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Concomitant repair of a complex rectovesicovaginal fistula following extensive pelvic surgery: A case report

Ahmad Badawi, Hussam Aloufi, Mohammed Almuzaini, Mohamed Mohiuddin, Amr Mahran, Abdullah Ghazi

ABSTRACT

Introduction: Complex pelvic fistulae involving the genitourinary and the gastrointestinal tracts represent a rare but serious complication following extensive pelvic surgery. Management of such conditions could be challenging due to the disrupted anatomy and multidisciplinary involvement.

Case Report: We are reporting a case of a 41-year-old female with a long-standing history of endometriosis, recurrent ovarian endometriomas, and multiple pelvic surgeries who developed a combined vesicovaginal and rectovaginal fistula manifesting as continuous urinary and fecal leakage. Two fistulous tracts were identified in imaging and endoscopic evaluation connecting the posterior bladder wall, vaginal vault, and rectal stump. Both fistulae were repaired simultaneously via the transabdominal approach where multidisciplinary teams including urology and colorectal surgery were involved. The patient remained continent and asymptomatic in her subsequent follow-up appointments.

Conclusion: Concomitant repair of rectovesicovaginal fistulae is feasible and safe in selected patients via thorough multidisciplinary approach, adequate imaging, and individualized surgical intervention.

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INTRODUCTION

Complex rectovesicovaginal fistulae (RVVF) are considered debilitating conditions defined by the presence of abnormal communications between the bladder, vagina, and rectum. These fistulae could result in urinary and/or fecal incontinence, leading to worrisome physical discomfort, recurrent infections, and significant psychosocial distress [1, 2].

While obstetric trauma, pelvic surgery, malignancy, and radiation therapy are the most common etiologies, endometriosis has become increasingly involved in the development of such complex fistulae [3–5]. Furthermore, rectovaginal fistulae were the most encountered complication after rectosigmoid resection for endometriosis [6]. The coexistence of fistulae involving the bladder, vagina, and rectum, though rare, further complicates management due to the intricate pelvic anatomy and multifactorial pathophysiology [7, 8].

Here, we report a case of a 41-year-old woman with recurrent endometriosis and multiple pelvic surgeries who developed refractory rectovaginal and vesicovaginal fistulas that was managed through staged and multidisciplinary reconstructive approach.

CASE REPORT

A 41-year-old female with a history significant for endometriosis and recurrent ovarian cystectomies that required multiple laparoscopies and laparotomies at different hospitals over a 15-year timespan.

Presentation and surgical course at previous institution

The patient was initially presented at another institution in 2018 and was seen by the Obstetrics and Gynecology Department for worsening pelvic pain, painful defecation, and mild dysmenorrhea. Initial imaging with magnetic resonance imaging (MRI) of the abdomen and pelvis revealed a large (22 × 18 × 18 cm) multilocular cystic lesion primarily arising from the left ovary, suggestive of mucinous cystadenoma or cystadenocarcinoma. This was redemonstrated on computed tomography (CT) abdominopelvic with contrast (Figure 1). CA12-5 was 137 U/mL (high, normal ≤35) and CA 15-3 was 42 U/mL (high, normal ≤25), but CA 19-9, alpha-fetoprotein (AFP), and human chorionic gonadotropin (hCG) were within normal limits. These findings prompted total abdominal hysterectomy with bilateral salpingo-oophorectomy. Significant adhesions were encountered between the ovarian mass and the rectosigmoid. Rectosigmoid resection reanastomosis with transverse loop colostomy was performed. Histopathology revealed uterine leiomyomata, chronic endometritis, focal cervical endometriosis, and ovarian endometriotic cyst adherent to colonic wall which also showed focal endometriosis.

Six months later, following colostomy reversal, she developed dysuria followed by fecaluria, prompting further investigation. Computed tomography (CT) abdomen with rectal contrast demonstrated a complex rectovaginal and rectovesical fistula with contrast passing through the fistula between the anterior rectal wall, vaginal stump, and posterior bladder wall (Figure 2). Due to the fistula's location at the vaginal vault, a vaginal approach to repair was deemed unfeasible. A protective transverse loop colostomy was performed for fecal diversion. The patient remained in this condition for several years, hesitant to pursue further surgical intervention.

