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Penoscrotal fistula secondary to urethral diverticulum treated with ventral penile skin flap urethroplasty: A case report

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ABSTRACT

Voiding symptoms and penoscrotal mass with/without fistula are typical findings of urethral diverticulum. We present a case of 55-year-old male patient who was evaluated for voiding symptoms, soft palpable penoscrotal mass and fistula. Retrograde urethrography, scrotal ultrasonography and cystoscopy revealed a urethral diverticulum and fistula. The defect developed after excision of the diverticulum associated with the penile ventral urethra was closed with a penile skin flap. In the 6-month follow-up, the patient did not have any voiding complaints and no signs of recurrence. Urethroplasty using a penile skin flap may be preferred in the repair of penile ventral urethral defect.

1. Introduction

Penoscrotal fistula developing secondary to acquired urethral diverticulum is a rare condition. Dorsal urethroplasty techniques are treatment choices for penile urethra diseases, but ventral urethroplasty is the only treatment choice when diverticulum is associated with ventral side of the urethra. Here, we present a case that have fistula secondary to urethral diverticulum treated with ventral urethroplasty.

2. Case presentation

A 55-year-old male patient was admitted with complaints of dysuria, obstructive voiding symptoms, penoscrotal mass and fistula. The patient had a history of previous scrotal abscess surgery and was also still on active treatment for Polycythemia Vera. Routine biochemical tests were within normal values. Urinalysis showed pyuria, and urine culture was negative. Urine mycobacterial tests and also cultures were negative. Physical examination revealed scrotal incision, palpable soft mass at penoscrotal junction and fistula. Scrotal ultrasonography showed a 37 × 19 mm penoscrotal lesion. Retrograde urethrography confirmed urethral diverticulum and fistula tract extending to the skin at the penoscrotal junction (Fig. 1). Urethral diverticulum and fistula mount were observed on cystoscopy. Multiple biopsies were taken from the diverticulum and around the fistula mouth to exclude the presence of granulomatous diseases. Suprapubic catheter was placed, and empirical antibiotic was started. The pathology revealed nonspecific infection findings.

A penoscrotal incision with fixed retractor was used in the lithotomy position. The fistula and its surroundings were marked (Fig. 2a). The fistula and its surrounding approximately 1 cm of normal skin were dissected, and fistula tract was found to be related to the distal part of diverticulum (Fig. 2b and c). The dissection was advanced along the diverticulum and the connection between proximal part of diverticulum and penile urethra was found, and excision of diverticulum together with fistula was performed (Fig. 2d). A 16F indwelling Foley catheter was placed. After diverticulectomy, a 2 × 1 cm pedicled skin flap was brought to the side of the defect developed in the ventral urethra (Fig. 3a). Anastomosis of the margin of skin flap and the margin of urethral mucosa was performed with 4/0 polyglactin sutures running along one side (Fig. 3b). Similarly, anastomosis was completed with a second running 4/0 polyglactin sutures to the other side of the skin flap and urethral margin (Fig. 3c). A dartos flap was placed over the neourethra to support the anastomosis. A drain was then placed and removed on 3rd-postoperative day. But a massive hematuria developed on 7th-postoperative day, which resolved with plasma transfusion and bladder irrigation, and the patient was discharged on 9th-postoperative day. Urethral catheter was removed on 25th-postoperative day and cystostomy catheter was left to maintain the urinary diversion. Cystostomy catheter was removed because no fistula tract was observed on anterograde urethrography of the patient who started spontaneously normal micturation from the meatus on 37th-postoperative day (Fig. 3d). The patient did not have any voiding complaints at 6 months

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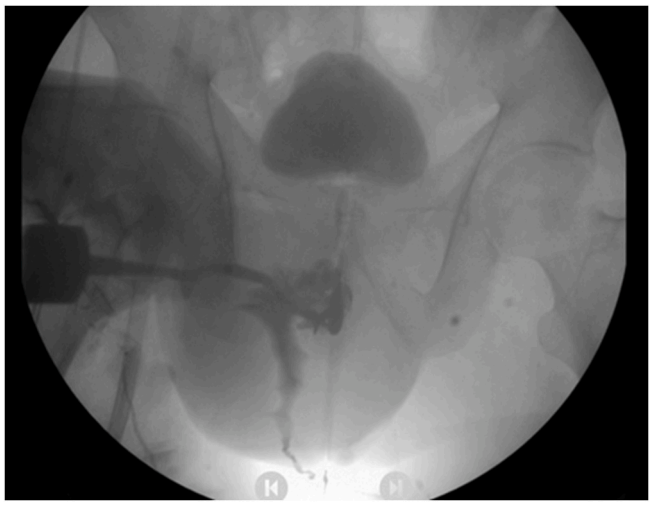

Fig. 1. Urethral diverticulum and fistula tract extending to the skin on preoperative retrograde urethrography.

postoperatively.

