Instruments and Techniques

Laparoscopic Removal of Mesh Used in Pelvic Floor Surgery

Su-Yen Khong, MRCOG*, and Alan Lam, FRCOG, FRANZOG

From the Centre for Advanced Reproductive Endosurgery, St. Leonards, New South Wales, Australia (both authors).

ABSTRACT Various meshes are being used widely in clinical practice for pelvic reconstructive surgery despite the lack of evidence of their long-term safety and efficacy. Management of complications such as mesh erosion and dyspareunia can be challenging. Most mesh-related complications can probably be managed successfully via the transvaginal route; however, this may be impossible if surgical access is poor. This case report demonstrates the successful laparoscopic removal of mesh after several failed attempts via the vaginal route. Journal of Minimally Invasive Gynecology (2009) 16, 592–594 © 2009 AAGL. All rights reserved.

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In an attempt to improve primary surgical outcomes, synthetic and biological meshes have been introduced to reduce recurrence rate while maintaining vaginal capacity and coital function [1]. Despite the lack of level 1 evidence to elucidate its long-term safety and efficacy, meshes for pelvic reconstructive surgery are currently being used widely in clinical practice [2,3]. Serious mesh-related complications have been reported including mesh erosion, infection, dyspareunia, and even trauma to bowel, bladder, and blood vessels [4–6]. Management of these complications can be challenging. This case report demonstrates the successful laparoscopic removal of mesh after several failed attempts via the vaginal route.

Case Report

A 67-year-old woman, para 3, reported persistent right buttocck pain, sciatica pain in her left leg, back pain and bowel dysfunction. She had a complex medical history of chronic back pain and bilateral sciatica secondary to degenerative spinal disease, total abdominal hysterectomy because of myomas, and 7 vaginal repairs including 2 vaginal fascia repairs preceding the hysterectomy in 2002 and posterior repair and bilateral sacrospinous fixation using polypropylene mesh in 2004. A second anterior repair was performed in 2005 using nonabsorbable polyester sutures (SURGIDAC; Covidien, Mansfield, Massachusetts) to attach the vaginal vault to the sacrospinous ligaments combined with insertion of a polypropylene mesh (TiMesh; Medtronic, Inc, Minneapolis, Minnesota) via the transobturator route. Six weeks later, a second sacrospinous fixation procedure was performed because of recurrent enterocele. A strip of porcine dermis implant (Pelvicol; C. R. Bard, Inc, Covington, Georgia) was laid across the vaginal vault and posterior vaginal wall and was then secured to the sacrospinous ligaments with polyester sutures (Ethibond; Ethicon, Inc, Somerville, New Jersey). In May 2006, a small area of mesh was found to have eroded into the vaginal vault and was subsequently excised via the transvaginal route with the patient under general anesthesia.

In July 2006, the patient sought an opinion from another urologist because of persistent backache, right groin and suprapubic pain, frequency of defecation, tenesmus, and dyspareunia. Examination revealed that the vaginal walls were well supported. However, there was substantial tenderness along the posterior wall and the vault over the area of the sacrospinous ligaments. Colonoscopy and gastroscopy were performed, and ruled out any gastrointestinal disease. After unsuccessful pain management using hydrotherapy, physiotherapy, and regional anaesthetic agents, the patient was admitted for mesh removal, again via the transvaginal route. Despite prolonged attempts and with great difficulty owing to limited access, only a portion of the Pelvicol implant attached to the sacrospinous ligaments with Ethibond sutures could be removed from the posterior wall and vault. Evidence of chronic inflammation with intense induration and scarring...
was noted. Postoperatively, the patient continued to experience debilitating symptoms.

In May 2007, the patient was referred to our unit by her colorectal surgeon. Predominant symptoms were persistent pain in her right buttock region while sitting, pain in the sciatic nerve region, and rectal pressure that produced the sensation of needing to defecate or pass flatus. Vaginal examination revealed tenderness over the posterior vaginal wall extending from midvagina to the vault, especially in the right vaginal fornix. There was also moderate scarring and puckering along the posterior and lateral aspects of the vaginal walls and at the vault. However, there was no evidence of mesh erosion. These findings were confirmed at examination with the patient under anesthesia. A colonoscopy performed during the same procedure by a colorectal surgeon did not reveal any abnormality.

