

## LETTER

## Immediate use of the extended Boari bladder flap with psoas hitching after an iatrogenic proximal ureteral avulsion

Dear Editor,

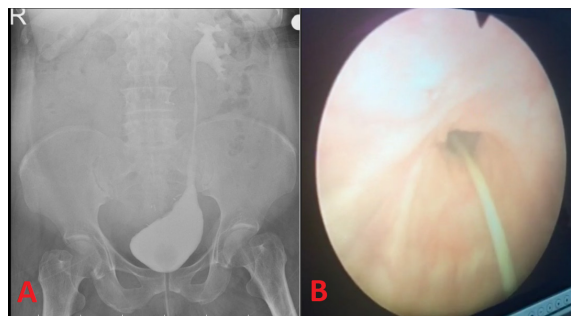
An ureteral avulsion is probably the most disastrous complication of ureterorenoscopy, and it was reported to occur in less than 1 % of patients undergoing ureterorenoscopy<sup>1</sup>.

A 56-year-old female patient presented to the clinic with nausea and colic pain on the left flank. Computerized tomography scan demonstrated a 10 x 7 mm stone in the proximal ureter approximately 4-5 cm from the ureteropelvic junction (UPJ) with concomitant dilatation of pelvicalyceal system. The stone was adherent to the ureteral mucosa, and following its fragmentation by pneumatic lithotripter utilizing a 9.5 Fr semi-rigid ureterorenoscope, an ureteral avulsion was noted to have occurred in approximately 2-3 cm distance from the UPJ. Subsequently, in an open procedure, a left nephropexy was carried out which allowed to free up to 3-4 cm of ureteral length in order to reach the proximal ureteral stump for anastomosis. After filling the bladder, a modified bladder flap approximately 12-14 cm was created based posterolaterally on the left side, transpositioned antero-infero-laterally toward the contralateral base. To provide tension-free anastomosis, the left posterolateral wall of the bladder was fixed with a psoas hitch method. Single 6 Fr double-J-catheter was placed inside the neoureter, and the Boari flap was anastomosed end-to-end to the remaining ureter. Before closing the bladder, the avulsed ureteral tissue was excised from the left ureteral orifice, and this field was sutured. Finally, the residual bladder tissue was sutured with continue technique.

No perioperative or postoperative complications (bleeding, urinary leakage, fever, etc.) were encountered. The Foley catheter was removed on the 21<sup>st</sup> postoperative day, after ensuring no evident leakage from the urinary system (Figure 1A). Ultimately, the double-J-catheter was removed on the third postoperative month (Figure 1B). She had an almost normal nephrogram and pyelogram functions of the left kidney at the three months after the catheter removal.

Upper-, mid-, and lower ureteral injuries need different reconstruction methods. Utilizing ureteral reimplantation with a Boari flap in a mid-ureteral injury and additionally ureteral reimplantation with a psoas hitch in a lower-ureteral injury can be used for the distal-ureteral repair management<sup>2</sup>. On the other hand, a Boari bladder flap and downward nephropexy can be used for an upper ureteral reconstruction<sup>3</sup>.

Herein we present the combination of the extended Boari bladder flap and the psoas hitch with nephropexy as feasible management for ureteric damage of substantial length.



**Figure 1:** A) Cystogram showing no evident leakage from the urinary system on the 21<sup>st</sup> postoperative day, B) Cystoscopic image showing the neoureteral orifice and the double-J-catheter before its removal on the third postoperative month.

### Conflict of Interest

The authors report no conflicts of interest.

**Keywords:** Boari bladder flap, complications, psoas hitch, ureteral avulsion, ureterorenoscopy

### References

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