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Case Report

Acquired Bilateral Puj Stricture: Single Stage Laparoscopic Bmg Ureteroplasty And Flap Pyeloplasty.

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Abstract

Simultaneous bilateral laparoscopic flap pyelo ureteroplasty and Buccal Mucosal Ureteroplasty is technically challenging and rarely performed in adults. Buccal mucosal graft (BMG) ureteroplasty is an emerging option for complex ureteric strictures. We report a rare case of a 64-year-old male with bilateral pelvi ureteric junction (PUJ) stricture secondary to recurrent ureteric interventions, managed with left laparoscopic vertical flap pyelo ureteroplasty and right BMG ureteroplasty in the same surgical session. Postoperative recovery was uneventful, and follow-up uretero renoscopy demonstrated well-healed anastomotic sites. Follow-up CT scan showed good function and well decompressed pelvicaliceal system bilaterally. This case highlights the feasibility of single-session bilateral minimally invasive reconstruction even in complex PUJ strictures in a high-risk comorbid patient.

Keywords: *Pyelo ureteroplasty, BMG ureteroplasty, Bilateral PUJO, Vertical flap pyeloplasty.*

INTRODUCTION

Laparoscopic pyeloplasty has emerged as the minimally invasive gold standard for pelviureteric junction (PUJ) stricture, with success rates comparable to open surgery and reduced morbidity. Simultaneous bilateral laparoscopic pyeloplasty, although feasible, is technically demanding and reported infrequently due to concerns about bilateral renal compromise and perioperative complexity. Kumar et al. [1] demonstrated that robotic assistance enables bilateral pyeloplasty to be completed safely in one session with minimal morbidity. Similar reports [2][3][4] in pediatric and robotic cases support single-stage bilateral intervention as safe and effective. However, very limited literature exists regarding complex bilateral reconstruction requiring buccal mucosal grafting in adults.

We present a unique case of a bilateral procedure in a comorbid elderly patient using combined techniques—laparoscopic vertical flap pyelo ureteroplasty on the left and BMG ureteroplasty on the right.

CASE HISTORY

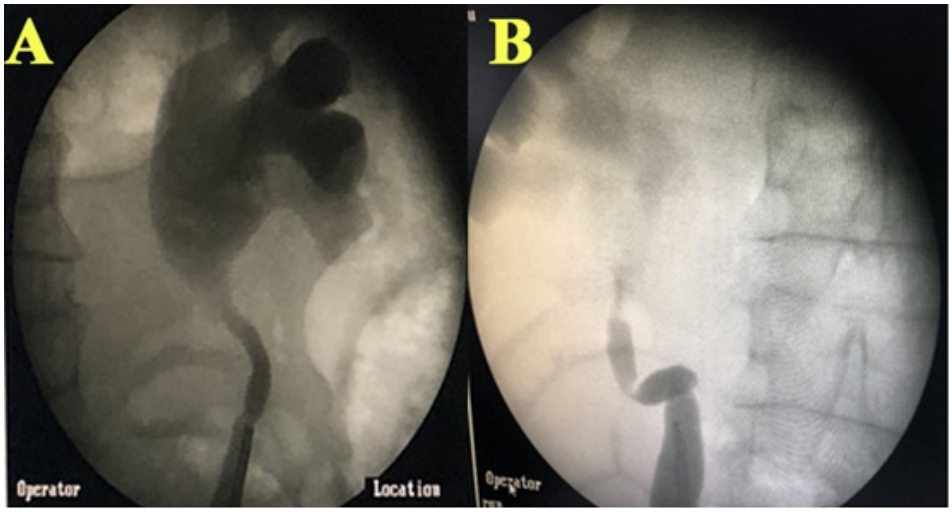
A 64-year-old male presented with bilateral loin pain with and urinary urgency. He had a significant past history of coronary artery disease, bronchial asthma, hypertension, COPD, carcinoma colon and bladder. He was treated with subtotal colectomy and TURBT in 2022, followed by five cycles of chemotherapy for colonic cancer and intravesical BCG for high grade non-muscle invasive bladder tumor. He had undergone left and right URSL and DJ stenting for bilateral ureteric calculus in September 2024, followed by bilateral URS and long term DJ stenting in December 2024 for pyelonephritis. One month after stent removal, he developed recurrent bilateral loin pain. CT urogram demonstrated bilateral hydronephrosis due to stricture at PUJ and upper ureter as shown in **fig 1**. CT did not show tumor in the upper ureter. Cystoscopy revealed no recurrence of tumor and retrograde pyelogram (RGP) confirmed the findings of bilateral long segment upper ureteric stricture of about 2.5 cm as shown in **fig 2 A** and **B**.

