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Urology

A LONG-STANDING GIANT RENAL CALCULUS WITH PRESERVED RENAL FUNCTION SUCCESSFULLY MANAGED BY OPEN PYELOLITHOTOMY –A CASE REPORT

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ABSTRACT A 43-year-old male presented with dull aching pain over the left flank region for 6 months with no other significant urinary complaints and no significant history. He was found to have a large 8cm renal calculus with normal excretion of contrast from the left kidney on contrast CT .. Patient was further evaluated and posted for open pyelithotomy under general anesthesia and a large renal pelvic calculus measuring 8cm was successfully removed. The postoperative period was uneventful and follow-up was normal.

KEYWORDS : giant renal calculus,pyelolithotomy,double J stent,CT urogram

INTRODUCTION

Urinary stone disease is one of the most common urological conditions in the emergency department.[1] .Longstanding renal calculi can compromise renal function and cause significant morbidity and mortality due to urosepsis [2]. With the introduction of lower-risk, minimally invasive surgery (MIS) techniques like endoscopic shockwave lithotripsy (ESWL), percutaneous nephrolithotomy (PCNL), and ureterorenoscopy with stone removal, only 1–5.4% of patients with complex calculi require treatment.[3] Although PCNL has become a key procedure for the removal of large stones, it carries potential risks such as disruption of the pelvicalyceal system, bowel perforation, or even hemorrhage [4]. This case report details an unusual instance of a long-standing giant renal calculus, successfully managed through open surgery.[5]

Figure 1: X-Ray KUB showing giant left renal calculus

CASE STUDY

A male in his mid-40s presented to our OPD with complaints of pain over the left flank region for 6 months. The pain was insidious in onset, mild to moderate in intensity, dull aching type, involving the left flank, non-radiating, no aggravating factors, relieved on taking analgesics.

There was no history of urinary complaints, fever, chills, vomiting, constipation, or trauma.

There was no previous history of urolithiasis and no genito-urinary surgery.

The patient had no other comorbidities and no history suggesting any metabolic abnormality.

His routine blood investigations were within normal limits. Urine showed 18-20 pus cells with culture yielding Escherichia coli. On subjecting the patient to imaging, an ultrasound abdomen revealed a large left renal calculus of 8x 7cm with moderate hydronephrosis. X-ray of the KUB region showed a large radio-opaque shadow in the left kidney region at the level of L1, L2, and L3 vertebrae. CT urogram showed a large left renal calculus measuring 83x46mm with 1345 HU with moderate to severe hydronephrosis with normal excretion of contrast.

The patient was posted for left open pyelolithotomy under general anesthesia after a proper written informed consent and fitness for surgery. The patient was placed in the right lateral position under general anesthesia. A left subcostal incision of 10 cm was placed, oblique muscles were cut and the retroperitoneum was accessed after reflecting the peritoneum medially. The left ureter was identified and hooked. Pelvic dissection was done and pelvic stay sutures were taken pelvis was cut open through a V-shaped incision and a large calculus was retrieved. A 5 French 26 cm double J stent was placed. The pelvis was closed using a 3-0 absorbable suture. The peripelvic drain was kept and the incision was closed in layers.

An X-ray of the KUB region was taken In the postoperative period which showed no residual fragments.

The drain was removed on the 3rd postoperative day and the patient was discharged.

Follow-up after 15 days and 1 month was normal. The Double J stent was removed after 4 weeks of surgery.

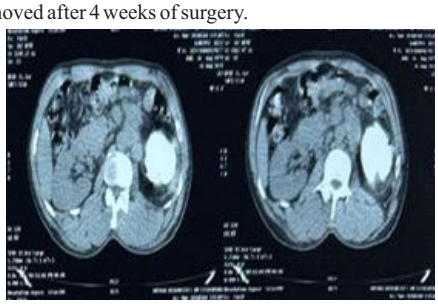

Figure 2: Plain CT axial image showing a large calculus in left kidney

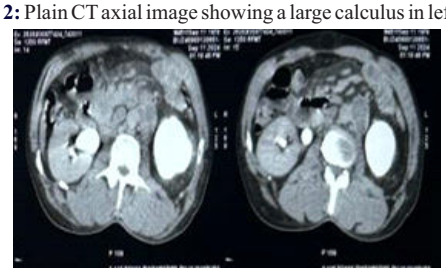

Figure 3: CT urogram axial image showing a large calculus in left kidney with prompt excretion of contrast into the ureter.

