

A 29-year-old Female with Nonpuerperal Vaginal Bleeding – Complete Uterine Inversion

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SECTION 2 – ANSWER

Case

A 29-year-old female patient presented with painless vaginal bleeding for 12 days. She was G2P2A0 with the youngest child, 6 years old. There was no history of difficult vaginal delivery during any of her pregnancies. A brown and white voluminous vaginal mass was felt with a small amount of vaginal bleeding on per-vaginal examination. Transabdominal ultrasound of the patient was performed, which is shown in Figure 1 and Video 1. What is your interpretation?

Interpretation

A transabdominal ultrasound in the longitudinal plane showed an upside-down uterine fundus (fallen fundus sign) and a “bull’s eye or target-like” appearance in the transverse plane, suggesting the diagnosis of complete uterine inversion [Figure 1]. Normally, the uterus should appear as a pear-shaped structure in the longitudinal section and oval-shaped in the transverse section. The fundus should be convex cranially in the normal uterus. As the patient was claustrophobic, magnetic resonance imaging (MRI) could not be performed. A hysterectomy was performed. There was no evidence of any leiomyoma or any other mass lesion in the uterus, which could have led to uterine inversion.

DISCUSSION

Uterine inversion is the collapse of the uterine fundus into the uterine cavity, which can be classified as incomplete (the uterine fundus descends inferiorly but not through the cervix), complete (the fundus and uterine body extend through the cervix), and total (the vagina is also inverted). It is a rare condition and can be further classified based on

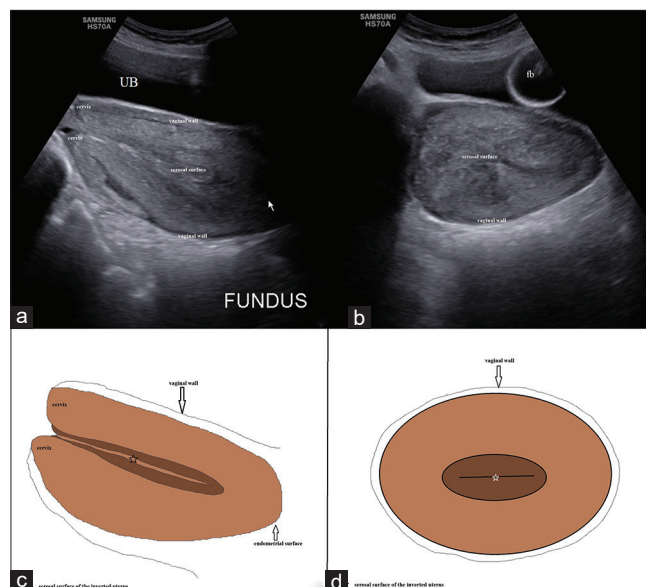


Figure 1: Transabdominal ultrasound image with full urinary bladder (UB) and Foley's bulb (fb) *in situ* in longitudinal (a) and transverse (b) planes showing upside-down uterine fundus (fallen fundus sign) in longitudinal plane and a bull's eye or target-like appearance in the transverse plane. Line diagram of the fallen fundus sign and bull's eye/target appearance are shown in (c and d)

the etiology – puerperal and nonpuerperal. Puerperal uterine inversion is reported to occur in 1/2000 to 30,000 deliveries and is considered a serious postpartum complication that can be fatal.^[1,2] Nonpuerperal uterine inversion is even rarer. Gomez-Lobo *et al.* reported 150 cases of nonpuerperal

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uterine inversions from 1887 to 2006.^[3] Our case was a nonpuerperal complete uterine inversion with no apparent cause identified, i.e., idiopathic. However, 70%–80% of cases of nonpuerperal inversions are associated with benign or malignant uterine tumors.^[2–6] Raised intra-abdominal pressure due to coughing, sneezing, and straining can further aggravate the inversion.

