604**
Hernia Classification	
Incisional	3542 (77%)
Umbilical (primary)	890 (19%)
Epigastric (primary)	237 (5%)
Wound Status	
Class I	4348 (94%)
Class II	256 (6%)
Approach	
Open	3150 (68%)
MIS	1454 (32%)
Robotic	1095
Laparoscopic	359
Mesh Position	
Sublay	4271 (93%)
Retromuscular	2530
Preperitoneal	1647
Intraperitoneal	997
Onlay	236 (5%)
Inlay	97 (2%)
Mesh Width - median (IQR)	15 (10-30)
Hernia Width – median (IQR)	6 (3-12)

Cohorts:

<5cm mesh *overlap* vs 5cm and above

Mesh width - hernia width *= </≥ 10 cm*
(i.e., 5cm overlap on either side)

**based off the original defect width

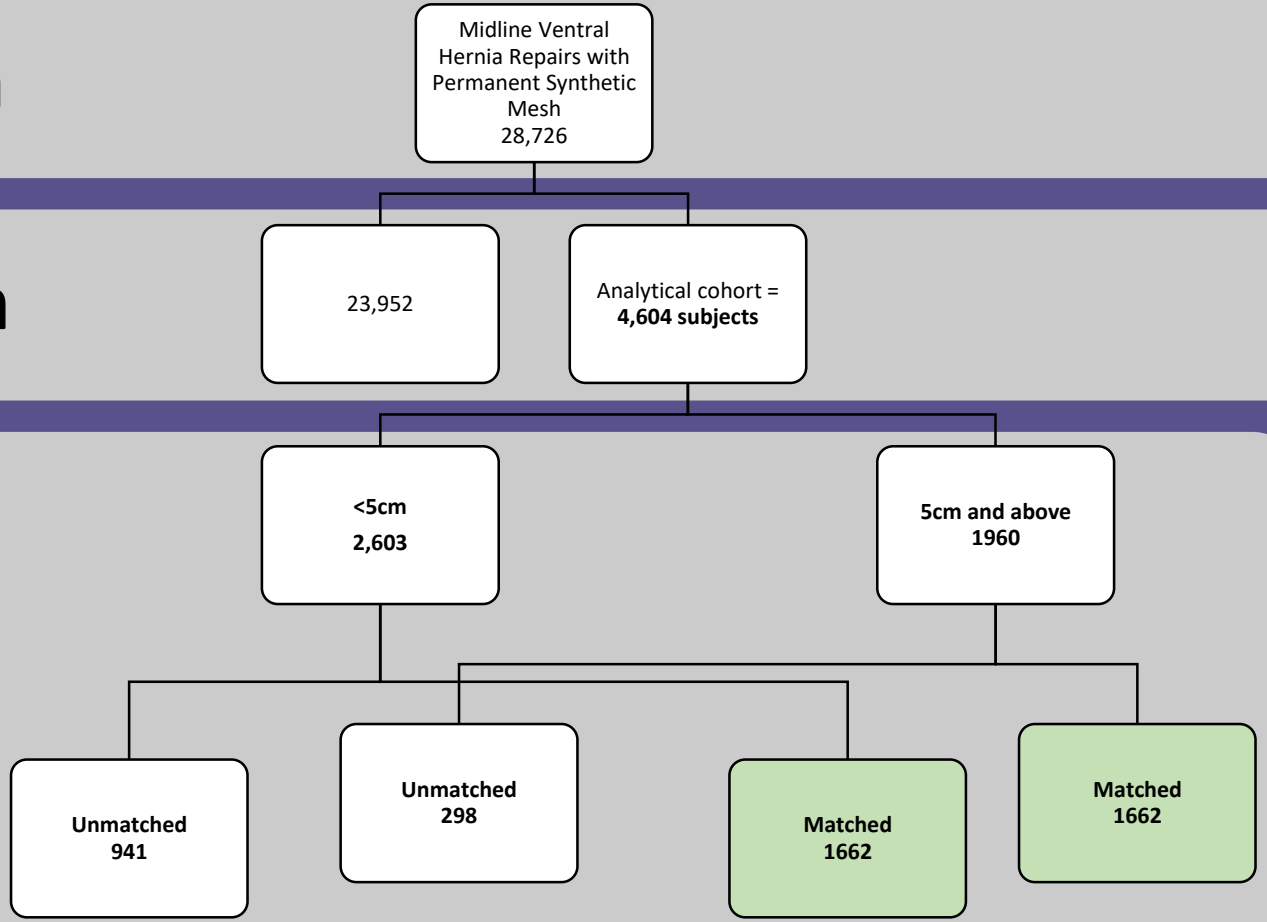
	Less than 5cm ***N = 1981***		**5cm and above** ***N = 2623***		**P-value**
Age	Median 58		Median 60		<0.001
Gender (Female)	44%		52%		<0.001
Race (Non-white)	12%		10%		0.031
Diabetes	15%		22%		<0.001
COPD	4%		7%		<0.001
Current Smoker	7%		6%		0.8
Avg BMI (continuous)	31		32		
ASA class	50% II, 39% III		33% II, 63% III		<0.001
Median hernia width	3cm (2-10cm)		10cm (5-14cm)		
VHWG[1] classification	90% 1-2		80% 2-3		
Myofascial Release	26%		78%		<0.001
Posterior Rectus		87%		82%	
Transversus Abdominis		22%		76%	
Recurrent hernia	21%		45%		<0.001
Operative approach					<0.001
Open	72%		66%		
MIS	28%		34%		