Subsequently, because of the complexity of the case, further advice was sought from orthopedic, colorectal, and gynecologic colleagues. In June 2008, the patient underwent spinal surgery because of sciatic pain, which failed to relieve the symptoms. The patient returned, requesting exploratory surgery for removal of the remaining mesh despite being informed that the outcome was unpredictable, the surgery was complex, and the potential risks of surgery included the possibility of worsening symptoms and need for colostomy.

The patient was admitted in November 2008 for examination under anesthesia and an attempt to remove the mesh. Examination showed extensive vaginal scarring, extending from the midrectum and vault toward the left sacrospinous ligament and left ischial spine, and moderate vaginal vault stricture. The decision was made to remove the mesh laparoscopically because access via the vaginal route was limited.

At laparoscopy, dense adhesions between the small bowel and the left pelvic side wall and pelvic brim restricted visualization of the vaginal vault and the pelvis. Once adhesiolysis was performed, a large nodular bulge, measuring $2 \times 3 \times 3$ cm, was found embedded deep in the pelvis. Vaginal palpation under laparoscopic visualization showed that this mass extended from the left vaginal vault into the left pararectal space and left sacrospinous ligament. Vaginal and rectal probes were used to delineate the vaginal vault and the rectum. Harmonic scalpel and bipolar diathermy were required for tissue dissection. The rectum was dissected medially and the left ureter laterally along its path from the pelvic brim to the vaginal vault. An incision was made at the top of the vault where the bulge was visible. Because the mass was deeply embedded in the pelvis, tissue dissection extended through the left pararectal fossa to the levator ani muscles. Eventually, a self-contained firm nodule was excised, measuring $3 \times 3 \times 3$ cm. There was no evidence of undissolved surgical sutures; however, when the nodule was cut in half, there was evidence of mesh material.

Postoperative recovery was uncomplicated, and the patient was discharged on day 2. At the 6-week follow-up visit, she reported complete resolution of pelvic symptoms. Histologic analysis later confirmed the presence of mesh and sutures associated with florid foreign body–type giant cell reaction and dense fibrosis (Figs. 1 and 2).

Discussion

A myriad of meshes have been used in surgical practice without sufficient supporting evidence of long-term safety and efficacy. Despite early reports from small studies that indicated encouragingly high anatomical success rates, the lack of level 1 evidence and conflicting advice given by expert bodies expose surgeons to medicolegal risk. In 2005, researchers at the World Health Organization Third International Consultation on Incontinence, concerned with high potential morbidity, recommended that transvaginal meshes should be used only in clinical trials and not in general practice [7]. The American College of Obstetricians and Gynecologists September 2007 Practice Guidelines also stated that because of limited data on the use of meshes, “patients should consent to surgery with an understanding of the postoperative risks and complications and lack of long-term outcomes data” [5]. In June 2008, the National Institute for...
Health and Clinical Excellence issued a statement that vaginal wall prolapse repair using mesh may be more efficacious than traditional native tissue repair [4]. Four months later, the US Food and Drug Administration issued a public health notification alerting health practitioners about serious complications associated with transvaginal placement of surgical mesh in repair of pelvic organ prolapse and stress urinary incontinence [6].

Mesh-related complications are not uncommon, with more than 1000 cases reported by manufacturers alone in the last 3 years. Complications such as mesh erosion and de novo dyspareunia [8], with rates ranging from 1% [4] to 25% [9] and from 9% [10] to 63% [11], respectively, can be serious and can substantially affect patient quality of life. It is, therefore, paramount that surgeons should have specialized training in each mesh placement technique, be able to counsel patients appropriately, be aware of the various adverse outcomes, and be able to manage them should the need arise [6].

Currently, most meshes used in pelvic organ prolapse are introduced transvaginally by surgeons skilled in vaginal surgery. Most mesh-related complications can probably be managed successfully via the transvaginal route [12–15]. However, removal of mesh via the transvaginal route may be impossible if surgical access is poor because of extensive vaginal scarring from previous pelvic floor surgeries, as in our patient. In addition, poor visualization of the operative field, especially when anatomy and surgical planes are distorted, may increase the risk of trauma to blood vessels, nerves, rectum, and bladder. When repeated transvaginal attempts prove unsuccessful, an alternative approach either by laparotomy [16] or laparoscopy may be required. The laparoscopic route, with the advantages of improved magnification and pneumoperitoneum, has been successfully used for the removal of tapes used in stress urinary incontinence [17]. Laparoscopic skills and experience may therefore prove valuable in managing complications associated with vaginally placed mesh.

References