Effects of Mesh Weight on Lateral Abdominal Wall Hernia Repair: An Abdominal Core Health Quality Collaborative (ACHQC) Analysis

Rui-Min Diana Mao MD[1], Sergio Mazzola Poli De Figueiredo MD[1], Giovanna Dela Tejera BSA[1], Luciano Tastaldi MD[1], Robert Tamer MPH MPA[2], Richard Lu MD FACS[1]

[1]Department of Surgery, University of Texas Medical Branch Galveston, TX [2]Center for Surgical Health, Assessment, Research and Policy, The Ohio State University Wexner Medical Center, Columbus OH

INTRODUCTION

Lateral abdominal wall hernias are a relatively rare subset of hernias, affecting 1-4% of the adult population. They can be further divided into the European Hernia Society classifications of subcostal, flank, iliac, and lumbar hernias (Fig. 1). These hernias are challenging to repair due to anatomic location and limited data to drive operative decisions. There are no guidelines for mesh selection in these patients, and this currently is largely left to surgeon preference.

Mesh weight is an important consideration in mesh selection and is defined as the amount of material per unit area (Fig. 2). Heavyweight mesh provides increased tensile strength to the repair but is also associated with a greater foreign body reaction and mesh sensation.

AIM

To evaluate the effect of mesh weight on 30-day postoperative outcomes following lateral abdominal wall hernia repair.

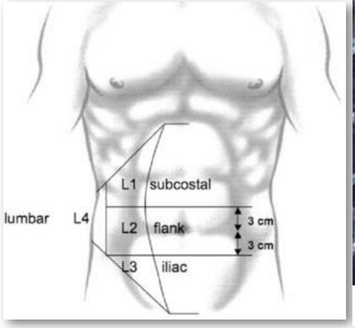


Figure 1. European Hernia Society Classification of Lateral Abdominal Wall Hernias

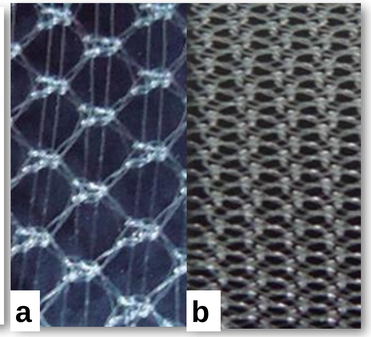


Figure 2. Pore size and density of a) medium weight (43 g/m^2) and b) heavyweight (90 g/m^2) mesh

METHODS

Patients who underwent a lateral abdominal wall hernia repair with 30-day follow-up were identified in the Abdominal Core Health Quality Collaborative (ACHQC) database. The mesh used in the repair was categorized as heavy or non-heavyweight mesh; heavyweight was defined as density >75g/m^2, and non-heavyweight was <75g/m^2. Outcomes of interest were compared between the two groups using multiple logistic regression with adjusted odds ratios.

RESULTS

The ACHQC identified 4130 lateral abdominal wall hernia repairs: 1357 with heavyweight mesh and 2773 with non-heavyweight mesh. Patients with active smoking, hypertension, and larger hernia dimensions were significantly more likely to have heavyweight mesh used in their repair (Table 1).

Postoperatively, heavyweight mesh patients were less likely to develop a surgical site occurrence or be readmitted compared to those with non-heavyweight mesh (Tables 2 and 3). The difference in surgical site occurrence was attributed to a significantly higher rate of seroma in the non-heavyweight mesh group (5.99% vs. 3.91%, p=0.005). Mesh weight was not significant in predicting the other outcomes of hernia recurrence, chronic pain, surgical site infection, surgical site occurrence requiring procedural intervention, and reoperation.

	Heavyweight	Non-heavyweight	*p*-value
Age (years)	61 [53,70]	61 [52,69]	0.5807
Gender (male)	658 (48.49)	1278 (46.09)	0.1462
Current Smoker	127 (9.36)	204 (7.36)	**0.0260***
Approach			<.0001*
Laparoscopic	77 (5.67)	460 (16.59)	
Open	936 (68.98)	1794 (64.70)	
Robotic	344 (25.35)	519 (18.72)	
BMI	31.3 [27.3,35.2]	30.8 [27.4,35.2]	0.3792
Hypertension	792 (58.36)	1497 (53.98)	**0.0078***
CHF	20 (2.16)	38 (3.00)	0.2210
COPD	95 (7.00)	203 (7.32)	0.7090
Diabetes Mellitus	292 (21.52)	572 (20.63)	0.5087
Hernia Length	12.0 [5.0,20.0]	9.0 [4.0,20.0]	**<.0001***
Hernia Width	10.0 [5.0,15.0]	8.0 [4.0,15.0]	**<.0001***

Table 1. Baseline characteristics of included patients. *BMI, body mass index; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease*

	Heavyweight	Non-heavyweight
Chronic pain	0.52%	0.40%
Recurrence	0.15%	0.25%
SSI	4.86%	4.98%
SSO	10.83%	12.80%
SSOPI	5.75%	6.60%
Readmission	5.67%	7.25%
Reoperation	2.43%	2.60%

Table 2. Absolute rates of 30-day postoperative outcomes of heavyweight and non-heavyweight mesh patients. *SSI*, surgical site infection; *SSO*, surgical site occurrence; *SSOPI*, surgical site occurrence requiring procedural intervention

	Odds Ratio	95% CI	*p*-value
Chronic pain	1.24	(0.48 – 3.23)	0.66
Recurrence	0.55	(0.11 – 2.71)	0.46
SSI	0.90	(0.66 – 1.22)	0.48
SSO	0.79	(0.64 – 0.97)	**0.02***
SSOPI	0.80	(0.61 – 1.06)	0.11
Readmission	0.73	(0.56 – 0.96)	**0.02***
Reoperation	0.91	(0.60 – 1.39)	0.67

Table 3. Odds ratios of 30-day postoperative outcomes of heavyweight mesh patients compared to non-heavyweight (reference) *p<0.05; *CI*, confidence interval; *SSI*, surgical site infection; *SSO*, surgical site occurrence; *SSOPI*, surgical site occurrence requiring procedural intervention

CONCLUSION

Heavyweight mesh use in lateral abdominal wall hernia repair is associated with decreased rates of surgical site occurrence and readmission. Mesh weight did not have a significant effect on other postoperative outcomes, including chronic pain and hernia recurrence. Future prospective and randomized controlled studies are necessary to confirm our findings.

References

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