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Case Report

Ultrasonographic examination and resolution of a pronounced hematocolpometra linked to an imperforate hymen: A detailed case study [☆]

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ABSTRACT

An imperforate hymen is a rare malformation present at birth; however, in most cases, diagnosis is missed until adolescence, when hematocolpometra and its symptoms develop. At this stage, every further delay in diagnosis and treatment will negatively affect the quality of life of young females. It may also be one of the causes of endometriosis and its consequences, such as subfertility. Sonography of the pelvis and physical examination are the diagnostic modalities of choice for diagnosing hematocolpometra and imperforate hymen.

We present a case of a 14-year-old patient admitted to the obstetrics and gynecology clinic with complaints of lower abdominal pain and urinary retention following dysuria. The patient was previously examined by a family doctor who misidentified the issue and treated it as a urinary infection. After the symptoms worsened, the patient was referred to a gynecologist. An ultrasound examination showed a distended vagina and uterus, suggesting hematocolpometra, and after further inspection, it was revealed to be caused by an imperforate hymen. A hymenectomy was performed, and about 900 mL of blood was drained. Symptoms and complaints ceased, and the patient was discharged the next day.

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Introduction

An imperforate hymen is a congenital anomaly of the female genital system characterized by the complete obstruction of

the distal part of the vagina caused by a failure of the hymenal membrane to perforate during fetal development [1]. It is a rare pathology with an incidence estimated at 1/2000 female births [2].

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Clinical signs of an imperforate hymen can appear in early childhood or during puberty. In early childhood, clinical signs appear if the patient develops mucocolpometra due to the accumulation of mucus in the vagina and uterus.

At this age, symptoms are quite discrete and nonspecific in the form of lower abdominal pain; thus, early childhood diagnosis is often missed. During puberty, with the onset of menarche and following cycles, the blood accumulates behind the imperforate membrane into the vagina and the uterus leading to hematocolpometra. Clinical signs become increasingly expressed in low abdominal pain, dysuria, urinary retention, and abdominal distention. Surgical intervention is necessary to drain the accumulated blood, resolve the hematocolpometra, and treat the pathology indefinitely.

Case presentation

A 14-year-old girl presented to the obstetrics and gynecology clinic with a diagnosis of a pelvic tumor and complaints of urinary retention. The patient did a checkup at the Family Medicine Center 3 days prior due to lower abdominal pain and dysuria, for which she was misdiagnosed with a urinary infection and was prescribed analgetic, spasmolytics, and a urine culture analysis was requested. Despite therapy, the symptoms had worsened, so the parents sent the girl to consult an abdominal surgeon. The abdominal surgeon ruled out appendicitis and other abdominal causes of an acute abdomen and referred the case to the obstetrics and gynecology clinic. On arrival, the patient's main complaints were severe low abdominal pain and dysuria. Careful history-taking revealed that the patient had experienced cyclic abdominal pain over the last 6 months without menarche. On physical examination, the female patient was 157 cm in height with normal development of secondary sexual characteristics. Palpation of the abdomen revealed it was firm and hypersensitive. Her vital signs and laboratory analysis, which included blood count number, C-reactive protein, and sedimentation rate, were unremarkable. The ultrasound examination of the lower abdomen and pelvis revealed a distended fluid-filled vagina. By sonography, it appeared as a retro vesical hypoechoic mass with dimensions of 13 × 8 cm, compressing the bladder (Fig. 1).

Anterosuperior to the vagina, the uterus also appeared enlarged, with the endometrial cavity being filled with content suggesting hematocolpometra (Fig. 2).

Upon inspection of the external genitalia, the hymenal membrane was closed entirely, convex, and bulging. Its livid color was due to the accumulated content behind the hymenal membrane (Fig. 3). The diagnosis of an imperforate hymen associated with hematocolpometra was established. The patient was placed under total intravenous short anesthesia and underwent a cruciate hymenectomy. Approximately 900 mL of accumulated blood was drained (Fig. 4).

The membrane edges were sutured with 4 interrupted absorbable sutures (Polyglactin 3/0) to prevent refusion and closure. Prophylactic antibiotics and analgesics were administered.

Abdominal pain and urinary retention were resolved after the hymenectomy, and the patient was discharged the next day.

