

Endo-Urological Management of Renal Lithiasis on Supernumerary Kidney: Flexible Ureteroscopy

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DOI: [10.36347/sjmcr.2022.v10i03.028](https://doi.org/10.36347/sjmcr.2022.v10i03.028)

| Received: 02.02.2022 | Accepted: 09.03.2022 | Published: 30.03.2022

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Abstract

Case Report

Supernumerary kidneys are defined by the presence of a 3rd or 4th kidney that is separate from the homolateral kidney and is served by a branch of a bifid ureter or a separate (double) ureter. These kidneys are poorly documented and extremely rare. These kidneys may be the site of lithiasis. We report here the ureteroscopic management of a pyelocalic lithiasis on a supernumerary kidney revealed by right low back pain in a woman.

Keywords: Supernumerary kidney, lithiasis, flexible ureteroscopy.

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INTRODUCTION

The supernumerary kidney is a 3rd or 4th kidney in addition to two independent kidneys that are separate from the homolateral kidney and are served by a branch of a bifid ureter or a separate (double) ureter. This is a poorly documented and extremely rare congenital variant of the urinary tract [1]. This supernumerary kidney can be the site of lithiasis formation. We report here the case of a patient with pyelocalic lithiasis on a supernumerary kidney revealed by right low back pain.

OBSERVATION

We report the case of a 59 years old patient, without any particular pathological history, hospitalized for right low back pain that had been evolving for 15 days with signs of lower urinary tract with pollakiuria, all evolving in a context of apyrexia and conservation of the general state. The clinical examination revealed a sensitivity of the right lumbar fossa. Renal function was normal. The primary metabolic workup was unremarkable. The renal ultrasound showed a moderate right uretero-hydronephrosis upstream of a probable lumbar ureteral calculus. A complementary scan (fig.1) was performed and showed a right supernumerary sigmoid kidney measuring 14 x 3.8 cm in the right

lumbar fossa, the superior one with internal sinus and the inferior one with external sinus, fused by their respective poles, they are vascularized by three arteries coming from the abdominal aorta: one artery for the upper kidney and two for the lower kidney. Individualization of a double sinus with a bifid ureter fusing opposite the inferior pyelone. These kidneys are regular in outline, well differentiated, secreting and excreting within normal time limits, with persistence in the upper kidney of a medium pyelocalic lithiasis of density 900 HU measuring 6.5*5 mm (fig 2).

A double J catheter was inserted in the upper caliche cavities of the right upper kidney and a retrograde ureteropyelography was performed. This showed an opacification of a supernumerary kidney, with the appearance of ureteral bifidity and the presence of two upper and lower pyelons. In a second step, the patient underwent a flexible ureteroscopy with complete fragmentation of the 5 mm stone with a LASER fiber, power 1200, frequency 10Hz, with placement of a simple right ureteral catheter at the end of the procedure. The postoperative course was simple. The ureteral catheter was removed on the first postoperative day.