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Figure 1. CT Urogram showing bilateral hydronephrosis with DJ stent on right side coiled within the ureter and left DJ stent in situ.



Figure 2. (A): Rgp Showing Left Puj Obstruction, (B): Rgp Showing Right Long Segment Upper Ureteric Narrowing

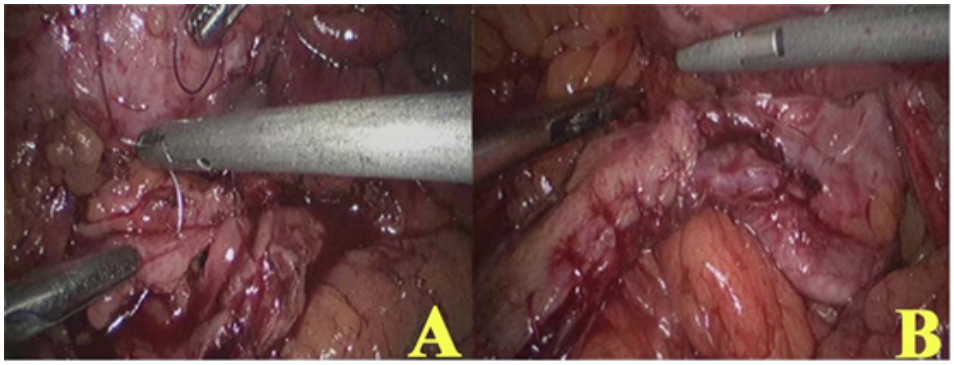


MATERIALS AND METHODS

The patient was positioned in left loin-up position. Four laparoscopic ports were placed. Left colon was medialized. PUJ was thick walled and adherent for about 2.5cm - involving the upper ureter. As the pelvis was wide enough, a vertical flap pyelo ureteroplasty was planned. A vertical flap of size about 4.5 x 1.5 cm from the renal pelvis was fashioned and the incision in the pelvis was carried down on the lateral aspect of the strictured ureter till a normal caliber of ureter was noted. The flap was flipped down and sutured to the laid open ureter using 4-0 monofilament absorbable suture. After suturing the posterior layer antegrade stenting was done. Subsequently the anterior layer of suturing of the ureteric and pyelotomy defect was done as shown in **fig 3 (A)**. A vascular segment of omental flap was tacked over the suture line. A tube drain was placed.

The patient was then repositioned to a right loin-up position, and three additional ports were inserted. A 2.5-cm upper ureteral stricture was found on the right side. However the pelvis was bifid making a flap infeasible. Hence buccal mucosa graft (BMG) was harvested from the right cheek. A pyelotomy just above the stricture was made and the incision was continued onto the lateral aspect of the strictured segment of ureter. The harvested buccal mucosal graft was inserted through the 10 mm port. Initially the lateral wall of the BMG ureteroplasty was reconstructed using 4-0 monofilament absorbable suture. Antegrade stenting (6 Fr) of the ureter was done as shown in **fig 3(B)**. Subsequently the anterior layer of BMG ureteroplasty was completed. Omentopexy was performed. A tube drain was placed. Total operative time was about 270 mins. Blood loss was insignificant.

