Andrology and fertility

**Duplicated collecting system with ectopic prostatic implantation: Therapeutic conservative robot assisted approach, about a case report**

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**ABSTRACT**

Duplication of the ureters with distal, supra-sphincteric, prostatic implantation is an uncommon congenital anomaly. We report a case of a 35 year-old men presenting with pelvic pain with lower urinary tract symptoms for at least 3 months duration. On magnetic resonance urograms double collecting system in the left kidney and also hydro-uretero-nephrosis in the collecting system which drained the upper pole of the left kidney were seen. The ureter draining the upper pole of the left kidney was seen to open into the prostatic utricle with an ureterocele and multiple stones. Left ureteroneocystostomy was performed.

**Introduction**

Ectopic insertion of the ureter in the genitourinary tract is a rare congenital disorder, usually associated with ureteral duplication. Identification of the insertion open is critical for ureteric re-implantation. However, the challenge in the diagnosis of ectopic insertion of the ureter usually is to identify its insertion, particularly when the affected ureter is not dilated.

**Case report**

A 35-year-old man, with no particular medical history, presented at our consultation with chronic pelvic pain evolving for 4 months, resisting to usual analgesic treatment, associated with signs of the lower urinary tract, especially pollakiuria and burning urination. The clinical examination was without particularity. The rectal examination showed a 20-g prostate that was supple, homogeneous and regular. Renal function was normal. The urine was sterile. After verifying the absence of allergy to iodine, a pelvic abdominal CT with injection of contrast medium was performed, and showed left renal duplicity with an ectopic ureteral meatus of the left superior kidney and calcification of its terminal ureter. The right kidney was of normal morphological appearance. The vesical endoscopy did not show either intra-vesical ureterocele, or left meatus. Magnetic resonance imaging (MRI) showed a slightly wide left ureter, reaching 1 cm in diameter on contact with the prostate, two images of stones making a 21.8 mm large axis cluster at the lower ureter of which the trajectory was intra-prostatic. The uretero-urethral junction was at the level of the prostatic utricle. The right excretory way was normal (Fig. 1).

In reason of urinary symptoms resistant to usual analgesic treatments, surgery was indicated. The Robot-Assisted Laparoscopy Pathway was preferred. The surgical exploration found two left ureters running in the same sheath. A urethral catheter was positioned inside the utricle and a Foley catheter was passed into the bladder. The optical port at the umbilicus was advanced into the peritoneum and two 5-mm working ports were placed on the para-rectal lines. The bladder was suspended to the abdominal wall. A dissection of the two left ureters was performed up to the vesical level for the lower ureter and up to the prostatic level for the pathological ureter. This dissection was carried out in a careful way to preserve genito-prostatic vasculo-nerve elements. The section of the lower ureter at the prostatic level made it possible to extract the stasis stones. Uretero-vesical reimplantation of the lower ureter was performed, according to Leach Grégoire, on a double-type ureteral stent J. The follow-up was simple. The bladder catheter was removed 4 days after the surgery while the ureteral stent was removed after 1 month. Three months after the surgery, the patient reported normal sexuality (IEEF-5 score was 23) and normal urination (IPSS score was 6).

**Discussion**

Ureteral duplication is a relatively common congenital anomaly with...
an incidence of 0.7% in the general population. Ectopic implantation of the ureter, however, is a rare entity with an estimated incidence of 0.05–0.025% in the population, the majority being women in 80% of cases. Ureteral duplication can be partial or complete which more frequent in 70% of cases. Complete duplication of the ureter is usually associated with ureterocele, ectopic ureteric insertion and vesicoureteral reflux. Diagnosis includes ultrasound, intravenous urography, evacuation cystography, computed tomography and magnetic resonance imaging. Ultrasound of the urinary tract is preferred for initial assessment, as it is widely available, inexpensive and can often detect major abnormalities, such as ureterocele or hydronephrosis. However, small anomalies can be ignored. Similarly, evaluation of the entire urinary tract or insertion site of an ectopic ureter may be difficult. Intravenous urography and urethral micturition are imaging techniques that can provide a complementary visualization of the anatomic pathway of the ureter and its site of implantation, but difficult to achieve, especially in children. Behaeghe et al. reported the contribution of cross-section imaging, CT and magnetic resonance imaging, with injection of contrast medium and urographic images for the diagnosis of complete left ureteral duplication with ectopic contact of the upper renal ureter to the upper third of the vagina in a female patient with urinary incontinence and overactive bladder. The treatment must be as conservative as possible. Dermir et al. reported a case of a 32-year-old patient with bilateral complete duplication and left-sided third-grade uretero-hydronephrosis. The ureter draining the superior pole of the left kidney presented a 24 mm wide cystic dilation in the lateral wall of the vagina. Conservative treatment with uretero-vaginal disconnection and uretero-vesical reimplantation according to Leach Grégoire has been successfully attempted. However, conservative treatment is not always possible. Milicevic et al. reported the case of a patient with left ureteral duplication with ectopic lower ureter involvement in the posterior urethra, who underwent a superior polar nephrectomy since the upper renal was not functional.

Conclusion

The surgical management of ectopic ureter aims at preserving renal function, eliminating infection, and maintaining continence. In a functioning upper pole, the procedures that can be done are distal and proximal uretero-ureterostomy (end-to-side), or upper polar ureteric reimplantation. In cases of nonfunctional moiety, an upper polar nephrectomy may be performed to prevent the risk of infection.

Declaration of competing interest

The authors declare that there is no conflict of interests.

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