Case Report

Vaginal Stump Prolapse After Bilateral Nephroureteral Hysterectomy: Case Study

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ABSTRACT

Pelvic organ prolapse (POP) has a high risk of recurrence and poses challenges for surgeons in terms of reconstruction.

A 77-year-old woman was admitted to the plastic and reconstructive surgery unit at our hospital. She complained of a mass on the external genitalia that caused pain and effusion. Axial computed tomography (CT) showed a prolapse lesion from the pubic bone to the outside of vagina, which did not affect the pelvic organs. During examination, the patient was found to have ascites due to liver cirrhosis.

Based on clinical and imaging findings, the patient was diagnosed with POP due to increased abdominal pressure from ascites, which was difficult to manage due to the patient undergoing maintenance dialysis. The remaining peritoneal defect was closed and fascia collected from the left thigh was transplanted to close the pelvic floor. A gluteal fold flap was created to fill the defect. One year after the operation, no recurrence was observed, and CT images showed no ascites in the genital area.

These findings suggest that fascia lata transplantation and reconstruction via the gluteal fold flap can effectively counter the increase in intra-abdominal pressure caused by ascites.

Key words : ascites, gluteal fold flap, maintenance dialysis, vaginal stump prolapse

Introduction

Pelvic organ prolapse (POP), including vaginal stump prolapse, is caused by the weakening of the pelvic floor muscles. In vaginal stump prolapse, the support mechanisms of pelvic organs are disrupted due to factors such as increased intra-abdominal pressure, resulting in the pelvic organs hanging down and escaping from the vaginal opening. Here, we report a case of vaginal stump prolapse that developed after bilateral nephroureteral hysterectomy, with recurrence due to an increase in intra-abdominal pressure from ascites associated with cirrhosis.

Case introduction

A 77-year-old woman was admitted to the Plastic and Reconstructive Surgery Department of the Ehime University Hospital for excision of a mass on the external genitalia, which caused pain and effusion. She previously underwent bilateral nephroureteral hysterectomy for a bilateral renal pelvis tumor and bladder tumor 5 years prior, at which point maintenance dialysis was introduced. Approximately 2 years after the operation, external genital prolapse was observed as a small intestinal hernia due to weakness of the residual vaginal wall. Vaginal closure was performed twice to address this. Six months after the second repair, the vaginal wall began to prolapse again, accompanied by exudate leakage and pain. Accordingly, the patient was referred to the urology department.

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Fig. 1. Initial presentation.

A 5- × 7-cm cyst-like lesion covered by a purplish-red mucosal capsule, partially accompanied by crusts and erosions, was found on the external genitalia.

Axial computed tomography (CT) of the thoracoabdominal region showed no pelvic organs in the prolapse lesion, and ascites due to liver cirrhosis was identified. The patient's Child Pugh score was B at 8 points (T-Bil: 1, Alb: 2, PT: 1, ascites: 3, encephalopathy: 1), and albumin-bilirubin score and grade was -1.67 and 2b, respectively. Resection and simple suturing of the prolapsed area have a high risk of recurrence, so the patient was referred to our department for reconstruction of the pelvic floor.

Present illness

The patient had a height of 150 cm, weight of 40 kg and BMI of 17.8. Clinical examination revealed a 5- × 7-cm cyst-like lesion covered with a purplish-red mucosal capsule on the external genitalia (Fig. 1). A section of the capsule surface had scabs and sores, and clear liquid leakage was observed. We could not confirm the position of the vaginal opening; therefore, manual return was not possible. The urethral meatus was retained, but the urethra was resected and blinded.

Imaging findings

Axial plane CT of the thoracoabdominal region revealed a prolapse lesion from the pubic bone to the inferior side. No pelvic organs were affected; however, ascitic fluid continuously leaked from the intraperitoneal region into the prolapsed part. An incisional hernia was observed in the umbilical region, and signs of liver cirrhosis, such as liver atrophy, marginal blunting, and surface unevenness, were also observed (Fig. 2).

We consulted the Department of Gastroenterology for the treatment of the liver cirrhosis and ascites. The management of ascites with diuretics proved challenging since maintenance dialysis had been introduced previously, and the primary cause of liver cirrhosis was unknown. However, if left untreated, there is a high risk of developing peritonitis due to infection; therefore, the decision to excise the prolapsed part and perform

Fig. 2. A prolapsed lesion from the pubic bone to the inferior side.

Liver atrophy and ascites were observed.

reconstruction of the pelvic floor was made.

Operation

On the day before surgery, the gluteal fold was marked with the patient in a standing position, and a 12- × 7-cm gluteal fold flap was marked (Fig. 3a). The operation was performed with the patient in the lithotomy position under general anesthesia. A drop-shaped excision line was marked, which included the vagina and area around the prolapsed part up to the clitoris; incisions were made along the skin following the markings. The adipose tissue and inside part of the scar were dissected all around so that the tissue reached the remaining vaginal wall. It was possible to confirm that the prolapse stump was on the anterior vaginal wall and that the stump protruded outside the vagina through the remaining vaginal opening (Fig. 4). Therefore, by advancing the dissection along the anterior and lateral walls of the vagina, the prolapsed portion could be restored (Fig. 3b).

