Int Urogynecol J (2007) 18:1499–1501
DOI 10.1007/s00192-007-0403-z

CASE REPORT

Rectal erosion of synthetic mesh used in posterior colporrhaphy requiring surgical removal

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Received: 23 March 2007 / Accepted: 15 May 2007 / Published online: 16 June 2007

Abstract Treatment of pelvic organ prolapse with transvaginally placed synthetic mesh has recently increased. Several reports of complications have surfaced raising the overall question of safety regarding its use for vaginal prolapse repair. This case report describes a rectal erosion and dyspareunia that resulted from mesh placed into the posterior vaginal wall. A 47-year-old woman underwent a laparoscopic supracervical hysterectomy and a posterior repair with polypropylene mesh resulting in a rectal erosion. Despite removal of all of the mesh that could be excised rectally resulting in a healed rectal mucosa, the patient had persistent dyspareunia and pain requiring complete removal of the mesh using a vaginal approach. After surgery, the patient had resolution of all her symptoms. Further studies of transvaginally placed synthetic mesh need to be performed to determine its safety and efficacy.

Keywords Synthetic mesh · Erosion · Dyspareunia · Rectocele · Prolapse · Posterior repair

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Introduction

An estimated 11% of women will require surgery for pelvic floor dysfunction with 29% requiring at least a second surgery [1]. To improve upon the results obtained with the use of native tissue, many surgeons have turned to different graft materials, especially synthetic mesh. Polypropylene mesh has been widely used and studied in such procedures as abdominal sacral colpopexies and numerous mid-urethral slings. Over the last several years, the use of polypropylene mesh has been extended to augment vaginal repair of the anterior and/or posterior vaginal wall. However, the use of polypropylene mesh placed vaginally has not been as well studied and questions of its safety remain. The purpose of this report is to present a case of rectal erosion, severe dyspareunia, and vaginal pain associated with vaginal placement of polypropylene mesh requiring complete removal after partial resection.

Case

The patient was a 47-year-old woman with a history of three vaginal births who had dysmenorrhea and menometrorrhagia associated with a leiomyomatous uterus as well as a rectocele on examination. At a community hospital, she underwent a laparoscopic supracervical hysterectomy followed by a posterior repair augmented with a polypropylene mesh. As described by the operative note after completion of the supracervical hysterectomy, a posterior repair was performed via a transverse incision over the posterior fourchette with the vaginal epithelium dissected from the vaginal fibromuscularis laterally to the ischial spines. Gynemesh™ polypropylene mesh was then secured to the

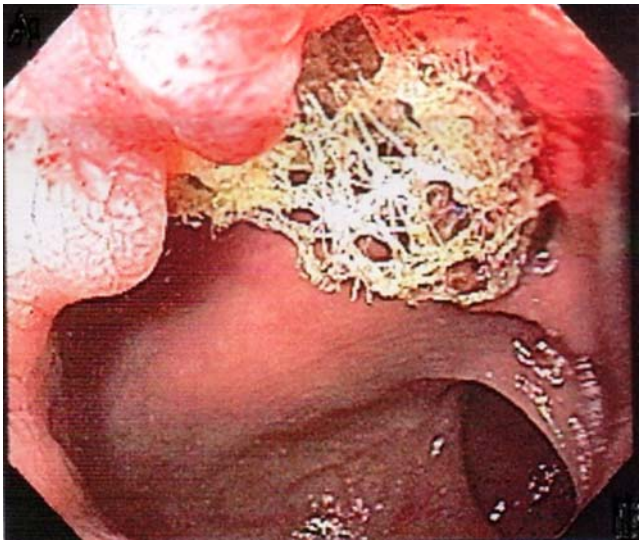

Fig. 1 View of eroded mesh through anterior rectal wall on sigmoidoscopy

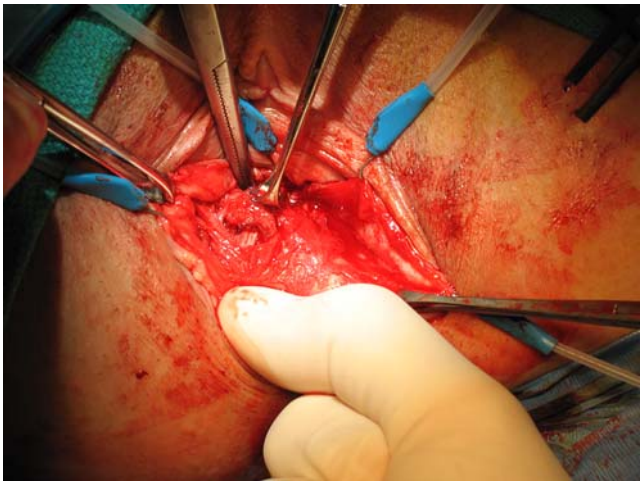

Fig. 2 Intraoperative removal of mesh with index finger placed into rectum

ischial spines using a ProTack™ instrument to apply helical fasteners to the mesh. The vaginal epithelium was then closed with interrupted stitches of 2-0 polyglactin sutures.

After 4 months, the patient noted rectal bleeding, persistent diarrhea, and worsening dyspareunia. She presented to the colorectal service where rigid sigmoidoscopy revealed mesh eroding through the anterior rectal mucosa just above the dentate line approximately 2 cm in diameter (see Fig. 1). The rest of the study was otherwise unremarkable. Once the diagnosis of rectal mesh erosion was made, a conservative approach to remove the mesh was attempted by transrectal resection of the exposed mesh leaving the vaginal epithelium intact and the defect to heal by secondary intention.

