

Case Report

Surgical management of mesh infection following laparoscopic sacrocolpopexy and tension-free vaginal mesh surgery: a report of two cases with a literature review

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Abbreviations & Acronyms

CT = computed tomography
 ESBL = extended-spectrum
 β -lactamase
 LSC = laparoscopic
 sacrocolpopexy
 POP = pelvic organ prolapse
 SC = sacrocolpopexy
 SH = supracervical
 hysterectomy
 TVM = tension-free vaginal
 mesh
 WBC = white blood cell

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Introduction: The standard management for pelvic abscess or spondylodiscitis after reconstructive surgery previously involved total mesh excision, abscess drainage, and intravenous antibiotic administration. However, only few reports exist regarding the possibility of nonoperative management.

Case presentation: Postoperative mesh infection occurred in two cases of transvaginal mesh and laparoscopic sacrocolpopexy surgery for pelvic organ prolapse. In the first case, intravenous antibiotics were administered and debridement was performed. In the second case, intravenous antibiotics were administered, and local drainage was performed postoperatively, as sacral promontory infiltration was suspected. Diabetes was a comorbidity in both cases.

Conclusion: It is necessary to select patients suitable for vaginal or laparoscopic mesh placement for pelvic organ prolapse preoperatively on the basis of prior history of the patients and once the patients provide informed consent for surgery after being explained the possible complications of pelvic reconstructive surgery, such as mesh infection.

Key words: abscess, laparoscopy, mesh, pelvic organ prolapse.

Keynote message

LSC is a very effective treatment for POP patients; however, rare complications can occur if the patient's indications are not carefully determined. Therefore, preoperative consent is extremely important.

Introduction

SC is the standard surgical treatment for POP. Reports indicate that mesh infection due to pelvic abscess is an uncommon complication of POP repair. The incidence of mesh-related infection ranges from 0.7 to 8.0%¹ for vaginal mesh placement to 0.3%² after laparoscopic mesh placement SC. When infection occurs after the placement of a mesh, such as in SC and TVM surgery, treatment usually involves resection of the mesh.³ However, most of the published literature is based on case reports of treatment strategies, so it is difficult to reach a conclusion regarding a standard treatment on the basis of published details.⁴ In the case of mesh infection with a pelvic abscess, all treatments offered should be explained to the patients, and they must be allowed to choose their treatment.

In this report, we describe two cases of mesh infection following pelvic reconstructive surgery. We obtained informed consent before surgery in each case. Additionally, we obtained consent from patients after mesh infection for publication of these cases.

Case presentation

Case 1

An 82-year-old woman, with diabetes (HbA1c 5.8%) and a history of abdominal total hysterectomy with stage 3 cystocele underwent TVM. She was afebrile, and malaise was observed on day 2 after the operation. Three days postoperatively, she presented with a WBC count of 12 500/ μ L, and after another 7 days postoperatively, she developed profuse vaginal discharge. An opening was made in the anterior vaginal wall and the abscess was drained on the 7th postoperative day. The isolated organisms were ESBL-producing *Escherichia coli*. A contrast-enhanced abdominal/pelvic CT scan 14 days postoperatively revealed a 6.5 \times 1.5 cm² pelvic abscess (Fig. 1a,b). She was treated with minocycline after identification and sensitivity studies of the infectious organism. She was subsequently treated with per os minocycline. A follow-up abdominal/pelvic CT scan demonstrated complete resolution of the abscess on the 28th postoperative day (Fig. 1c). We performed anterior colporrhaphy on the 30th postoperative day, when the patient was discharged. The patient's 3-month follow-up examination revealed excellent vaginal support with no recurrence or mesh extrusion.

Case 2

A 76-year-old woman, with diabetes (HbA1c 7.1%), stage 3 cystocele, and stage 2 rectocele underwent SH and LSC. Two days postoperatively, she presented with fever and malaise. Her temperature at presentation was 38°C with a WBC count of 11 500/ μ L. Then, 4 days postoperatively, she presented with vaginal discharge. The identified pathogens were ESBL-producing *Escherichia coli* and *Enterococcus avium*, and treatment with oral antibiotics (minocycline), on the basis of the organism identified and sensitivity was administered. An intravenous contrast-enhanced CT scan of the abdomen/pelvis 14 days postoperatively revealed a 4.6 \times 7.3 cm² pelvic abscess with extensive inflammation (Fig. 2a,b). She underwent drainage of the abscess and

placement of a Penrose drain. The isolated organisms were *Bacteroides fragilis*, *Peptoniphilus* spp., and *Prevotella* spp. She did not present with symptoms of spondylodiscitis, but a CT scan of the abdomen/pelvis demonstrated an abscess infiltrating the sacral promontory; there was extensive inflammation and the patient developed profuse discharge from the vagina. The infected mesh was completely removed under visualization by laparoscopy on the 19th postoperative day. No organisms were found on the mesh upon microbial culture. A follow-up CT scan of the abdomen/pelvis demonstrated complete resolution of the abscess on the 26th postoperative day (Fig. 2c). The patient was discharged on the 29th postoperative day. The patient's 3-month follow-up examination also revealed excellent vaginal support with no recurrence.

