



Endourology

Laparoscopic Assisted Transmesocolonic Percutaneous Nephrolithotripsy in Ectopic Iliac Kidney



N. Sohail*, A. Albodour, K. Abdelrahman

Alkhor Hospital Urology section, Hamad Medical Corporation, Qatar

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ABSTRACT

We report a case of 15-year old female who presented with recurrent lower abdominal pain treated three times with ESWL previously. She was diagnosed as having right ectopic kidney with a 4 cm renal stone in renal pelvis and involving lower and mid calyx. She was treated successfully with laparoscopic assisted transmesocolonic percutaneous nephrolithotripsy. Procedure resulted in complete stone clearance without any perioperative or post operative complication. Patient stayed in hospital for 72 h with no drains or stents after day 5, post operatively.

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Introduction

Percutaneous nephrolithotomy was first introduced in 1976.¹ Since then it went through different phases of evolutions to improve its effectiveness and reduce the difficulties and problems occurring due to it.² Managing stones in ectopically situated kidney always remain challenge for the urologist. Although other options like open surgical procedures, extracorporeal shockwave lithotripsy and retrograde endoscopic procedures can be an option in some cases but these procedure might have some limitations depending on stone location, stone burden and orientation of renal pelvicalyceal system. Many surgeons described laparoscopic surgery as an alternative for treatment of renal calculi.^{3,4}

We are presenting a case of renal calculi in ectopic kidney located in the iliac region treated successfully by laparoscopic assisted percutaneous nephrolithotripsy.

Case presentation

A 15-year old female presented with recurrent abdominal pain for more than 1-year. She was diagnosed as a case of right renal calculi and underwent three sessions of ESWL. CT abdomen showed malrotated right kidney located at L4-5 region. Multiple stones

found in renal pelvis and lower and mid calyx (Fig. 1). Due to presence of large bowel along the tract, percutaneous puncture was not feasible. Along with that parents of the patient did not agree to perform longer retrograde endoscopic renal procedure. We decided to perform laparoscopic guided percutaneous nephrolithotripsy. Patient was placed in modified Valdivia position. Cystoscopy performed and Retrograde ureteric catheter was inserted for performing pyelography. The veress needle inserted through umbilical incision to create pneumoperitoneum at gas pressure up to 14 mm Hg. It was followed by insertion of 12 mm trocar. Secondary trocars introduced under vision at both iliac fossa 10 mm at right and 5 mm at left side. Taking care of vessels which could be easily seen under laparoscopies light, minimal dissection of the mesocolon performed. This exposed the kidney parenchyma which was rotated medially, without mobilizing large bowel. Contrast used retrogradely to opacify renal system under fluoroscopy. Through the port in right side, puncture needle introduced under fluoroscopy guidance and puncture of renal calyx performed (Fig. 2). Guide wire inserted through it followed by tract dilatation with help of balloon dilator. All steps were closely monitored by laparoscopic video as well as fluoroscopy. The right laparoscopic port removed and replaced by 30 Fr amplatzt dilator followed by Sheath (Fig. 3). A 26 Fr nephroscope used through this sheath connected to separate video monitor. Stone identified and fragmented using ultrasonic lithoclast. Stones not accessible were removed using flexible scope and dormia until complete clearance. Retrograde insertion of JJ stent with string performed under fluoroscope guidance. Removal

* Corresponding author. Tel.: +974 55424880.
E-mail address: dr.nadeemsohail@gmail.com (N. Sohail).

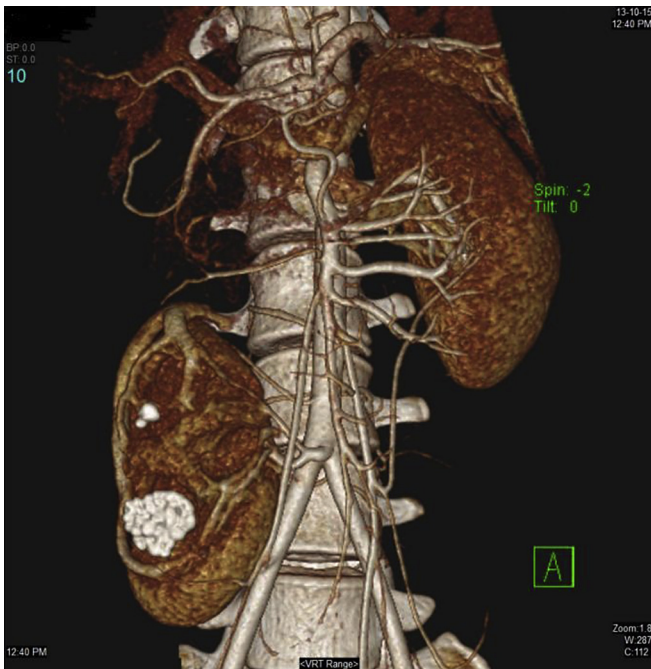


Figure 1. 3D, CT scan showing right renal calculi located ectopically.

