

Repair of Complex Ureterovaginal and Vesicovaginal Fistulas with Ileal Cystoplasty and Ureteric Reimplantation into an Antireflux Ileal Nipple Valve—A Case Report

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Abstract

We report a case of a 59-year-old woman with bilateral ureterovaginal and vesicovaginal fistulas after radical total hysterectomy and bilateral salphingo-oophorectomy who failed transvesical repair of the vesicovaginal fistula. The bladder was extensively scarred, half of which had to be excised. This was replaced with an ileal cystoplasty with an antireflux ileal nipple valve into which the ureters were reimplanted. Continuity of the urinary tract was re-established without a urinary diversion or stoma.

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Introduction

Urogenital fistulas are a known but uncommon complication of gynaecological surgery, especially those involving a malignant process. Its incidence does not exceed 2%.¹ Most are simple vesicovaginal fistulas that may be treated conservatively² or repaired transvaginally. Twelve per cent to 25%^{3,4} may involve the ureters, bladder and vagina. These are aptly known as complex fistulas for their involvement of multiple organs and the difficult surgery sometimes required for their treatment. Reported surgical treatments include ureteroneocystostomies with or without Boari flaps, transuretero-ureterostomy, continent urostomies, ileal conduit, autotransplantation and even nephrectomies.

We report a case of a patient with bilateral ureterovaginal and vesicovaginal fistulas after failed transvesical repair who was successfully treated with an ileal cystoplasty and ureteric reimplantation into an antireflux ileal nipple valve.

Case Report

A 59-year-old patient underwent a radical total hysterectomy and bilateral salphingo-oophorectomy (THBSO) for Stage 1 cancer of the cervix. In the immediate postoperative period, she had leakage of urine per vagina. A cystogram showed a large vesicovaginal fistula (Fig. 1). The ureters were of normal caliber with normal drainage into the bladder on intravenous pyelo-

gram (IVP). No evidence of ureterovaginal fistula was seen.

A transvesical repair of the vesicovaginal fistula was attempted 3 months postoperatively. There was a 3 cm vesicovaginal fistula just superior to the interureteric bar. The pelvis was also noted to have dense and fibrotic adhesions.

Again the patient leaked urine from the vagina postoperatively. Bilateral percutaneous nephrostomies were inserted. Initial antegrade nephrostogram showed holdup of contrast on the right side and freeflow of contrast into the bladder on the left. Subsequent antegrade studies revealed bilateral distal ureterovaginal fistulas (Fig. 2). She was tried on conservative treatment by nephrostomy drainage. The urine leak did not resolve and a cystoscopy 6 months later revealed multiple recurrent vesicovaginal fistulas along the previous repair site. She was then referred to the department for repair and reconstruction.

Urodynamic study prior to reconstruction showed a stable bladder and intact sphincteric mechanism.

The patient was explored through an abdominal incision. Dense pelvic adhesions were found. The bladder was extensively scarred and unsuitable for reconstruction. On bivalving the bladder, multiple fistulas were found along the previous suture line. These were excised together with the supratrigonal half of the bladder.

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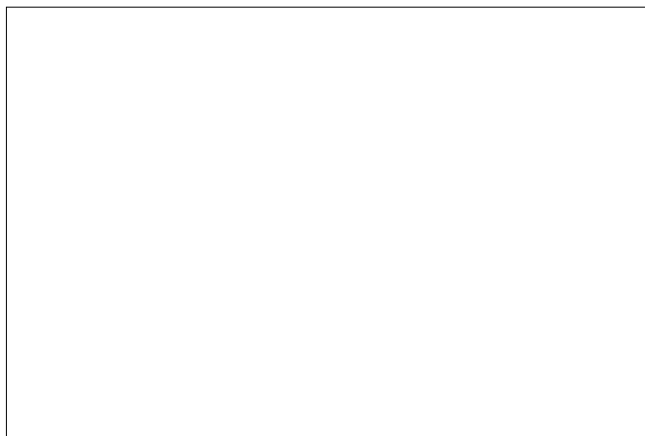


Fig. 1. Cystogram showing a large vesicovaginal fistula.

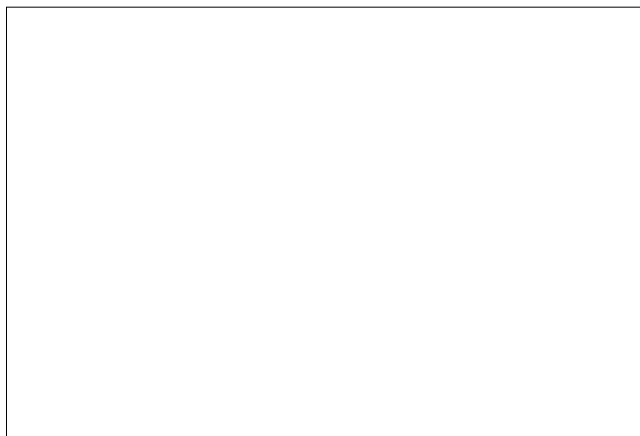


Fig. 2. Antegrade nephrostogram showing a distal left uretero vaginal fistula.

