

# Management of radiation-induced rectovesical fistula in a woman using ileum

## A case report and review of the literature

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### Abstract

**Background:** Radiation-induced rectovesical fistulas (RVFs) require the most demanding treatment. We presented a rare case of postradiation RVF in a woman repaired with ileum.

**Case presentation:** A 49-year-old woman was referred to our department for fecaluria and dysuria after radiation for cervical cancer. The voiding cystourethrography demonstrated a large RVF. A segment of ileum was separated into 2 parts for the simultaneous reconstruction of bladder and rectum, which led to a permanently closed fistula. This approach is easily accessible via transabdominal approach, could be applied for large defect, and bladder augmentation could be performed simultaneously.

**Conclusion:** The repair of an RVF using ileum appears feasible and represents an attractive alternative for the management of RVFs.

**Abbreviation:** RVF = rectovesical fistula.

**Keywords:** intestinal graft, postradiation, rectovesical fistula, surgical treatment

### 1. Introduction

Rectovesical fistulas (RVFs) are uncommon. Although not life-threatening, this condition causes an immediate and significant effect on patients' quality of life. Most RVFs result from iatrogenic complication of radiotherapy, lower urinary tract, or rectal surgery.<sup>[1]</sup> RVFs remain one of the most challenging problems in modern urology due to the rarity and complexity of this condition. Several surgical approaches have been proposed, including perineal, transanal, abdominal, and combined abdominoperineal.<sup>[2]</sup> To date, there is no clear consensus over the most appropriate approach to repair the RVF. Here, we described a rare case of postradiation RVF in a woman repaired with ileum.

### 2. Case presentation

The patient provided informed consent for the publication. The study was approved by the ethics institutional review board of the First Affiliated Hospital of Zhejiang University.

A 49-year-old woman was referred to our department for the treatment of an RVF. She has undergone radiotherapy for cervical cancer 6 years ago. Five months postoperatively, she developed fecaluria and dysuria. She remained dry for approximately 5 years after colostomy, and then again reported urinary leakage per rectum. The patient was then referred to us for further management. At presentation cystoscopy revealed a fistulous orifice localized at the trigone. The voiding cystourethrography demonstrated the contrast medium spreading from the bladder to the rectum, and the CT urography revealed contrast medium retained in the rectum and left kidney atrophy secondary to ureteral stricture (Fig. 1).

The patient then underwent RVF repair, and the transabdominal approach was used. We found extensive fibrosis and dense adhesion in the pelvis, and the bladder was contracted. We created a vertical midline cystotomy and carried it distally to the fistulous tract. The fistulous tract was excised, then the defect of rectum was revealed. After all nonviable necrotic tissue were completely debrided to healthy tissue, we found it was impossible to perform tension-free tissue approximations because both defects were too big (more than 3 cm), the rectovesical plane was hard to dissected due to the firm, solid adhesions, and the mucosa was easily torn when suturing the friable tissue. In addition, we were concerned about compromising the contracted bladder capacity. An 8 cm segment of ileum was isolated on its mesentery about 20 cm proximal to the ileocecal junction. An end-to-end anastomosis of the ileum was performed. The isolated ileal segment was detubularized along its antimesenteric border and separated into 2 rectangular parts on their respective mesentery and cleaned. The vascular pedicle was long enough to reach the bladder and the rectum. The 2 ileal segments were tailored and used to repair bladder defect and reconstructed anterior rectal wall respectively by interrupted suture (Fig. 2). No interposing tissues were used. The bladder was closed in a running fashion using a 2–0 Dexon suture.

The patient made an uneventful postoperative recovery. One month after the surgery, the cystogram revealed no evidence of

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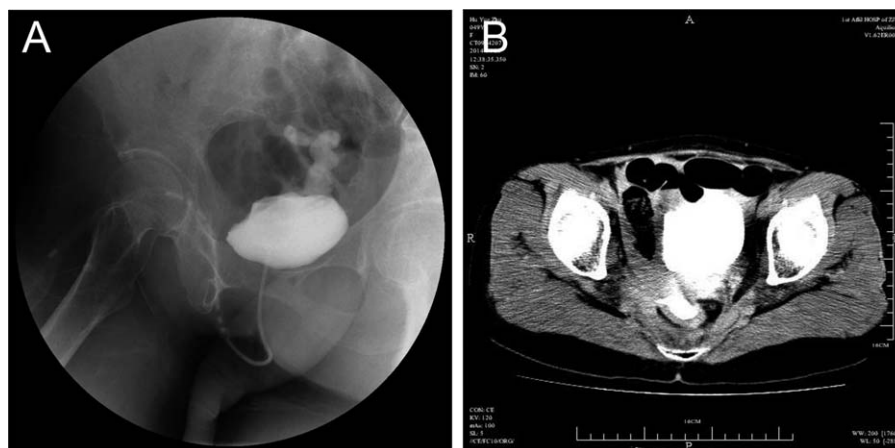
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**Figure 1.** (A) The voiding cystourethrography demonstrates a rectovesical fistula. (B) The computed tomography (CT) urography showing contrast extravasation from bladder to rectum.



