

PCNL Surgery Following Laparoscopic Hellström Pyeloplasty in a Patient with UPJO and Concurrent Renal Stones



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ABSTRACT

The prevalence of renal stones with concomitant UPJO is about 20-30%. Its treatment method is controversial. In this study, a 29-year-old man with UPJO and simultaneous ipsilateral renal stone is presented, who was treated with PCNL following Hellström laparoscopic pyeloplasty.

Introduction

Upper ureteropelvic junction obstruction (UPJO) is identified as the most prevalent cause of prenatal and postnatal hydronephrosis [1]. Reports suggest that the prevalence of renal stones occurring simultaneously with UPJO is approximately 16-30% [1-3].

Factors such as urinary stasis, metabolic abnormalities, and infection predispose UPJO patients to stone formation [2].

Traditionally, the surgical management of renal stones occurring simultaneously with UPJO included open pyelolithotomy with pyeloplasty. This method,

however, has disadvantages such as pain, a long recovery period, and the potential for incisional hernia. With the advancement in surgical techniques, minimally invasive surgeries like percutaneous nephrolithotomy (PCNL) with endopyelotomy (EP), laparoscopic pyeloplasty (LP), and robotic-assisted laparoscopic pyeloplasty (RALP) with simultaneous pyelolithotomy, are being increasingly utilized for managing these cases [1].

Nevertheless, the treatment approach for simultaneous renal stones and UPJO remains a subject of controversy [2, 3]. This study presents a case of a young patient diagnosed with UPJO and a

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simultaneous ipsilateral kidney stone. The patient underwent PCNL following Hellström laparoscopic pyeloplasty.

Case presentation

A 29-year-old patient, with no history of urinary tract stones, had been experiencing pain in the left flank for several years. The pain was neither radicular nor positional, and it did not change with fluid intake. The patient did not exhibit any Lower Urinary Tract Symptoms (LUTS), and his past medical and surgical history was unremarkable. The physical examination of the patient was normal.

Upon conducting an ultrasonography, stones measuring 10mm and 8mm were identified in the

lower calyx, along with severe hydronephrosis of the left kidney. The Antero-Posterior (AP) diameter of the pelvis was 16mm, and the thickness of the renal cortex was 7mm.

A CT scan revealed moderate hydronephrosis with two stones (8mm and 10mm) in the lower calyx of the left kidney (Figure 1 and 2). Due to the absence of a hydroureter, Ureteropelvic Junction Obstruction (UPJO) was suspected, and an Intravenous Pyelogram (IVP) was performed. The right kidney drained after 4 hours, but the left kidney did not drain even after 8 hours, presenting a box-shaped view (Figure 3).

The patient was diagnosed with aberrant vessel type UPJO and underwent laparoscopic pyeloplasty and the aberrant vessels were buried in the pelvis. Due to



Fig. 1. Left hydronephrosis with two renal stones



Fig. 2. Left hydronephrosis without hydrourethrosis



Fig. 3. IVP shows delay in contrast secretion of left kidney with Box shape renal pelvis

pelvic drainage and proper peristalsis, laparoscopic pyeloplasty was omitted. Then, due to the lack of opening of the urinary system, PCNL of the left kidney was performed with access from the lower calyx and the stones were removed. The patient was discharged without any complications.

Discussion

In the study by Wei et al., 31 patients with recurrent UPJO and simultaneous ipsilateral renal stones underwent PCNL and antegrade balloon dilatation. None of the patients experienced grade 3 or 4 complications, and all became stone-free. The method was found to be safe and effective [1].

In another approach, Kartal et al. treated patients with UPJO and concomitant ipsilateral renal stones by incising the UPJ stenosis with retrograde laser endopyelotomy (rLEP). After 6 weeks, the renal stones were treated using the RIRS method. The results showed an 81.5% SFR in a 32-month follow-up and a 74% obstruction-free rate. It was concluded that RIRS can be used effectively after rLEP in patients with stones less than 2 cm and a short length of the obstructed segment [2].

In a case series study by Kring et al., 12 patients underwent robotic laparoscopic pyeloplasty and retrograde flexible percutaneous ureteroscopy (fURS). During the 10-month follow-up period, no recurrence of stenosis was observed, and all patients became stone-free. The surgery was found to be feasible with good results. No major complications occurred, but to

achieve this, two experienced urologists are required within a limited operating time [3].

Also, Skolarikos et al. found in their study that both laparoscopic and robotic methods offer an excellent surgical solution for UPJO and simultaneous ipsilateral renal stones. It was suggested that in the hands of experienced surgeons, laparoscopy and robotic pyeloplasty with stone removal is safe, and minimally invasive pyeloplasty should be the first choice for renal stones and UPJO simultaneously [4].

In the study by Zheng et al., after the incision of the pelvis by a laparoscope, renal stones were removed through trocars with a basket or grasper. This combined treatment method was found to be safe and reliable [5].

Due to the fact that in the patient, the pyelocalyx system remained intact and only the aberrant vessels were replaced, methods such as retrograde balloon dilatation or retrograde endopyelotomy were not considered. RIRS was not preferred to PCNL due to the stone's location and size and its SFR.

Conclusion

A minimally invasive approach to the standard treatment of renal stones and concurrent UPJO is discussed. In such cases, it is recommended to examine UPJO with laparoscopy in order to address the aberrant vessel without manipulating the pyelocaliceal system, and remove the stones with methods that have a higher SFR, such as PCNL.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this article.

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Conflict of Interests

The authors have no conflict of interest to declare.

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