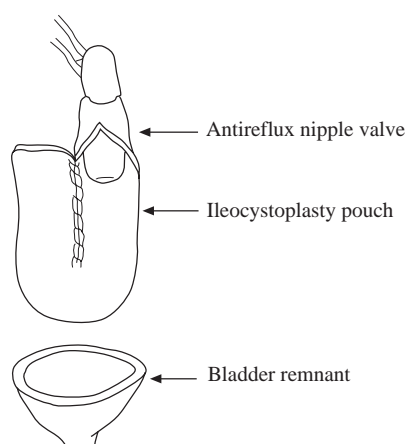


Fig. 3. Ileocystoplasty creation. Distal limb of ileal segment is folded on itself and opened along anti-mesenteric border to form a pouch. Proximal limb is intussuscepted to create an antireflux nipple valve. Ureters are reimplanted into ileal valve as shown. Ileocystoplasty completed by anastomosis to bladder remnant.

An ileal segment 35 cm long was isolated and opened for 20 cm along its antimesenteric border distally. This was then folded on itself to form a pouch (Fig. 3). The rest of the proximal limb of 15 cm was then intussuscepted and stapled to create an antireflux nipple valve. The ureters were dissected free from the fistulas and trimmed and reimplanted into the proximal limb of the ileal nipple valve with Bricker's type ureteroileal anastomoses. The pouch was then joined to the remnant bladder to complete the cystoplasty.

The patient remained dry postoperatively with good urine output and normal biochemistry.

Discussion

Urogenital fistulas are uncommon complications of pelvic surgery. During radical THBSO, the fascial coverings of the ureters that carry the blood supply may be denuded, causing ischaemia and fistulation.⁵

Diagnosis

Urine leak per vagina is pathognomonic of a urogeni-

tal fistula and usually indicate gross injury to the urinary tract. Fistulas from necrotic processes may be inapparent until weeks later. A pelvic examination including a speculum examination is mandatory. Cotton swabs placed along the length of the vagina can help indicate the possible site of the communication i.e. at the urethra or bladder. The track can be visualized on micturating cystogram. The existence of a concomitant ureterovaginal fistula should be excluded or confirmed with an IVP. This can be normal even in the presence of ureterovaginal fistulas as this case shows. One should be alerted though if hydronephrosis is found. Further study with a cystoscopy and retrograde ureterogram may uncover any elusive fistulas.⁶ If the patient has a nephrostomy tube inserted, an antegrade ureterogram may be carried out and repeated when necessary.

Conservative Treatment

Isolated unilateral ureterovaginal fistulas can be completely healed with internal stenting.⁷ The probability of cure is much reduced in bilateral fistulas. Delay from conservative observation may result in stricture formation and loss of the involved kidney. Coexistence of a vesicovaginal fistula is a strong indication for open surgery.⁸

Surgical Aspects

Timing of surgery. When the fistula is recognized at the time of surgery, it should be immediately repaired. In most cases the diagnosis is made postoperatively. One then has to weigh the benefit of waiting for tissue healing against early relief of the patient's distress. Any decision to wait will necessitate an additional temporary drainage procedure such as a nephrostomy tube. Good results have been reported with early repair with no apparent disadvantage.⁹ It may also be more expedient in the face of a hostile and potentially litigious patient.

Technique. Complex fistulas are best approached transabdominally. Excision of the vesicovaginal track

transvesically or extravesically with direct antireflux reimplantation of the ureter(s) is the simplest solution. A psoas hitch of the bladder with or without a Boari flap may be employed when the ureter has insufficient length for a tension-free anastomosis. With both ureters involved there may not be enough bladder tissue to construct 2 Boari flaps, although this has been described.⁹ Where the ureters are short and potentially ischaemic, an anastomosis to healthy small bowel will be less prone to stenosis. An antireflux reimplantation is recommended to avoid delayed complication of infection and upper tract deterioration, the prevention of which is important in patients with good prognosis and long survival. Scarred and doubtful tissue should be debrided and not incorporated in the repair. A hemicystectomy was necessary in this case.

An augmentation cystoplasty should be performed if the remnant bladder capacity is small, failing which the patient will be subjected to a urinary diversion with a possible urinary stoma. We chose the ileum for the augmentation as it is usually abundantly available and can easily reach down into the depths of the pelvis due to its long mesentery. It has less resorptive and metabolic problems than the jejunum and malignant change is not a risk as in large bowel substitution. Ileal patch grafts to augment repair of vesicovaginal fistulas when debridement has resulted in extensive tissue loss as in post irradiation cases have given excellent outcomes.¹⁰ Small bowel reconstruction is unsuitable for cases where adjuvant postoperative radiotherapy is contemplated.

Utilizing experience of ileal pouches and neobladders in urology, an ileal cystoplasty and antireflux nipple valve reimplantation of the ureters was a reliable and suitable reconstruction option for this patient. The construction of the cystoplasty is similar to a Hemi-Kock's pouch. The antireflux nipple valve has a low stenosis rate of 4%.¹¹ A search of the literature did not reveal any

previous publications describing the use of this form of reconstruction for complex ureterovesicovaginal fistulas. It can be a useful and advantageous alternative to urinary diversion in the treatment of complex ureterovesicovaginal fistulas.

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