Abdominal Wall Reconstruction with Biological Mesh is a Durable and Safe Technique in Patients Undergoing Cytoreductive Surgery

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Introduction

Abdominal wall reconstruction (AWR) is frequently necessary in patients undergoing cytoreductive surgery (CRS) due to abdominal wall tumor infiltration and/or preexisting incisional hernias. The use of biological mesh is attractive as it avoids both placing a synthetic mesh directly on small bowel and opening additional tissue planes for autologous reconstruction in a patient with peritoneal metastases. Strattice® is a porcine-derived acellular dermal matrix, which is expected to have a lower rate of complications compared to other biological meshes. The purpose of this study is to evaluate perioperative and long-term complications of biological mesh AWR in patients undergoing CRS.

Methods

This was a descriptive study and retrospective review of all patients undergoing an attempt at cytoreductive surgery. They were identified from a single-institution, de-identified prospective database. Patients receiving a biological mesh implant for abdominal wall or diaphragm reconstruction were analyzed retrospectively to determine mesh-related postoperative complications and long-term presence of cancer and hernia recurrence. No hypothesis testing was conducted. This was IRB exempt.

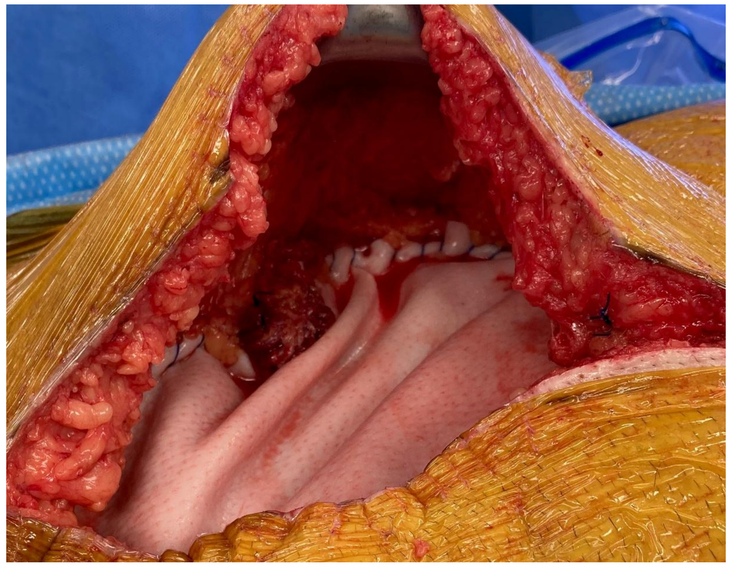

Table 1: Postoperative Complications

Complication	90 day (n=50)
None	18 (36%)
Grade 1-2	18 (36%)
Grade 3-4	14 (28%)
Mortality	0
Readmission	12 (24%)
Reoperation	7 (14%)
Anastomotic Leak	1 (2%)
Enterocutaneous fistula	2 (4%)
Mesh Dehiscence	2 (4%)
Mesh Infection	10 (20%)
Mesh Loss	1 (2%)

Results

- Between May 2017 and December 2023, 483 patients with peritoneal metastases were explored with an intent of completing CRS. CRS was completed in 415 patients and 46 patients completed CRS with biological mesh (Strattice®) who underwent 50 unique cytoreductive surgical procedures
- Peritoneal metastases were of appendiceal (n=25), colorectal (n=20), ovarian (n=2), mesothelial (n=2), or pancreatic (n=1) origin
- Use of biological mesh was required to reconstruct existing incisional or stoma site hernia (n=20), an abdominal wall defect created from resecting tumor (n=41), and/or diaphragmatic defect from resecting tumor (n=2)
- Grade 1 or 2 complications included wound cellulitis, seroma, urinary tract infection, and prolonged ileus
- Mesh related infectious complications included wound cellulitis (n=2) and infected seromas (n=3), which were all managed successfully with antibiotics and/or drainage
- Eleven of the 12 patients with mesh related complications recovered with intact, durable mesh reconstructions
- Among 47 patients with follow up imaging, five patients (10%) developed incisional hernias and 3 patients (6%) developed abdominal wall recurrence

Conclusions

In patients undergoing AWR with biological mesh, the presence of perioperative complications in patients undergoing CRS appears to be low. The biological mesh reconstruction is durable with low risk of incisional hernia.