

Short Communication**Buccal mucosal graft in reconstructive urology: Uses beyond urethral stricture**

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Abbreviations & Acronyms

BMG = buccal mucosal graft
IVP = intravenous pyelography
LS = lichen sclerosis

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Abstract: The use of buccal mucosal grafts for the reconstruction of urethral strictures is an established procedure. Because of its robustness, the buccal mucosal graft could also potentially provide an alternative for other indications in reconstructive urology. We report here six consecutive patients who received a buccal mucosal graft for ureteral strictures, glans reconstruction and stoma stenosis. The follow up for all patients ranged from 26 to 50 months. The buccal mucosal graft showed excellent functional results for the ureteral strictures and stenosis from ureterocutaneostomy. For glans reconstructions, the buccal mucosal grafts delivered excellent cosmetic and functional results without causing meatal stenosis. We conclude the buccal mucosal graft can be used in reconstructive surgery beyond the reconstruction of urethral strictures.

Key words: buccal mucosal graft, glans reconstruction, lichen sclerosis, meatal stenosis, ureteral stricture.

Introduction

The use and success of the BMG for the reconstruction of urethral strictures are well documented.^{1–4} However, the use of the BMG for other types of reconstruction has been largely unexplored and only scarcely reported.^{5–10} We present here a series of patients in which BMG was utilized for purposes other than the reconstruction of urethral strictures.

Methods

Patients 1 and 2 (aged 51 years and 48 years, respectively) were referred to the Department of Urology, Pediatric Urology and Urological Oncology, Sana Hospital Hof, Hof, Germany, because of recurrent ureteral strictures after failed laparoscopic pyeloplasty (Fig. 1a). Patient 3 (aged 29 years) presented with right-sided renal colic resulting from a ureteral stricture of unknown origin. For these cases, all efforts to dilate the ureter through JJ stents were in vain, with ureteric colic occurring soon after the removal of the stent. For all three patients, a JJ stent was placed 4 weeks before the reconstruction to prevent the complete obliteration of the strictured lumen, which would have required us to carry out a complete tube reconstruction using, for example, the bowel. During the procedure, a flank incision was made, and the retroperitoneal space was developed. After Gerota's fascia was opened, the ureter and kidney were mobilized, and the strictured portion of the ureter was identified and incised up to the healthy segment at both ends. The strictured portion was measured (6, 7 and 4 cm in patients 1, 2, and 3, respectively), and the BMG was harvested from the cheek and thinned. The BMG was subsequently placed on the narrowed segment (Fig. 1b) and fixed by a 6 × 0 monocryl running suture using the onlay technique. The ureter and the graft were wrapped with a peritoneal/omental patch. The postoperative period was uneventful, with the JJ stent left in place for 6 weeks. An IVP was carried out after the removal of the JJ stents and at 6 months postoperatively.

Patient 4 (aged 46 years) underwent a total glans reconstruction as a result of penile carcinoma (pT2a G1, pN0, pR0) that had occurred 1 month previously, and received the BMG at the glans for cosmetic purposes. After the complete removal of the glans up to the corpus cavernosum and the resection of the distal segment of the urethra, the BMG was sutured on the corpus cavernosum (Fig. 2a) with a 6 × 0 monocryl suture. The graft was also adapted to serve as a meatus using a simple interrupted 6 × 0 monocryl suture. An 18-Fr urethral catheter and a 10-Fr suprapubic catheter were left in place. The postoperative period was uneventful, and the catheters were removed after 7 and 20 days, respectively.

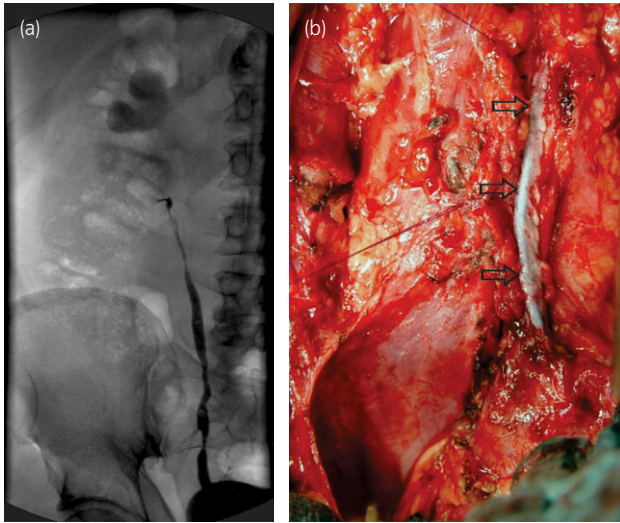


Fig. 1. Ureteral stricture in patient 1. (a) Preoperative retrograde pyelography showing a right-sided proximal ureteral stricture. (b) After mobilization of the ureter and renal pelvis, a BMG was implanted at the strictured ureter using the onlay technique. Arrows indicate BMG placed on the ureteral stricture using an onlay technique.

