

Case Report

Imperforate Hymen Presenting with Obstructive Urological and Gastrointestinal Symptoms in An Adolescent Girl: A Case Report

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Abstract

Introduction: Imperforate hymen is a rare congenital anomaly of the female genital tract caused by failure of hymenal membrane canalization during embryologic development. Although present at birth, it typically remains asymptomatic until adolescence, when obstruction of menstrual outflow leads to the accumulation of blood within the vagina (hematocolpos) or uterus (hematometra). In this case, the patient uniquely presented with urogenital obstruction symptoms, which can mimic primary urinary tract disorders and contribute to missed or delayed diagnosis. This highlights the importance of considering genital outflow tract anomalies in an adolescent female presenting with urinary complaints.

Case presentation: A 13-year-old girl presented with cyclical lower abdominal pain, difficulty in micturition, and constipation for three months, without prior menarche. The physical examination showed mild abdominal distension with suprapubic tenderness. The inspection of the external genitalia showed a bulging hymenal membrane without an opening and without bluish discoloration, and pelvic ultrasonography showed hematometrocolpos. The patient underwent a hymenotomy, during which approximately 500 mL of retained menstrual blood was drained. This intervention resulted in complete resolution of symptoms, and the patient was subsequently discharged in stable condition.

Conclusion: Careful genital examination is essential in adolescent female with primary amenorrhea and cyclical abdominal pain. Prompt diagnosis and surgical management result in excellent outcomes and prevent long-term morbidity.

Keywords: Constipation; hematocolpos; imperforate hymen; primary amenorrhea; urinary retention

Himen Imperforata dengan Gejala Obstruktif Urologi dan Gastrointestinal Pada Remaja Putri: Laporan Kasus

Abstrak

Pendahuluan: Himen imperforate merupakan kelainan kongenital langka pada traktus genitalia perempuan yang disebabkan oleh kegagalan kanalisasi membran himen selama perkembangan embriologis. Meskipun sudah ada sejak lahir, kondisi ini sering kali tetap asimtomatik hingga masa remaja, ketika obstruksi aliran menstruasi menyebabkan hematokolpos atau hematometra. Pada kasus ini, pasien secara khas datang dengan gejala obstruksi urogenital yang dapat menyerupai gangguan saluran kemih primer sehingga berpotensi menyebabkan diagnosis terlewat atau terlambat. Hal ini menekankan pentingnya mempertimbangkan kelainan obstruksi traktus genitalia pada remaja perempuan dengan keluhan urinaria.

Presentasi Kasus: Seorang anak perempuan usia 13 tahun datang dengan nyeri perut bawah siklik, sulit berkemih, dan konstipasi selama tiga bulan tanpa riwayat menarke. Pemeriksaan fisik menunjukkan distensi abdomen ringan dengan nyeri tekan suprapubik. Inspeksi genitalia eksterna tampak membran himen menonjol tanpa lubang dan tanpa perubahan warna kebiruan. Ultrasonografi pelvis menunjukkan hematometrokolpos. Pasien menjalani himenektomi dengan drainase ± 500 mL darah menstruasi yang tertahan. Gejala menghilang sepenuhnya dan pasien dipulangkan dalam kondisi stabil.

Kesimpulan: Pemeriksaan genital yang teliti penting pada remaja dengan amenore primer dan nyeri perut siklik. Diagnosis dan tatalaksana dini memberikan hasil yang sangat baik.

Kata kunci: Amenorrhea; hematocolpos; himen imperforate; konstipasi; retensi urin

Introduction

Imperforate hymen is a rare congenital anomaly of the female genital tract caused by failure of canalization of the hymenal membrane during embryological development. Embryologically, the hymen originates from the urogenital sinus, and incomplete degeneration of the central epithelial cells results in a persistent membrane completely obstructing the vaginal introitus. This anomaly is typically isolated and not associated with Müllerian duct abnormalities. Although an imperforate hymen is present at birth, it is frequently asymptomatic during childhood and often remains undiagnosed until adolescence, when obstruction of menstrual outflow following menarche leads to the accumulation of blood within the vagina and uterus.¹⁻³

The reported incidence of imperforate hymen ranges from approximately 0.05% to 0.1% in the general female population.^{2,4} Clinical presentation most commonly occurs at puberty and is characterized by primary amenorrhea accompanied by cyclical lower abdominal or pelvic pain. Compression of adjacent pelvic organs by retained menstrual blood may result in urinary retention, difficulty with micturition, constipation, or lower back pain.⁵ In more advanced cases, prolonged obstruction can lead to hematocolpos, hematometra, or hematometrocolpos, and delayed diagnosis has been associated with complications such as urinary tract obstruction, infection, endometriosis, and potential long-term reproductive morbidity.

