Rectourethral fistula: the result of an unusual sequence of events

Introduction

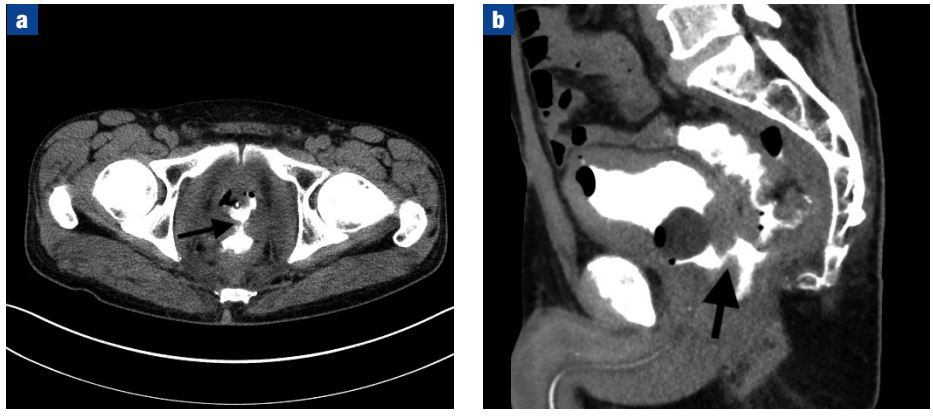
Iatrogenic rectourethral fistulas are a rare but devastating complication following treatment for prostatic or other pelvic malignancies. Their management is notoriously complex, with a wide variety of surgical techniques described, reflecting the technical difficulties faced by the surgeon in treating this disorder. This article reports the case of a man who developed a rectourethral fistula after chemotherapy, radiotherapy and surgery for anterior rectal cancer, followed by transurethral resection of the prostate.

Discussion

Iatrogenic rectourethral fistula is an uncommon complication with severe consequences for patient quality of life, most commonly caused by surgical or radiation therapy for prostate cancer (Hechenbleikner et al, 2013). Currently, 52.6% of all reported rectourethral fistulas are secondary to exposure to pelvic radiation (Hanna et al, 2014) and these fistulas have been reported to occur up to 14 years following the last session of radiotherapy (Davis and Schellhammer, 2001). Indeed, the occurrence of a rectourethral fistula after rectal biopsy and even haemorrhoidectomy in men who have previously undergone radiotherapy of the prostate has lead some authors to advocate the complete avoidance of anterior rectal procedures in patients with an irradiated pelvis (Hechenbleikner et al, 2013).

The initial management of rectourethral fistula is centred on both urinary and faecal diversion to control sepsis and decrease inflammation (Hechenbleikner et al, 2013). While up to 25% of non-irradiated fistulas

Figure 1. **a.** Axial and **(b)** sagittal views of computed tomography scan with cystogram phase demonstrating rectourethral fistula (arrow).



CASE REPORT

A 56-year-old man presented to the emergency department of the authors' teaching hospital with dysuria, pneumaturia, fever and passing urine per rectum 9 days following an uneventful transurethral resection of the prostate. At operation 3.1 g of benign tissue had been resected. This had been performed to treat recurrent episodes of urinary retention in the setting of benign prostatic hypertrophy, with a preoperative prostate volume of 40cc on ultrasound scan.

The patient's history was significant for having previously received neo-adjuvant chemotherapy and radiotherapy of the pelvis followed by ultralow anterior resection of the rectum for an obstructing anterior rectal cancer. This operation had been performed 6 months before his transurethral resection of the prostate in the same institution. At the time of anterior resection a bulky anterior rectal cancer was excised, which required en-bloc resection of part of the seminal vesicles. Histologically the patient had had little response to his neo-adjuvant radiotherapy, and postoperatively had repeated episodes of urinary retention. Following his procedure for reversal of his loop ileostomy a transurethral resection of the prostate was planned and then performed by the urology team.