Figure 3. (A) Intraoperative picture showing vertical flap taken from renal pelvis was sutured to the lay opened ureter, (B): Intraoperative picture showing BMG ureteroplasty



Post-Operative Course

The patient required ICU support for tachycardia and tachypnea with noninvasive ventilation. He developed transient ileus until postoperative day (POD) -7 which was managed conservatively. Left sided drain was removed POD -7, right sided drain was removed on POD-11 and Foley catheter was removed on POD -11. He improved clinically and renal parameters normalized. After 2 months, serum creatinine settled to normal range (1.2mg/dl). CT urogram done showing resolution of hydronephrosis with bilateral DJ stent in situ as shown in **fig 4 (A)**. At the end of 3 months cystoscopy, URS and bilateral stent removal was done. RGP at the same time revealed patent upper ureter and no extravasation of contrast. Ureteroscopy with 6 Fr URS showed bilateral fully healed anastomoses with no granuloma or tumor as shown in **fig 4 (B and C)**. A diuretic renogram at 3 months revealed good drainage on both sides as shown in **Fig 5 A**. Patient was followed up for 1 year and he was asymptomatic. There was no clinical UTI. An ultrasonogram of the kidneys revealed good resolution of pelvicaliceal dilatation as shown in **Fig 5 B**. CT urogram showed prompt function, patent PUJ and well decompressed pelvicaliceal system on both sides as shown in **Fig 5 C and D**.

Figure 4. (A) CT urogram showing bilateral DJ stent in situ with resolution of hydronephrosis ; (B): Left URS image showing well healed anastomotic site ; (C): Right URS image showing well healed anastomotic site.

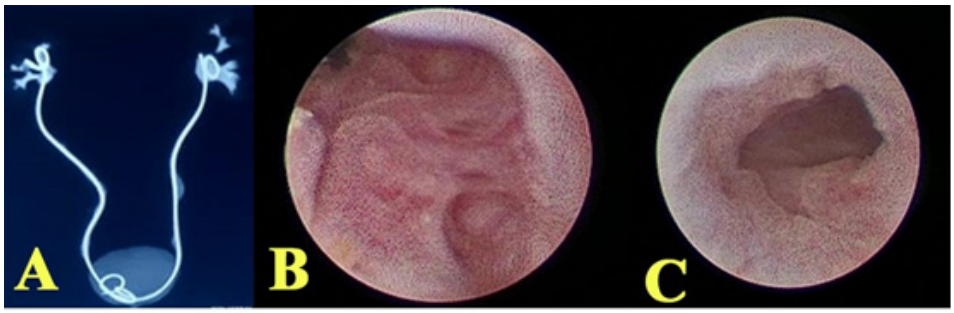
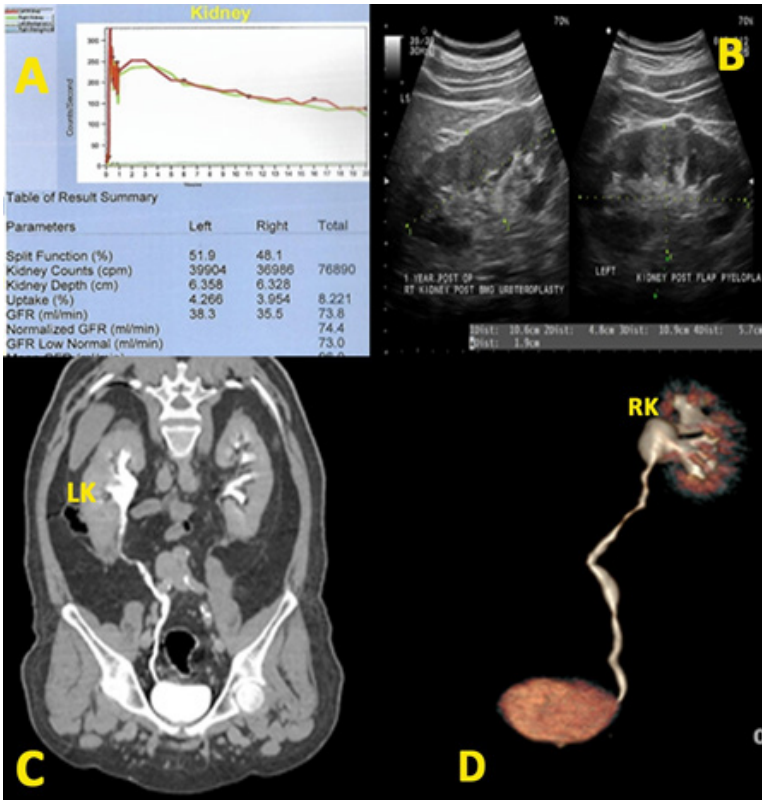


