

Mesh Fixation via Percutaneous Transfascial Suture Fixation versus Fibrin Sealant Fixation Does not Affect Relative Costs

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Introduction

- Optimizing ventral hernia repair techniques while improving patient outcomes is a point of continual emphasis
- Percutaneous transfascial suture mesh fixation (PTSMF) and fibrin sealant mesh fixation (FSMF) are common and well-accepted methods[1-4]
- FSMF has been presumed to be more cost-effective due to decreased operative time[5]

Aim

To compare relative costs of patients undergoing open retromuscular ventral hernia repair with PTSMF or FSMF

Methods

- Retrospective cohort study (2012-2020)
- All patients undergoing open, elective retromuscular ventral hernia repair with uncoated permanent synthetic sublay mesh performed by a single surgeon at a single institution
  - Retromuscular defined as posterior rectus sheath and/or transversus abdominis release
- Exclusion criteria:
  - Parastomal hernia repair
  - No mesh fixation
  - Alvimopan administration
- Primary outcome: total 30-day cost
  - Secondary outcome: operative procedural cost
- PTSMF defined as mesh secured to myofascial abdominal wall via percutaneous incisions
- FSMF defined as adhesive mesh fixation with fibrin sealant with/without non-percutaneous suture fixation to Cooper's ligament

Results

DEMOGRAPHICS AND OPERATIVE DETAILS

Variable	PTSMF Group (n = 115)	FSMF Group (n = 44)	p-value
Age, years, mean (SD)	56.4 (11.6)	58.9 (11.9)	0.2395
Female	61 (53.0%)	20 (45.5%)	0.3918
mVHWG Grade			0.0748
1	9 (7.8%)	9 (20.5%)	
2	82 (71.3%)	26 (59.1%)	
3	24 (20.9%)	9 (20.5%)	
Myofascial Release Method			0.4764
Posterior Rectus Only	36 (31.3%)	16 (36.4%)	
TAR Only	8 (7.0%)	1 (2.3%)	
Both	71 (61.7%)	27 (61.4%)	
Locoregional Analgesia			< 0.0001**
Epidural	89 (77.4%%)	2 (4.6%)	
Peripheral Nerve Block	26 (22.6%)	42 (95.5%)	
Concomitant Procedure	33 (28.7%)	13 (29.6%)	0.9158

SD standard deviation
mVHWG modified ventral hernia working group
TAR transversus abdominis release

LOS length of stay
**inflation adjusted to US $ in Jan 2020*
** statistically significant

OUTCOMES

Variable	PTSMF Group (n = 115)	FSMF Group (n = 44)	p-value
Total Costs, US $, mean (SD)*	23,511.70 (15,259.90)	22,413.50 (10,390.50)	0.6048
OR Costs, US $, mean (SD)*	8,125.00 (1,878.80)	8,016.70 (2,300.00)	0.7812
Operative Time, hours, mean (SD)	6.1 (1.8)	5.0 (1.9)	0.0018**
LOS, days, mean (SD)	5.9 (2.8)	4.8 (4.1)	0.1063
Intraoperative Complication	2 (1.7%)	0 (0.0%)	0.3787
30-Day Readmission	5 (4.4%)	5 (11.4%)	0.1030
30-Day Surgical Site Infection	7 (6.1%)	0 (0.0%)	0.0942
30-Day Surgical Site Occurrence	35 (30.4%)	11 (25.0%)	0.4990
30-Day Reoperation	2 (1.7%)	1 (2.3%)	0.8249
30-Day Complication	24 (20.9%)	10 (22.7%)	0.7983

LINEAR REGRESSION

Variable	Total Costs, US $ (95% CI)	p-value	OR Costs, US $ (95% CI)	p-value
PTSMF	-3,165.82 (-9,690.15 to 3,358.51)	0.3392	-317.23 (-1,256.95 to 622.50)	0.5058
Other Covariates Included in Model*	additional procedures, intraoperative complications, locoregional analgesia method, type of component separation, 30-day complications		additional procedures, intraoperative complications, locoregional analgesia method, type of component separation	

**results of linear regression are truncated with effects of each individual covariate not displayed, effect of PTSMF on costs is after controlling for listed covariates*

Conclusions

- Total costs and operative procedural costs don't appear to be influenced by method of mesh fixation
- Cost should not influence decision to select PTSMF or FSMF
- Further study is necessary to determine how patient-reported outcomes are influenced by mesh fixation methods

References

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