On re-presentation to hospital 9 days after his transurethral resection of the prostate, computed tomography with a cystogram phase was performed which demonstrated passage of contrast into the neo-rectum consistent with a fistula (*Figures 1a* and *b*). Flexible sigmoidoscopy demonstrated an anterior ulcer overlying the prostate in the low rectum, with fistulation into the bladder, and the patient's indwelling catheter balloon on view.

Initial management consisted of urinary drainage with both an indwelling urethral and suprapubic catheter, and appropriate intravenous then oral antibiotic therapy. Despite these the patient continued to suffer ongoing urinary and peri-testicular sepsis, requiring subsequent readmission to hospital. Eventually after multidisciplinary discussion with the patient's colorectal surgeon a defunctioning loop ileostomy was re-created laparoscopically to permanently aid symptom control. This has had some success in reducing the frequency of urinary sepsis and frank faecaluria the patient was suffering from. He remains with both indwelling urinary and suprapubic catheters.

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may close with conservative treatment, those caused by radiation toxicity invariably do not and require definitive repair (Hanna et al, 2014). Surgery is often technically challenging as a result of obliteration of the natural tissue planes and fibrosis from radiation (Muñoz et al, 1998). The wide variety of procedures described for surgical repair of rectourethral fistulas in previously irradiated fields is testament to these difficulties and the high recurrence rate following intervention (Hanna et al, 2014). The surgical methods described include transabdominal, transperineal, trans-sphincteric and transanal approaches with or without tissue interposition flaps (Hechenbleikner et al, 2013). The use of interposition muscle flaps between the urethra and rectum has produced 84% closure rates in radiated patients (Vanni et al, 2010).

To the best of the authors' knowledge this is the first reported case of a rectourethral fistula occurring after combined treatment for rectal cancer followed by transurethral resection of the prostate. Despite the modest amount of tissue resected at the time of transurethral resection of the prostate, presumably an irradiated area of prostato-rectal septum fistulated with a delayed diathermy injury. It is likely that the history of en-bloc resection of seminal vesicles at the time of his ultra low anterior resection reduced the anatomical space between the bladder neck and rectum contributing to fistula formation. **BJHM**

LEARNING POINTS

- Iatrogenic rectourethral fistulas are a rare but devastating complication following surgery or radiation therapy for pelvic malignancy.
- A rectourethral fistula can develop as a late complication in previously irradiated fields.
- To minimize complications surgeons need to appreciate the extent of resection from previous surgeries when planning future procedures.

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A rare complication of ureteral stent insertion

A 78-year-old man presented with miction pain, frequency, urgency, hesitancy, weak urine stream and terminal dribbling for 1 week before admission. On physical examination, he exhibited knocking tenderness over his left flank. Urine examination revealed microscopic haematuria and pyuria. Ultrasonography revealed left renal stones and hydronephrosis, and a 1.5 cm-diameter stone in the left lower ureter.

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Ureteroscopy was performed to remove the ureteral stone, and a papillary lesion was also observed with a high tendency to bleeding in the left ureter. A ureteral stent was inserted to protect the ureter from spasm or collapse and prevent further obstruction. However, unusual gross haematuria occurred immediately after the procedure, and abdominal computed tomography revealed that the ureteral stent had been inserted into the common iliac artery creating a ureteroarterial fistula (*Figure 1*). The ureteral stent was removed and a common iliac artery–external iliac artery stent applied to cover the vascular defeat. The patient made an uneventful recovery and urine cytology confirmed the diagnosis of urethral transitional cell carcinoma.

Insertion of a ureteral stent is associated with complications such as dislocation, infection, blockage, and rarely a ureteroarterial fistula. Typically, ureteroarterial fistulas can be classified into primary (10–15%), secondary (iatrogenic, 85%) and pregnancy-related (<5%). Secondary ureteroarterial fistulas are predominant and often associated with pelvic surgery for malignancy, vascular surgery with synthetic grafting, irradiation, and prolonged ureteral stenting. Endovascular stenting has emerged as an effective alternative to open surgical closure of the defect. **BJHM**

Figure 1. Abdominal computed tomography scan revealed hydroureter (arrow head) and the ureteroarterial fistula (arrow).