

Combined ureterocalicostomy with buccal mucosa graft ureteroplasty in complex upper ureteral stricture: A rare case of reconstruction

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Abstract

The treatment of a major and complex ureteric stricture requires the use of a bowel interposition or autotransplantation of the kidney, which is a major undertaking and remains the traditional option. Buccal mucosa is an established tissue for urethral reconstruction and can be used safely for the repair of narrowing of the ureter. This technique has been well documented in the literature; however, a combined ureterocalicostomy with buccal mucosa graft ureteroplasty has not yet been reported in literature. We report the case of a 59-year-old female who was diabetic and hypertensive presented with a long-length, complex upper ureteric stricture with recurrent pyelonephritis. A long stricture in the upper ureter measuring approximately 8 cm was successfully repaired by free buccal mucosal onlay patch graft over a double J stent with ureterocalicostomy. This technique can be used in salvaging kidneys with complex ureteric strictures along with fibrotic pelvis.

Keywords: Buccal mucosa graft, ureterocalicostomy, ureteroplasty

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INTRODUCTION

The repair of complex, long stricture disease at any position in the ureter remains a challenging prospect, as evidenced by the variety of approaches described to tackle them. The success experienced by surgeons when repairing complex urethral strictures using buccal mucosa harvested from the patient's oral cavity has led some surgeons to investigate this tissue as a tool for repairing complex ureteral strictures.^[1]

CASE REPORT


A 59 years old female, diabetic and hypertensive, presented

with acute kidney injury and acute pyelonephritis and underwent stenting. Double J stent was removed after 6 weeks and creatinine normalized. She again developed left pyelonephritis. Computed tomography intravenous urography [Figure 1] revealed a thickened left proximal ureter causing obstructive changes suggestive of stricture. Diethylenetriaminepentaacetate (DTPA) renogram revealed left-sided function of 30.5%. Left percutaneous nephrostomy (PCN) insertion was performed, which drained frank pus. PCN urine cleared up gradually and was draining 600–800 ml/day. Cystoscopy with retrograde

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pyelogram and percutaneous nephrostogram done simultaneously [Figure 2] showed upper ureteric stricture of approximately eight centimeters length. Options of buccal mucosa augmentation and Yang–Monti replacement were discussed with the patient. On exploration, it was found to have unhealthy thickened and fibrotic pelvis with strictured ureter, and while on dissection, the upper ureter got avulsed at the ureteropelvic junction. Ureterocalicostomy along with buccal mucosa graft (BMG) augmentation ureteroplasty and omental wrap over a 7 Fr JJ stent anastomosis was performed [Figures 3a-d]. Postoperatively, the patient developed urinary leak from the graft site [Figures 4-6]. This

was managed conservatively with indwelling Foley catheter and JJ stent *in situ*. A retrograde pyelogram showed 0.5 cm stricture at ureterocalicostomy site and it was managed by laser stricturotomy. Serial follow-up DTTPA showed stable hydronephrosis and function at 21%. A follow-up MRU (magnetic resonance urography) and ultrasonography at 1 year showed persistent hydronephrosis but good drainage [Figures 7 and 8]. The patient remains pain free and free of infection.

DISCUSSION

Ureteric stricture can be caused by calculus disease, iatrogenic ischemic injury during open, laparoscopic or endoscopic surgeries, or postradiation. It can be due to infections (tuberculosis) or malignancy.^[2] To preserve the renal function, these ureteric strictures need to be treated as

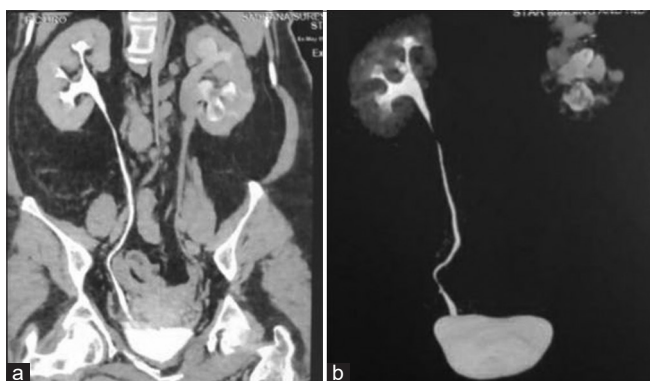


Figure 1: (a) Computed tomography intravenous urography – thickened left proximal ureter causing obstructive changes suggestive of stricture. (b) Computed tomography intravenous urography – hypodense debris in the lower pole of the left kidney without drainage of contrast

