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Case report

Double, Ectopic Blind-end Ureter: A Case Report

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A B S T R A C T

We report a case of a complete, ectopic blind-ending ureteral duplication in a 26-year-old man who presented with the symptoms of an acute urinary tract infection for the first time. Since anamnestic data and clinical examination indicated a complicated urinary infection he was referred for further examination. On the left side, the imaging studies revealed a normal ureter draining the lower pole of the kidney and a blind-ending ureter with ectopia in the seminal vesicle. The patient recovered completely following surgical removal of the blind-ending ureter.

***Key words**: double blind-ending ureter, ectopic ureter, anomaly*

Introduction

A blind-ending ureter is a rare anomaly. Most previous reports have described cases of partial ureteral duplication that resulted in a bifid ureter, also called a Y ureter. Only a few case reports of complete, blind-ending ureteral duplications have been published. Here we present clinical, diagnostic and operative findings of this rare anomaly.

Case Report

The 26-year-old patient presented with dysuria, pain in the left hemi-abdomen and lumbar region, and fever up to 39 °C lasting for three days. He had no history of previous urinary tract infections. On palpation the testes and epididymis were normal and the patient reported no pain in the scrotum. Digital rectal examination revealed a sensitive pararectal mass. Ultrasound revealed a cystic 3-cm-wide structure toward the left side of the prostate. The white blood cell count (WBC) were 14.9×10^9/L (normal range $3.4–9.7 \times 10^9$/L) and the C-reactive protein (CRP) was 112.2 (normal range <5.0). Urine analysis showed a normal number of red blood cells count (RBC) but a high number of leukocytes. Antibiotic therapy (gentamicin and ciprofloxacin) had been started and the patient was referred for further examination. The computed tomography (CT) study of the abdomen and pelvis showed a contrast-free structure near the kidney and bladder that was 3 cm wide with calcifications in its lumen (Figures 1 and 2). Cystoscopy showed only one ureteral orifice on the left side. A retrograde ureterogram revealed only one ureter with medial displacement at the level of sacroiliac

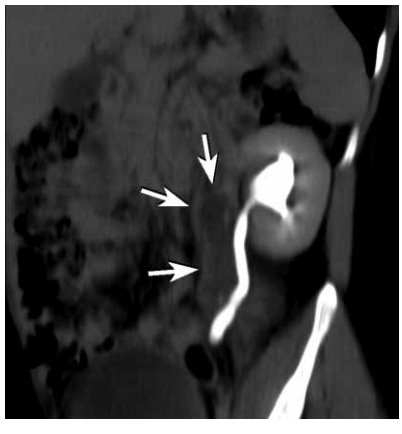

Fig. 1. Contrast-enhanced coronal reformatted CT image showing hypoplastic upper renal pole and a tubular, contrast-free blind-ending ureter (arrows).

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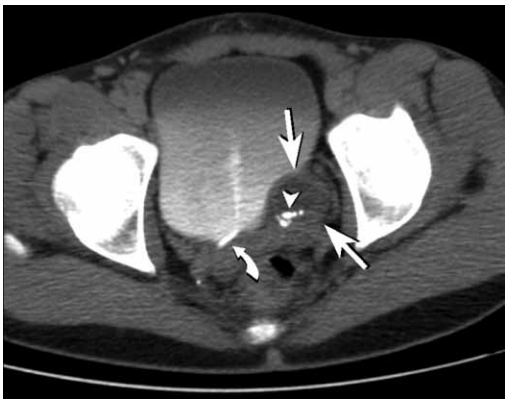

Fig. 2. Contrast-enhanced axial CT scan at the level of the urinary bladder showing 3-cm-wide blind-ending ureter (arrows) compressing the normal ureter and urinary bladder, with calcifications in its lumen (arrowhead). The right ureteral orifice (curved arrow) is in the normal position, as shown by the contrast jet entering the bladder.

joint, probably due to compression by a dilated, blind--ending ureter.

Surgical exploration revealed one normal ureter draining the lower kidney pole and a blind-ending ureter. The upper part of the blind-ending ureter was dilated and ended near, but did not reach, the hypoplastic upper kidney pole. The lower part of the blind-ending ureter ended at the area of the seminal vesicle and prostate and was filled with small calculi. The blinding-ending ureter was removed with the left seminal vesicle, extraperitoneally (Figures 3). Histopathological analysis of the ureter showed chronic unspecific inflammation. Lymphocytes, plasma cells and tissue macrophages were present in the ureteral wall. Normal seminal vesicle tissue was found on the distal part of the blind-end ureter.

