

Case Report

A Case Report of Primary Amenorrhea Due to Imperforate Hymen with Hematocolpos and Hematometra: Diagnosis and Management

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Abstract

Introduction: Imperforate hymen (IH) is a congenital anomaly of the female genital tract that causes obstruction of vaginal flow. This report aims to describe the clinical presentation of an imperforate hymen and the surgical approach used in the patient.

Case Illustration: A 13-years-old girl presented to the obstetrics and gynecology clinic with the chief complaint of lower abdominal pain. Physical examination of the external genitalia revealed a bulging, bluish hymenal membrane. Pelvic ultrasonography showed findings consistent with hematocolpos and hematometra. A diagnosis of imperforate hymen was established. A hymenotomy was performed using a cruciate incision technique. Postoperative evaluation two weeks later demonstrated good wound healing without complications.

Conclusion: Imperforate hymen should be identified and managed promptly to prevent complications. Hymenotomy using a cruciate incision technique is an effective therapeutic option with favorable clinical outcomes.

Keywords: Primary amenorrhea; imperforate hymen; hematocolpos; hematometra; hymenotomy

Amenore Primer Akibat Himen Imperforata dengan Hematokolpos dan Hematometra: Diagnosis dan Tatalaksana

Abstrak

Pendahuluan: Himen imperforata (HI) merupakan anomali kongenital saluran genitalia wanita yang menyebabkan obstruksi saluran vagina. Laporan ini bertujuan untuk mendeskripsikan himen imperforata dan pendekatan pembedahan pada pasien.

Ilustrasi Kasus: Seorang perempuan usia 13 tahun datang ke poliklinik dengan keluhan utama nyeri perut bawah. Inspeksi genitalia eksterna menunjukkan himen menonjol berwarna kebiruan, dan gambaran hematokolpos pada ultrasonografi pelvis. Diagnosis himen imperforata ditegakkan. Tindakan himenotomi dilakukan dengan teknik insisi menyilang. Evaluasi dua minggu pascaoperasi menunjukkan penyembuhan yang baik tanpa komplikasi.

Kesimpulan: Himen imperforata perlu diidentifikasi dan ditangani segera untuk mencegah komplikasi. Himenotomi dengan teknik insisi menyilang merupakan pilihan terapi efektif dengan hasil klinis yang baik.

Kata kunci: Amenore primer; hematokolpos; hematometra; himenotomi; himen imperforata

Introduction

In clinical practice, amenorrhea refers to the absence of menstruation and is divided into primary and secondary types. Primary amenorrhea is characterized by the absence of menarche by the age of 15 or within three years post-thelarche. Secondary amenorrhea involves the interruption of previously regular menstrual cycles. Among the various causes of primary amenorrhea, imperforate hymen, while rare, is a significant structural anomaly that must be ruled out.¹

Imperforate hymen is a congenital anomaly of the female genital tract that results in vaginal outflow obstruction, caused by the failure of spontaneous hymenal canalization during late gestation.² It is considered a rare condition, with an estimated incidence of approximately 1 in 1,000 to 2,000 female births.³ Although most cases occur sporadically without evidence of genetic mutations or specific etiological markers, familial cases involving siblings and intergenerational inheritance have been reported.^{4,5}

Imperforate hymen is typically asymptomatic and often identified incidentally during adolescence or after menarche, presenting with clinical manifestations such as amenorrhea, a bluish bulging hymen, recurrent lower abdominal pain, urinary retention, dysuria, and constipation.^{6,7} Although its incidence is very low, imperforate hymen may also be observed in approximately 0.006% of female neonates, most commonly presenting as an abdominal or pelvic mass. This condition is associated with maternal estrogen stimulation, which promotes fetal cervical and endometrial glandular secretions, leading to mucus accumulation or mucocolpos.⁸

Surgical intervention in the form of hymenotomy or hymenectomy is the definitive treatment for imperforate hymen. Ideally, the procedure is performed after

the onset of puberty—when the vaginal tissues have undergone estrogenization—but before the development of acute symptoms.⁷ Although the diagnosis and management of imperforate hymen are relatively straightforward, delayed diagnosis is common due to its low incidence, nonspecific symptoms, and suboptimal implementation of gynecological examinations. Such delays can lead to various complications, including infections, endometriosis, retrograde bleeding, hydronephrosis, and even acute renal failure, ultimately increasing morbidity and necessitating further interventions.⁶

Therefore, we report this case of imperforate hymen to document this rare congenital anomaly of the female genital tract, highlighting a comprehensive approach involving history taking, physical examination, supporting investigations, and appropriate management.

