

Laparoscopic vesicovaginal fistula repair: A case report

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Summary

Introduction: Vesicovaginal fistula is a common urinary complication following gynecological surgery, greatly affecting the quality of life of patients. Minimally invasive laparoscopic surgery is becoming a standard method for treating this complex complication. *Case report:* A 48-year-old female patient with vesicovaginal fistula after hysterectomy due to uterine fibroids underwent successful treatment with laparoscopic surgery at 108 Military Central Hospital. Relevant literature was reviewed to draw initial experiences. *Conclusion:* Laparoscopic surgery for vesicovaginal fistula is a highly successful procedure with minimal invasiveness for patients.

Keywords: Vesicovaginal fistula, laparoscopic vesicovaginal fistula repair.

1. Background

The vesicovaginal fistula is a passageway between the bladder and the vagina, resulting in frequent leakage of urine through the vagina. It's caused by many reasons, of which the most common cause is complications due to obstetric and gynecological interventions. Patients with vesicovaginal fistula often carry a heavy psychological burden, and guilt due to the constant leakage of urine, causing unpleasant odors, greatly affecting their mental and physical health and reducing the patient's quality of life [1].

Surgery is the only method that can cure vesicovaginal fistula, close the communication between the bladder and the vagina, and restore the anatomy and normal function of the bladder and the vagina. Currently, in the world, open surgery, and laparoscopic surgery for vesicovaginal fistula are applied. In this report, we performed intraperitoneal laparoscopic surgery to close a vesicovaginal fistula in a patient with prior gynecological intervention. Intending to share the

initial experience of laparoscopic surgery for vesicovaginal fistula, we describe a typical case of this pathology at the Department of Lower Urology, Center of Urology and Andrology, 108 Military Central Hospital.

2. Case presentation

In December 2022, a 48-year-old female patient was admitted to the hospital with the reason that urine was passing through the vagina. The patient has a long history of detecting large uterine fibroids and is indicated for laparoscopic total hysterectomy at a provincial hospital about 5 months before admission. During the postoperative period, the patient discovered that urine naturally flowed through the vagina, gradually losing the feeling of needing to urinate. Urine flows through the vagina continuously, causing the patient to wear diapers all day. The patient who went to the Lower Urology Department, 108 Military Central Hospital was diagnosed with a bladder-vaginal fistula after doing laboratory tests, imaging tests, and cystoscopy.

Computed tomography: Uterus is not observed, in the late phase the contrast agent can be seen from the bladder exiting into the vagina; may be the fistula is higher than Mercier's bar.

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Figure 1. The CT-scan image of the location of the contrast leak from the bladder into the vagina
(Source: Bui Thi D., 1974, MRN 23229949)

Cystoscopy: No bladder fistula was seen, but after performing the bladder pump test with 0.9% NaCl mixed with potassium permanganate, clean gauze was placed in the vagina, and the gauze turned purple; concluded that there was a vesicovaginal fistula.

Preoperative diagnosis: (High) vaginal fistula after hysterectomy due to fibroids at 6 months.

We performed surgery with 2 stages:

Stage 1-Cystoscopy: found the fistula, put a modelage catheter through the fistula, and threaded out into the vagina; place bilateral ureteral

catheters (as a landmark to avoid further damage to the ureters).

Stage 2-Laparoscopy: We placed 4 laparoscopic trocars (1 bioscope trocar, 2 left iliac fossa trocar and 1 right iliac fossa trocar); removed pelvic adhesions (after previous surgery) to approach the back of the bladder and Douglas pouch; cut along the top of the bladder down to the fistula, dissect the posterior bladder wall and anterior vaginal wall, remove the fistula, suture the vaginal wall in 1 layer and suture the bladder wall in 2 layers; checked bladder did not find any leakage, ended the surgery.

The total operation time was 150 minutes.

