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Case Report

Ureteral duplicity in a female patient with renal calculus in left UVJ- a case report

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Abstract: The ureters are tubular, bilateral, unique structures for each kidney, responsible for draining the urine collected in the renal pelvis to the bladder, so that it can later be eliminated. Ureteral duplication can be described as an abnormal urologic entity, with a frequency reported in 0.3 to 3% of the population. This anomaly is caused by the formation of double ureteral buds, which, in turn, form into separate structures and develop and form their own individual pelvic systems. A duplicated ureter is a result of early division of the ureteral bud into two or more completely or incomplete forms. Its diagnosis, for the most part, occurs incidentally, usually through imaging tests or even during surgery.

The objective of this study is to report a case of incomplete ureteral duplication and to highlight the type of treatment performed in the face of obstruction due to lithiasis.

Keywords: Obstruction, lithiasis, ureteral duplication, anomaly and UVJ, renal calculus

1. Introduction

The ureters are tubular, bilateral, unique structures for each kidney, responsible for draining the urine collected in the renal pelvis to the bladder, so that it can later be eliminated. Because they have smooth muscles in their embryological formation, the conduction of urine occurs through peristaltic movements, which, when associated with gravity, propel the urinary fluid towards the detrusor muscle (1).

Duplication of the ureter can be described as an abnormal urological entity, the reported frequency of which is 0.3 to 3% of the population (2). This anomaly is caused by the formation of double ureteral shoots, which in turn form in separate structures and develop into their own individual pyelocalial systems (1 and 2). The anatomical variations of the ureter and its relationship with adjacent structures are, therefore, important from an academic and clinical perspective, because when diagnosed, they can help in the maintenance and preservation of renal functions (2).

A duplicated ureter is the result of the early division of the ureteral bud into two or more completely (two ureters that drain into the bladder) or incompletely (two ureters that come together, forming a single ureter that drains into the bladder), known as a bifid ureter. (1, 2 and 3). In the meantime, duplicity of the ureter can be found in patients asymptomatically. However, it can be the cause of recurrent urinary tract infections (UTIs), urinary incontinence, vesicoureteral reflux, megaureter formation, urolithiasis, and pyelonephritis (1, 2, and 3).

Its diagnosis, for the most part, occurs incidentally, usually through imaging tests or even during surgery, whether by video or conventional (2 and 3). In the case of conventional

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surgeries, its presence, when not diagnosed, can cause the occurrence of medical iatrogenesis during the surgical procedure, due to the lack of recognition/identification of the structure(3).

2. Materials and Methods

The database used for the description of this report will be: the analysis of the medical record, the evolution, the laboratory tests and imaging tests performed, which were applied to determine the respective diagnosis of the patient in question

For a better understanding of the subject, previous studies on ureteral dupicity were used as bibliographic reference, which were made available in the PubMed, Scielo database and Capes/UNITAU portal.

3. Case report

Patient N. O. C., female, 25 years old, student, was admitted to the emergency room of the Regional Hospital of Vale do Paraíba with pain in the left flank region starting in the early hours of 07/23/2023. Associated with pain, she presented nausea and vomiting, but denied fever. He denies habitual use medications and allergies.

Previous pathological history: right ureterorenolithotripsy.

Physical examination: Good general condition, flushed, hydrated, eupneic, anicteric, acyanotic, afebrile. Cardiac system: Regular rhythm in 2 beats, normal sounds, no audible murmurs. Respiratory system: breath sounds present, no adventitious sounds. Abdomen: bowel sounds present, flaccid abdomen and painless on palpation, absence of masses or visceromegaly with normotympanic percussion, negative abrupt decompression, and negative giordano. Extremity: Peripheral pulses present and symmetrical, without cyanosis or edema, with capillary refill time less than 3 seconds.

Imaging test: CT scan of the abdomen 08/23/2023: presence of ureterolithiasis in the left ureterovasic junction (UVJ) with upstream dilation, 0.6 MM, absence of densification of ureteral and renal fat. Presence of incomplete double ureter on the left. (Image 1)

Conduct: rigid ureterorenolithotripsy + left to left double J catheter passage

Evolution: Surgical findings: presence of ureterolithiasis in left UVJ, fragmentation being performed by means of laser fiber, and removal of the fragments with Basket extractor forceps. The patient opted for the passage of a double J catheter on the left with a wire for removal. Confirmation of the diagnosis of incomplete double ureter intraoperatively by means of ascending pyelography and direct visualization. (Image 2)

Hospital discharge: Patient receives after diuresis and ambulation.