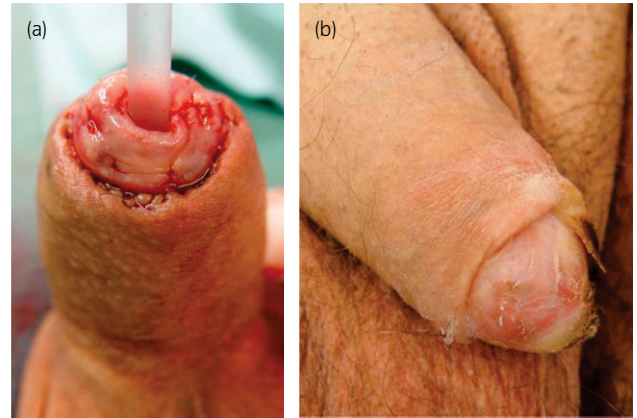


Fig. 2. Glans reconstruction. (a) Patient 4. BMG transplanted on the corpus cavernosum after total glansectomy and also adapted to serve as a meatus using a simple interrupted 6 x 0 monocryl suture. (b) Patient 5. Extensive LS of the glans and meatus.

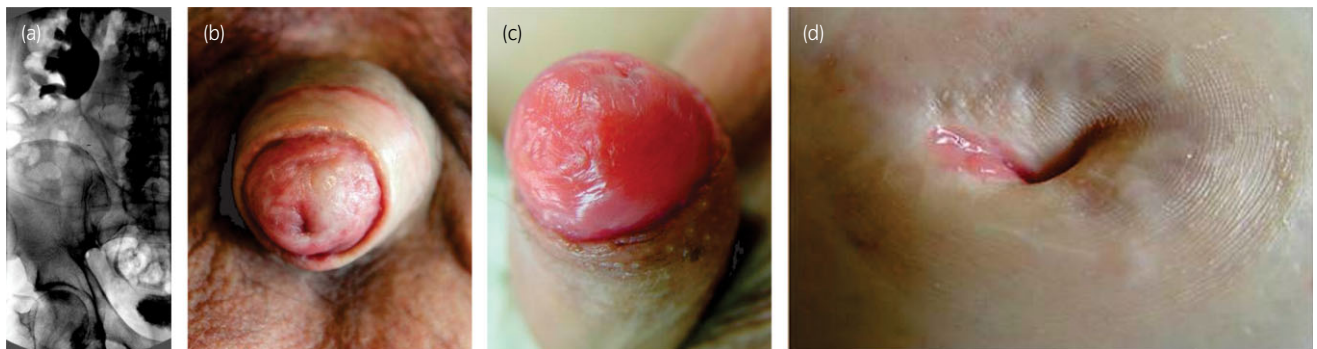


Fig. 3. Postoperative outcome after BMG. (a) Postoperative intravenous pyelogram of patient 1 after 6 weeks. (b) Postoperative result after 3 months in patient 4 (penile carcinoma). (c) Postoperative result after 3 months in patient 5 (LS). (d) Postoperative result after implantation of a BMG on the stoma in patient 6.

Patient 5 (aged 58 years) received a BMG for cosmetic and functional purposes because he suffered from recurrent metal stenosis caused by extensive LS of the glans and meatus (Fig. 2b). The epithelium of the glans was completely removed because of its complete destruction from the LS. The BMG was sutured on the glans and the coronary sulcus using a 6 x 0 monocryl.

Patient 6 (aged 60 years) received a BMG using the inlay technique because of recurrent stenosis from a ureterocutaneostoma, which was placed after palliative radical cystectomy because of transitional carcinoma of the bladder. Despite multiple incisions of the stoma and permanent placement of a single J stent, the stenosis became recurrent and ultimately so severe that even replacement of a single J stent was not possible. A 40 x 14-mm BMG patch was placed on the stoma after dissecting the same-sized area up to fascial level, and was subsequently sutured with 6 x 0 monocryl. An 18-Fr catheter was left in place for 10 days.

