Published in final edited form as:

Female Pelvic Med Reconstr Surg. 2016 ; 22(6): 501–503. doi:10.1097/SPV.0000000000000297.

Vesicosalpingo Fistula: A Case Presentation And Review of The Literature

Taylor G. Maloney*, Alex Kavanagh, MD[†], and Rose Khavari, MD[†]

*Houston Methodist Hospital, Texas A&M University College of Medicine, Houston, TX

[†]Department of Urology, Houston Methodist Hospital, Houston, TX

Abstract

Objectives—To describe a case presentation and perform a review of the literature on vesicosalpingo fistulas.

Methods—An otherwise healthy 32 year-old patient was referred to urology with symptoms of persistent abdominal bloating and urine leakage from the vagina after abdominal conversion of laparoscopic hysterectomy. Two fistula tracts were identified in the bladder during preoperative cystoscopy. The tracts were cannulated with temporary ureteral catheters, and the patient underwent a robotic-assisted laparoscopic repair of a vesicosalpingo and a vesicovaginal fistula.

Results—The patient was discharged on the first postoperative day with an indwelling urinary catheter. A follow-up cystogram performed on the 14th postoperative day demonstrated no evidence of extravasation. There was no evidence of recurrence at a 4-month follow-up visit. This is the first reported robot-assisted laparoscopic repair of a vesicosalpingo fistula and the fifth reported case of a vesicosalpingo fistula in the literature. This is the first reported case of separate vesicosalpingo and vesicovaginal fistulas presenting concurrently in a single patient.

Conclusions—This case presentation with 2 separate fistula tracts emanating from the bladder demonstrates the need to meticulously evaluate each individual fistula tract in order to successfully visualize and address all fistula tracts present in order to mitigate failures and the need for reoperation.

Keywords

vesicosalpingo fistula; vesicovaginal fistula; fistula tract; robotic; urinary incontinence

A fistula is an abnormal connection between 2 organs, vessels, or structures. The majority of urological fistulas in developed countries are consequences of iatrogenic injury during pelvic surgery, most commonly hysterectomies, or from radiotherapy in the treatment of pelvic cancers.¹ Contrary to this, most obstetric fistulas in developing countries result from obstructed labor during childbirth.² A retrospective cohort study which analyzed 436 cases of genitourinary fistulas occurring after hysterectomies in the English National Health Service found that benign conditions such as endometriosis, uterine fibroids, genital

prolapse, or menstrual disorders accounted for 78% of fistulas, whereas 22% of fistulas occurred after hysterectomies for malignant conditions, such as cervical, uterine, or ovarian cancer.³ However, women whom had undergone hysterectomies for cervical cancer bore the highest risk overall, with genitourinary fistulas occurring in about 1% of cases.³

Many variants of urogenital fistulas affect patients in both developing and developed countries, such as vesicovaginal, vesicouterine, vesicocervical, urethrovaginal, ureterovaginal, rectourethral, rectovesical, and even vesicosalpingo fistulas. A case series in the United Kingdom spanning more than 25 years of data covering 348 urogenital fistulas showed that almost 74% of fistula sites were vesicovaginal, nearly 11% were urethrovaginal, 6% were ureterovaginal, 3.7% were combined vesicovaginal and urethrovaginal, 3.2% were vesicouterine or vesicocervical, 1.4% were vesicorectal, and 1.1% were ureterorectal in origin.⁴ A vesicosalpingo fistula is an abnormal epithelial-lined communication between the urinary bladder and the fallopian tube. This rare type of urogenital fistula has only 4 previously published cases in the literature.⁵⁻⁸ The aim of the present study is to describe a complex case presentation of a patient with concurrent vesicosalpingo and vesicovaginal fistulas, their surgical repair, and to perform a review of the literature on vesicosalpingo fistulas. With the rise of laparoscopic and robotic gynecology procedures, this case report and review of literature emphasize the need for meticulous evaluation and characterization of each fistula tract in the perioperative setting.

CASE STUDY

A 32-year-old otherwise healthy woman presented with a chief complaint of abdominal pain, distention, bloating, and persistent and continuous vaginal leakage. The patient had undergone hysterectomy for uterine fibroids 3 months prior. The hysterectomy was complicated with significant intraoperative pelvic bleeding in addition to a suspected bladder injury and was converted from laparoscopy to an open abdominal approach. Her ovaries and fallopian tube remnants remained in situ.

