



## CASE REPORT

### **Obstructive Uropathy as a Complication of Hematometrocolpos in an Adolescent Female: A Case Report**

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#### **Abstract**

Obstructive uropathy, secondary to mass obstructing effects such as hematometrocolpos and consequent acute urinary retention (AUR); is a proven but rare condition in females. Imperforated hymen, which is found in 0.05-0.1% of females, obstructs blood flow at the onset of menstruation with a resultant hematometrocolpos presenting most commonly with abdominal pain and urinary symptoms in the background of primary amenorrhea, which is similar to the presentation of the 11 years old female in the case report. She had abdominal pain and dysuria, which AUR followed for 16 hours. The patient was at Turner stage 3, and the examination revealed a palpable tender pelvic mass up to the umbilicus level with a bulging introitus and an imperforated hymen. Ultrasonography confirmed hematometrocolpos and an associated bilateral grade 2 hydronephrosis. Therefore, hymenotomy and excision of hymenal edges were done. Although diagnosis can be directed by physical examination, it can be significantly delayed or missed due to generally low incidence rate and insufficient physical examination due to cultural and religious reasons. This case report directs toward the importance of high clinical suspicion of hematometrocolpos as a cause of AUR in adolescent females and the necessity of a complete detailed physical examination, although it is rare.

**Keywords:** Imperforated hymen, Adolescent, Urinary retention, Hematometrocolpos, Hydronephrosis

#### **Introduction**

Obstructive uropathy and consequent acute urinary retention is a rare condition in females compared to males due to the different anatomical features of each.<sup>1</sup> Obstructing mass effect is a leading cause of acute

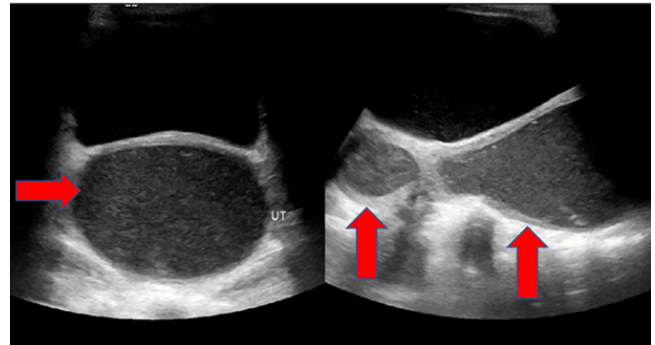
urinary retention in females. Hematometrocolpos, a condition wherein blood is retained and accumulated in the vagina up to the uterus due to obstructed vaginal outflow, can result in acute

urinary retention.<sup>2,3</sup> Around 0.05 - 0.1% of females are born with an Imperforated Hymen obstructing vaginal outflow, resulting in hematocolpos, hematometra, or hematometrocolpos.<sup>4</sup> Imperforated Hymen results from failure to completely canalize the urogenital sinus endoderm perinatally.<sup>5</sup> It often presents in adolescence at the onset of menstruation in which the patient attends the paediatric emergency, most commonly for abdominal pain or urinary symptoms with primary amenorrhea.<sup>4</sup> Clinical history and physical examination pointing for hematometrocolpos can be confirmed by ultrasonography for further management.<sup>6</sup> We are presenting a case of a premenarchal 11 years old female presenting with severe abdominal pain and acute urinary retention.

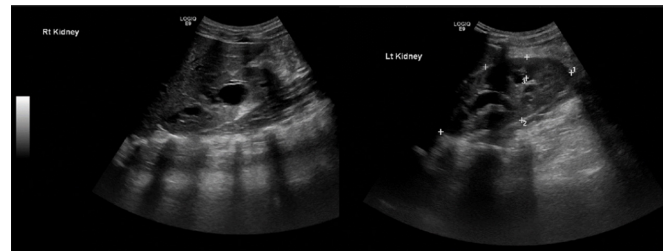
### Case presentation

An 11 years old girl was brought to the emergency department with a presenting complaint of abdominal pain associated with the inability to pass urine for more than 16 hours. Abdominal pain was most intense in the lower abdomen, radiating to the flank area bilaterally and aggravated by physical activity with mild relief on hip flexion. Abdominal pain was accompanied by initial dysuria and a lack of urine for more than 16 hours. The child was premenarchal at Tanner stage 3 and denied a previous history of cyclical abdominal pain. Abdominal Examination revealed a palpable pelvic mass up to the level of the umbilicus that was tender but without rebound or guarding. Although gynecological examination was refused initially by a caregiver, a bulging introitus and an imperforated hymen were visualized upon external genitalia inspection after detailed clarification of the predictable diagnosis and the associated possible complications of late diagnosis and management. Ultrasonography was performed and confirmed hematometrocolpos (Figure 1) with an associated distended bladder (an estimated retained urine volume of 300 milliliters) and grade 2 hydronephrosis bilaterally (Figure 2). Urine catheterization was offered, but the patient and the guardian vehemently refused it. A basic laboratory work-up that included complete blood count, renal function test, electrolytes, C-reactive protein, urine analysis, and urine culture was insignificant except for high leukocytes count in urine but a negative

urine culture. Informed consent was obtained, and the patient had a hymenotomy (a cruciate incision was done) with excision of hymenal edges, and around 700ml of retained blood was drained. The child recovered well post-operatively without complication, followed up at 2 and 6 weeks after the procedure with no recurrence or need for further intervention.



