CASE REPORT

Imperforate Hymen presenting as acute abdomen in a 15-year-old girl: A case report

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ABSTRACT

Background: Imperforate hymen is a type of congenital vaginal outflow tract anomaly due to failure of perforation of the hymen. It is a cause of haematocolpos, haematometria and urinary tract obstruction due to the pressure effect of the haematocolpos.

Case presentation: We present a "15-year-old girl" who presented at puberty with a history of primary amenorrhea, cyclical, acute abdominal pain and ultrasound findings of haematocolpos, haematometria and hydronephrosis. The obstruction was successfully relieved by a cruciate hymenectomy.

Results: The patient's symptom resolved after the hymenectomy and has been menstruating every month after the procedure.

Conclusion: Acute abdomen in a pubertal girl with primary amenorrhea may be due to imperforate hymen.

INTRODUCTION

Imperforate hymen is a rare condition that presents with amenorrhea, cyclical abdominal pains and urinary retention among pubertal girls.[1] It is an uncommon congenital anomaly of the female genital tract, with the hymen completely obliterating the vaginal opening.[2] It occurs due to embryological defect from failure of canalization of the endoderm of the urogenital sinus.[3] The incidence varies from 0.05% to 0.1%.[2] An incidence of 1 in 2000 females in childhood period has been reported.[4] A familial predisposition has been seen in three sisters of the same mother, with the mother having a similar occurrence.[4,5] It is often diagnosed after menarche, mainly presenting with primary amenorrhea, lower abdominal pain and or urinary retention.[2] The pain is usually cyclical. It can be an incidental finding.[6] It could present with varying degrees of genitourinary obstruction.[6] It may also present with constipation.[7] Rarely, it can be diagnosed in the neonatal period, and it can present as mucocolpos, hydrocolpos and, if infected, pyocolpos.[8] Examination revealed a bulging, thin hymenal tissue bluish coloration caused by haematocolpos behind it.[9] Imperforate hymen needs to be differentiated from other outflow tract abnormalities such as transverse vaginal septum, labial adhesion and distal vaginal atresia.[9]

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Ultrasonography will show haematocolpos.[9] If there is a concern for distal vaginal atresia or vaginal septum, magnetic resonance imaging may be indicated.[9] Abdominopelvic ultrasound showed a large pelvic cystic lesion. Magnetic resonance imaging showed a large, well-defined structure arising from the pelvis.[7] There may be associated hydroureteronephrosis due to obstruction from the mass effect of haematocolpos.[9] The standard treatment of imperforate hymen is surgical hymenectomy. This case is notable due to the acute abdominal presentation, significant hydronephrosis and the fact that acute abdomen in a pubertal girl with primary amenorrhoea may be due to imperforate hymen.

CASE PRESENTATION

Miss M.S is a 15-year-old nulliparous single Yoruba girl who presented with primary amenorrhoea, lower abdominal swelling, and cyclical and acute lower abdominal pain. She was transferred from the general outpatient clinic of the University of Ilorin Teaching Hospital (UITH) to the gynaecological emergency on account of abdominal swelling that started about a year prior to presentation but became severe in the last month following abdominal trauma during a football match in school. Cyclical lower abdominal pains started at about the same time as the lower abdominal swelling but became worse following the abdominal trauma she sustained about a month prior to presentation. Pains waxed, waned and radiated to the lower back and upper thighs. The pain became severe at the time of presentation. There were no specific aggravating factors; the pain was temporarily relieved by analgesics. Also, there was history of difficulty in passing urine few hours prior to presentation. She had developed secondary sexual characteristics evidenced by a growth spurt, the presence of pubic hair, axillary hair and breast bud. She has an elder sister who attained menarche at fourteen years of age, and there was no delayed menarche in her mother.

