Outcomes Following Ventral Hernia Repair Using Biosynthetic Absorbable Mesh For Large And Complex Abdominal Wall Defects.

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Introduction

Ventral hernia repair in patients at high risk of post-operative complications poses a significant challenge. Mesh reinforcement is often required to facilitate a tension free hernia repair. Selecting an appropriate reinforcement material is fundamental to prevent recurrence and complication.

Early indications suggest that biosynthetic mesh may represent an improvement on biologic prostheses, however, there is a paucity of data regarding clinical outcomes with such materials. We present a large single centre series of complex ventral hernia repair using a Polyglycolic acid:Trimethylene carbonate (PGA:TMC) biosynthetic mesh (Gore® Bio-A® Tissue Reinforcement).

Aims and Objectives

This aim of this study is to evaluate the use and performance of PGA:TMC biosynthetic mesh for the reinforcement of the midline fascial closure in single-staged repair of complex ventral hernias in predominantly high risk patients.

Methods

A retrospective review was undertaken. All adult patients with complex ventral hernia as defined in literature[1], who underwent a planned open single-staged ventral hernia repair with a single unit of PGA:TMC biosynthetic mesh between May 2013 and August 2017 were included. Data on outcome variables were recorded and quality of life (QoL) assessment undertaken by Short Form-12 (SF-12) instrument.

Table 1. Patient Demographics and Comorbid Conditions (N=56).

Preoperative variables (median)	
Age, y (range)	63 (25-84)
Sex (female), n (%)	31 (55.4)
Body mass index, kg/m^2 (range)	29 (19-37)
Recurrent hernia repaired, n (%)	14 (25)
Comorbid conditions, n (%)	
ASA Grade	
I	3 (5.4)
II	36 (64.3)
III	16 (28.6)
IIII	1 (1.8)
Previous abdominal wall infection	17 (30.4)
Obesity	22 (39.3)
Inflammatory bowel disease	6 (10.7)
Active smoking	13 (23.2)
Diabetes mellitus	14 (25)
Chronic obstructive pulmonary disease	10 (17.9)

Results

Overall, 56 patients underwent an abdominal wall reconstruction procedure for complex ventral hernia. All meshes were placed in the retrorectus position. Some 39% (n=22) underwent component separation. The majority of patients (86%, n=48) had high risk (grade 2 or 3) hernias according to Ventral Hernia Working Group classification[2].

Overall, hernia recurrence rate was 3.6% (n=2). Post-operative surgical site infection (SSI) occurred in 27% (n=15). No patients required mesh removal. Median follow up by clinical examination was 6 months (range, 4-17 months). Median telephone follow-up was 21 months (range, 4-54 months). Pre and post treatment SF-12 QoL demonstrated significant improvements in both the physical and mental components. Median time to QoL assessment post-operatively was 21 months (range 4-54).

Table 2. Wound and Hernia characteristics (N=56).

VHWG grade, n (%)	
Grade 1	8 (14.3)
Grade 2	28 (50)
Grade 3	20 (35.7)
CDC wound classification, n (%)	
Clean (Class I)	43 (76.8)
Clean-contaminated (Class II)	12 (21.4)
Contaminated (Class III)	1 (1.8)
Reasons for contamination, n (%)	
Presence of stoma	9 (16.1)
Bowel resection	0 (0)
Infected mesh removal	2 (3.6)
Repair of gastrointestinal fistula	2 (3.6)
Non healing abdominal wound	0 (0)
Ostomy reversal	3 (5.4)
Parastomal hernia repair	4 (7.1)
Urological and gynaecological procedure	1 (1.8)
Cholecystectomy	2 (3.6)
Other	3 (5.4)
Hernia defect characteristics, median (range)	
Defect size (cm^2)	83 (22 - 442)
Defect width (cm)	8 (4 - 32)
Defect length (cm)	10 (4 - 23)

*Patients may have had more than one reason for contamination
VHWG indicates Ventral Hernia Working Group[2]
CDC indicates Centres For Disease Control[3]

Table 3. Operative Characteristics (N=56).

Component separation, n (%)	
Posterior TAR and Anterior	3 (5.4)
Posterior TAR	15 (26.7)
Anterior	4 (7.2)
Stoppa alone	34 (60.7)
Placement of mesh n (%)	
Retrorectus location	56 (100)
Median hospital stay, d (range)	7 (3-63)
Median days to drain removal, d (range)	14 (2-78)

Table 4. Postoperative Wound Events (Surgical Site Occurrence (SSO)) and Surgical Site Infections (SSI) (n=56).*

Wound events (SSO)**, n (%)	
Surgical site infection	15 (26.8)
Seroma	18 (32.1)
Fistula	0 (0)
Bowel obstruction	0 (0)
Wound dehiscence	7 (12.5)
Hematoma	5 (8.9)
Postoperative infection (SSI)***, n (%)	
Superficial incisional infections	6 (10.7)
Deep incisional infections	9 (16.1)
Organ space infections	0 (0)
Hernia Recurrence, n (%)	2 (3.6)

*Patients may have had more than one wound event
**Reported based on Ventral Hernia Working Group (VHWG) definition[2]
***Reported based on Centres for Disease Control (CDC) criteria[3]

Table 5. Mean Short Form-12 QoL Outcomes (N=34).

	Baseline (n=34)	Post-op (n=34)
SF-12 Physical	36.1	42.3*
SF-12 Mental	40.8	49.4*

*P <0.001

Conclusion

This retrospective study is the largest single centre study to report outcomes related to the use of a biosynthetic mesh in complex ventral hernia repair. Our data indicate low hernia recurrence and significant improvements in quality of life with this approach. Larger well controlled studies with longer follow-up are needed for confirmation of these findings.

References

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3. Mangram AJ, Horan TC, Pearson ML, et al. Guideline for prevention of surgical site infection, Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol. 1999;20:250-278.