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Case Report

Salpingovesical fistula mimicking an enterovaginal fistula ☆

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ABSTRACT

Fallopian tube fistula with the bladder can mimic an enterovaginal fistula. A 34-year-old woman presented with continuous urinary incontinence after hysterectomy. A cystogram confirmed a vesicovaginal fistula and a possible additional intestinal communication. Further imaging, however, ruled out an enterovaginal fistula and diagnosed a fallopian tube prolapse with salpingovesicovaginal fistula. This case demonstrates the importance of multiple imaging modalities in identifying and clearly delineating the anatomy of gynecologic fistulous connections. The case illustrates the fact that while salpingovesical fistula is a rare complication of hysterectomy, it is an important consideration in one's differential diagnosis.

Introduction

A variety of fistulas may arise after hysterectomy between the female genital tract and urinary tract or between the genital and intestinal tracts. Salpingovesical fistulas are rare and can often be mistaken for an enterovaginal fistula. The radiologist and urogynecologist should be familiar with the fistula and the way to diagnose it with the varying diagnostic modalities.

Case report

This is a 34-year-old woman with no significant past medical history presenting with continuous urinary incontinence. She is 6 months after cesarean section with subsequent hysterectomy for intraoperative hemorrhage in her native Brazil. Her incontinence began one month prior to presentation, and she used about 4 pads per day. She also complained of nocturia, urgency and frequency of urination. She did not

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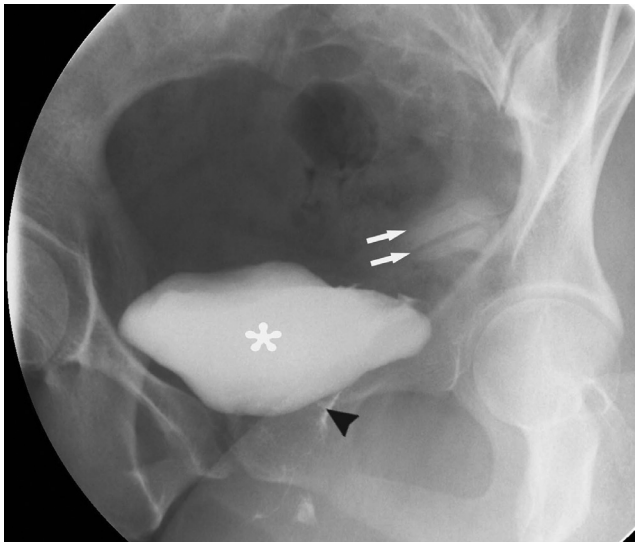

Fig. 1 – A radiographic image from a cystogram demonstrates some contrast outlining the vagina (black arrowhead) consistent with presence of cystovesical fistula. A left lower quadrant contrast containing structure (initially thought to represent the sigmoid colon) demonstrates parallel folds (white arrows). An asterisk indicates a contrast filled bladder.

