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**RESEARCH ARTICLE**

**Mission Possible, Hymen Imperforate from Imperfect to Become Perfect: A Case Report**

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**ABSTRACT**

Imperforated hymen is a rare presentation in peripubertal girls. Imperforate hymen is the most common obstructive congenital abnormality of the female genital tract. Despite being the most common malformation in the female genital system, imperforate hymen is uncommon. It often emerges at puberty; however, prenatal, infant and adolescent cases have been reported. This study aims to report a case of 12 years girl present with cyclical abdominal pain, backache, and primary amenorrhoea with a huge mass per abdomen. This study implemented a qualitative method with a case report approach. The results of the study show imperforate hymen patients need to be treated by surgical hymenotomy.

**KEYWORDS**

Imperforated hymen; primary amenorrhoea; huge abdomen mass; haematometra; haematocolpos

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**1. Introduction**

Imperforate hymen/atresia hymen is a hymen with a solid, holeless membrane. The hymen is one of the reasons for pseudoamenorrhea/cryptomenorrhea, which is congenital and aberrant in the distal genital tract of women (menstruation is present, but no blood is shed) (Hafidhah, 2021). Imperforate hymen is an uncommon genital defect characterized by obstruction of vaginal outflow at the vaginal introitus caused by improper development of the epithelial lining of the Vagina attached to the hymenal tissue so that it cannot open and total obstruction ensues (Triansyah, Munir, & Saranga, 2019). In addition to checking the state of the genitalia at the vaginal introitus, hematometra and hematocolpos are common ultrasound examination indicators for diagnosis.

Despite being the most prevalent female genital tract abnormality, the imperforate hymen is uncommon. It often manifests at puberty. However, prenatal, newborn, and juvenile diagnoses have been observed (Mwenda, 2013). Impervious hymen occurrence affected 1 in 1,000 to 1 in 10,000 females (Anurogo, 2013). Furthermore, this rare congenital abnormality causes vaginal canal blockage. Hymen imperforate is a congenital abnormality, although it can also be caused by occlusive scarring from a prior injury or infection. As an embryological connection between the sinovaginal bulb and the urogenital sinus, the hymen consists of a thin mucous membrane. The hymen is not produced from the Mullerian ducts but rather from the epithelial endoderm of the urogenital sinus. When the mesoderm of the aberrant primitive streak separates into the urogenital region of the cloacal membrane, the imperforate hymen is created due to a persisting piece of the urogenital membrane.

As its name suggests, the imperforate hymen is a disorder in which the hymen, a thin membrane shaped like a half-moon, covers the whole aperture of the Vagina. Although uncommon, this syndrome is the most prevalent abnormality in the female genital tract. A patient may not be diagnosed until they exhibit one or more of several symptoms. Symptoms might range from modest abdominal pain and tenesmus to urine retention and hematocolpos, a mass caused by the buildup of menstrual blood that cannot exit the vaginal space. In this case, a young woman presents with recurrent stomach pain and a palpable pelvic tumor (Mercado-

Alvarado, 2013). This instance is unique due to the size of the mass, which is over twice as large as any hematocolpos previously reported in case reports.

Imperforate hymen is the most common congenital malformation of the female genital tract. It represents a sporadic condition with an incidence of 0,014 and 0.1% at term (Messina et al., 2004) (See Figure 1).



**Figure 1. Imperforate hymen of 12 years old girl that presented to the surgery**

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 (Deligeoroglou, Deliveliotou, Makrakis, & Creatsas, 2007). Transabdominal ultrasonography (USG) is the commonest imaging method used to diagnose the anomaly (Partsiavelos, Rodolakis, Loutradis, & Antsaklis, 2009). However, some cases can be misleading. In addition, transabdominal USG cannot always identify other coexisting congenital anomalies of the lower genital tract (Posner & Spandorfer, 2005). Thus, other imaging modalities are commonly used to confirm the diagnosis (Hsu, Chen, Chien, & Hsu, 2008).

