

Acute Ureteral Obstruction in Pregnancy: Management with Ureteral Stents

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Abstract

Urinary problems in pregnancy are a frequent occurrence. While most of the associations are mild and can be medically managed, there can occasionally be more sinister situations, which require emergent surgical interventions. We report a case of acute ureteral obstruction in pregnancy secondary to urolithiasis causing renal failure. The patient underwent a stent placement at 23 weeks of gestation leading to resolution of the symptoms and an improvement in clinical course. A high degree of clinical suspicion and an appropriate and timely intervention is imperative to prevent long-term renal damage and improve neonatal outcomes.

Keywords: Urolithiasis, Pregnancy, Ureteral stents, Ureteral obstruction.

INTRODUCTION

Voiding dysfunction in obstetric patients in the form of frequency, urgency, stress incontinence is often considered to be a normal pregnancy association. However, pregnancy is also a situation that predisposes to and aggravates the urinary complications, which can significantly affect the maternal and neonatal outcomes. We report a case of urolithiasis with acute ureteral obstruction in pregnancy requiring emergent surgical intervention.

CASE HISTORY

A 21-year-old primigravida with 23 weeks pregnancy presented with low grade fever since one week nausea, vomiting, dysuria and hematuria since two days and decreased urine output since one day. She had an episode of urinary tract infection (UTI) two months back which was managed conservatively. On admission, patient had tachycardia, hypotension and high grade fever (39.2°C), generalized abdominal guarding and bilateral renal angle tenderness. Uterus was relaxed with regular fetal heart rate. On catheterization, no urine was drained. Investigations revealed leucocytosis (TLC: 28,300/mm³) with features of azotemia (BUN-19.8 mg/dl, Serum creatinine-2.4 mg/dl) Urine analysis showed significant WBC, RBCs with granular and amorphous casts and proteus mirabilis was grown on urine culture. Ultrasound revealed an adequately growing fetus, normal upper abdomen anatomy with bilateral hydronephrosis (Right > Left) and a 18 mm calculus at the right pelviureteric junction. With a provisional diagnosis of acute pyelonephritis with acute renal failure with septicemia, patient was started on conservative management

with adequate hydration and parenteral antibiotics. Her urine output improved initially on second and third day but by day four it again declined to 400 ml/day. There was worsening renal function (BUN-38.9 mg/dl and S. creatinine-3.5 mg/dl) and a deterioration in the clinical course. Surgical intervention was decided and Right DJ stent (6/26) was placed under ultrasound guidance. Subsequently patient improved symptomatically and her renal function recovered (S. creatinine decreased to 0.8 mg/dl) by day 10 and the patient was discharged in two weeks. Rest of her antenatal period was uneventful. She delivered a 2.9 kg healthy neonate at 38 weeks with no further maternal and neonatal complications. DJ stent was removed 6 weeks postpartum and patient planned for definitive surgical intervention.

DISCUSSION

Urolithiasis in pregnancy poses a diagnostic and therapeutic challenge as the initial signs and symptoms may be masked. However, if complicated, it can significantly jeopardize both the maternal (septicemia, ARF, CRF) and fetal health (preterm labor, PPRM, fetal growth restriction).

Urolithiasis complicates about 1 in 1500 pregnancies (reports varying from 1 in 200-1 in 2000).¹ The true incidence is difficult to ascertain because only symptomatic stones are diagnosed during pregnancy. Physiologic dilatation of the collecting system may cause migration of renal stones into the ureter leading to acute pain and obstruction.²

Pregnancy is associated with significant anatomical and functional changes in the urinary tract of which hydronephrosis is of particular relevance. Extrinsic obstruction of the ureter

(right > left) occurs by the gravid uterus as well as there is a state of decreased ureteral peristalsis and relaxation of the smooth muscle wall of the ureters mediated by progesterone.

The most common presenting symptoms of urolithiasis are flank/abdominal pain, hematuria, pyuria, lower urinary tract symptoms. 80 to 90% of symptomatic stone disease presents in second or third trimester. A high degree of clinical suspicion is needed and prompt diagnosis is important as a delay could potentially have untoward effects on the renal function and maternal and fetal health.³ Patients, who have UTI and remain febrile for more than 48 hours, should be further evaluated for complicated UTI attributable to urolithiasis.⁴

Ultrasonography is the initial modality of investigation showing details of renal parenchyma, calyces and pelvis. Combination with Doppler aids in the functional evaluation and differentiation of stone obstruction from hydronephrosis.

Most stones would have a spontaneous passage either during pregnancy or in the postpartum period.^{5,6} Initial management involves an aggressive conservative approach with analgesics, adequate hydration and parenteral antibiotics to which a majority would respond.

However, in the rare event of nonresolving infection, deteriorating renal function (anuria/azotemia), absence of Doppler evidence of ureteral flow, obstruction in a solitary kidney or intractable pain despite maximal conservative measures, surgical intervention becomes necessary. The goals of various modalities are to lessen maternal discomfort, prevent permanent renal damage and minimize sepsis and fetal risks. Surgical management could be in the form of indwelling ureteral stent placement, percutaneous nephrostomy or ureteroscopy.

Ureteral stent placement is an effective and safe method for urinary decompression with no radiation and anesthesia risks and with a low morbidity rate. It can be done under local anesthesia supplemented with intravenous analgesia under cystoscopic vision and ultrasound guidance. It relieves the obstruction, drains the infected urine, preserves renal function and provides a prompt relief of symptoms. Definite therapy can then be postponed to the postpartum period. Well-defined guidelines for replacement of stents do not exist. Some

recommend safe placement in situ for 3 to 9 months⁷ while others advocate a change every 4 to 8 weeks.⁸

In our patient, ARF was caused by acute pyelonephritis, bilateral hydronephrosis and ureteral obstruction, which was resolved on relieving the obstruction by ureteral stenting.

CONCLUSION

A high degree of clinical suspicion in all pregnant women with pelvic pain, hematuria or unresolved UTI is imperative. Though a vast majority of patients can be treated with conservative measures, stent insertion is an efficient and safe modality for the rare patient with refractory symptoms. Appropriate and timely intervention can prevent long-term renal damage and minimizes both maternal and fetal morbidity.

REFERENCES

1. Gorton E, Whitfield H. Renal calculi in pregnancy BJU 1997;80 (Suppl 1):4-9.
2. Kroovand RI. Stones in pregnancy. In: Coe FL, Favars MJ, Pak CYC, Park JH, Preminger GM (Eds). Kidney stones: Medical and surgical management. Lippincott-Raven Publishes Philadelphia 1996;1059-64.
3. Hendricks SK, Ross SO, Krieger JN. An algorithm for diagnosis and therapy of management and complication of urolithiasis during pregnancy. Surg Gynecol Obstet 1991;172:49-54.
4. Pais VM (Jr), Payton AL, La Grange CA. Urolithiasis in pregnancy. Urol Clin North Am 2007;34(1):43-52.
5. Parulkar BG, Hopkins TB, Wollin MR. Renal colic during pregnancy: A case for conservative treatment. J Urol 1998; 159:365-68.
6. Stothers L, Lee LM. Renal colic in pregnancy. J Urol 1992;148:1383-87.
7. Spirnak JP, Resnick MI. Stone formation as a complication of indwelling ureteral stents: A report of five cases. J Urol 1985;134:349-51.
8. Loughlin KR, Bailey RB. Internal ureteral stents for conservative management of ureteral calculi during pregnancy. N Engl J Med 1986;315:1647-49.