In the perioperative period, the patient noted persistent urine leakage and presented to her gynecologist for repeat evaluation. A urinary catheter was placed by the performing surgeon, but this failed to resolve the leakage. The patient was then referred to urology for further assessment and management.

Pelvic examination revealed a defect at the apex of the vagina which was consistent with a vesicovaginal fistula. Cystoscopy revealed 2 small defects near the midline of the posterior bladder trigone. The larger of the 2 defects was continuous with the vagina, whereas the smaller defect had no apparent vaginal communication. The findings were discussed, and an informed consent was obtained for abdominal fistula repair using robotically assisted laparoscopic technique.

Operative Technique

The patient was induced with general anesthetic and placed in the dorsal lithotomy position. Cystoscopy was repeated and cannulation of the larger of the 2 bladder defects with a ureteric catheter confirmed a 1-cm vesicovaginal fistula above the trigone. The smaller

bladder defect was cannulated, and its catheter path was not evident. Fluoroscopy and retrograde fistulogram of this tract were performed, and the catheter appeared to sit within the peritoneum. Bilateral retrograde pyelogram showed no filling defects, hydronephrosis, or extravasation in the ureters or renal pelvises. Bilateral temporary ureteral catheters were placed to further identify the ureters during the surgical repair.

Access to the peritoneum was achieved using open approach and the da Vinci (Sunnyvale, CA) robot was docked with port placement similar to abdominal sacrocolpopexy using a 12-mm periumbilical camera port; three 8-mm robot ports with left predominant spacing; and a 10-mm right-sided assistant port. Abdominal surveillance was performed, and the patient's right-sided fallopian tube was found adherent to the remnant of the vaginal cuff closure from her abdominal hysterectomy. The ureteral catheter which was placed into the smaller of the 2 bladder defects during our cystoscopic evaluation was visualized within the fistula tract and appeared to enter the right fallopian tube (Fig. 1).

The peritoneum overlying the posterior bladder was incised horizontally and divided. The bladder was elevated to define the vesicovaginal plane. The vesicovaginal plane was dissected using a combination of blunt and sharp dissection and a controlled cystotomy was performed. The vesicovaginal fistula was identified, entered, and the ureteric catheter within the fistula was traced back to its origin to visualize the tract in its entirety. The vesicovaginal fistula was widely exposed to achieve approximately 3 cm of healthy tissue on either side of the fistulous tract to ensure a tension-free repair. The bladder was completely mobilized away from the anterior surface of the vagina, whereas ureteral stents were in full view to ensure ureteral integrity.

The ureteric catheter originating from the smaller bladder defect was seen exiting the bladder and entering the fallopian tube. The vesicosalpingo fistula was grasped and similarly divided and excised. The fallopian tube remnant was cauterized.

Closure of the bladder was then performed in a horizontal running fashion with 3-0 polyglactin absorbable suture. This suture line was then imbricated with a second layer of 2-0 polyglactin suture. Water-tight closure was confirmed with a bladder backfill test using 300 mL of pigmented normal saline. The vaginal defect was then closed with a 2-0 polyglactin suture in a running locked fashion along its length. An omental flap was then interposed and anchored within the vesicovaginal plane with sutures. The patient's ureteral catheters were removed and an 18 Fr urinary catheter was left in situ for 2 weeks duration.

Results

Total operative time was 110 minutes (including the endoscopic and fluoroscopic procedures). Robotic console time for this procedure was 80 minutes. The estimated blood loss was 50 mL. The patient was discharged on the first postoperative day. No intraoperative or perioperative complications were identified. The patient's Foley catheter was placed and left in situ for 14 days. A follow-up voiding cystourethrogram performed 2 weeks after the operation demonstrated no evidence of extravasation. There were no concerns of fistula formation or leak at the four month follow-up visit.

