

BLADDER STONE IN PREGNANCY: A RARE ENCOUNTER

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ABSTRACT

Bladder stones are rare and account for approximately 5.0% of all urinary tract stones. The presence of bladder stones places the pregnancy at risk for adverse outcomes including recurrent urinary tract infections, preterm labour, and obstructed labour. Prompt and accurate diagnosis requires a high degree of suspicion and judicious use of diagnostic imaging given the higher risks of radiation exposure. Treatment ranges from conservative to more invasive approaches. Thus, management needs to be individualized to the patient with careful consideration of the potential adverse effects. We report a case of bladder stone in mid-pregnancy that was treated by open cystolithotomy.

KEYWORDS

Bladder outlet obstruction, cystoscopy, open cystolithotomy, Nepal

Received on: July 02, 2023

Accepted for publication: July 28, 2023

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DOI: <https://doi.org/10.3126/nmcj.v25i4.60932>

INTRODUCTION

Urolithiasis, which encompasses all urinary tract stones, is rare in pregnancy, with an incidence of only 0.5%.¹ Bladder stones, which constitute approximately 5.0% of all urolithiasis in general population,² are even rarer in pregnancy, with only 19 cases reported till date.³ The presence of bladder stones places the pregnancy at risk for adverse outcomes including recurrent urinary tract infections, preterm labour, obstructed labour and rarely urinary fistula formation. Therefore, timely intervention becomes necessary to avoid complications. Treatment ranges from conservative to more invasive approaches and is individualized to the patient with careful consideration of the potential adverse effects. We present a case of a bladder stone encountered in mid-pregnancy which was successfully removed by open cystolithotomy.

CASE REPORT

A 21-year-old primigravida at 15 weeks gestational age presented to emergency department of Paropakar maternity and women's hospital with complaints of inability to pass urine and severe abdominal pain for 6 hours. Over the past month, she had been suffering from right flank pain and urinary symptoms such as dysuria, increase frequency, weak stream, straining to void and feeling of incomplete voiding.

At presentation, she was anxious and in agony due to pain in suprapubic region. Her pulse was 110 beats per minute. Blood pressure, temperature, oxygen saturation and respiratory rate were normal. There was a suprapubic bulge and uterine size was 16 weeks. With a clinical diagnosis of acute urinary retention, immediate catheterisation was performed, which drained 500 ml of urine and her symptoms resolved.

A urinalysis revealed moderate blood with positive leukocyte esterase and nitrates, suggestive of a urinary tract infection. She was started on nitrofurantoin and later her urine culture showed *Escherichia coli*, which was also sensitive to it. A pelvic ultrasound confirmed intrauterine pregnancy at 15 weeks and revealed a urinary bladder stone measuring 5.2 X 5.4 centimetres, a thickened bladder wall with mucus irregularities and bilateral hydronephrosis. These features were suggestive of bladder outlet obstruction. She had a history of spinal cord injury for which she had undergone surgery. She was bedridden for 3 months and was under catheterisation.

The patient was referred to Department of Urology, Bir Hospital for further management.

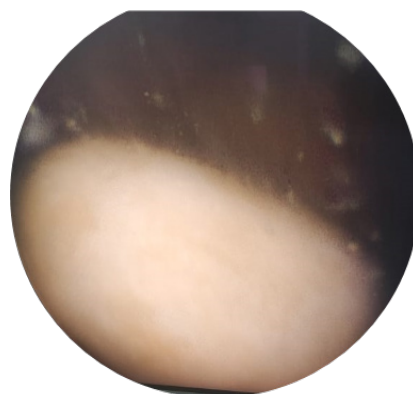


Fig 1: Cystoscopic visualisation of vesical calculi



Fig 2: Closure of the cystostomy in double layer

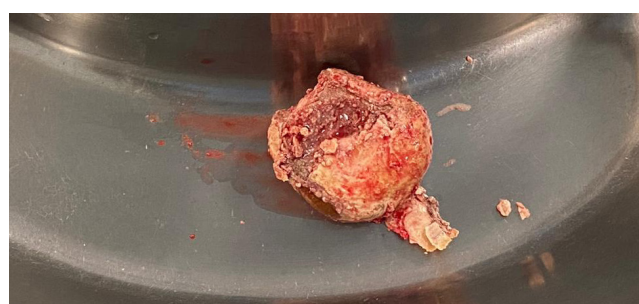


Fig 3: Vesical calculi

An open cystolithotomy was planned. Prior to surgery, 17 alpha-hydroxy progesterone caproate 500 mg IM was administered. Under spinal anaesthesia, cystoscopy was performed and a stone noted at the trigone. After filling the bladder with normal saline, a transverse suprapubic incision was given. The bladder was then opened with a vertical incision and stone removed by forceps. Abdominal cavity and bladder were washed with normal saline to remove tiny concretions. Water-tight repair of bladder was done followed by abdominal drain insertion and closure of the abdomen.

In the postoperative period, analgesics and antibiotics (ceftriaxone) were administered. Her postoperative period was uneventful. Fetal heart rate charting was also done. She was discharged on third postoperative day with Foley catheter in situ.

