CASE REPORT
Endourology

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Sequential Ureterocalicostomy for An Adult Patient with Bilateral Ureteropelvic Obstruction Complicated with Kidney Stones

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Abstract

Ureterocalicostomy is generally known as a salvage procedure performed for indications of ureteropelvic junction stricture recurrence and/or upper ureteric injury that precludes dependent ureteropelvic anastomosis. Here we report a patient with bilateral ureteropelvic junction obstruction and an intrarenal pelvis anomaly complicated with pelvic and lower calyceal kidney stones treated with bilateral sequential ureterocalicostomy with successful outcomes at the 1-year follow-up.

Keywords: Ureterocalicostomy, ureterocaliceal anastomosis, ureteropelvic junction obstruction

Introduction

Open, laparoscopic, and robotically assisted laparoscopic approaches can be used for ureterocalicostomy (UC) in both pediatric and adult patients (1-5). Recent reports have revealed that UC may also be useful as a primary procedure for treatment-naïve pediatric patients with ureteropelvic junction strictures and some patients with anatomical variations, such as giant hydronephrosis and/or intrarenal pelvis with or without kidney malrotation (6-9).

Case Presentation

A 32-year-old man was admitted to our outpatient clinic with sonographic findings of bilateral nephrolithiasis and high-grade hydronephrosis. His past medical history and physical examination did not reveal any pathological conditions. Computed tomography without contrast enhancement and serum biochemical evaluation revealed a mildly decreased glomerular filtration rate (e-GFR=88 mL/min) with bilateral nephrolithiasis, with a diameter of 13 mm at the right ureteropelvic junction (UPJ), three other stones in the lower calyxes up to 6 mm in diameter in the right kidney, a stone with a diameter of 23 mm at the left renal pelvis, and a second 14 mm stone in the left lower pole calyx. The measured stone densities for the right and left kidneys were 906 and 1422 HU, respectively. Bilateral hydronephrosis (SFU grades 4 and 3, respectively) in the right and left kidneys was also reported, as shown in Figure 1. Therefore, retrograde intrarenal surgery for the right-sided stones and simultaneous endoscopic combined intrarenal surgery on the left side were offered to the patient as an initial treatment. In the first session of the surgery, despite the difficult anatomy of the right upper ureter, right flexible ureteroscopic lithotripsy with a Holmium-Yag laser was completed, and a Double-J (DJ) stent was inserted as planned. However, surgery for the left kidney stone was unsuccessful. The intrarenal anatomy of both the pelvis and the stone, with a very long segment and dilated infundibular anatomy of the left kidney, precluded access for lithotripsy. However, a DJ stent was inserted. The postoperative course was uneventful. Within three months after the first surgical session, the patient underwent three sessions of extracorporeal shock wave lithotripsy for the left pelvic stone with the aim of fragmenting the impacted stones in the UPJ that precluded contrast passage to stone-bearing calyces, followed by one session of supine percutaneous nephrolithotomy. The bilateral DJ stents were then removed and renal scintigrams were obtained when the patient retained stones only in the lower pole calyxes. Bilateral obstructive renography patterns with split functions of 34% and 66% for the right and left kidneys, respectively, were reported. Thus, the final diagnosis was congenital bilateral UPJ obstruction with an

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intrarenal pelvis accompanied by residual stones at the lower pole calyxes (up to 5 mm on the right side and up to 18 mm on the left side). The renal cortical thickness measurements were 3 and 5 mm for the right and left kidneys, respectively.

We proceeded with planning for two additional consecutive surgical treatment sessions. In the first session, the left kidney was treated with nephropyelolithotomy, accompanied by UC and DJ stent insertion via a left lumbotomy incision. We performed a 2 cm incision in the lower pole of the kidney and ureterocalyceal anastomosis with a 3.0 absorbable suture in an interrupted fashion. The operative procedure lasted four hours. Two months after the left-sided surgery, right-sided retroperitoneoscopic UC with DJ stent insertion was performed laparoscopically in the same manner. The operative time was three hours. Lower pole parenchymal resection was not required to establish appropriate ureterocalyceal anastomosis. No complications occurred in either the perioperative or postoperative periods of the surgical sessions. The DJ stents were removed cystoscopically 4 weeks after each surgery. At the 12-month follow-up visit, the patient was asymptomatic, and the hydronephrosis of both kidneys was reduced (Figure 2). Residual fragments were observed only in the lower pole calyces with diameters <5 mm. The analysis of the removed stones by X-ray diffraction revealed the whewellite content. The patient's GFR had improved to 111 mL per minute.

