

Received: 2017.03.07
Accepted: 2017.06.12
Published: 2017.09.04

Vesico-Adnexal Fistula Treated with Transurethral Embolization Under Fluoroscopic Guidance

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

ABCDEF 1 **Ma'moon H. Al-Omari**
ABEF 2 **Aws Shawkat Hamid**

1 Department of Radiology, Jordan University of Science and Technology (JUST), King Abdullah University Hospital (KAUH), Irbid, Jordan
2 Department of Radiology, University of Michigan Health System, Ann Arbor, MI, U.S.A.

Corresponding Author: Ma'moon H. Al-Omari, e-mail: mamoonomari@hotmail.com
Conflict of interest: None declared

Patient: Female, 27
Final Diagnosis: Vesicoadnexal fistula
Symptoms: Dysuria and discharge
Medication: —
Clinical Procedure: Embolization
Specialty: Urology

Objective: Rare disease

Background: Vesico-adnexal fistulae are rare. Potential causes of such fistulae include infection, endometriosis, and iatrogenic causes following pelvic surgeries. To the best of our knowledge, only 3 cases of vesico-adnexal fistulae have been reported, and all these patients were treated surgically by removing the involved adnexa, excising the fistulous duct, and suturing the bladder. We describe the first case of vesico-adnexal fistula that developed after pelvic surgery, and it was successfully treated by transurethral embolization under fluoroscopic guidance.

Case Report: Our patient was a 27-year-old woman with a history of hysterectomy. She presented to our institution with urethral discharge and a recurrent urinary tract infection. The cystogram showed a fistula tract connecting the urinary bladder and left adnexal cystic cavity. She was treated conservatively with antibiotics and prolonged Foley catheterization to allow for spontaneous closure of the fistula; however, conservative management failed. The patient was successfully treated with transurethral embolization of the tract under fluoroscopic guidance.

Conclusions: In such a rare scenario with limited treatment options, interventional radiology offers an alternative minimally invasive treatment strategy.

MeSH Keywords: Embolization, Therapeutic • Fluoroscopy • Urinary Fistula

Full-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/904202>



1213



—



2



9



Background

Among genitourinary fistulae, vesico-adenal fistulae are rare. To the best of our knowledge, only 3 cases of vesico-adenal fistulae have been reported in the literature [1–3]. Most vesico-genital fistulae are iatrogenic in origin. Other causes include infectious ovarian inflammation and endometriosis [4]. Surgical repair is the gold standard treatment for such fistulae; other treatment options include percutaneous drainage, electrodissection, and fibrin sealant injection [4,5]. We describe a case of vesico-adenal fistula in a patient successfully treated with transurethral intravesical embolization under fluoroscopic guidance. To the best of our knowledge, this is the first reported patient treated with this technique.

Case Report

A 27-year-old woman (para 3 gravida 3) underwent elective cesarean section (CS) through a transverse suprapubic incision at a private hospital; the indication for CS was 2 previous CSs. A full-term male infant was delivered (3.2 kg), and no intraoperative complications were observed. The mother was discharged in good condition after 3 days.

The patient presented 7 days later with progressive lower abdominal pain, dizziness, and bloody urine. She had sepsis and was anemic (hemoglobin level=6 mg/dL). The patient underwent urgent exploratory laparotomy. Dehiscent skin from the previous CS, a necrotic uterus, and an injured urinary bladder with a uterovesical fistula were discovered. Pockets of pus between the rectus abdominis muscle and parietal peritoneum, and a large amount of blood within the peritoneal cavity were found. Pelvic adhesions were noted; however, there was no evidence of endometriosis. Transabdominal hysterectomy with partial cystectomy was performed, and 2 L of blood and multiple pockets of pus were evacuated. Resected tissues were sent for histopathology examination. She was discharged a few days later in good general condition.

After the procedure, the patient reported recurrent urethral discharge, cloudy urine, and recurrent urinary tract infection (UTI). Results of the urine culture revealed *Klebsiella pneumoniae*. The voiding cystourethrogram (VCUG) showed a vesico-adenal fistula projecting posteriorly and to the left side. The pelvic computed tomography scan showed an adnexal cystic lesion measuring about 4 cm; however, the tract of the fistula was not shown. Cystoscopy was performed, but the bladder orifice of the fistula could not be visualized. Vaginoscopy showed normal findings.

