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A Case of Chronic Back Pain: Revealing Complete Ureteral Duplicity in an Adult Woman

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Abstract **Case Report**

Ureteral duplication is a rare congenital anomaly, often diagnosed incidentally, characterized by the presence of two distinct ureters draining a single kidney. This condition can lead to complications such as vesicoureteral reflux or upper pole obstruction, often due to ectopic ureteral insertion or ureterocele. We report the case of a 40-year-old woman presenting with left-sided chronic low-back pain. Imaging studies, including ultrasound and CT urography, revealed bilateral ureteral duplication with significant left ureterohydronephrosis due to dysplasia and ectopic insertion of the upper ureter. Radiological imaging, especially CT urography, is essential for diagnosing ureteral duplication and identifying its complications. Timely imaging and intervention are critical for preserving renal function, with treatment options depending on the extent of renal impairment. These may include partial or total ureteronephrectomy or ureteral reimplantation.

Keywords: Ureteral duplication, Congenital malformation, Ectopic ureteral termination, Adult, CT scan.

INTRODUCTION

Ureteral duplication is a rare urinary tract malformation affecting approximately 0.6% of the population [1, 2], defined by a kidney with two collecting systems, each drained by a separate ureter and orifice.

Each ureter may present specific pathologies: vesicoureteral reflux for the lower pole, and obstruction in the upper pole related to conditions such as ureterocele, ectopic insertion -as in our case-, or megaureter.

This condition becomes pathological with its abnormal junctions impeding drainage [3, 4]. While fetal imaging has improved detection in infants, many adults remain undiagnosed [5-7]. These adults face an increased risk of recurrent urinary tract infections and other complications, highlighting the need for greater awareness and improved diagnostic practices to enhance patient outcomes.

The aim of this work is to present a clinical case and review the literature. We report a case of bilateral complete ureteral duplication complicated by left ureterohydronephrosis with ectopic insertion of the upper pole ureter.

CASE REPORT

A 40-year-old woman with a notable family history of undocumented nephropathy presented with chronic left-sided low back pain. This persistent pain had intensified in recent months, prompting her to seek medical attention. The patient reported no other symptoms, such as fever, urinary changes, or weight loss, which could suggest a more acute pathology.

Upon examination, there was no palpable abdominal mass, and her vital signs remained stable. Given her clinical presentation, an abdominal ultrasound was performed, revealing significant left-sided ureterohydronephrosis. The ultrasound did not identify a distinct obstruction in the lower urinary tract, raising suspicion of an underlying anatomical anomaly.

To further investigate the cause of the hydronephrosis, a CT urography was conducted, both without and with contrast injection. The results revealed a double collecting system in both kidneys, indicating ureteral duplication. Notably, there was dysplasia of the

upper renal parenchyma on the left side, with major ureterohydronephrosis of the upper system and ipsilateral ectopic ureteral insertion, which could explain the patient's low back pain.

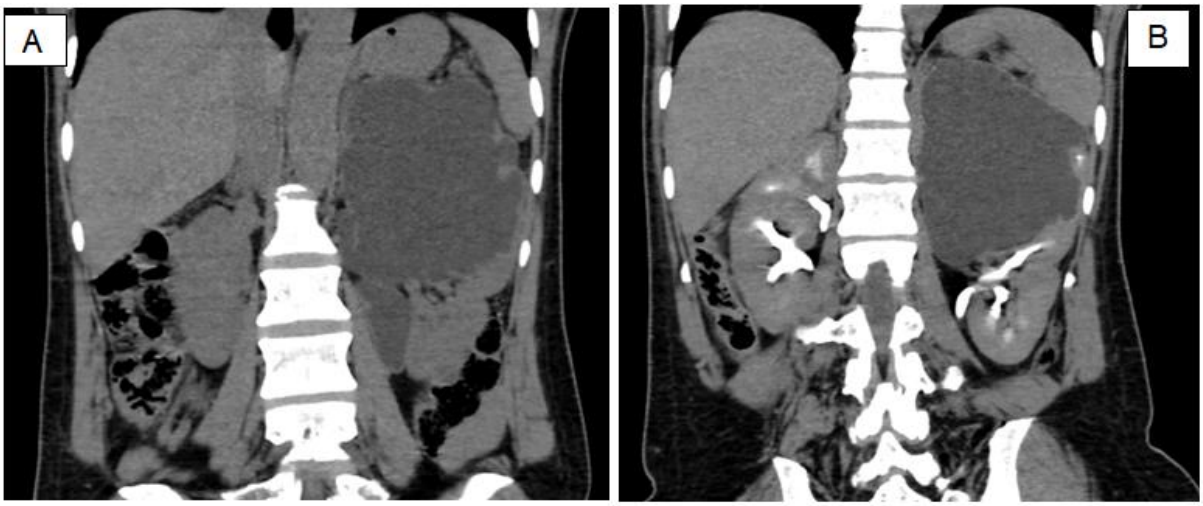

Figure 1: Urography CT scan coronal images (A) without (B) with contrast injection images showing double collecting system in both kidneys complicated by parenchymal dysplasia of the upper collecting system on the left, and major ureterohydronephrosis

