

# Imperforate hymen with hematocolpometra: A new diagnostic approach using 2D and 3D translabial ultrasonography

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## Abstract

Imperforate hymen is a urogenital tract anomaly that represents the most frequent congenital malformation of the female genital tract. We present a case of a young girl who was referred to our pediatric and adolescent gynecological department with a transabdominal ultrasound showing a suspicious pelvic mass. Using translabial ultrasonography the diagnosis of imperforate hymen was confirmed. Translabial ultrasound scan

provides an excellent alternative to the transvaginal technique where vaginal access is impossible. Furthermore, allows differentiating imperforate hymen from low transverse vaginal septum, thus helping clinicians in tailoring management options.

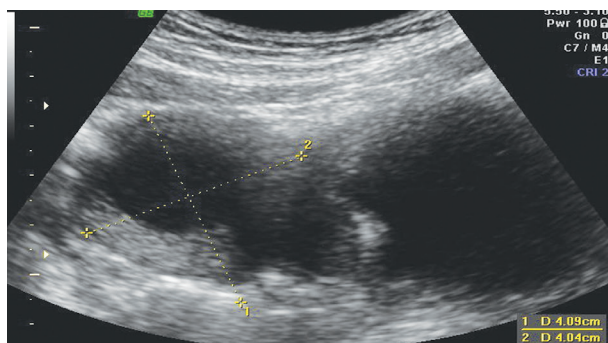
**Key words:** Abdominal pain; hematocolpometra; imperforate hymen; pelvic mass; translabial ultrasonography

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Imperforate hymen is the most common congenital malformation of the female genital tract. It represents a sporadic condition with an incidence that ranges between 0,014 and 0.1% at term<sup>1</sup>. Diagnosis of imperforate hymen is usually based on the characteristic symptoms of cyclical pain, primary amenorrhea and palpable pelvic mass combined with clinical examination and imaging studies. Transabdominal ultrasonography (USG) is the commonest imaging method used for the diagnosis of the anomaly<sup>2-5</sup>. However, there are cases that can be misleading<sup>6</sup>. In addition, transabdominal USG cannot always identify other coexisting congenital anomalies of the lower genital tract. Thus, other imaging modalities are commonly used in order to confirm the diagnosis<sup>2-4</sup>.

## Case report

An 11 years old girl was referred to our pediatric and adolescent gynecology department with a provisional diagnosis of an ovarian tumor upon a finding of a pelvic mass on transabdominal USG (Figure 1). She was complaining of pelvic distension, cyclic abdominal pain, disturbance of the defecation and urinary hesitancy. Symptoms had started 6 months before, but significantly worsened over the last seven days. No clinical examination was attempted due to severe pain and discomfort. Her past medical history was unremarkable, and no medications were assumed. She also denied trauma, fall or sexual abuse. Although breast development, axillary and pubic hairs were at Tanner stage 3, she had not experienced menarche.



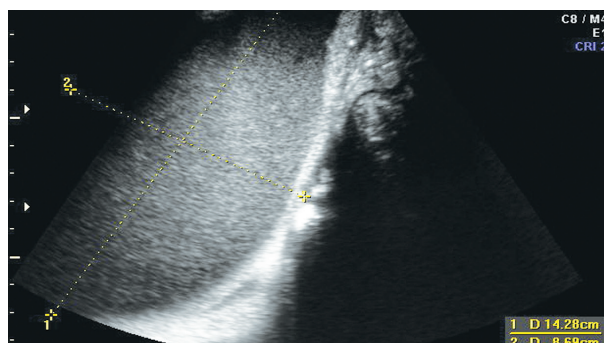
**Figure 1:** Transabdominal evaluation of hematocolpometra

Examination of the perineum revealed an imperforate hymen, which was vascular, bluish, and was completely obstructing the vagina, while on abdominal examination a palpable mass was felt. A pelvic mass of 142 x 87mm that was occupying entirely the vagina was revealed (Figure 2). The mass was filled with hemorrhagic fluid. By using the least pressure possible to the transducer fluid movement was observed. This technique allows excluding the presence of a lower vaginal septum that may present with similar clinical symptoms. In addition, sagittal 3D translabial USG confirmed the absence of a lower transverse or longitudinal fibromuscular septum (Figure 3).