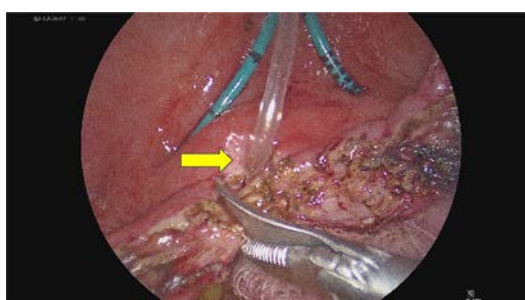


Figure 2. Fistula (yellow arrow) resection

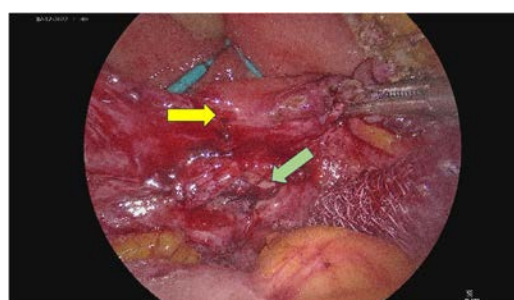


Figure 3. Dissection of posterior bladder wall (yellow arrow) from anterior vaginal wall (green arrow)

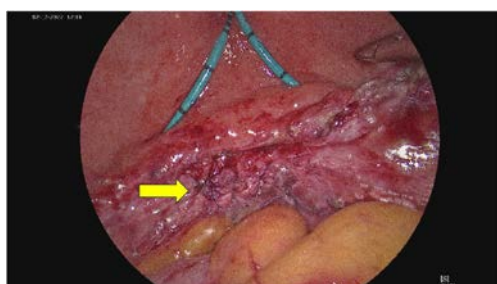


Figure 4. Vaginal suture (horizontal line, yellow arrow)

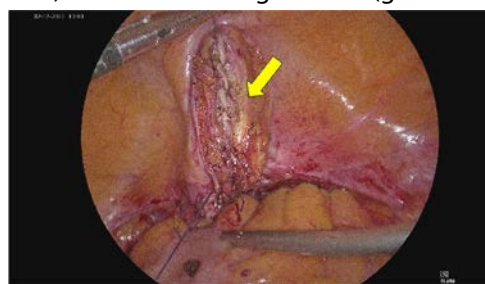


Figure 5. Bladder suture (vertical line, yellow arrow)

The postoperative period of the patient was favorable, gastrointestinal circulation after 1 day, abdominal drainage removed after 3 days, urethral catheter removed after 9 days, discharged after 11 days of treatment in the state of returning to urination. normal, no urine leakage through the vagina.

After 2 months, the patient was re-examined, and the urinary symptoms were completely normal.

3. Discussion

The first author to describe laparoscopic vesicovaginal fistula repair was Nezhat (1994), who emphasized 6 principles in laparoscopic surgery to help close the fistula successfully: (1) Expose the fistula and surrounding tissue sufficiently, (2) excision of all fibrous tissue, (3) suture without tension and good blood perfusion, (4) use of the correct suture, (5) insert between different types of tissues such as omentum, peritoneum, etc. so that the bladder wall is separate from the vaginal wall, (6) good bladder drainage after surgery [2].

3.1. Choices of approaches

Vesicovaginal fistula surgery has many approaches such as transvaginal, transbladder, transperitoneal, or laparoscopically. However, the choice of which surgical procedure is suitable for the closure of a vesicovaginal fistula is convenient and effective, it also depends on many factors such as location, fistula size, type of fistula, condition of the patient as well as the expertise and experience of the surgeon.

In this case, with the diagnosis of high vesicovaginal fistula (above Mercier's bar), we chose transperitoneal laparoscopic surgery. This is the approach with the highest success rate and fewer complications than other approaches [3, 4].

