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Case Report

Hydrocolpos Complicated by Chronic Urine Retention. A Case Report and Current Literature Review

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Abstract

Hydrocolpos is a rare congenital anomaly characterized by a fluid-filled distension of the vagina, resulting from the retention of cervical and vaginal secretions behind a vaginal obstruction. An imperforate hymen is the most common etiology. Diagnosis can be made prenatally or at birth. It can present with lower urinary tract symptoms due to an anterior mass effect on the bladder. Early treatment is necessary to prevent the mechanical and infectious complications associated with chronic infravesical obstruction. Treatment is surgical, and several techniques have been described, some aiming to preserve the hymenal architecture to address sociocultural considerations, although scientifically, hymenal integrity is not an indicator of virginity. We report a case of hydrocolpos due to an imperforate hymen, diagnosed late in a 5-year-old girl and complicated by chronic urinary retention. She was successfully treated with hymenoplasty preserving the hymenal architecture. The postoperative course was uneventful, with a return to normal micturition.

Keywords

Hydrocolpos, Imperforate Hymen, Chronic Urinary Retention, Hymenoplasty, Child

1. Introduction

Hydrocolpos is defined as a fluid-filled distension of the vagina secondary to a congenital obstruction of the vaginal outlet. An imperforate hymen is the most frequent cause of this condition [1].

Urinary retention and constipation are potential consequences of the hyperpressure exerted by the hydrocolpos within the pelvic cavity. This pathophysiology has been described in cases of hematocolpos due to imperforate hymen in peripubertal girls [2].

Diagnosis can be made at birth through clinical examination, or prenatally via ultrasound or Magnetic Resonance Imaging (MRI) [3, 4].

We report a late-presenting case in a 5-year-old girl complicated by chronic urinary retention, which we treated with

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hymenoplasty.

2. Case Presentation

A 5-year-old girl, born at term via vaginal delivery, was diagnosed with an imperforate hymen at birth in a local health center. Due to financial constraints, her parents did not attend the scheduled specialist consultation, and the child was lost to follow-up.

Over approximately three years, she gradually developed pelvic pain associated with lower urinary tract symptoms, including overflow incontinence, dysuria, straining, and a weak urinary stream. This prompted a urology consultation. Clinical examination revealed an intermittent urinary stream and crying upon urination. The lumbar regions were non-tender, and palpation of the hypogastrium provoked urinary incontinence. Gynecological examination identified a vaginal fluid collection bulging behind an imperforate hymen (Figure 1).

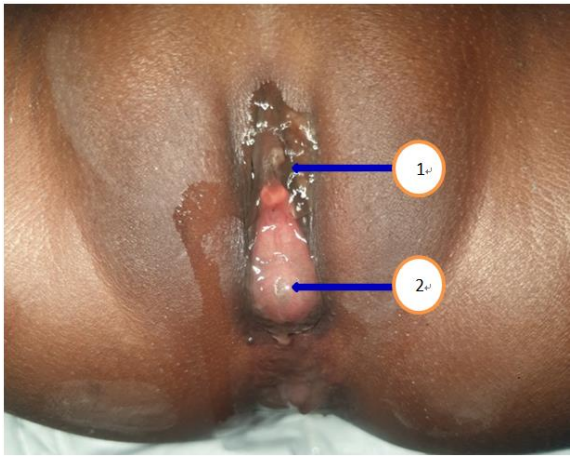

Figure 1. *Imperforate hymen with hydrocolpos (2) and urinary incontinence (1).*

A diagnosis of hydrocolpos due to an imperforate hymen complicated by chronic urinary retention was made. An indwelling CH 8 transurethral catheter was placed, draining approximately 150 cc of straw-yellow urine. The remainder of the physical examination was unremarkable.

Serum creatinine was 32.4 μmol/l, and urinalysis with culture was sterile. Abdominopelvic ultrasound revealed a post-void residual volume estimated at 45 cc. CT urography showed left ureteral dilation measuring 6 mm, compared to 3 mm on the right.

In the operating room, under general anesthesia and in the lithotomy position (Figure 2), a vertical midline hymenotomy of approximately 1.2 cm was performed, evacuating 80 ml of citrine-colored fluid. Hemostasis was achieved with electrocautery, followed by marsupialization of the hymenal edges (Figure 3). The procedure concluded with the placement of a vaginal pack, which was removed 24 hours later along with the transurethral catheter. The patient was discharged after 48 hours of observation with satisfactory micturition.

