

Early diagnosis and successful resolution of incarcerated gravid uterus using transvaginal ultrasound probe

Diagnóstico precoce e resolução bem-sucedida de útero gravídico encarcerado com recurso a sonda ecográfica transvaginal

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Abstract

Uterine incarceration (IGU) is a rare but potentially serious complication in early pregnancy, often leading to bladder dysfunction and adverse maternal-fetal outcomes if not promptly corrected. Diagnosis is challenging due to nonspecific symptoms, with acute urinary retention as a hallmark sign. Ultrasound, particularly transvaginal ultrasound (TVUS), can play a pivotal role in diagnosis. We report a 33-year-old primigravida at 9 weeks with urinary retention and TVUS-confirmed IGU. Initial manual reduction failed, but a TVUS-guided technique successfully restored uterine position and resolved symptoms. This case highlights TVUS as a safe, minimally invasive, and effective tool for both diagnosis and management.

Keywords: Uterine incarceration; Pregnancy complications; Vaginal ultrasonography; Manual reduction; Urinary retention.

Resumo

O encarceramento uterino (IGU) constitui uma complicação rara na gravidez, potencialmente grave, associada a disfunção vesical e desfechos maternos-fetais adversos quando não corrigido atempadamente. O diagnóstico é desafiante pela inespecificidade clínica, sendo a retenção urinária aguda o sinal mais característico. A ecografia, nomeadamente por via transvaginal (TVUS) pode ser primordial no diagnóstico. Relata-se o caso de uma primigesta com diagnóstico de IGU realizado por TVUS às 9 semanas de gestação. Após uma tentativa infrutífera de redução manual, a aplicação de uma técnica inovadora guiada por TVUS restaurou a anatomia uterina, evidenciando a dupla utilidade deste exame – diagnóstica e terapêutica – no IGU.

Palavras-chave: Útero gravídico encarcerado; Complicações da gravidez; Ecografia transvaginal; Redução manual; Retenção urinária.

INTRODUCTION

IGU is a rare but potentially serious obstetric complication in which a retroverted gravid uterus becomes trapped between the sacral promontory and the

pubic symphysis, displacing the cervix anteriorly and superiorly and often causing bladder compression, obstructive uropathy, and – if uncorrected – adverse maternal and fetal outcomes¹. While uterine retroversion is common in early gestation and usually resolves spontaneously by 16 weeks, IGU occurs in ~1/3,000 pregnancies. Recognized risk factors (e.g., retroverted uterus, pelvic adhesions, fibroids) are absent in up to 50% of cases². Nevertheless, risk profile appears not to

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influence management or obstetric outcomes, supporting conservative first-line measures³.

Presentation is often nonspecific, delaying diagnosis. Acute urinary retention is a hallmark sign⁴. Suspicion should rise when examination shows an inaccessible, anteriorly displaced cervix with a tense posterior vaginal bulge⁴. Imaging is central to diagnosis. No gold standard exists; ultrasound (US) and magnetic resonance imaging are valuable and complementary⁴. The key finding is a markedly elongated, anteriorly displaced cervix; transabdominal US helps assess cervical position, whereas TVUS better delineates severe retroversion, typically showing the cervix anterior to the fundus within the cul-de-sac².

Management is stepwise, guided by gestational age, symptom severity, and response to initial measures⁵. Manual reduction – applying steady digital pressure to the uterine fundus via the posterior fornix – is most frequently reported⁵. Preparatory steps include complete bladder emptying, followed by optimal patient positioning (dorsal lithotomy, Trendelenburg, or lateral decubitus)⁵. Other manoeuvres have also been described^{4,5}. In 2025, a TVUS-guided reduction was described in which after bladder evacuation, the probe is introduced into the posterior fornix to apply gentle but sustained superior-anterior pressure – sometimes with subtle lateral motion – to the uterine fundus under direct visualization⁵. Successful reduction is confirmed by the *bowel sliding sign*, indicating posterior cul-de-sac bowel displacement, and corroborated by transabdominal US⁵. Repositioning after 20 weeks is usually discouraged due to low success and higher risk of preterm labor, with persistent cases often requiring caesarean delivery⁵.