Return: Patient returns without symptoms, only for removal of the Double J catheter.

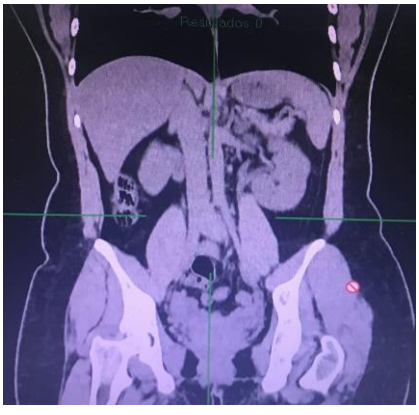

Image 1. CT scan: Presence of incomplete double ureter on the left.

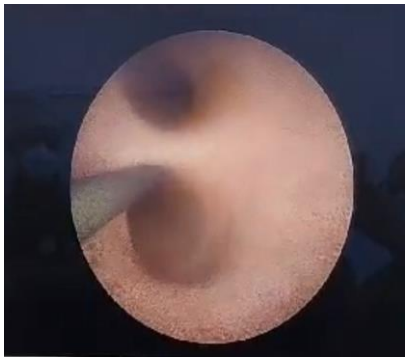

Image 2: ureteroscopy visualization intra-operatively.

4. Discussion

Ureteral duplication is a rare urological anatomical malformation, with a low incidence in the population, which may be associated with different types of pathologies.

There are two types of ureteral duplicity reported, complete and incomplete (bifid ureter) and are often accompanied by several complications. The latter is usually more associated with ureteroureteral reflux or obstruction of the ureteropelvic junction of the lower pole of the kidney, while the former has a higher incidence in females and is more frequently associated with vesicoureteral reflux, ectopic ureterocele, or ectopic ureteral insertion (1 and 5).

The diagnosis commonly occurs through an endourological procedure or imaging test performed to investigate the underlying cause of acute pain (3). The patient presented clinical symptoms of ureterolithiasis, which motivated her to seek specialized medical care. After being evaluated, a computed tomography scan was requested, confirming the diagnosis of ureterolithiasis in UVJ and also, incidentally, the presence of incomplete double ureter.

Imaging tests such as US and CT can be used to identify the presence of this type of anomaly, although they have low sensitivity and specificity (2 and 3). Radiological studies with the use of contrast, such as excretory urography and voiding cystourethrography, are the most indicated to promote a better understanding of preexisting anatomical structures (6). In addition, it is important to emphasize that minimally invasive ureteroscopy is also an effective option to treat ureteral and upper tract abnormalities (4), and is therefore the technique used to resolve the condition of the patient in this report and also to endoscopic confirmation of the diagnosis of ureteral duplicity.

5. Conclusions

Malformations of the urinary system should be kept in mind so that the correct and early diagnosis of this pathology can be made, since the lack of prior knowledge can lead to treatment complications.

In the reported case, the diagnosis was made previously, and the approach adopted brought excellent results with low morbidity.

References

1. Figueiredo, B. Q., et. Al. Bilateral complete ureteral duplication in a woman with recurrent urinary tract infection (UTI): case report. Research, Society and Development, v. 10, n. 12, e90101220174, 2021; (CC BY 4.0) | ISSN 2525-3409 | DOI: http://dx.doi.org/10.33448/rsd-v10i12.20174
2. Balawender K, Pliszka A, Wysiadecki G, et al. Complete unilateral duplication of the right ureter with ectopic orifice to the prostatic urethra found by transrectal ultrasound. Pol Arch Med Intern 2022; 132: 16249. doi:10.20452/pamw.26249
3. Papageorgiou D., et al. Incomplete bilateral duplication of the ureters identified during cytoreductive surgery for ovarian cancer: A case report; International Journal of Surgery Case Reports 60; 2019; 213–215
4. Pedro, Renato N., et al. In Vitro Evaluation of Ureteral Perforation Forces. UROLOGY 70 (3), 2007
5. Hanson, G. R., Gatti, J. M., Gittes, G. K. & Murphy, J. P. (2007). Diagnosis of ectopic ureter as a cause of urinary incontinence. J Paediatr Urol., 3 (1): 53–57
6. Oge, O., Ozeren, B. & Sonmez, F. (2001). Nephron-sparing surgery in a duplex system associated with a vaginal ectopic ureter. Paediatr Nephrol.,16(3), 1135–1136.