On follow-up after 7 days, her symptoms had improved and had normal voiding. Her Foley

catheter was removed and sent home. She is now having regular antenatal checkup at Paropakar Maternity and Women's Hospital at Thapathali, Kathmandu, Nepal.

DISCUSSION

The rarity of urinary bladder stones in women and pregnancy can be attributed to the structure of the female urethra⁴ as well as estrogen, which inhibits the formation of stones by regulating the synthesis of 1,25-dihydroxy-vitamin D.⁵ Urolithiasis most commonly presents in the second (39.0%) and third (46.0%) trimesters of pregnancy.⁶ Due to advent of imaging in pregnancy, often it is diagnosed during antenatal period by ultrasound and X-ray exposure can be avoided.

There are many factors that can lead to the formation of bladder stones in pregnancy. Urinary tract infections can be a cause as well as a consequence of bladder stones.⁷ A prior history of stone disease is important to elicit as up to 30.0% of patients will have had a previous stone, and approximately 3.7% will have had a prior stone episode during pregnancy.⁶ Indwelling catheters and neurogenic bladder are also risk factors for bladder stones.^{4,7} In our case, spinal cord injury must have caused neurogenic bladder, and the use of urinary catheter, both created a favourable environment for bladder stone formation. Presence of a nidus in the bladder also result in stone formation. Reports of retained suture

from prior surgery and even migration of intrauterine device into the bladder leading to stone formation have been reported.^{8,9}

Bladder stones, if detected before delivery, can be removed either via open cystolithotomy or with cystolitholapaxy. Cystolithotomy is appropriate for larger stones, as in this case. Furthermore, due to shorter duration of procedure, it may be appropriate in pregnant women.

Laser cystolithotripsy has also been used for nephrolithiasis in pregnancy, but its use in treating bladder stones has been limited to one case report.⁷ Although safe, premature contractions and ureteral perforation have been reported.¹⁰

In conclusion, if bladder stones go undetected and untreated during pregnancy, they can lead to several complications. Infections, including pyelonephritis, are common. Premature delivery can occur. During delivery, obstructed labour is the most common presentation as they interfere with the descent of the fetal head.¹¹ Pressure damage to the bladder wall during labour can also lead to development of vesicovaginal fistula.¹² Management of these cases has involved cystolithotomy at the time of caesarean delivery or weeks later. Performing the surgery during caesarean section, however, has a risk of contributing to fistula formation.⁷

Conflict of interest: None

Source of research fund: None

REFERENCES

- Cormier CM, Canzoneri BJ, Lewis DF *et al*. Urolithiasis in pregnancy: current diagnosis, treatment and pregnancy complications. *Obstet Gynecol Surv* 2006; 61: 733-41.
- Schwartz BJ, Stoller ML. The vesical calculus. *Urol Clin North Amer* 2000; 27: 333-46.
- Chakraborty B, Mondal PC, Sahana R, Barman SC. A giant vesical stone causing impending rupture of bladder during labor. *J Obstet Gynaecol India* 2015; 65: 267-70.
- Cross LL, Meythaler JM, Tuel SM, Cross AL. Pregnancy, labor and delivery post spinal cord injury. *Paraplegia* 1992; 30: 890-902.
- Kale SS, Ghole VS, Pawar NJ, Jagtap DV. Inter-annual variability of urolithiasis epidemic from semi-arid part of Deccan Volcanic Province, India: climatic and hydrogeochemical perspectives. *Int J Environ Health Res* 2014; 24: 278-89.
- Meria P, Hadjadj H, Jungers P, Daudon M and members of the French Urological Association Urolithiasis Committee Stone formation and pregnancy: pathophysiological insights gained from morphoconstitutional stone analysis. *J Urol* 2010; 183: 1412-6.
- Whittington JR, Simmons PM, Eltahawy EA, Magann EF. Bladder stone in pregnancy: a case report and review of the literature. *Amer J Case Rep* 2018; 19: 1546-9. doi: 10.12659/AJCR.912614.
- Holmstrom SW, Paidas-Teefy C, Sellers E. Bladder calculus at cesarean delivery in a patient with previous cystotomy repair: A case report. *J Reprod Med* 2017; 62: 89-91.
- Rafique M. Vesical calculus: a complication of intravesical migration of intrauterine contraceptive device. *Int'l Urogynecol J Pelvic Floor Dysfunct* 2002; 13: 380-82.
- Laing KA, Lam TBL, McClinton S *et al*. Outcomes of ureteroscopy for stone disease in pregnancy: results from a systematic review of the literature. *Urol Int'l* 2012; 89: 380-86.
- Cope E. Obstructed labour due to vesical calculus. *J Obstet Gynaecol Brit Common* 1961; 68: 476-8.
- Penning SR, Cohen B, Tewari D *et al*. Pregnancy complicated by vesical calculus and vesicocutaneous fistula. *Amer J Obstet Gynecol* 1997; 176: 728-9.