Figure 5. A- Post OP diuretic renogram reveals good drainage on both sides. B- Post OP An ultrasonogram of the kidneys reveals good resolution of pelvicaliceal dilatation. C and D- Post OP CT urogram shows prompt function, patent PUJ and well decompressed pelvicaliceal system on both sides.



DISCUSSION

Single-stage bilateral laparoscopic management of PUJ stricture avoids repeated anesthesia exposure and prevents scar-related technical difficulty like adhesions of staged procedures. Kumar et al[1] reported successful simultaneous bilateral robotic pyeloplasty with short hospitalization and minimal complications. Basiri et al [2] demonstrated safe bilateral pyeloplasty using only three midline ports with good functional recovery. Freilich et al[3]reported five pediatric cases with no complications and significant postoperative improvement. Schwab and Casale et al[4] reported bilateral dismembered laparoscopic pediatric pyeloplasty via a transperitoneal 4-port approach. Lane et al[5] reported simultaneous Laparoscopic Management of Bilateral Ureteropelvic Junction Obstruction in a Horseshoe Kidney. Eckstein et al[6] reported simultaneous bilateral open pyeloplasties by making a transverse incision above the umbilicus. Sievert et al[7] reported unexpected Success of Bilateral Robotic-Assisted Ureteral Reconstruction with Buccal Mucosa Graft for Bilateral Ureteral Strictures. Guliev et al[8] reported laparoscopic ventral onlay ureteroplasty with buccal mucosa graft for complex proximal ureteral stricture. Rassweiler et al[9] compared retroperitoneal laparoscopic non dismembered pyeloplasty versus Anderson Hynes pyeloplasty for uretero-pelvic junction obstruction due to crossing vessels and reported that both the procedures were comparable. Gill et al[10] reported a novel technique of dismembered tubularized flap pyeloplasty for long segment upper ureteric stricture.

Our case represents an extension of these principles to

- This case highlights a different approach on each side- A flap pyelo ureteroplasty on the left side as the pelvis was wide and BMG ureteroplasty on the right side as the pelvis was bifid and not wide (infeasibility).
- The principal challenge in this case was the combination of bilateral disease, long-segment proximal strictures, previous ureteric instrumentation, and substantial medical comorbidity. Although staged reconstruction may reduce the immediate physiological burden, a single-stage approach avoids a second anesthesia and provides definitive treatment for both stricture units during one admission.
- BMG ureteroplasty is particularly useful when the ureter is unsuitable for primary anastomosis because of the stricture length, dense fibrosis, or impossible tissue mobilization. The successful early anatomical outcome in this patient supports the feasibility of incorporating BMG reconstruction into a synchronous bilateral procedure. Nevertheless, the postoperative need for intensive care support and the prolonged ileus highlight the importance

of careful patient selection and pre and perioperative optimization.

- This case supports the feasibility of bilateral reconstructive surgery even in complex settings when executed by experienced minimally invasive team.

CONCLUSION

Simultaneous bilateral laparoscopic reconstruction, including advanced flap and graft techniques such as buccal mucosal grafting, is feasible and effective in selected patients with bilateral PUJ extensive ureteric strictures. It avoids staged procedures and demonstrates satisfactory functional and anatomical outcomes. To our knowledge, this is the first case report illustrating simultaneous combining vertical flap pyelo ureteroplasty and BMG ureteroplasty according to the anatomical characteristics of each side can provide a tailored reconstructive solution when conventional techniques are unsuitable.

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