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Case Report

Ectopic Ureter Opening in Vagina in a Dual Collecting System: Report of a Case

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Abstract

The ectopic ureter is a congenital anomaly characterized by an opening of the ureter outside the bladder trigone. Approximately 80% of cases are associated with a completely dual collecting system, most often involving the ureter draining the upper pole, in accordance with the Weigert-Meyer Law. The majority of cases are diagnosed during childhood, often during continuous urinary leakage or recurrent urinary infections. However, certain cases may remain unknown and be revealed in adulthood. Ultrasound, urography, uroscanner and uro-MRI are currently the examinations which allow the precise diagnosis of these uropathies. Surgical management of an ectopic ureter depends on the functional status of the kidney. Various surgical methods are available including the laparoscopic approach. We report a case of an ectopic ureter draining into the vagina, associated with ureteral duplication, discovered in a 16-year-old girl presenting with urinary incontinence. The investigations and treatment are discussed, as well as hypotheses regarding its embryogenesis, considering data from the literature. Ectopic ureter in a double urinary system is a rare but classic cause of permanent urinary incontinence in young girls, despite preserved voiding. Its diagnosis can be delayed, particularly in resource-limited settings, hence the importance of clinical suspicion in any case of atypical incontinence.

Keywords

Ectopic Ureter, Urinary Incontinence, Reimplantation

1. Introduction

The ectopic ureter is a congenital anomaly characterized by an opening of the ureter outside the bladder trigone. Approximately 80% of cases are associated with a completely dual collecting system, most often involving the ureter draining the upper pole, in accordance with the Weigert-Meyer Law [1, 2].

In women, ectopic drainage can occur at various points in the urogenital tract, from the bladder neck to the perineum. The most common sites of insertion are the urethra, followed by the vagina and the vulvar vestibule. In men, ectopic ureters generally open in the lower part of the bladder, followed by the posterior urethra, the seminal vesicle, the vas deferens and the ejaculatory duct [3]. This anatomical feature explains the

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typical clinical presentation in girls, dominated by permanent urinary incontinence despite retained urination.

The majority of cases are diagnosed during childhood, often during continuous urinary leakage or recurrent urinary infections. However, certain cases may remain unknown and be revealed in adulthood, particularly in contexts with limited access to care or when symptoms are mild and tolerated for a long time [4]. Ultrasound, urography, uroscanner and uro-MRI are currently the examinations which allow the precise diagnosis of these uropathies.

Scintigraphy and uro-MRI make it possible to assess the function of the kidney concerned in order to help make a therapeutic decision [5].

We present a case of ectopic opening of the ureter in vagina following a late discovery of ureteral duplicity.

2. Observation

It was a 15-year-old girl with a history of female genital mutilation at the age of 8. She is seen in urology consultation for permanent urinary incontinence, requiring the use of two sanitary napkins per day. The symptomatology was noticed according to the mother since the age of two, when diapers were stopped.

During interrogation, urination is preserved. urinary incontinence was permanent and not influenced by effort or changes in position. There were no other lower urinary tract symptoms, including urinary tract infections.

The physical examination revealed wearing a protective pad soaked in urine, type 1B genital mutilation (Figure 1) with urine passing through the vagina intermittently (every three to five minutes).

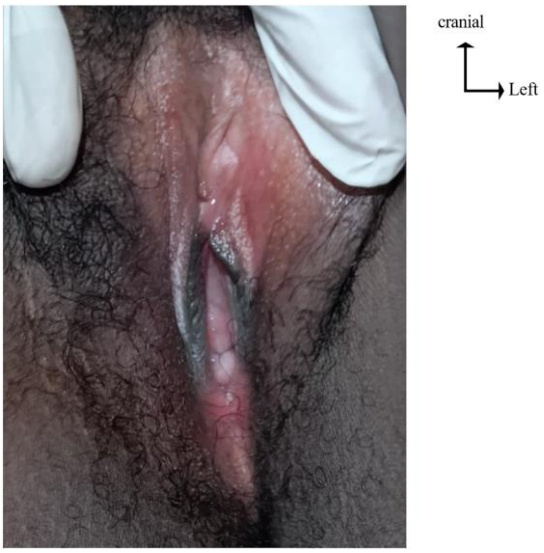

Figure 1. *Type 1B genital mutilation.*

Examination of the vaginal cavity was impossible (virgin patient).

Faced with this symptomatology, we posed as diagnostic hypotheses, a vesico-vaginal fistula or an ectopic opening of the ureter in the vagina.

