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Duplex Collecting System with Ureteric Ectopia Insertion into Vagina

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Abstract

Ectopic ureter is a congenital anomaly of the urinary system that involves ectopic location of the ureteric orifice. It is often associated with a duplex collecting system, which may obey the Wiegert-Meyer phenomenon. There are various sites of ectopic ureter insertion such as bladder neck, urethra and vagina. We present a teen female with persistent urine incontinence who was having a normal voiding pattern. Diagnosis was made through a CT Urogram where a vaginal insertion of right ectopic ureter was seen. Ureteroneocystostomy was carried out. Therefore, persistent urine incontinence, especially in children and adult females, should raise suspicion of this rare entity, and hence, appropriate investigations should be carried out accordingly. Its management depends entirely on the function of that particular kidney (moiety) and the site of orifice location.

Keywords

Ectopic Ureter, Double Collecting System, Urine Incontinence

1. Introduction

Ectopic ureter is a rare congenital anomaly of the urinary system in which the ureteric orifice inserts away from the trigone of urinary bladder [1] [2]. It may be associated with other urinary system congenital anomalies and some syndromes, such as Zinner syndrome [3]. The Occurrence varies from 1/2000 in newborn babies and 1/2000 to 4000 in the general population, and females are affected two times more as males. About 30% of ectopic ureteric cases are also associated with a duplex col-

lecting system [1] [3]. Its incidence is reported to be around 0.05% - 0.025% [4]. The commonest sites of insertions in females are bladder neck, urethra, vestibule, vagina, uterus, cervix and perineum [3] [5]. The clinical presentation in females varies from enuresis, vaginal discharge and most common continuous urine incontinence in the presence of normal micturition pattern. Males seldom show symptoms; however, if any mainly present with recurrent urinary tract infection [6].

2. Case Report

We present a 15-year-old female with inability to control urine since she was eight years old. Before this age, it was reported she was having episodes of bed wetting at night and occasionally wetting herself during the daytime when awake. She did not pass the toilet training when she was around 2 - 4 years of age. The symptom was noted more when she reached around eight years old. This was not associated with exertion, cough, sneezing, or defecation. She was experiencing a normal urge to void between episodes of the leakage of urine. There was no previous history of perineal/abdominal surgery or trauma. She attained menarche at the age of 13 years with a regular cycle of 3 - 4 days. Currently, she is a secondary school pupil living with both parents. After a thorough evaluation (physical examination, laboratory investigations and imaging) then Examination under Anesthesia (EUA) was done and the only abnormality was leakage of fluid (with urine odor) from the vagina but the exact position of leakage was difficult to ascertain and she was then planned for surgery. Through the intraperitoneal approach, the bilateral double ureters were tracked down from the mid-ureters of both sides (one side at a time) to the urinary bladder, where a single insertion of the left ureter was found entering the urinary bladder posterolateral and was not dilated. The right ureters, however, did not unite at any point, while a more medial right ureter was found entering the urinary bladder posterolateral, slightly higher than the left ureter, and was not dilated. The other right ureter, which coursed more laterally beyond the urinary bladder, was dilated, and no point of obstruction or kink was found and anatomical relationship between the two right ureters with uterus is as shown in **Figure 3** below. It was transected as distal as possible just near the entrance of vagina and a non-refluxing ureterovesical reimplantation was done medial to the other right ureter after insertion of double pigtail ureteric stent. She was able to start oral sips and ambulation the next day. Urethral catheter was left in situ for ten days post-surgery, and the ureteric stent was planned to be removed endoscopically after six weeks. She was then discharged on day four after surgery, and there was no more urine incontinence three weeks later during her first postoperative visit. Abdominal stitches were taken out on day seven.

2.1. Laboratory

Complete Blood Count: Hemoglobin 13.2 g/dl, Platelets and white blood cells were in normal range, Urine analysis had normal findings, Creatinine and Blood Urea Nitrogen (BUN) were within normal range.

2.3. Imaging

CT-IVU (see Figure 1 and Figure 2 below).

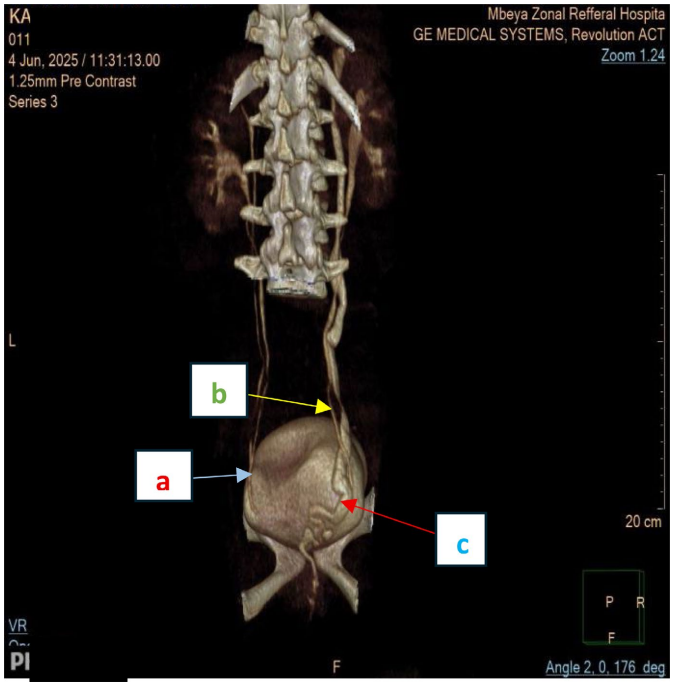

Figure 1. Above showing bilateral duplex urinary system with a joining of two left ureters leading to a single insertion in the urinary bladder **a**, normal caliber right ureter draining the lower moiety and that has inserted into urinary bladder **b** and a tortuous, dilated right ureter draining the upper moiety and that has inserted into vagina **c**. **NOTE:** There was no delayed or differential excretion between the two moieties in the excretory phase.

