

Transvaginal repair of rectovaginal fistula by filling with bulbocavernosus fat pad and retaining scar tissue

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Summary

The authors performed transvaginal repair of rectovaginal fistula (RVF) with bulbocavernosus fat pad by incising left side of the labia majora and retained scar tissues which were formed after three months for one patient. Repair of the RVF was successful and the patient had normal diet and defecation at a week after surgery. Previous gynecological surgery performed on the patient resulted in RVF accompanied by weak rectal tissues. Retaining the tissues and scars surrounding to the fistula and filling the fistula with bulbocavernosus fat pad tissue increased rectal wall thickness and facilitated healing. The efficacy of this surgical technique will need further studies with larger patient cohorts to establish a clear success rate.

Key words: Rectovaginal fistula; Bulbocavernosus fat pad tissue; Reserving scar tissue.

Introduction

Rectovaginal fistula (RVF) is an abnormal connection between the vaginal epithelium and rectal mucosa. It is a pathological passage between rectum and vagina, also known as fecal fistula. The condition may manifest as fecal accumulation in the vagina and/or vaginal fecal discharge which is especially obvious with liquid stool. With a smaller fistula, vaginal discharge of feces may not happen, but vaginal gas may be released.

RVF can be congenital or acquired. Congenital RVF is defined as an abnormal opening of the rectum into the vagina due to anorectal agenesis; acquired RVF results mostly from obstetrical injury, surgical injury, trauma, tumors, or infection. It has been reported that 85% to 92 % of acquired RVF are caused by obstetrical injuries [1]. In developed countries, the incidence of RVF resulting from childbirth is 0.06% to 0.1 %, but it is higher in developing countries [2].

It has been proposed to classify RVF into high, middle, and low according to the location of the fistula opening in the vagina [3]. Common international classification of RVF is currently based on location, size, and etiology of the fistula in the vagina, and is described as simple and complex [4]. A simple fistula is defined as one that occurs in the lower vagina, and has a diameter of less than 2.5 cm. The fistula may have one opening, but two or more openings are possible, particularly when caused by trauma or infection. A fistula is considered complex when it is located in the higher vagina, and its diameter is greater than 2.5 cm. Causes of complex RVF include inflammatory bowel disease, radiotherapy complications, tumors, and recurrence of fistula after a failed repair.

Many surgical treatments provide solutions for RVF. Surgical methods vary due to diverse causes, location, and size of the fistula, and surrounding scarring tissues. When treating fistula at a high location in the vagina, difficult exposure, unclear anatomical localization, and a weakened rectovaginal septum often result in low success rates. Therefore, repairing the fistula directly through a transvaginal or transrectal approach is difficult. Conversely, middle and low fistulas are easily exposed, clearly localized, and the rectovaginal septum is relatively thick, thus the success rate is higher [5]. The authors treated a patient with RVF after she underwent surgical resection of a cervical squamous cell carcinoma. The patient's fistula was repaired with a bulbocavernosus fat pad and scar tissues were retained.

Case Report

History

In 1998, the patient had an abdominal uterine fibroid myomectomy. In 2005, she underwent a laparoscopic myomectomy at the Shenzhen Sixth People's Hospital affiliated to Guangdong Medical College. There was no history of hypertension, diabetes, heart disease, tuberculosis, hepatitis, trauma, and food or drug allergies. She had two pregnancies, one resulting in a live delivery, and the other was terminated by an abortion. On June 8, 2012, the patient underwent a colposcopy for excision of a cervical neoplasm. Pathological examination of the biopsy showed a cervical invasive non-keratinizing squamous cell carcinoma positioned at 10 o'clock, Stage IB1. On June 26, 2012, laparoscopic surgery was performed. The operation included wide hysterectomy, bilateral oophorectomy, pelvic lymph node dissection, and pelvic adhesiolysis. Intraoperative exploration found a slightly enlarged uterus, adhesions between the omentum and the abdominal wall, and dense adhesions between the intestine and posterior wall of uterine fundus. The postoperative diagnosis was CIN1 and cervical polyps, and the vaginal vault and lymph nodes showed no metastasis. Five days after surgery, vaginal discharge turned odorous, yellow-green liquid, increasing in

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Figure 1. — Incision of the left side of the labia majora and dissociation of the bulbocavernosus fat pad.

volume when the patient was in a standing position. Vaginal speculum examination revealed a tear approximately one cm in size located on the left side of the vaginal stump, and two fistulas with openings of 1.5 cm located below the suture at the right side of the stump. The top of the fistula was positioned five cm from anus and was considered an intestinal fistula. The patient was instructed to take digestible food to maintain normal defecation.

On October 19, 2012, she was admitted to the present hospital for surgery. Physical examination showed that the patient had an acceptable clinical condition and could urinate on her own. Fresh granulation tissue was found within the vaginal stump, and the rectal fistula was interlinked with the tear on the vaginal stump.

Preoperative preparation

To minimize the number of bacteria in the rectum, preoperative bowel preparation involved full cleaning the gut and rigorous disinfection of both rectum and vagina. Three days before surgery, the patient was given oral metronidazole (0.4 g, twice daily) and instructed a no residue diet. Each night, diluted iodine was used to clean the vagina. The night and morning prior to surgery, a cleaning enema and a retention enema with metronidazole were carried out.

Surgical procedure

Repair of RVF was performed as follows: under general anesthesia, the patient was in a lithotomy position. After disinfecting the surgical field with iodophor, surgical towels and sterile membranes were placed.

Skin on the left side of the labia majora was longitudinally incised about seven cm. The left bulbocavernosus fat pad was dissociated by cutting perineally (Figure 1).

