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Case Report

Giant Ureteric Calculi In Patient With Chronic Kidney Disease.

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Abstract

Background: The term Giant ureteric calculus can be can be used to describe calculus measuring more than 5cm or weighing more than 50gm. An impacted calculus may continue to increase in its longitudinal diameter rather than the transverse diameter after some time and becomes oblong shaped.

Case report: A 60 year old female presented with complaints of pain in both flanks radiating to her back and groin region since 15 days with deranged serum creatinine of 3.5 gm/dl and serum urea 70mg/dl. Xray-KUB and NCCT-KUB revealed presence of a giant left ureteric calculus of 9x3 cm with a right ureteric calculus of 26mm. She underwent right DJ stent placement, and Left percutaneous nephrostomy (PCN) insertion. Patient underwent a right ureterorenoscopic lithotripsy (URSL) followed by left laparoscopic ureterolithotomy

Discussion: Historically, open ureterolithotomy has been the procedure for choice for such large stones, but with the advancements in minimally invasive surgery, laparoscopic/robotic removal of such large calculi has overtaken as the gold standard of treatment ,having the advantage of early post operative recovery, lesser intraoperative and post operative complications, lesser post operative pain, better cosmesis.

Keywords: Giant ureteric calculi, chronic kidney disease, ureterolithotomy, laparoscopy.

BACKGROUND

The term Giant ureteric calculus can be can be used to describe calculus measuring more than 5cm or weighing more than 50gm.[1] Stones larger than 1 cm in diameter and more than 0.1 g are less likely to pass spontaneously. An impacted calculus may continue to increase in its longitudinal diameter rather than the transverse diameter after some time and becomes oblong shaped.[2]

These calculi are rare and not many have been reported in literature as most of the ureteric calculi being symptomatic are detected early. We present a case of a 60 year old female with chronic kidney disease (CKD) with a giant left ureteric calculus of approximately 9cm x 3cm. for which transperitoneal laparoscopic ureterolithotomy was performed.

CASE PRESENTATION

A 60 year old female presented with complaints of pain in both flanks radiating to her back and groin region since 15 days. Her physical examination was unremarkable. Routine blood investigations revealed a deranged serum creatinine of 3.5 gm/dl and serum urea 70mg/dl. Patient was a known case of chronic kidney disease for which she was undergoing

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dialysis in an outside institute since 1 month. Ultrasonography (USG) was suggestive of a large left pelvi-ureteric calculus with left hydronephrosis along with a right upper ureteric calculus with hydroureteronephrosis. Xray-KUB and NCCT-KUB revealed presence of a giant left ureteric calculus of 9x3 cm (1560 HU) with a right ureteric calculus of 26mm (1490 HU) (**Figure 1**). She underwent right double j (DJ) stent placement, and Left percutaneous nephrostomy (PCN) insertion. Her radionucleotide study revealed a total glomerular filtration Rate(GFR) of 29.85 ml/min (right -13.02 ml/min,left-16.83 ml/min) with a differential function of 56% on left side and 44% on right side. Patient was planned for a right URSL followed by left laparoscopic ureterolithotomy. Left transperitoneal laparoscopic ureterolithotomy was performed by placing three ports, 10 mm umbilical port for telescope, 10 mm and 5 mm working port in the left mid-clavicular line at the level of anterior superior iliac spine and subcoastal region. Lower limit of the calculus was identified and was traced cephalad. A 2 to 3 cm longitudinal incision was given over the ureter and ureteric calculus was extracted by grasping the caudal end using bowel graspers (**Figure 2,3**). A 5 fr 26 cm stent was placed (**Figure 4**), and ureterotomy was closed using interrupted vicryl 2-0 round body suture. A 20 fr abdominal drain was kept at the anastomotic site and PCN was left in-situ. Patient had an uneventful post operative period. Her abdominal drain was removed at post operative day (POD) 5 after removal of her foley catheter, stent removal done at 3 weeks followed by PCN removal after confirming the patency and drainage of the urinary tract.