The majority of cases of the imperforate hymen are sporadic; however, there have been reports of familial cases with both recessive and dominant inheritance (Mwenda, 2013). Moreover, the imperforate hymen is created when the mesoderm of the aberrant primitive streak separates into the urogenital region of the cloacal membrane, resulting in a persistent portion of the urogenital membrane. Various sources are likewise skeptical about the reason for hymen imperforate, but it is hypothesized that genetic inheritance is to blame. Cases with imperforate hymen typically exhibit the same symptoms; in this instance, abdominal pain that sometimes radiates to the waist and a swollen abdomen was observed in adolescents of puberty age. Menstrual blood from one menstrual cycle that occurs continually causes blood to gather in the vagina, resulting in vaginal stretching; the hymen appears bluish and projecting (hymen bulging) due to vaginal stretching of the mucous membrane hymen, and the hymen is swollen. The collection of blood in the vagina (hematocolpos). If this condition persists, menstrual blood will cause vaginal and cervical canal dilation and fill the uterine cavity (hematometra). This demonstrates signs of an imperforate hymen manifest when difficulties emerge (Hafidhah, 2021).

This current study differs from those research. This study focus on analyzing a case report of the imperforate hymen of 12 years old girl that presented to the surgery outpatient department with on and off lower abdominal colic pain and concomitant anorexia that had lasted for 3 months.

## **2. Method**

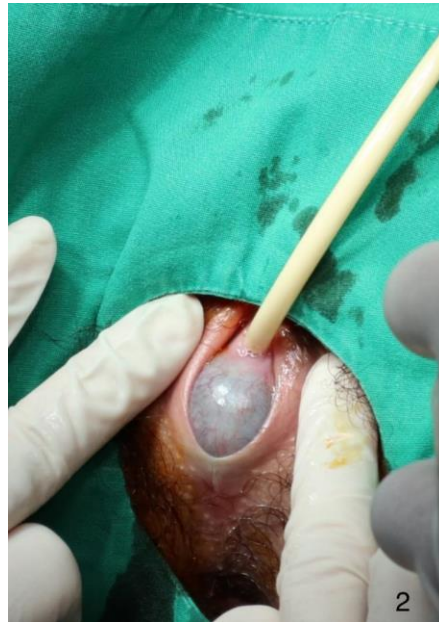
This study uses a qualitative approach method case report study. By utilizing case study research, the researcher will obtain specific expertise or insight into the issue they have chosen to explore, which is typically a contemporary one. Case study research permits the researcher to examine the phenomenon within its context. Case studies are empirical investigations in the sense that they are based on knowledge and experience, or in a more practical sense, they entail the collecting and analysis of data (Cresswell, 2017). Moreover, this study attempts to examine the imperforate hymen case of a 12-year-old girl.

## **3. Results and Discussion**

### **3.1 Results**

A 12-year-old girl went to the surgical outpatient department with three months of intermittent lower abdomen colic pain and concurrent anorexia. There was no history of constipation, diarrhoea, vomiting, fever, or urinary system-related problems. In her physical assessment, all vital signs were normal. However, suprapubic fullness, abdominal pain, and positive rebound and defense were seen. Laboratory findings were as follows:  $\beta$ -human chorionic gonadotropin ( $\beta$ -hCG): negative, leukocytes: 11000/uL, hematocrit: 32.2%, hemoglobin (Hb): 10 gr/dl, thrombocytes: 514 000/uL in blood, while Rapid Test Antibody (serum) Anti SARS-COV-2 Ig G and Ig M non reactive. Urinalysis was normal. In her physical examination, secondary sex characters were detected to be developed (Tanner stage 3). Her physical examination revealed the development of secondary sex characteristics (Tanner stage

3). She was referred to the pediatric clinic and prescribed pre-and post-operative medications. After the pelvic mass was confirmed by abdominal ultrasonography, she was referred to our gynecology clinic (Shek & Dietz, 2013). The absence of the hymenal opening and a large hymen with purple highlights that closed the vagina by forming a curtain around it was seen during the gynecological examination (See Figure 2).



