Uterine Incarceration Causing Significant Bladder Overdistension: Missing the Opportunity to Intervene

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Received: 20 January 2017; Accepted: 28 February 2017; Published: 13 March 2017

Abstract
Background: Incarcerated gravid uterus can lead to significant urinary obstruction and retention.

Case: A 41-year-old multiparous woman presented at 16 weeks gestation with urinary retention of approximately 6 liters. She had been misdiagnosed by multiple practitioners prior to her presentation. Diagnosis was confirmed by clinical examination and bedside ultrasound and the incarcerated uterus was released with simple transluminal urinary bladder decompression.

Conclusion: Close observation of a gravid woman with a retroverted uterus is key to recognizing uterine incarceration. Early detection and intervention, if warranted, can potentially avoid serious maternal and fetal complications.

Keywords: Uterine incarceration; Bladder overdistension

Introduction
Uterine incarceration in pregnancy, a retroverted or retroflexed uterus entrapped within the hollow of the sacrum, is an event most commonly reported at an incidence of 1:3000 pregnancies [1]. In available literature, the majority of patients described were diagnosed between 12 and 16 weeks gestation with an average urinary volume of 1200 mL [2]. Most literature surrounding the phenomenon relies on case report and describes a myriad number of diagnostic techniques, ranging from physical exam to MRI, as well as a number of different mechanisms to reduce the incarceration [1,3,4]. Given its uncommonness, it is a diagnosis which is commonly missed [4]. We present a case of a missed uterine incarceration in the second trimester leading to bladder overdistension with 7100mL of urine that was decompressed over 12 hours.

Case Report
A 41-year-old G5P4004 at 16 weeks gestation presented to obstetric care complaining of severe abdominal pain. Her past medical and surgical history was significant only for Class II obesity and a history of one previous lower transverse cesarean section for non-reassuring fetal heart tones. She had no known uterine or pelvic pathology. She had established her prenatal care with Family Medicine (FM). Her pregnancy was complicated by worsening abdominal pain and stress urinary incontinence starting from 6 weeks of gestation. At 10 weeks, she presented to the Emergency Department (ED) with suprapubic pain with defecation. On evaluation, the ED physician noted a gravid appearing abdomen. A transvaginal ultrasound was obtained, the report of which confirmed a viable intrauterine pregnancy and commented on an approximated volume of 2439 mL of urine in the bladder with the patient being unable to void. Based on the presence of urinary leukocyte esterase on point of care urinalysis, she was diagnosed with a urinary tract infection and discharged with oral antibiotics. No comment on urinary retention was made by the ED provider and no attempt at urinary drainage was made. She was seen by her primary FM provider two days later with no change in management.

Two days after this visit the patient had her first visit with an Obstetrician. She was 16 weeks gestation and complaining of abdominal pain associated with increased abdominal girth, micturition of low volume, dyschezia, and intermittent urinary incontinence. Physical exam revealed a fundal height of 33 cm. Fetal heart tones could not be obtained with bedside Doppler. A bedside ultrasound revealed a large amount of fluid within the urinary bladder and the inability to visualize a fetus. On speculum exam, the cervix could not be visualized and a pelvic exam was not tolerated by the patient secondary to pain. Given the patient’s history, large volume of visualized urine on bedside ultrasound, and inability to visualize cervix concerning for a retroflexed uterus, a uterine incarceration was suspected. The patient was in too much pain to tolerate an in-office attempt at manual disimpaction, and given the volume of visualized urine, it was felt this maneuver was unlikely to be successful. A Foley catheter was placed in the office and clamped after the release of 1000 mL of clear yellow urine. The patient was admitted to observation at the hospital where intermittent drainage of 1000 mL of urine every hour resulted in 5800 mL drained over the first 6 hours and a total urine volume of 7100 mL over 12 hours.

Following decompression, it was clinically apparent the uterine incarceration had been freed: the fetal heart tones were auscultated abdominally and the patient had significant relief of her pain. A transabdominal ultrasound confirmed a viable intrauterine pregnancy and commented that the “uterus was no longer markedly retroflexed”. Rectal exam was negative for a palpable uterus. Urine cultures were negative. The patient was discharged home with the Foley catheter and instructions for intermittent clamping for bladder retraining. She was seen in the office one week later where a voiding trial was performed with a normal post void residual volume. The patient had an uncomplicated remainder of her pregnancy. At 38 weeks gestational age, she underwent a repeat Caesarean section for a fetus in a breech presentation following spontaneous rupture of membranes. The intraoperative appearance of her bladder was normal. She had a straightforward postoperative course and currently has no urinary complaints.

Discussion
Uterine incarceration is an uncommon phenomenon that can present with urinary frequency, the sensation of incomplete emptying, abdominal pain, rectal pressure, urinary retention, and/or urinary incontinence [3]. The mechanism of urinary obstruction in uterine incarceration is unclear and opinions varied. Some authors propose that straightening of the posterior urethrovesical angle during voiding is hindered secondary to mass effect, while others propose the obstruction is secondary to urethral obstruction from the uterine corpus against the pubic symphysis [1,2].

A normal full bladder capacity is approximately 500 mL with a
bladder holding approximately 1000 mL in chronic retention [5]. Bladder rupture occurring at volumes of as low as 1500 mL has been described, though this happened during intraoperative bladder distension [5]. Long-term sequelae from bladder overdistension can result in postpartum maternal morbidity, including longstanding urinary retention and needing self-catheterization: this has been described at urinary volumes significantly lower than that of the case presented here [4]. Obstetric complications from uterine incarceration and associated bladder overdistension including preterm premature rupture of membranes (PPROM), placental abruption, and spontaneous abortions have also been documented at much lower urinary volumes [3,4]. Maternal sequelae such as bladder ischemia, bladder rupture, and rectal gangrene are also worrisome possibilities [1].

Management of urinary bladder overdistension varies and there are no standardized recommendations in the literature, as it occurs at a rate of less than 0.07 in 100,000 in women [6]. In this case, we opted to perform a gradual decompression over several hours due to concerns of maternal hypotension and bladder hemorrhage. Some evidence suggests this may not be necessary [6]. Given the volume of urine, the catheter was kept in situ for one week with intermittent bladder clamping for bladder retraining. Though some evidence on relieving obstructive urinary retention suggests a Foley is only necessary for three days, this data comes from studies in men [6].

Management of an incarcerated uterus is not standardized and in our case, was resolved with simple decompression of the urinary bladder with an excellent obstetric outcome. However, the possibility of significant maternal and fetal morbidity was real and there were multiple missed opportunities for intervention. Previous authors have suggested any gravida known to have uterine retroversion in the first trimester be re-examined in the second trimester with uterine repositioning and pessary support as standard of care [3]. We propose that any gravida noted to have a retroverted uterus at initial clinical exam be followed closely through her first trimester. If by 10 weeks, she remains retroverted, she should be prescribed knee-chest position for fifteen minutes twice daily for a week and re-examined. If she continues to be retroverted, strong consideration should be given to uterine repositioning by 12 weeks, in the ambulatory setting if possible but in the operating room if indicated. An exploratory laparotomy with manual repositioning and possibly even uteropexy is rarely indicated for management but could be considered if other options remain unsuccessful. Obstetric providers should have a high index of suspicion for this condition when caring for a pregnant patient with urinary retention. With early detection, close observation, and early intervention as indicated, gravidae with a retroverted uterus could potentially avoid serious maternal and fetal complications from uterine incarceration such as those described here.

References