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Transperineal repair of a persistent rectourethral fistula using a porcine dermal graft



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ABSTRACT

INTRODUCTION: Rectourethral fistula (RUF) is a rare major complication after radical prostatectomy (RP). Management of patients with persistent RUFs after primary repair is controversial and technically challenging.

PRESENTATION OF CASE: We describe the case of a patient with history of RUF secondary to rectal injury during laparoscopic RP and failed trans-abdominal repair. A further attempt to repair the persistent RUF was done through a perineal approach. The fistula was excised, the anterior rectal wall was closed in two layers and the defect at the level of the urethrovesical anastomosis (UVA) was repaired with an interrupted suture. A porcine dermal graft was interposed between the UVA and the rectum and was sutured to the rectal wall. There were neither clinical nor radiological evidences of fistula recurrence at one-year follow-up after transperineal surgical repair.

DISCUSSION: We used, for the first time, a porcine dermal collagen allograft as interposition tissue in a persistent RUF secondary to rectal injury during laparoscopic RP. The use of this allograft allows the potential advantage of less surgical invasivity if compared to gracilis muscle graft.

CONCLUSIONS: Transperineal repair of persistent RUFs with porcine dermal graft interposition is a safe and feasible surgical procedure.

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1. Introduction

Rectourethral fistula (RUF) is a rare, but increasingly occurring, major complication after radical prostatectomy (RP).^{1,2} RUF usually occurs as a consequence of intraoperative rectal injury and can be observed after any RP technique.^{1,2} Previous pelvic radiation therapy, rectal surgery, and transurethral resection of the prostate are factors that predispose patients to this complication.¹ Spontaneous closure of the fistula is rare and the time required is uncertain.³ Surgical repair of RUFs is challenging and there is no standardized treatment due to the rarity of the disease. Several approaches have been described: perineal, transrectal, transanal and trans-abdominal.² However, fistula may persist or recur after surgical repair. According to some authors, the perineal approach is particularly suitable in patients who have a history of failed previous repairs.² The need of tissue interposition in adjunct to fistula excision has been emphasized in these patients.² The use of vascularized autologous grafts is often challenging and time consuming.

Previous studies have demonstrated favorable results, technical simplicity, safety and efficacy of using a porcine dermal collagen graft as interposition tissue for vesicovaginal fistula repair.⁴ We report the first case of a persistent RUF successfully repaired with a porcine dermal collagen graft interposition.

2. Presentation of case

A 75-year-old men underwent extraperitoneal laparoscopic RP at our institution. His past medical history was relevant for previous transurethral resection of the prostate. During the procedure, a 4 mm rectal laceration occurred at about 2 cm from the prostate apex. The injury was intraoperatively recognized and sutured. The post-operative course was complicated by urinary leakage at the urethrovesical anastomosis (UVA) with dehiscence of the rectal suture and urinary leakage from the rectum. This complication occurred on postoperative day (POD) 11. A colostomy was performed on POD 14 and the patient subsequently underwent trans-abdominal repair of the RUF after 6 months. However, the cystogram performed on POD 21 demonstrated the persistence of the fistula (Fig. 1). Based on our experience in radical perineal prostatectomy we performed a further attempt at fistula repair after an additional 6 months through a perineal access.