1 - Ventral Hernia Working Group

Inclusion

Exclusion

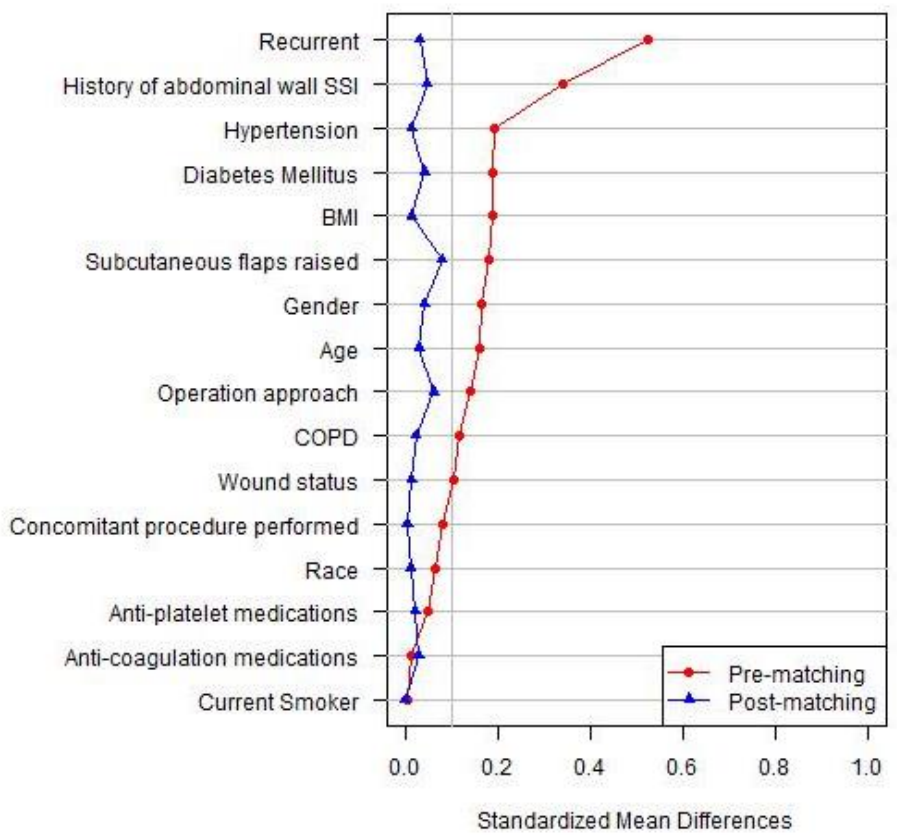
PSM



Covariates

- Age
- BMI
- Gender
- Recurrent hernia
- Operative Approach
- Wound Status
- Smoking
- COPD
- Diabetes
- History of Abd SSI

Post Matching



	<5cm *N* = 1981	≥5cm *N = 2623*	**<5cm *N* = 1662**	**≥5cm *N* = 1662**	**P-value**
Age	58	60	**59**	**60**	**0.62**
Gender (Female)	44%	52%	**45%**	**48%**	**0.21**
Race (non-white)	12%	10%	**11%**	**11%**	**0.74**
Diabetes	15%	22%	**16%**	**18%**	**0.21**
COPD	4%	7%	**5%**	**6%**	**0.5**
Current Smoker	7%	6%	**6%**	**6%**	**1**
Avg BMI (continuous)	31	32	**31**	**32**	**0.36**
Recurrent hernia	21%	45%	**25%**	**26%**	**0.36**
Operative approach					**0.076**
Open	72%	66%	**69%**	**66%**	
MIS	28%	34%	**31%**	**34%**	