Results

The IVP after the removal of the JJ stent showed a patent ureter in patients 1 and 2 (Fig. 3a). After a follow up of 50 and 34 months, respectively, no episode of ureteric colic was observed. However, patient 3 suffered from renal colic after the removal of the stent. The IVP showed a chronically dilated renal pelvis. Ureterorenoscopy ruled out a recurrence. The patient had no complaints after a follow up of 26 months.

The reconstruction of the glans lead to excellent cosmetic and functional results in both patients 4 and 5 (Fig. 3b,c). The meatus was wide enough to allow satisfactory urinary function. No complications were observed at a follow up of 38 and 45 months.

Patient 6 (Fig. 3d) no longer required a JJ stent after a follow up of 45 months, and had no episode of hydronephrosis or ureteric colic.

Discussion

Traditionally, ureteral strictures are treated with ureteroureterostomy when the upper or middle segment has a stricture length of 2–3 cm.¹¹ Meanwhile, a distal ureteral stricture is usually best managed by ureteroneocystostomy with or without a psoas hitch¹² or boari flap. The most challenging problem is usually a long segment proximal ureteral defect. The management of choice for such strictures is usually an ileal interposition, which can be associated with significant metabolic and bowel complications.⁸ The use of BMG for the correction of ureteral strictures in selected cases could be successful and might avoid surgery, such as bowel interposition. Indeed, suitable candidates for BMG are patients with proximal and middle ureteral strictures that cannot be corrected with a ureteroureterostomy, as well as those patients in which an ileal interposition is not indicated because of azotemia/inflammatory bowel disease. The findings of the present small case series do not justify the universal use of BMG in all ureteral strictures, particularly in the absence of a long-term follow up, but still provide evidence that BMG can be used effectively in these types of cases. Of particular relevance, BMG placement is a minimally-invasive procedure compared with ileal interposition, which can still be used in cases of failure.

A mutilating surgery for the penis because of a precancerous/cancerous lesion is associated with significant functional and psychological morbidity.^{13,14} Of course, the aim of reconstructive surgery after complete removal of the lesion is to provide a satisfactory functional and cosmetic outcome, as well as a satisfactory sexual outcome in applicable cases. Given the macroscopic findings in the patient with penile carcinoma, a conservative treatment was not possible. The cosmetic appearance of the neoglans after using BMG was almost similar in appearance to the original glans. Because of the possibility of a precancerous lesion,¹⁵ the patient with LS demanded special consideration. In particular, LS can be associated with cancerous transformation.¹⁶ The conservative treatment of LS with corticosteroids and acitretin is still associated with recurrence, and malignant transformation remains a concern.¹⁷ The current wisdom is to completely remove the epithelium to reduce the risk of meatal stenosis, cancerous transformation and LS recurrence. BMG is not preferred in the literature because of its possible inability to withstand a dry environment.⁶ However, the present results are contrary to this prevailing concern, as the outcomes of both patients showed that BMG was able to withstand a dry environment.

Finally, BMG can be an additional tool for the correction of stoma stenosis, which is an important complication in patients treated for different types of urinary diversion with or without the use of bowels.¹⁸ Generally, ileal-ureteral anastomosis is a common treatment for patients not suitable for orthotopic bladder replacement. On the contrary, a transuretero-ureterocutaneostomy can be used in patients who require a palliative cystectomy or have significant morbidity, or in those in whom the bowel cannot be used (e.g. inflammatory bowel disease). The stoma stenosis can be managed endoscopically or through an open revision, with the open revision the preferred treatment because of higher success rates. However, because of

the significant morbidities in the present patients, we preferred to avoid an additional open surgery. Usually, such patients as those in the present study are treated with cold knife incision or laser incision and placement of a JJ stent. However, these treatments are associated with recurrence and ascending urinary tract infection. In patient 6, the stomal stenosis was so severe that the replacement of a single J stent was not possible. The repair of such stomas with BMG is a minimally-invasive procedure,⁷ and can avoid other forms of urinary diversion. Nevertheless, a long-term follow up with more patients is required before making any final statement about the use of BMG in such cases.

In conclusion, the functional and cosmetic results in our patients were excellent after the use of BMG for reconstruction, suggesting that BMG can be used in reconstructive urology beyond the reconstruction of urethral strictures alone.

Conflict of interest

None declared.

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