**Figure 2. Bulging imperforate hymen**

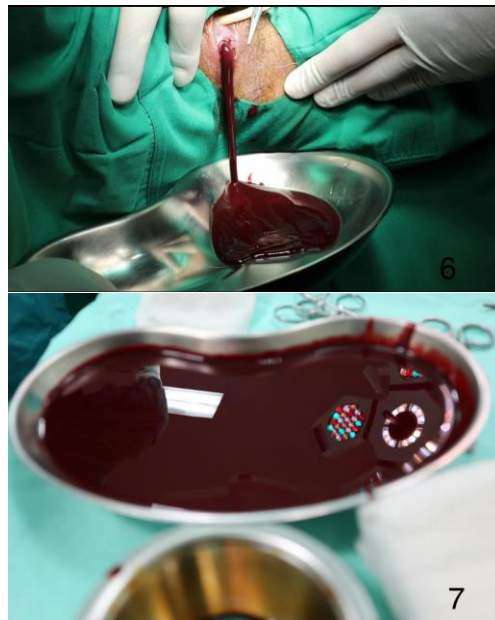
In the repeated ultrasonographic examination of the pelvis, a homogenous hypogastric mass consistent with haematometra and haemocolpos was observed, accompanied by a hypoechoic cystic development of around 13 x 10 cm in diameter. Bilateral ovaries and uterus were normal. The bladder of urine was empty. The patient was subsequently identified with an imperforate hymen, and a hymenotomy was planned. Under spinal anesthesia, the patient was treated with stellate incisions through the hymenal membrane and removal of the individual segments (See Figure 3).





**Figure 3. Imperforate hymen removal**

After removing the obstructing material, finger pressure from the rectum to the vaginal canal facilitated drainage of accumulated menses, and approximately 1500 cc of tarry menstrual blood was aspirated (See Figure 4).





**Figure 4. Blood drained out on incising the hymen**

3-0 vicryl was used to suture the vaginal mucosa to the hymenal ring to prevent adhesion and recurrence of the obstruction. The patient was discharged the following day without incident. At her two-month follow-up checkup, there was no indication of a problem, and she was observed to have menstruated.

### **3.2 Discussion**

Throughout embryogenesis, the lateral section of the hymen develops from a urogenital sinus fold. The posterior portion originates outwardly from the cells of the urogenital sinus and internally from Müller's duct. It usually partially ruptures in the inferior portion of Müller's duct around the eighth week of pregnancy, lingering as a fold of mucous membrane surrounding the vaginal entrance. Failure of these events results in the persistence of the septum (Sadler, 2018). Imperforate hymen is uncommonly identified in neonates, with the majority of instances presenting between the ages of 11 and 15. Between the sinovaginal bulbs and the urogenital sinus is the hymen. The hymen is pierced during embryonic development to connect the vestibule to the vaginal canal. If this phase fails, the individual will be born with an imperforate hymen. Imperforate hymen is a rare condition, with an estimated incidence rate between 0.5% and 0.1%. This uncommon congenital defect is typically discovered during adolescence, after menarche, and when stomach discomfort and amenorrhea are prevalent. The imperforate hymen does not manifest as an abdominal mass during the neonatal period, and the majority of patients are asymptomatic and are not diagnosed until menarche (Lee et al., 2019). Cyclical pelvic pain 2.5 to 4 years after thelarche, primary amenorrhea, and a palpable pelvic mass represent the characteristic clinical symptomatology (Adaletli, Ozer, Kurugoglu, Emir, & Madazli, 2007). 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 (Chircop, 2003). Although the 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 (Hsu et al., 2008). However, in some situations, observations can be mistaken as a suspicious pelvic mass and trigger severe concern for a young girl and her family. In addition, to further explain false findings of transabdominal USG and rule out possible related congenital defects, various imaging or invasive modalities have been used such as CT scan, MRI scan, and videolaparoscopy (Partsinevelos et al., 2009). All of them are very accurate in the diagnosis of hematocolpos and hematometra; however, they are not considered to be cost-effective (Deligeoroglou et al., 2007). Transrectal USG has also been reported as a method of evaluating pelvic anatomy in young girls with no sexual activity (Kushnir, Garde, & Blankstein, 1997). Although it has been quite accurate in the diagnosis of hematocolpos, it is not considered to be an acceptable diagnosis for this age range due to possible psychological repercussions. Treatment of imperforated hymen is to reestablish vaginal outflow and generally comprises surgical hymenotomy under anaesthesia. Simple vertical, T-shaped, cruciform, stielatte and cyclical incisions may be employed. Stielatte incision provides the advantage of lower chance of harm to the urethra-which should be stented during the procedure.

