A Novel Hybrid Approach to the Repair of Flank Hernias

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INTRODUCTION

- Flank hernias are uncommon and traditionally approached with an open technique directly overlying the hernia.
- Causes of flank hernias:
  - Incisional – nephrectomy, spinal surgery, retroperitoneal aortic surgery
  - Denervation – injury to lateral abdominal wall nerves
  - Traumatic – tearing abdominal wall muscles from the iliac crest
- Repair approach differs in comparison to anterior abdominal wall hernias:
  - Requires dissection laterally into the retroperitoneum
  - Mesh placement is limited by boney structures such as the iliac crest and lower rib cage
- The purely open approach:
  - Attempts to stay retroperitoneal
  - Synthetic mesh is placed in the preperitoneal space and extends to the retroperitoneum
  - Choice of onlay mesh and need for plication is individualized
- The purely laparoscopic approach:
  - Inability to easily plicate muscles
  - Increasing recurrence of denervation hernias

METHODS

- Qualitative single-center retrospective review
- Patients received a “hybrid” surgical approach from 2014 to 2020
- Categorical variables compared with Pearson’s chi-square or Fisher exact

OPERATIVE TECHNIQUE

- Positioned with bump ipsilateral to hernia and partial lateral decubitus
- Skin flaps raised and hernia sac dissected out
- Dissection carried into the retroperitoneal space to the paraspinus muscles posteriorly
- Peritoneum entered to accommodate robotic trocars
- Mesh placed to overlap above the rib margin, into the pelvis, across midline and over the quadratus and psoas muscles
- Synthetic microporous midweight mesh was used and fixed with three permanent transfascial sutures
- Onlay mesh placed – microporous polypropylene or Synecor Pre
- Skin flaps closed and drain placed in subcutaneous space or quilting
- Robot docked and intraperitoneal mesh secured
- Sterile dressing and wound vac applied

RESULTS

Table 1: Demographics

Characteristic	n (%)
No. of patients	25
Age, yr	
Mean	58.8±13.2
Range	18–76
Sex	
Male	13 (52.0)
Female	12 (48.0)
BMI class	
<25	3 (12.0)
25-29	6 (24.0)
30-34	10 (40.0)
35-39	5 (20.0)
40-44	1 (4.0)
Current smoker	0 (0.0)
Diabetes mellitus	6 (24.0)
Hypertension	18 (72.0)
Hyperlipidemia	16 (64.0)
COPD or asthma	3 (12.0)
Chronic pain	12 (48.0)

Table 2: Defect Size

	Length (cm)	Width (cm)	Area (cm^2)
3	12.0	7.0	84.0
4	7.0	15.0	105.0
6	12.0	5.0	60.0
8	4.0	7.0	28.0
11	10.0	15.0	150.0
12	25.0	13.0	325.0
16	12.0	15.0	180.0
18	12.0	20.0	240.0
19	15.0	8.0	120.0
20	25.0	15.0	375.0
23	15.0	15.0	225.0

Table 3: Perioperative Data

Characteristics	n (%)
Prior abdominal or flank surgery	23 (92.0)
Prior hernia repair	7 (28.0)
Hernia type	
Traumatic	5 (20.0)
Denervation	8 (32.0)
Incisional	18 (72.0)
Defect size	
Mean length (cm)	13.5±6.5
Mean width (cm)	12.3±4.7
Mean area (cm^2)	172.0±109.9
Range (cm^2)	28.0–375.0
Intraperitoneal meshes	
Symbotex	1 (4.0)
Synecor IP	22 (88.0)
Ventralight ST	2 (8.0)
Onlay meshes	
Bard Soft	15 (60.0)
Synecor Pre	10 (40.0)
Drain placed	8 (32.0)
Subcutaneous skin flap quilting	17 (68.0)
Negative pressure wound vac	8 (32.0)
Length of stay, days	
Mean	4.3±1.1
Range	2.0–6.0

Table 4: Postoperative Complications

Complication	Total (N=25)	Drain group (n=8)	Quilting group (n=17)	P-value
Seroma, n (%)	4 (16.0)	1 (12.5)	3 (17.6)	0.618
Hematoma, n (%)	3 (12.0)	0 (0.0)	3 (17.6)	0.296
Wound infection, n (%)	2 (8.0)	0 (0.0)	2 (12.5)	0.435
Mesh infection, n (%)	0 (0)	0 (0.0)	0 (0.0)	1
Persistent pain, n (%)	5 (25.0)	2 (25.0)	3 (17.6)	0.525
Recurrence, n (%)	1 (4.0)	0 (0.0)	1 (5.9)	0.680

DISCUSSION

- Seromas (16%) and hematomas (12%) were the most common complications. These rates were comparable to other large hernia repairs requiring musculocutaneous flaps.
- Incidence of seroma (P=0.618) or hematoma (P=0.296) was greater with quilting though not statistically significant
- Two patients with wound infection complications, concomitant seroma. Both required debridement and drain placement.

CONCLUSION

The “hybrid” approach to flank hernia repair is safe with similar outcomes to open repair