The patient was treated conservatively with antibiotics (ciprofloxacin, 500 mg twice daily) and long-term catheterization to allow for spontaneous closure of the fistula. After several months

of conservative management, the fistulous connection remained patent and the patient remained symptomatic. Treatment options were discussed with the patient; surgical repair would be difficult because of adhesions and fibrosis related to several previous procedures. The patient was referred to our Interventional Radiology Department for possible embolization. The technique of the intended procedure and possible complications were discussed with the patient, and written informed consent was obtained.

The procedure was performed in an angiographic suite (Philips Medical Systems, Eindhoven, the Netherlands) using a standard aseptic technique. With the patient in the lithotomy position, the urinary bladder was catheterized with a 6-French guiding catheter (Cook Medical, Bloomington, IN). The urinary bladder was opacified with 300 cc of iohexol (Omnipaque 300, Nycomed Imaging AS, Oslo, Norway), a non-ionic contrast medium. The VCUG further confirmed the presence of the fistula. The ostium of the fistula was selectively catheterized with a microcatheter-microwire (Renegade™; Boston Scientific, Natick, MA), and the fistulogram showed a long, narrow tract connecting the urinary bladder and the left adnexal cystic cavity (Figure 1). Cyanoacrylic glue (Glubran 2, GEM, Viareggio, Italy) was infiltrated through the microcatheter into the cyst and along the tract and its bladder ostium.

The completion cystogram showed immediate closure of the fistula. The Foley catheter was left inside the urinary bladder to enhance closure of the fistula. The cystogram after 48 h confirmed closure of the fistula. The Foley catheter was removed, and the patient was discharged on prophylactic antibiotics.

Follow-up VCUG after 1, 6, and 12 months confirmed complete closure of the tract (Figure 2). Subsequent urine analyses were normal and the patient's symptoms were completely resolved.

Discussion

Iatrogenic injury of the lower urinary tract during gynecologic operations is relatively uncommon [6], and bladder injuries are the most common urinary tract injuries [6]. Most of these injuries are immediately recognized and corrected, and potential complications are minor [6,7].

Gynecologic surgery is considered the most common cause of bladder fistula [4,5–8]. Bladder fistulae may involve the female reproductive tract, urethra, gastrointestinal tract, and skin [9].

To the best of our knowledge, only 3 cases of vesico-adenal fistulae have been reported in the literature [1–3]. The first case was reported in 1990 secondary to suppurative ovarian inflammation after placement of an intrauterine pessary, which was treated surgically by removing the right adnexa, excising the