Figure 4: open pyelolithotomy being performed

Figure 5: An 8 cm calculus successfully removed.

Figure 7: Post-operative X-Ray KUB sowing no residual stone with double J stent in position.

DISCUSSION

Calculus disease of the urinary tract has a global prevalence of 14% and a lifetime recurrence rate ranging from 10% to 75% [1]. In Asia, the prevalence is approximately 1% to 5% [5]. In India, urolithiasis in the upper urinary tract affects about 12% of the general population [1, 5]. Generally, urinary stone disease is more common in males, while staghorn stones are more prevalent in females, often occurring unilaterally [6]. The sensitivity and specificity of ultrasound (USS KUB) in diagnosing renal and ureteric calculi are 45% 88%, and 45% and 94%, respectively [5]. Because it is cost-effective and free of radiation, ultrasound is considered an optimal initial diagnostic modality.

The European Association of Urology (EAU) guidelines recommend non-contrast computed tomography (NCCT) of the abdomen as the investigation of choice for patients presenting with acute flank pain or suspected urinary tract stones. This imaging technique provides essential information for perioperative planning, including the diameter and density of calculi [5]. Our diagnostic workup included ultrasound, X-ray, and CT of the kidneys, ureters, and bladder (KUB).

Assessment of renal function, including serum electrolytes and creatinine levels, is crucial in the workup for urolithiasis. In cases of large renal stones, further quantitative evaluation through renal scintigraphy may be necessary [7]. Patients with significantly reduced renal function (less than 10%) should be considered for nephrectomy. Our patient's contrast CT showed good enhancement and a normal excretion of contrast from the affected kidney, so no additional scans were performed.

Renal calculi are associated with urinary tract infections (UTIs) in 49% to 68% of patients [6]. The most frequently identified organisms include E coli, Proteus mirabilis, Klebsiella pneumoniae, Pseudomonas aeruginosa, and Enterobacter [5, 6]. Obtaining urine culture data before surgery is essential for effective antimicrobial prophylaxis, with samples collected through sterile catheterization or bladder aspiration preoperatively [4]. Our patient had E-coli growth on urine culture and was accordingly treated with a sensitive antibiotic for 7 days in the preoperative period.

Conservative management of renal calculi has a 28% mortality rate over ten years and a 36% risk of progression to significant renal dysfunction [6]. Therefore, surgical treatment is preferred, including open surgery (OS) and minimally invasive techniques such as percutaneous nephrolithotomy (PCNL) and extracorporeal shock wave lithotripsy (ESWL). The EAU and the American Urological Association recommend PCNL as the modality of choice for large calculi (greater than 2 cm), offering calculi-free outcomes comparable to open surgery [8]. Advantages of PCNL over open surgery include lower morbidity, shorter operative times, decreased hospital stays, and early resumption of routine activities [9]. However, Zhang et al. [3] favored open surgery over PCNL-based combination therapy for complex and large renal calculi larger than 5cm, noting that open surgery provides better calculi-free status for multiple calculi with calyceal extensions by allowing simultaneous reconstruction of anatomical defects in the renal collecting system.

In this case, there was an 8cm large calculus in the left renal pelvis with extension into a calyx. Given the complexity of this presentation, we opted for left-sided open extended pyelolithotomy. The procedure and postoperative recovery were uneventful, and at the one-month follow-up, the patient was free of calculi.

CONCLUSION

Percutaneous nephrolithotomy (PCNL) is the preferred treatment for renal calculi more than 2 cm in size. However, large and complex renal stones, are best managed with open surgery (OS). This approach offers the greatest likelihood of achieving a calculi-free outcome in a single procedure. Therefore, the principles of OS remain essential in modern urological practice and should continue to be taught and applied when necessary.

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