Surgical course at our institution

Three years later, the patient was presented to our clinic for continuous urinary leakage and intermittent fecal leakage per vagina. On vaginal examination, the patient had negative cough stress test even after filling the bladder with 250 cc of saline via a catheter. Air bubbles were noticed when she was asked to strain without obvious urine leak from vagina. A multiphase abdominopelvic CT with contrast was performed and that showed the persistence of the fistulous tract (Figure 3). Cystoscopy and concomitant colonoscopy were performed. Cystoscopy demonstrated a supratrigonal fistulous opening on the posterior wall of bladder, approximately 3–4 cm from and caudal to both ureteric orifices. A cystogram was done and revealed that the opening lead to two tracts: one to the proximal end of the colon and the other to the vagina. Concurrent colonoscopy was performed through the anus revealed a closed Hartmann's stump without any communication to the bladder or vagina. Colonoscopy was then performed via the stoma and showed a fistulous tract with the urinary bladder around 40 cm distance from the stoma (Figure 4).

Three months later, the patient underwent complex fistula repair. Intraoperatively, dense adhesions were encountered. During adhesiolysis, the bladder dome was opened, revealing a fistula in the posterosuperior aspect. O'Connor's technique was then employed the bladder was bivalved down to the level of the fistulous tract. Interestingly, gastrointestinal anastomosis (GIA) metallic clips were found at fistula site, which could indicate improper prior surgical technique. The left ureteric orifice was visualized and was cannulated with a 6 Fr ureteric catheter and that exited through a defect in the left lower ureter. The vagina fistula was initially closed by 2/0 Vicryl stitch in a continuous fashion. A left ureteric reimplantation with JJ stent insertion and psoas hitch was performed, where the left side of the bladder was brought up close to injured ureter and it was fixed to the Psoas muscle by 2 Vicryl 2/0 interrupted stitches. Ureteroneocystostomy was performed using five 5/0 interrupted Vicryl stitches. Concurrently, the colorectal team dissected the colorectal stump, the previous anastomosis was taken down, excised, and sent for histopathology, and an end-to-end anastomosis to the rectum was performed using EEA circular 28 mm stapler. Colonoscopy was performed and a negative air-leak test was confirmed. The previous colostomy was taken down; the edges were refreshed and were simultaneously closed. An iatrogenic rectal injury was encountered during dissection of the posterior vaginal wall and that was repaired via Vicryl 3/0 interrupted stitches. The bladder wall was then closed in 2 layers via Vicryl 3/0 stitches in continuous fashion. The bladder was then filled with saline where no leaks were seen. An omental flap was then interposed between the bladder and vagina. A protective new double-barrel colostomy from the transverse colon was then performed. The omentum was not adequate and since a protective colostomy has been performed, we thought that no need for an interposition tissue to be placed between the rectum and the vaginal stump. Sigmoidorectal anastomotic stump showed extensive fibrosis and moderate chronic inflammation, and several foci of endometriosis on histopathological examination.

Postoperatively, the patient recovered well. A post-repair CT cystogram was performed three weeks later without any evidence of contrast leak, and the urethral and suprapubic catheters were removed (Figure 5). Two months later, the patient underwent cystoscopy and left JJ stent removal. In December 2024, stoma reversal was

performed. The patient was last seen in May 2025 for follow-up, she continued to do well. She is voiding and defecating volitionally without any issues.

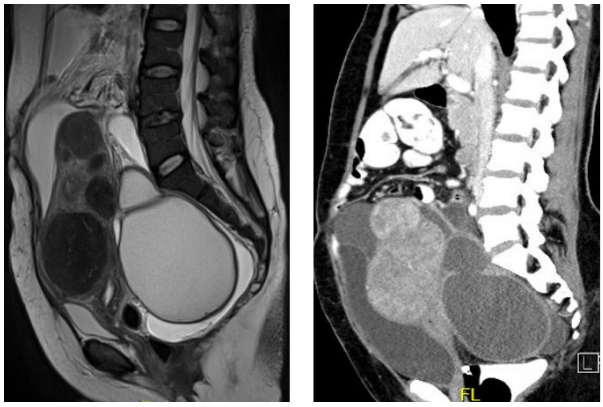

Figure 1: Sagittal view imaging showing a large, complex, adnexal multicystic lesion (Left: MRI; Right: CT with contrast).