3.2. Time of surgery

Determining the time of surgery to close the vesicovaginal fistula is very important and necessary in the treatment of the vesicovaginal fistula, to make the surgery successful, to restore the isolation of the bladder, the vagina, and the normal function of each organ. Previously, most authors suggested that the fistula should be closed within 3 to 6 months, or even later after a true fistula has formed, there is a

clear demarcation between healthy and necrotic tissue. markedly, edema and inflammatory process were stable. Roberto Angioli delayed surgery 4 to 6 weeks from the time the fistula appeared [3]. In a study by Le Nguyen Minh Hoang et al. in 2019 at Binh Dan Hospital, 12 patients with vesicovaginal fistula underwent intraperitoneal laparoscopic surgery to repair the vesicovaginal fistula. Surgery was performed 12-24 weeks (15.4 ± 4.7 weeks) after the lesion causing the fistula [5].

Thus, it can be said that the indication for surgery to close the vesicovaginal fistula for the patient in our report is consistent with the recommendations proposed (24 weeks).

3.3. Duration of surgery

Laparoscopic vesicovaginal fistula closure usually has a longer operative time than open surgery. In the study of the author Stilianos Giannakopoulos et al in 2019, the average surgical time was 178 ± 31.6 minutes [6], research by author Le Nguyen Minh Hoang in 2019 had an average surgical time of 135 ± 26.5 minutes [5].

Vesicovaginal fistula repair surgery is usually performed after previous obstetric and gynecological surgeries, so this time the fistula closure surgery must remove the old postoperative adhesions to ensure sufficient surgical field. The time of surgery depends on many factors such as the limited surgical field making surgery difficult, patients who have had previous pelvic surgery requiring a lot of surgical removal, the location of the fistula being close to the ureteral orifice, large-old fistula... In addition, the operating time also depends partly on the experience of the surgeon.

For this reported case, intraoperatively observed adhesion inflammation, and scarring due to old surgery (after laparoscopic total hysterectomy), so the time of surgery is also relatively long (150 minutes), like the meantime with referenced reports.

3.4. Postoperative complications

Vesicovaginal fistula closure surgery is difficult to succeed due to the following reasons: 1/ The fistula is located deep, difficult to operate, and difficult to manipulate even though the surgeon

operated through the vagina or the bladder, 2/ The structure between the bladder and the vagina is very thin, there is no cushion in the middle, so it is difficult to heal after patching, 3/ The fistula has a lot of fibrous tissue caused by scarring, the consequences of infection or radiation therapy (in patients with cervical cancer, pelvic cancer), 4/ Wide fibrous fistula due to previous failure of fistula closure surgery, so the fistula recurs easily, 5/ The bladder contains urine and is under pressure, so the fistula is easy to open, especially when it is still in the inflammatory stage [7].

Research by author Tran Trong Tri and colleagues in 2013 at Binh Dan Hospital with 39 patients undergoing surgery to close the vesicovaginal fistula, 01 cases required conversion to open surgery, 04 cases required blood transfusion. Maximum infusion is 1000ml and at least 350ml. The reported cases of blood transfusion are difficult cases, due to high inflammation, and large and complex fistulas, which make the operation time longer and blood loss more. Other complications such as damage to the ureter and damage to nearby organs were not recorded [2].

René Sotelo et al in 2005, reported complications encountered in 02/15 patients, in which 1 case had intestinal damage and underwent laparoscopic repair of intestinal perforation (this patient had a history of 3 surgeries, previous surgery should have caused peritoneal adhesions); another case suffered from epigastric artery injury during trocar placement, which was managed by suturing the bleeding point. The postoperative course of these two patients was not unusual [4].

The patient in our report did not have any complications during surgery as well as after surgery.

5. Conclusion

In the literature, so far, laparoscopic vesicovaginal fistula repair is a difficult operation, with many complications, the most common are fistula recurrence and infection. The most common cause of vesicovaginal fistula is complications of gynecological surgery. Indications for surgery to close the fistula are usually made 12-24 weeks after the lesion causing the fistula. The patient in the

report had appropriate indications, the surgery went smoothly, and during the postoperative period, there were no surgical complications.

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