Research Article

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RIRS - A Boon for The Crossed Ectopic Non-fused Kidney Calculi Patients : First Case Report

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ABSTRACT

Introduction : The incidence of ectopic kidney in autopsy series is around 1 in 900 otherwise it is 1 in 3000. There are various treatment modalities that can be utilised to treat these renal calculi e.g., extracorporeal shock wave lithotripsy, laproscopy assisted per-cutaneous nephrolithotomy, retrograde intra-renal surgery using the flexible ureteroscope, laproscopic/robotic pyelolithotomy and open surgery. We here describe a case of RIRS for stone in the pelvis of ectopic left kidney located on the right side just below the right kidney, it was crossed but not fused. To the best of our knowledge, this is first such case to be reported in crossed non-fused ectopic kidney.

Case Report : A 33 years young male came with complaints of intermittent pain right loin for 2-3 months, mild initially but severe for last 24 hours. Physical examination suggested mild tenderness right iliac fossa. Ultrasonography and intravenous pyelography suggested ectopic left kidney located on right side below the right kidney in the right iliac fossa and not fused or attached to the right kidney with a large 21mm pelvic calculus with mild hydronephrosis. He later underwent retrograde intra-renal surgery where stone was completely lased and double J stent was kept at the end of the procedure.

Results : Complete stone clearance was confirmed visually and under c-arm. Post operative USG and x-ray KUB showed no residual calculus. Patient was discharged on second post-op day. There were no post-op complications. The double J stent was removed after two weeks.

Conclusion : RIRS is a very good option to treat stones in an ectopic kidney. It may require more than one session sometimes, but considering the minimal invasive nature, the bothersome is less. Disposable ureteroscopes have further revolutionised the armamentarium of the urologist, who can now offer a personalised treatment plan for each patient.

Keywords : RIRS, ectopic kidney, crossed ectopic non-fused kidney, stone in ectopic kidney, minimal invasive laser surgery

INTRODUCTION

The metanephrons of the kidney start to originate from the sacral area and ascend cranially to the final position in the retroperitoneum. Whenever the ascent of the kidney is hampered or is halted, it leads to ectopic kidney. The incidence of ectopic kidney in autopsy series is around 1 in 900 otherwise it is 1 in 3000 [1]. The abnormal location leads to abnormal anatomy and rotation of the kidney in addition to structural and architectural abnormalities. All these lead to renal concentration and filtration abnormality leading to more stone formation. Stone formation is one of the common diseases in these patients. There are various treatment modalities that can be utilised to treat these renal calculi e.g., extracorporeal shock wave lithotripsy (ESWL), laproscopy assisted per-cutaneous nephrolithotomy (PCNL), retrograde intra-renal surgery (RIRS) using the flexible ureteroscope, laproscopic/robotic pyelolithotomy and open surgery. We here describe a case of RIRS for stone in the pelvis of ectopic left kidney located on the right side just below the right kidney, it was crossed but not fused. To the best of our knowledge, this is first such case to be reported in crossed non-fused ectopic kidney.

CASE REPORT

A 33 years young male came to our outpatient department with complaints of intermittent pain right loin for 2-3 months, mild initially but severe for last 24 hours. His medical history was unremarkable. Physical examination suggested mild tenderness right iliac fossa. Ultrasonography and intravenous pyelography (Fig. 1) suggested ectopic left kidney located on right side below the right kidney in the right iliac fossa and not fused or attached to the right kidney with a large 21mm pelvic calculus with mild hydronephrosis. His urine culture came positive and he was started on antibiotics as per the antibiotic sensitivity. He later underwent retrograde intra-renal surgery

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where stone was completely lased and double J stent was kept at the end of the procedure. Prior DJ stenting was done to straighten the ureter. Patient was discharged on second post-op day. There were no post-op complications. Repeat sonography and x-ray of the kidney-ureter-bladder showed no residual calculus (Fig. 2). The double J stent was removed after two weeks.

Figure 1



Figure 1. Intravenous Pyelography

Figure 2



Figure 2. Post-op X-ray KUB

DISCUSSION

Abnormal development of the ureteric bud and the Wolffian duct during embryogenesis leads to an ectopic kidney, which can be found anywhere from the pelvis upto the thorax or on the contralateral side. The incidence of crossed fused renal ectopia is around one in 7000 to one in 1000 live births while the incidence of crossed ectopia non-fused kidney is further rare. Crossed fused ectopia is the second most common anomaly after horse-shoe kidney [2]. Among the crossed fused ectopic kidneys, the inferior fusion anomaly is the most common. In our case, the left kidney crossed to right side inferior to the right kidney but not fused. This may be the variation of the above-mentioned anomaly.

Treatment of stones in the ectopic kidney is challenging for the urologists due to the abnormal location and architecture. RIRS has shown good results in such cases (3,4). The crossing of the kidney caused angulations and tortuosity of the ureter and to do RIRS in such cases need straightening of the ureter. Therefore, pre-stenting is recommended in such cases [5] to allow the ureteral access sheath to pass easily without any trauma to the ureter. We also did prior DJ stenting in our case. We used disposable ureteroscope (from bioradmedisys, 7.5 Fr outer diameter, 670 mm length) for RIRS and 30-watt laser (from Allenger, Blaze 30 watt Holmium:Yattrium-Aluminium-Garnet laser) for dusting the stone. Disposable ureteroscopes are technically better with 360-degree deflection, good flow, and a very good vision (6).

The success rate of RIRS in ectopic kidney is variable. Bozkurt et al [7] had 84.4% success rate while Bogdan Geavlete et al [8] had 94.4% success after third session.

The complications like ureteral perforation, ureteral injury may happen in an ectopic kidney due to the malformations in the renal anatomy. Bas et al [9] had 17.2 % rate of complications and Bogdan Geavlete et al [8] had 19.7% complication rate. We did not have any complication in our case.

The point to note in our case is the that every crossed kidney is not crossed fused renal ectopia. Do pre-stent the ectopic kidneys before the final procedure considering the tortuosity and angulations.

CONCLUSION

RIRS is a very good option to treat stones in an ectopic kidney. It may require more than one session sometimes, but considering the minimal invasive nature, the bothersome is less. Disposable ureteroscopes have further revolutionised the armamentarium of the urologist, who can now offer a personalised treatment plan for each patient.

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