After the operation, the rectal bleeding and diarrhea had ceased. However, the patient's dyspareunia continued, and she developed vaginal pain over the entire posterior vaginal wall which did not improve after several months of observation. She was then referred to the gynecology service for consultation. On examination, the patient was found to have severe tenderness to palpation over the posterior vaginal wall with palpable but unexposed mesh. Additionally, the patient was found to have cervical motion tenderness without any gross evidence of infection. After counseling, the patient agreed to surgical removal of the mesh along with trachelectomy, as the cervix was thought to be a contributing factor to the dyspareunia.

In the operating room, both the gynecology and colorectal service were involved in a joint effort. A trachelectomy was performed first with no noted involvement of the mesh or any sign of infection. A vertical midline incision was made through the posterior vaginal epithelium. The vaginal epithelium was then dissected from the fibromuscularis laterally. An Allis clamp was then used to grasp the mesh where it was palpable and elevate the tissue. Metzenbaum scissors were then used to cut down onto the mesh to free the distal edge (see Fig. 2) and dissect the mesh off of the rectovaginal septum over a finger placed into the rectum. Complete resection of the mesh to the sidewalls was performed. Because the mesh had become incorporated into the rectal submucosa, it was necessary to resect a full-thickness portion of the anterior rectal wall 4 cm proximal to the anus. Repair of the rectum was performed with an interrupted 2-0 polyglactin suture. A proctoscope was then used to assure a water-tight closure. This was followed by a site-specific posterior repair with a running 2-0 polyglactin suture bringing the fibromuscularis over the repaired rectum. The vaginal epithelium was then closed with a running 2-0 polyglactin suture. The patient recovered uneventfully and was discharged home the following day.

At the patient's 3 week postoperative visit, her vaginal pain was resolved. At her 6-week appointment, the surgical site was well healed, and there was no evidence of rectocele. The patient had no further complaints of vaginal pain or rectal bleeding. She was able to resume coitus without dyspareunia and denied any incontinence of stool or flatus and remains asymptomatic after 4 months of follow-up.

Discussion

A Medline review of the literature using the keywords "rectal," "erosion," "mesh," and "prolapse" found three reports of rectovaginal fistulas associated with synthetic mesh in the posterior vaginal wall. In the first case, the authors were unable to ascertain whether the fistula was caused by the multifilament weave from the posterior intravaginal slingplasty or the monofilament mesh used to augment the posterior repair [2]. Two rectovaginal fistulas have been reported with an Atrium mesh in the posterior

vaginal wall [3, 4]. A search of the Manufacturer and User Facility Device Experience (MAUDE) database using "mesh erosion" associated with synthetic mesh for posterior prolapse repair from 2004 to 2007 reported one posterior mesh erosion, three unspecified mesh erosions, two mesh exposures, a colovaginal fistula, a rectovaginal fistula, one unspecified fistula, and one case of severe dyspareunia [5]. Although important, the MAUDE database is not comprehensive, as many complications are never reported.

Over the last several years, the use of synthetic mesh in transvaginal reconstructive surgery has increased. With more marketing of transvaginal synthetic mesh kits, this trend is likely to continue. Although there are numerous case series and retrospective reviews demonstrating safety, great care must be taken when performing these procedures, as surgeons are asked to place the mesh deep into the fibromuscular layer of the vaginal wall to avoid mesh extrusion. One can only assume that during our patient's primary surgery, the mesh was placed in such a fashion. Additionally, the use of a ProTack™ instrument to fix the mesh to the ischial spines has not been reported in the literature and would appear to place the pudendal artery and nerve at risk, although we feel that the patient's symptoms and physical findings were a result of the mesh itself.

Although 29% of surgeries for pelvic floor dysfunction will require a second surgery, it is often overlooked that this statistic includes surgery for urinary incontinence as well [1]. The use of synthetic mesh especially in the posterior compartment is particularly controversial because anterior compartment repairs without graft or mesh augmentation have been less efficacious with success rates ranging from 37 to 100% [6]. In comparison, repairs without mesh or graft in the posterior compartment have achieved success from 54 to 96% with many studies with more than 80% in excellent anatomic outcome while correcting obstructed defecation [7]. In a recent randomized trial comparing different methods of rectocele repair, site-specific repair was found to have a failure rate of 22%, posterior colporrhaphy had a failure rate of 14%, and biological graft augmented repair had a failure rate of 46% at a mean follow-up of 17.5 months. Failure was defined as prolapse equal to or less than 2 cm from inside the hymen [8].

Concerning dyspareunia, it is difficult to pinpoint a range of new-onset dyspareunia, as native tissue repairs using levator plication, midline fascial plication, and site-specific repairs are performed quite differently. Although many studies have shown that midline fascial plication and site-specific repairs usually improve dyspareunia, others have reported small increases in painful coitus [7]. Several studies including one by Milani et al. have found significant increases in dyspareunia associated with repairs using synthetic mesh in the posterior compartment. In their study, sexual activity decreased by 12% while dyspareunia increased by 63% [9]. Because there has been a lack of good quality studies showing a significant improvement over native tissue repairs along with the possibility of complications such as extrusions, erosions, fistulas, and high dyspareunia rates, several review articles have recommended against the routine use of graft materials placed vaginally to treat pelvic organ prolapse [7, 10]. It might be argued that the synthetic mesh may be more appropriate for large defects or repeated operations, although there is no data currently to support this theory. Concerning this patient, her initial preoperative evaluation did not report the size of her defect, but she never required splinting, did not feel a bulge in the vagina, and had not had a prior rectocele repair.

To our knowledge, this is the first case report of a rectal erosion requiring partial mesh removal that necessitated a second surgery for complete removal as a result of vaginal pain and dyspareunia despite a healed rectal mucosa. This case report serves as a caution that new and different complications not yet reported in the literature may occur. Randomized control trials with long-term follow-up of different vaginally placed graft materials, especially synthetic mesh, are needed to further weigh the benefits and risks of these materials.

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