In deeper parts of the vagina, a thin, peritoneal-like membrane was observed on the ventral side of the vaginal wall. This was firmly adhered to the vaginal wall, so the remaining vaginal tissue, including a part of the peritoneum, was excised. A large amount of transparent liquid that resembled ascitic fluid was observed after excision. Finally, the posterior vaginal wall and anterior rectal wall were dissected, and the remaining vaginal tissue was removed together with the prolapsed part (Fig. 3c).

The intraperitoneal cavity was observed through the peritoneal defect. After confirming that there were no

Fig. 3. Intraoperative findings.

- (a) Gluteal fold marked with the patient in a standing position. A 12 × 7-cm gluteal fold flap was designed. Red marks: perforators, X: ischial tuberosity.
- (b) The prolapsed lesion.
- (c) The remaining vagina, removed together with the prolapsed part as a lump.
- (d) The peritoneal defect, sutured directly, with the femoral fascia transplanted to the pelvic floor and fixed using an absorbent thread.
- (e) After flap movement.

Fig. 4. Illustration of the prolapse stump, seen on the anterior vaginal wall protruding outside the vagina through the remaining vaginal cavity.

adhesions, hematomas, or intestinal perforations, the intraperitoneal cavity was sufficiently irrigated. The peritoneal defect was sutured directly with an absorbent thread. The fascia lata, which was 4 × 6 cm in size, was collected from the left thigh, fixed to the pubic periosteum on the anterior and lateral sides, and then sutured to the retroperitoneum and surrounding

soft tissue on the posterior side to prevent recurrence (Fig. 3d). Doppler ultrasound was used to detect the perforating vessels of the gluteal fold flap. Because the skin and soft tissue defects encompassed an area 7 × 4 cm in size, the flap design in the left gluteal fold was modified to a size of 9 × 5 cm. The flap was raised on the fascia and rotated 120° counter-clockwise to fill the defect (Fig. 3e). Two suction drains were inserted; one between the transplanted fascia and flap, and the other at the donor site. The flap was then sutured, and the operation was completed.

Three days postoperatively, the patient was able to get out of bed, and 11 days postoperatively the suture thread was removed. Fourteen days postoperatively, no recurrence of hernia was confirmed using CT imaging, and the patient was discharged. One year postoperatively, no recurrence was observed, and CT imaging showed no accumulation of ascitic fluid in the genital area (Fig. 5).

Discussion

POP is a condition in which pelvic organs hang down and escape from the vaginal opening due to disruptions in the supporting structures of the pelvic organs, i.e. due to weakening of the pelvic floor muscles, damage to pelvic ligaments and

Fig. 5. Absence of recurrence 1 year postoperatively.
CT imaging shows no accumulation of ascitic fluid in the genital area.

nerves, etc. POP is classified depending on the site of prolapse into cystoceles, rectoceles, uterine prolapses, or vaginal stumps¹⁾. POP is common among women; the proportion of women with some symptoms is 30.8% between the ages of 20–59 years, 39.7% for women over 50 years and postmenopausal women²⁾, and 50% for women who have experienced vaginal delivery³⁾. Vaginal stump prolapse after total hysterectomy is reported to occur at a rate of 3.6 per 1,000 patients⁴⁾.

Causes of POP include aging, delivery, and nerve and ligament damage due to surgery or trauma. Risk factors include chronic constipation, obesity, retention of ascitic fluid, and increased intraperitoneal pressure due to intraperitoneal tumors¹⁾. Conversely, tumors and ascites can be triggered by POP⁵⁻⁷⁾. Typically, ascites due to liver cirrhosis can be controlled with proper diet, diuretics, and administration of albumin preparations; however, if hemodialysis is introduced and the patient is not able to urinate without assistance, the management of ascites can be very difficult. In our case, in addition to the weakening of the residual vaginal wall due to aging and previous history of total hysterectomy, there was increased intraperitoneal pressure due to ascites retention caused by liver cirrhosis. This made it difficult to control ascites with diuretics since the patient was undergoing maintenance dialysis. Although some studies have reported that POP caused by neoplastic or inflammatory ascites was improved by controlling the underlying disease, ascites due to pure cirrhosis was the cause in only four cases; of these, one died in a hepatic coma while waiting for surgery^{1, 8)}. Of the four cases, maintenance dialysis led to difficulties in ascites management only in the present case.

Main symptoms of POP include vaginal drooping, discomfort, pain, bleeding due to friction with underwear,

stress urinary incontinence, and urge incontinence^{1, 9)}, all of which worsen quality of life. However, patients often delay consultation due to embarrassment associated with having the disease^{2, 3)}.

