

## Replacement of Both Tunica and Urethra by Inner Prepuccial Flap in a Neglected, Old Case of Fracture of the Penis

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### ABSTRACT

The present case is a rare complication of fractured penis involving the tunica leading to a large fibrous plaque and stricture urethra because of involvement of corpus spongiosum in the plaque. The fibrous plaque in the tunica was excised and distal urethra involved in plaque was resected. An inner prepuccial flap was divided into 2 and used successfully to cover the resultant tunica defect and for urethral replacement with good results.

### INTRODUCTION

Fracture of the penis is not so uncommon but involvement of the urethra in fracture of the penis is rare, and the treatment of choice is immediate surgical exploration. Untreated or conservatively treated patients heal with fibrous plaque formation with or without calcification, and such patients present with chordee, painful erections, and painful coitus or impotence. If a small segment of the urethra is involved, the resultant stricture is amenable to visual internal urethrotomy. But sometimes both the corpora and urethra are involved in a large segment of fibrous plaque, leading to a large segmental loss of the urethra. Such cases are very rare and pose problems in management. We managed 1 case of old penile fracture with large fibrous plaque involving both the tunica and distal urethra. The objective of the case report is to highlight this rare complication of fracture of the penis and difficulty in its management.

### PATIENTS AND METHODS

A 42-year-old male presented with a history of poor urinary stream, impotence, and swelling in the distal half of the penis for 6 months after penile trauma. The patient gave a history

of penile bending during sexual intercourse followed by a loss of penile erection and swelling of the penile shaft, pain, and bleeding via the urethra. Bleeding via the urethra continued for 3 consecutive nights during nocturnal tumescence. He did not come to the hospital because of shyness. The pain disappeared in about 10 days but the swelling of penile shaft persisted with loss of erection. The patient gradually developed a thin stream and ultimately started passing urine in drops. Examination revealed a swelling of 5 cm x 4 cm on the right side of the distal shaft involving the urethra (Figure 1a). The urethrogram showed almost complete loss of lumen (Figure 2) in the distal 5 centimetres of the urethra. Ultrasonography (USG) showed a large echogenic area in the distal penile shaft on the right side (Figure 2). Penile degloving was done after circumferential circumcoronal incision. The plaque, which was starting from mid penis to the corona, was identified and dissected (Figure 1b, Figure 1c, Figure 1d). The plaque was excised, including the involved urethra, resulting in a gap in the tunica of about 4 cm x 3.5 cm and urethral loss of 4 cm (figure 1d). An inner prepuccial flap was raised and divided into 2 (figure 1e, Figure 1f). One flap was used to cover the defect in tunica (Figure 1g) and another was used for distal urethral replacement by tubularizing the flap over a catheter (Figure 1i, Figure 1j, Figure 1k). Pressure dressing was done after applying skin sutures.

**KEYWORDS:** Penile fracture, Peyronie's, urethral stricture

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Figure 1. Showing operative steps of resection of plaque and replacement of both tunica and urethra by inner prepuceal flap.

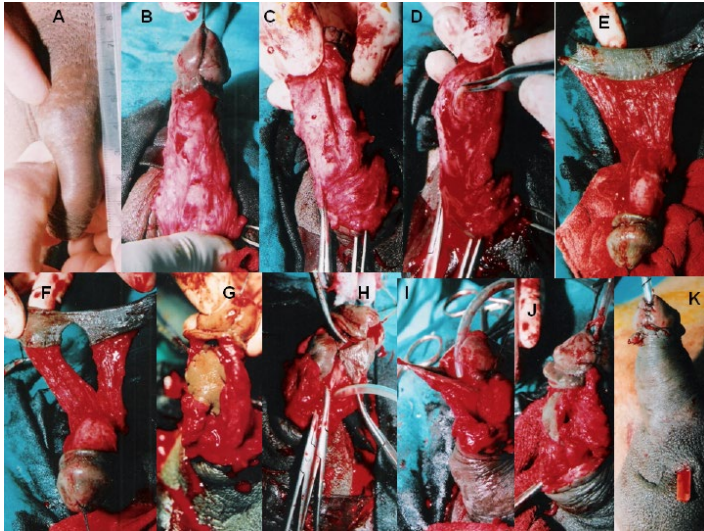


Figure 2. A preoperative urethrogram showing the loss of the distal penile urethra.



## RESULTS

Postoperative progress was uneventful and the patient voided in a good stream after removal of the catheter at 2 weeks. The patient reported good penile erection and sexual intercourse at 3 months, but his urinary stream was thin. The Urethrogram revealed a normal distal urethra but proximal bulbar urethral stricture (Figure 3). Visual internal urethrotomy was done for the stricture 4 months after surgery. The patient reported having sexual intercourse and voiding well when last seen at 18 months of follow-up .

## DISCUSSION

Penile fracture with urethral trauma is a relatively rare urological emergency with a wide spectrum of injuries ranging from minor tears in the tunica albuginea to development of fibrous plaques in the long-term, causing penile curvature and pain during erection. The incidence of urethral trauma in fracture of the penis varies from 1 to 38% [1-5], with reported incidences higher in the United States and other western countries compared to Asia [6]. Classically, blood at the urethral meatus, painful voiding with hematuria, and inability to void with/without a distended bladder indicate a urethral injury. Some authors consider urethrography to be mandatory in such circumstances [7-9], whereas others consider routine

Figure 3. Postoperative urethrogram at 3 months showing a proximal urethral stricture.



urethrography to be unnecessary [3]. After excision of the plaque, provided the defect is small and the fibrosis isn't deep, resuturing the tunica albuginea is a reasonable alternative. If resection of the fibrous tissue produces a big gap in the tunica

albuginea, then a replacement graft is required to bridge the defect.

