Mercado-Alvarado et al., Trop Med Surg 2013, 1:5
DOI: 10.4172/2329-9088.1000144

Tropical Medicine & Surgery

Case Report Open Access

Imperforated Hymen: An Unexpected Cause of Pediatric Abdominal Pain, Case Report and Review of Literature

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Abstract

Introduction: Imperforate Hymen is the most common female genital tract malformation with prevalence of up to 0.1% and can present with wide variety of symptoms, ranging from abdominal pain to urinary retention.

Case: Case of 11 y/o female with cyclical abdominal pain and palpable mass up to umbilicus. Patient diagnosed with imperforate hymen and taken to operating room (OR) by Gynecology team for hymenotomy; 2,500 mL of blood was evacuated.

Discussion: Imperforate Hymen is an uncommon cause of abdominal pain. Presentation varies from abdominal pain and difficulty urinating, to urinary retention and tenesmus. Ultrasound is the study of choice for further evaluation and definite treatment is via hymenotomy.

Conclusion: Imperforate hymen is an easily missed diagnosis in the Emergency Department (ED). It has to be included in the differential diagnosis for abdominal pain in pre-menarchal females.

Introduction

Imperforate hymen, as its name implies, is a condition where the hymen, a thin membrane in the shape of a half moon, covers the entire opening of the Vagina [1]. This condition, although rare, is the most common female genital tract malformation with a prevalence of up to 0.1% [2,3]. Diagnosis can go undetected until a patient starts experience one, or many, of a variety of symptoms.

Symptoms can range from mild abdominal pain and tenesmus to urinary retention and hematocolpos, a mass that forms due to the accumulation of menstrual blood that cannot leave the vaginal cavity. In this case, we present a young female with cyclical abdominal pain and a palpable pelvic mass. Setting this case apart is the size of the mass; over twice the size of any hematocolpos previously published on case reports [4].

The Case

Case of an 11 year-old pre-menarchal female with lower abdominal and pelvic pain for four days after moving some boxes in her bedroom. Associated to amenorrhea, increased urinary frequency and palpable abdominal non-pulsatile mass that extended above the umbilicus (Figure 1). She denied any poor oral intake, nausea, vomiting or problem with bowel movements. She had never been evaluated by a gynecologist. Upon further history, her sister had menarche at 10 years old and mother also had menarche at 10 years old.

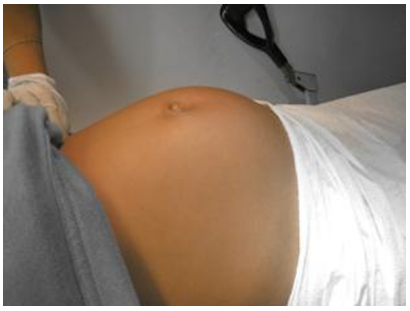

Figure 1: Protuberant abdomen due to enlarged mass.

Trans-Abdominal Ultrasound (US) evaluation showed a cystic mass of 24 cm×12 cm×16 cm. Further evaluation with computed tomography of the abdomen and pelvis showed a hyperdense, non-enhancing, fluid-filled pelvic mass confirming US findings (Figure 2). She was taken for genital examination were bulging imperforate hymen occluding the vagina was seen (Figure 3).

Obstetrics and Gynecology service was consulted and patient was taken to the OR. Vertical hymenotomy was performed and 2,500 ml chocolate-colored menstrual bloody fluid was drained. Patient was discharged on post-op day number two without any complications.

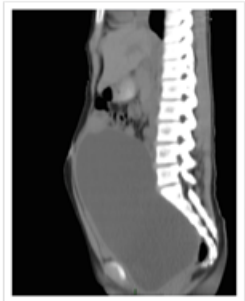

Figure 2: Sagital view from abdomino-pelvic CT scan showing huge abdomino-pelvic mass

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Received September 16, 2013; **Accepted** September 26, 2013; **Published** September 30, 2013

Citation: Mercado-Alvarado J, Falcon JL, Zequeira J (2013) Imperforated Hymen: An Unexpected Cause of Pediatric Abdominal Pain, Case Report and Review of Literature. Trop Med Surg 1: 144. doi:10.4172/2329-9088.1000144

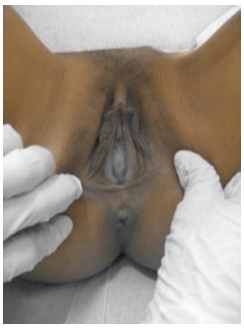

Figure 3: Bulging imperforate hymen through vaginal introitus.

