CASE REPORT
Reconstructive

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Ventral and One-sided Dorsolateral Onlay Buccal Mucosa Graft Urethroplasty for Simultaneous Penile and Bulbar Urethral Stricture: A Case Report and Review of Literature

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Abstract

Buccal mucosa graft (BMG) urethroplasty is one of the most commonly used augmentation techniques in urethral stricture. In this case report, we present a patient who had urethral strictures in 2 different localizations; 1 cm in the proximal penile urethra and 3 cm in the mid-bulbar urethra. We applied two different BMG techniques as one-sided dorsolateral onlay and ventral onlay. Our case report indicates that according to stricture nature, different BMG techniques can be performed safely in simultaneous urethral strictures. In this case report, we presented the techniques and reviewed the literature.

Keywords: Buccal mucosa graft, ventral onlay, dorsolateral onlay, simultaneous urethral stricture

Introduction

Today, the incidence of urethral stricture has grown with the increase in retrograde endoscopic procedures (1). The anterior urethra is the most frequently affected part in urethral strictures (2). Simultaneous urethral strictures with different localizations are rare (3). Open urethroplasty is an effective treatment option for the management of anterior urethral strictures (4). Buccal mucosa graft (BMG) urethroplasty is one of the most commonly used augmentation techniques. Ventral and one-sided dorsal onlay techniques are frequently used and offer satisfactory results (5,6). In this case report, we present a patient who underwent dorsolateral one-sided BMG urethroplasty due to mid-penile urethral stricture and then underwent ventral onlay and dorsolateral one-sided BMG urethroplasty surgery due to simultaneous proximal penile and mid-bulbar urethral stricture. Our aim was to present the techniques and review the literature.

Case Report

A seventy-two-year-old male patient with a history of one-sided dorsolateral onlay BMG urethroplasty due to mid-penile urethral stricture was admitted to our clinic with voiding symptoms. The patient, whose etiology of urethral stricture was trans-urethral resection of the prostate, had a history of 4 direct vision internal urethrotomies (DVIU) before previous urethroplasty. In the uroflowmetry of the patient, the maximum flow (Q^{max}) was 7.1 mL/s, the mean flow (Q^{mean}) was 6.5 mL/s. In the retrograde urethrography (RUG) it was observed that there was no stricture in the localization of the previous urethroplasty, but there were strictures in 2 different localizations, 1 cm in the proximal penile urethra and 3 cm in the mid-bulbar urethra as it is demonstrated in Figure 1. BMG urethroplasty was planned for the simultaneous strictures in two different localizations.

Surgical Procedure

After general anesthesia, the patient was placed in the extended lithotomy position. Retrograde endoscopic evaluation was performed on the patient with a 9.5 fr semi-rigid ureteroscope. It was observed that there was no stenosis in the localization of the previous urethroplasty. In the proximal penile urethra, a 1 cm stricture area was passed, then the mid-bulbar stricture was observed. A guide-ware stent was delivered to the bladder. Afterwards, perineal vertical incision was made. Bulbospongiosus

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muscle was identified and a midline incision was performed. The bulbar urethra was applied. Penile invagination was performed through a perineal incision. The penile urethra was dissected. A penile urethral stricture localization was detected by urethral catheter. A one - sided dorsolateral dissection was performed and a stricture was incised. Afterwards, bulbar urethral stricture localization was identified with a urethral catheter. A longitudinal ventral incision until healthy tissue encountered was performed. BMG harvested from the left inner cheek was trimmed. 1 cm graft was fixed dorsolaterally to the corpus cavernosum in penile urethral stricture localization then one edge of the opened urethral mucosa and graft was sutured with 4/0 vicryl sutures. In bulbar urethral stricture localization three-cm graft sutured to the opened urethral mucosa ventrally (Figure 2). Urethral incisions were closed on 16 fr silicon urethral catheter with interrupted sutures then corpus spongiosum was closed in bulbar urethral stricture localization. After three weeks, there was no urinary leakage in the RUG, and the urethral catheter was removed (Figure 1). Three months after surgery, Q^{max} was 15,1 mL/s and Q^{mean} was 10,2 mL/s in uroflowmetry. The patient was satisfied with regard to lower urinary tract symptoms.