#### **4. Conclusion**

Imperforate hymen is a rare case, but it is the most common anomaly of the female lower genital tract. The clinical presentation varies from patient to patient, depending on the age at diagnosis. Although uncommon, this syndrome is the most common female genital tract anomaly. A patient cannot be diagnosed until he or she demonstrates one or more symptoms. It may present with acute pain abdomen, haematocolpos, haematometra, or urinary retention. As a result, Imperforated hymen is treated by surgical hymenotomy.

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#### **References**

- [1] Adaletli, I., Ozer, H., Kurugoglu, S., Emir, H., & Madazli, R. (2007). Congenital imperforate hymen with hydrocolpos diagnosed using prenatal MRI. *American Journal Of Roentgenology-New Series-*, 189(1), 155. Google Scholar
- [2] Anurogo, D. (2013). Memahami Dispareunia. *Jakarta: Kalbe Farma*. Google Scholar
- [3] Chircop, R. (2003). A case of retention of urine and haematocolpometra. *European Journal of Emergency Medicine*, 10(3), 244–245. Google Scholar
- [4] Cresswell, J. W. (2017). *Research Design: Pendekatan Kualitatif, Kuantitatif, dan Mixed (Edisi Ketiga)*. Yogyakarta: Pustaka Belajar. Google Scholar
- [5] Deligeoroglou, E., Deliveliotou, A., Makrakis, E., & Creatsas, G. (2007). Concurrent imperforate hymen, transverse vaginal septum, and unicornuate uterus: a case report. *Journal of Pediatric Surgery*, 42(8), 1446–1448. Scopus
- [6] Hafidhah, A. N. (2021). *Hymen Imperforata: Laporan Kasus*. Proceeding Book National Symposium and Workshop Continuing Medical Education XIV. Google Scholar
- [7] Hsu, K.-P., Chen, C.-P., Chien, S.-C., & Hsu, C.-Y. (2008). Hematocolpometra is associated with an imperforate hymen and acute urinary retention mimicking a pelvic mass. *Taiwanese Journal of Obstetrics and Gynecology*, 47(2), 222–223. Google Scholar
- [8] Kushnir, O., Garde, K., & Blankstein, J. (1997). Rectal sonography for diagnosing hematocolpometra. A case report. *The Journal of Reproductive Medicine*, 42(8), 519–520. Google Scholar
- [9] Lee, K. H., Hong, J. S., Jung, H. J., Jeong, H. K., Moon, S. J., Park, W. H., ... Son, M. J. (2019). Imperforate hymen: a comprehensive systematic review. *Journal of Clinical Medicine*, 8(1), 56. Google Scholar
- [10] Mercado-Alvarado, J. (2013). Imperforated hymen: an unexpected cause of pediatric abdominal pain, case report, and review of the literature. *Tropical Medicine & Surgery*. Google Scholar
- [11] Messina, M., Severi, F. M., Bocchi, C., Ferrucci, E., Di Maggio, G., & Petraglia, F. (2004). Voluminous perinatal pelvic mass: a case of congenital hydrometrocolpos. *The Journal of Maternal-Fetal & Neonatal Medicine*, 15(2), 135–137. Google Scholar
- [12] Mwenda, A. S. (2013). Imperforate Hymen-a rare cause of acute abdominal pain and tenesmus: case report and review of the literature. *Pan African Medical Journal*, 15(1). Google Scholar
- [13] Partsinevelos, G. A., Rodolakis, A., Loutradis, D., & Antsaklis, A. (2009). Imperforate hymen is associated with elevated serum CA125 and CA19–9 levels: a reappraisal. *Journal of Obstetrics and Gynaecology*, 29(6), 560–561. Google Scholar
- [14] Posner, J. C., & Spandorfer, P. R. (2005). Early detection of imperforate hymen prevents morbidity from delays in diagnosis. *Pediatrics*, 115(4), 1008–1012. Google Scholar
- [15] Sadler, T. W. (2018). *Langman's medical embryology*. Lippincott Williams & Wilkins. Google Scholar
- [16] Shek, K. L., & Dietz, H. P. (2013). Pelvic floor ultrasonography: an update. *Minerva Ginecol*, 65(1), 1–20. Google Scholar
- [17] Triansyah, A., Munir, M. A., & Saranga, D. (2019). Case of hymen imperforata in adolescents. *Jurnal Medical Profession (Medpro)*, 1(1), 7–11. Google Scholar