



Imperforate Hymen with Acute Urinary Retention

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Abstract:

Background: Imperforate hymen though most common female genital tract malformation, remains an uncommon cause of acute urinary retention and abdominal pain in children. **Case Report:** We present a case of 13 year old pre-menarchal female who presented with acute urinary cyclical suprapubic pain and a lump in abdomen in emergency department. Foleys catheterization was done to relieve her urinary retention. On detail examination, she was diagnosed with imperforate hymen and palpable lump in abdomen. Ultrasonography showed it to be hematometrocolpos. Patient underwent hymenotomy and passive drainage of collected menstrual blood. **Discussion:** Imperforate hymen presents as amenorrhea, recurrent cyclical lower abdominal/pelvic pains, acute urinary retention or palpable lump due to hematometrocolpos. **Conclusion:** It is a diagnosis that can easily be overlooked in the fast paced setting of the Emergency Department. It must be included, particularly, in the differential diagnosis of every pre-pubertal young female with abdominal pain or acute urinary retention.

Key words: Abdominal Pain, Menstruation Disturbances, Urinary Retention, Hymen, Pelvic Pain.

Introduction

Imperforate hymen is the commonest female genital tract malformation and the incidence is approximately 1 in 2000 females [1]. Imperforate hymen, is a condition where the hymen, a thin membrane in the shape of a half moon, covers the entire opening of the vagina [2]. There can be delayed diagnosis of this condition as the patient remains asymptomatic for a long time and if symptomatic can present with one or

many, of a variety of symptoms. Symptoms can range from mild abdominal pain and tenesmus to urinary retention and a palpable lump in abdomen due to hematometra, hematocolpos or hydrocolpos. Haematocolpos is a rare condition seen with imperforate hymen or vaginal atresia in peripubertal age, where the vagina is filled with menstrual blood [3]. In hydrocolpos, secretions are believed to result from the maternal estrogen

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effect on the vaginal and/or cervical glands and are mostly seen in newborn. Although the most common age of presentation of imperforate hymen is around puberty, diagnosis in-utero and during the newborn period and childhood are also reported. Mostly imperforate hymen is sporadic in nature but there are reports of familial cases showing dominant as well as recessive inheritance [4]. In this case we present a young female of 13 years old with acute urinary retention and large palpable lump in abdomen as a result of imperforate hymen.

Case Report

A 13 year old pre-menarchal female presented to the emergency department with history of acute urinary retention since 6 hours associated with suprapubic pain. She also gave history of lump in lower abdomen since last 4 months, which gradually increased to present size [Fig.1]. There was history of cyclical colicky lower abdominal pain with backache since last 6 months for which she took medication from local hospital. For last one month there was increased frequency and difficulty in micturition. She denied any poor oral intake, nausea, vomiting or problem with bowel movements. There was no previous history of urinary retention or trauma or any surgery. Her birth history and developmental history were unremarkable. Here secondary sexual characters were well developed. On routine blood investigations, hemoglobin was 8.5 gm%, total leucocyte count was $13,400/\text{mm}^3$ and renal function test were within normal limits. She was catheterized with 10 french unit (fr) Foleys catheter, which drained 700 cc clear urine. Here suprapubic pain was relieved after catheterization. On abdominal examination, suprapubic mass corresponding to approximately 14 weeks pregnant uterus was palpable [Fig.2]. The mass was arising from pelvis and had mild tenderness and was cystic on palpation.



Fig.1: Supra-pubic lump.



Fig.2: Supra-pubic lump with Foleys catheter in situ.

Perineal examination revealed normal external urethral opening and a bulging bluish colored bulge with a covering membrane over the vagina [Fig.3]. The bulge in perineum was exaggerated on pressing the suprapubi clump and by performing Valsalva maneuver [Fig.4]. The mass was found to be anterior to rectum and was cystic on per rectal examination.

The ultrasonography of abdomen and pelvis reported an 11.5x8x7.2 cm³ large fluid collection with fine internal echos (suggestive of blood) in dilated and enlarged vagina and uterus and was not related to bowel [Fig.5]. The cervical canal was seen widely open. There was no free fluid in peritoneal cavity. These findings were suggestive of hematocolpos and hematometra. Bilateral mild hydroureteronephrosis was noted on renal ultrasound.