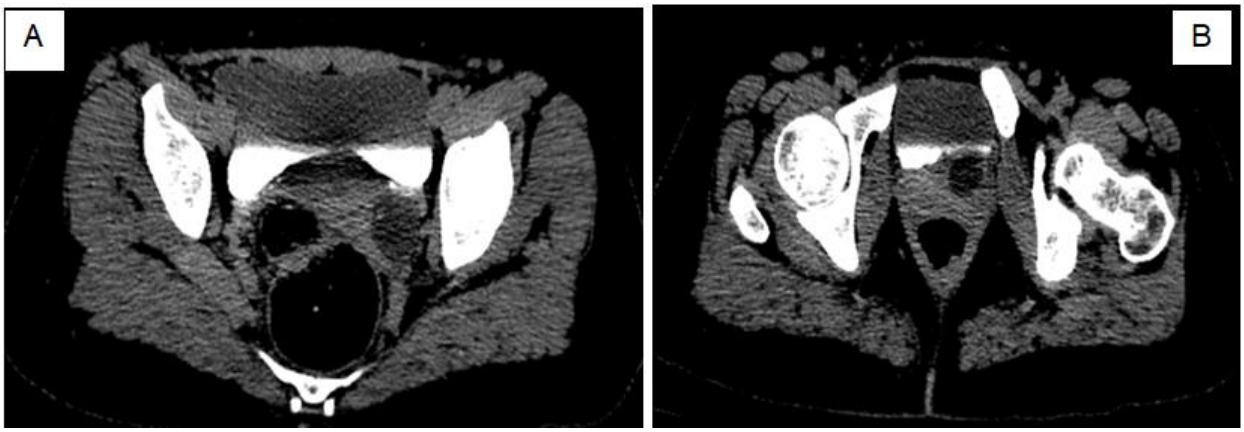

Figure 2: Axial urography CT scan with contrast injection in delayed phase showing two left pelvic ureters (A) with ectopic insertion of the upper collecting system ureter into the urethra (B)

DISCUSSION

Ureteral duplication is a congenital malformation resulting from the development of two distinct ureteral buds originating from the Wolffian duct. During the assimilation of this duct, the orifice of the lower ureter is absorbed earlier than that of the upper ureter, resulting in an inversion of the ureteral orifices at the bladder level, a phenomenon described by the Weigert-Meyer law. This law, frequently observed in cases of duplication, explains the typical crossing of ureters in double systems [8, 9].

Although symptomatic patients are typically diagnosed during childhood, adult cases are often discovered incidentally through abdominal imaging [7]. Our case is particularly notable because, despite the presence of symptoms, the anomaly remained undiagnosed until adulthood, underscoring the importance of early detection of congenital urinary tract anomalies.

Symptoms of ureteral duplication are generally non-specific, including recurrent urinary infections and flank pain resembling renal colic, as seen in our patient [10, 11]. Palpation of an enlarged kidney is also common. The most significant clinical consequences involve vesicoureteral reflux in the lower pole and obstruction in the upper pole, often due to conditions like ectopic insertion (as in our case), ureterocele, or megaureter. These complications highlight the need for thorough diagnostic imaging in evaluating such anomalies.

Imaging, particularly computed tomography (CT), is essential for determining the anatomical details of ureteral duplication, identifying complications, and guiding treatment decisions [12-14]. CT scans provide a

comprehensive view of the kidneys and ureters, helping to visualize both the anatomy and the associated pathology along their iliac paths.

The choice of treatment depends on the kidney's residual function or the affected segment, ranging from partial or total ureteronephrectomy to ureteral reimplantation, with or without ureteroureterostomy.

CONCLUSION

Ureteral duplication is a rare congenital malformation that is often detected incidentally during imaging studies, such as radiological or computed tomography evaluations.

CT urography plays a crucial role in diagnosing this anomaly and its associated complications.

Treatment should prioritize conservative approaches whenever feasible. The overall prognosis is influenced by the timing of diagnosis, the impact on renal tissue, and the careful consideration of therapeutic options.

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