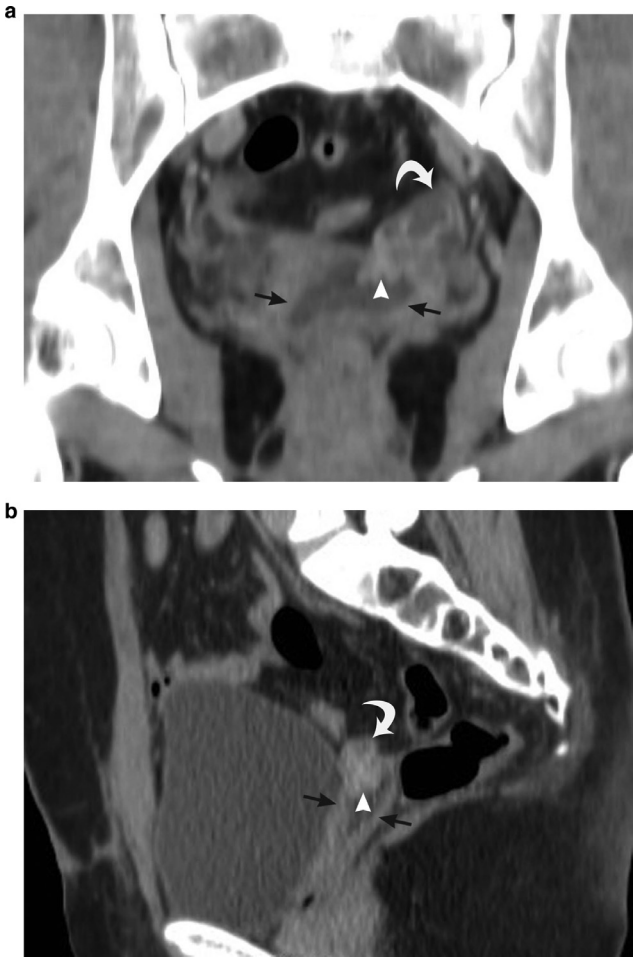

Fig. 2 – A and B. Coronal (A) and sagittal (B) CT images show a fluid filled vagina (black arrows). An enhancing soft tissue mass extends through the vaginal wall into the vault (white arrowhead). This mass is contiguous with the left supravaginal fluid containing structure (curved white arrow).

complain of dysuria or hematuria. On exam, urine in the vaginal vault and an erythematous papillary lesion in the left fornix of the vagina were observed. Urinalysis was normal. A cystogram confirmed a vesicovaginal fistula and suggested additional communication with the sigmoid colon (Fig. 1). A subsequent computed tomography (CT) urogram demonstrated layering fluid in the vaginal vault consistent with a vesicovaginal fistula. Markedly irregular thickening of the vaginal wall suspicious for a soft tissue mass was noted. There was also an elongated, somewhat tubular and cystic structure immediately adjacent to the vaginal wall in the region of the left adnexa compatible with hydrosalpinx. There was no contrast extravasation from the upper urinary tract or any enteric communication seen (Fig. 2). Gynecological exam and biopsy (Fig. 3), in addition to pelvic ultrasound (Fig. 4), confirmed that the fallopian tube prolapsed into the vaginal vault and was in communication with the fistula, causing hydrosalpinx. Six months after hysterectomy, the patient underwent transabdominal vesicovaginal fistula repair with left salpingectomy (Fig. 5). The patient has an uneventful postoperative course and was discharged in good condition on the third postoperative day with an indwelling Foley catheter. Ten days later, the catheter was removed and there was no further urinary incontinence.

Discussion

A variety of fistulas may arise after hysterectomy between the female genital tract and urinary tract or between the genital and intestinal tract. A meta-analysis performed by Tebeu et al found that vesicovaginal fistulas account for the vast majority of gynecologic fistulas (79%-100%) with rectovaginal and combined vesicovaginal and rectovaginal fistulas significantly less common [1].

There are only a handful of reported cases of salpingovesical fistulas. Patients with salpingovesical fistulas may present with symptoms that include abdominal discomfort, dysuria, recurrent urinary tract infection (UTI) [2], vaginal discharge [3], sterility [4], or urinary incontinence. The first salpingovesical fistula reported in literature was diagnosed in 1954 in a 24-year-old woman through hysterosalpingography [4]. Three more diagnoses of salpingovesical fistulas were made between then and 1990 commonly with a cystoscopy with fistulogram [2,5,6]. The most recent salpingovesical fistula in literature was diagnosed in 2015 in a 32-year-old woman post hysterectomy. The imaging modalities used were cystoscopy with fistulogram and CT urogram. The case report describes the importance of performing preoperative cystoscopy with evaluation of the ureters