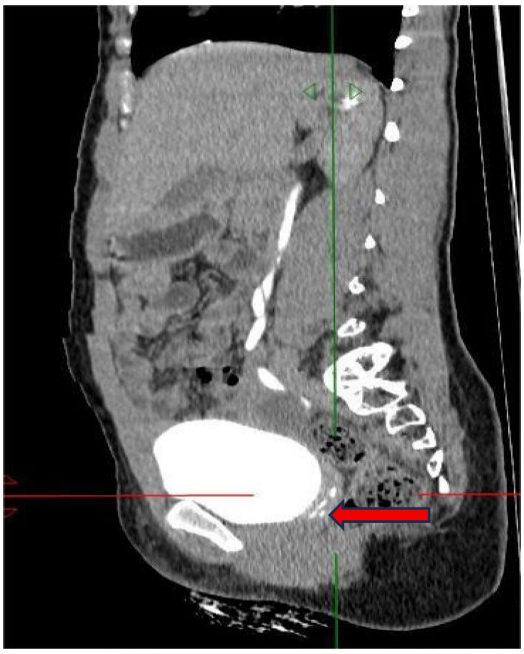

Figure 2. Above showing distal part of the ectopic right ureter entering into the cervico-vaginal junction (red arrow).

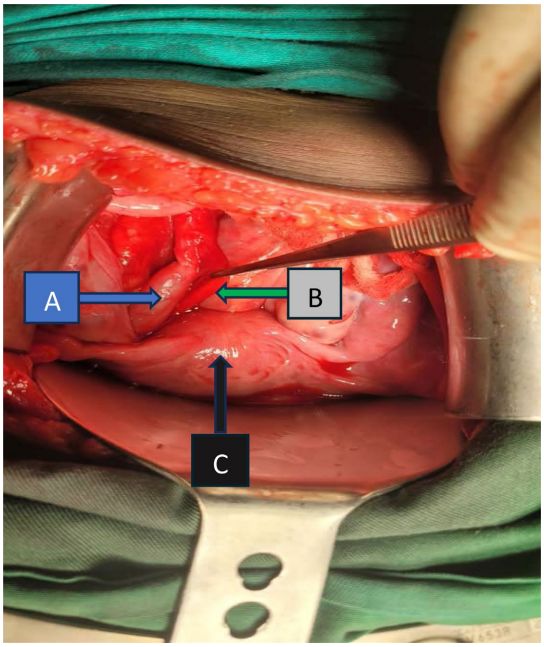

Figure 3. Above showing the two right ureters **A** is dilated and tortuous, **B** has normal caliber while **C** shows the uterus.

3. Discussion

Ectopic ureter is often misdiagnosed due to its vague presentation. This condition may impose a diagnostic challenge during the neonatal or infant period; hence, in most instances delayed diagnosis is common, and therefore high index of suspicion especially in female clients should be sought in case of a longstanding history of urine incontinence [7] [8]. The differential diagnosis of this condition in line of persistent continuous urine incontinence is congenital vesical vaginal fistula, however this condition is uncommon [9] [10]. Magnetic resonance imaging (MRI) and Contrast-Enhanced Computed Tomography play an important role in the diagnosis and provide a clue on the function of both upper and lower moieties. Complementary investigations such as urethrocystoscopy and vaginoscopy should also be considered, as they provide added information on the ectopic location of the ureteric orifice [11]. In some settings, a properly done abdominopelvic or kidney, ureter, and Bladder ultrasonography can aid in the diagnosis of ectopic ureter [12]. Renal isotope scan is critical for the assessment of differential function; however, in this case report it was not done as it was not available in our setting. Management of this condition varies depending on the adequate function of the moieties, location of ectopic ureteric orifice and anomalies related to this condition. Generally, conservative management especially in males, ureteroneocystostomy, transureteroureterostomy, and hemi nephroureterectomy may be the options [13] [14].

4. Conclusion

Ectopic ureter is normally associated with a duplex collecting system. The site of

insertion varies in males and females. This congenital anomaly predominates in females. Persistent, continuous urine incontinence and dribbling of urine or enuresis, especially in females, should warrant further evaluation, including MRI and CT Urogram. Ectopic ureter is mainly managed surgically; however, there is documentation of conservative management especially in male patients.

Ethical Approval

Ethical approval was obtained from Mbeya Zonal Referral Hospital (MZRH).

Consent

Informed written consents were obtained from the parents, and they allowed this information to be published.

Author Contribution

Each author participated equally in every level of evaluating the patient, summarizing patient's particulars and history, including physical examination and follow-up of the patient after surgery. We had three teams; gynecology, urology and radiology team who worked hand in hand.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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