3. Discussion

Urethral diverticulum is extremely rare and occurs either congenital or acquired. Approximately 90% of cases have acquired etiologies such as post-urethroplasty or urethral surgeries, endoscopic urethral interventions, urethral catheterization, periurethral and prostate abscesses.[1,2] Penoscrotal fistula, excluding to urethral diverticulum, can also develop due to anogenital diseases and surgeries, hypospadias surgery, Fournier's gangrene, epididymal tuberculosis, long-term urethral catheterization, and urethral cancer. Besides, as in our case, scrotal abscess and/or associated scrotal abscess surgery can be added to the etiopathogenesis of urethral diverticulum and/or scrotal fistula. Scrotal fistula is similar to urethral diverticulum; however, in fistula, there is a tract extending from the diverticulum to the skin. Most cases present with voiding symptoms and recurrent urinary infections, most commonly affecting the anterior urethra, which is recognized as a palpable soft mass at the penoscrotal junction.[2] Retrograde urethrography and scrotal ultrasonography are the primary diagnostic tests. The relationship between normal urethra and diverticulum is confirmed by cystoscopy. A differential diagnosis of infectious and non-infectious causes of urethral diverticulum and/or scrotal fistula should be made before surgery. In the presented case, the existence of urinary tract tuberculosis was excluded because of the previous history of scrotal abscess surgery.

Excision of diverticulum with fistula, urethroplasty and support of neourethra with subcutaneous tissue such as dartos fascia are the surgical principal of urethral reconstruction. Because treatment of long penile urethral strictures using excision primary anastomosis (EPA) can result in loss of penile length and chordee, the European Association of Urology (EAU) guidelines recommend EPA for penile urethral strictures shorter than 1 cm, otherwise augmented urethroplasty.[3] Therefore, augmentation urethroplasty was an appropriate option for the presented case. The success rates of augmented urethroplasty using graft versus flap are still controversial. EAU guideline states that there is no high-level evidence that one technique is superior to the other, but that the dorsal graft location is more commonly used than the ventral one in penile urethra strictures.[3] Generally, spongioplasty is added as a surgical step to augmented bulbar urethroplasty to support the neourethra and maintain the urethral anatomy. However, thickness of spongious tissue surrounding the penile urethra is less than the bulbar urethra, thus dorsal techniques are preferred rather than ventral technique in penile urethroplasty as thinner spongy tissue in this region may not provide support to neourethra.[4] Also, this anatomical detail may affect the choice of graft or flap use in this region. The vascular supply of the graft is provided by a thick, highly vascular spongiosum tissue, thus, a thinner spongy tissue in this area may not provide adequate blood flow to the graft and may lead to an unsuccessful urethroplasty with ventral grafting.[5] *Therefore, ventral urethroplasty with a pedicled penile flap was a viable option, as in our case. Urinary diversion such as cystostomy or perineal urethrostomy may be an alternative urethrostomy for more devastating cases who cannot achieve urethral reconstruction or depending on patient characteristics such as advanced age and comorbidities.*

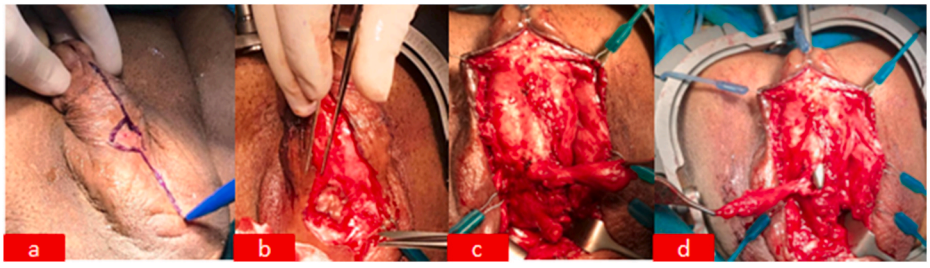

Fig. 2. (a) The fistula tract and its surroundings to be excised were marked with a penoscrotal incision, (b) Dissection of the fistula tract, (c) Urethral diverticula, (d) Excision of urethral diverticulum with skin fistula.

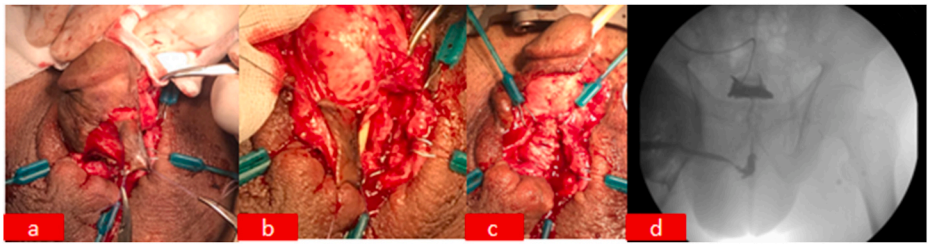

Fig. 3. (a) Preparation of pedicled skin flap, (b) A running sutures along one side, approximating the edge of the skin flap to the urethral mucosa margin, (c) Completed anastomosis after a second running suture to the other margin of skin flap and urethra, (d) No fistula tract on postoperative anterograde urethrography.

4. Conclusion

Scrotal fistula secondary to urethral diverticulum in men is very rare, and clinical and imaging findings are highly diagnostic. The choice of surgical treatment should be individualized depending on the urethral localization of diverticulum and patient characteristics.

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Ethical statement

Informed consent and our local institutional review board approval were obtained.

Declaration of competing interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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