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CASE REPORT

Dyspareunia and chronic pelvic pain after polypropylene mesh augmentation for transvaginal repair of anterior vaginal wall prolapse

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Abstract Synthetic mesh augmentations for pelvic floor reconstructive surgeries are increasing in usage and popularity. Many studies are focusing on the anatomical success rates of transvaginal anterior compartment repairs with synthetic mesh, with minimal attention on its postoperative complications. We present a case report on a 59-year-old postmenopausal woman who underwent an anterior repair with 6×4-cm polypropylene mesh. Postoperatively, she developed severe dyspareunia and debilitating chronic pelvic pain. The patient failed conservative medical therapy and now requests complete removal of the synthetic mesh.

Keywords Cystocele repair · Synthetic mesh · Polypropylene mesh · Dyspareunia · Chronic pelvic pain · Anterior repair

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Introduction

Synthetic meshes are being used with increasing frequency in various pelvic floor reconstructive surgeries. Building on the success of the tension-free vaginal tape sling procedure, surgeons are beginning to expand the indications for synthetic mesh applications. Larger sizes of synthetic mesh of different materials and different porosity through different surgical entry points are being used in prolapse repairs for the anterior, posterior, and apical compartments [1, 2].

There is a growing use of synthetic mesh placement in the vagina without sufficient evidence of clinical studies on patient safety for these procedures. In animal studies, Zheng et al. examined the host response of synthetic mesh placement in the rat model. Zheng states that the use of synthetic mesh augmentation for fascial defect repairs induced a strong inflammatory reaction resulting in strong scar formation and good tensile strength [3]. On the other hand, synthetic mesh also creates extensive and severe fibrosis that can possibly contribute to postoperative pain, infection, mesh erosion, dyspareunia, and chronic pelvic pain.

For the management of mild complications (e.g., small mesh erosion through the vaginal epithelium), conservative treatment with vaginal estrogen therapy alone or in combination with antibiotics may be sufficient. In the cases of larger areas of vaginal erosion of synthetic mesh, the exposed mesh can be trimmed in the office setting or, occasionally, a repeat intraoperative procedure may be necessary to undermine the vaginal epithelium and cover the exposed mesh with vaginal tissues [2]. However, for the management of more severe complications such as dyspareunia and chronic pelvic pain, the treatment options are more daunting. How do you manage a patient that presents

with focal points of pain and tenderness extending the entire length and width of the synthetic mesh that covers the entire base of the bladder, including the trigone area?

In this paper, we present a unique case of chronic and severe pelvic pain and dyspareunia, without any evidence of erosion or infection, following the use of synthetic mesh in transvaginal anterior compartment repair.

Case report

A 59-year-old postmenopausal woman presented for evaluation of severe dyspareunia and debilitating chronic pelvic pain for 4 years. She had a total abdominal hysterectomy in 1988 and subsequently developed stress urinary incontinence and a stage IV symptomatic cystocele. Four years ago, she underwent a midurethral suspension using a polypropylene tape (2×8 cm) and a transvaginal anterior compartment repair with monofilament polypropylene hernia mesh (Bard, Haasrode, Belgium, size 6×4 cm). For the anterior compartment repair, the polypropylene mesh was anchored to the lateral sides of endopelvic fascia at multiple points using 2-0 Vicryl sutures.

This surgery was performed at an outside hospital, and the patient has been experiencing dyspareunia and chronic pelvic pain ever since. She denies any history of any underlying medical or psychological problems. In addition, the patient denies any previous history of chronic pelvic pain or dyspareunia prior to her anterior repair surgery. The patient's medical records show that the onset of dyspareunia and chronic pelvic pain occurred after her synthetic mesh placement.

She has consulted two other independent physicians who have treated her pain conservatively with vaginal estrogen cream, antibiotics, and local analgesic injections. She presented to our clinic for another medical opinion. Pelvic examination showed that the anterior compartment was well supported (Aa -3 cm, Ba -3 cm), with no evidence of mesh or suture erosions. A large, firm, synthetic mesh was palpated underlying the base of the bladder, ranging from the urethrovesical junction to near the ischial spines bilaterally. Palpation of the entire width and the length of the mesh caused reproducible symptomatic pelvic pain. Evaluation of the apical compartment showed stage I vaginal vault prolapse (C -4 cm), and evaluation of the posterior compartment showed a stage III rectocele (Ap +2 cm, Bp +2 cm). Cystoscopy was normal and did not reveal any mesh erosion or suture inside the bladder or urethra. Multichannel urodynamic testing showed positive stress urinary incontinence at full bladder capacity only, with no evidence of detrusor overactivity. Computerized axial tomographic scan of the pelvis did not reveal any pelvic abscess, bone infection, or any other source of infection.

We opted to treat the patient conservatively with more vaginal estrogen therapy and oral anti-inflammatory medications for 4 months. Other options included referral to pain management clinic or the use of gabapentin, a centrally active agent, to address the psychological issues associated with chronic pain. However, she strongly requested complete surgical excision of the mesh in the anterior vaginal compartment. After extensive counseling with the patient about the risks and the benefits of surgical excision, we believed that the risks of surgery outweighed the benefits and we recommended that conservative management was her best option. The patient's chronic pelvic pain symptoms remained persistent and unchanged after conservative treatments, and she failed to keep further follow up appointments.