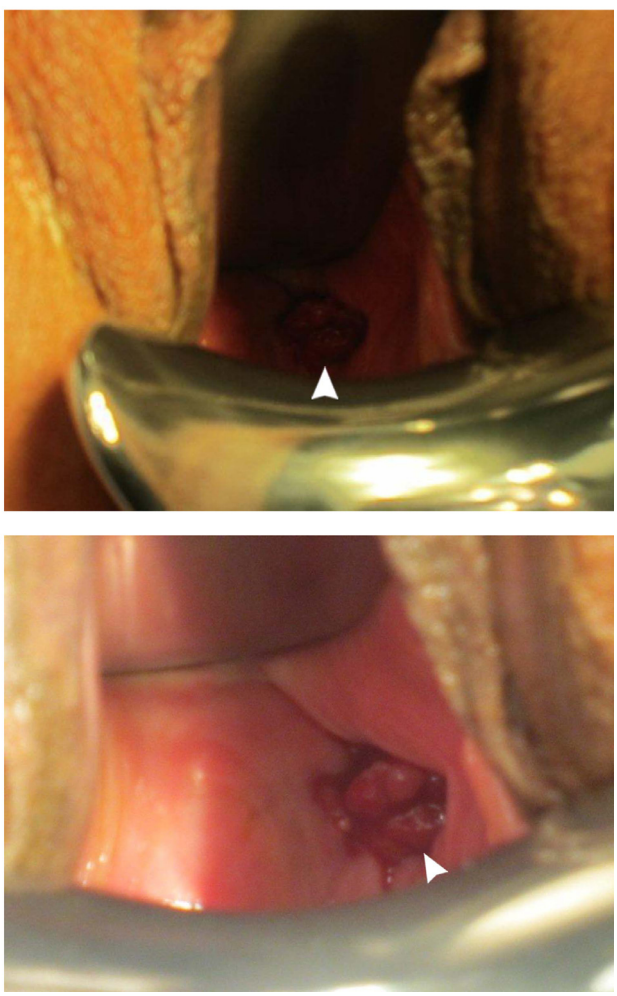

Fig. 3 – A and B. Speculum vaginal exam (A) and close-up (B) photographs demonstrating fallopian tube prolapse (arrowhead).

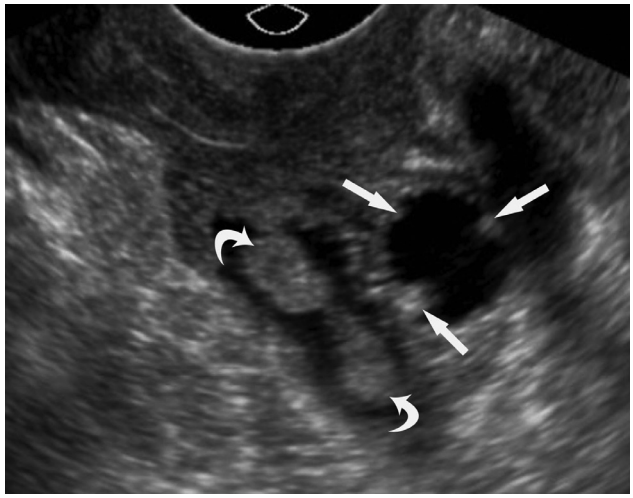

Fig. 4 – An intravaginal sonographic view of the left adnexa identifies a serpiginous tubular fluid filled structure. It was traced on real time imaging to the vaginal wall. Note thickened folds running along the walls, demonstrated in cross section (at the tips of the straight white arrows) and longitudinal orientation (between the curved white arrows). The findings represent hydrosalpinx with typically thickened folds. This dilated fallopian tube retrospectively correlates with the contrast collection seen on cystogram and left supravaginal fluid containing CT finding.

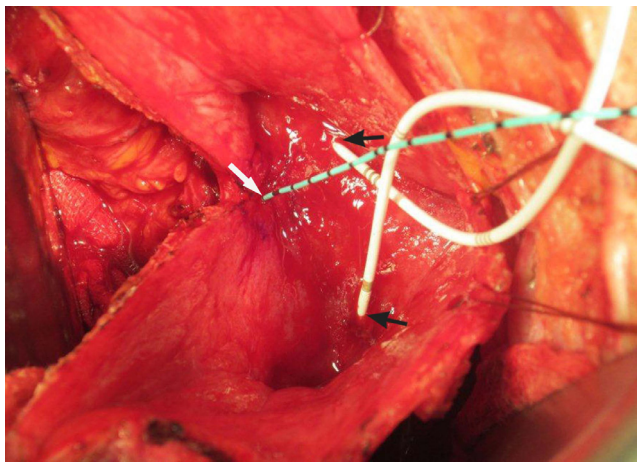

Fig. 5 – Intraoperative photograph of bladder bivalve dissection reveals the fistulous tract cannulated with a green catheter (white arrow) and both ureteric orifices cannulated with white catheters (black arrows).

in order to exclude the presence of multiple fistulas [7]. The practice of using additional imaging modalities to delineate the anatomy and extent of fistulous tracts has gained increasing support [8]. All but one of the reported cases were treated with surgical intervention.