The biological analyzes revealed a normal blood count, the assessment of renal function showed creatinine at 10 mg/L and the cytobacteriological examination of the urine did not isolate any germs.

On imaging, the uro-CT scan revealed a right ureteral duplicity with a sinuous, tortuous, dilated upper ureter opening into the vagina (Figure 2).

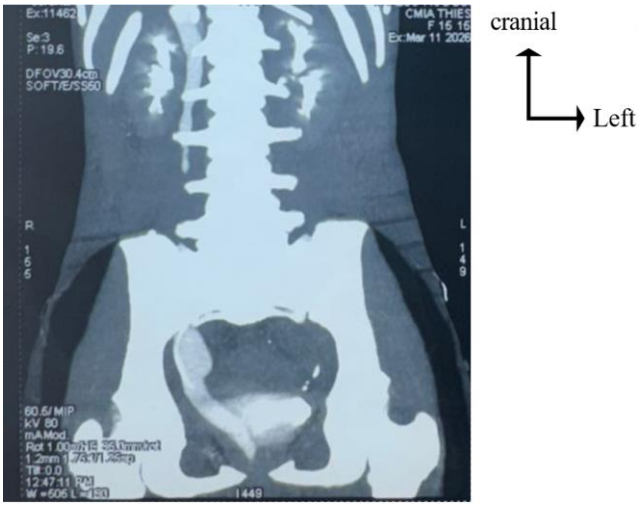

Figure 2. *Dilated ectopic ureter opening in vagina (arrow).*

The diagnosis of ectopic ureter opening was ultimately confirmed. Ureterovesical reimplantation using the Politano-Leadbetter technique of the ectopic ureter with placement of a double-J stent was performed via open surgery (Figure 3). A single dose of intravenous antibiotic (ceftriaxone, weight-ad-

justed) was administered postoperatively, followed by oral antibiotic therapy. The postoperative course was uneventful, with the leakage resolving immediately upon discharge from the operating room. The Foley catheter was removed on postoperative day 6. The patient reported complete resolution of the leakage. The planned removal of the double-J stent was performed two months later.

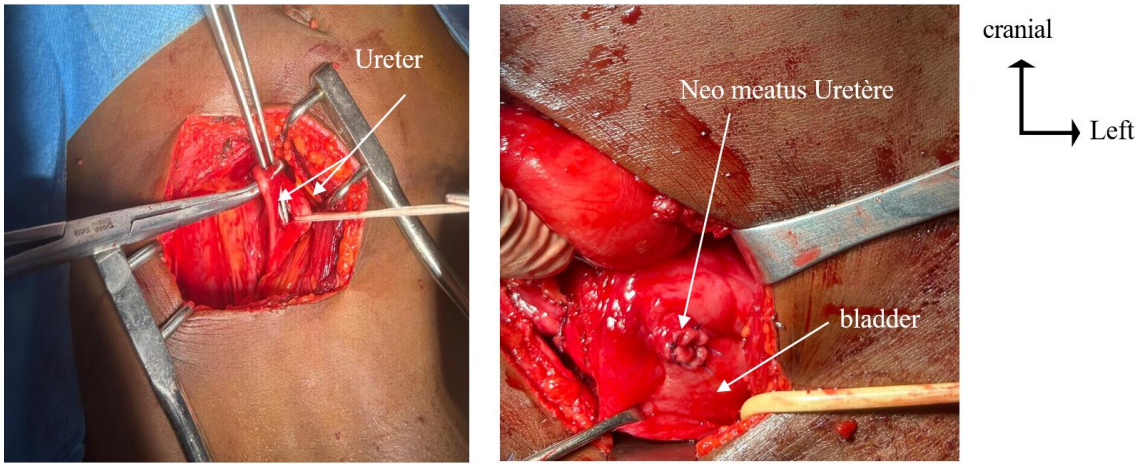

Figure 3. *Ureterovesical reimplantation time according to the Politano-Leadbetter technique. A: Dissection of the two ureters; B: Final appearance of the meatus after reimplantation.*

3. Discussion

The overall prevalence of ectopic ureter in the general population is estimated to be between 0.025% and 0.05%, with a higher prevalence in women (female-to-male ratio as high as 6: 1). In approximately 80% to 85% of cases, the ectopic ureter is associated with a duplicated renal collecting system [2]. Ectopic ureter encompasses various ureteral insertions resulting from apoptotic abnormalities of the common nephroureteral duct or the site of origin of the ureteral bud. It can be found anywhere from the bladder neck to the perineum, with the urethra being the most common site (45%), followed by the vagina (35%) and the vestibule (15%) in women. In most cases, ureteral ectopia opens either downstream of the external urethral sphincter or into the genital tract, resulting in persistent urinary incontinence in women [6].

