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## A rare case of congenital renal duplex system with renal calculi in a seventy-five years old woman

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### Abstract

Unilateral and bilateral renal calculi are more commonly observed in patients presented with pain in the loin region. Renal duplex system has been encountered occasionally as a congenital anomaly and it is more commonly diagnosed as an incidental finding during intraoperative renal surgical intervention of the patient. The present case is significant as in this case both renal calculi and union of both moieties of the ureters were observed in a seventy five years old woman.

**Keywords:** Duplex system - lithotripsy - PCNL procedure - renal calculi - renal moiety

### Introduction

Renal calculi are diagnosed in cases presented with flank and groin pain. Non obstructive calculi have meagre or mild symptoms. But patients with obstructive calculi are often presented for emergency surgical intervention due to intolerable pain. The present case gives an account of a 75 years old woman presented to the hospital with pain in the loin region and associated symptoms like burning micturition, nausea etc. Along with renal calculi, a rare case of duplex system of ureters with both moieties joined, a congenital anomaly of rare incidence was observed as an incidental finding in the patient.

Stamatelou *et al.* (2003) <sup>[4]</sup> reported that by 70 years of age, 11 per cent of men and 5.6 per cent of women will have a symptomatic kidney stone. Meschi *et al.* (2011) <sup>[3]</sup> attributed lifestyle and dietary factors such as low urine volume, diets predominantly consisting of animal protein, oxalate or sodium, and abnormal body weight, sedentary activity and stressful life events as causes for the increase in individuals' risk for calculus development.

Congenital duplex collecting system is a rare abnormality. It occurs in 1 in 500 persons and is found in 0.3% of excretory urograms (Yonli *et al.*, 2019) <sup>[5]</sup>. A 'duplex kidney' comprises two renal masses (moieties) with its own separate pelvicalyceal system, ureter, ureteral orifice and site of insertion; the upper pole moiety drains via an ectopic ureter usually inserting below and inferomedially to the lower moiety ureter and lower pole moiety draining via an orthotopic ureter and inserting into the lateral angle of the trigone (Mann *et al.*, 2011) <sup>[2]</sup>. According to the Weigert-Meyer law, in duplex collecting system, the upper moiety ureter presents an ectopic insertion (inferomedially) being prone to obstruction, often due to an ureterocele and the lower moiety ureter presents an orthotopic insertion and is prone to vesicoureteral reflux. Stephen's ectopic pathway claimed exceptions to Weigert-Meyer law and stated a superomedially ectopic insertion of the upper moiety ureter instead of inferomedial insertion. In the present case, both pole moieties were joined together in front of the bladder.

### Case history and observation

A 75 years old woman was presented with the history of intermittent pain in the left loin, as well as nausea, increased frequency of micturition and burning sensation during micturition for a period of 20 days. The patient's vital signs at presentation were within the normal range. On physical examination, the patient was oriented and conscious. Left loin revealed tenderness and pain was evinced on palpation of the left loin. Haematological and serum biochemical investigation didn't reveal any abnormality. No abnormalities were detected in urinalysis and microscopic examination of urine sediment. Urine sample culture didn't show any bacterial growth.

Radiography, Ultrasound and CT (Computerised Tomography) scan was done, based on which, the case was diagnosed as left intra renal calculi (Fig.1) and Bifid renal pelvis with

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partial duplication of ureter left side. Duplex system of kidneys with both ureters joined distally (Fig.2) was observed.

### Treatment and discussion

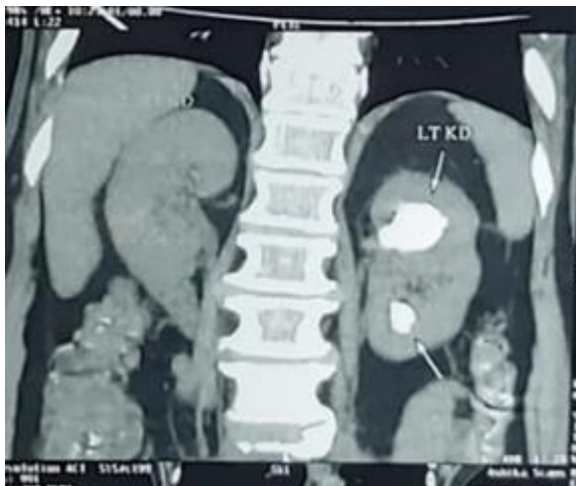
Under anaesthesia, Left PCNL (Percutaneous nephrolithotomy) procedure was performed. Desai *et al.* (2009)<sup>[1]</sup> reported PCNL as the most effective method due to increasing expertise of the urologists performing the procedure, the maturation of the instrumentation, and the ability to maintain multiple tracts and perform multistaged procedures.