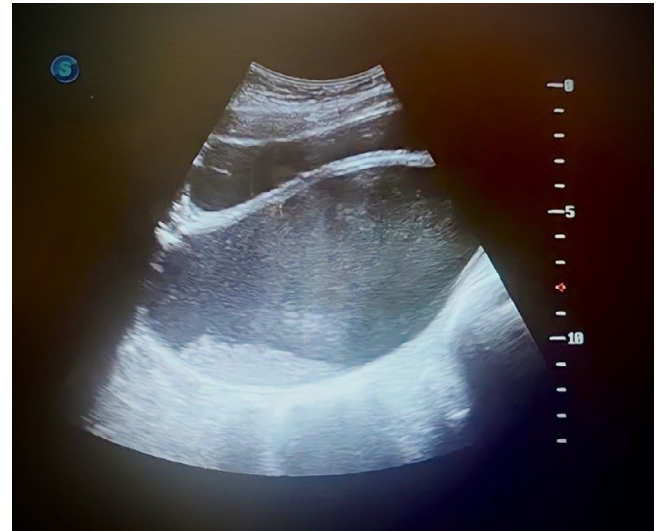


Fig. 1 – An ultrasonic view of hematocolpos. Transabdominal ultrasonographic view showing the markedly distended vagina measuring 13 × 8 cm.

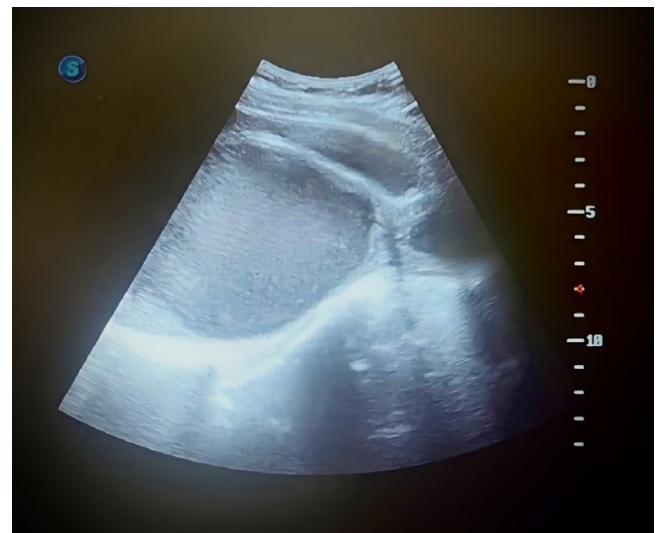


Fig. 2 – Ultrasound imaging of hematocolpometra. The figure depicts that the vagina and uterus are filled with fluid, suggesting a diagnosis of hematocolpometra.

Discussion

The hymen is a thin fold of mucous membrane located at the entrance of the vaginal opening [3]. This membrane develops early during embryogenesis from the sinovaginal bulb and urogenital sinus [4]. At later stages of intrauterine life, usually before birth, the hymen perforates due to the degeneration of the central epithelial cells. This intrauterine spontaneous perforation of the hymenal membrane is critical for the later normal outflow of the mucus and menstrual blood from the

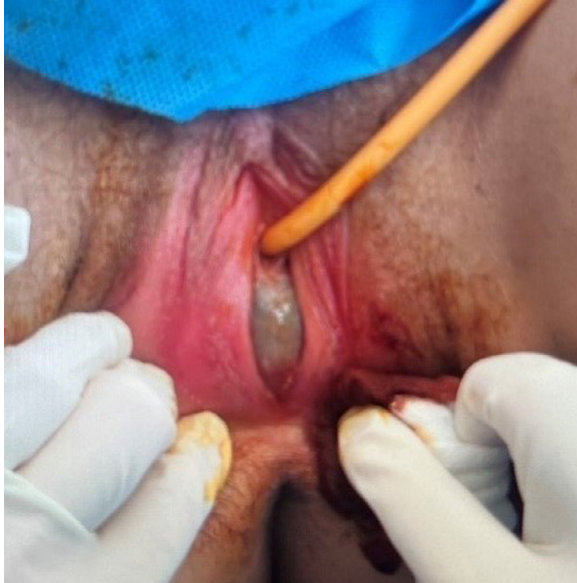


Fig. 3 – Imperforate bulging hymen. The figure provides an exterior view of the hymenal membrane, which is entirely closed, convex, and livid. This is due to the accumulated blood behind the closed membrane, which creates pressure on the membrane, resulting in the features visible during physical examinations.