Discussion

Synthetic mesh augmentation in pelvic floor reconstruction surgeries is increasing in popularity and frequency of use. The majority of the published papers on anterior compartment repairs with mesh augmentation report on the anatomical success rates, with less focus on the quality of life and sexual function issues [4, 5], and the majority of the reported mesh complication patients are offered easy treatment solutions with vaginal estrogen cream and antibiotics. However, mesh complications such as chronic pelvic pain often present with more serious and challenging problems, without any easy answer. The focus of this discussion is to examine chronic pelvic pain and dyspareunia after mesh placement and consider the different management options.

In our case report, the 6×4-cm polypropylene mesh was adherent to the base of the bladder. The anatomic support of the synthetic mesh in the anterior compartment was excellent; however, the patient's chronic pelvic pain and dyspareunia were now more debilitating than her previous bladder prolapse. We considered a conservative surgical option of a tension release procedure of anterior repair by releasing the sutures that anchor the corners of the mesh to the endopelvic fascia on the lateral sidewalls. We also considered a more aggressive surgical option of complete excision and removal of the mesh. However, we had concerns about the ability to find a clear plane of separation of the synthetic mesh from the bladder mucosa, thereby potentially creating a 6×4-cm hole in the base of the bladder. Additional surgical risks included injury to the trigone area, vesicovaginal fistula formation, ureteral obstruction, and possible bilateral ureteral reimplantation. Although some surgeons may argue that one should be willing to attempt its removal, we believe that additional surgical intervention could possibly worsen the patient's

already bad condition. From our perspective, even though the patient had chronic pelvic pain with dyspareunia, at least the patient was still continent and her bladder function was normal. Furthermore, it is possible that the synthetic mesh removal may not even resolve her pain.

To better understand the relationship of synthetic mesh complications and chronic pelvic pain, one must examine the pathophysiology. Zheng et al. compare the inflammatory response of the implantation of Pelvicol (porcine dermis) with Prolene (knitted filaments of polypropylene) in the rat model [3]. The rats are killed on days 7, 14, 30, and 90 to evaluate for the presence of herniation, infection, fibrosis, and changes in thickness and tensile strength. Fibrosis formation is of particular importance because this may lead to pain, obstruction, and reintervention. The histopathology of the Prolene implantation shows a more pronounced foreign body reaction with increased inflammatory response of infiltrating inflammatory cells. Zheng concludes that Prolene induced significantly more extensive and severe fibrosis, two times greater than the Pelvicol group.

A review of the literature shows a variety of different types of synthetic meshes and various different surgical techniques for transvaginal anterior compartment repairs. However, the paucity of well-conducted clinical trials makes the choice of whether to use synthetic mesh or which one to use difficult. Given the limited articles available in the literature, some studies report insignificant rates of postoperative dyspareunia [6, 7], while other studies show a larger proportion of dyspareunia postoperatively. In reviewing only the prospective studies, Yan et al. prospectively evaluated 30 patients undergoing cystocele repair with polypropylene mesh and reported an anatomical success rate of 97% [8], with an anterior dyspareunia rate of 14% (2 of 14 patients). De Tayrac et al. performed prospective multicenter study on 143 patients with anterior and posterior repairs using polypropylene mesh with at least a 10-month follow-up and reported an anatomical cure rate of 92.3% for cystocele repairs, with nine vaginal erosions (6.3%), and a de novo dyspareunia rate of 12.8% [9, 10]. Milani's prospective study evaluated the effects of prolene mesh on urinary, bowel, and sexual function after prolapse surgery in 32 women with anterior or posterior repair using a prolene mesh. Milani et al. reported an anatomical success rate of 94%, with a vaginal erosion rate of 13%, and a postoperative dyspareunia rate that increased by 20%, and they recommended that the "use of prolene mesh should be abandoned" [11].

Does this mean that all graft augmentations are bad? Not necessarily. In our opinion, we believe there is a role for graft augmentation in anterior compartment repairs. The traditional anterior colporrhaphy has a high failure rate ranging from 20% to 40% [12, 13]. For patients with severe prolapse or for patients with poor connective tissue, there is a need for additional supportive biomaterials to reinforce the surgical fascial defects. The different graft possibilities can range from allografts to xenografts to synthetic grafts. The next question is, "Should synthetic meshes be used in pelvic floor reconstruction surgeries?" We do not know. The older generation of synthetic meshes that is thicker, heavier, and of denser weave should be avoided. However, some surgeons may argue that the newer generation of type I polypropylene synthetic mesh is softer, lighter, monofilament, macroporous (pore size >75 μm), and less likely to cause dyspareunia and chronic pelvic pain. The advantage of the type I mesh is the large interstices that allow entry of leukocytes and macrophages to counter biological colonization, thereby decreasing the risk of infections [14]. Overall, there is still a lot of uncertainty about the efficacy and safety of graft augmentation in pelvic floor reconstruction, but randomized, prospective, case-controlled clinical trials are currently under way to better assess the outcome associated with graft augmentations.

The use of synthetic mesh in pelvic floor reconstruction surgeries often raises more questions than answers. The procedures for mesh augmentation are easy surgical procedures to perform, but the potential postoperative complications remain the challenge. With the newness of these mesh procedures, there needs to be more awareness and understanding of the potentially serious complications. The surgeon must have a plan to manage the complications before choosing the type of surgical repair, with or without mesh augmentation, because once the dyspareunia and chronic pelvic pain develop, the problem is usually not easily treated with conservative medical therapy and may persist for a long time. There need to be more long-term studies that evaluate both the anatomical and functional results to examine the safety and efficacy of newer biomaterial products. More controlled clinical trials are necessary.

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