

# A new reconstructive technique for select patients with long upper ureteral obliteration

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Ureteral reconstructions pose a challenge for urologists. We describe a novel reconstructive technique for long upper ureteral obliteration with an intrarenal pelvis.

The obliterated ureteral segment was excised and the healthy segment of the ureter was spatulated and anastomosed end-to-side to the intrarenal lower calyx (ureterocalycostomy).

The procedure was successfully performed without any complication. To date, the patient's clinical state, renal function and radiographic imaging are stable without any evidence of deterioration.

The described technique is a useful surgical option for select patients with long upper ureteral obliteration and intrarenal pelvis.

**Key Words:** ureteral strictures ↔ reconstructive surgery ↔ ureterocalycostomy ↔ renal function

## INTRODUCTION

Long proximal ureteral strictures present unique reconstructive challenges with very limited surgical options available [1, 2].

Herein we present a challenging reconstructive case of a long proximal ureteral obliteration that we managed with a hilar ureterocalycostomy.

## CASE PRESENTATION

A 39-year-old previously healthy female presented to our institution due to acute pyelonephritis with pararenal collections. These were drained percutaneously along with percutaneous nephrostomy to maximize drainage of the affected moiety. After resolution of the

acute episode, a thorough workup was undertaken, demonstrating a long proximal ureteral obliteration with an intrarenal pelvis as shown by the antegrade and retrograde urography (Figure 1).

The patient was offered a laparoscopic, possibly open reconstruction. During laparoscopy, after dissection of the ureter and renal pelvis, it became apparent that the defect was too long to be bridged with a tension-free end-to-end anastomosis. We then converted to an open procedure. Given the patient's intrarenal pelvis and lack of severe hydronephrosis and thus no available redundant tissue for a possible flap with healthy appearing parenchyma (Figure 2A), ureterocalycostomy was considered.

After complete mobilization of the ureter and the intrarenal pelvis, we continued to dissect the neck of the



**Figure 1.** Antegrade and retrograde pyelography.

lower pole calyx and decided to perform an ureterocalycostomy not in standard fashion intraparenchymally, but through the hilar portion of the lower calyx neck (Figure 2B). This method avoids resecting healthy renal parenchyma in order to access the calyx and minimized potential bleeding from such an approach.

In order to perform this, we dissected and then partially transected the hilar lower lip of renal parenchyma (Figure 2B), and freed sufficient lower calyx neck tissues to enable a tension-free end-to-side anastomosis with the dissected ureter.

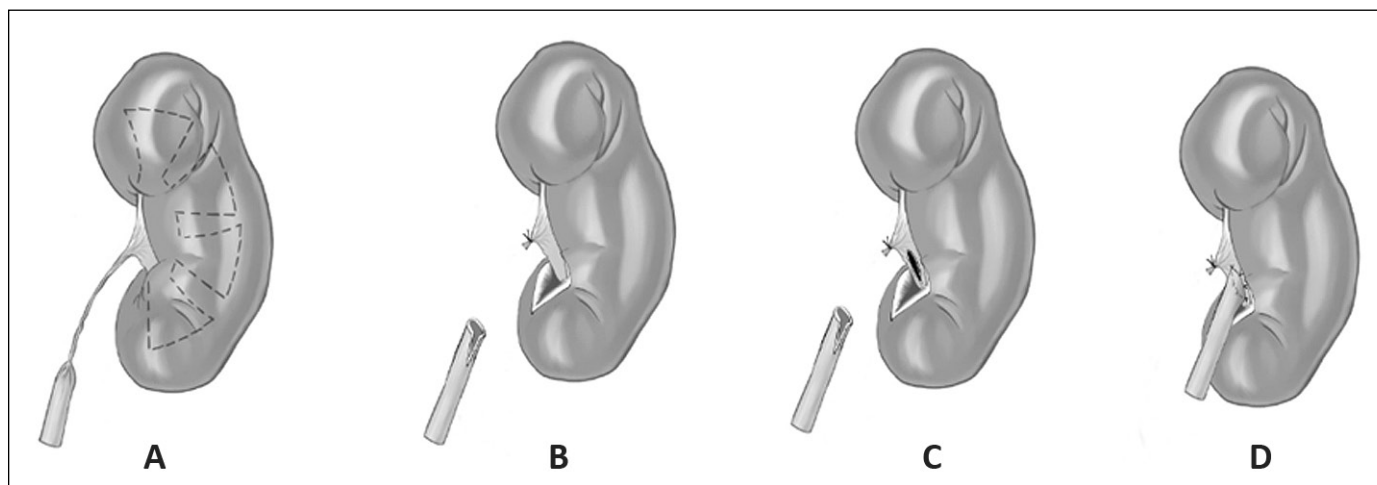
The obliterated segment was then excised and the healthy ureter spatulated for roughly 1 cm (Figure 2C). This was then anastomosed to the intrarenal lower calyx with interrupted 4-0 absorbable sutures (Figure 2D). A ureteral double J stent was left for 4 weeks. Her postoperative course was uneventful and the ureteral stent was removed 4 weeks postoperatively.

Over 5 years of follow-up, there is no clinical, laboratory or radiographic evidence of recurrence.

## DISCUSSION

The surgical options for upper ureteral reconstruction are limited and include end-to-end anastomosis [1, 2], augmented anastomotic urethroplasty using a pelvic flap [3], ureterocalycostomy [4], autotransplantation, y-v plasty and in some cases may be managed by ileal interposition [1, 2, 5], or with nephrectomy [6].

Longer gaps cannot be bridged with an end-to-end anastomosis safely; augmented anastomoses with a pelvic flap requires redundant tissue; ureterocalycostomy necessitates a resection of the thinned parenchyma of the lower pole to access the calyx. Ileal interposition, auto-transplant, and nephrectomy are reserved for extreme cases. In this case, we encountered factors that made conventional options not suitable, namely long stricture, lack of redundant pelvis, preserved parenchymal thickness with a well-functioning renal moiety. These complexities resulted in a novel surgical solution that can be used in similar scenarios.



**Figure 2.** A. Long upper ureteral obliteration; B. Excision of the obliterated segment with spatulation of the lateral aspect of the ureter; C. Partial transection of the hilar lower lip of renal parenchyma; D. Anastomosis end-to-side of the upper ureter with the lower calyx.

In this case, the long upper ureteral stricture was reconstructed using ureterocalyceal anastomosis through the hilar portion of the lower calyx neck as opposed to the reported technique of ureterocalycostomy through the parenchyma of the lower pole of the kidney [4]. Standard ureterocalycostomy necessitates a part of the lower pole parenchyma to be removed to enable a safe anastomosis between the calyx and ureter and to reduce the risk of anastomotic stricture [4]. However, our new technique did not require resection of kidney parenchyma and this could potentially reduce the complications associated with a standard ureterocalycostomy (e.g. bleeding, urine leak) and preserves functional, non-diseased renal parenchyma.

The standard ureterocalycostomy procedure can lead to complications such as persistent leakage, sepsis, recurrent stricture, hypertension and loss of renal func-

tion [7, 8]. The technique described here may be used in select cases of long upper ureteral strictures and may provide an additional safe repair option avoiding the need to resort to 'end of the line' options such as ileal interposition, auto-transplant or nephrectomy.

## CONCLUSIONS

The new technique of hilar ureterocalycostomy represents an alternative, safe and feasible reconstructive surgical method in select patients to repair long upper ureteral obliteration. This technique may be an additional valid option in urologist's armamentarium when presented with a rare and challenging reconstructive scenario such as in this case.

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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