Diagnosis is primarily clinical, based on inspection of a bulging hymenal membrane, often described as bluish discoloration, and supported by pelvic ultrasonography showing hematometrocolpos. However, the absence of typical bluish discoloration, as observed in this case, may obscure the diagnosis. Although management with hymenectomy or hymenotomy is straightforward and

generally associated with excellent outcomes, the condition is frequently misdiagnosed, as adolescents often present with predominantly urinary or gastrointestinal obstructive symptoms.^{1,5,6}

This case highlights a unique presentation with dominant urological and gastrointestinal obstructive symptoms in the absence of classical bluish hymenal discoloration, which may lead to diagnostic delay or misdiagnosis. It underscores the importance of maintaining a broad differential diagnosis and performing a simple genital examination in adolescent female presenting with primary amenorrhea and cyclical abdominal pain to avoid delayed diagnosis and prevent unnecessary morbidity.

Case Presentation

A 13-year-old girl was admitted to the Department of Obstetrics and Gynecology with chief complaints of cyclical lower abdominal pain, difficulty in micturition, and constipation for the past three months. The patient had not yet experienced menarche and exhibited normal secondary sexual characteristics appropriate for age. There was progressive difficulty in initiating urination, without prior catheterization or specific treatment. In addition, the patient had persistent constipation, although there was no evidence of bowel obstruction requiring intervention. There was no history of previous surgery, underlying medical conditions, or known congenital or familial anomalies. Pubertal development was appropriate for age, with well-developed secondary sexual characteristics (Tanner stage IV breast development and pubic hair growth).

On physical examination, the patient was alert and hemodynamically stable, with blood pressure of 110/70 mmHg, pulse rate of 88 beats/minute, respiratory rate of 18 breaths/minute, and body temperature of 36.7°C. The abdomen was mildly distended with suprapubic tenderness on palpation,

without guarding or rebound tenderness. No palpable abdominal mass was identified. The inspection of the external genitalia showed a bulging hymenal membrane without opening (Figure 1) and notably without bluish discoloration, suggestive of distal vaginal outflow obstruction. Pelvic ultrasonography showed hematometrocolpos, confirming the diagnosis of an imperforate hymen (Figure 2).



Figure 1 External Genital Examination Showing a Bulging Hymenal Membrane without an Opening

The diagnostic approach in this case was primarily clinical, supported by pelvic ultrasonography showing hematometrocolpos. A key diagnostic

challenge was the atypical presentation dominated by urinary and gastrointestinal obstructive symptoms, as well as the absence of bluish discoloration of the hymen, which may lead to misdiagnosis. Differential diagnoses included transverse vaginal septum and other distal genital tract obstructive anomalies. However, MRI was not deemed necessary because the diagnosis was adequately established through physical examination and ultrasonography, and there were no results suggestive of more complex Müllerian anomalies. The evaluation of renal function and urinary tract imaging was also not performed, as there were no signs of upper urinary tract involvement or severe obstruction requiring further assessment.

The patient subsequently underwent hymenotomy (Figure 3). A cruciate incision was made over the bulging hymenal membrane, allowing gradual drainage of approximately 500 mL of retained menstrual blood. Following decompression, the redundant hymenal tissue was carefully excised to prevent re-adhesion and restenosis. The cut edges of the hymenal membrane were then approximated and sutured to the adjacent vaginal mucosa using absorbable sutures to maintain long-term patency of the vaginal introitus. Postoperatively, the patient received analgesics and prophylactic antibiotics. Urinary catheterization was not required because she was able to

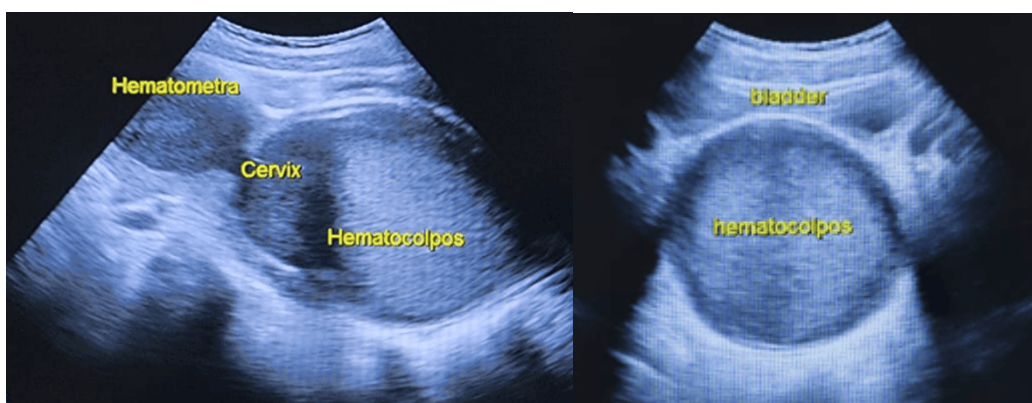


Figure 2 Pelvic Ultrasonography Showed Hematometrocolpos



Figure 3 Intraoperative View of Hymenotomy (Cruciate Incision) along with Drainage of Retained Menstrual Blood

void spontaneously after decompression. The procedure was completed without intraoperative complications.