Operative Details: After PSM

	<5cm *N* = 1662	5cm and above *N* = 1662	P-value
Median (IQR) Mesh Width cm	10 (6-14)	30 (18-30)	<0.001
Median (IQR) Hernia Width cm	3 (2-7)	9 (5-13)	<0.001
History of Component Separation	2%	3%	0.1
Myofascial release	27%	75%	<0.001
Posterior Rectus	87%	80%	<0.001
TAR	23%	73%	<0.001
Fascial Closure – suture material			
Absorbable	68%	87%	<0.001
Permanent	33%	14%	<0.001
Mesh Position			<0.001
Onlay	5%	7%	
Inlay	4%	1%	
Sublay	91% (1517)	92% (1532)	
Retrorectus	31%	78%	<0.001
Preperitoneal	37%	36%	0.64
Intraperitoneal	37%	15%	<0.001

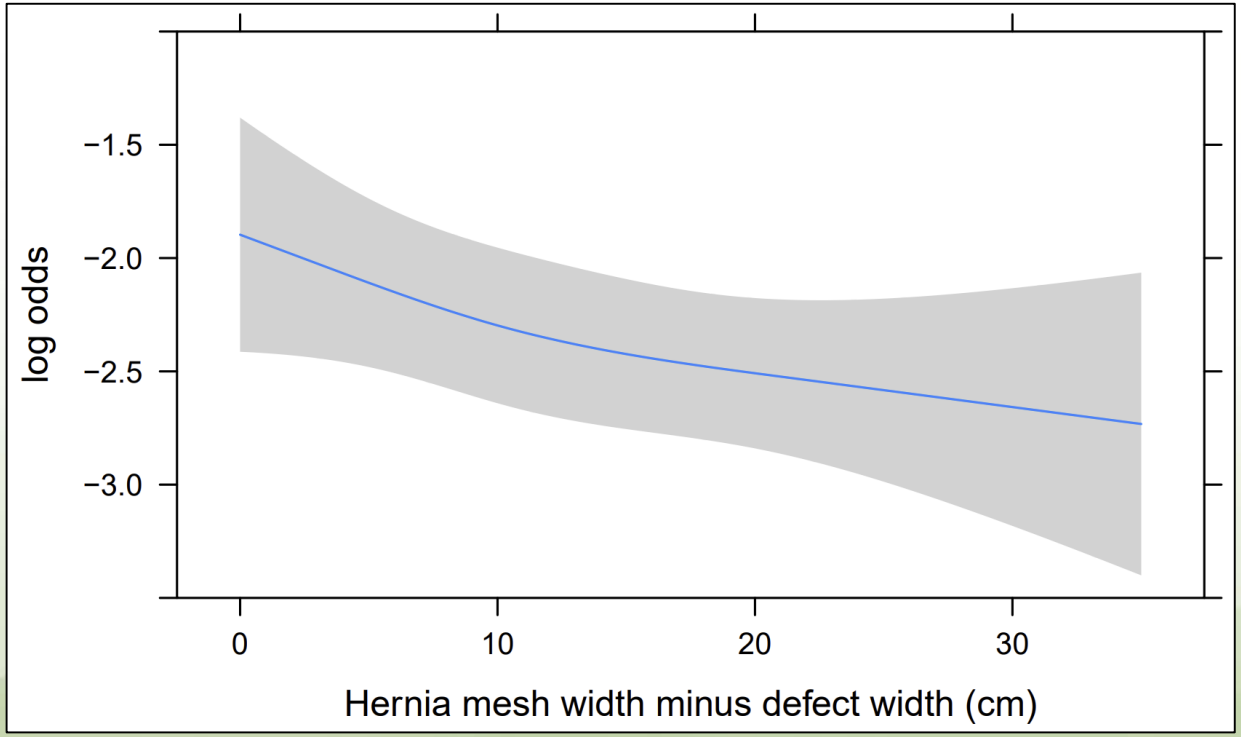
After PSM: Pragmatic Recurrence at 1 year

	<5cm *N* = 1662	**5cm and above** *N* = 1662	**P-value**
Recurrence	12% (198)	9% (150)	0.007

Conclusions

1. In the era of advanced AWR, even if the fascial defect is closed, overlap still matters

- Logistic regression on recurrence at 1 year – 5cm mesh overlap isn't the absolute. More overlap continues to decrease the risk of recurrence.



Conclusions

2. The optimal overlap to minimize recurrence is unknown, however should account for other risks

- Absolute risk reduction = 12% - 9% = 3% for 5cm overlap or more in our study.

- Is it worth performing myofascial release to achieve adequate overlap if tension-free fascial closure can be obtained without it? Does the risk of myofascial release outweigh the mitigated risk of recurrence provided by mesh overlap?

Limitations/Future Investigation

- 93% of mesh was in a sublay position, the majority of which was in the retrorectus space.

Representative of the QC – Generalizable to the wider community?

- Confounders in mesh position, myofascial releases, fascial closure

We plan to perform subgroup analyses to evaluate recurrence in each sublay position. We would also like to evaluate with/without component separation.

MAHEC

Thank You

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