LAPAROSCOPIC ASSISTED PERCUTANEOUS NEPHROLITHOTOMY IN ECTOPIC PELVIC KIDNEYS

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ABSTRACT
Nephrolithiasis management within an ectopic kidney presents a challenge to the urologists. Several treatment modalities are possible in this group of patients. Although percutaneous nephrolithotomy (PNL) is an accepted treatment modality in anatomically normal kidneys, ectopic pelvic kidneys require a different and more complicated approach for PNL. We report the case of a patient with abdominal pain and macroscopic hematuria whose clinical evaluation showed a left pelvic kidney with nephrolithiasis in the renal pelvis and lower pole. We describe the successful management through laparoscopic assisted percutaneous nephrolithotomy (PCNL) in ectopic pelvic kidney, stressing that this method is a minimally invasive therapeutic option in such cases.

Key Words: Laparoscopy, Ectopic kidney, Percutaneous nephrolithotripsy, Renal stones.

INTRODUCTION
The pelvic kidney is the most common form of renal ectopy. Its incidence is estimated from 1 in 2200 to 1 in 1300.(1) Various factors predispose to the formation of renal calculi in an ectopic kidney like tortuous ureter with high insertion, leading to inadequate evacuation of urine.(2) Nephroliths in the pelvic kidney can be managed by means of extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotomy (PCNL), laparoscopic or ultrasound guided PCNL, and retrograde intrarenal surgery (RIRS) (3). There are still some challenges in treatment of the patients with large nephroliths>2cm in pelvic ectopic kidneys. The exact location of the kidney, variation of pelvicaliceal anatomy, stone size, and location are important factors for deciding the access into kidney in these patients. In this video, we present a case with kidney stones in a pelvic ectopic kidney managed by laparoscopic-assisted percutaneous nephrolithotomy.

CASE REPORT
A 54-years old male patient admitted urology outpatient clinic with abdominal pain and macroscopic hematuria lasting for 5 months. He had a history of open nephrolithotomy an ectopic pelvic kidney 32 years ago in another clinic. The intravenous urography, abdominal ultrasonography and triphasic computed tomography revealed a right ectopic pelvic kidney with nephroliths; a 31 mm in the renal pelvis and smaller one lower posterior calyx of the kidney, respectively (Figure 1-3). The other kidney was normal. Serum urea and creatinine levels were in normal ranges. Urinalysis and urine culture was normal. The patient underwent laparoscopic-assisted percutaneous removal of calculus.

In lithotomy position under general anesthesia, a 6Fr open-ended ureteral catheter was introduced into the ectopic kidney using fluoroscopy, in retrograde fashion. Retrograde pyelography was done to locate the

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The patient was placed in a supine position. A Veress needle was inserted through a 1.5-cm umbilical incision, pneumoperitoneum was created, and a 12-mm visualizing laparoscopic trocar was inserted into the abdominal cavity. Working 10mm and 5mm trocars, were inserted in the right and left iliac fossae, respectively, and the table was tilted to a 30° Trendelenburg position. The mesocolon of the large bowel was draped over the ectopic kidney in the pelvis overlying the sacral promontory. Under laparoscopic vision, the renal puncture was made. After aspiration of urine from access needle a hydrophilic guide-wire was inserted in collecting system. Tract was dilated with Amplatz dilator was introduced over guide-wire 30 Fr sheath into the kidney. A 30 Fr nephroscope was inserted through the kidney (Figure 4A-D) and the stone was seen.

After fragmentation of the stone with pneumatic lithotriptor, the stone fragments were removed out with grasping forceps (Figure 5,6). At the end of the procedure, a 6 Fr JJ stent was placed (Figure 7) in an antegrade fashion and a 26 Fr drain was positioned into the pelvis. The urethral catheters were removed 24 h postoperatively, and abdominal drains were removed on the 2nd postoperative day. Patient was discharged at the 2nd day of surgery.

CONCLUSION

Laparoscopy-assisted Mini PCNL is feasible and safe in ectopic pelvic kidneys in achieving good stone clearance, especially in patients with a large stone burden or failed ESWL or RIRS.

TAKE HOME MESSAGES

1. Treatment of nephrolithiasis in a pelvic kidney presents a technical challenge to endourologists.
2. Interposing bowel loops between the kidney and the anterior abdominal wall prevents a direct puncture through the anterior abdominal wall.
3. A blind percutaneous transperitoneal approach to a pelvic kidney should be avoided. This may risk injury to the overlying bowel and the aberrant vascular structures.
4. Laparoscopic assisted percutaneous nephrolithotomy (PCNL) in an ectopic pelvic kidney represents a good alternative for open surgery and the best access point can be in any part of the abdomen.
5. Laparoscopic assisted percutaneous nephrolithotomy (PCNL) is feasible, safe and has excellent results in this group of patients.

Figure 1: Preoperative X-Ray.

Figure 2: Axial CT scan 1.5cm calculus in the renal pelvis of the left pelvic kidney.

Figure 3: Axial CT scan 2.5cm calculus in the lower pole calyx of the left pelvic kidney.
Figure 4: A) Laparoscopic view of access needle insertion to left pelvic kidney. B) Laparoscopic view of Amplatz dilatation. C) Laparoscopic view of Amplatz dilatation. D) Laparoscopic view of Amplatz sheath insertion to pelvic kidney.

Figure 5: Nephroscopic view of stone being dusted with lithotriptor.

Figure 6: Urethral catheter in the renal pelvis and Through and through access.
Footnotes

REFERENCES


Figure 7: Post Operative X-ray.