

# Laparoscopic Treatment of Vesicouterine Fistula

John R. Miklos, M.D.

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## Abstract

*Vesicouterine fistula are rare disorders that are most commonly repaired by laparotomy. A specific type of vesicouterine fistula, vesicocervical fistula, was repaired successfully by laparoscopy. This procedure was associated with minimal blood loss and morbidity, and the patient's hospital stay was less than 24 hours.*

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Vesicouterine and vesicocervical fistulas are rare, accounting for approximately 4% of all urogenital fistulas.<sup>1</sup> They are a pathologic communication between the bladder and the uterus. Vesicouterine fistulas encompass the entire passage between bladder and uterus; those specific to the cervix are called vesicocervical fistulas. Nonsurgical and surgical approaches are successful in treating the disorders. Although repair may be achieved by both vaginal and abdominal approaches, the abdominal approach is the most common.

## Case Report

A 41-year-old gravida 1, para 1 woman developed a vesicocervical fistula 15 years after supracervical hysterectomy was performed for benign disease. During the procedure the bladder was accidentally entered and repaired with absorbable suture. No other immediate intraoperative or postoperative complications were reported. The patient had no history

of endometriosis, pelvic irradiation therapy, or inflammatory bowel disease.

Fifteen years postoperatively the patient developed a watery vaginal discharge. A vesicovaginal fistula was suspected after speculum examination confirmed a copious amount of watery discharge. Intravenous pyelogram and cystogram revealed normal-appearing ureters and a 1-cm fistulous tract connecting the midportion of the anterior vaginal wall to the posterior aspect of the bladder. The woman was referred to the urogynecology unit for further evaluation and treatment.

Difficulty locating the fistulous tract during speculum examination prompted a methylene blue dye test. Inspection of the vagina at that time confirmed blue dye extravasating from the external cervical os during Valsalva maneuver. Cystoscopy confirmed bilateral ureteral patency and a single fistulous tract that was located posterior, midline, and superior to the trigone. Initial management consisted of continuous

From the Urogynecology and Reconstructive Pelvic Surgery, Department of Obstetrics and Gynecology, Northside Hospital, Atlanta, Georgia.

Address reprint requests to John R. Miklos, M.D., Urogynecology and Reconstructive Pelvic Surgery, 308 Maxwell Road, Suite 100, Atlanta, GA 30004; fax 770 475 0585.

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bladder drainage for 4 weeks with a transurethral Foley catheter. Because the tract did not close spontaneously, the patient was offered surgery. After a thorough discussion of surgical approaches and informed consent, she elected to proceed with laparoscopic repair.

### **Operative Procedure**

Under general anesthesia, a minilaparotomy was made at the inferior edge of the umbilicus where a 10-mm port was placed to accommodate the laparoscope. Three other ports were placed under direct vision: a 5-mm port suprapubically and in the right paramedian area, and a 12-mm port, for needle insertion, in the left paramedian area. Thorough inspection of the abdomen and pelvis was performed. Numerous bowel adhesions were lysed. A serosal defect of the anterior sigmoid colon was repaired in a transverse fashion with two interrupted, delayed absorbable sutures.

An end-to-end anastomosis sizer was placed in the vagina to elevate the cervical stump and facilitate dissection. The bladder was retrograde filled with normal saline to identify the vesicocervical reflection. The vesicocervical space was dissected with endoscopic scissors and blunt dissection. The fistulous tract was excised, and dissection was continued 1 to 2 cm distally, mobilizing vagina and bladder. A harmonic scalpel was used to excise the cervical stump from its vaginal attachment. The vaginal cuff was closed with 2-0 polyglactin interrupted sutures. Six 3-0 polyglactin sutures were placed in a single layer, interrupted fashion, to close the cystotomy. Greater omentum was identified and thought to be inadequate for mobilization and interposition between vagina and bladder. The bladder was filled in a retrograde fashion with 300 ml indigo carmine and normal saline solution, and no leaking was noted laparoscopically.

Operating time was approximately 2 hours and 45 minutes and estimated blood loss was 50 ml. No intraoperative or postoperative complications occurred. The patient was discharged the morning after surgery with a transurethral Foley catheter in place. The bladder was drained for 21 days, after which time cystoscopy and vaginal inspection revealed a well-healed surgical site. Nine months after the procedure the woman had no signs or symptoms of recurrence.

### **Discussion**

Urogenital fistulas in women are relatively uncommon. Especially rare are vesicouterine fistulas, with

fewer than 200 cases reported in the literature since 1908.<sup>2</sup> Etiologies include trauma, irradiation, cancer, and infection. Although reported causes are diverse, most fistulas resulted from surgical trauma during lower segment cesarean section.<sup>3</sup> Others reported spontaneous vesicouterine fistula formation during vaginal birth after cesarean section.<sup>4,5</sup> The present case is of interest because of late onset of the fistula—15 years after surgery. The patient was followed annually by the same physician who performed supracervical hysterectomy. Both she and the physician confirmed that neither had identified signs or symptoms of urinary leakage before this time. In addition, the woman denied trauma, infection, radiation therapy, or malignancy. All her Papanicolaou smears were within normal limits and she had not had therapy or surgery of the cervix.

Pathology of the cervical stump, which contained remnants of the fistulous tract, showed no evidence of endometriosis or malignancy. One might theorize that the fistula occurred due to a combination of suture placement during supracervical hysterectomy and abnormal tissue at an endometriotic site, however, the etiology remains elusive. Vesicouterine fistula repair is most commonly approached transabdominally by laparotomy. Basic principles are as follows<sup>6</sup>:

- Absence of local infection
- Cystoscopy or catheterized ureters as necessary
- Exposure, positioning, necessary instruments
- Wide mobilization
- Do not excise scar
- Appropriate suture material
- Tension-free closure of bladder
- Graft when indicated
- Drain bladder postoperatively

Adherence to these principles should increase the likelihood of successful repair<sup>7</sup> regardless of approach, and most fistulas are now closed successfully on initial attempts. As discussed with the patient preoperatively, laparoscopy allows for transabdominal access with excellent exposure and minimal morbidity. In addition, regardless of mode of access (laparoscopy vs laparotomy) the same surgical technique would be used to identify and repair the fistula. The woman was also informed that there were no reported cases of laparoscopic vesicouterine fistula repair; however, laparoscopic vesicovaginal fistula repair had been performed successfully<sup>8,9</sup> and was a similar operation.

Laparoscopy should be considered a mode of abdominal access and should not influence method of



surgical repair. Surgical success should depend on adherence to good technique rather than approach. To my knowledge, this is the first case report of a successful laparoscopic repair of a vesicocervical fistula. I believe the procedure may be an alternative to the traditional, more morbid approach.

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