Discussion

Imperforate hymen is a rare congenital anomaly reported at an approximate rate of 0.1% and occurs due to the incomplete canalization of the Mullerian system and the urogenital system [1]. In the embryological period, the lateral portion of the hymen originates from a fold of urogenital sinus at the union of the Mullerian ducts, whereas in its posterior part, it originates from the cells of the urogenital sinus externally and from Mullerian ducts internally. Usually in the eighth week of gestation, it partially ruptures in the inferior part of the Mullerian ducts, remaining as a fold of mucous membrane around the entrance of the vagina. Failure to partially rupture results in a persistence of the septum, which can be diagnosed as imperforate hymen clinically [5].

Imperforate hymen is an isolated abnormality, where diagnosis should ideally be done at birth by careful examination of the external genitalia of all newborn females [2-17]. During the neonatal period, it may present with fetal ascites or acute renal failure. The hematocolpos or hydrocolpos may lead to variable degrees of hydroureter, and hydronephrosis. If the diagnosis is not made in the newborn period and the hymen remains imperforate, the mucus will be reabsorbed and the child usually remains asymptomatic until menarche [10]. At menarche, usually between 9 to 13 years of age, the child starts getting cyclic abdominal pains associated with primary amenorrhea. Retained blood in the vagina, uterus, and fallopian tubes can result in hematocolpos, hematometra and hematosalpinx. Hematocolpos gets worse with each menstrual period [17].

Over thirty cases of hematocolpometra due to imperforate hymen have been reported [2-17]. Most of these cases present with cyclic abdominal pain, but presentation can vary widely, from low back pain [15] to acute urinary retention [3,5-12] and tenesmus [2,12]. Of the 20 cases being reviewed [2-17], 55% experienced urinary retention as a result of mass effect. Diagnosis is done through a thorough history and physical exam, which needs to include genitalia; something that is not always performed. Most of these reported cases presented in adolescence upon menarche. The youngest patient was a 3-month-old girl who had suffered from repeated urinary tract infections because of urinary retention related to pyocolpos [10]. Menarche typically occurs within 2 to 3 years after the larche (breast budding), at Tanner stage IV breast development, and is rare before Tanner stage III development [18-20]. Also, upon evaluation of the vagina, a bluish membrane will be seen protruding the vaginal introitus.

If patient or parents refuse genital exam evaluation, imaging studies can greatly help with diagnosis. Ultrasound will show an echogenic fluid accumulation in the vagina that can extend to uterus. Masses of up to 18 cm×8 cm [3,5,9,11,12,16] and containing up to 1L of blood [2,5-8,10-14] had been reported prior to our study. Our patient had double the volume and a 50% larger mass than any reported to our best knowledge. These masses place pressure on surrounding structures leading to the symptoms the patient experiences. In some cases ultrasound might not be enough for evaluation of other complications, and other tools like computed tomography scans or magnetic resonance imaging must be used [10].

Urinary retention should always be treated via catheterization until definitive treatment via hymenotomy can be achieved. Variations of hymenotomy exist to comply with cultural beliefs [3,8,10]. Because the hymen is a symbol of virginity in some communities, its destruction can be a source of social problems for some girls [10]. Hymental tissue in case of imperforate hymen tends to form a tougher border, making simple incision and sutures more than enough [3]. Multiple types of incisions have proven effective: cruciate incision, longitudinal incision or excision of part of membrane [10,12]. Standard treatment is surgical hymenectomy with T,X, plus, or cruciform incisions and removal of excess hymenal tissue [3]. The patient described in this case repor received a vertical incision as a part of a newer practice for hymen preservation. It involves a midline vertical incision, where the hymenal orifice was kept patent by 4 or 5 absorbable sutures that were formed by oblique location of the inner and outer needle sites to prevent realignment of the edges as described in Basaran et al. [3]. 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

Imperforate hymen, although being the most common female genital tract malformation, remains an uncommon cause for abdominal pain in the pediatric population. It is a diagnosis that can easily be overlooked in the fast paced setting of the Emergency Department. It is of utmost importance to perform a complete physical examination, to obtain a meticulous menstrual history of other female family members, and to have a high clinical suspicion in order to facilitate early detection. It must be included, particularly, in the differential diagnosis of every pre-pubertal and pre-menarchal young female with abdominal pain.

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