REVIEW OF THE LITERATURE AND DISCUSSION

The first vesicosalpingo fistula in the literature was diagnosed by Rozin in 1954 while evaluating a 24-year-old woman for sterility of 5 years duration. Contrast dye was injected into the patient's right fallopian tube during hysterosalpingography and was observed entering a sac. In repeat imaging 1 hour later, the contrast medium had disappeared from the sac. The key difference was that the patient had urinated before the second film was taken, thus clearing her bladder of the contrast medium. The first diagnosis of a vesicosalpingo fistula was made.⁶

More than 60 years have passed since then, and there have only been three additional vesicosalpingo fistulas case reports published in the literature. Previously reported vesicosalpingo fistulas have had etiologies which were either unknown,⁶ secondary to a vaginal hysterectomy,^{7,8} or from a tubo-ovarian abscess.⁵ Vesicosalpingo fistulas may present with signs and symptoms, which include sterility,⁶ lower abdominal pain,^{5,7,8} dysuria,⁷ fever,⁵ recurrent urinary tract infections,^{5,8} and vaginal urine leakage. Vesicosalpingo fistulas which form after a vaginal hysterectomy are likely caused by misdirected sutures joining the fallopian tube and bladder wall which are placed while tying the round ligament and fallopian tube shut.⁷ Table 1 summarizes vesicosalpingo fistulas reported in the literature thus far.

Sterility is a potential consequence of the vesicosalpingo fistula and was even a primary complaint in 1 case report.⁶ Although prior studies did not evaluate for fertility on follow-up, one can infer that repair of a vesicosalpingo fistula would lead to the restoration of fertility as it has been shown to after the repair of vesicouterine and vesicocervical fistulas.⁹ The diagnosis of a vesicosalpingo fistula was most commonly made through cystoscopy with fistulogram,^{5,7,8} but was once made after hysterosalpingography.⁶ An excretory urogram or cystogram may aid in diagnosing a vesicosalpingo fistula, but it occasionally is made during exploratory laparotomy.⁷

Two of the 4 reported cases of vesicosalpingo fistulas were treated with salpingo-oophorectomy,^{7,8} one was treated with fistulectomy and salpingostomy,⁶ and one was treated by removing an intrauterine contraceptive device, which was suspected as the inciting cause of a tubo-ovarian abscess, and placement of a Foley catheter drainage with parenteral antibiotics for 11 days.⁵ Conservative nonoperative management of a vesicosalpingo fistula with Foley catheter drainage, fistula tract irrigation, and antibiotics is usually only temporarily beneficial.^{7,8} One case report does not quantify the amount of time at follow-up visit, so the duration of benefit that their patient received through non-operative management remains uncertain.⁵

A recent case series described the robot-assisted laparoscopic repair of vesicovaginal fistula in detail and reports a 100% cure rate without fistula recurrence at a 2-year follow-up visit.¹⁰ This is the first case report detailing the robotic-assisted laparoscopic repair of simultaneous vesicovaginal and vesicosalpingo fistulas with a uterus in situ.

The vesicovaginal fistula is likely to present with constant urinary leakage from the vagina however the other forms of fistulas would have varying symptoms. It is imperative to

perform preoperative cystoscopy with evaluation of the ureters in order to exclude the presence of multiple concurrent fistulas, such as urethrovaginal, vesicocervical, vesicouterine, vesicoureteral, or vesicosalpingo fistulas. If multiple fistula tracts or complex fistulas are present, authors strongly recommend abdominal approach over the transvaginal repair for wider dissection and accessibility to peritoneal cavity for exploration if needed and interposition of omentum or peritoneum in the vesicovaginal space. A recent randomized controlled trial by Barone et al has found that after repair of simple female genital fistulas, 7-day bladder catheterization is noninferior to 14 days and poses no increased risk of repair breakdown, urinary retention, or residual incontinence; however, the authors believe that in the presence of multiple fistulas, radiated field, or a more comprehensive reconstructive repair a longer catheterization may be indicated which is usually followed by an imaging study such as a cystogram.