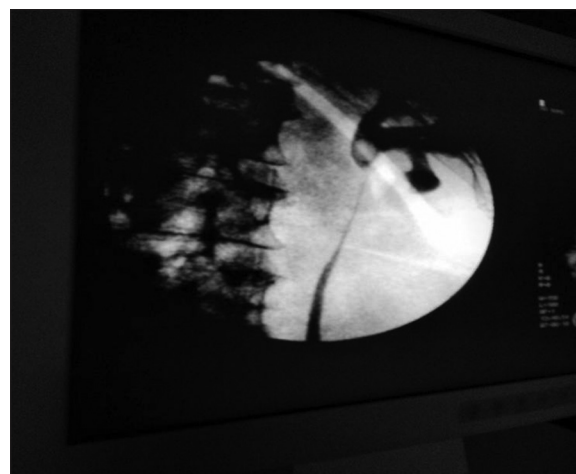


Figure 2: Percutaneous nephrostogram and retrograde pyelography done simultaneously showing cutoff at the level of pelvis with thin streak of contrast in the upper ureter, i.e., Stricture segment of approximately 8 cm with residual hydronephrosis. Also filling defect seen in pelvis probably secondary to debris ball

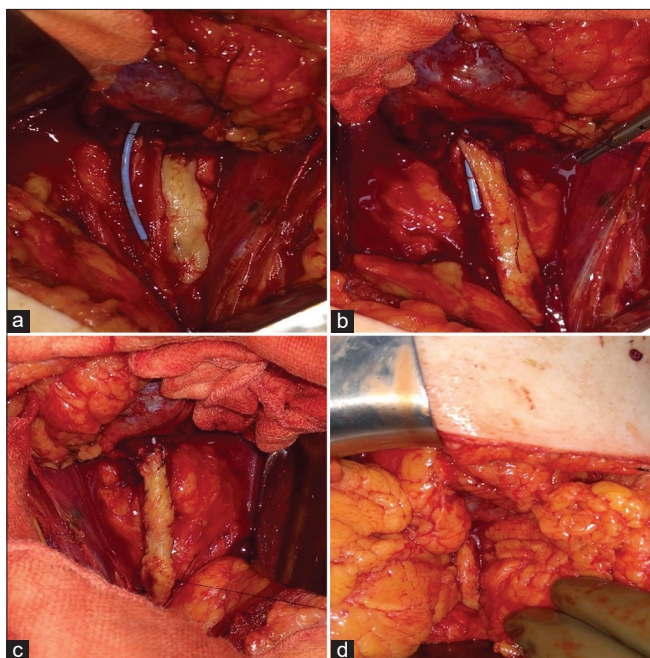


Figure 3: (a) Ureterotomy and ureterocalicostomy stented with buccal mucosal graft on the lateral border of the ureterotomy. (b) Suturing of buccal graft to ureter. Lateral wall suturing completed. Medial wall suturing in progress; stent seen *in situ*. (c) Completion of buccal mucosa graft anastomosis to the ureter. (d) Omentum wrapped posteriorly

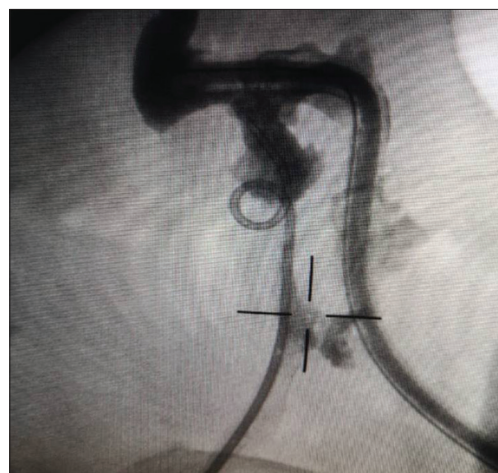


Figure 4: Postoperative nephrostomogram showing stent *in situ* with minor leak of contrast

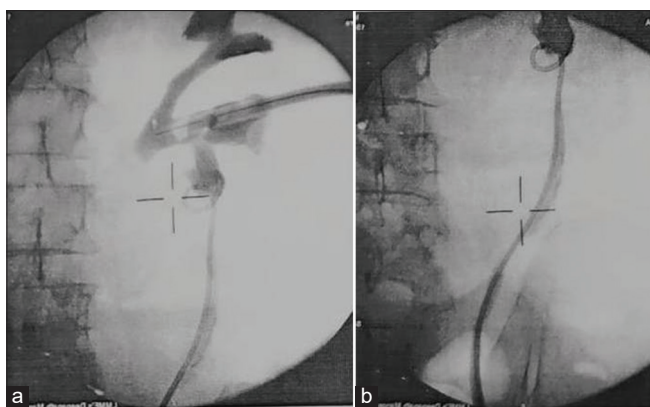


Figure 5: PCN gram showing DJ stent in situ with proximal end in lower calyx (b) No leakage of contrast from the reconstructed ureter