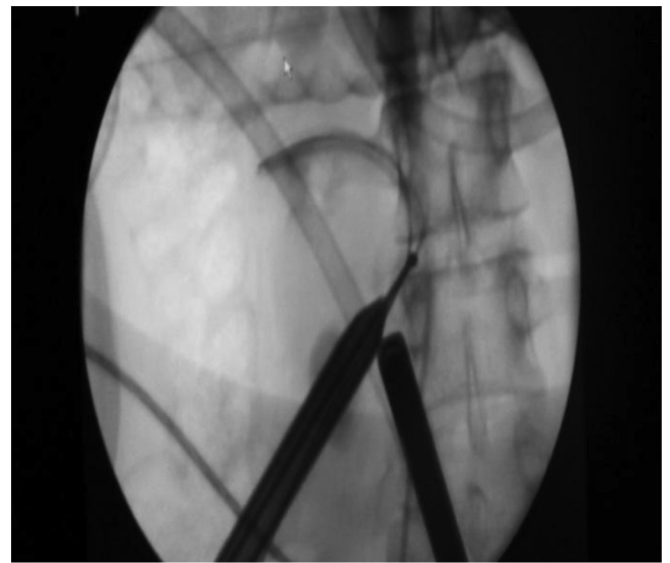


Figure 3. Insertion of Amplatz Dilator over Alkon rod and guide wire.

difference between the sexes. A solitary ectopic kidney occurs in 1 of 22,000.⁵

Renal stones in ectopic kidney are difficult to treat. Smaller stones can be treated by ESWL or flexible RIRS. But failures of these procedures or large volume stones need alternative techniques. Conventional PCNL is not feasible due to possibility of bowel and vascular injury unless access is achieved in presence of skilled radiologist. Open surgery has its own limitations in form of post operative pain, scar and complications. Laparoscopic assisted PCNL through anterior abdominal approach is a reasonable option in certain cases. 1st laparoscopic assisted PCNL was reported by Esghi a colleagues in 1985.³ Latter several authors described successful removal of renal stones in ectopic kidney through this way.

Alesse R and associates reported laparoscopic guided percutaneous transperitoneal approach in renal pelvic stone measuring 1.5 cm.⁶ Several years later Mousavi-Bahar SH and associates reported 3 cases of ectopic kidney treated successfully through this

of amplatz sheath was done under laparoscopic vision. No significant leakage of urine was observed throughout the procedure as well as after removing amplatz sheath. A drain was placed around the site. Drain was removed on 1st post operative day. Patient was discharged home on 2nd post operative day. JJ stent with string was removed in clinic on 5th post operative day.

Discussion

According to Campbell's urology 11th edition, Ectopic kidney can be found in pelvic, iliac, abdominal, thoracic, and contralateral or crossed position. Its incidence varies from 1 in 500 to 1 in 1200, with an average occurrence of about 1 in 900 with no significant

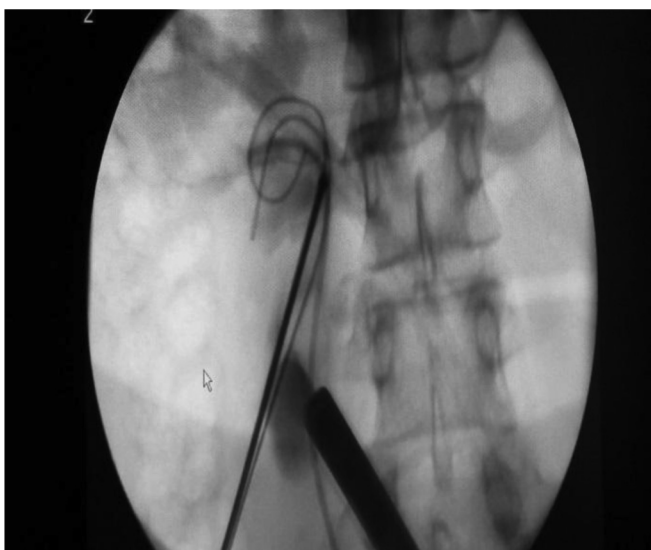


Figure 2. Puncture of renal system followed by insertion of guide wire.



Figure 4. Post operative X-ray showing complete stone clearance with JJ stent in place.

technique.⁷ Goel R and his colleagues operated on two cases with stone in ectopic kidney. One of their patient had same location of kidney as of our case. They removed stones successfully by entering kidney parenchyma through transmesocolonic approach with minimal dissection to the bowel.⁸

Similarly, in our case, the patient underwent a successful surgery, with complete stone clearance (Fig. 4). No post operative complications happened. Patient had a shorter hospital stay with smooth recovery phase. We did not require any further procedure for removing JJ stent.

Conclusion

Laparoscopic assisted transmesocolonic percutaneous nephrolithotripsy can be considered safe and effective treatment option in cases of ectopic kidney with stone disease. Apart from the technique, we have given special consideration on transmesocolonic approach to access the calyceal system. It needs minimal dissection and mobilization of the mesocolon and colon avoiding post operative bowel related complications in experienced hands.

Conflict of interest

None.

Disclosure statement

No competing financial interests exist.

Acknowledgement

None.

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