Effect of mesh type and fixation method on early pain and surgical outcomes post laparoscopic ventral and incisional hernia repair (LVIHR)

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Introduction

Pain after laparoscopic ventral and incisional hernia repair(LVIHR) has been largely attributed to the mesh fixation technique.

The choice of the mesh (bio-materials, size and shape) and fixation methods (such as titanium tacks and absorbable tacks) are considered crucial issues to achieve optimal results, and reduce complication and recurrence rates.

Objectives

Primary outcome: Compare the severity of early postoperative pain with two types of mesh and two techniques of fixation.

Secondary Outcomes: Operative time, Intraoperative complications, hospital stay, seroma formation, wound infections, and recurrence

Methods

Study type: Retrospective analysis of patients underwent LVIHR between 2011 and 2016

Comparison groups: Data were analysis based on:
Technique of mesh fixation:

Absorbable Tacks (AT) vs. non-absorbable Tacks (NAT)
Mesh type: PhysioMesh™ vs. Proceed mesh.

Pain score was evaluated on Visual analogue Score (VAS) ranging from no pain (0) to worst possible pain (10). P-value < 0.05 were considered to be significant. All data are represented as mean ± standard deviation

Results

Table 2. Comparison of preoperative demographics

	Total (n=56)	Proceed (n=42)	PhysioMesh (n= 14)	P Value	Non-absorbable Tack (n=15)	Absorbable Tack (n= 41)	P Value
Age (years)	57.2 ± 14	57±14.1	57.5±14.8	0.9	55.8±17.5	57.6±13	0.3
Male	26(46.5%)	20	6	0.6	11	15	0.01*
Female	30(53.5%)	22	8	0.8	4	26	0.02*
BMI(Kg/M²)	33.7±7.2	33.7±7.4	33.4±7.1	0.9	35.2±8.1	33.2± 7.1	0.5
Incisional	44(78.5%)	34	10	0.4	11	33	0.7
Primary ventral	12(21.5%)	8	4	0.4	4	8	0.5
Supra-umbilical (M2)	2(3.5%)	2(5%)	0	0.4	1(7%)	1(2%)	0.4
Umbilical (M3)	20(36%)	15(36%)	5(36%)	1.0	5(33%)	15(37%)	0.8
Infra-umbilical (M4)	21(38%)	16(38%)	5(36%)	0.9	6(40%)	15(37%)	0.8
Suprapubic (M5)	3(5.3%)	2(5%)	1(7%)	0.8	1(7%)	2(5%)	0.8
Subcostal (L1)	4(7.1%)	3(7%)	1((7%)	1.0	1(7%)	3(7%)	1.0
Flank (L2)	4(7.1%)	3(7%)	1(7%)	1.0	1(7%)	3(7%)	1.0
Iliac(L3)	2(3.5%)	2(5%)	0	0.4	0	2(5%)	0.4

Table 2. Comparison of operative & postoperative data

	Total (n=56)	Proceed (n=42)	PhysioMesh (n= 14)	P Value	Non-absorbable Tack (n=15)	Absorbable Tack (n= 41)	P Value
Size of defect (cm²)	60.9 ± 60.3	67.5± 67	44.8±35.3	0.4	32.2±33.1	67.3±65	0.3
Mesh size (cm²)	273±155	272±174	238± 119.2	0.5	268±180.4	274±149.8	0.9
Operative time (min)	127±76	128±74	124±78.3	0.8	127±74.3	127±77.9	0.8
Bleeding	3(5.3%)	2(5%)	1(7%)	0.7	1(7%)	2(5%)	0.7
Hospital stay	2.8±2.2	2.8±2.3	2.9±1.9	0.9	2.9±2.3	2.6± 2.0	0.4
Bowel injury	2(3.5%)	2(5%)	0	0.4	1(7%)	1(2%)	0.4
Seroma	10(10%)	5(12%)	5(36%)	0.02*	2(13%)	8(20%)	0.6
Wound infection	4(7%)	1(2%)	3(21%)	0.01*	1(7%)	3(7%)	0.1
Recurrence	4(7%)	1(2%)	3(21%)	0.01*	1(7%)	3(7%)	0.1

Postopeartive pain scores in relation to fixation technique

Postoperative pain scores inrelation to mesh type

Post opearive pain intensity scores

Conclusion

AT mesh fixation method was associated with higher postoperative pain intensity compared to NAT fixation during the first 48 hours independent of mesh type; however, it was similar at 4 weeks. PhysioMesh™ was associated with higher recurrence rate and seroma formation compared to the proceed mesh.