

Imperforate Hymen with a Huge Abdominal Mass and Massive Hematocolpometra in a 15-Year-Old Girl

Cryptomenorrhea with huge abdominal mass

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Abstract

Background: Imperforate hymen is one of the commonest embryological defects of the lower genital tract which occurs due to failure of canalization of the sinovaginal bulb. Its incidence is 1 in 2000 girls.

Case Presentation: This case is of a 15-year-old nullipara who presented on account of a 2-month history of recurrent abdominal pain, hesitancy, and primary amenorrhea. Her physical examination reveals a huge abdominopelvic mass about the size of a 26 weeks intra-uterine gestation, and a vagina examination revealed an imperforate hymen. A pelvic ultrasound confirmed a massive hematometra and hematocolpos leading to a diagnosis of imperforate hymen. She had a hymenotomy with a cruciate incision to drain the menstrum.

Conclusion: Pediatricians and gynaecologists need a high index of suspicion to diagnose this defect for earlier treatment and reduced morbidity due to late diagnosis.

Keywords: Cryptomenorrhea, imperforate hymen, hematocolpometra, hematocolpos, hymenectomy

Introduction

Imperforate hymen is an embryological defect of the lower female genital tract that occurs due to the failure of the endoderm of the urogenital sinus to canalize (1). It is often diagnosed in adolescent girls (mean age of diagnosis 10.7 ± 4.7 years) after the onset of the menstrual cycle with the majority presenting with amenorrhea (1, 2, 3, 4), lower abdominal pain (about 50% of cases) (1, 2, 3, 4), abdominal mass causing obstructive symptoms (2, 5) such as urinary retention, constipation, urinary tracts infections with a smaller percentage also

leading to hydroureter, hydronephrosis, and renal failure (1, 3, 4, 5).

In utero and newborns (3, 4, 6), the maternal estrogen effect can predispose to abdominal mass in the female neonate in the form of secretion leading to hydrocolpos (3, 4, 6) and hydrometrocolpos (3, 4, 6). In utero diagnosis is made using prenatal ultrasound (4).

Most cases of imperforate hymen are noted to be either familial or sporadic (1, 2, 3, 4) and it could also be a part of a syndrome - McKusick Kaufman Syndrome (polydactyl, congenital heart defect, and

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genital malformations which could be an imperforate hymen) (1, 3). Delayed diagnosis and treatment of imperforate hymen can lead to complications including hydronephrosis, hematosalpinx, obstructive renal failure, peritonitis, and endometriosis (3, 4, 5, 6).

This case review is important for clinicians to have a high index of suspicion when presented with cases of abdominal pain or mass in adolescents and young adults.

Case Presentation

This is a case of a 15-year-old nullipara girl who presented to the clinic with complaints of recurrent lower abdominal pain, abdominal swelling, and hesitancy of two months duration. The pain is noted to be cyclical with the present episode starting about a week before presentation, it has been persistently intense and radiates to the lower back. There was a history of abdominal swelling (figure 1) which was spontaneous in onset and progressively increased to the present size. It was also noted that the patient had yet to attain menarche.



Figure 1: Abdominal mass

On general examination, a well-hydrated adolescent in mild painful distress, was afebrile, not pale with no pedal oedema. She has well-developed breast, pubic, and axillary hair (Tanner stage 3). Her vital signs at presentation were pulse rate- 90 bpm, blood pressure- 110/82mmHg, respiratory rate- 24cpm. Abdominal examination revealed a uniformly enlarged abdomen that moved with respiration with moderate suprapubic

tenderness and a fluctuant globular mass of 26 weeks sized intrauterine gestation. The mass had a regular surface and appeared mobile and smooth. Her liver, spleen, and kidneys were not palpably enlarged. Genital examination showed a bulging bluish hymenal membrane (figure 2) posterior to the urethral opening. A digital rectal examination shows a mass anterior to the rectum.



Figure 2: Bulging unperforated hymen

An abdominopelvic ultrasound scan revealed a liver of normal homogenous echotexture with a vertical span of 11.8mm in size. Both kidneys have good echogenicity and a normal calyceal system. The corticomedullary differentiation appears normal (Right kidney- 88 X 40mm, Left kidney- 92 X 41mm) in size. A distended hypoechoic mass with homogenous coarse fluid extending from the

uterus to the vagina causing a ballooned vagina (figure 3). The uterus measured 65 x 85mm in size with the vagina measuring 130x 87 x 117mm in size and had an estimated volume of 697.7 cm³ leading to a sono-diagnosis of massive hematometra and hematocolpos. MRI was not done. Other pre-operative investigations were normal.