The diagnosis of nonpuerperal inversion is complicated based on physical findings alone, with chronic ones presenting with vague abdominal discomfort and bleeding per-vaginam. Other clinical findings described in the literature are vaginal mass, urinary dysfunction, and anemia. A vaginal mass can be palpated on per-vaginal examination, with a nonpalpable uterine fundus on bimanual pelvic examination.^[1]

Transvaginal ultrasound examination is difficult to perform because of the presence of vaginal mass. Transabdominal ultrasound is generally the first imaging modality for the evaluation of such patients. It is readily available, less expensive, and noninvasive radiological investigation, and it is also fast and accurate in experienced hands. On transabdominal ultrasound, two signs are described: “fallen fundus sign” in longitudinal plane indicating upside-down uterine fundus and “a bull’s eye or target-” like appearance in transverse plane.^[7] Both the signs were present on the ultrasound examination of our patient, so the diagnosis of complete uterine inversion was quickly made.

MRI is the gold standard imaging modality of choice for confirmation of the diagnosis of uterine inversion. On sagittal and coronal MRI images, a “U-shaped” uterine cavity can be observed with round ligaments and Fallopian tubes bulging centrally out of the top of the uterus; on axial images, a bull’s eye or target sign can be seen similar to ultrasound. MRI can also characterize the mass responsible for inversion in some cases. The majority of cases require hysterectomy.^[8,9]

As ultrasound is the first imaging modality, knowledge of typical ultrasound appearance is very important for early diagnosis and preventing any fatal complication.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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A Pediatric Right Lower Quadrant Pain Case

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SECTION 2 – ANSWER

CASE

A 4-year-old male patient was admitted to the emergency department with right lower quadrant pain. On physical examination, there was tenderness and voluntary defense in the right lower quadrant. Rebound tenderness was not observed. Initially, the patient was sent for sonographic examination [Figure 1] and then to the abdominal radiography [Figure 2]. Images of the mentioned examinations are shown.

Interpretation

A 4-year-old male patient was admitted to the emergency department with right lower quadrant pain that started yesterday evening. The anamnesis was nonspecific. On physical examination, there was tenderness and voluntary defense in the right lower quadrant, but rebound tenderness was not observed. The patient was sent to the radiology department for ultrasonographic examination with a clinical diagnosis of acute appendicitis. Ultrasonography of the right lower quadrant revealed [Figure 1] a thin linear echogenicity causing reverberation artifact inside the bowel lumen. It was impressed as a metallic foreign body that probably a pin. The finding on ultrasound was confirmed with plain radiography [Figure 2] which showed a metallic shadow (pin) in the right side pelvic region.

DISCUSSION

Right lower quadrant pain is one of the most common causes of emergency surgery in the pediatric population. The first surgical pathology that is considered in the etiology and should be ruled out is acute appendicitis.^[1] Differential diagnosis should include; mesenteric adenitis, gastroenteritis, invagination, Meckel's diverticulum, urinary system infections, urolithiasis,

malignancies, and female gender-specific pathologies such as pelvic inflammatory disease, ovarian cyst, ovarian torsion. In addition, although it is less common, foreign body should be kept in mind as in our case.^[2] Anamnesis and physical examination may be insufficient in cases of pediatric foreign body ingestion. Therefore, imaging is used in case of clinical suspicion.^[3] The first imaging method is thoracic and abdominal radiographs. However, conventional radiographs may be insufficient to determine the exact location of the foreign body. In addition, some objects such as plastic and food pieces are not radiopaque and can be overlooked in radiographs.^[4] Therefore, the combination of conventional radiographs and ultrasonography increases diagnostic accuracy.^[5] In our case, 4 years old patient, who presented with right lower quadrant pain, was sent to the radiology department with a clinical diagnosis of acute appendicitis. A pin



Figure 1: Oblique gray scale ultrasound of right lower quadrant. There is a linear echogenic foreign body causing reverberation artefact in the bowel lumen. No sign of inflammation in the surrounding fat and no sign of perforation are seen

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