

A case report on buccal mucosa graft for upper ureteral stricture repair

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Abstract

Management of ureteric stricture especially long length upper one-third poses a challenging job for most urologists. With the successful use of buccal mucosa graft (BMG) for stricture urethra leads the foundation for its use in ureteric stricture also. A 35-year-old male diagnosed case of left upper ureteric stricture, postureteroscopy with left percutaneous nephrostomy (PCN) *in situ*. Cysto-retrograde pyelography and nephrostogram done simultaneously suggestive of left upper ureteric stricture of 3 cm at L3 level. On exploration, diseased ureteral segment exposed, BMG harvested and sutured as onlay patch graft with supportive omental wrap. The treatment choice for upper ureteric long length stricture is inferior nephropexy, autotransplantation, or bowel interposition. With PCN *in situ*, inferior nephropexy becomes technically difficult, other two are morbid procedures. Use of BMG in this situation is technically better choice with all the advantages of buccal mucosa. Onlay BMG for ureteral stricture is technically easy, less morbid procedure and can be important choice in future.

Key Words: Buccal mucosa graft, reconstruction, ureteric stricture

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Received: 05.02.2016, Accepted: 21.02.2016

INTRODUCTION

Management of ureteric stricture, especially upper ureteric long strictures poses a challenging job for most urologist.^[1] Long, complicated, upper ureteric strictures; beyond the reach of end-to-end anastomosis, requires bowel interposition or autotransplantation, both the procedures are morbid for patient. With the successful use of buccal mucosa for stricture urethra, leads the foundation for its use in ureteric stricture as well.^[1-4]

Recent literature suggest successful use of buccal mucosa graft (BMG) with omental wrapping for treating complicated

ureteric stricture.^[3,5] We present our experience with BMG for ureteric stricture that would otherwise have needed ureteric replacement with intestinal segments or kidney autotransplantation.

CASE REPORT

A 35-year-old male working in merchant navy came with diagnosis of postureteroscopy long length upper ureteric stricture. Left percutaneous nephrostomy (PCN) inserted for infected hydronephrosis (HN) which was draining 300–500 ml/day

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How to cite this article: Sabale VP, Thakur N, Kankalia SK, Satav VP. A case report on buccal mucosa graft for upper ureteral stricture repair. Urol Ann 2016;8:474-7.

Access this article online

Quick Response Code:



Website:

www.urologyannals.com

DOI:

10.4103/0974-7796.192092

clear urine. Blood investigations were normal. Simultaneously cysto-RGP and nephrostogram suggested 3 cm long upper ureteric stricture with extravasation of contrast at L3 level [Figure 1].

Left upper ureter exposed through left anterior transverse incision retroperitoneally. About 3 cm long stricture segment identified [Figure 2]. Inferior nephropexy attempted was not successful sizeably due to PCN adhesion. Hence, decision of buccal mucosa onlay graft was taken, about 4 cm long BMG harvested, defatted, washed in saline and sutured as patch graft over double J (DJ) stent [Figures 3-5]. Live omentum was wrapped around.

DJ stent and left PCN removed after 6 weeks, after confirming good drainage and no extravasation at anastomotic site.

Follow-up till 8 months postoperatively, patient clinically comfortable, ultrasonography shows mild residual HN. The patient could retain his job after renal preservation.

DISCUSSION

Ureteric stricture can be caused by calculus disease, ischemic injury during open, laparoscopic, or endoscopic surgeries or radiations. It can be due to infections (tuberculosis) or malignancy.^[1]

To preserve renal function, ureteric strictures need to be treated as priority.^[3]

Treatment options ranged from simpler endoscopic procedure to complex reconstruction. Small segment ureteric stricture can be managed endoscopically or by end-to-end anastomosis. Urologists have been challenged by the optimal tissues needed for management of long ureteric strictures. Long, complicated, upper ureteric strictures, beyond the reach of end-to-end anastomosis, require either bowel interposition or autotransplantation. Both these procedures carry high morbidity due to bowel anastomosis, complexity of procedure, and possible long-term complications.^[1,2]



Figure 1: Cysto- and nephrostogram suggestive of left upper ureteric stricture with complete cutoff and extravasation of contrast at L3 level