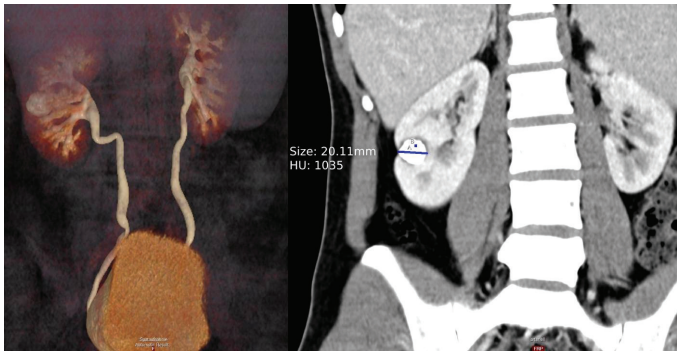

Figure 1. Preoperative coronal image of computerized tomography that demonstrates bilateral giant hydronephrosis and kidney stones in the case

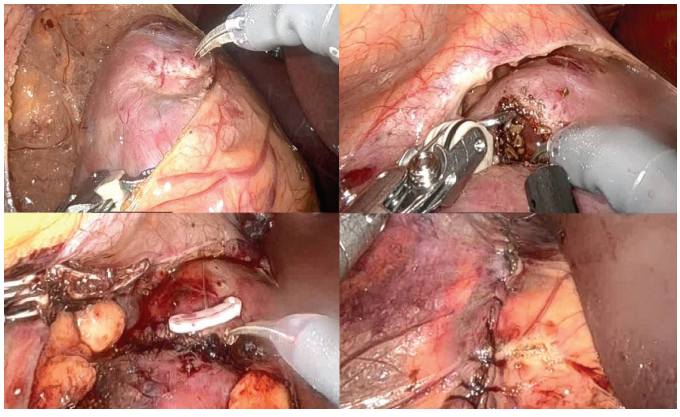

Figure 2. Postoperative coronal image of computerized tomography obtained at one-year follow-up demonstrates resolved hydronephrosis and u

Discussion

To the best of our knowledge, this is the first case in the literature in which bilateral UC procedures were performed sequentially. The patient was initially diagnosed with bilateral renal pelvic and lower pole stones with giant hydronephrosis. Following the routine initial treatment sessions for both kidneys, we noticed a bizarre anatomy that precluded routine intraoperative surgical procedures. Following three endourological surgical sessions for stone fragmentation and removal from both kidneys, the final diagnoses were bilateral ureteropelvic junction obstruction with intrarenal pelvis and giant hydronephrosis. Therefore, we performed bilateral UC (open procedure on the left side and retroperitoneoscopic procedure on the right side) sequential. Subsequent workup revealed good outcomes without any complications at 12 months.

The indication for UC in the current case was bilateral giant hydronephrosis with intrarenal pelvic variation, which was concordant with previously reported findings in the literature (6-8). Recent case reports and comparative studies support this policy in patients with giant hydronephrotic kidneys and/or intrarenal pelvis with comparable results (9).

The presence of a low preoperative GFR (less than 20 mL per minute) and a thinned-out cortex (less than 5 mm) has been reported to be an independent predictor of poor surgical outcomes (2). Although the renal parenchymal thickness measurements for both kidneys were in the marginal zone in our cpre-operativeoperative GFR was good, and we achieved good surgical outcomes by symptomatic and functional healing at the 12th month. In the current report, the shortness of the follow-up evaluation is a limiting factor in establishing an overall conclusion.

Conclusion

In conclusion, with appropriate indications, bilateral sequential UC for ureteropelvic junction obstruction may be performed with good surgical outcomes. Bilateral renal involvement or accompanying kidney stones may not interfere with treatment results.

Ethics

Informed Consent: Informed consent was obtained from the patient.

Peer-review: Externally peer-reviewed.

Conflict of Interest: No conflict of interest was declared by the author.

Financial Disclosure: The author declared that this study received no financial support.

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