

Bulbar Urethroplasty Using Combined Dorsal *cum* Ventral Onlay Buccal Mucosa Graft: a Novel Technique

Dear Editor,

In urethral stricture disease, it is known that anastomotic urethroplasty with complete excision of scar tissue provide the best long-term outcome for short bulbar urethral strictures. Longer strictures are dealt with by onlay urethroplasties employing tissue substitution, using either flaps or grafts. In recent times, the buccal mucosa graft, whether laid dorsally or ventrally, has gained popularity.^{1,2} However, substitution urethroplasty often involves the incision of stricture only, leaving scar tissue behind. In an attempt to overcome this problem, Guralnick and Webster introduced the augmented anastomotic urethroplasty, where stricture of up to 2 cm is excised.³ However, this may not be possible in cases where the stricture is longer. Often, only the most diseased portion of the urethra is excised and the remaining portion of strictured tissue remains in-situ. In this regard, we report a novel technique - combined ventral *cum* dorsal onlay buccal grafts with complete excision of diseased urethra - to manage a bulbar urethral stricture greater than 2 cm.

A 63-year-old Chinese male presents with a history of urethral stricture resulting from previous sexually transmitted disease. In addition to symptoms of poor urinary stream, dribbling and incomplete emptying for several years, he had recurrent scrotal and perineal abscesses that required repeated surgical drainage. Perineal examination revealed an urethro-cutaneous fistula opening in the perineum from which urine occasionally leaked. Retrograde urethrography showed a bulbar urethral stricture 2.5 cm in length, situated 0.5 cm distal to the external urethral sphincter (Fig. 1A).

An inverted Y perineal incision was made and the bulbar urethra exposed and mobilised off the triangular ligament dorsally, the perineal body posteriorly and distally to the limit indicated by the suspensory ligament of penis. The urethra was transected at the distal margin of the stricture and dorsal stricturotomy made along the proximal end. The stricture had virtually occluded the urethral lumen leaving a thin strip of diseased native urethral tissue. The stricture was completely excised. However, the surrounding corpus spongiosus tissue, which was healthy, was left intact. The urethra was further incised 10 mm distally and 5 mm proximally until healthy urethral mucosa is seen; the proximal incision limited by the proximity of the external sphincter.

Two strips of buccal mucosal were harvested from the inner left cheek. A 4.0 x 1.5 cm graft was spread-fixed

dorsally onto the corporal bodies. A second graft, 2.5 x 1.5 cm, was laid and spread-fixed onto the healthy corpus spongiosum, in a ventral onlay manner. The 2 buccal grafts were then anastomosed together and then to the distal urethral stump. The repair was completed over a 12F siliconised catheter using interrupted absorbable sutures (polyglactin).

Postoperative recovery was uncomplicated and postoperative urethrogram showed a patent bulbar urethra (Fig. 1B). The patient returned to normal micturition and enjoyed strong urinary stream at the last review at 20 months after surgery.

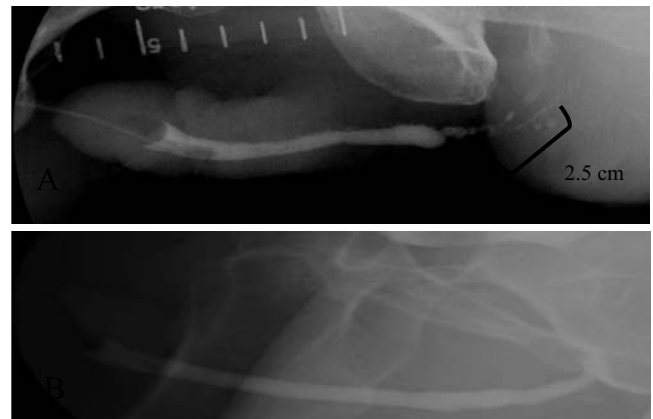


Fig. 1A. Preoperative urethrogram.

Fig. 1B. Postoperative urethrogram.

Various surgical techniques have been described to manage long bulbar urethral strictures, including substitution urethroplasty, augmented anastomotic urethroplasty and staged urethroplasty. These techniques should ideally include complete scar excision as in the case of anastomotic urethroplasty. However, for fear of chordee and/or penile shortening, this is not done. Thus, in most instances, the stricture is merely incised, leaving diseased urethral tissue behind. The grafts or flaps are then anastomosed to the incised edges of the diseased urethra.

These surgical approaches often lead to relatively inferior result when compared to anastomotic urethroplasty. It is known that the best long result is achieved by complete excision of the stricture and end-to-end anastomosis of healthy mucosa.⁴ The inferior result of substitution urethroplasty is probably due to the non-urethral nature of the substitute tissue or remnant diseased urethra or both. While it is ideal to eliminate both factors as in anastomotic

urethroplasty, it may not be possible in long bulbar urethral strictures. Nevertheless, it would be preferable to at least remove one of them.

In our patient, the diseased urethral scar tissue was completely excised. Following scar excision, it was not amenable to performing either an anastomotic or augmented anastomotic urethroplasty. However, the scar excision involved removal of the diseased urethra only. The surrounding healthy corpus spongiosum was preserved and this formed the bed for the ventral portion of the buccal graft. Thus, if the corpus spongiosum tissue is diseased and needed to be excised, it may not be possible to proceed to a combined ventral cum dorsal onlay grafting. Likewise, this technique may not be suitable for strictures in the more distal portion of the urethra where the spongy tissue is significantly thinner.

Anastomosing the 2 grafts literally converts them into a tubularised buccal graft. Tubularised grafts are reported to have poor results.⁵ However, we believe there are fundamental differences between the combined grafts as described and a simple tubularised graft. In our patient, the grafts are securely fixed to their respective beds, thus promoting imbibition and inosculation whilst it is often not the case in a tubularised graft. Secondly, there is a dual blood supply and both grafts draw their blood supply from different graft beds. Hence, we feel that these aided graft take, lead to a good outcome.

In conclusion, combined ventral cum dorsal onlay with a complete excision of stricture in appropriate circumstances is a reasonable surgical option for bulbar urethral strictures greater than 2 cm.

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