

# Acute Urinary Retention Associated with an Imperforate Hymen and Hematocolpos

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Acute urinary retention is unusual in children and when present they are usually a candidate for visiting the emergency department upon initial diagnosis. We report a 10-year-old girl who complained of acute urinary retention depending on imperforate hymen. Ultrasonography demonstrated a large echogenic mass over the vagina and mild dilation of the uterus. Imperforate hymen associated with hematocolpos was diagnosed. Cruciate hymenotomy was performed. The symptoms resolved after the procedure.

Adolescent girls who complain of urinary symptoms with no previous menstruation should have their external genitalia examined in order to rule out the possibility of imperforate hymen as the cause of acute urinary retention.

**Key Words:** Acute urinary retention, Imperforate hymen

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## Introduction

Acute urinary retention (AUR), meaning the inability to pass urine, is an uncommon diagnosis encountered in childhood. The etiology of AUR is age-dependent. The causes of AUR in childhood may be psychogenic, drug-induced with antihistamines or anticholinergic drugs, or related to viral infections, congenital anomalies, neurologic bladders or mechanical compression of the urethra via the mass of pelvis.<sup>1,2</sup>

We report the case of an adolescent girl who complained of AUR due to imperforate hymen.

## Case Report

A 10 year-old girl was admitted with history of lower abdominal pain for 7 days and retention of urine for 5 days. There was no history of nausea, vomiting, altered bowel habits and fever. The patient had not started her menses yet. She was apparently asymptomatic until a year before when she started developing cyclical pain in the lower abdomen, which lasted for 4-5 days every month. The patient was in acute distress

and agony due to pain. Physical examination showed a pelvic mass extending to the suprapubic region with tenderness. No dimpling or hair over the lumbosacral region was noted. Neurologic examinations were normal. Secondary sexual characteristics were present. Urethral catheterization was administered for relief of the symptoms. A total of 1500 mL of clear urine was drained. The hymen was found to be imperforate and was bulging forwards. On examination, a bulging bluish membrane was seen on retracting the labia. Ultrasonography showed significant echogenic fluid accumulation in the vagina measuring about 10.3×6.9 cm in size, mild dilation of the uterus, no hydronephrosis, and no abnormalities of the ureter and bladder.

The patient was taken to the operating room and a cruciate incision was made over the hymen under general anesthesia (Figure 1).



Figure 1: Cruciate incision made over the hymen.

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The edges were everted. Around 500 ml of dark, red, tarry blood was drained (Figure 2). The patient was discharged postoperative 4<sup>th</sup> hour.



Figure 2: Drainage of dark, red, tarry blood after the edges were everted

## Discussion

The hymen is an embryologic remnant of mesodermal tissue. Failure to perforate during embryonic development results in accumulation of successive menstruation in the vagina and uterus during puberty. Imperforate hymen is an uncommon anomaly of the reproductive tract, occurring in approximately 0.1 % of newborn females.<sup>3</sup> McCann et al reported an incidence of 1.2% (n:114) for imperforate hymen in a descriptive study about genital findings in girls between the ages of 10 months and 10 years.<sup>4</sup> Although imperforate hymen usually occurs sporadically, some familial occurrences have been reported. The mode of transmission is thought to be autosomal recessive or autosomal dominant.<sup>5</sup> An imperforate hymen is almost always an isolated finding, but it may also occur with McKusick-Kaufman syndrome or Bardet-Biedl syndrome. Other possible associated anomalies include polydactyly, congenital anorectal abnormalities and multicystic dysplastic kidneys. In addition, urinary tract abnormalities have been reported.<sup>6</sup>

The differential diagnosis of primary amenorrhea, pelvic pain, and pelvic mass in pubertal developmental stage includes transverse vaginal septum, longitudinal vaginal septum, vaginal agenesis, and cervical atresia. Imperforate hymen must be differentiated from a low transverse vaginal septum; this can be accomplished with the Valsalva maneuver. Imperforate hymen should bulge with Valsalva and transverse vaginal septum should not. Magnetic resonance imaging (MRI) may also identify if a cervix is present, differentiating a high vaginal transverse septum from cervical agenesis. MRI will delineate these abnormalities and is considered the gold standard for diagnosis.<sup>7</sup> Imperforate hymen is usually not associated with any other Müllerian abnormalities. Thus, exten-

sive investigation for urogenital anomalies is often unnecessary for girls with imperforate hymen. Hematocolpos, due to imperforate hymen, though simple to treat, may have devastating sequelae in the form of endometriosis if not managed in time.<sup>8</sup>

