

# Retro-rectus Placement of Bio-absorbable Mesh Improves Patient Outcomes

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## Introduction

Previous studies suggest the use of absorbable synthetic mesh for contaminated and high-risk wounds as a safe alternative to biologic or permanent synthetic mesh in open complex ventral hernia repairs.<sup>1</sup> However, there is little consensus on the ideal placement of bio-absorbable mesh for a successful abdominal wall reconstruction in open complex ventral hernia repairs. The most common positions are onlay, intraperitoneal, preperitoneal, or retro-rectus. Our primary objective was to determine the long-term surgical outcomes of retro-rectus and intraperitoneal placement of mesh.

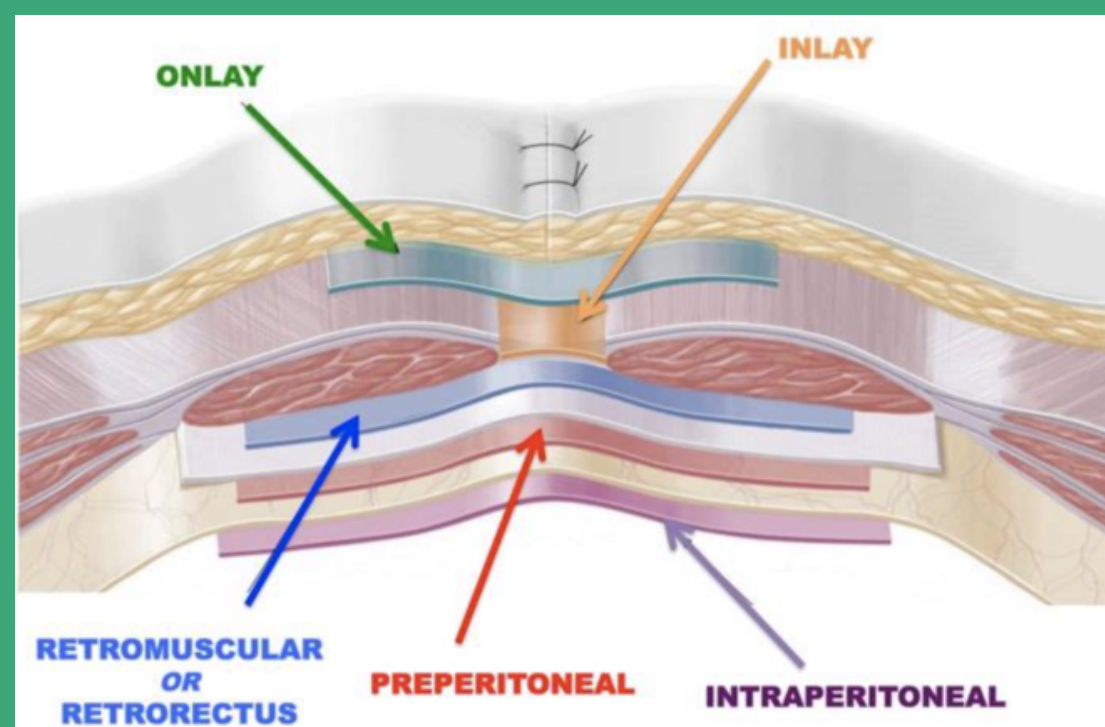


Figure 1. Different types of mesh positions. (Consensus International Hernia Collaboration, Muysums et al. 2017)

## Methods

- Retrospective review of patients who underwent open complex ventral hernia repair using bio-absorbable mesh (Bio-A, Gore, Flagstaff, AZ) from September 2011 to January 2015.
- Patient demographics, perioperative details, postoperative complications (up to 24 months), Centers for Disease Control wound type, and Hernia Working Group wound class<sup>4</sup> were collected.
- Hernia-related quality-of-life surveys (HerQLes)<sup>2</sup> were used preoperatively and post-operatively to assess quality of life.
- Follow-up either in person or by validated phone questionnaire.<sup>3</sup>

## Results

Table 1. Patient Data and Demographics

Variable	Cumulative	Intraperitoneal	Retro-rectus	p value
Subjects N (%)	81 (100%)	7 (8.6%)	74 (91.4%)	-
Female	54 (66.7%)	3 (42.9%)	51 (68.9%)	0.16
Age (years)	56.5 (±11.7)	60.1 (±6.1)	56.2 (±12.0)	0.17
Pre-op BMI (kg/m <sup>2</sup> )	34.9 (±8.4)	36.1 (±8.7)	34.7 (±8.4)	0.69
Caucasian	72 (88.9%)	4 (57.1%)	68 (91.9%)	0.005
Recent smoker (w/in 1 mo)	9 (11.1%)	0 (0%)	9 (12.2%)	0.33
Size of defect (cm <sup>2</sup> )	148.2 (±123.3)	63.9 (±59.3)	156.2 (±125.0)	0.058
Bio-A mesh size (cm <sup>2</sup> )	414.0 (±202.2)	346.1 (±265.9)	420.4 (±196.2)	0.50
ASA 3	59 (72.8%)	7 (100%)	53 (71.6%)	0.15
Length of Stay (days)	6.4 (±3.0)	7.9 (±5.8)	6.3 (±2.6)	0.50
OR Time (min)	490.1 (±159.7)	531.3 (±229.7)	486.7 (±154.2)	0.51

Table 2. Surgical Outcomes

Variable	Cumulative	Intraperitoneal	Retro-rectus	p value
Perioperative complications	1 (1.2%)	0 (0%)	1 (1.4%)	1.00
30-day complications	10 (12.3%)	1 (14.3%)	9 (12.2%)	0.87
30-days to 12mo complications	3 (3.7%)	0 (0%)	3 (4.1%)	0.59
12mo to 24 mo complications	0 (0%)	0 (0%)	0 (0%)	-
<b>Recurrent midline hernia</b>	<b>9 (11.1%)</b>	<b>3 (42.9%)</b>	<b>6 (8.1%)</b>	<b>0.005 *</b>

Table 3. Symptomatic Outcomes (HerQLes Survey)

HerQLes (6pt scale)	Time frame	Mean (SD)	p value
Intraperitoneal	Baseline	43.5 (17.8)	-
	3 month	37.5 (18.9)	0.87
	<b>6 month</b>	<b>41.5 (16.8)</b>	<b>&lt;0.01 *</b>
Retro-rectus	Baseline	49.0 (8.1)	-
	<b>3 month</b>	<b>33.5 (29.1)</b>	<b>0.01 *</b>
	6 month	34.6 (11.3)	0.09

Reported as mean (SD) using two sample t-tests. Measurements compared against baseline. Two-tailed p-value reported. Range (12, poor quality-of-life to 72, excellent quality-of-life). \*p value < 0.05

- Average follow-up rate was approximately 22 months.
- One-year follow-up was 55.4%.

## Conclusions

- I. Patients who underwent open complex ventral hernia repairs with bio-absorbable mesh in either the retro-rectus or intraperitoneal position had acceptable post-operative complication rates.
- II. Despite a larger hernia defect, the retro-rectus group had significantly lower recurrence rates.
- III. There is a potential bias in the peritoneal placement of bio-absorbable mesh. Although placement of mesh was at the discretion of the attending surgeon, retro-rectus placement was the preferred position.
- IV. More complex cases with greater posterior sheath destruction likely necessitated intraperitoneal mesh placement. It is difficult to determine if higher recurrence rate is due to complexity of hernia or anatomical position of mesh.

## References/Acknowledgments

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