

## Imperforate Hymen: A Cause of Acute Urinary Retention in Young Females that is often Overlooked

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### Abstract

Children, especially females, very rarely present with acute urinary retention to the Emergency Department. In this case report, we present a case of urinary retention secondary to imperforate hymen leading to haematocolpos and mechanical obstruction of the urinary tract in a 12 year old adolescent girl. Imperforate hymen can be missed in adolescent girls presenting to Emergency Departments with urinary difficulty if genital examination or Emergency Ultrasound scan is not performed. There should be increased awareness among emergency physicians that imperforate hymen can be a possible cause urinary retention and lower abdominal pain in adolescent girls. We discuss the need of careful assessment along with a brief review of literature.

**Keywords:** Imperforate Hymen; Young Females; Cyclical Abdominal Pain.

### Introduction

Though imperforate hymen is one of the commonest congenital anomaly of lower female genital tract, occurs in approximately 1/1000 newborn girls i.e. 0.1% of all new born female babies [1, 2, 3].

Acute urinary retention is a rare occurrence in females because of their short urethra and anatomic relationships [1]. However, imperforate hymen can present as urinary retention due to obstruction from a pelvic or perineal mass caused from haematocolpos, which is the accumulation of menstrual blood above an imperforate hymen leading subsequently to the distension of the vagina. This distension of the vagina leads to stretching of the urethra and eventually urinary retention. A case of imperforate hymen that presented with acute urinary retention is described to increase awareness of this condition amongst EM clinicians.

### Case History

We present the case of a 13 year old girl who attended the Emergency Department with acute urinary retention and lower abdominal pain of about

6 hours duration. She did not have any nausea, vomiting, fever or bowel disturbance. She had no previous episodes of any urinary problems like retention or difficulty in passing urine. She had not attained menarche and denied any vaginal discharge or sexual activity. Her past medical history was unremarkable. Her mother had attained menarche at the age of 14.

Fig. 1



On physical examination her ABC's and vitals were stable. Abdominal examination revealed suprapubic tenderness and with no guarding and rigidity. Bowel sounds were present and hernial orifices were normal.

Vaginal examination revealed bulging bluish membrane beneath the urethral orifice.

Rest of the systemic examination was normal.

Bedside USG (Figure I) showed a distended bladder with grossly distended fluid filled uterus measuring 25cm\*15\*16cm. Our final diagnosis was acute urinary retention secondary to urethral obstruction due to imperforate hymen and haematocolpos and hematometra.

Foley's catheterization (12F) was done immediately under aseptic and antiseptic precautions to relieve the symptoms of acute urinary retention. The patient then underwent a vertical hymenotomy in the operation theatre and 2550 ml of blood mixed, chocolate coloured fluid was drained. Patient was discharged on day two without any complications.

## Discussion

This case report helps us to think about imperforate hymen in the differential diagnosis and the use of bedside ultrasonography by the ED physician as an adjunct to the diagnosis.

The hymen develops from the embryonic vagina buds and the urogenital sinus and normally perforates in the later stages of embryonic development and forms a central canal that communicates between the upper vaginal tract and the vestibule of the vagina. Imperforate hymen occurs due to incomplete canalization of the mullerian system and the urogenital system [2]. It is a developmental abnormality and the most frequent cause of vaginal outflow obstruction which is reported in approximately of 0.1% of newborns.

Imperforate hymen is an isolated abnormality, where the diagnosis should ideally be done at birth by careful examination of the external genitalia of all newborn females [1]. Patients who are not diagnosed in their infancy can present in the early part of second decade with symptoms of cyclical abdominal pain, urinary retention or constipation due to hematometra or haematocolpos. Sometimes in severe cases hematosalpinx can occur due to retrograde menses with resultant development of intra-abdominal endometriosis.

The most common symptoms of an imperforate hymen are cyclical abdominal pain and urinary retention, usually presenting between the ages of 13 and 15 years (when menarche occurs) [3, 4]. In a previous report on twenty cases it was found that 55% of the patients presented with urinary retention as a result of mass effect [5].

Though, the etiology of this condition is still unknown, imperforate hymen results in vaginal outflow obstruction and menstrual blood accumulates in the vagina (haematocolpos) and the uterus (hematometra). This may lead to pressure and stretching effects on the urethra, bladder, intestines or pelvic blood vessels which result in urinary retention, intestinal obstruction or pedal oedema. [3, 5-9]. Low back pain may also result from pressure and irritation of the sacral plexus [4].

Imperforate hymen can mimic other lower abdominal conditions like appendicitis, urinary tract infection and cystitis, renal calculi or abdominal tumour (ovarian tumour), where patients have even undergone appendectomies [10].

Though imperforate hymen is not a very uncommon cause of acute retention, the lack of awareness amongst clinicians frequently leads to incomplete history and physical examinations leading to misdiagnosis and unnecessary tests and treatment [2] One should always consider an imperforate hymen if there is a discrepancy between the Tanner stage and menarche status [2].

Gynecological examination should be carried out in all adolescent females and will reveal a bluish bulging hymen and generally an abdominal mass. Abdominal ultrasound showing a pelvic cystic mass, which bulged when Valsalva maneuver is used confirms the diagnosis of imperforate hymen by differentiating it from transverse vaginal septum which should not bulge [2].

If imperforate hymen is not diagnosed early it can cause serious complications such as infections (pyocolpos), hydronephrosis, renal failure, endometriosis and subfertility [11, 12]. It has been shown in a previous study that eight of nine patients with imperforate hymen and outflow obstruction had developed endometriosis at the time of operation.

Imperforate hymen is surgically treated by a cruciate incision in the hymen from 4 o'clock position to 10 o'clock position and 2 o'clock position to 8 o'clock position which allows the accumulated blood to drain away. This should be done aseptically as a closed vagina has an alkaline or weakly acidic pH and lacks in protective Doederlein's bacilli. This

causes poor natural resistance to bacteria entering from the lower genital tract and the blood and debris provide a good culture medium after the drainage leading to intrauterine infection [4]. The complications of a hymenotomy are infection, bleeding, scarring and stenosis of the vaginal opening [13].

A previous study on the long term results of hymenotomy has shown that nine out of fifteen patients had irregular periods and six had dysmenorrhoea after hymenotomy. However their Pre-operative complaints like cryptomenorrhea (n=15), abdominal pain (n=11), palpable mass in the lower abdomen (n=9), urinary retention (n=6), dysuria (n=3) and problems defecating (n=4) disappeared after surgery. Most patients had no sexual dysfunction and [14] two of them who were attempting pregnancy and were successful. Another study showed that 86% of patients who attempted pregnancy succeeded after surgical correction of imperforate hymen [12]. Less invasive treatments for an imperforate hymen include the use of CO<sub>2</sub> lasers or a Foley catheter [12].

### Conclusion

Imperforate hymen is one of the most common female genital tract malformations though thought to be uncommon cause of abdominal pain in pediatric population. A large number of patients with this condition (55%) presents with acute urinary retention. It is one of the conditions that can be overlooked in a busy emergency department leading to misdiagnosis and delayed or unnecessary investigations, treatment and serious complications. So, it is very important to take a complete gynecological history and perform a gynecological examination in adolescent girls presenting to the Emergency department with cyclical pain, lower abdominal mass or acute urinary retention especially if there is a discrepancy between the Tanner stage and menarche status.

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