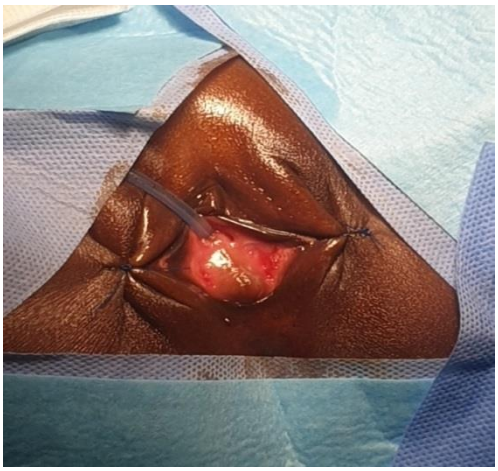

Figure 2. *Patient Positioning.*

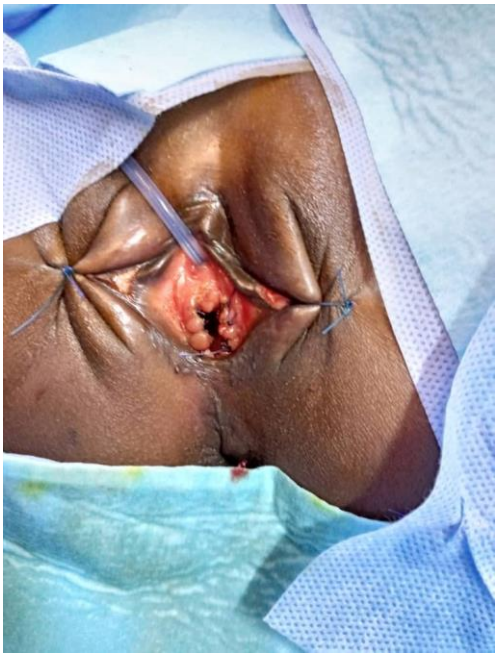

Figure 3. *Post-hymenoplasty.*

3. Discussion

Hydrocolpos due to an imperforate hymen is a rare cause of urinary retention in daily urological practice [1, 2].

Prenatal diagnosis of imperforation can be suspected on ultrasound by the presence of a retrovesical fluid-filled mass [3] or on MRI, which will show a pelvic cystic mass suggesting imperforate hymen with hydrocolpos, aiding the differential diagnosis from sacrococcygeal teratoma or myelomeningocele [3, 4]. In our case, no prenatal imaging could be performed, likely due to the lack of ultrasound availability

at the prenatal care center and the low socioeconomic status of the family, preventing travel for imaging.

If missed prenatally, diagnosis is made at birth after a systematic and complete clinical examination [2, 5], as was the case for our patient. The delay in specialized consultation for our patient was reportedly due to financial constraints. The clinical presentation on admission was characteristic, with an intermittent stream and crying during micturition. Palpation of the hypogastrium induced urinary incontinence, and gynecological examination revealed a vaginal fluid collection behind an imperforate hymen. This clinical picture is consistent with literature reports [1, 6].

In hydrocolpos, a postnatal X-ray may show an opaque pelvic mass with a mass effect on the bowels. Abdominopelvic ultrasound typically reveals a midline cystic mass in the pelvis with a fluid-debris level and fine echogenic particles, displacing the bladder anteriorly [7, 8]. In some cases, an endometrial collection defining hydrometrocolpos may be noted [8]. MRI confirms ultrasound findings, showing a T1 hypointense, T2 hyperintense fluid accumulation in the vagina and sometimes the endometrial cavity [8].

In our case, ultrasound estimated the post-void residual at 45 cc. Literature rarely evaluates post-void residual or the estimated volume of the hydrocolpos. We believe these are important parameters for assessing the pathophysiological stage of the infravesical obstruction and for planning surgical equipment. Ultrasound also helps identify upper urinary tract impact or associated malformations: hydronephrosis is frequent and often bilateral [7, 8]. In our case, it was unilateral, revealed by CT urography showing left ureteral dilation (6 mm vs. 3 mm on the right). Renal function is usually normal if diagnosis and management are early.

Diagnosis can also be made later at puberty due to primary amenorrhea and the presence of hematocolpos [2, 5].

In our case, serum creatinine and urinalysis were normal. However, complications including renal failure, recurrent urinary tract infections, pyocolpos, or fatal sepsis can occur, underscoring the need for early management [5, 7-9].

Several surgical techniques have been reported: cruciform hymenotomy [1, 2, 4], hymenoplasty via a cruciform incision on the vaginal bulge followed by marsupialization of the edges [3, 10], or total circumferential excision of the hymen [1, 8]. Exploratory laparotomy has also been reported in cases of diagnostic uncertainty for large hydrometrocolpos [9].

Salvat and Slamani advise against total circumferential hymenal excision due to the risk of sclerosis and introital dyspareunia. They recommend a star-shaped radial incision technique while protecting the orifices of Bartholin's glands located at the 5 and 7 o'clock positions [11]. However, this simple technique does not guarantee preservation of the hymenal architecture. This is a concern for patients wishing to preserve hymenal integrity. Alternatives have been proposed to address sociocultural concerns related to virginity.

The Caparo technique involves a sagittal hymenal incision, giving the appearance of a labiate hymen. We used a variant of this technique in our case, performing a vertical midline hymenotomy followed by marsupialization of the edges. The Caparo technique preserves hymenal architecture but is discouraged by Salvat and Slamani, likely due to a high risk of recurrence [6, 11]. We believe the marsupialization performed on our patient may reduce this recurrence risk.

A new technique described by Ali et al. guarantees the preservation of hymenal architecture: it involves excising a small central collar of hymen (0.5 cm in diameter) through which a Foley catheter with a 10 cm^3 inflated balloon is introduced. The catheter is removed after two weeks [12]. Chelli et al. achieved the same therapeutic result by excising only a central hymenal collar without using a Foley catheter [6].

The postoperative course was simple in our case, with satisfactory micturition. Literature reports postoperative complications such as recurrence [10], acute renal failure, urosepsis, and death [4, 9]. The prognosis of this condition is good if diagnosed early but becomes poorer in cases of delayed diagnosis or complications.

4. Conclusion

Hydrocolpos due to an imperforate hymen is a rare but preventable cause of chronic urinary retention. A systematic clinical examination at birth is sufficient for diagnosis and allows for early surgical management. The diversity of surgical techniques reflects both medical and sociocultural considerations. The prognosis is favorable when treatment is performed early, before the onset of urinary or infectious complications.

Abbreviations

MRI	Magnetic Resonance Imaging
CT scan	Computed Tomography Scan

Author Contributions

Hassami Sawadogo: Conceptualization, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing

Abdoul-Karim Pare: Conceptualization, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing

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Brahima Kirakoya: Writing – original draft, Writing – review & editing

Adama Ouattara: Writing – original draft, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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