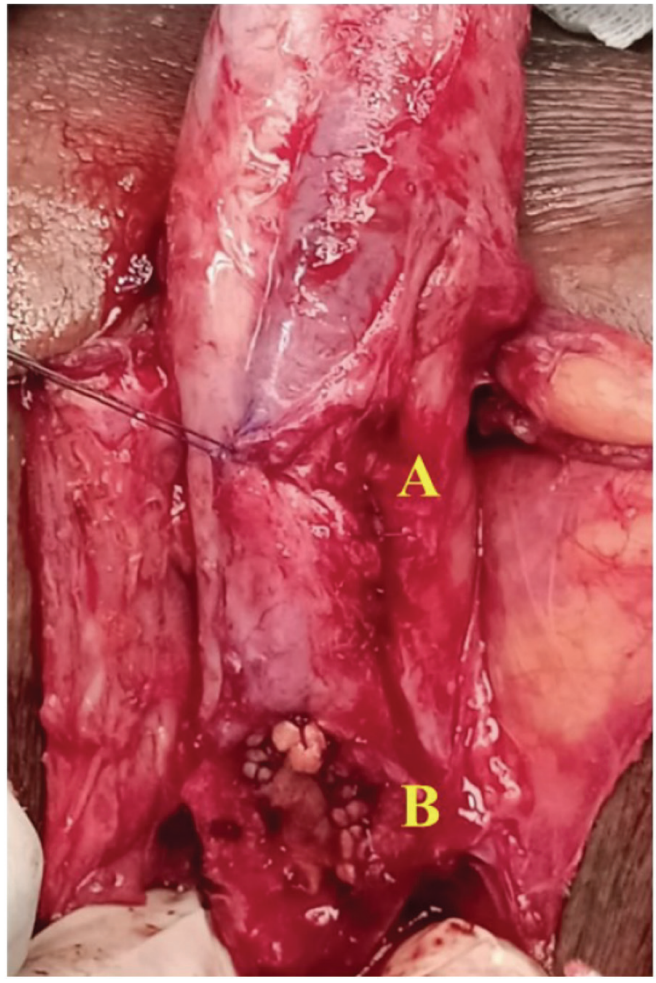

Figure 2. Intraoperative view. Penile invagination and urethral dissection was performed. **A:** One sided dorsolateral onlay BMG, urethra was closed with interrupted 4/0 vicrly sutures, **B:** Ventral onlay BMG, urethra was closed with interrupted 4/0 vicrly sutures

Discussion

DVIU has a lower success rate in complex urethral strictures than in short segment bulbar strictures (7). Therefore, BMG urethroplasty is used as an effective treatment option in complex urethral strictures. Kulkarni et al. (8) described the one-sided dorsolateral onlay graft technique for the first time. It has been shown that patient-reported outcomes of one-sided dorsolateral BMG urethroplasty are high in anterior urethral strictures (6). In another study by Zumrutbas et al. (9), it was shown that functional results were good for patients who