On examination, she was in painful distress. She was afebrile with normal blood pressure. Axillary hair was sparsely distributed, and the breasts were at Tanner stage 3. Abdominal examination showed a distended abdomen, tender with rebound tenderness and an abdominopelvic mass of 20 weeks size. The female external genitalia appeared normal with pubic hair at Tanner stage 3. The vestibule showed a blind end with a bluish bulge. An assessment of primary amenorrhea secondary to vaginal outflow obstruction was made. Foley catheter was used to empty the bladder and about 1litre of urine was emptied. Abdominopelvic ultrasound scan showed haematocolpos, haematometria and hydronephrosis (Figure 2A and C). Electrolyte, urea and creatinine were within normal limits with preserved renal functions. The serum β-hCG test was negative. The patient and parent were counselled about the findings and the need for an examination under anaesthesia with hymenectomy. A cruciate incision was made on the hymen, about 2 litres of the menstruum was drained, and haemostasis was secured from the excised redundant hymenal tissue.

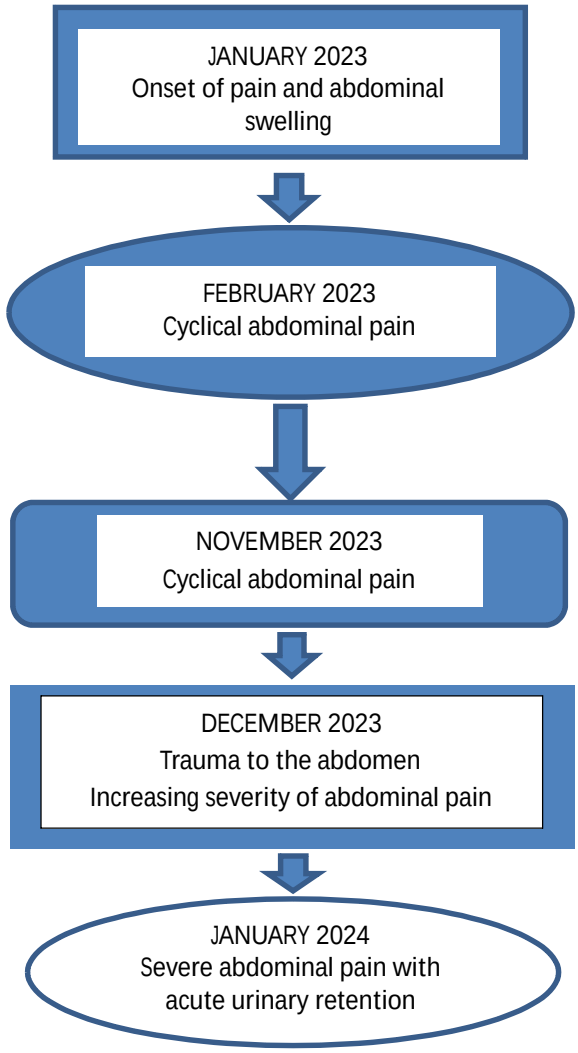

Figure 1: Timeline of the symptoms

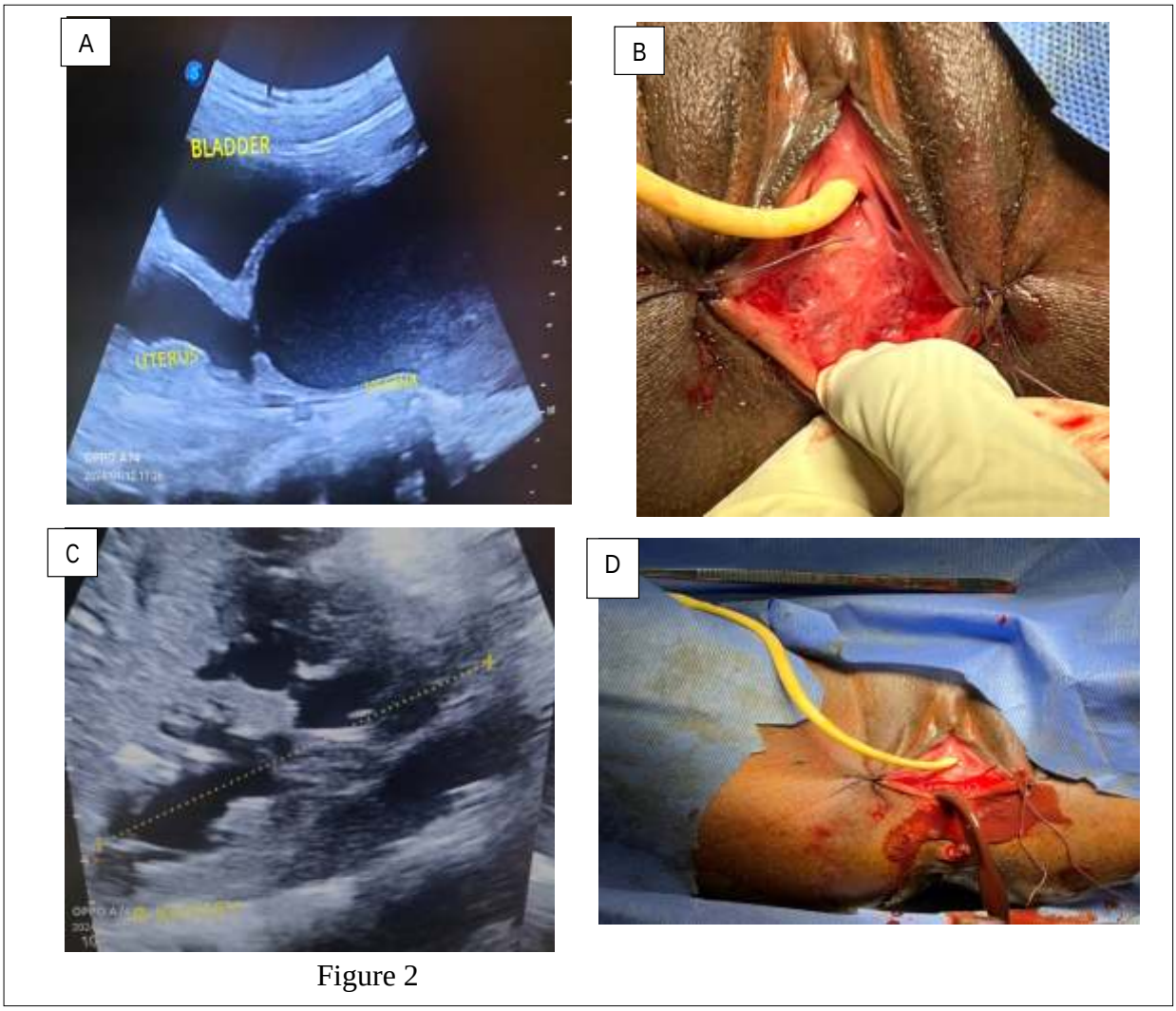

Figure 2

Early Postoperative outcome

Patient's abdominal pain resolved, and the abdominal distention markedly decreased. She was able to void urine easily following the procedure

Follow-up: She was menstruating normally with regular flow at the follow up visits. Repeat ultrasound scan showed no persistence hydronephrosis and haematocolpos (Figure 3).

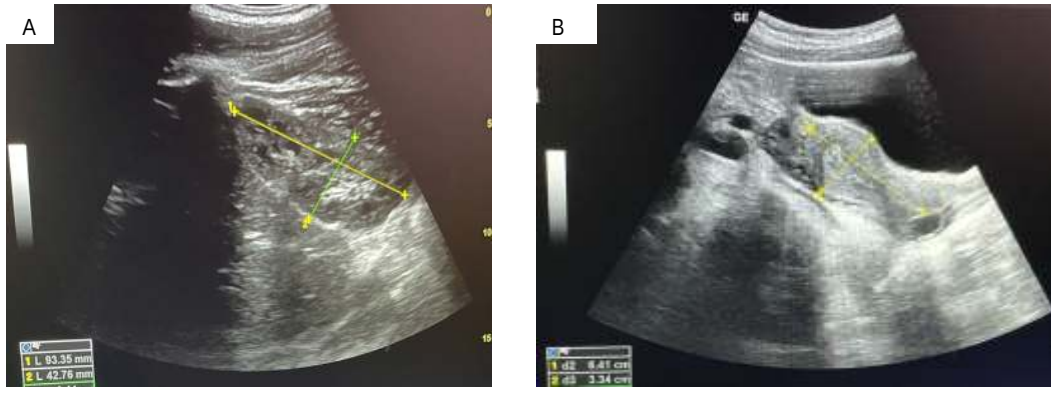

Figure 3: Postoperative Ultrasound

Patient Recovery: There were no infections and other complications. She had a good recovery.
Patient Perspective: The mother and the patient felt relieved about the diagnosis and the treatment. She was happy to resume her normal activities.