Treatment can be conservative or surgical. Options for conservative treatment include diet and exercise interventions for weight loss, management of constipation, pelvic floor muscle exercises, and ring pessary¹⁰⁾. Conventional surgical treatments include vaginal hysterectomy combined with a non-mesh treatment (native tissue repair) such as vaginal stump fixation, colpoplasty, or colpocleisis. However, these treatments are associated with high recurrence rates (20%–40%) and postoperative sexual intercourse disorders¹⁰⁾. Therefore, transvaginal mesh (tension-free vaginal mesh: TVM) has been used to reconstruct the pelvic floor with minimal invasiveness without impairing the original functions of the pelvic floor, including sexual function. However, this procedure carries several risks, such as intraoperative bladder and/or ureteral injury, intestinal injury, postoperative wound infection, and mesh contracture and/or protrusion.

In 2008, the Food and Drug Administration (FDA) issued a safety notice for TVM, and in 2011, a warning was issued. Since then, the number of facilities performing TVM surgery has decreased worldwide, including in Japan. Laparoscopic sacrocolpopexy (LSC), a procedure in which the vaginal stump is lifted and fixed to the sacrum using a transabdominal mesh, has since attracted attention. The technique of lifting the vaginal stump to the sacral promontory during laparotomy was first reported in 1957 and was regarded as the standard treatment for vaginal stump prolapse because of its excellent treatment results and few mesh-related complications. Although it was originally highly invasive, it was possible to perform LSC as a minimally invasive transabdominal mesh

surgery in 1991. LSC became widespread with the technological development of laparoscopes, and after the FDA issued a warning about TVM, the number of facilities performing LSC gradually increased. In Japan, LSC was first covered by health insurance in 2016 and has since become a widespread treatment for POP^{10,11)}.

In the present case, colpocleisis was previously performed twice; however, prolapse recurred. Therefore, it was necessary to remove the fragile vaginal wall and reconstruct the pelvic floor. Initially there were concerns about compromised host tissue and delayed wound healing due to liver cirrhosis; therefore, the lesion was covered with autologous tissue with abundant blood flow to avoid using artificial materials. Fascia lata was used instead of mesh to counter the increased intraperitoneal pressure due to ascites retention^{12,13)}.

Free fascial transplantation is more resistant to infection than transplantation using artificial tissue since free fascia is an autologous tissue and is easy to collect. Free fascia is often used in the repair of dural defects after mesh infection, abdominal wall/scar hernias, and static reconstruction of facial nerve paralysis. The collection sites include the thigh and abdomen; however, the thigh is chosen more frequently due to the wider area and since no complications are typically observed. In this case, an abdominal wall hernia was previously found in the umbilical region. As a moderate amount of tissue was needed, the thigh was chosen as the collection site. Myocutaneous flaps, such as the gracilis flap, tensor fascia lata myocutaneous flap (TFL-MC), rectus abdominis myocutaneous (RAMC) flap, and gluteal fold flap, have been used in the reconstruction of vulvar defects. The gracilis flap has a disadvantage in that blood circulation in the distal part of the flap is unstable, and scars and dog-ears are easily noticeable. The RAMC and TFL-MC flaps are disadvantageous in that they tend to become bulky instead of forming a large flap¹⁴⁾. The RAMC flap can also lead to the formation of abdominal wall hernias upon collection of the rectus abdominis muscle¹⁴⁾.

The gluteal fold flap is the most suitable flap for reconstruction of the perineum¹⁴⁾. This is due to the fact that the gluteal fold does not contain muscles; therefore, thinning is possible, it is unlikely to become bulky, and blood circulation is stable even if the entire circumference of the flap is incised. Moreover, tension is not applied to the reconstructed part because the flap rolls over; therefore, dog-ears are not created at the donor site, and the scar is inconspicuous because it coincides with the gluteal fold. Although it is possible to attach fascia to the flap to raise it, blood circulation is stable without fascia; when fascia is included, the flap may become bulky. In general, this procedure is a good alternative for reconstruction when the genitourinary system is removed in addition to pelvic visceral organ removal. One disadvantage is that the source of posterior fixation of the tensor fascia lata is the rectum and surrounding soft tissues. If the width of the defect is large, gluteal sulcus

flaps may be used on both sides; however, it cannot be used in longitudinal defects beyond the symphysis pubis.

We consider the combined use of the fascia lata and gluteal fold flap effective for treating vaginal stump prolapse because it enables a more natural reconstruction of the external genitalia. The use of the fascia lata may relieve intra-abdominal pressure, and the gluteal fold flap effectively fills the tissue defect and supplies blood to the fascia lata to ensure fascia engraftment.

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Conflicts of interest

The authors declare no financial or commercial conflict of interest.

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