

Ureteric Calculi Complicating Pregnancy

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Authors' contributions

This work was carried out in collaboration between all authors. Author SRR conducted the vaginal delivery and participated in sequence alignment and she drafted the manuscript. Authors GR and Sasirekha managed the patient through her antenatal, natal and postnatal period. Authors VK, MG and MS carried out the surgery. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Urolithiasis is the most common cause of non-obstetrical abdominal pain that requires hospitalization among pregnant patients. We are presenting a case of symptomatic right ureteric calculi. This was diagnosed during second trimester. The patient did not respond to conservative management and had to be treated surgically with good symptomatic improvement.

Keywords: Urolithiasis; ureteric calculi; pregnancy.

1. INTRODUCTION

Kidney stones affect 10% of the population during their lifetime and over the past 2 decades, this statistic has risen [1]. This affects 1 in 200 to 1 in 1500 pregnancies.

Urinary tract changes occur during pregnancy. Both kidneys increase in size by 1-1.5 cm during pregnancy [2]. Kidney volume increases by 30% due to the renal vasculature and interstitial volume. There is an increase in glomerular filtration rate by 50% [3]. Dilatation of renal

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pelvises and caliceal system occurs due to progesterone effect. Mechanical compression of the ureters at the pelvic brim by the gravid uterus (more prominent on the right) [4]. Certain bladder changes like increased vascularity of bladder, decreased muscle tone and edematous bladder mucosa are seen in pregnancy. There is an increased frequency to micturate. Creatinine, urea and uric acid clearance increases during pregnancy [5].

This is an interesting case of ureteric calculi complicating pregnancy. The patient was symptomatic and her symptoms were not relieved by conservative management. She underwent a surgical intervention at mid-trimester. Following surgery, she had symptomatic relief. She delivered as late preterm.

2. CASE REPORT

Mrs P, 24 years female, primi gravida, with 22 weeks gestation was admitted with c/o right loin to groin pain for past 1 week. Associated with vomiting and dysuria. The following investigations were done, haemoglobin was 10.2%, total count was 10,300, random blood sugar was 74 mg/dl, RFT was with normal range, urine routine showed positive for protein (2+), nitrate (1+), leukocyte (2+), plenty of RBC, 15-20 WBC, 2-3 epithelial cells. Urine culture and sensitivity testing showed few pus cells and occasional gram-negative bacilli, *E. coli* 10000 CFU, sensitivity to amikacin, cefotaxime, cefuroxime, co-trimoxazole, gentamicin, nitrofurantoin, norfloxacin. Ultrasonogram findings showed 1x0.4 cm calculus in the right vesicoureteric junction, bilateral ureteric jet was normal, single live intrauterine gestation with gestational age of 22+ weeks

2.1 Conservative Management

Initially, conservative management was tried for 2 weeks. The patient was started on hydration therapy with intravenous fluids and plenty of oral

fluids. Pain was treated with analgesics and antispasmodics (like drotaverine). The urinary infection was treated with antibiotics-nitrofurantoin 100 mg twice daily for one week. There was no symptomatic improvement with conservative management. Hence, patient was taken up for surgery (right ureteroscopy with Double J stenting).

2.2 Preoperative Preparation

Patient was started on progesterone supplements one day prior to surgery.

2.3 Procedure

Under spinal anesthesia, right URS (ureteroscopy) was done using 6F ureteroscope and right VUJ (vesicoureteric junction) calculus visualized (Fig. 1). ICL (intra corporeal lithotripsy) done using pneumatic waves. Another stone of size approx. 1.5 cm found in the right lower ureter and the same cleared. Bilateral 6 F DJ stenting done. The steps of the procedure are summarized in Table 1.

Long lasting carbothane stents were used. The advantage of carbothane stent is that they can be left in situ for 6 months. Whereas, conventional stents should be removed by 3 months.

2.4 Post-Operative Period

Progesterone supplements were continued for 10 days. Cefotaxime was given for 7 days. Tocolytics like isoxsuprine was given for 3 days. Biochemical analysis of the stone: calcium oxalate. Patient had a good symptomatic relief.

2.5 Follow Up

Patient was advised to increase intake of fluids and low calcium diet. She went till 37 weeks and delivered vaginally a boy baby, birth weight 2.17 kg. One month after delivery, the stents were removed.

Table 1. Steps of right ureteroscopy with pneumatic wave lithotripsy followed by bilateral DJ (Double J) stenting

Steps	Procedure
1	Under spinal anesthesia
2	Right URS (ureteroscopy) was done using 6F ureteroscope
3	Right VUJ (vesicoureteric junction) calculus visualized
4	ICL (intra corporeal lithotripsy) done using pneumatic waves
5	Another stone of size approx. 1.5 cm found in the right lower ureter and the same cleared
6	Bilateral 6 F DJ (double J) stenting done