Vaginal and rectal walls were disinfected with iodophor, and the fistula was exposed on the vaginal side. Tissues surrounding the fistula opening were injected with epinephrine. The vaginal mucosa around the fistula was dissociated, and necrotic tissues were removed. Silk sutures (No. 4) were used to close up the fistula around the proximal vaginal wall, and suture ends were reserved. Next, the vaginal mucosal membrane around the fistula opening and the medial fat pad at the left side of the labia majora were incised. A tunnel about one cm in width was isolated, and the bulbocavernosus fat pad was placed over the original fistula opening through the tunnel. The suture ends from the previous step were

knotted to fix the fat pad in place, and the distal vaginal wall around the fistula was stitched interruptedly with 2-0 Vicryl suture to close the top of the vagina.

The subcutaneous tissues and then the skin of the labia majora were stitched interruptedly using silk suture (No. 4). Afterward, the wound was covered with dressing. The intraoperative infusion volume measured 1,500 ml, and bleeding was about 50 ml. The patient's urine was clear and measured about 100 ml. After the operation, the patient was safely moved into the general ward.

Postoperative conditions

After three days of fasting, the patient took liquid diet for an additional three days before resuming a normal diet. Appropriate antibiotics and haemostatic agents were used. She bathed with a 1:5,000 potassium permanganate solution after defecation. After wound stitches and urethral catheter were removed, the vagina was unobstructed and secretions were normal. She was discharged on October 30, 2012.

Discussion

Diagnosis of RVF is relatively straight forward. RVF requires surgery, and many physicians first consider conducting a diverting colostomy, expecting the RVF to heal on its own. In fact, simple diverting stoma surgery for RVF produces a lower spontaneous healing rate. Rex *et al.* reported that only 35.37% of patients who underwent a diverting colostomy spontaneously healed; while non-surgical treatments for some patients with RVF had a 71% healing rate [6]. In addition, Kosugi *et al.* conducted diverting stoma surgery for treating RVF caused by rectal cancer surgery. The spontaneous healing rate was only 42.9%; the average healing time was up to six months [7]. In patients with spontaneous healing, the only cause for surgery was anastomotic leakage with concurrent abscesses.

Patients with injured vaginal wall do not benefit from diverting stoma surgery. Patients with simple RVF who exhibit mild symptoms can receive non-surgical treatment and observation, instead of routine colostomy. Patients with severe symptoms should be treated surgically. In case of poor local condition and a long waiting time for surgery, diverting stoma surgery should be considered. Patients with complex fistulas (in particular after radiotherapy) should undergo diverting stoma and elective surgical repair. For patients with RVF caused by malignant invasion, diverting stoma surgery is necessary to improve quality of life. The patient in this study had cervical cancer and multiple postoperative fistulas, a shortened vagina, and increased vaginal secretions. Thus, surgery was the best course of treatment.

Timing of RVF repair surgery is under debate. Some physicians suggest that repair should be carried out six to 12 weeks after the RVF has occurred. A complexity of etiologies and clinical treatments of RVF suggest that treatment should be individualized in accordance with the specific circumstances of each patient. Surgical intervention should only be performed when the local infection or inflammation is under control. The patient with RVF described in the current study was repaired after three months.

Successful repair of RVF relies critically on the reconstruction of the rectal wall and restoration of the rectum and anal canal within the high pressure zone. However, local anatomical characteristics of RVF make surgery prone to failure. Subsequent surgery is often related with increased difficulty and failure rates. After three repairs, the success rate was reported at only 55 % [8].

The present authors considered that their patient had weak rectal tissue. If the necrotic tissues around the fistula were scraped without resectioning the fistula or surrounding tissues and scars, the blood supply would likely be inadequate and high local tension was likely to occur. Bulbocavernosus fat pad tissue has a rich blood supply, and using it as filling between the vagina and rectum created four layers consisting of the proximal vaginal wall, scar tissue, the fat pad, and the distal vaginal wall, ultimately resulting in a strengthened rectal wall. Postoperative recovery of the patient was satisfactory, eliminating the need for diverting colostomy or the occurrence of diaphasic surgical injury.

Effective prevention of low postoperative RVF should include: (1) a careful review of the patient's history of pelvic surgery and/or radiotherapy prior to surgery, (2) an assessment of risk factors so that preventive measures are taken. Some patients who undergo resection or separation of the posterior wall in the perineum may have unsatisfactory outcomes. In these cases, preventive filling with bulbocavernosus fat pad tissue in rectovaginal gap may be considered to ensure adequate blood supply and to build a barrier against inflammation or abscesses. (3) Placement of the postoperative drainage tube is also important in preventing anastomotic leakage and abscess formation. RVF is a rare occurrence, but it can seriously affect a patient's quality of life. Ineffective treatment often gives rise to delayed postoperative rehabilitation and adjuvant therapy. Therefore, prevention strategies for RVF and risk assessment are of particular importance. Once a diagnosis of RVF is established, individualized treatment programs should be developed based on the type of disease and the patient's condition. For the majority of patients, surgical repair is the best option to improve quality of life. The patient in this study underwent gynecological surgery and had weak tissues surrounding the fistula. Retaining the surrounding tissues and scars,

as well as filling the opening with bulbocavernosus fat pad tissue, increased rectal wall thickness and may have improved healing. The efficacy of this surgical technique will need large sampling studies to be confirmed.

Conclusions

Retaining the tissues and scars surrounding to the fistula and filling the fistula with bulbocavernosus fat pad tissue increase rectal wall thickness for rectovaginal fistula. The efficacy of this surgical technique will need further studies with larger patient cohorts to establish a clear success rate.

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