If only the vesicovaginal fistula was repaired in the present case, the patient would likely have had persistent abdominal pain, urine leakage, and worsening of symptoms without resolution of the vesicosalpingo fistula. This shows a necessity to maintain a high suspicion for multiple fistula tracts communicating to various surrounding structures (such as the ureter, fallopian tubes, etc) and to thoroughly evaluate each fistula tract present. The combination of a detailed history and physical examination, complete preoperative and intraoperative evaluation of the fistula tracts including cystoscopy, retrograde pyelograms, ureteral and fistula tract catheterization, abdominal approach with tension-free cystotomy repair, omental interposition, and a follow-up with cystourethrogram all contributed to a successful robotic-assisted laparoscopic vesicovaginal and vesicosalpingo fistula repair and the avoidance of any future reoperations.

References

1. Langkilde NC, Pless TK, Lundbeck F, et al. Surgical repair of vesicovaginal fistulae—a ten-year retrospective study. *Scand J Urol Nephrol.* 1999; 33(2):100–103. [PubMed: 10360449]
2. Lewis, G. World Health Organization, Department of Making Pregnancy Safe. *Obstetric fistula: guiding principles for clinical management and programme development.* Geneva: World Health Organization; 2006.
3. Hilton P, Cromwell DA. The risk of vesicovaginal and urethrovaginal fistula after hysterectomy performed in the English National Health Service—a retrospective cohort study examining patterns of care between 2000 and 2008. *BJOG.* 2012; 119(12):1447–1454. [PubMed: 22901248]
4. Hilton P. Urogenital fistula in the UK: a personal case series managed over 25 years. *BJU Int.* 2012; 110(1):102–110. [PubMed: 21981463]
5. London AM, Burkman RT. Tuboovarian abscess with associated rupture and fistula formation into the urinary bladder: report of two cases. *Am J Obstet Gynecol.* 1979; 135(8):1113–1114. [PubMed: 517596]
6. Rozin S. The diagnosis of tubointestinal and tubovesical fistulas by hysterosalpingography. *Am J Obstet Gynecol.* 1954; 68(6):1525–1534. [PubMed: 13207240]
7. Stewart DW, Gianis TJ, Bell TE. Salpingo-vesical fistula. Rare and unusual complication of vaginal hysterectomy. *Urology.* 1990; 36(1):66–67. [PubMed: 2368234]
8. Turner BI, Ekbladh L, Edson M. Vesicosalpingovaginal fistula. *Urology.* 1976; 8(1):49–50. [PubMed: 941360]
9. Sapmaz E, Celik H, Semerciöz A. Omental graft use in Youssef syndrome. *Eur J Obstet Gynecol Reprod Biol.* 2003; 109(1):92–96. [PubMed: 12818452]

10. Agrawal V, Kuchеров V, Bendana E, et al. Robot-assisted laparoscopic repair of vesicovaginal fistula: a single-center experience. *Urology*. 2015; 86(2):276–282. [PubMed: 26194296]

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

FIGURE 1.

Posterior view of the bladder visualized laparoscopically. The right fallopian tube inserts directly into the posterior bladder wall and is continuous with the bladder lumen. A 5 Fr ureteric catheter was passed from the bladder into the fallopian tube remnant using cystoscopy (it is within the lumen of the bladder and the fallopian tube and cannot be seen in this image).

TABLE 1

Vesicosalpingo Fistulas in the Literature

Authors	Year	Age, y	Etiology	Symptoms	Diagnosis by	Treatment
Rozin ⁶	1954	24	Unknown	Sterility of 5 y	Hysterosalpingography	Fistulectomy and salpingostomy
Turner et al ⁸	1976	48	Vaginal hysterectomy 3 years prior and abscess formation	Abdominal pain, UTI	Cystoscopy with fistulogram	Fistulectomy and salpingo-oophorectomy
London and Burkman ⁵	1979	21	Tuboovarian abscess possibly caused by IUD	Abdominal pain and fever, UTI	Cystoscopy with fistulogram	IUD removal and 11 d of parenteral antibiotics
Stewart et al ⁷	1990	46	Vaginal hysterectomy 2 years prior	Abdominal pain aggravated by urination	Cystoscopy with fistulogram	Fistulectomy and salpingo-oophorectomy
Present Study	2015	32	Vaginal hysterectomy 3 months prior with a known bladder injury	Vaginal urine leakage	Cystoscopy with fistulogram and CT urogram	Abdominal vesicovaginal and vesicosalpingo fistulectomy

IUD, intrauterine device; UTI, urinary tract infection.