Discussion

We have presented two different cases of complicated postoperative pelvic abscesses following TVM and SC surgery (Table 1). Case 1 was successfully managed without any resection of the mesh, whereas in Case 2, the patient underwent total mesh removal by laparoscopy because of suspected spondylodiscitis. The standard management of an abdominal or pelvic abscess after pelvic reconstructive surgery with a mesh previously involved total excision of the mesh, drainage of the abscess, and intravenous antibiotic administration.³ Unlike those regarding traditional operative management, only few reports exist regarding the possibility of nonoperative management in selected patients.⁴ Kwon *et al.*,⁴ by conservative management of a pelvic abscess in three cases following SC, indicated that the abscesses were resolved by CT-guided drainage and antibiotic administration. Aguilar *et al.*⁵ indicated three clinical criteria for the conservative management of infected hernia meshes: (i) the infection focus must be confined; (ii) there must be no intestinal injury; and (iii) there must be no immunosuppression for other comorbidities.

Diabetes was a comorbidity in our cases; hence, the third criterion was not met. Moreover, there was no intestinal injury on the abdominal/pelvic CT scan and physical

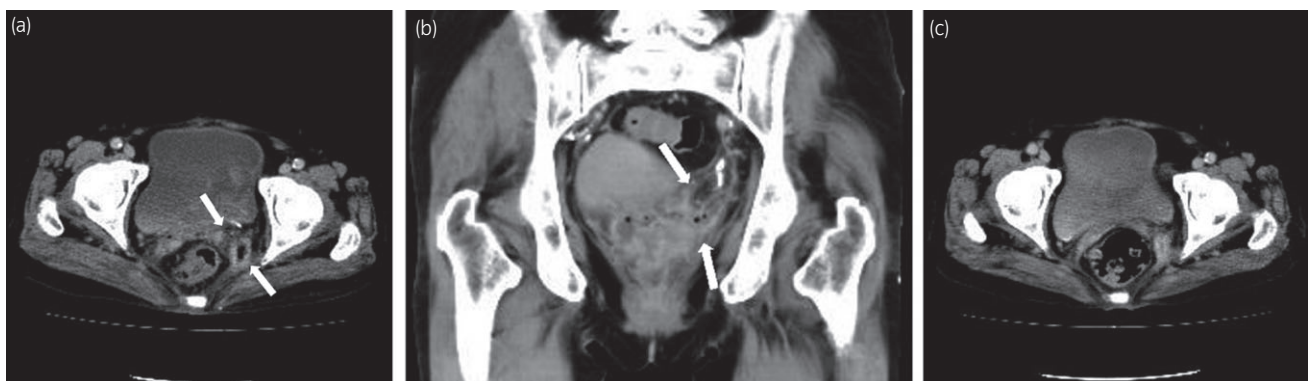


Fig. 1 (a) Case 1: Transverse image from the intravenous contrast-enhanced CT of the pelvis. This demonstrates the rounded posterior fluid collection, 6.5 \times 1.5 cm², with minimal marginal enhancement, consistent with an abscess (arrow). (b) Case 2: Coronal image, enhanced CT. The arrow indicates an abscess. (c) Case 1: A transverse image following drainage of the abscess and administration of antibiotics. There is complete resolution of the abscess, which was previously seen in (a) and (b).



Fig. 2 (a) Case 2: Transverse image obtained from intravenous contrast-enhanced CT of the pelvis, showing rounded posterior fluid collection, $4.6 \times 7.3 \text{ cm}^2$, with minimal marginal enhancement, consistent with an abscess (arrow). (b) Case 2: Coronal image, enhanced CT. The arrow indicates an abscess. (c) Case 2: Transverse image obtained after laparoscopic mesh excision. There is complete resolution of the abscess that was previously seen in (a) and (b).

Table 1 Comparison of patient characteristics

Variable	Case 1	Case 2
Surgery	TVM	LSC
Age (year)	82	76
Comorbidity	Diabetes	Diabetes
Body mass index	23.1	26.8
Fever (over 38°C)	No	Yes
Presenting symptom	Malaise	Malaise
Postoperative day at presentation	2	2
Hospitalization (days)	33	29
Cultured organisms	ESBL-producing <i>Escherichia coli</i>	<i>Bacteroides fragilis</i> <i>Petroniphilus</i> spp. <i>Prevotella</i> spp.
Mesh excision	No	Yes

examination. Nevertheless, conservative management succeeded because of localized abscess in Case 1. However, total excision of the mesh had to be performed in Case 2 because the infectious focus infiltrated to the sacral promontory. Regarding the risks of the development of abscesses, the most likely cause of abscess, bacterial vaginosis has been associated with post-hysterectomy cuff cellulitis/infection due to alteration of the vaginal flora.⁶ Case 2 involved vaginal contamination from concurrent SH. Uterine endometriosis was found postoperatively by histopathological analysis of a specimen of the corpus uteri obtained during SH. Therefore, cervicitis was considered a cause of the abscess. As a routine vaginal culture was not performed during this study, the possibility of identification of the causative organism of Case 1 from the vaginal culture cannot be denied. The infection in Case 1 was thus presumed to be caused by the normal bacterial flora of the vagina and some contamination at the time of vaginal surgery because surgery was performed after the hysterectomy; this is a limitation of this case report.

In conclusion, laparoscopic mesh excision improved the patient's symptoms even under conditions of deteriorated physical strength due to chronic inflammation, as in Case 2.

Thus, assessing patient comorbidity as an indication for pelvic floor reconstructive surgery using a mesh is important, and in the case of diabetic patients, other treatments, such as native tissue repair, also need to be thoroughly studied in the future.

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Conflict of interest

The authors declare no conflict of interest.

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