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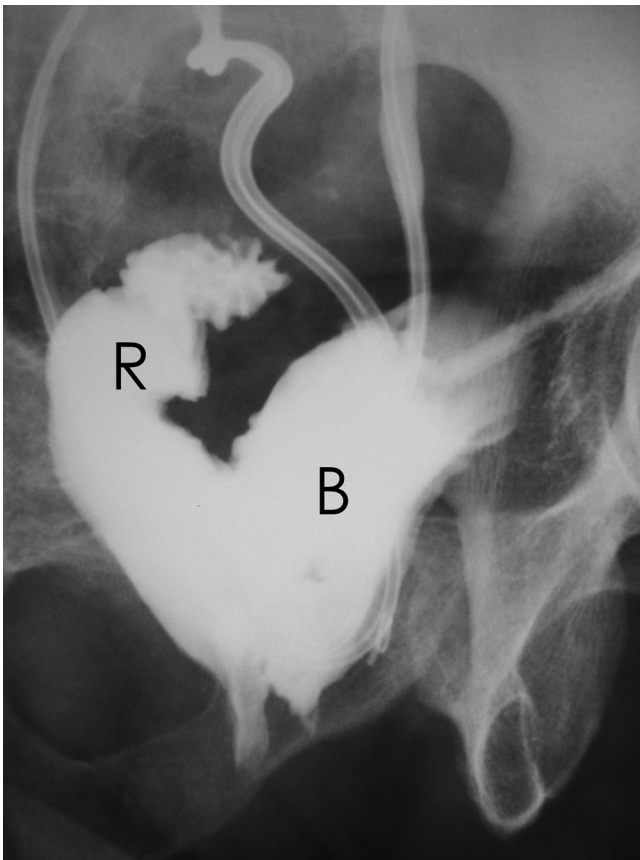


Fig. 1. Post-operative cystogram demonstrating fistula persistence after trans-abdominal repair. R: rectum, B: bladder.

Pre-operative evaluations included a computed tomography with contrast medium and a cystoscopy. The computed tomography confirmed the presence of a fistulous tract between the area of the UVA and the rectum with retrograde opacification of the rectum. The cystoscopy demonstrated a fistulous orifice located within the trigonal region at the level of the UVA. *Preoperative intravenous antibiotic prophylaxis with levofloxacin 500 mg plus teicoplanin 400 mg* was administered within one hour before surgical procedure. With the patient placed in the lithotomy position, a cystoscopy was performed, the ureters were stented with mono-J ureteral catheters to allow urinary diversion and to avoid intraoperative ureteral injury. The fistulous tract was stented to facilitate recognition. An indwelling 18F urethral catheter was inserted. The lithotomy position was then exaggerated until the perineum was nearly horizontal. An inverted U-shaped perineal incision was made outside the anus and inside the ischial tuberosities. The subcutaneous tissue was divided and the central tendon of the perineum transected, thus opening the ischiorectal fossae and exposing the ventral rectal wall. The scarring between the urethra, the bladder and the anterior rectal wall was dissected sharply and the fistulous tract, with the stent passing through it, was identified. The fistula was excised with the surrounding scarred tissue to create vital margins. The anterior rectal wall was closed in two layers using continuous 5–0 monofilament sutures. The first layer included the rectal mucosa, the second the rectal musculature and submucosa. The defect at the level of the UVA was repaired with an interrupted 3/0 suture. A porcine dermal graft (Tecnoss®) was interposed between the UVA and the rectum and was sutured to the rectal wall (Fig. 2). A drainage was placed inside the wound. Operative time was 95 min. Intraoperative blood loss was 100 mL. No intra-operative complications occurred.



Fig. 2. The porcine dermal graft is positioned to cover the defect. Asterisk: graft, arrow: UVA.