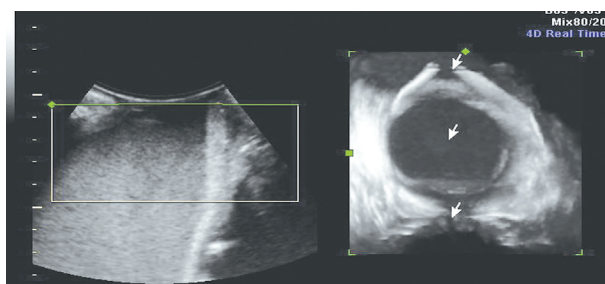
The patient was treated with stellate incisions through the hymenal membrane and excision of the individual segments, under general anesthesia. Finger pressure to the vaginal canal from the rectum accomplished drainage of accumulated menses. Approximately 500cc of dark, red blood was drained. Postoperative period was uneventful and the patient was discharged the day after. On 12 weeks postoperative follow - up she reported a regular menstrual pattern without any difficulties in urination or defecation.

## Discussion

In the embryological period, the lateral portion of the hymen originates from a fold of the urogenital sinus. The posterior part originates from the cells of the urogenital sinus, externally, and from Müller's duct, internally. Usually, at the 8th week of gestation, it partially ruptures in the inferior part of Müller's duct, remaining as a fold of mucous membrane around the



**Figure 2:** 2D translabial sonography imaging hematocolpos and absence of a lower vaginal septum



**Figure 3:** 3D translabial sonography at the level of the introitus showing vagina filled with hemorrhagic fluid (middle arrow). Upper arrow indicates the level of the symphysis pubis and lower arrow shows the anal sphincter

entrance of the vagina. Failure of these events results in persistence of the septum<sup>7</sup>.

Imperforate hymen is rarely diagnosed in the neonatal period, and most cases are presented to the gynecologist between the age of 11 and 15. Cyclical pelvic pain 2.5 to 4 years after thelarche, primary amenorrhea and a palpable pelvic mass represent the characteristic clinical symptomatology<sup>8</sup>. Urological problems related to external compression of the bladder and ureter are also very common. Urinary hesitancy and dysuria are detected in as many as 58% of patients with hematocolpos<sup>9</sup>.

Although clinical examination is in most cases sufficient for the diagnosis of imperforate hymen, imaging studies are also necessary to confirm the presence of hematocolpos or hematometra. Transabdominal USG is the commonest method used for that purpose<sup>2-5</sup>. However, in some occasions findings can be misinterpreted as a suspicious pelvic mass and provoke se-

vere anxiety to a young girl and her family. In addition, to further clarify spurious findings of transabdominal USG and rule out possible associated congenital anomalies, other imaging or invasive modalities have been used such as CT scan, MRI scan and videolaparoscopy<sup>2-4</sup>. All of them are very accurate in diagnosis of hematocolpos and hematometra, however, they are not considered to be cost-effective<sup>2-4</sup>.

Transrectal USG has also been reported as a method of evaluating pelvic anatomy in young girls with no sexual activity<sup>5</sup>. Although, it has been quite accurate in diagnosis of hematocolpos, it is not considered to be an acceptable method for this age group, due to possible psychological implications.

According to our knowledge, this is the first case where translabial USG has been used for the diagnosis of imperforate hymen causing hematocolpometra. Translabial USG provides an excellent alternative to transvaginal technique, in cases where vaginal access is not amenable. The method is both efficient and feasible and has become an individual technique for examining the uterus, adnexa, vagina and other non gynaecologic structures in the pelvis, as it provides a better spatial resolution than transabdominal USG<sup>10</sup>. Although transabdominal scanning is useful to determine if hematocolpos or hematocolpometra is present, this method does not allow visualization of a caudally placed obstructive septum. In contrast, translabial USG due to its proximity to the pelvic organs and especially to the vagina allows a dynamic examination of these structures<sup>10</sup>. This technique is suitable for differentiating imperforate hymen from low transverse vaginal septum by visualizing the movement of the hemorrhagic fluid in contact with the hymen. Accurate preoperative diagnosis is important for optimal planning of treatment. A caudal vaginal septum requires quantification of the obstructive segment followed by a carefully planned vaginal reconstructive procedure.

The possibility of hematocolpometra should always be suspected when evaluating adolescent girls with a pelvic mass, low intermittent abdominal pain, and urinary difficulties. Ultrasound imaging has an estab-

lished role in the assessment of these symptoms. We propose a different, non invasive, but accurate approach of evaluation. Translabial ultrasound imaging may become a diagnostic standard with imperforate hymen presenting to pediatric and adolescent gynecologists due to ease of use, availability of equipment and patient's acceptance. ■

### Conflict of interest

All authors declare no conflict of interest.

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