When performing a surgical excision of a blind-ending ureter one should be careful not to enter the normal ureter. Although we were very cautious during the operation and did not detect visible damage of the normal ureter, on the second day after the operation urine was leaking at the wound. The enhanced CT scan showed a contrast leak that later stopped after the »JJ« prosthesis was inserted. The »JJ« prothesis was removed after 6 weeks. Three months after the operation the patient was asymptomatic and the ultrasound showed no hydronephrosis or collections in the retroperitoneum and pelvis.

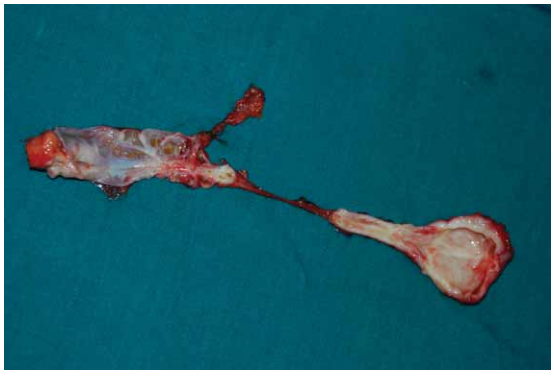

Fig. 3. Post-operative specimen showing the blind-ending ureter (on the right side) and the seminal vesicle containing small calculi (on the left).

Discussion and Conclusion

A blind-ending ureter is a rare anomaly. It usually occurs as part of a bifid ureteral duplication (Y ureteral duplication)[1] rather than a complete one; however, in this case, the blind-ending ureter had no proven communication with the normal ureter or the urinary bladder. During normal ureteral development one ureteric bud arises from the mesonephric duct (Wolffian duct) during the fourth week of gestation. The bud migrates cranially and laterally towards the metanephric blastema to induce kidney development. On its way, the bud may divide, forming the partial ureteral duplication, a Y ureter. When two ureteric buds arise from the mesonephric duct and penetrate the metanephrogenic blastema, this forms a complete ureteral duplication. When the bud is abortive and fails to make contact with the metanephros, it ends blindly, causing hypoplasia or dysplasia of the kidney[2]. The ureter that is draining (or should be draining) the upper renal segment is almost always ectopic because of the embryological development of the Wolffian duct, the so-called Weigart-Mayer rule[3]. An ectopic ureteral orifice results when the ureteral bud arises from the mesonephric duct more cranially than is usual. The most common sites of extravesical ureteral ectopia in males are the prostatic urethra and the seminal vesicle[3].

Blind-ending ureters are more common on the right side and in women[1]. Most of them are a few centimeters long, have a bulbous dilatation and are not surrounded by any renal tissue. In women, the blind-ending ureter can be a cause of recurrent urinary tract infections. In men it is often asymptomatic until the third or fourth decade of life, when it may present with symptoms of abdominal, chest and flank pain, or signs of obstruction and infection[1].

In the past, the most useful diagnostic tools for ureteral anomalies were intravenous urography, retrograde ureteropyelogram, voiding cystoureterography, cystoscopy and seminal vesiculography[3]. Cystoscopy remains mandatory because it provides information about the ureteral orifice and enables retrograde ureterography[4]. Modern methods of imaging such as ultrasound, CT and magnetic resonance imaging can also provide helpful information about ureteral abnormalities[5,6], and they are crucial for diagnosis and preoperative planning when no communication between the blind-ending ureter and the urinary tract exists. After surgical removal of the blind--ending branch, most patients are relieved of recurrent urinary tract infections.

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DUPLI EKTOPIČNI »SLIJEPI« URETER: PRIKAZ SLUČAJA

SAŽETAK

Prikazan je slučaj kompletne duplikature uretera sa slijepim završetkom kod 26 godišnjeg muškarca, koja se po prvi puta prezentirala sa simptomima infekcije urinarnog trakta. Budući da su anamnestički podaci te klinički pregled upućivali na kompliciranu urinarnu infekciju bolesnik je upućen u daljnju obradu. Metode slikovnog prikaza su pokazale na lijevoj strani jedan normalni ureter iz donjeg pola bubrega i jedan »slijepi« ureter koji završava uz gornji pol istog bubrega s ektopijom u sjemene mjehuriće. Nakon kirurškog odstranjanja slijepog uretera bolesnik se kompletno oporavio.