After proper anesthetic evaluation she was posted for surgery. Needle aspiration from the bulging hymenal membrane confirmed the aspirate as collected blood. A cruciate incision was taken through the membrane which drained approximately 700 cc of collected chocolate colored blood passively, suggestive of menstrual products. After drainage the suprapubic lump disappeared. The incised quadrants of the hymenal membrane were excised laterally. Margins of vaginal mucosa were approximated with absorbable vicryl sutures [Fig.6].

Local analgesic cream and intravenous antibiotic were given. She had an uneventful postoperative period and was discharged on 4th day after removal of the catheter. She had menstruation after two months and is asymptomatic in follow up examination.

Discussion

The hymen is a vestigial membrane at the junction between the sinovaginal bulb and the urogenital



Fig.3: Bulge over the vaginal area.



Fig.4: Exaggeration of bulge on pressing the supra-pubic lump.



Fig.5: Ultrasonography showing fluid filled uterus with internal echos.

sinus. Normally it ruptures partially at the inferior portion during 8th week of gestation to establish connection between the vaginal lumen and exterior. When there is complete failure to of the inferior end of the vaginal plate to canalize, then diagnosis of imperforate hymen is made. Hymen provides innate immunity as it provides barrier to ascending infections [5]. Imperforate hymen is rarely associated with other female genital tract malformations but Mullerian duct malformations should be ruled out. Although it is mostly found in pubertal females, it can also be diagnosed with help of obstetric ultrasonography in fetus and in newborn by careful examination of the perenium. On ultrasonography findings of such as hematocolpos, hematometra, hematosalpinx, or hydrometrocolpos in newborn, suggest the diagnosis. Commonly pubertal girls present after menarche when menstrual blood trapped in the vagina behind the imperforate hymen which is known as hematocolpos creating a bluish bulge at the introitus. With cyclic menstruation, the vaginal canal becomes greatly distended, and the cervix may begin to dilate and allow formation of a hematometra and hematosalpinx thus forming lump in abdomen. This can lead to mass effect causing to urinary outflow obstruction or rarely intestinal obstruction. The largest reported size of hematocolpometra mass in a imperforate hymen case was of 24x12x16 cm³ on ultrasonography by Joanna Mercado-Alvarado *et al.* [11]. If patient or parents refuse genital exam evaluation, imaging studies can greatly help with diagnosis. According to Lui *et al.* [6] mean age of presentation is 12 years and 13.2 years by Liang *et al.* [7].

The common mode of presentation of imperforate hymen includes (i) Amenorrhea, which may be primary due to obstruction by imperforate hymenal membrane. (ii) Recurrent cyclical lower abdominal/pelvic pains due to continued distension of the vagina and uterus by accumulating menstrual blood [8]. (iii) Acute urinary obstruction due to



Fig.6: After incision of the imperforate hymenal membrane.

compression effect by the lump on urethra and angulation of the bladder neck [9]. (iv) Chronic urinary retention causing hydroureteronephrosis leading to renal failure in long term [10]. (v) Lymphovenous obstruction and intestinal obstruction in rare cases. The differential diagnosis of imperforate hymen includes lower transverse vaginal septum, distal vaginal atresia, complete vaginal atresia, phimosis of the cervix and mucocolpos.

In cases of imperforate hymen presenting with urinary retention, retention should always be treated via Foleys catheterization until definitive treatment via hymenotomy can be achieved. Because hymen is a symbol of virginity, its destruction during hymenotomy can lead to social problems for girls [12]. Different types of incision are proven effective for hymenotomy in literature such as cruciate incision, longitudinal incision, or excision of part of membrane. Hymenotomy is a minor procedure that does not cause significant morbidity and provides complete relief of all the symptoms. Follow up is

always necessary to make sure there is no refusion of the hymen.

Conclusion

Even though imperforate hymen is the most common congenital abnormality of the female genital tract, it is a rare cause of acute urinary retention or abdominal pain in children and adolescents. It is a diagnosis that can easily be overlooked in the fast paced setting of the Emergency Department. It must be included, particularly, in the differential diagnosis of every pre-pubertal young female with abdominal pain or acute urinary retention. Hymenotomy, a simple surgical procedure is all that needed for the treatment of imperforate hymen patients who can present with acute surgical emergency.

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