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ORIGINAL ARTICLE

Workup and conservative management of ileal conduit-vaginal fistulas: review of literature

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Abstract

Ileal conduit-vaginal fistulas are a rare but challenging complication of urinary diversion. Here we identify risk factors and summarize the workup and conservative management strategies for this complication. We present two cases of elderly women with remote history of cancer who presented with persistent urinary leakage from the vagina several years after ileal conduit creation. Fistulas may be identified using dye or imaging with a loopogram and looposcopy. Correction of obstruction such as stomal stenosis or urinary diversion should be pursued to relieve pressure off the conduit. Minimally invasive management such as fulguration can result temporary relief; however, the recurrence rate is high.

Keywords Ileal conduit · Urinary diversion · Genitourinary fistula · Vaginal fistula · Case report

Introduction

An ileal conduit urinary diversion is an incontinent urinary diversion. This is typically constructed for several reasons, most commonly after radical cystectomy due to bladder, colorectal or advanced gynecologic cancers. Ileal conduit diversions can also be performed for benign conditions such as end-stage overactive bladders or interstitial cystitis. The most frequent long-term complications include renal insufficiency, electrolyte disturbances, stomal stenosis or prolapse, bowel obstruction, urinary tract infections, ureteral obstruction at anastomosis and urolithiasis [1, 2]. Fistulous complications of the ileal conduit are rare, and as a result, management strategies and outcomes for ileal conduit-vaginal fistulas are poorly defined in the literature. Here, we present two cases of ileal conduit-vaginal fistulas focusing on workup and conservative management.

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Case presentation

An 83-year-old female presented for a 1-month history of constant leakage of urine from the vagina. The patient has a history of bladder cancer treated with radical cystectomy and two failed neobladder reconstructions. She subsequently underwent ileal conduit creation in 2008. She reported having routine bladder cancer surveillance. She underwent stomal revision 6 months prior to presentation, raising concern for stomal stenosis. She noted her urostomy was draining normally and denied having pain, hematuria, fever, chills, nausea or vomiting. On pelvic examination, a suspected fistula was visualized at the apex of the vagina. The patient underwent examination under anesthesia, loopogram and looposcopy, which found no stenosis, tumors, lesions or stones, but confirmed the presence of a conduit-vaginal fistula. This was seen as a 5-mm opening in the proximal ileal pouch to the vagina. A biopsy was taken from the fistula opening, and fulguration of the fistula tract was performed using Bugbee electrocautery. Pathology returned negative for malignancy. Following the procedure, the patient reported resolution of the leakage. However, she returned to the clinic 8 months later for recurrence of symptoms. Looposcopy found recurrence of a 5-mm fistula in the proximal ileal conduit draining into the vagina. Repeat fulguration of the fistula tract with additional injection of a sclerosing agent (Sotradecol 3%) was performed, with Foley catheter insertion into the loop for 6 weeks. This resolved the fistula but led to a short course of postoperative

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pain, nausea and emesis managed by IV and PO antibiotics. Subsequently, the patient was asymptomatic until 2 months later when she noted a third recurrence of urine leakage from the vagina. A Foley catheter was reinserted into the loop as a temporizing solution. The patient removed the catheter and continues to have persistent incontinence. She is not medically optimized for a reconstructive procedure nor does the patient want to pursue further treatment.

Another patient, a 78-year-old female Jehovah's Witness with extensive cardiac history, presented with a 2-month history of persistent urinary leakage from the vagina. Her past medical history was notable for cervical cancer in her 40s, status post-radiation and brachytherapy, followed by pelvic exenteration (total abdominal hysterectomy with bilateral salpingoopherectomy, cystectomy, partial colectomy with left colostomy and right ileal conduit urostomy) and vaginal reconstruction in 1983. Two months prior to presentation, the patient noted decreasing urine output from her urostomy with progressive urinary leakage from the vagina. Physical examination revealed a dry vaginal mucosa with a foul urine smell and a large, 8-cm anterior vaginal wall ulcer. CT abdomen and pelvis with IV contrast demonstrated severe bilateral hydroureteronephrosis with renal cortical thinning. Urine cytology was negative for malignant cells. A loopogram further identified an ileal conduit-vaginal fistula with urostomal stenosis. The patient underwent looposcopy with stomal dilation of the ileal conduit, which temporarily improved her symptoms. The loopogram showed narrowing of the proximal pouch and bilateral reflux into the kidneys. The patient was offered bilateral percutaneous nephrostomy tubes as conservative management, however declined persistently. She developed worsening vaginal urine leakage necessitating frequent diaper changes. Despite continued recommendation for bilateral nephrostomy tubes for urinary diversion in an attempt to allow the fistula to close, the patient declined. Surgery to reconstruct the conduit was not advised because of the patient's comorbidities and the risk of blood loss in the setting of her religious views. It is likely that the outlet obstruction from stomal stenosis contributed to nonhealing of the fistula.

