

Diagnosis and Management of Nephrolithiasis in Active Labor using POCUS and Epidural Analgesia

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Introduction

The incidence of asymptomatic urolithiasis during pregnancy ranges from 1 in 200 to 1 in 3300 pregnancies¹. Given that there is some symptom overlap between renal colic and labor pain, mild renal colic may be underdiagnosed in pregnant patients and moderate to severe renal colic may be misdiagnosed. Point-of-Care Ultrasound (POCUS) provides a safe, non-invasive, cost-effective opportunity to rapidly diagnose nephrolithiasis at the bedside in pregnant patients if the clinical presentation warrants further investigation.

Case Presentation

A 38-year-old G2P0 parturient at 39 weeks presented for induction of labor of an uncomplicated pregnancy. Prior to initiation of synthetic oxytocin, the patient began experiencing episodes of sharp, left-sided lower back pain that radiated to her flank and groin with urinary frequency, stating she had been voiding hourly overnight.

- Vital signs were stable with no signs of hemodynamic compromise.
- Physical exam was significant for a gravid uterus and point tenderness over the left flank.

Diagnosis

- **POCUS:** 5 Hz curvilinear ultrasound probe placed over the left flank revealed several hyperechoic structures in the medulla, pelvis, and ureteropelvic junction of the left kidney, consistent with nephrolithiasis.
- No evidence of hydronephrosis or cystic disease and no significant findings on examination of the right kidney.

Management

- Patient adequately hydrated and an epidural catheter placed in the L4-L5 interspace.
- Epidural analgesia induced with 8 mL of a fentanyl PF 2 mcg/mL-bupivacaine PF 0.125% in NaCl 0.9% solution which was then maintained at a continuous rate of 8 mL/hr and PCEA dose of 5 mL with a 15-minute lockout interval.
- Foley catheter inserted and IV hydration with an isotonic solution continued at 125 mL/hr until Foley catheter removal in the postpartum period.

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Clinical Course

- Patient reported resolution of renal colic and improvement of labor pain almost immediately after achieving a bilateral T9 sensory level via epidural analgesia.
- She proceeded through labor uneventfully with spontaneous vaginal delivery.
- She had no complaints of renal colic postpartum, as the stones had presumably passed without any discomfort to the patient.

Discussion

- The diagnosis of nephrolithiasis in the pregnant patient can be especially challenging given the limited imaging modalities available to the parturient due to risks to the pregnancy or fetus¹.
- For a well-trained operator with reasonable clinical suspicion, POCUS can be used to quickly guide management of suspected renal colic in the pregnant patient as well as to rule out impending obstetric or surgical emergencies.
- The mainstays of management for uncomplicated renal colic in the parturient and non-parturient alike are hydration, antiemetics, and pain control; not unlike the management of active labor.
- Due to risks to the fetus, pain control options are limited in the pregnant population; thus alternatives to systemic analgesics, such as epidural analgesia, may be necessary for adequate pain control.
- Utilizing epidural analgesia to treat renal colic pain in the parturient has been described previously³, but not specifically in the setting of active labor.



References

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