Figure 3: Pelvic ultrasound scan showing distended uterus and vagina

Following this, the patient and caregiver were informed of the findings and the need for surgery. The patient was prepared for hymenotomy with drainage of the menstrual blood collection. Surgery was done with a cruciate incision made on the hymen followed by drainage of approximately 1100mls of chocolate-like effluent (figure 4) and the vaginal canal was subsequently washed with

normal saline. Some prophylactic intravenous antibiotic was administered and the patient was counselled to maintain good perineal hygiene. A urethral urinary catheter was removed after the patient made a significant recovery. Her post-op condition was uneventful. Since discharge, the patient has had two normal menstrual flows with no complaints.



Figure 4: Chocolate menstruum

Discussion

The hymen is the bridge between the urogenital sinus and the sinovaginal bulbs (1, 3). During embryological development, the hymen canalizes to make a connection between the vestibule and the vaginal canal (1, 3), failure of its canalization leads to an imperforate hymen (1). Imperforate hymen is one of the most common lower female genital defects, seen in 1 out of 2000 girls (2). Early diagnosis of imperforate hymen is usually made at birth (1, 4) with most delayed diagnosis noted during the pubertal stage of development (1, 4) because of the absence of symptoms until significant accumulation of menstrual blood. Patients with imperforate hymen commonly present with cyclical abdominal pain, abdominal mass, and urinary symptoms (1, 4) which is invariably part of the presenting complaints of this patient. However, despite how huge the abdominal mass in the patient was she had no obstructive gastrointestinal symptoms (2, 4).

Abdominopelvic ultrasonography is the diagnostic tool of choice (1, 3, 4) at the emergency department with magnetic resonance imaging (MRI) serving as an important diagnostic tool for the detection of other possible associated abnormalities, therapeutic planning, detection of complications, and follow-up (1, 5, 6), this was not done in the index case due to financial constraints. The differential diagnosis of imperforate hymen includes other developmental abnormalities of the urogenital sinus and Mullerian ducts like transverse vaginal septum, vaginal atresia, and vaginal agenesis (1, 3). Failure to diagnose these anomalies early burdens patients with further morbidity since the treatment approach is different (1, 3, 7).

Treatment options include a simple, virginity-preserving (6, 8, 9) socially acceptable surgical procedure known as hymenotomy which is a cruciate incision on the imperforate hymenal membrane to provide an annular intact hymen (6, 8, 9). Other options of treatment include hymenectomy which involves the removal of the hymen. When associated with other embryological defects, these may be repaired necessitating either a vaginal septum repair, vaginoplasty or closure of the fistula. Although, these procedures could pose some psychological effects on the adolescent and their caregivers. They are usually carried out under anaesthesia (1, 2, 3, 4, 5, 6), followed by vaginal saline washout and prophylactic antibiotics (3). This index case had hymenotomy due to the cultural belief in virginity preservation in the study environment.

Successful drainage of an imperforate hymen will satisfactorily resolve symptoms (1, 7) just as seen in this patient. Some complications such as hymenal reclosure, vaginal adhesion, vaginal adenosis, and the recurrent persistent imperforate hymen can be noted in some patients following the surgical opening of the hymen (1, 3, 5) but these were not noted in this case during the follow-up.

It is worth noting that the lack of early detection, diagnosis and treatment can lead to long-term complications such as endometriosis, subfertility, infections, hydronephrosis, and renal failure (3, 4, 5, 6).

Conclusion

Imperforate hymen being a rare case can present as a huge abdominal mass in adolescents. A high index of suspicion by paediatricians and gynaecologists is necessary to diagnose this defect. This will lead to an earlier treatment and reduction in morbidity associated with a delayed diagnosis.

Declarations

Ethics approval and consent to participate

Institutional ethical approval (Protocol number: A67/2022/11/003) was sought and obtained for the study. Consent was obtained from all parties involved with the study.

Consent for publication

All the authors gave consent for the publication of the work under the Creative Commons Attribution-Non-Commercial 4.0 license.

Availability of data and materials

The essential data supporting the findings of this study are available within the article. Additional data are available on request from the corresponding author due to confidential reasons.

Competing interests

Authors declare no conflict of interest

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Author contributions

IOM, OIM, and AK designed the manuscript and conceived the original idea. IOM, OIM, AK, ITM, IOI and ECO drafted the manuscript, and all authors contributed to its final form, and critically reviewed and approved the final manuscript. All authors approved the final manuscript for publication.

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