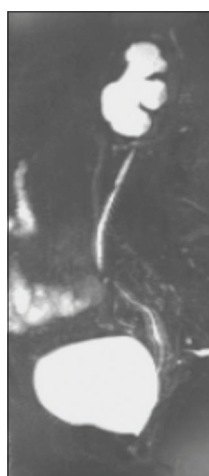


Figure 7: Magnetic resonance urogram – left hydronephrosis with drainage in the ureter

priority.^[3] Treatment options range from simple endoscopic procedure to complex reconstruction. Small-segment ureteric stricture can be managed endoscopically (stricturotomy and balloon dilatation) or by end-to-end anastomosis. Other options include ureterocystoneostomy, mobilization of kidney, transureteroureterostomy, psoas hitch technique, or Boari flaps. For long strictures, ureteric replacement with intestinal segments or kidney autotransplantation may be required. Both procedures are elaborate, are time consuming, and carry the risk of serious complications.^[2,4] Many renal units may land up with nephrectomy. A small ileal segment can be tubularized into a long-length ureteric substitute using Yang–Monti principle and it has shown good results.^[5] It is, however, associated with potential complications such as paralytic ileus, bowel fistula, recurrent UTI, wound infection, and metabolic disturbances.^[6] Duckett *et al.* had popularized the successful use of BMG in the treatment of complicated hypospadias and urethral reconstruction.^[7] Owing to its excellent take-up and simplicity of harvesting, BMG

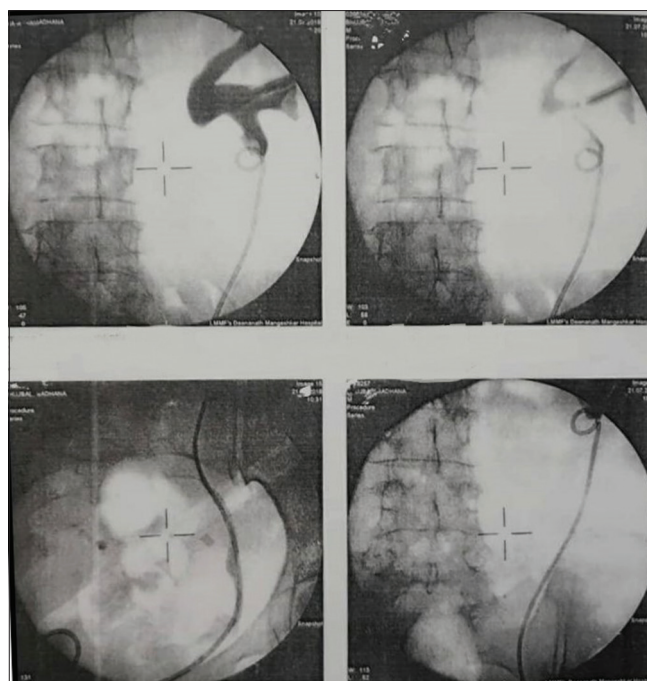


Figure 6: PCN gram in upright position shows good drainage of contrast without extravasation

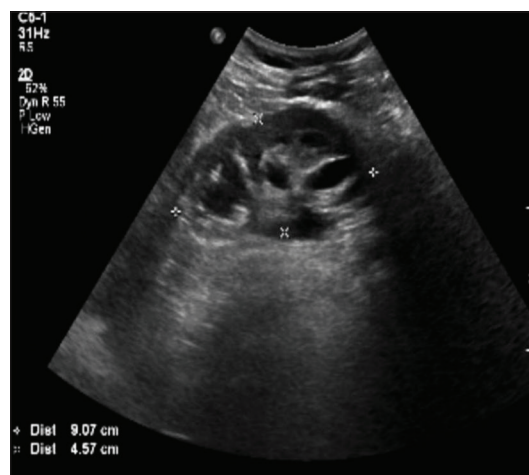


Figure 8: Ultrasonography kidney, ureter, and bladder showing residual left-sided hydronephrosis

has become a popular and an important source of tissue for urethral reconstruction. The technique subsequently found favor in treating ureteric lesions. BMG does not have a metabolite secreting surface and also avoids bowel resection. Naude had reported successful use of BMG patch in five patients and tubularized graft interposition in one patient to bridge lost segment for benign ureteric stricture; it showed excellent results in terms of maintaining patency and drainage using buccal mucosal onlay patch and tubularized graft.^[8] In our case too, the onlay patch provided excellent drainage with stable renal function and no postoperative urinary tract infection.

In our case, ureterocalicostomy along with BMG augmentation ureteroplasty with supportive omental wrap was performed in long-segment upper ureteric stricture with fibrotic renal pelvis. The patient is asymptomatic with maintained renal function and without urinary tract infection at 2-year follow-up.

We present this case report for its uniqueness as the only case reported in the literature. We feel that a BMG ureteroplasty along with inferior ureterocalicostomy if required can be an option to using a bowel segment to treat such complex ureteric strictures.

CONCLUSION

BMG is a novel tissue substitute for upper urinary tract reconstruction; we report its successful use for bridging a long upper ureteric stricture, i.e., BMG ureteroplasty along with ureterocalicostomy with good medium-term success at 2 years.

There is no such case reported in literature. Hence, we presented for its uniqueness and further case studies and long-term follow-up are needed to make a statement.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and

other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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