

## Acute Urinary Retention in Early 2nd Trimester

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### BRIEF HISTORY

A 35-year-old woman, G2P1, suffered from two episodes of acute urinary retention occurring in the mid-night with bladder drainage of 800 mL and 1000 mL of urine, respectively. She was in the 13th week of gestation. The course of her first pregnancy had been uneventful. She was transferred to the urogynecologic clinic for further evaluation and management.

### CLINICAL EXAMINATION

On vaginal examination, the cervix was drawn high up into the anterior fornix behind the pubic symphysis. The posterior fornix bulged with a firm mass impacted in the pelvis.

### ULTRASONOGRAPHY

Transabdominal sonography revealed an enlarged uterine corpus, confined to the sacral concavity, with a viable fetus (crown-rump length

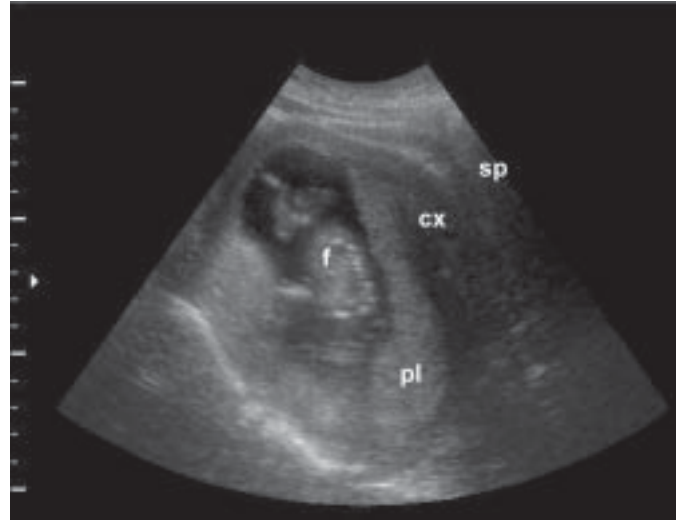


Fig. 1. Transabdominal ultrasonography reveals a retroverted gravid uterus confined by the sacrum below and promontory above. (sp = pubic symphysis, cx = cervix, f = fetus, pl = placenta)

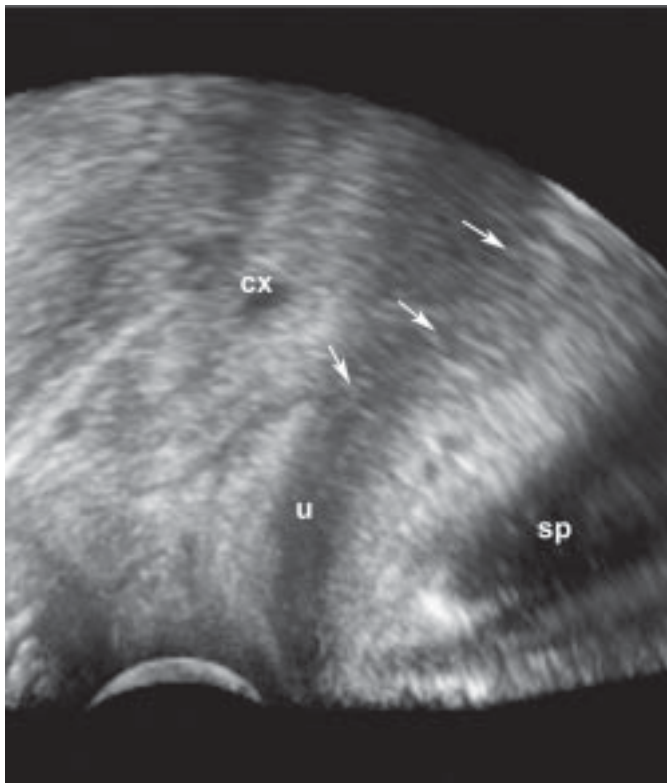


Fig. 2. At rest, 3D ultrasound rendered image displays compression of the lower bladder (arrows) posteriorly by the cervix (cx). The pubourethral angle (the angle between the bladder neck-symphyseal line and the midline of the pubic symphysis) is 60 degrees. (sp = pubic symphysis; u = urethra)



Fig. 3. With the Valsalva maneuver, 3D ultrasound rendered image displays compression of the lower bladder (arrows) posteriorly by the cervix (cx). The pubourethral angle (the angle between the bladder neck-symphyseal line and the midline of the pubic symphysis) is 140 degrees. There is no limitation of urethral mobility. (sp = pubic symphysis; u = urethra)

