BARBED SUTURES IN VENTRAL HERNIA REPAIR: A PROPENSITY-MATCHED ANALYSIS OF THE ACHQC

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Background

Barbed sutures (BS) are widely used across several specialties, but little is known about their impact on open, laparoscopic, or robotic ventral hernia repair (VHR). The aim of this study was to document the outcomes of BS in VHR.

Methods

Study Population

Patients who underwent VHR with fascial closure from 2020 to 2022 from the Abdominal Core Health Quality Collaborative (ACHQC) were included.

Analysis

Propensity score matching (PSM) 1:1 with covariates of age, ASA class, recurrent, wound status, incisional procedure, hernia width, mesh used and type, mesh location, BMI capped at 15-60, and concomitant procedures was performed by operative approach. The primary outcome of interest was operative time, and secondary outcomes were LOS, and SSI, SSO, SSOPI at 30 day follow up.

Results

OR time > 2 hours was less likely for patients with BS compared to NBS for robotic procedures (47% vs 58%; p=0.006) and was not statistically significant for open (57% vs 60%; p=0.2) or laparoscopic (21% vs 15%; p=0.2). LOS was shorter for patients with BS compared to NBS for open procedures (3 vs 4; p=0.003) and was not statistically significant for laparoscopic (0.6 vs 0.5; p=0.3) or robotic (0.9 vs 0.9; p=0.06). Reoperation was more likely for patients with BS compared to NBS for open procedures (3% vs 1%; p=0.03) and was not statistically significant for laparoscopic (1% vs 1%; p=0.3) or robotic (1% vs 1%; p=1).

Results

Other outcomes including SSI, SSO, SSOPI, readmission, and ER Visit had no statistically significant difference for BS or NBS patients across all modalities.

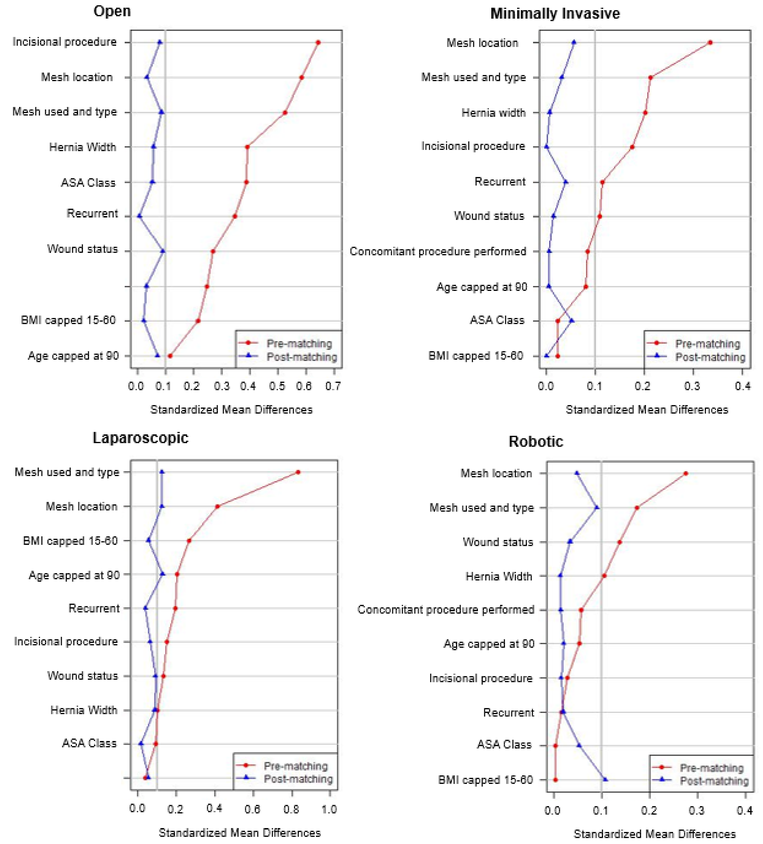


Figure 1: Propensity Score Matching of Barbed Sutures and Non-barbed Sutures across Surgical Approach

Characteristics	Open BS (n=717)	Open NBS (n=717)	*p*	Lap BS (n=126)	Lap NBS (n=126)	*p*	Robot BS (n=272)	Robot NBS (n=272)	*p*
Age, median (IQR)	60 (49-67)	60 (49-68)	0.2	60 (48-70)	54 (44-67)	0.2	57 (45-66)	57 (46-67)	0.8
Male sex, % (*n*)	50 (359)	48 (344)	0.4	52 (66)	48 (60)	0.9	56 (151)	49 (134)	0.1
BMI, *median* (IQR)	32 (28-36)	32 (28-36)	0.7	30 (27-35)	31 (27-35)	0.9	32 (28-36)	32 (28-37)	0.5
ASA class, % (*n*)			0.2			0.6			0.06
1	2 (17)	4 (27)		13 (16)	8 (10)		7 (20)	4 (10)	
2	29 (210)	26 (183)		37 (46)	42 (53)		50 (135)	51 (138)	
3	66 (470)	68 (491)		48 (61)	48 (60)		41 (111)	45 (122)	
4	3 (20)	2 (16)		2 (3)	2 (3)		2 (6)	0 (1)	
Hernia Width, median cm (IQR)	8 (5-12)	8 (3-14)	0.7	2 (2-4)	2 (2-4)	0.6	4 (2-7)	4 (2-7)	1
Myofascial release, % (*n*)	49 (351)	59 (421)	<0.001	10 (13)	2 (2)	<0.003	36 (98)	31 (85)	0.2
Permanent Mesh Used, % (*n*)	80 (575)	81 (584)	0.3	89 (112)	85 (107)	0.6	91 (248)	93 (252)	0.6
OR Time > 2 hours, % (*n*)	57 (409)	60 (423)	0.2	21 (26)	15 (19)	0.2	47 (127)	58 (159)	0.006

Table 1. Demographics, comorbidities, and perioperative characteristics of PSM cohorts

30-day Outcomes	Open BS (n=717)	Open NBS (n=717)	*p*	Lap BS (n=126)	Lap NBS (n=126)	*p*	Robot BS (n=272)	Robot NBS (n=272)	*p*
LOS, mean days SD	3±4	4±4	0.003	0.6±1.2	0.5±1.3	0.3	0.9±2.8	0.9±1.5	0.06
SSI, % (n)	5 (35)	7 (51)	0.07	5 (35)	7 (51)	0.07	0 (2)	1 (7)	0.09
SSO, % (n)	13 (93)	13 (94)	0.9	4 (5)	5 (6)	0.8	8 (22)	10 (28)	0.4
SSOPI, % (n)	8 (55)	8 (56)	0.9	1 (1)	0 (0)	0.3	1 (3)	2 (6)	0.3
Reoperation, % (*n*)	3 (22)	1 (10)	0.03	1 (1)	1(1)	0.3	1 (2)	1 (2)	1
Readmission, % (*n*)	5 (38)	5 (38)	1	3 (4)	4 (5)	0.8	3 (7)	1 (4)	0.4
ER Visit, % (*n*)	8 (56)	6 (44)	0.2	3 (4)	6 (7)	0.4	5 (13)	4 (12)	0.8

Table 2. Univariate analysis of postoperative complications within 30 days of surgery.

Conclusions

The usage of BS may reduce OR time for robotic procedures but has little effect on open or laparoscopic procedures. Further studies are required to validate these findings.

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