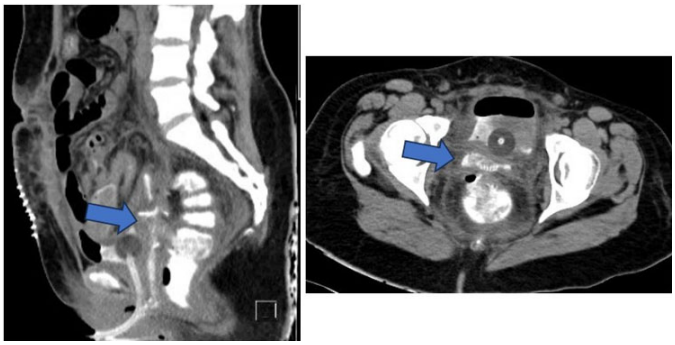

Figure 2: Early CT cystogram (performed November 2018) showing a complex rectovaginal–vesical fistula, surgical sutures noted between the vaginal vault and the colon (Left: Sagittal view; Right: Axial view). Blue arrow is pointing to the site of presumed communication.

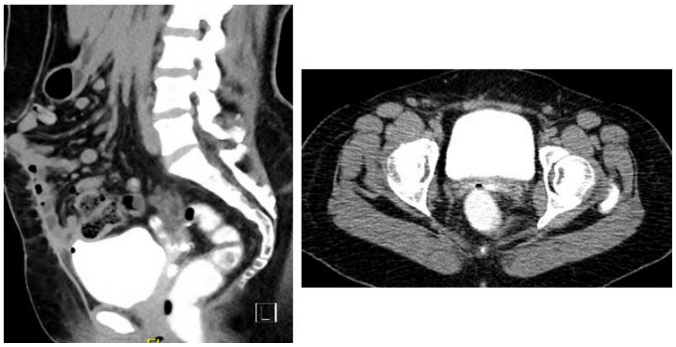

Figure 3: CT abdomen with contrast (performed January 2024) showing persistent rectovaginal–vesical fistula (Left: Sagittal view; Right: Axial view).

DISCUSSION

This case report highlights the complexity of the management of concurrent vesical, rectal, and vaginal fistulae in a patient with a hostile abdomen from recurrent endometriosis and several ovarian cystectomies. This study stresses the importance of employing multimodal and multidisciplinary approaches in the diagnosis and management of these types of fistulae.

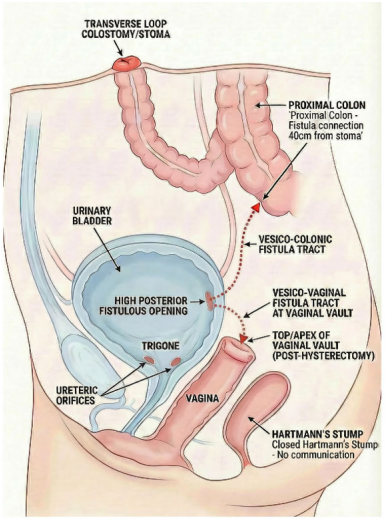

Figure 4: A diagram illustrating the findings of fistulous tract via the diagnostic cystoscopy and colonoscopy.

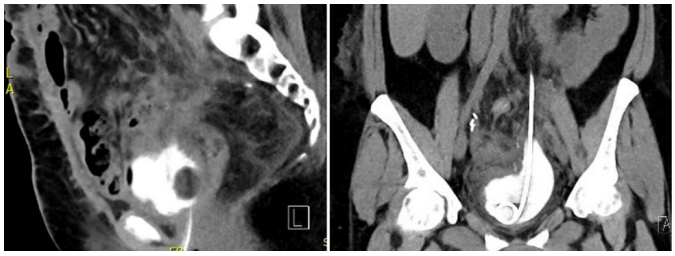

Figure 5: Post-repair CT cystogram with contrast (performed May 2024) showing no evidence of contrast leak with urethral catheter and left JJ stent in place (Left: Sagittal view; Right: Coronal view).

While rectovaginal fistula is a reported complication after rectosigmoid surgery, a combined vesicovaginal and rectovaginal fistula is quite rare in the studied literature. There is one case reported after low anterior resection that was repaired via concomitant transperineal and transabdominal approaches [9]. A second case was caused by a longstanding intravaginal foreign body and that with treated with simultaneous transabdominal surgery [10].

Our patient had an iatrogenic rectovaginal and rectovesical fistulae after rectosigmoid dissection for an adherent left ovarian mass. This aligns with a finding of a relatively recent systematic review which indicated that rectovaginal fistulae were the most frequent seen complication in this subset of patients [6].

Diagnosis of complex vesicovaginal fistula (VVF) and rectovaginal fistula (RVF) requires a multimodal approach, including thorough clinical evaluation, endoscopic assessment, and advanced imaging [11–14]. Magnetic resonance imaging (MRI) was found to achieve accuracy rates between 86% and 100% in characterizing fistula anatomy, guiding surgical planning [15]. In the present study, extensive evaluation of the fistulous tracts was performed. Initially, imaging via MRI and CT scans

were obtained. Furthermore, preoperative evaluation of the fistulae through endoscopic evaluation via cystoscopy and colonoscopy was performed. This allowed for accurate characterization of fistula location and size and helped in determining the optimal surgical approach [16].