DISCUSSION

Imperforate hymen is a genital tract malformation that arises from the complete failure of the inferior end of the vaginal plate to canalize.[3] It is a cause of outflow tract obstruction and a cause of primary amenorrhea, as seen in this patient. She presented with primary amenorrhea and cyclical and acute abdominal pain. Congenital causes of haematocolpos and hydrocolpos are imperforate hymen, distal vaginal agenesis, complete transverse vaginal septum and obstructed hemivaginal and ipsilateral renal anomaly (OHVIRA).[10] The clinical presentation was more in keeping with the imperforate hymen due to the cyclical pain and bluish discoloration of the blind-ending vagina. In the transverse vaginal septum, it is usually pinkish.

The incidence of imperforate hymen varies; it occurs in 1 out of 2000 females.[4] Familial cases have been reported, but sporadic occurrence is more common.[4] The patient presented at puberty at the age of 15 with a history of recurrent abdominal pain and abdominal swelling; however, the pain became acute, leading to the presentation to an emergency. Trauma sustained could have exacerbated the abdominal pain. While hydrocolpos due to congenital anomalies can be detected in prenatal or postnatal periods due to the collection of secretions in the vagina, most patients are diagnosed at puberty. Other forms of presentation include dysuria, urinary retention, abdominal mass, constipation and dyschezia.[9] She presented with an abdominal mass of 20 weeks size, which caused acute urinary retention from the obstructive effect of the haematocolpos and haematometria.

Transabdominal ultrasound scan is of help in making the diagnosis. Abdominal ultrasound demonstrated haematocolpos and haematometria in this 15-year-old girl. Another ultrasound finding is hydronephrosis. It is due to the pressure effect of the hydrocolpos on the ureter. Magnetic resonance imaging (MRI) can show accumulation of fluid which is hypointense on TI and hyperintense on T2 weighted images, within the vagina and endometrial cavity. It is also supporting haematocolpos. It can also show hydronephrosis. The goal of the management is to timely perform hymenectomy to prevent complications. Hymenectomy with drainage of haematocolpos was done in this patient to relieve the pain. This case is reportable because of the clear ultrasound evidence of the back pressure effect on the kidney and acute presentation. Also, imperforate hymen is an important differential diagnosis of an acute surgical abdomen in adolescents especially with background history of primary amenorrhea.

CONCLUSION

Imperforate hymen though rare should be considered in pubertal girls with cyclical abdominal pain and primary amenorrhea. Early diagnosis and surgical intervention are crucial to relieve symptoms and complications such as hydronephrosis. Therefore, a thorough gynaecological examination is important in evaluating an adolescent female with acute abdomen.

- *What is already known:* Imperforate hymen is a rare cause of primary amenorrhea and pelvic pain, known to cause complications like urinary retention
- *What this case adds:* imperforate hymen presenting as an acute abdomen with hydronephrosis triggered by abdominal trauma emphasizing the need to consider gynaecologic causes in adolescent abdominal emergences and the value of ultrasound in diagnosis

Limitation

Our limitation was that we did not obtain MRI imaging although the diagnosis was clear from physical examination and the ultrasound scan.

Conflict of interest statement: The Authors declared no conflict of interest.

Ethical Statements: Written informed consent was obtained from the patient's parent for publication of this case report and the use of the clinical details and images.

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Legend of figure 2

2A. Ultrasound image of hydrocolpos and haematometria
2B. Picture of Imperforate Hymen
2C. Ultrasound image of hydronephrosis
2D. Released menstruum under pressure FIGURE 3: Postoperative Ultrasound

Legends of figure 3

3A. Ultrasound image of the left kidney with normal parenchyma and collecting system
3B. Ultrasound image of normal uterus with resolved haematometria