**Figure 2.** (A) An 8 cm ileal segment was detubularized and divided into 2 parts. (B) One segment of ileum was used to repair the bladder defect. (C) The other segment was used for anterior rectal wall reconstruction.

leakage. The patient remained continent with no fistula recurrence after 2-year follow-up.

**3. Discussion**

The radiation-induced fistulae have a poor reputation among urologists, because fibrosis and vascular deficiency pose a challenge to good healing. Rarely, RVFs heal spontaneously,

but most require surgical repair.<sup>[3]</sup> Perianal, transanorectal, laterosacral, posterior sagittal transrectal (York-Mason), transabdominal, perineal, and combined approaches are frequently used for rectourinary fistula repair. The pros and cons of each approach are summarized in Table 1.<sup>[4]</sup> There are no data clearly favoring one approach owing to rarity of this disease and a large randomized controlled study of treatment modalities is not likely to be performed.<sup>[5]</sup> Conditions for success include excision and debridement of the fistula tract to healthy vascular tissue, closing of the opening in multiple, well vascularized layers, and effective urinary and/or fecal diversion to keep the wound fairly dry. Regardless of the surgical approach, the best chance of success is the first surgical attempt. However, the results are often disappointing in the previously irradiated area, and urinary diversion is the last resort to achieve a socially acceptable solution.

The transabdominal approach, as with the present case, is indicated for complex or recurrent fistula and for highly supratrigonal or fistula located near the ureteric ostium.<sup>[6]</sup> The original plan with standard surgical techniques involved opening the bladder toward the fistula tract, dissection between the rectum and bladder, closure of the rectum, interposition of omentum, and closure of the bladder. As stated above, owing to the large radiation-induced defects and dense adhesion between bladder and rectum, it is impossible to mobilize the scarred bladder and rectal walls sufficiently to achieve a tension-free approximation, thus we modified the repair by using the ileum

Approach	Pros	Cons
Transabdominal	Availability of tissue to interpose	Poor exposure Long operation time
Perineal	Availability of tissue to interpose	Difficult to dissect tissue planes
Transanorectal	Availability of tissue to interpose Excellent exposure	Risk of impotence
Perianal	Low risk of wound infection	Poor exposure
Laterosacral	Excellent exposure	Risk of fecal and urinary incontinence
Posterior sagittal transrectal (York-Mason)	Excellent exposure  Fecal continence is preserved No anal stricture	Unfamiliar for urologists

separating into 2 segments for the reconstruction of rectum and bladder, respectively. Previously, the intestinal flap has been applied in patients with VVF in a slightly different way. Vaso et al<sup>[7]</sup> reported a case of a recurrent postradiation VVF treated with ileum. The ileum was opened antimesenterically to obtain a rectangular graft, and sewn tension-free to the bladder margins, while the fistula in the vagina was just covered with the back wall of the intestinal flap with 3 stitches to eliminate the possibility of the abdominal cavity opening to the vaginal environment. Patwardhan et al<sup>[8]</sup> used ileum for bladder augmentation with “W” pouch, and harvested adjacent segment of ileum on different vascular pedicle for simultaneous reconstruction of anterior vaginal wall in 4 patients with VVF. As far as we know, simultaneous reconstruction of bladder and rectum with 2 segments of detubularized ileums for closure of RVF has not been reported in the literature.

This technique has several advantages. First, the ileum is easily accessible via transabdominal approach and can be maneuvered easily into the depth of anterior rectal wall with good mobility and blood supply. Second, it could be applied for large defect, allowing for the excision of nonviable tissue maximally, especially in the case of radiation-induced RVFs. Third, due to extensive radiation and inactivity because of continuous urinary leakage, bladder capacity as well as compliance should be considered to determine the need for possible bladder augmentation. This procedure avoids reducing the volume of the bladder, and even in some cases, can be performed with the dual purpose of fistula repair and bladder augmentation in a 1-step procedure.

However, several drawbacks should be mentioned. First, the operative trauma is much higher, while a robotic or laparoscopic approach might be less invasive for this procedure. Second, it increases morbidity associated with intestinal anastomosis, such as intestinal fistula, anastomosis stricture, and thus prolonged hospital stay. At last, though not seen in this patient, mucus discharge postoperatively could be a problem.

#### 4. Conclusion

In conclusion, our results indicate that repair with segments of ileum represents a feasible and attractive alternative for the management of RVF, particularly in the setting of poor tissue healing potential (such as radiation and history of unsuccessful previous repairs). More experience and longer follow-up is required before definitive recommendations can be made for the role in the surgical treatment for RVF. Since radiation-induced RVFs have the lowest success rate and require the most demanding treatment, the more surgical options we have in our armamentarium, and the better our chances of curing these fistulas in the initial attempt.

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