CASE NOTE

Minimal abdominal adhesions after Sepramesh repair of a parastomal hernia

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Postoperative adhesions are a major cause of morbidity and mortality in surgical patients. The use of prosthetic meshes in abdominal surgery increases the formation of adhesions by triggering an inflammatory reaction to a foreign body. Although several animal studies have shown that implantation of the composite polypropylene and hyaluronate-carboxymethylcellulose mesh Sepramesh (Genzyme Biosurgery) results in decreased adhesion formation, there is no evidence of this in human studies. To our knowledge, the present case represents the first report of minimal adhesions in an abdomen in which Sepramesh was previously implanted.

Case report

A 58-year-old woman who had undergone a defunctioning loop sigmoid colostomy for neurogenic fecal incontinence presented with a pericolostomy hernia and 2 incisional hernias. As the pericolostomy hernia was impairing function of the ostomy appliance, we scheduled her for surgery.

We conducted open revision of the colostomy with repair of the pericolostomy and incisional hernias. Upon laparotomy, we found abdominal adhesions, which we were able to take down, mostly by blunt dissection. Using Zühlke's grading system,[1] we estimated the adhesions to be grade 1 (Box 1). We resected the original colostomy and created a new one on the opposite side of the abdomen. We were unable to perform a primary closure because the fascia would have been under tension. Therefore, we sutured a 9×5 inch ellipse of Sepramesh subfasically to obtain closure.

A year later, the patient returned with a second pericolostomy hernia at the new colostomy site. We conducted open revision via a midline abdominal incision by dissecting the deep fascia of the abdomen. We opened the fascia and Sepramesh with sharp dissection. Upon entering the peritoneal cavity, we anticipated finding extensive adhesions owing to the previous 2 colostomies and a surgical history of tubal ligation, hysterectomy and bilateral salpingo-oophorectomy. However, we found minimal intraperitoneal adhesions that were easily taken down, mostly by blunt dissection. Again, using Zühlke's grading system,[1] we estimated the adhesions to be grade 1 (Box 1). They covered less than 25% of the mesh surface area.

Box 1. Grading system for intra-peritoneal adhesions

Grade	Observation
0	No adhesions
1	Filmy adhesions: easy to separate by blunt dissection; no vascularization
2	Stronger adhesions: blunt dissection possible but partly sharp dissetion possible (beginning of vascularization)
3	Strong adhesions: lysis possible but sharp dissection only; clear vascularization
4	Very strong adhesions: lysis possible by sharp dissection only (organ strongly attached with severe adhesions and damage of organs hardly preventable)

Discussion

Prosthetic meshes are often required to repair abdominal wall hernias and are manifold in composition. The most commonly used meshes are made of polypropylene and include Prolene (Ethicon Inc.). These meshes are strong, inexpensive, easy to work with and have excellent tissue incorporation. Polypropylene meshes, however, have a high rate of adhesion formation to underlying tissues in animal models.[2] Recently, composite meshes that

incorporate less reactive biomaterials onto the intraperitoneal surface have been developed. Sepramesh is a dual-component mesh composed of macroporous polypropylene coated with a bioresorbable, nonimmunogenic membrane of sodium hyoluronate and carboxymethylcellulose. This membrane turns to gel within 48 hours, remains on the mesh for about 7 days and is cleared from the body within 28 days.[3]

Animal data suggest there is decreased adhesion formation with Sepramesh compared with single-component mesh.[4] In addition, a small number of studies in humans have shown that implantation of a single-component sodium hyaluronate–carboxymethylcellulose membrane (Seprafilm) decreases adhesions and complications of adhesions after abdominal surgery.[5] However, we could find no clinical data in the medical literature to support or refute the hypothesis that the use of Seprafilm results in decreased adhesions to polypropylene mesh.

To our knowledge, the present case is the first report describing the extent of adhesion formation in a patient with previous implantation of Sepramesh. Our patient had a history of abdominal surgeries, which placed her at greater risk for intra-abdominal adhesions. At the time of Sepramesh implantation, we graded her abdominal adhesions as minimal and were able to take them down mostly with blunt dissection. Surprisingly, when we entered the abdomen for a fifth time to repair the second paracolostomy hernia, we found adhesions that were not well formed and completely free of vasculatization. We took down most adhesions with blunt dissection. Moreover, the adhesions covered less then 25% of the surface area of the mesh and were graded at 1, according to Zühlke's grading system.

Our review of the literature suggests that, although there is a sound theoretical basis for the use of composite prothetics, a lack of clinical data exist to support or refute their use. Whereas our patient's case may suggest successful prevention of adhesions, more clinical data are needed to determine the true impact of such materials to justify their routine use. To achieve this, we suggest a registry be initiated to catalogue abdominal adhesions in patient undergoing relaparotomy.

Competing interests: None declared.

References

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