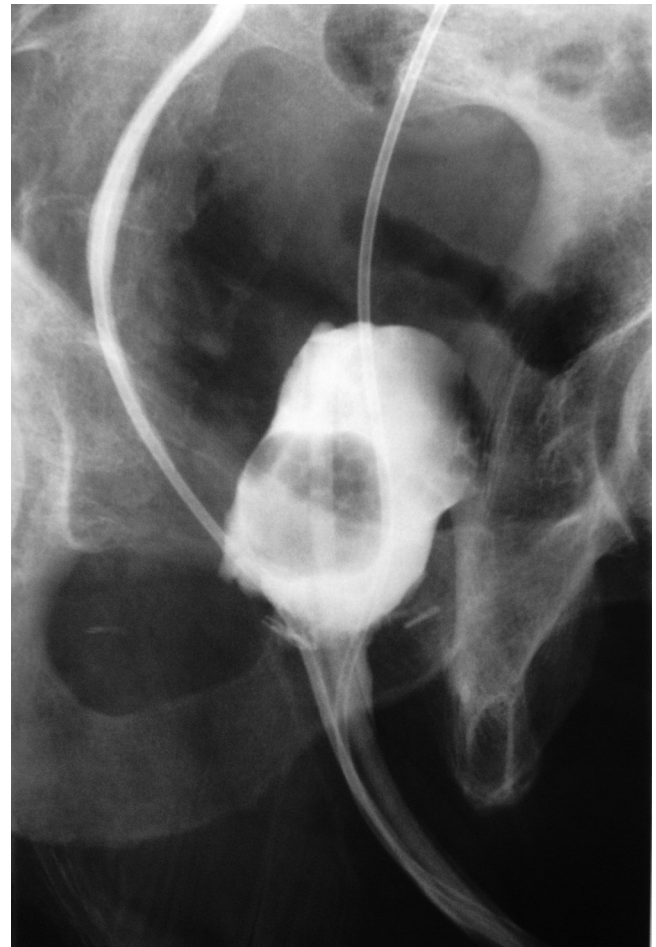


Fig. 3. Post-operative cystogram demonstrating fistula healing after transperineal repair.

Postoperative antibiotic coverage with levofloxacin 500 mg/day plus teicoplanin 200 mg/day was administered until POD 7. A post-operative cystogram performed on POD 15 excluded pathologic leakages (Fig. 3). The ureteral catheters were removed 4 weeks after surgery and the bladder catheter was removed 2 weeks later. No early- and late post-operative complications were recorded. Bowel

continuity was restored 6 months after surgery. There were neither clinical nor radiological evidences of fistula recurrence at one-year follow-up after transperineal surgical repair.

3. Discussion

The overall incidence of rectal injury in patients undergoing RP varies from 0% to 9%.⁵ This injury has been reported in 1% to 2.7% of patients undergoing laparoscopic RP, in 1.5% to 2.2% of patients undergoing retropubic RP and in 1.5% of patients undergoing perineal RP.⁵ Most of the comparative studies did not show significant differences in terms of prevalence of rectal injury according to the type of RP.¹ In a study by Harpster et al., the incidence of delayed RUFs after rectal injury in patients undergoing retropubic and perineal RP was 25%.⁶ Castillo et al., reported a 33% rate of delayed RUFs after rectal injury in patients undergoing laparoscopic RP.⁷

The management of persistent RUFs is technically challenging due to the extensive scarred tissue between the urethra, the bladder and the anterior rectal wall.³ The ideal approach is one in which the surgeon is most familiar to provide optimal exposure to identify and repair the fistula. The perineal approach is preferred by many authors as it provides good exposure of the area extending from the bulbar urethra to the bladder neck and the corresponding area of the rectum thus improving identification, dissection, excision, and repair of RUF.³ The use of interposition flaps into the area of repair has been reported to enhance fistula healing and to prevent recurrence. Various vascularized autologous flaps have been described including island groin flap, omentum, dartos pedicle flap, scrotal myocutaneous flap, and gracilis muscle.^{2–4} However, these flaps are associated with complications such as infection, wound dehiscence, hematoma formation, thigh pain, and leg numbness.⁸ Spahn et al. described the use of a perineal approach and buccal mucosa interposition with no additional tissue interposition for repairing persistent RUFs with encouraging results.³ Porcine dermal collagen allografts have been reported to be a valid alternative as interposition tissue for the repair of vesicovaginal fistulas.⁴ We used, for the first time, a porcine dermal collagen allograft as interposition tissue in a persistent RUF secondary to rectal injury during laparoscopic RP. When compared to the widely used gracilis muscle interposition technique, the use of the porcine dermal allograft allows the potential advantage of less surgical invasivity and shorter operative times.

4. Conclusion

The present case demonstrates that transperineal repair of persistent RUFs with porcine dermal graft interposition may be a safe and feasible surgical procedure.

Conflict of interest

There are no conflicts of interest to declare.

Funding

There are no sources of funding for research to declare.

Ethical approval

A written and signed consent to publish the case report was obtained from the patient.

Author contributions

Vittorio Imperatore, Massimiliano Creta: study design, writing. Sergio Di Meo, Roberto Buonopane: data collection, data analysis. Ferdinando Fusco, Ciro Imbimbo, Nicola Longo, Vincenzo Mirone: writing.

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