The presenting clinical features vary with age at diagnosis. Imperforate hymen has been diagnosed with prenatal ultrasound documented by bladder outlet obstruction due to hydrocolpos or mucocolpos. During the neonatal period, imperforate hymen may present with fetal ascites or acute renal failure.<sup>9,10</sup> The hematocolpos or hydrocolpos may lead to variable degrees of hydronephrosis, hydroureter, hydronephrosis and nephronia.<sup>11</sup> The clinical symptoms of teenagers include cyclic lower abdominal pain, primary amenorrhea, chronic constipation, low back pain, dysuria, and AUR.<sup>12,13</sup>

AUR is unusual in children, and many conditions are associated with it. AUR may result from inadequate bladder contraction due to inflammation, be drug-induced, or as a result of dyssynergia between detrusor contraction and sphincter relaxation in a neurologic bladder. Extrinsic compression of the urethra by an ovarian tumor, vaginal mass or rhabdomyosarcoma of the urinary bladder may also cause AUR in young females. The incidence of patients with imperforate hymen presenting with AUR varies, ranging from 3% to 46%.<sup>14,15</sup> The mechanisms of imperforate hymen causing AUR may be due to the retained hematoma in the vagina compressing the urethra or causing irritation of the sacral plexus. In addition, the mechanical effect of the hematoma in the vagina may alter the angle between the bladder neck and urethra, resulting in urinary outflow obstruction. Urinary retention is always treated by catheterization. It is convenient and easy to observe the hymen at the time of catheterization. A bulge along the posterior aspect of the introitus is typical. A high index of suspicion makes early diagnosis easier and prevents inappropriate laboratory work or imaging studies. On pelvic examination, bluish bulging hymen is noted in patients with hematocolpos secondary to imperforate hymen. The diagnosis can be established with the help of abdominal ultrasound showing the pelvic cystic mass.

The classical treatment of imperforate hymen is via surgical hymenectomy. Bleeding, scarring and stenosis of the vaginal orifice are the major complications of this procedure. The patients with imperforate hymen were managed a Foley catheter as a new technique without damaging the structure of the hymen. After oval centralized closure was performed on imperforate hymen membranes, Foley catheter was inserted through closure of hymen and then the balloon of Foley catheter was insufflated 10 cm<sup>3</sup>. Catheter was removed after 2 weeks. This new technique is less invasive than other methods and prevents many social problems by preventing destruction of the architecture of hymen and providing annular-intact

hymeneal ring.<sup>16</sup> The optimal timing of operation is based on symptoms. Asymptomatic children diagnosed without mucocele can be treated during puberty before the development of hematocolpos or hematometra to reduce the risk of general anesthesia. The long-term outcome is good. Endometriosis and infertility are the most prominent late complications.

Teenagers with AUR usually visit the emergency department firstly. Imperforate hymen should be considered in adolescent girls who complain of urinary symptoms with no previous menstruation. Inspection of the external genitalia, along with catheterization and detailed history-taking, including regarding menstruation, can aid in preventing misdiagnosis and commencing with additional appropriate diagnostic examinations.

### İmperfore Hymen ve Hematokolpos ile Birlikte Görülen Akut Üriner Retansiyon

Akut üriner retansiyon çocuklarda nadir görülür ve görüldüğünde bu çocuklar tanı konur konmaz acil servise adaydırlar. Biz de 10 yaşında imperfore hymene bağlı akut üriner retansiyon şikayetleri olan bir kız çocuğunu bildirmekteyiz. Ultrason ile vajen üzerinde geniş ekojenik bir kitle ve uterusu da hafif bir dilatasyon tespit edildi. İmperfore hymen ile birlikte hematokolpos tanısı kondu. Çapraz hymenotomi uygulandı. Ugulanan prosedür sonrası belirtiler geriledi.

Henüz menstruasyon görmemiş, üriner sistem şikayetleri olan adolesan çağıdaki çocukların dış genital sistemleri, akut üriner retansiyonun muhtemel sebeplerinden imperfore hymenin ekarte edilebilmesi için muayene edilmelidir.

**Anahtar Kelimeler:** Akut üriner retansiyon, İmperfore hymen

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