**Figure 1.** Transabdominal ultrasound of the pelvis in transverse and longitudinal view show distended uterus and vagina [red arrows] by homogenous echogenic consistent with hematometrocolpos.



**Figure 2.** Greyscale images of both kidneys shows bilateral mild hydronephrosis.

### Discussion

Obstructive uropathy and acute urinary retention rarely presents in females though it is more common in males, given different anatomy.<sup>1</sup> Multiple causes have been identified to cause acute urinary retention in adolescent females, including infectious processes (i.e., urinary tract infections), neurological disorders, or conditions that result in obstructive mass effect. Renal stones, urethral strictures, and hematometrocolpos are defined causes of mechanical obstruction that result in acute urinary retention in adolescent females.<sup>3,7</sup> Although it is rare, obstructive uropathy is most commonly caused by hematometrocolpos secondary to imperforated hymen in this pediatric category.<sup>3</sup> Imperforated hymen is a rare local congenital anomaly with an incidence rate of 0.05-0.1% caused by failure of degeneration of cells and failure of urogenital sinus endoderm canalization perinatally.<sup>3,5</sup> It remains asymptomatic until menarche; neonatal diagnosis is

possible if the neonate develops mucocolpos due to vaginal secretions.<sup>3</sup> Systematic review done in 2019 by Lee *et al.* defined more than 30 clinical signs and symptoms of the imperforated hymen. Presentation to the health faculty with abdominal pain and primary amenorrhea was found in more than half of patients diagnosed later with imperforated hymen.<sup>4</sup> Cyclical abdominal pain was commonly defined in published cases and helped direct physicians toward the imperforated hymen, mostly diagnosed at a median age of 11.2 years. Though our patient presented with abdominal pain at the age of 11 years, she denied a previous history of cyclical abdominal pain.<sup>4</sup> Patients with imperforated hymen can present moreover with a palpable mass and urinary symptoms, including dysuria, urinary frequency, and retention. Given the mass effect and resultant hydronephrosis secondary to blood accumulation in the vagina and/or uterus which stretch, compress, and obstruct the urethra, urinary tract infections may commonly occur as a complication with an incidence rate of 20-48%.<sup>1,8,9</sup> Symptoms that were difficult to relate to imperforated hymens, like back pain, constipation, respiratory distress, nausea, and vomiting, were also reported.<sup>4</sup> Suspected hematometrocolpos can be diagnosed by careful perineal examination and inspecting a bulged hymen at the vaginal introitus; thus, careful gynecological examination in any adolescent female presenting with abdominal pain or obstructive uropathy with primary amenorrhea is highly recommended.<sup>10</sup> Gynecological inspection and examination can be encountered frequently by rejection because of cultural and tribal factors. It should be done to all patients with a suspected imperforated hymen, considering the educational levels and awareness of the patients and caregivers about the imperforated hymen and needed gynecological examination.<sup>8</sup> Ultrasonography is the most common modality of radiological imaging that is used to differentiate pelvic masses and it is a preferred modality in the diagnosis of hematometrocolpos and associated complications.<sup>3,11,2</sup> Grouped signs and symptoms like dysuria, acute urinary retention, abdominal pain, a palpable mass and bilateral hydronephrosis with suspected urinary tract infection in a patient with hematometrocolpos secondary to imperforated

hymen like in our patient were not commonly reported. Different types of management plans were described in the literature because of still present cultural preferences of preserving virginity in young females.<sup>10</sup> On the other hand, hymenectomy and excision of the hymenal edges have significantly reduced the risk of recurrence.<sup>6</sup>

## Conclusion

Our case underlined the importance of gynecological examination as part of the systemic examination in premenarchal adolescent females presenting with abdominal pain and/or obstructive uropathy specially in countries where tribal, cultural and religious factors are influential. Thus, in spite of the fact that hematometrocolpos secondary to Imperforated Hymen can be directed easily by physical examination, diagnosis can be delayed and challenging, given the generally low incidence rate and insufficient physical examination due to such factors which might be thought to impact preserving virginity in this age group.

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