CASE REPORT

A 33-year-old primigravida at 9 weeks' gestation, with no relevant gynecologic history, presented with one week of pelvic discomfort and worsening urinary urgency with minimal urine output. Pelvic examination revealed an anteriorly displaced, closed cervix and a tense posterior vaginal bulge. TVUS showed a retroverted uterus containing a viable intrauterine pregnancy (CRL 30 mm), with marked anterior displacement

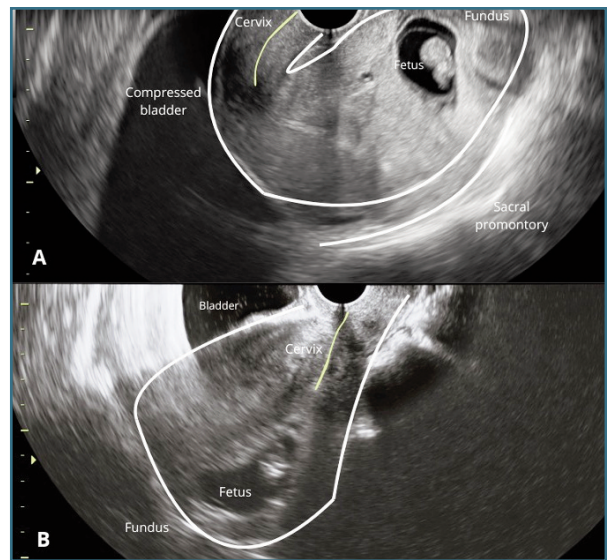


FIGURE 1. Sonographic findings in early gestational uterine incarceration (IGU) and after successful reduction. (A) Transvaginal ultrasound showing a retroverted gravid uterus with a markedly elongated, anteriorly displaced cervix (yellow line) compressing the bladder, and the uterine fundus trapped against the sacral promontory; a viable intrauterine pregnancy is present. (B) Post-ultrasound-guided manual reduction demonstrating restoration of uterine anteversion, normal cervical position, and bladder decompression.

ment and elongation of the cervix causing bladder distension – findings consistent with an IGU (Figure 1A); urinalysis excluded urinary tract infection. After bladder evacuation (500 mL drained), an initial manual reduction attempt in the Gaskin position was unsuccessful. A second, single attempt in the dorsal lithotomy position, using the TVUS-guided technique⁴, achieved successful repositioning, confirmed by the *bowel sliding sign* (Figure 2). Post-reduction ultrasound demonstrated restoration of uterine anteversion and bladder decompression (Figure 1B). The procedure was well tolerated without analgesia; symptoms resolved, and the pregnancy has remained uncomplicated. Written consent for publication was obtained from the patient.

CONCLUSION

Given its safety, minimal invasiveness, and capacity for

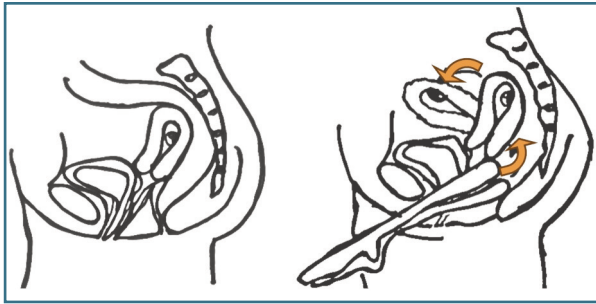


FIGURE 2. Schematic representation of transvaginal ultrasound-guided manual reduction of early gestational uterine incarceration (IGU). From left to right: Retroverted gravid uterus with the fundus trapped in the posterior cul-de-sac and the cervix displaced anteriorly, compressing the bladder; reduction manoeuvre performed with the ultrasound probe positioned in the posterior fornix, applying gentle superior-anterior pressure with subtle lateral motion (arrows) to the uterine fundus under direct sonographic visualization, facilitating restoration of uterine anteversion.

immediate confirmation of success, TVUS-guided reduction should be considered early as an effective option in early gestational IGU.

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AUTHORS' CONTRIBUTIONS

Isabel Saavedra Rocha conducted the literature search, collected the data, drafted the manuscript, and is the guarantor and corresponding author. Carla Leitão and Joana Bernardoco provided critical revisions for important intellectual content and assisted with editing and proofreading of the manuscript.

CONFLICTS OF INTEREST

There are no conflicts of interest, and informed consent was obtained.

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