Figure 1. Xray kub: left large ureteric calculi with pcn in situ and right ureteric calculi with dj stent in situ.

Figure 2. Ureterotomy with stone extraction.

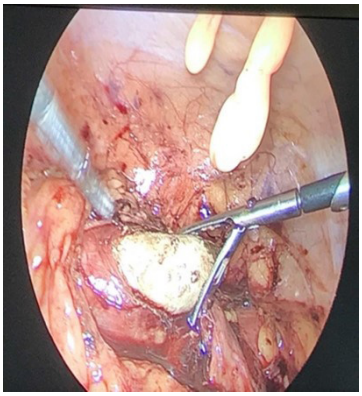
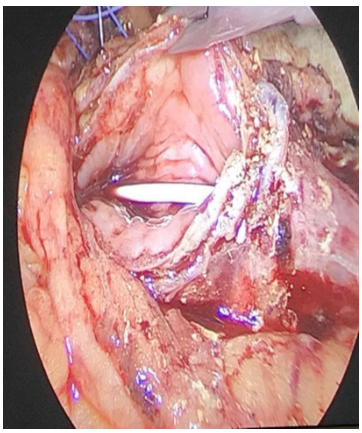


Figure 3. Extracted entire calculus

Figure 4. DJ stent in situ.



CONCLUSION

Ureteric stones which exceed 5 cm in size are termed giant ureteric calculi and are rare.[3,4]

In context to India stone disease is prevalent in about 12% of the population.[5] Of this 12%, 50% of the population are severely affected by renal damage, which even leads to a loss of kidneys. Prevalence of stone disease demographically is more prevalent in north india as compared to other regions.[6] Most of the cases are usually detected early due to their symptomatic presentations. Of the few reported giant ureteric calculi in literature, the largest reported in the world

till now has been by Mayer, which measured 11 cm × 5.5 cm and weighed 286 g while the longest stone was reported by Taylor, which was 21.5 cm in length.[7] In reference to Indian cases among the few report the largest has been by Sabnis et al in 1992 of a stone measuring 13cm in length and weighing 90 gm which was found in a nephroureterectomy specimen.[8] In cases of giant ureteric stones, open or laparoscopic ureterolithotomy remains the procedure of choice.[9] Recently mini-endoscopic combined intrarenal surgery (ECIRS) for a giant ureteric calculi has been reported by Limudomporn et el in 2022.[10]

Historically, open ureterolithotomy had been the procedure for choice for such large stones, but with the advancements in minimally invasive surgery, laparoscopic/robotic removal of such large calculi has overtaken as open surgical treatment, having the advantage of early post operative recovery, lesser intraoperative and post operative complications, lesser post operative pain, better cosmesis. Thus with major advancements in minimally invasive surgery, laparoscopic removal of such giant stones should be the preferred modality especially in such high risk cases where open surgery may contribute to the morbidity of the patient.

List Of Abbrevations

1. Xray-KUB : Kidney ureter bladder.
2. NCCT-KUB: Non contrast computed tomography.
3. PCN: Percutaneous nephrostomy
4. URSL: Ureterorenoscopic lithotripsy
5. CKD: Chronic kidney disease
6. USG: Ultrasonography
7. HU: Hounsfield unit.
8. DJ: Double J.
9. GFR: Glomerular filtration rate.
10. POD: Post operative day.
11. ECIRS: Endoscopic combined intrarenal surgery

Declarations

Ethical approval and consent to participate

The Ethical approval consent to participate has been waved and obtained from the ethical committee of Dr D.Y Patil University. Ethical Committee Dr D.Y Patil Medical University Pune 411018 India

Consent for Publication

Written Consent has been obtained from all participants included in the study.

Availability of data and materials

Not Applicable as all data required for case is written in manuscript and attached as figure.

Competing interests

Not applicable

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Not Applicable

Author's Contributions

Dr. S S collected the patient data. Dr. R K contributed in writing the manuscript. Dr. V S, V S structured the case report, Dr. A M, Dr. D M, Dr S M did proof reading.

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