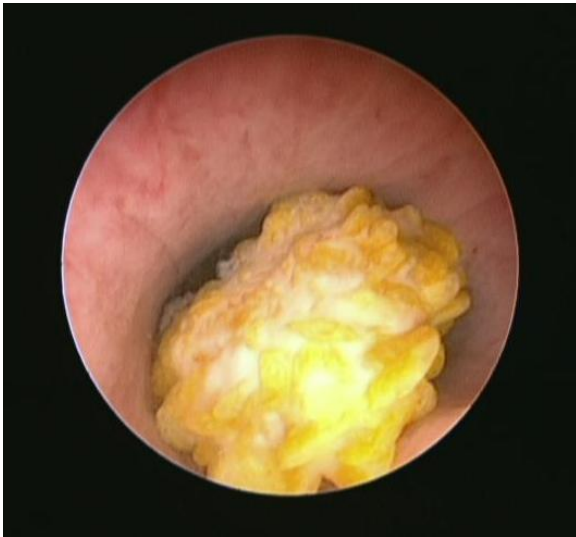


Fig. 1. Right vesicoureteric junction calculus visualised by 6 F ureteroscope

3. DISCUSSION

Ureteric stones (70-80%) can pass with conservative treatment [6]. The recent mini-ureteroscopes and stone fragmentation tools and safe anaesthesia during pregnancy has made it possible to successfully access and treat any stone within the upper tract in a relatively atraumatic way [7]. The ideal lithotripter must have the ability to deliver energy to an extremely localised area with minimal or no collateral damage and must be able to be delivered through a flexible or semirigid ureteroscope [8]. Both Holmium lasers and pneumatic lithotripsy fulfil these criteria [9]. The pneumatic lithoclast is safe and effective for the patient and foetus. Many reports showed safety and high success rate (up to 90%) of ureteroscopy during pregnancy.

3.1 Treatment Goals in a Case of Renal Calculi Complicating Pregnancy

To reduce maternal discomfort, to prevent renal damage and sepsis due to obstructing calculi and to minimise risk to the fetus.

3.2 Surgical Care

Surgical intervention is required in 20-30% of pregnancies complicated by urolithiasis [10]. Indications for surgical interventions are 1) ureteral obstruction associated with increasing azotemia, 2) obstruction in a solitary kidney, 3) intractable pain despite maximal conservative

measures, 4) urosepsis and 5) renal colic induced preterm labour.

Ureteroscopy is the first line approach to urinary calculi that requires intervention [11]. Anatomical distortion late in pregnancy and complications due to exposure to anaesthesia are few minor limitations.

Timings of surgical intervention are usually in the first and second trimester. PCN is preferred in women with ≤ 22 weeks of gestation.

LASER or pneumatic source is the preferred energy sources.

4. CONCLUSION

Urolithiasis during pregnancy is more complex than when it occurs in the general population and diagnosis can sometimes be quite challenging.

CONSENT

We have obtained the patient's consent for the case report.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

We do not have any commercial association that might pose a conflict of interest in connection with the manuscript. We certify that neither this manuscript nor one with a substantially similar content under our authorship has been published or is being considered for publication elsewhere.

REFERENCES

1. Riley JM, Dudley AG, Semins MJ. Nephrolithiasis and pregnancy: Has the incidence been rising? *J Endourol.* 2014;28(3):383-6.
2. Burgess KL, Gettman MT, Rangel LJ, Krambeck AE. Diagnosis of urolithiasis and rate of spontaneous passage during pregnancy. *J Urol.* 2011;186(6):2280-4.
3. Liu G, Wang J, Li J, Zheng J, Huang Z, Ye Z. Urolithiasis in pregnancy: Survey in clinical epidemiology. *J Huazhong Univ Sci Technolog Med Sci.* 2011;31(2):226-30.
4. Katz DS, Klein MA, Ganson G, Hines JJ. Imaging of abdominal pain in pregnancy. *Radiol Clin North Am.* 2012;50(1):149-71.
5. Srirangam SJ, Hickerton B, Van Cleynenbreugel B. Management of urinary

- calculi in pregnancy: A review. J Endourol. 2008;22(5):867-75.
6. White WM, Zite NB, Gash J, Waters WB, Thompson W, Klein FA. Low-dose computed tomography for the evaluation of flank pain in the pregnant population. J Endourol. 2007;21(11):1255-60.
 7. Parsons JK, Hergan LA, Sakamoto K, Lakin C. Efficacy of alpha-blockers for the treatment of ureteral stones. J Urol. 2007;177(3):983-7; discussion 987.
 8. Rivera ME, McAlvany KL, Brinton TS, Gettman MT, Krambeck AE. Anesthetic exposure in the treatment of symptomatic urinary calculi in pregnant women. Urology. 2014;84(6):1275-8.
 9. Akpınar H, Tüfek I, Alici B, Kural AR. Ureteroscopy and holmium laser lithotripsy in pregnancy: Stents must be used postoperatively. J Endourol. 2006;20(2): 107-10.
 10. Boubred F, Vendemmia M, Garcia-Meric P, Buffat C, Millet V, Simeoni U. Effects of maternally administered drugs on the fetal and neonatal kidney. Drug Saf. 2006;29(5):397-419.
 11. Koren G, Florescu A, Costei AM, Boskovic R, Moretti ME. Nonsteroidal antiinflammatory drugs during third trimester and the risk of premature closure of the ductus arteriosus: A meta-analysis. Ann Pharmacother. 2006;40(5):824-9.

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