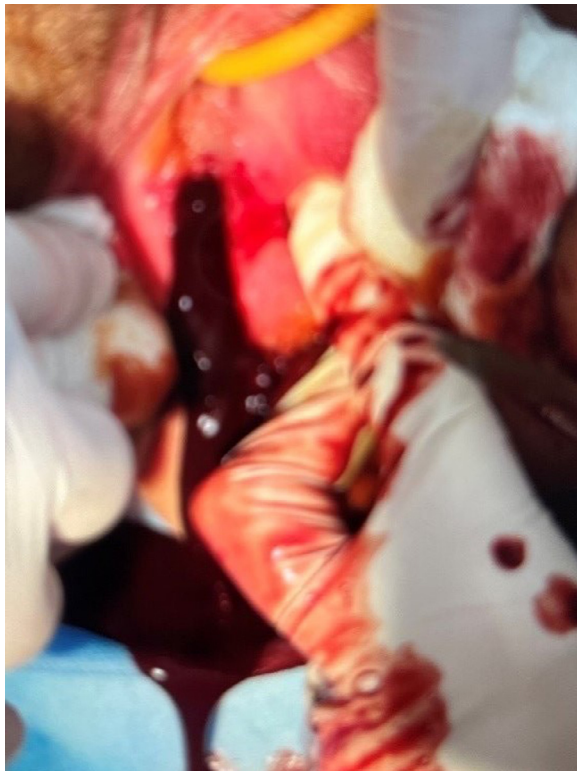


Fig. 4 – Drainage of the blood content after hymenectomy. As evident in the figure, the patient underwent a surgical incision of the hymen, which enabled blood drainage.

uterus and the vagina. In 1 out of 2000 newborns, this spontaneous perforation of the hymen doesn't occur, leading to an obstructive congenital anomaly of the female genital system named hymen imperforate [5].

Based on the ESHRE/ESGE classification of anomalies of the female genital system, the imperforate hymen is categorized in the subgroup U0.C0.V3, which includes various anomalies of the vagina and all their variants. All these anomalies are classified into a single group because they usually present as isolated and have the same clinical manifestation as obstructive anomalies [6]. An imperforate hymen occurs mainly as a sporadic anomaly, although there have been reported cases of familial occurrence [7,8].

The clinical manifestation of this anomaly, such as abdominal pain, back pain, and urinary retention, is dependent on the accumulation of content in the vagina and uterus, and it can occur in early childhood when mucus accumulates in the vagina and uterus (mucocolpometra) or during adolescence when menstrual blood accumulates (hematocolpometra). Diagnosing a hematocolpometra caused by an imperforate hymen is not difficult; it can be done simply by physical examination with an inspection and an ultrasound without needing other advanced methods such as magnetic resonance imaging. Despite this, cases of delayed diagnosis of this pathology are still being reported [9]. Insufficient examination of the newborn and insufficient consultation with a gynecologist when symptoms occur in early adolescence are the main factors contributing to this delay.

Imperforate hymen treatment consists of a surgical procedure known as a hymenectomy. The obstruction is cleared, the content is drained, the symptoms are treated, and possible complications are avoided.

Conclusion

Hematocolpometra associated with hymen imperforate is a rare pathology that often is delayed in diagnosis and can lead to complications such as endometriosis and subfertility. An early diagnosis is essential to avoid such complications. We suggest a consultation with a gynecologist and an ultrasonographic examination on all amenorrheic adolescents with cyclic abdominal pain.

Patient consent

Written consent was obtained from the patient's legal guardian for the publication of this case and any accompanying images. A copy of the consent can be available upon request of the Editor-in-Chief of this journal.

Authors' contribution

Concept: V.A.I., Design: V.A.I., H.L., L.I., Data Collection: V.A.I., H.L. Analysis: V.A.I., H.L., L.I., Literature Search: V.A.I., L.I., Writing: V.A.I., H.L., L.I. All the authors have read and approved the final version of the manuscript.

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