Figure 2: Intraoperative image showing stricture segment, hooked by infant feeding tube with proximal dilatation



Figure 3: Intraoperative images shows buccal mucosa onlay graft placed over stricture segment



Figure 4: Intraoperative images shows buccal mucosa onlay graft sutured over stricture segment

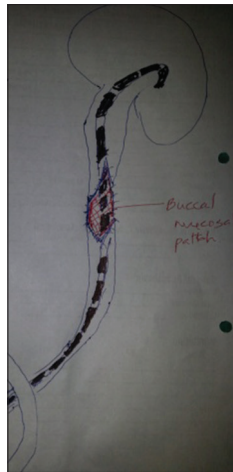


Figure 5: Schematic diagram of the reconstructive procedure done for the patient

In the literature, many authors have reported the use of nondegradable synthetic grafts such as silicon, polytetrafluoroethylene, and biodegradable collagen sponge tube, to bridge the ureteric defect. Even some had used small intestine submucosa, human dura mater, and amniotic membrane for filing the ureteric defect. None of the above were consistently successful. Autologous bladder mucosa graft or free flap peritoneum is not used for long ureteric stricture nowadays due to disruption.^[1]

Although there are very few published studies over the use of BMG for ureteric stricture, results are good and favorable. With the successful use of BMG in stricture urethra, motivated us for its use.^[3,5]

Shah *et al.* reported an ureteroplasty using buccal mucosal onlay grafts with omental wrap in five patients with long, benign ureteric strictures due to tuberculosis in four patients and amyloidosis in one patient. In all the patients, the length of the stricture was >5 cm. Ureteric patency was established in all patients. In four patients, the strictured portion was laid open, and buccal mucosal patch graft (over a DJ stent) for ureteral reconstruction by dorsal onlay technique was used. In one patient, 3 cm obliterated segment of ureter with lesion was completely excised and laid open ureteral ends were spatulated and sutured dorsally following renal descensus. Then, BMG was placed ventrally to bridge the defect.^[3]

Naude reported the successful use of buccal mucosal patch grafts in 4four patients having a variety of ureteric lesions and a tubularized BMG in one patient with a segmental ureteric loss. The patients had a variety of ureteric lesions due to tuberculosis, bilharziasis, severe fibrosis, and stenosis of ureteropelvic junction following pyelolithotomy in the intrarenal pelvis,

loss of a segment of the ureter following a gunshot injury, and resection of a periureteric mass. Ureteric patency was established and maintained in all patients. In 4 patients, the stricture segment was laid open, and a BMG sutured in and wrapped in omentum. In one patient, a periureteric mass was resected along with short segment of ureter. A tension free, spatulated end-to-end anastomosis was not possible, so an end-to-end anastomosis with a patch BMG to the spatulated ureter was reconstructed. In one patient, ureteric segment was replaced by a tubularized BMG and wrapped with omentum.^[5]

BMG had been vastly used for variety of urethral defects such as hypospadias, epispadias, and stricture. With the successful results of BMG, for urethral reconstruction and its unique histological features prompt us for its use.

Advantages of onlay BMG over other procedures:

- It is a simple technique with minimal complications. It provides good patency and drainage^[2]
- Thick, nonkeratinized epithelial layer, and highly vascular lamina propria are the unique histological features of BMG. Abundant vasculature in the outer layer of lamina propria promotes graft uptake by imbibition, inosculation, and angiogenesis. Added with omental wrap which provides a good vascular bed will have excellent take up results^[1-3]
- No need to depend on damaged urothelium to regenerate as in case of classical davis intubated ureterotomy^[3]
- It is safe option in highly morbid patient like chronic renal failure because of less complex procedure and without any metabolic complications.^[1]

Buccal mucosa can be used as a patch graft or tabularized graft.^[3]

Herein, we present our initial experience, with onlay BMG for ureteric reconstruction. Follow-up results are encouraging that promotes its use.

CONCLUSION

Buccal mucosa onlay graft for ureteral stricture is a technically easy and less morbid procedure with good results although long-term follow-up and larger studies are required to make a statement.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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