Under Spinal Anaesthesia, Lithotomy position, cystoscopy was done. The urethra and bladder were normal. Left URS was done – 3 to 3.5 cm from the ureterovesical junction (UVJ) double opening (Fig.3) wherein both moieties of the ureters were found to be joined as an incidental finding. Through both sides of the ureter, ureteric catheter was placed. Retrograde Pyelogram (RGP) was done (Fig.4). Under general anaesthesia, prone position, upper calyceal puncture was done for the upper moiety calculus and the tract was dilated upto 26Fr and nephroscope was passed which revealed

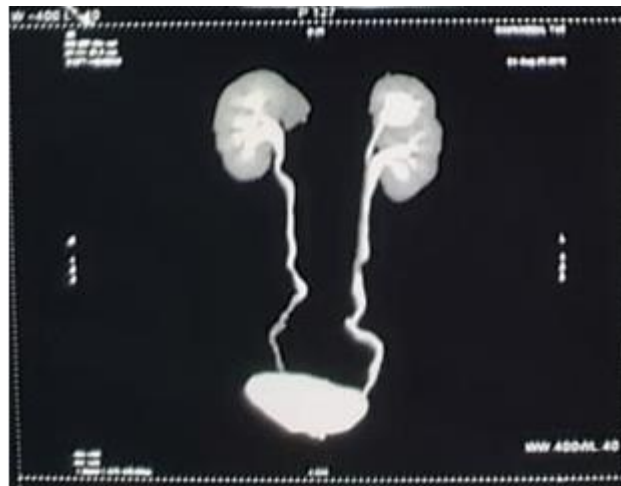
a 3.5x2 cm calculus. Pneumatic lithotripsy was done, the calculi were cleared completely (Fig.5). and 6Fr DJ stent was placed ante grade followed by PCN tube. Another puncture was made in lower calyx and the tract was dilated upto 24Fr and nephroscope passed which revealed a 2cm x1cm calculus in lower calyx. Lithotripsy was done and 5 Fr DJ stent was passed followed by PCN tube (Fig.6).

Post surgery, the patient was treated with intravenous fluids, antibiotics and analgesics. The upper moiety PCN tube was removed on the second day, the lower moiety PCN tube was removed on the third day and the urethral Foley's catheter was removed on the fourth day. The patient's intraoperative and immediate post operative period was uneventful. Both stents were removed after three weeks following which the patient recovered completely.

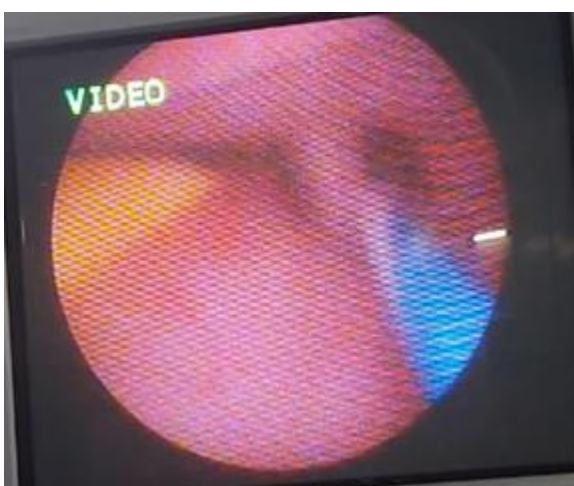
The present case reported as finding of both moiety calculus ureters joined in a geriatric patient is an occurrence with rarity and scanty literature is available on this finding. The finding gives a trace to consider congenital anomalies like both moieties joined which can go undiagnosed and may only be recorded as an autopsy finding.



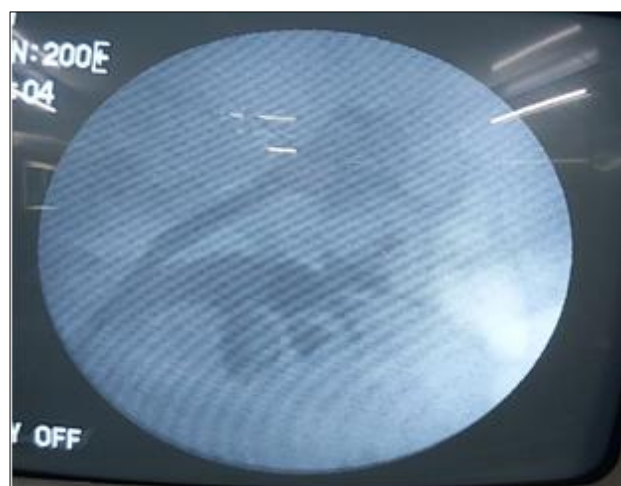
**Fig 1:** Left intra renal calculi



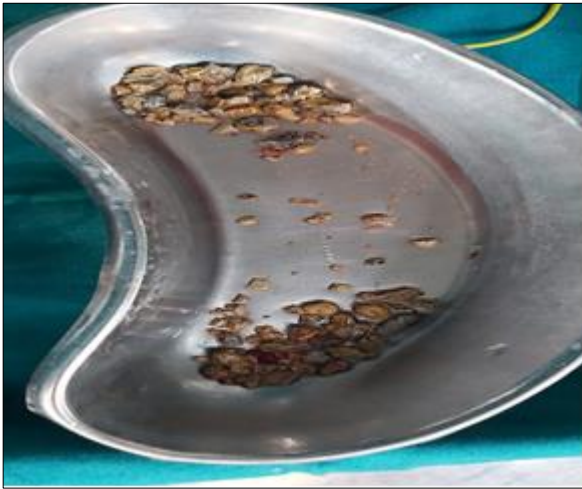
**Fig.2** Duplex system of kidneys with both ureters joined



**Fig 3:** Ureterovesical junction (UVJ) double opening



**Fig 4:** Retrograde Pyelogram



**Fig 5:** Cleared renal calculi



**Fig 6:** Placement of 5Fr Stent

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