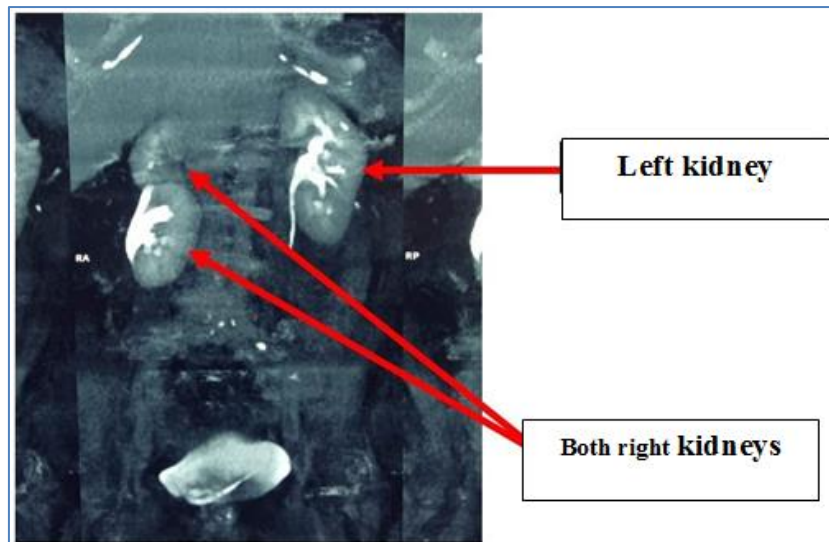


Fig-1: Scannographic sections showing a right supernumerary kidney with the upper kidney with internal sinus and the lower kidney with external sinus.



Fig-2: Scannographic sections showing a medium pyelocalic lithiasis (red arrow) of density 900 HU measuring 6.5*5 mm

DISCUSSION

Geisinger aptly defined a supernumerary kidney as “the free accessory organ”, which is a distinct, encapsulated parenchymal mass, large or small, topographically related to the usual kidney by a loose cellular attachment at most and often by no attachment of any kind [2]. This is a rare anomaly of the genitourinary system. The usual differential diagnosis is duplicated kidney or “duplex kidney” which has two pelvises with single or double ureters. The embryologic basis of the supernumerary kidney is thought to be the abnormal division of the nephrogenic cords into two metanephric blastae in association with a partially or completely duplicated ureteral bud. They may have bifid or completely duplicated ureters.

In our case, the ureters were bifid and merged at the level of the lower pylon. Supernumerary kidney is common in men and on the left side in about 63.3%

of cases [3]. In our case, the supernumerary kidney was located on the right side.

The supernumerary kidney is usually distinguished from the homolateral kidney by its smaller size and/or abnormal position. Rarely, supernumerary kidneys may be located cranial to the native kidney, as reported in our observation. The presence of a supernumerary kidney is rarely manifested by symptoms except in cases of complications such as renal and ureteral calculi, hydronephrosis, pyelonephritis, pyonephrosis, carcinoma, and neoplasia. The clinical picture varies and may present as abdominal pain, renal colic, hematuria, fever, abdominal swelling [4]. These complications occur in a variable manner depending on whether the ureter is double or bifid [1]. The circumstances of discovery vary and may be in the context of pathology such as hypertension or trauma.

The supernumerary kidney may be responsible for a pelvic mass or simulate an adrenal tumor. Low back pain was the mode of revelation of this anomaly in our case.

For diagnosis, a uroscanner is commonly used to confirm the diagnosis of supernumerary kidney, to look for associated abnormalities such as kidney stones and to study the abnormal vascularity. Apart from the presence of the stone in the supernumerary kidney, no associated abnormality was observed in the index case. In the literature, the management of stones in these supernumerary kidneys has not been widely reported. Several techniques are available for the management of these stones: extracorporeal lithotripsy, flexible ureteroscopy, semi-rigid ureteroscopy, and percutaneous nephrolithotomy. The management of supernumerary kidney stones consisted of flexible ureteroscopy in our case.

In the literature, two studies, Ilgi et al and Parmar K. et al. who reported complete stone removal by laser lithotripsy using ureteroscopy and laser in a supernumerary kidney combined with a horseshoe kidney. Given the size of the stone, which is 6.5mm, we were also able to ensure effective fragmentation and complete stone removal in the supernumerary kidney by flexible ureteroscopy using the Holmium laser [5, 6]. Compared to percutaneous nephrolithotomy (NLPC), ureteroscopy is minimally invasive and causes fewer complications. NLPC in an ectopic kidney is not simple. Because of the varied anatomy of the pyelocalyx and abnormal vascularity, the risk of bleeding would be high. Laparoscopic pyelolithotomy is excessive given the size of the stone and the risks involved.

CONCLUSION

The supernumerary kidney is an anomaly of the urinary tree that remains rare. This kidney can be the site of complications such as kidney stones which can be grafted to it. Ureteroscopy is very effective in the management of supernumerary kidney stones.

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