Postoperative peritoneal adhesions develop in an estimated 93–100% of upper and 67–93% of lower abdominal laparotomies [17]. These percentages could increase dramatically in patients with multiple laparostomies for the same pathology. This creates a significantly hostile abdomen that requires a team of experienced urologists, gynecologists, and colorectal surgeons for the management of such cases for achieving optimal outcomes [18]. Having an experienced multidisciplinary team in the management of our patient was detrimental to obtaining a successful postoperative outcome.

Although total abdominal hysterectomy with bilateral salpingo-oophorectomy is often considered definitive treatment for endometriosis, it is important to recognize that residual disease can persist even after this extensive surgery. Incomplete excision of deeply infiltrating lesions, particularly in the bowel, rectovaginal septum, or pelvic sidewall could exist. In our case, the complex fistula formation may have been influenced by residual endometriotic tissue that continued to cause chronic inflammation and tissue damage over time as evident on the histopathological examination of the excised distal sigmoid rectal stump [19].

The study is limited by the lack of generalizability given the single-patient nature of the study. Also, drawing causal relationships is difficult in this setting. The study could be also prone to selection and recall bias.

CONCLUSION

This case shows the difficulties and challenges to diagnose and treat fistulae involving multiple pelvic organs, especially in patients who have undergone several surgeries and have a history of chronic inflammation. Managing such rare and complicated conditions requires a team of specialists working together, thorough preoperative planning, and a treatment approach tailored to the individual patient to achieve the best possible results.

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Manus 1.6 AI was used to generate an illustrative diagram of the fistula.

Author Contributions

Ahmad Badawi – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Hussam Aloufi – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Mohammed Almuzaini – Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Mohamed Mohiuddin – Conception of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Amr Mahran – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Abdullah Ghazi – Conception of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission
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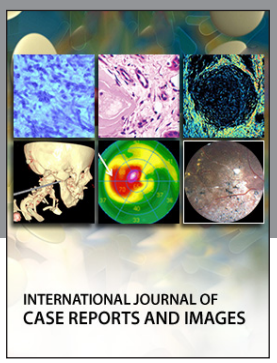
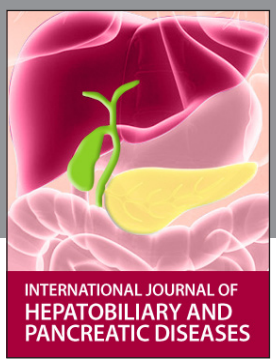
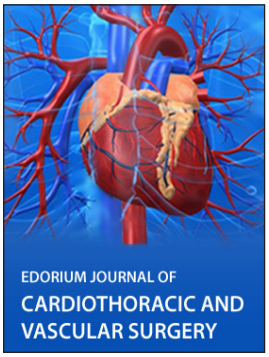
Written informed consent was obtained from the patient for publication of this article.

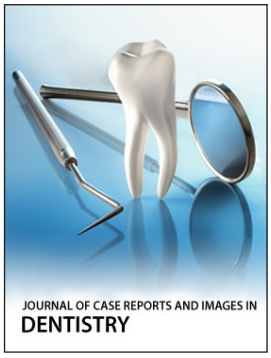
Conflict of Interest
Authors declare no conflict of interest.

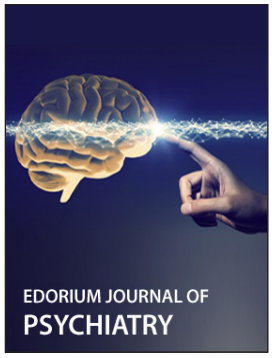
Data Availability
All relevant data are within the paper and its Supporting Information files.

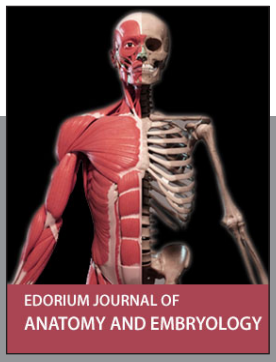


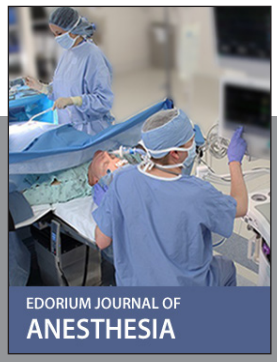












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