Case Report

A 13-year-old adolescent girl presented to the obstetrics and gynecology outpatient clinic with complaints of lower abdominal pain that had been present for the past week. The pain was described as cramping, intermittent, with a severity of 6 out of 10 on the numerical pain scale. The symptoms were accompanied by a sensation of abdominal fullness, discomfort, and a palpable mass in the genital area. The patient also reported difficulty in urination, requiring straining during urination. There were no complaints of vaginal discharge, nausea, vomiting, or difficulty with defecation. The patient had not yet experienced menarche. There was no history of trauma or infection involving the genital area. Episodes of lower abdominal pain and difficulty urinating had occurred intermittently over the past eight months. Due to these symptoms, the patient had previously visited the emergency department on two occasions. At that time, she was diagnosed

with urinary retention and a urinary tract infection.

The patient's vital signs were within normal limits. Her body mass index (BMI) was recorded at 20 kg/m², classified as normal weight. Abdominal examination revealed tenderness and pain on palpation in the suprapubic region. Assessment of sexual maturity using the Sexual Maturity Rating (SMR) indicated age-appropriate development, with Tanner stage 3 for breast development and Tanner stage 2 for pubic and axillary hair growth. External genital examination revealed a bulging, bluish-colored hymen at the vaginal introitus, which became more prominent during the Valsalva maneuver. Per rectal examination identified a mass anterior to the rectum. The results of routine blood tests and urinalysis were within normal limits. Pelvic ultrasonography demonstrated an enlarged uterus and vagina filled with homogeneous fluid, consistent with hematocolpos and hematometra.



Figure 1 A Bulging Hymen Completely Covering The Vaginal Introitus

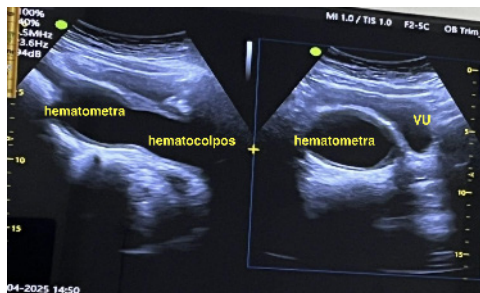


Figure 2 Sagittal View (Left), Transversal View (Right)

The diagnosis of this patient was imperforate hymen, complicated by hematocolpos and hematometra. Management was performed through a surgical hymenotomy using a cruciate incision technique. Prior to the procedure, the patient received preoperative counseling, and a urinary catheter was inserted in preparation for surgery. Cruciate (cross-shaped) incisions were made at the 2, 4, 8, and 10 o'clock positions. After fluid evacuation, each edge of the incised hymenal mucosa was sutured with simple interrupted stitches using 3-0 absorbable sutures. The patient's postoperative condition was stable; she was administered analgesics and antibiotics and was discharged the following day.



Figure 3 After The Cruciate (Cross-Shaped) Incision Procedure

The patient was educated on maintaining vaginal hygiene to prevent infection and possible re-adhesion of the hymenal mucosa. In addition, the patient's parents were counseled regarding concerns about cultural and social concerns related to virginity associated with the surgical management of imperforate hymen. At the one-week postoperative follow-up, examination revealed a patent hymenal opening, a well-healed surgical incision, and no signs of inflammation or infection.

Discussion

Primary amenorrhea is defined as the absence of menarche by the age of 15 years or within

three years after the onset of thelarche. This case aligns with the latter criterion, as the patient experienced thelarche but subsequently failed to menstruate. The concomitant symptoms of abdominal pain and urinary retention raised a strong clinical suspicion for an outflow tract obstruction, which suggested the possibility of imperforate hymen. Accordingly, these clinical findings should prompt a thorough physical examination to find any sign of imperforate hymen, frequently shown as vaginal bulging.¹