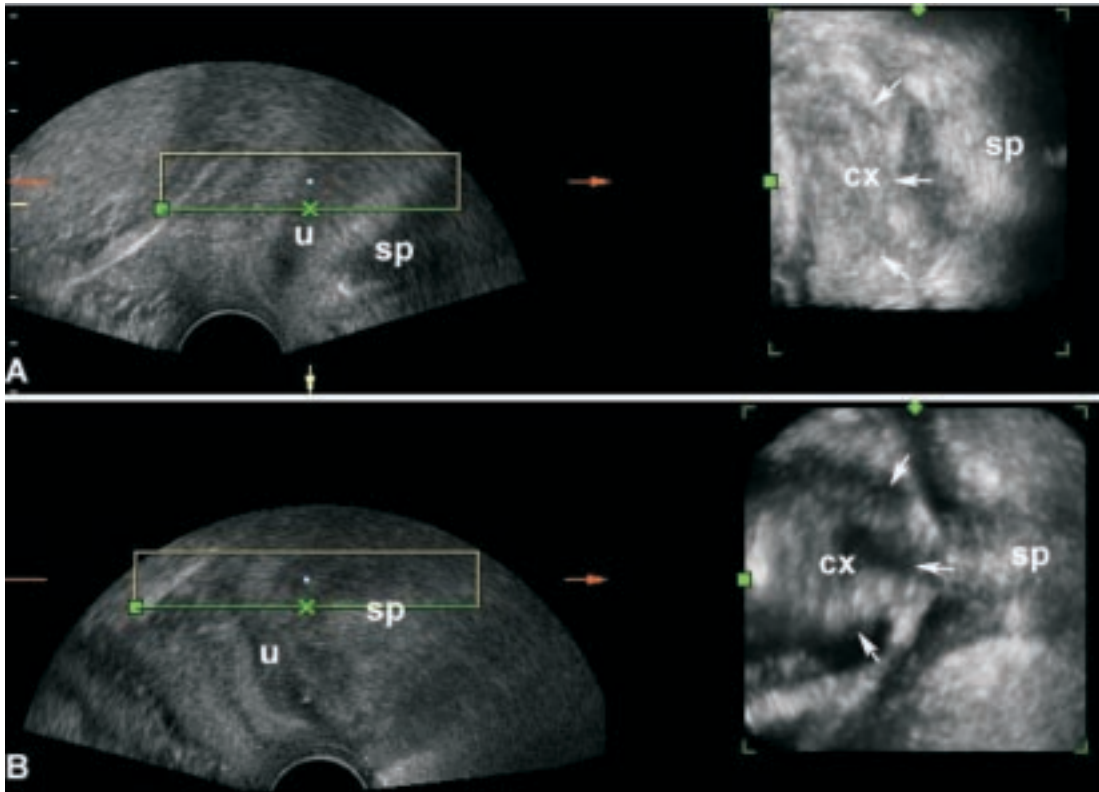


Fig. 4. 3D ultrasound axial views at rest (A) and during stress (B) demonstrating the lower bladder is compressed posteriorly by the cervix (cx, arrows). There is no urine visible between the cervix and pubic symphysis (sp). The inferior borders of the boxes marked × indicate the level of the section lines in the sagittal views selected for the plane of axial views. (u = urethra)

of 6.7 cm). The cervix was pushed against the pubic symphysis (Fig. 1). The demarcation between the urethra, cervix, and pubic symphysis was obscure. Three-dimensional (3D) transvaginal ultrasound allowed clear discrimination of these structures. During a Valsalva maneuver, there was no limitation of urethral mobility. The descent of the bladder neck was the rotational type with urethral mobility of 80 degrees (Figs. 2,3). The cervix, rather than lying adjacent to the proximal urethra, compressed the lower bladder to the point that it totally overlaid the internal urethral orifice. 3D axial views demonstrated compression of the lower bladder by the cervix without any urine visible in the lower bladder (Fig. 4).

## DIAGNOSIS AND MANAGEMENT

Urinary retention secondary to an impacted gravid uterus is a rare emergency during pregnancy. This condition has been described in all three trimesters but most commonly occurs between the 10th and 16th weeks of gestation [1,2]. Acute urinary retention is initially treated with catheterization, but the cause must be determined to allow definitive treatment. Currently, videocystourethrography is the ideal tool for evaluating voiding dysfunction, simultaneously offering both functional and anatomic assessment of the lower urinary tract. However, there are concerns about radiation exposure during this procedure, especially to the fetus. The cystoscopic findings in women with a retroverted gravid uterus and urinary retention include an elevated trigone, bladder neck, and posterior bladder wall. Urethral obstruction by extrinsic compression from the impacted and enlarging uterus had been postulated as the pathogenesis of urinary retention in this condition. Nevertheless, ultrasonography providing reproducible, non-invasive serial assessments of the dynamic changes of the maternal lower urinary tract and fetus during pregnancy reveals different pathophysio-

logy responsible for voiding dysfunction and acute urinary retention in a retroverted gravid uterus. In our patient, the gravid uterus was confined by the sacrum below and promontory above, which therefore lifted and displaced the cervix anteriorly and superiorly. The cervix, rather than lying adjacent to the proximal urethra, compressed the lower bladder to the point that it totally overlaid the internal urethral orifice. The urethra itself was not compressed or attenuated. Urine in the lower bladder was forced into the upper bladder, which expanded and extended superiorly so that it crossed the uterus. Pushing the cervix inwards with a vaginal probe relieved the compression so that the lower bladder refilled with urine. At that point, the distinction between the urethra and bladder became clear. During the Valsalva maneuver, there was no limitation of urethral mobility. However, as abdominal straining increased during the maneuver, the lower bladder was compressed even more [3].

The following prophylactic methods were suggested to prevent recurrence of acute urinary retention: limiting fluid intake before sleep, changing from the supine to the prone position for a few minutes before getting up to go to the toilet, leaning forward when initiating voiding, avoiding any Valsalva maneuver, and using a Cred'e maneuver to initiate or maintain voiding [3].

## REFERENCES

1. Silva PD, Berberich W: Retroverted impacted gravid uterus with acute urinary retention: Report of two cases a review of the literature. *Obstet Gynecol* 1986; **68**:121-123.
2. Yohannes P, Schaefer J: Urinary retention during the second trimester of pregnancy: A rare cause. *Urology* 2002; **59**:946.
3. Yang JM, Huang WC: Sonographic findings in acute urinary retention secondary to retroverted gravid uterus: Pathophysiology and preventive measures. *Ultrasound Obstet Gynecol* 2004; **23**:490-495.