



Percutaneous Nephrolithotomy (PCNL) In Ectopic Pelvic Kidney Stone: Laparoscopic Assisted (Anterior Approach)

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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 (PCNL) 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 19 years old female patient with pain in right flank whose tests showed a right pelvic kidney with a 18 mm stone in the renal pelvis. We describe the successful management by percutaneous nephrolithotomy (PCNL) in ectopic pelvic kidney via anterior approach with Laparoscopic assistance, stressing that this method is a minimally invasive therapeutic option in such cases.

Keywords: Ectopic Kidney Stone Laparoscopic Assisted PCNL.

INTRODUCTION

After Introduction of ESWL and Endourology procedures, Management of Renal Calculi has been changed. But in the presence of anatomical anomalies, management is still difficult. We can manage Renal Calculus by various modalities that is by Open Method, PCNL or ESWL¹. Open surgery presents higher morbidity, is less aesthetic due to the incision, and causes more pain post-operatively. ESWL has higher rates of failure as well as recurrence due to incomplete clearance. PCNL has much more advantages in management of Renal Calculus. Routine entry in the renal system is by Posterior approach, but the pelvic bone hinder the posterior access in Ectopic kidney, leading to Anterior Abdominal Approach. Here the position of the ectopic Kidney was first confirmed by Laparoscopy and then entry was done through anterior Abdominal Approach.

CASE REPORT

A 19 years old female presented with complaint of abdominal pain for several months. Abdominal ultrasonography suggested right pelvic kidney with a 18 mm stone in renal pelvis. X ray Kub was done to confirm the Diagnosis primarily. CT Scan of Abdomen with KUB was suggestive of a functional right pelvic kidney with pelvic calculus while the contralateral kidney was normal in function and position (Figure 1).

We have Planned Operative Management for this patient. There were two Surgical Teams with individual Functioning Monitors and instruments (Endourology as well as Laparoscopic). The patient was put in lithotomy position and a retrograde ureteric catheter was inserted cystoscopically. This was used to delineate the pelvicalyceal system with urograffin dye. Next the patient was placed supine and through Hassan open technique a 10mm laparoscopy port was introduced in the Supraumbilical region. under direct vision. CO2 insufflation at 14 mm Hg was started. One 5 mm port was inserted in epigastric region and another 5 mm port in the left iliac fossa.



Figure 1- CT-IVP plates showing Ectopic Right Kidney and Normal location of Left Kidney



Figure-2 Guide wire Entry in Renal Pelvis



Figure-3 Serial Dilators are dilating Renal Pelvis



Figure-4 – Post operative X-ray KUB

Kidney was identified as a retroperitoneal pelvic organ. Small intestines over lying the pelvic kidney were displayed the laparoscopic forceps. Once the renal capsule was identified, contrast was injected via ureteric stent. This allowed the hydronephrotic kidney to dilate up. With the aid of image intensifier an 18 gauge spinal needle was inserted into the abdominal wall directly over lying the kidney(Figure-2). The intra abdominal course of the needle was guided by the video laparoscopy and a forceps in the working port. Under laparoscopic vision the needle was introduced into the kidney. The site of puncture was in a dilated calyx now filled with radio contrast .After aspiration of urine from the spinal needle a J TIP guide wire was inserted and the tract was serially dilated over the guide wire till 27 F using telescopic metal dilators(Figure-3). Finally a 28 F sheath was passed over the dilators. The dilators along with the guide wire were removed. This allowed insertion of a 26 F nephroscope (Storz™) in the sheath.

After performing nephroscopy, the stone was identified, and fragmented using pneumatic lithoclast. The fragments were removed using forceps. Finally the kidney was inspected for residual stones by direct nephroscopy. During this entire period the renal puncture site was constantly monitored by the laparoscopist on a separate video monitor. Laparoscopic forceps were used to assist in keeping the dilators from slipping out of the kidney. The tract was drained using a nephrostomy tube. Urine / irrigation fluid spillage was minimal. It was aspirated using laparoscopic suction device. At conclusion a suction catheter was placed in the true pelvis. This was introduced through a laparoscopy working port and directed into place using a laparoscopy forcep. The abdomen was deflated, port sites inspected for bleeding and closed.

The surgical time was 100 minutes. On second postoperative day x-ray KUB showed complete clearance of stone (Figure-4). Nephrostomy tube was removed on fourth post-operative day. Patient was discharged on sixth post-operative day and DJ stent was removed on twenty- first post-operative day.

DISCUSSION

The pelvic kidney is the most common form of renal ectopy. Although percutaneous nephrolithotomy (PNL) is an accepted treatment modality. In anatomically normal kidneys, ectopic pelvic kidneys require a different and more complicated approach for PCNL. PCNL is a challenging technique in pelvic kidneys. 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. The abnormal renal orientation, the unusual and unpredictable blood supply and the overlying loops of intestine are significant difficulties.

REFERENCES

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