Discussion

Fistulas are rare complications of urinary diversions post-radical cystectomy and most commonly occur between the urinary diversion and small bowel [3]. Ileal conduit fistulas in particular typically originate from the proximal end of the conduit at the uretero-ileal anastomosis site [4]. These are typically conduit-enteric, conduit-arterial [5] and conduit-genital fistulas and have a reported cumulative incidence of 2.6% [2]. In contrast, fistulas with continent diversions such as orthotopic neobladders are more common in the literature and have a reported incidence of 5.6–7.1% in several larger studies [2, 6].

The pathophysiology of acquired fistulas includes inflammatory (diverticulitis, Crohn's), iatrogenic (pelvic irradiation or surgery), malignant or traumatic (penetrating injury, stones) etiologies. Operative risk factors during ileal conduit creation include full-thickness bowel injury, damage to mesenteric arteries and tight sutures causing ischemic necrosis [7]. Furthermore, the intestinal epithelium is not optimally designed to hold urine and lacks the metabolic but also mechanical properties of the urothelium and detrusor muscle. Outlet obstruction from stomal stenosis described in both cases causes back pressure, which may force urine through a weakened conduit wall. Stomal stenosis compounded with prior pelvic irradiation and post-menopausal vaginal epithelial atrophy may have predisposed the patient to fistula formation decades later. It is important to focus on the appropriate diagnosis and treatment of outlet obstruction as relieving the pressure may allow the fistula to heal if it is small.

Upon clinical suspicion, a simple clinical dye test can confirm the presence of a fistula. This can be accomplished by instilling methylene blue solution into the ileal conduit or by taking oral phenazopyridine for identification of the fistula. Imaging techniques may also be used to evaluate ileal conduit fistulas, such as CT or MR urography and loopography. Loopography involves retrograde injection of contrast material through the stoma into the ileal conduit to observe for filling defects or extravasation into other structures. In our patient, the fistula was identified with a loopogram (Fig. 1). The diagnosis can be further confirmed by direct visualization of the fistulous opening by looposcopy and pelvic examination, as was the case in both patient scenarios.

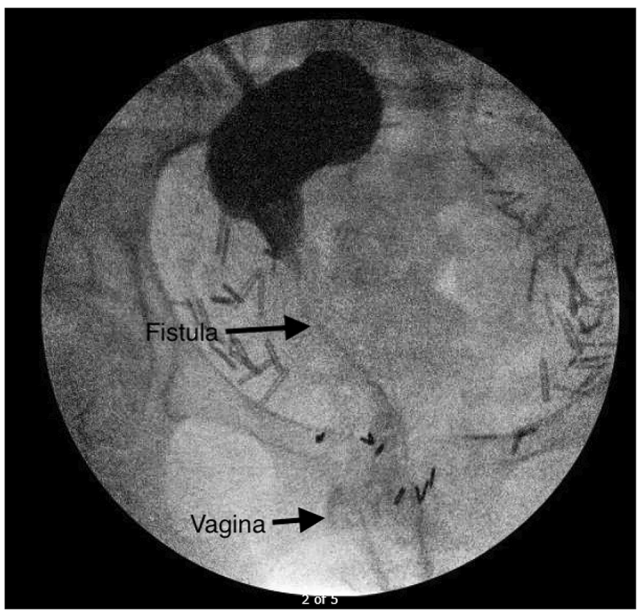

Fig. 1 Loopogram demonstrating contrast extravasation from the ileal conduit to the vagina

It is important to keep in mind those who require ileal conduit diversions often already have multiple comorbidities, and the decision for a large reconstructive surgery should be shared with the surgeon and the patient [8]. Sometimes, conservative treatment with catheterization of the stoma with or without nephrostomy tubes may be sufficient to allow the fistula to close spontaneously. Correction of obstruction such as stomal stenosis should be pursued to relieve pressure off the conduit. Minimally invasive techniques such as fulguration with or without sclerosis of the tract may be used for small fistulas, as has been demonstrated with vesicovaginal fistulas [9]. In the first case, recurrence of the ileal conduit-vaginal fistula was observed, so an additional sclerosing agent, sodium tetradecyl sulfate (Sotradecol), was used to disrupt the cellular membrane and promote tract scarring. This did offer the patient relief for a brief period of 2 months. A second injection could be considered. Injectable bulking agents, which are typically used to correct intrinsic urethral sphincter deficiency [4], may also be considered.

When these measures fail, formal open or transvaginal repair with grafting [10] may be considered in large or recurring fistulas. Ultimately, consideration of the patient's existing comorbidities and quality of life is crucial in the management of these fistulas. If a patient undergoes repair, then they can undergo a reconstructive procedure that encompasses the principles of a vesicovaginal fistula repair.

Compliance with ethical standards

Conflicts of interest Cogentix/Laborie participation: project development, manuscript writing.

Informed consent No informed consent was required for this report per the University of California Irvine Institutional Review Board.

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