Robotic Retromuscular Hernia Repair Optimizes Short Term Outcomes in Higher Risk Patients

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INTRODUCTION

- Robotic retromuscular repairs have improved hernia management in patients by creating smaller incisions, reduced postoperative surgical site occurrences (SSO), and faster recovery (Gokcal 2019, Kudsi 2021).
- Smoking, obesity, diabetes mellitus, and COPD are known risk factors for SSO in open hernia repair.
- Little evidence exists on whether these factors also significantly impact SSO following robotic hernia repair.
- The significance of appropriate preoperative management of obesity and smoking to minimize SSO has been highlighted, however the available data are limited (Jensen 2022).

AIMS

1) Examine whether smoking, obesity, diabetes mellitus, and COPD increase postoperative SSO after robotic retromuscular hernia repair.

2) Compare SSO occurrence between extended totally extraperitoneal (eTEP) and transversus abdominis (TAR) ventral hernia repairs.

MATERIALS AND METHODS

Study Design

- Retrospective review of a prospectively maintained database was conducted for eTEP and TAR ventral hernia repairs.
- Performed at three hospitals within our system from October 2019 to July 2022.

Data Collection

- Patient demographics, preoperative evaluation, operative details, 30-day follow-up, and patient reported outcomes were recorded in the Abdominal Core Health Quality Collaborative (ACHQC) database.

Analysis

- Logistic regression models were used to determine the association between smoking, obesity, diabetes mellitus, and COPD with postoperative SSO.
- Data analysis was performed utilizing IBM SPSS Statistics (Version 28) Statistical Software.

RESULTS

Table 1

Patient characteristics	
Age, mean (SD)	55.07 (12.9)
Gender	
Male	48 (59.3%)
Female	33 (40.7%)
ASA score	
II	25 (30.9%)
III	52 (64.2%)
IV	3 (3.7%)
BMI<40	65 (80.2%)
BMI>40	16 (19.8%)
Tobacco usage	
Nonsmoker	65 (80.2%)
Active smoker	30 (19.8%)
Diabetes	23 (28.4%)
COPD	6 (7.4%)
Type of hernia	
Ventral	9 (11.1%)
Incisional	71 (87.7%)
Surgical procedure	
eTEP	36 (44.4%)
TAR	42 (51.9%)
Mesh Length, mean (SD)	26.16 (6.6)
Mesh Width , mean (SD)	24.52 (6.5)
Postoperative complications	
SSO	9 (11.1%)
Readmission	2 (2.5%)

Table 1. Patient characteristics and postoperative outcomes after robotic retromuscular ventral hernia repair (n=81).

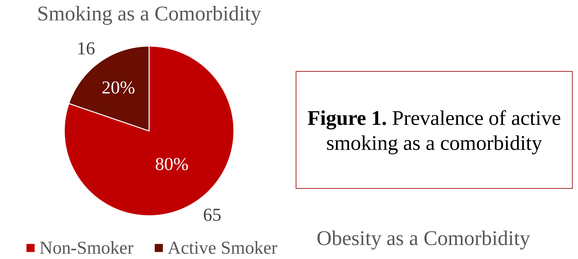


Figure 1. Prevalence of active smoking as a comorbidity

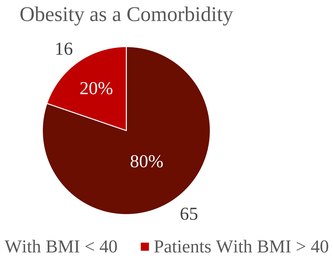


Figure 2. Prevalence of obesity (BMI > 40) as a comorbidity

Table 2

Patient characteristics	BMI < 40(n=65)	BMI > 40 (n=16)	*P*
Age, mean (SD)	56.37 (12.57)	49.81 (13.7)	0.070
Gender			
Male	38 (58.5%)	10 (62.5%)	
Female	27(41.5%)	6 (37.5%)	0.772
ASA score			
II	24 (36.9%)	1 (6.3%)	
III	38 (58.5%)	14 (87.5%)	0.005
IV	2 (3.1%)	1 (6.3%)	
Tobacco usage			
Nonsmoker	53 (81.5%)	12(75%)	
Active smoker	12 (18.5%)	4 (25%)	0.281
Diabetes	21 (32.3%)	2 (12.5%)	0.065
COPD	5 (7.7%)	1 (6.5%)	0.423
Type of hernia			
Ventral	6 (9.2%)	3 (18.8%)	
Incisional	59 (90.8%)	12 (75%)	0.353
Surgical procedure			
eTEP	27(41.5%)	6 (37.5%)	
TAR	38(58.5%)	7 (43.9%)	
Mesh Length, mean (SD)	25.16 (7.08)	27.40 (4.07)	
Mesh Width, mean (SD)	24.63 (6.76)	24.07 (5.18)	
Postoperative complications			
SSO	7(10.8%)	2 (12.5%)	0.350
Readmission	1(1.5%)	1 (6.3%)	0.458

Table 2. Patient characteristics and postoperative outcomes after robotic retromuscular ventral hernia repair comparing obesity (BMI > 40 kg/m^2).

Table 3

	Odds Ratio	95% CI	*P*
BMI>40	0.75	0.13–4.31	0.74
Diabetes	2.04	0.36–11.7	0.42
Active Smoker	2.55	0.27–23.9	0.41
COPD	0.32	0.03–3.93	0.38

Table 3. Logistic regression analysis of predictors associated with surgical site occurrence.

CONCLUSIONS

1) In our study smoking, obesity, diabetes mellitus, and COPD did not predict 30-day follow-up wound complications after robotic retromuscular hernia repair.

2) Current requirements for preoperative comorbidity management may not yield as significant of a benefit as previously thought.

3) Given these findings, patients who are unable to optimize these risk factors may still be offered robotic retromuscular repair without increasing risk of postoperative SSO.

FUTURE DIRECTIONS

- Though this study has a larger sample size and follow-up period than previously reported studies, it may still have failed to detect differences. Long-term SSO will be assessed to allow for analysis of the effect of comorbidities and the necessity of prehabilitation.
- We plan to expand the current ACHQC hernia database to include a larger cohort and improve the duration and quality of follow up. This will be done by interviewing patients at 6 months, 1 year, and 2 years postoperatively.

DISCLOSURES

Dr Stefanidis is a consultant for Applied Medical and Ethicon, and has received research support from Intuitive and Davol.

Dr Ritter is a consultant for Applied Medical and Boston Scientific.

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