Imaging plays an important role in evaluating gynecologic fistulas and may help direct appropriate management. Magnetic resonance (MR) imaging and CT are currently reported to be the preferred imaging modalities for initial evaluation in patients suspected to have a pelvic fistula [9]. The fistula is seen as a high-signal, fluid-filled communication on T2 weighted and short tau inversion recovery (STIR) sequences, which accentuate appearance of inflammatory edema and fluid collections. Air filled tracts will demonstrate low signal on all sequences [10]. The sagittal plane is most informative for detection of vaginal fistulas. CT with oral and intravenous contrast administration is the preferred modality in patients unable to tolerate MR imaging or fluoroscopy. Three-dimensional reconstructions can help identify the precise course of the fistula and provide detailed anatomic information, important for surgical planning [11]. Fluoroscopic techniques with instillation of contrast material rectally, through the vagina, or into the urinary tract are traditional methods for detection of fistulas. Limitations include overlap of the bowel loops, which may obscure a fistula to the vagina. In addition, in the case of a barium enema, the contrast is more likely to follow the path of least resistance, moving proximally in the colon [12]. Ultrasonographic (US) techniques, including transabdominal, endovaginal, endoanal and color Doppler US have

produced variable results for detection of fistulas and are not routinely used for this indication [13].

Diagnosing of iliovaginal fistula on fluoroscopy after oral or rectal barium administration [14] or vaginography [12] is based on observation of contrast pooling in the small bowel and demonstration of communication with the vagina. The fact that the contrast is collecting in the small bowel is inferred from the tubular shape of contained collection and presence of folds.

Advanced chronic hydrosalpinx presents as a dilated tubular structure [15]. Moreover, chronic hydrosalpinx can also exhibit thickened and flattened endosalpingeal folds. This phenomenon had been described sonographically as a “beads-on-a-string” sign, which is defined as wall projections protruding into the fluid filled lumen visible in the cross section of the tube [16]. These endosalpingeal folds can appear as ridges running along the length of the dilated tube, when the tube lumen is viewed in longitudinal dimension and filled with contrast material.

Folds of the ileum, also known as valvulae conniventes, can be less pronounced than in the jejunum or even absent [17]. Thus, a short segment of a dilated fallopian tube containing visible endosalpingeal ridges can be confused with the folds in the normal ileum when filled with contrast material. This can mislead an interpreter to believe that the patient has an iliovaginal fistula.

In our case, initial cystography demonstrated a connection between the urinary bladder and vagina, as well as between the vagina and posterior tubular structure, with a configuration suggestive of a bowel loop. The initial diagnoses of vesicovaginal and enterovaginal fistulas were proposed. Further imaging with CT and US revealed the dilated, tubular structure to be a fallopian tube, and the diagnosis was thus revised to salpingovesicovaginal fistula. The ability to visualize direct communication of the fallopian tube with the vaginal wall on US played a key role in formulation of the diagnosis of fallopian tube prolapse.

Conclusion

Our patient represents a rare case of salpingovesical fistula with fallopian tube prolapse and hydrosalpinx mimicking an enterovaginal fistula. To the best of our knowledge, this is the first occurrence of fallopian tube prolapse diagnosed by US reported in English literature. While this case presents a rare complication of hysterectomy, it is important to keep a fallopian tube fistula as a consideration in one’s differential diagnosis. This case also demonstrates the limitations of fluoroscopic evaluation and value of cross-sectional imaging in not only identifying gynecologic fistulas, but also in clearly delineating the regional anatomy and fistulous connections.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2020.05.063.

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