The discovery of an ectopic ureteral orifice can occur prenatally in cases of pyelocaliceal dilation or a solitary kidney due to contralateral involution. Prenatal screening has allowed for suspicion and subsequent postnatal confirmation. Common manifestations include incontinence, recurrent urinary tract infections, recurring lower back pain, and vulvar abnormalities (genital irritation syndrome, characterized by recurrent vulvovaginitis and maceration of the genital area related to the more or less constant flow of urine). The ectopic ureter may also be discovered at the stage of renal failure.

The frequency of renal failure in the context of ectopic ureter is low (0 to 10%). This is especially true in cases of ectopic ureter accompanied by ureteropelvic duplication. This is a serious and ultimate complication of ectopic ureter because it worsens the prognosis of this ureteral condition [7]. More rarely, we may observe urinary retention in the vagina, a Gartner's cyst, pyelocaliceal dilation with hypertrophy of the upper pole of the ureter, or a non-functioning kidney [7]. Although ectopic ureter is a congenital anomaly generally present at birth, its diagnosis may be delayed until adolescence due to insufficient medical history and further investigations. With age, other factors contributing to urinary incontinence are often prioritized, which can lead to a missed diagnosis of ectopic ureter [8].

Our patient, a 15-year-old girl, presented with mild but persistent urinary incontinence. In girls with an ectopic ureteral orifice, urinary incontinence is usually continuous despite normal and regular voiding, because the ectopic ureter opens distal to the external urethral sphincter.

Radiological imaging is essential to confirm the diagnosis. CT urography and MR urography are currently the preferred modalities for identifying and characterizing an ectopic ureter [9]. Additional assessments such as DTPA (diethylenetriaminepentaacetic acid) or DMSA (dimercaptosuccinic acid) scintigraphy, descending pyelography, and voiding cystourethrography can help evaluate renal function and detect vesicoureteral reflux. Cystoscopy can also help identify an ectopic ureteral meatus [10]. Surgical management of an ectopic ureter depends on the functional status of the kidney. Various surgical methods are available to prevent recurrent infections, preserve renal function, and restore continence. These include reimplantation with bladder neck reconstruction, ureterorenal or ureteroureterostomy, nephroureterectomy, and hemi-nephrectomy, depending on the insertion site of the ectopic ureter [11]. The laparoscopic approach can also be used for the management of an ectopic ureter opening in the vagina

[12-15]. In our case, ureterovesical reimplantation using the Politano-Leadbetter technique was performed via open surgery for the ectopic ureter. The postoperative course was uneventful. The patient was discharged on postoperative day 6, with a favorable outcome.

4. Conclusion

Ectopic ureter in a double urinary system is a rare but classic cause of permanent urinary incontinence in young girls, despite preserved voiding. Its diagnosis can be delayed, particularly in resource-limited settings, hence the importance of clinical suspicion in any case of atypical incontinence. This delay in diagnosis and late management has significant repercussions on the quality of life and physical, mental, and emotional well-being of our patient.

Imaging plays a key role in diagnostic confirmation and assessment of the lesion. Management is surgical and must be tailored to renal function. Ureterovesical reimplantation is an effective option in cases of a functioning kidney, restoring continence with excellent results. Our observation highlights the importance of early diagnosis and appropriate management to improve the functional prognosis and quality of life of patients.

Abbreviations

DTPA	Diethylenetriaminepentaacetic Acid
DMSA	Dimercaptosuccinic Acid
CT SCAN	Computed Tomography Scan
MRI	Magnetic Resonance Imaging

Author Contributions

Bagayogo Ndeye Aissatou: Conceptualization, Data curation, Methodology, Project administration, Writing – original draft, Writing – review & editing

Zihalirwa Patrick Ciza: Data curation, Formal Analysis, Investigation, Software

Thiam Amath: Supervision

Cissokho Omar: Data curation

Thiam Ibrahima Diaw: Data curation

Lakibi Raphaelle: Data curation

Sene Aissatou: Data curation

Sine Babacar: Supervision, Validation, Visualization

Diao Babacar: Supervision

Conflicts of Interest

The authors declare no conflicts of interest.

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