Postoperatively, genital examination showed a patent hymenal opening with satisfactory healing and no evidence of restenosis. The patient reported complete resolution of urinary and gastrointestinal symptoms. The first menstrual period following surgery occurred normally and was not associated with significant pain, urinary complaints, or bowel symptoms. No postoperative complications, including infection or persistent symptoms, were observed.

Discussion

Imperforate hymen represents the most common obstructive anomaly of the female genital tract, although it remains a rare condition overall. Despite being present at birth, the diagnosis is frequently delayed until adolescence, when menstrual outflow obstruction results in the accumulation of blood within the vagina and uterus.^{3,5,7,8} This explains why most patients, including this case, present with primary amenorrhea accompanied by cyclical lower abdominal pain following pubertal development.

The classical clinical presentation of imperforate hymen includes cyclic pelvic or

lower abdominal pain, primary amenorrhea, and symptoms related to compression of adjacent pelvic organs. This case is particularly instructive due to the predominance of extra-gynecological symptoms. The patient's primary complaints of urinary retention and constipation show the significant mass effect that hematocolpos can exert on adjacent pelvic structures. Mechanistically, a distended vagina may compress the bladder neck or urethra against the pubic symphysis, resulting in obstructive uropathy, or exert posterior pressure on the rectum, thereby mimicking chronic constipation.^{2,8} Literature suggests that approximately 46% of patients with imperforate hymen may present with urological symptoms, although many undergo unnecessary gastrointestinal or urological workups before a simple genital examination is performed.^{2,7-9}

Physical examination plays a crucial role in diagnosis and should not be overlooked. Inspection of the external genitalia may show a bulging hymenal membrane, which may or may not exhibit bluish discoloration depending on the thickness of the membrane and the degree of blood accumulation. The absence of bluish discoloration, as seen in this case, does not exclude the diagnosis. Careful genital examination in adolescent girls presenting with primary amenorrhea is therefore essential.^{4,7,9}

Pelvic ultrasonography is considered the first-line imaging modality for confirming the diagnosis of imperforate hymen. Typical results include a distended vagina and uterus filled with echogenic fluid consistent with retained menstrual blood. In most cases, ultrasound is sufficient for diagnosis, although magnetic resonance imaging may be useful when the diagnosis is uncertain or when associated Müllerian anomalies are suspected. In the present case, ultrasonography was adequate to confirm hematometrocolpos and guide surgical management.^{4,7,9,10}

The definitive management for imperforate hymen is surgical intervention, aimed at relieving the obstruction, facilitating the drainage of sequestered menstrual blood, and restoring normal vaginal patency to prevent recurrence. In this case, a cruciate incision (hymenotomy) was performed, a well-established and reliable technique that ensures rapid and adequate decompression of the hematocolpos. While alternative approaches, such as the interdigitating Y-incision, have been proposed to theoretically minimize the risk of postoperative stenosis and cicatricial contracture by avoiding circular scarring, the cruciate incision remains widely used due to its technical simplicity and efficacy in acute settings. To further reduce the risk of restenosis, the hymenal tissue was carefully excised (hymenotomy), and the vaginal mucosa was approximated to the hymenal ring. As shown in this case, prompt surgical decompression leads to immediate symptom resolution and an excellent long-term prognosis, provided that postoperative monitoring is maintained to ensure patency of the vaginal introitus.^{2,7,9,11–13}

Delayed diagnosis and prolonged obstruction may lead to significant complications, including urinary tract obstruction, infection, retrograde menstruation, endometriosis, and potential impairment of future fertility. Therefore, early recognition and timely surgical management

are critical in preventing long-term morbidity. This case underscores the importance of maintaining a high index of suspicion for imperforate hymen in adolescent girls presenting with primary amenorrhea and cyclical abdominal pain.^{2,5,6,9,14,15}

This report has several limitations. First, the follow-up period was relatively short, limiting assessment of long-term outcomes and the risk of late restenosis. Second, long-term menstrual patterns, reproductive function, and quality-of-life outcomes could not be evaluated. Finally, additional investigations such as renal function testing and long-term urinary tract assessment were not performed because there was no clinical evidence of significant upper urinary tract involvement at presentation. In an adolescent female presenting with primary amenorrhea, cyclical abdominal pain, and urinary or gastrointestinal obstructive symptoms, imperforate hymen should be considered in the differential diagnosis. Early genital examination and prompt surgical management are essential to establish the diagnosis, relieve obstruction, and prevent avoidable complications.

Conflict of Interest

The authors declare no conflict of interest.

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