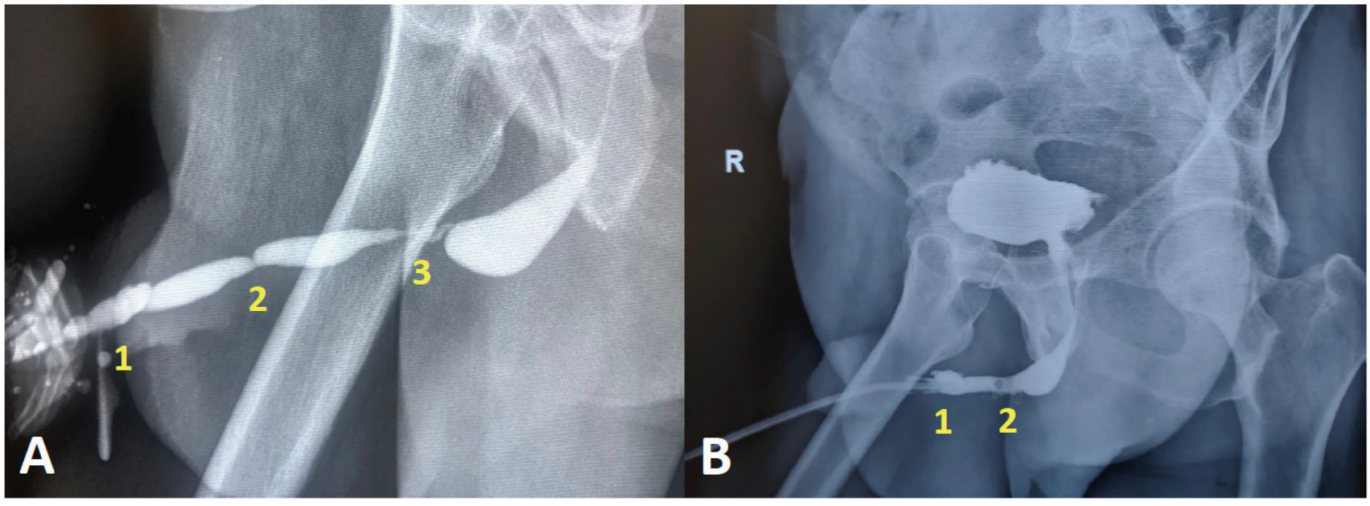

Figure 1. A; 1: Previous urethroplasty localization, **2:** 1 cm proximal penile urethral stricture, **3:** 3 cm mid-bulbar urethral stricture, **B; 1:** Postoperative proximal penile graft, **2:** Postoperative mid-bulbar graft, no urinary leakage in both side

underwent one-sided dorsolateral BMG urethroplasty due to panurethral stricture. However, ventral onlay BMG urethroplasty is a frequently preferred technique in bulbar urethral strictures Mellon and Bihrle (5) showed that ventral onlay BMG urethroplasty has good long-term functional results and low complication rates in bulbar urethral strictures. The ventral approach in the proximal bulbar urethra provides direct access to the urethral lumen and a clear visualization of the entire stricture. Also, corpus spongiosum tissue is thick in proximal bulbar urethra, which provides good blood supply to the BMG. Additionally, the ventral onlay technique is easier than the dorsal or dorsolateral onlay technique. In one-sided dorsolateral onlay technique, corpus cavernosum directly supplies BMG. Also, one-sided nervous supply of urethra is preserved. Additionally, much less bleeding occurs in contrast to the ventral approach. Dorsal approach is preferred in penile urethral strictures because the spongiosum tissue is thinner.

Simultaneous urethral strictures at different locations are relatively rare in clinical practice. In the case series in the literature, it is seen that urethral strictures usually develop in a single site either as a short or long segment. We detected proximal penile and mid-bulbar urethral strictures in a patient who had previously undergone one-sided dorsolateral onlay BMG urethroplasty due to penile urethral stricture. We applied two different BMG techniques (One sided dorsolateral and ventral onlay) to the patient. There is only one case report about simultaneous multiple strictures treated with different BMG techniques. Favorito et al. (3) reported that they applied dorsal inlay and ventral onlay BMG technique to a patient with simultaneous penile and bulbar urethral strictures. In our clinical practice, the single stage one-sided dorsolateral BMG technique is the technique we frequently prefer in penile urethral strictures, and we applied the same technique for penile urethral stricture in this patient. In the literature, the ventral onlay BMG technique has good results in the bulbar urethral stricture (5) and we preferred the ventral onlay BMG technique for bulbar urethral stricture in this patient. Augmented anastomotic urethroplasty can be performed in bulbar urethral strictures and it was shown that augmented anastomotic urethroplasty was independently associated with stricture recurrence (10). We prefer this technique for appropriate bulbar urethral strictures. But, we did not apply the non-transecting anastomosis technique in this patient because we detected that the dorsal urethral mucosa was sufficient at the stricture site of the bulbar urethra.

Conclusion

In conclusion, our case report indicates that according to stricture nature, different BMG techniques can be performed safely in simultaneous urethral strictures. One-sided dorsolateral and ventral onlay BMG techniques are simple to perform and yield good functional results. We think that this case report encourages urologists who are unfamiliar with reconstructive urethral surgery.

Ethics

Informed Consent: Written informed consent was obtained from the patient for the publication of this case report and any accompanying images.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: M.A.K., Ö.K., Concept: E.O., Design: A.Ö., Data Collection or Processing: S.Ü., Writing: M.A.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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