

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

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. 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 of all patients undergoing an attempt at cytoreductive surgery who were identified from a single-institution, prospective de-identified database. Patients receiving a biological mesh implant for abdominal wall or diaphragm reconstruction were analyzed retrospectively from May 2017 through December 2023 to determine mesh-related postoperative complications and long-term presence of cancer and hernia recurrence.

Results: Cytoreductive surgery was completed in 415 patients with peritoneal metastases and biological mesh (Strattice®) was implanted in 46 patients who underwent 50 (12%) unique cytoreductive surgical procedures. Use of the biological mesh was required to reconstruct the abdominal wall for an existing incisional or stoma site hernia (n=20), an abdominal wall defect created from resecting tumor (n=41), and/or a diaphragmatic defect created from resecting tumor (n=2). No perioperative deaths occurred within the first 90 days of surgery. Perioperative complications occurred in 32 (64%) of patients including 18 (36%) with grade 1 or 2 complications (wound cellulitis, urinary tract infection, and prolonged ileus). Grade 3 or 4 complications occurred in 14 (28%) patients. Mesh related complications occurred in 12 (24%) patients leading to reoperation in 7 patients. Ultimately 11 of the 12 patients with mesh-related complications recovered with intact, durable mesh reconstruction after appropriate interventions. Median follow-up was 21 months and 47% of patients had at least one CT surveillance exam. Five (10%) patients developed incisional hernias and 3 (6%) had abdominal wall disease recurrence.

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