The outcome of trauma to the urethra in fracture of the penis is different when the urethra and corpus spongiosum are surrounded by the hematoma. If such patients are treated conservatively or remain untreated, then both tunica and urethral loss are likely to be larger due to involvement of the urethra in the plaque. This was the case with our patient who presented late and had developed a 5 cm stricture. Being a long segment in the anterior urethra with moderate to severe spongiofibrosis, such strictures are not amenable to visual internal urethrotomy and requires dorsal onlay graft or urethral replacement. Dorsal onlay is feasible only if the corpus spongiosum is available. End-to-end urethroplasty is not possible in such cases with extensive loss of the anterior urethra. Urethral replacement remains the choice available. Various tissues used for urethral replacement are bladder mucosa, buccal mucosa, penile skin, and inner prepuce flap. Among these, the best available option in such situations is the inner prepuce flap.

Various alternatives for tunica replacement described in the literature are a dermal graft, free fat graft, a tunica vaginalis graft, a temporalis fascia graft, mono filaments, knitted polypropylene or lyophilized human dura, a venous patch graft, and a dermabraded graft with variable results. The dermis is more vascular and has a higher metabolic demand, with a more random fiber arrangement that might contribute to its contraction when used as a free graft [10]. The tunica vaginalis lacks strength and might result in areas of aneurysmal dilatation [10]. Prosthetic materials have the disadvantage of promoting a capsule around the material, which may contract later, defeating the purpose of the procedure [11]. Fascia lata, dura mater, and temporalis fascia grafts require additional major surgery to harvest the graft. In dermabraded flaps, removal of the epidermis leads to potential weakness in the flap strength. Trauma to the epidermis will cause an inflammatory reaction, which may lead to fibrosis and contracture. Inner prepuce flap has the advantages of being well vascularized, so it has good strength.

Krishnamurti [13] used dermabraded skin flaps for the replacement of tunica after excision for Peyronie's disease with good long term results. The inner prepuce is also skin with similar tensile strength and is thus adequate replacement for the tunica. It has little chances of graft contracture, is hairless, has the advantage of easy take-up, and is taken from the same site of surgery [4]. Although there is a theoretical disadvantage of increased risk of inclusion of a dermoid due to a buried epidermis [12], in a previous series of use of inner prepuce for tunica replacement, we didn't encounter a dermoid on long-term follow up of up to 13 years [4].

## CONCLUSION

This is a first case of extensive urethral involvement in fracture of the penis that was managed successfully with good results by excision of plaque, and replacement of both tunica and urethra by an inner prepuce flap.

## REFERENCES

1. Dincel, C., et al. (1998). "Fracture of the penis." *Int Urol Nephrol* 30(6): 761-765. [PubMed](#)
2. Tsang, T. and A. M. Demby (1992). "Penile fracture with urethral injury." *J Urol* 147(2): 466-468. [PubMed](#)
3. Zargooshi, J. (2000). "Penile fracture in Kermanshah, Iran: report of 172 cases." *J Urol* 164(2): 364-366. [PubMed](#)
4. Bhat, A., B. Sharma, et al. (2010). "Inner Prepuce Flap as Tunica Albuginea Replacement in The Management of Previously Untreated Fracture of The Penis." *African J Urol* 16: 33-38.
5. Fergany, A. F., et al. (1999). "Review of Cleveland Clinic experience with penile fracture." *Urology* 54(2): 352-355. [PubMed](#)
6. Derouiche, A., et al. (2008). "Management of penile fractures complicated by urethral rupture." *Int J Impot Res* 20(1): 111-114. [PubMed](#) | [CrossRef](#)
7. Jack, G. S., et al. (2004). "Current treatment options for penile fractures." *Rev Urol* 6(3): 114-120. [PubMed](#)
8. Miller, S. and J. W. McAninch. (1996). "Traumatic and Reconstructive Urology: Penile fracture and soft tissue injury." W. B. Saunders; Philadelphia, Pennsylvania: 693-698.
9. Mahrah, D. and V. Narysingh. (1998). "Fracture of the penis with urethral rupture." *Injury*: 483.
10. Gelbard, M. K. and B. Hayden (1991). "Expanding contractures of the tunica albuginea due to Peyronie's disease with temporalis fascia free grafts." *J Urol* 145(4): 772-776. [PubMed](#)
11. Wild, R. M., et al. (1979). "Dermal graft repair of Peyronie's disease: survey of 50 patients." *J Urol* 121(1): 47-50. [PubMed](#)
12. Savoca, G., et al. (1999). "Epidermoid cyst after dermal graft repair of Peyronie's disease." *BJU Int* 84(9): 1098-1099. [PubMed](#)

13. Krishnamurti, S. (1995). "Penile dermal flap for defect reconstruction in Peyronie's disease: operative technique and four years' experience in 17 patients." *Int J Impot Res* 7(4): 195-208. [PubMed](#)