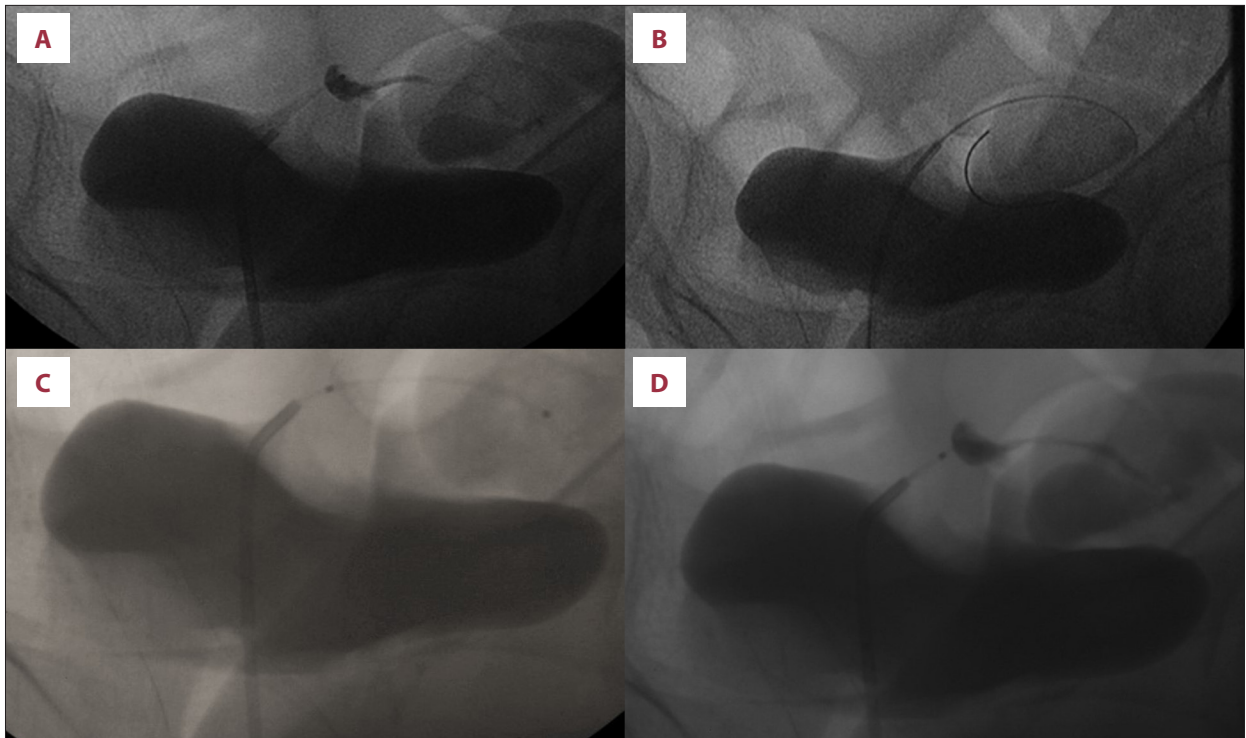


Figure 1. (A) Fistulogram showing a long, narrow tract connecting the urinary bladder and left adnexal cystic cavity. (B) A guidewire is inserted deep into the cyst. (C) A microcatheter is inserted into the cyst. (D) Embolization with glue is performed using the microcatheter technique.

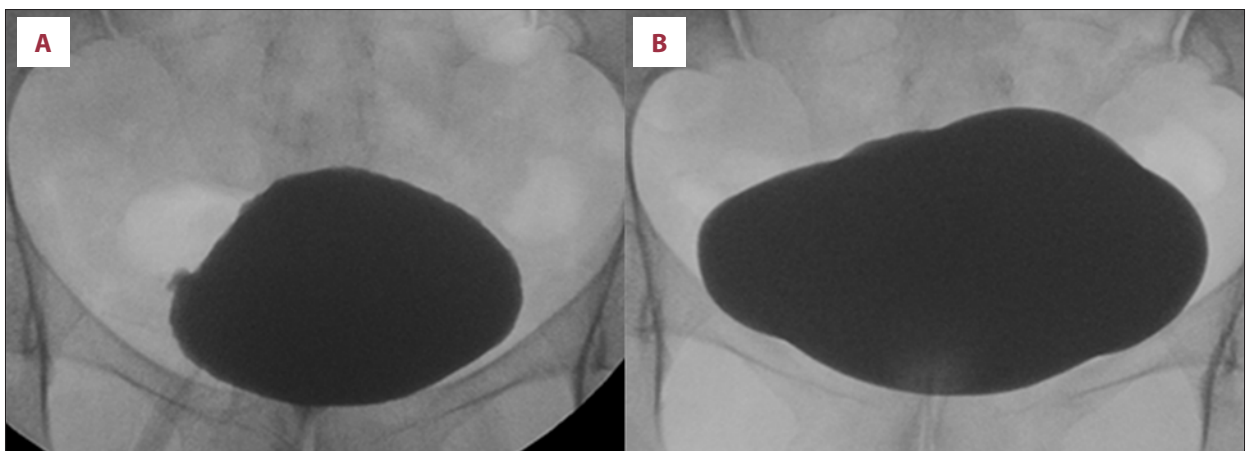


Figure 2. Follow-up cystograms after (A) 1 month and (B) 6 months confirming complete closure of the tract.

fistulous duct, and suturing the bladder [1]. The second case was reported in 1997 in a 44-year-old female patient, and the vesico-adnexal fistula was caused by a granulomatous ovarian infection in the background of ovarian endometriosis [2]. The patient was also treated with surgical resection of the abscess and fistulous tract and partial cystectomy. The third case was reported in 2014 in a patient with advanced endometriosis complicated by a tubo-ovarian abscess, and the patient was treated by median laparotomy with resection of the right ovarian abscess and vesical fistula [3].