With an incidence of 0.1%, imperforate hymen is a rare anomaly usually detected incidentally.³ Most cases are sporadic, with no evidence of genetic mutations or specific etiological markers; however, familial cases have been reported. A case series by Baanitse et al. detailed three sisters—aged 33 months, 6 years, and 8 years—with the condition, each presenting different clinical symptoms.⁴ Supporting the possibility of heritability, Stelling et al. documented a transgenerational case involving a 12-year-old girl and her mother, who had presented with the same condition at age 14.⁵

Most cases of imperforate hymen remain asymptomatic until menarche, as the obstruction leads to the accumulation of menstrual blood, resulting in hematocolpos, hematometra, or, in rare instances, hematosalpinx.^{9,10} Consequently, the diagnosis is most frequently established in adolescents between the ages of 12 and 18, who often present with complaints of cyclical lower abdominal pain or urinary retention due to the mass effect of the retained blood.^{6,11} The differential diagnosis for this presentation includes other obstructive reproductive tract anomalies of the female reproductive tract, such as a transverse vaginal septum, vaginal atresia, or vaginal agenesis.¹² In this case, the patient's symptomatology—including lower abdominal pain and urinary retention—along with the physical finding of a bluish, distended hymenal membrane confirming

hematocolpos, aligns perfectly with this classic presentation.

The diagnosis of imperforate hymen is generally clinical and confirmed through pelvic ultrasonography. In this case, the diagnosis was established based on the patient's clinical presentation, which included recurrent lower abdominal pain and a bluish bulging hymen on vaginal examination, supported by ultrasonographic findings of hematocolpos.^{13,14} No additional diagnostic procedures were necessary. Delayed diagnosis can lead to various complications, including endometriosis, retrograde bleeding, urinary tract infections, and even acute renal failure.¹⁰ A study by Keum Hwan Lee et al. reported severe complications in six patients, including five cases of renal failure (2.1%) and one case of urinary tract infection (0.4%).⁶ Consequently, clinicians must maintain a high index of suspicion for this condition to initiate timely management and prevent long-term morbidity. In this case, the patient had previously been hospitalized for urinary tract infection and urinary retention before the diagnosis of imperforate hymen was established. This condition was likely caused by the accumulation of blood in the uterus, which exerted pressure on the urinary tract, leading to urinary retention and an increased risk of urinary tract infection.

Management options for imperforate hymen involve surgical procedures, such as hymenotomy or hymenectomy, typically performed using cruciate, annular, or X-shaped incisions. In the present case, a urinary catheter was inserted, and cruciate incisions were made at the 2, 4, 8, and 10 o'clock positions to reduce the risk of urethral injury. Following fluid evacuation, the hymenal mucosal edges were sutured using interrupted absorbable sutures (3-0 or 4-0) to maintain vaginal patency and prevent postoperative stenosis. The patient received eight sutures on each side of the incision site. Excessive irrigation of the distended vaginal

canal should be avoided, as it may increase the risk of complications like infection and ascending reflux that can be the cause of endometriosis.⁷

Following the evacuation of hematometocolpos, patients may experience prolonged bleeding, typically lasting around two weeks, which contributes to the process of uterine involution.⁷ Endometriosis should also be considered in patients who develop dysmenorrhea following hematocolpos. Patient education is essential, particularly regarding the importance of seeking prompt medical attention if symptoms such as increased pain or fever occur, given the risk of ascending infection.¹² During the recovery period, topical moisturizer cream may be applied to the surgical site several times a day in this case. In prepubertal patients, short-term topical estrogen cream may be used to promote healing and prevent stricture formation.⁷ Although postoperative stenosis and adhesions have been reported following hymenotomy, such complications are extremely rare.¹⁵

Conclusion

This report presents a case of imperforate hymen identified in a 13-year-old female, identified following the onset of complications, including urinary retention and urinary tract infection. The patient presented with cyclic abdominal pain that had persisted for the past eight months and had intensified during the week prior to presentation. The diagnosis was established, and the patient was managed surgically. The patient had previously been hospitalized due to urinary retention and urinary tract infection, both of which were secondary complications resulting from the imperforate hymen. This case highlights the importance of considering imperforate hymen as a potential diagnosis in females presenting with cyclic abdominal pain who have not yet experienced menarche.

Therefore, heightened clinical awareness and early recognition of symptoms are crucial to ensure optimal surgical management and prevent further complications.

Conflict of Interest

We explicitly declare that there is no conflict of interest in relation to this article.

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