Our patient developed a vesico-adnexal fistula after pelvic surgery. The pelvic surgery included hysterectomy of the infected uterus, bladder injury repair, and debridement of pelvic collections. We believe that an unrecognized bladder injury during previous CSs, which was complicated by suppurative pelvic infections, was the main reason for formation of this fistula. Endometriosis was not implicated in our case, as this was excluded by intraoperative and histopathological findings.

The patient's general condition improved postoperatively, and she was discharged on analgesics and antibiotics. The fistula was discovered using follow-up cystography, which was performed as a workup for a recurrent UTI and to exclude a leak.

Since the tract of the fistula was narrow, the patient was initially treated conservatively with long-term catheterization and antibiotics. The fistula remained patent, and the patient was not comfortable with the Foley catheter. She also refused a suprapubic catheter. Cystography was performed in preparation for intravesical repair; however, the bladder opening of the fistula was not found, probably due to scars from the previous surgery and the small orifice of the fistula.

We believe that open surgical repair in our patient was infeasible because of the adhesions from previous surgeries because she had undergone 3 CSs and 1 emergency laparotomy with evacuation of multiple pelvic collections. The interventional treatment we used in this patient was effective and precluded the need for pelvic surgery. The presence of the narrow tract was optimal for embolization and was probably the main reason for treatment success. To the best of our knowledge, this is the first reported patient treated using such a technique.

References:

1. Carl P: Vesico-ovarian fistula in suppurative ovarian inflammation and salpingitis. *J Urol*, 1990; 143: 352–53
2. Yazawa K, Nonomura N, Kokado Y et al: Vesico-adnexal fistula following endometriosis of an ovary. *Br J Urol*, 1997; 79: 658
3. Tran C, Even M, Carbonnel M et al: Vesicoovarian fistula on an endometriosis abscessed cyst. *Case Rep Obstet Gynecol*, 2014; 2014: 240596
4. Hillary CJ, Osman NI, Hilton P, Chapple CR: The etiology, treatment, and outcome of urogenital fistulae managed in well- and low-resourced countries: A systematic review. *Eur Urol*, 2016; 70: 478–92
5. Garza Cortés R, Clavijo R, Sotelo R: Laparoscopic treatment of genitourinary fistulae. *Arch Esp Urol*, 2012; 65: 659–72
6. Lee JS, Choe JH, Lee HS, Seo JT: Urologic complications following obstetric and gynecologic surgery. *Korean J Urol*, 2012; 53: 795–99
7. Teeluckdhar B, Gilmour D, Flowerdew G: Urinary tract injury at benign gynecologic surgery and the role of cystoscopy: A systematic review and meta-analysis. *Obstet Gynecol*, 2015; 126: 1161–69
8. Cowgill KD, Bishop J, Norgaard AK et al: Obstetric fistula in low-resource countries: An under-valued and under-studied problem – systematic review of its incidence, prevalence, and association with stillbirth. *BMC Pregnancy Childbirth*, 2015; 15: 193
9. Yu NC, Raman SS, Patel M, Barbaric Z: Fistulas of the genitourinary tract: A radiologic review. *Radiographics*, 2004; 24: 1331–52

Conclusions

Vesico-adnexal fistulae are rare and can be difficult to treat. This paper describes the successful management of a vesico-adnexal fistula by transurethral intravesical embolization. Minimally invasive techniques should be offered to such patients when conservative management fails.

Acknowledgements

We would like to thank the Deanship of Research at the Jordan University of Science and Technology for the approval and continuous support of this study. We also would like to thank Editage (www.editage.com) for editing and reviewing the English language of this manuscript.

Conflicts of Interest

None.