

## Bilateral double renal pelvis with partial ureteral duplication complicated with unilateral ureteral and renal lithiasis

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**Section:** Uroradiology & genital male imaging

Case Type: Clinical Cases

**Authors:** Carmen Salvan 1,2,3, Paul Lazar 2, Doru Munteanu 2, Silviu Draghici 2, Andrei Lebovici 2, Elena Nastasa1,3, Daniel Dreptate 2,3, Rodica Suciu 3, Anca George2 1) Praxis Medical SRL, 2) Hiperdia SA, 3) Spitalul Judetean de Urgenta, Bistrita, Romania.

**Patient:** 41 years, female

### Clinical History:

A 41 year old female presented for a routine abdominal ultrasound, having no complaints.

### Imaging Findings:

The female patient presented 8 years ago lumbar pain, without pathological findings at ultrasound and radiography. At the time being, ultrasound revealed a deep cortical band in the right kidney, suggesting a double pelvis. The upper part of the left kidney had a normal appearance (normal parenchymal index). However, the middle and the lower part presented a grade 3 hydronephrosis (Fig. 1a), with dilatation of the proximal ureter (lumbar part) (Fig. 1b) as well as an echogenic focus of 22 mm with shadow in the lower calyces suggesting renal lithiasis (Fig. 1a), but also a similar focus of 16 mm in the lumbar ureter, concluding as ureteral lithiasis (Fig. 1b). Subsequently, a simple renal radiography was done; just the ureteral lithiasis was proven (Fig. 2). CT urography (with native (Fig. 3), secretory (Fig. 4) and excretory phase (Fig. 5)) for detecting lithiasis and for opacification of the collecting system was performed for preoperative functional renal status and revealed a normal left upper renal pole (Fig. 3a, b, 4 a, d), bilateral double pelvis (Fig. 5a,b), bilateral partial ureteral duplication (Fig. 5a-h), and confirmed the ultrasound results regarding the lithiasis (Fig. 3c-e, 4c, 5c), the hydronephrosis (Fig. 3b-e, 4 b-d) and the presumed double the renal pelvis (Fig. 5 a, b), and showed the maintained excretory function of both (whole) kidneys (Fig. 5a-c).

### Discussion:

Bilateral renoureteral malformations are rare entities, especially in woman, being first mentioned in anatomical dissections [1], found in the operating room and later proven in IV urography examinations as well as on CT urography [2- 7]. Double renal pelvis predispose to complications, mainly hydronephrosis and urolithiasis (3,5). Associations with partial ureteral duplication are increasing the risk for nephrolithiasis and ureteral lithiasis as well as for pioniophrosis, with impaired outcome for the patient [7-9]. Ultrasound is a good initial diagnostic tool in patients with suspected lithiasis, including ureteral lithiasis, but has a limited role in characterizing certain anatomical abnormalities [4, 10, 11]. And cannot evaluate the functional status of the kidneys. Subsequently, IV urography has this potential, but CT urography is better demonstrating all types of lithiasis, location, size measurements, characteristics, and secretory as well as excretory function, urinary flow dynamics of the kidneys, degree of obstruction, with implications in selecting the best treatment option [2, 6, 10]. Finally, the radiologist should answer 3

questions regarding the presence of lithiasis, the necessity of treatment and the best treatment strategy [2, 12].

**Differential Diagnosis List:** Bilateral double renal pelvis. Partial ureteral duplication. Unilateral reno-ureteral lithiasis

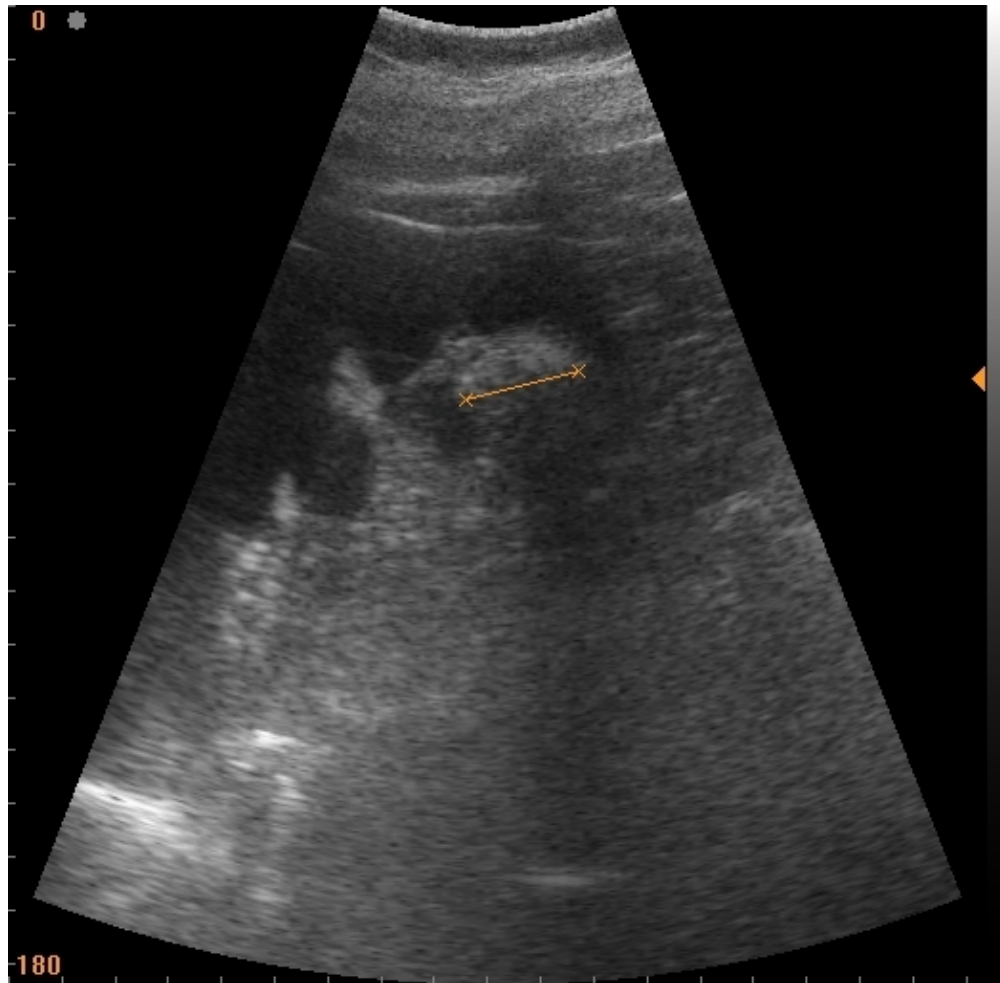
**Final Diagnosis:** Bilateral double renal pelvis. Partial ureteral duplication. Unilateral reno-ureteral lithiasis

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**Figure 1**

a



**Description:** Renal lithiasis with hydronephrosis **Origin:**

b



**Description:** Ureteral lithiasis with dilatation of the proximal ureter **Origin:**

**Figure 2**

**a**

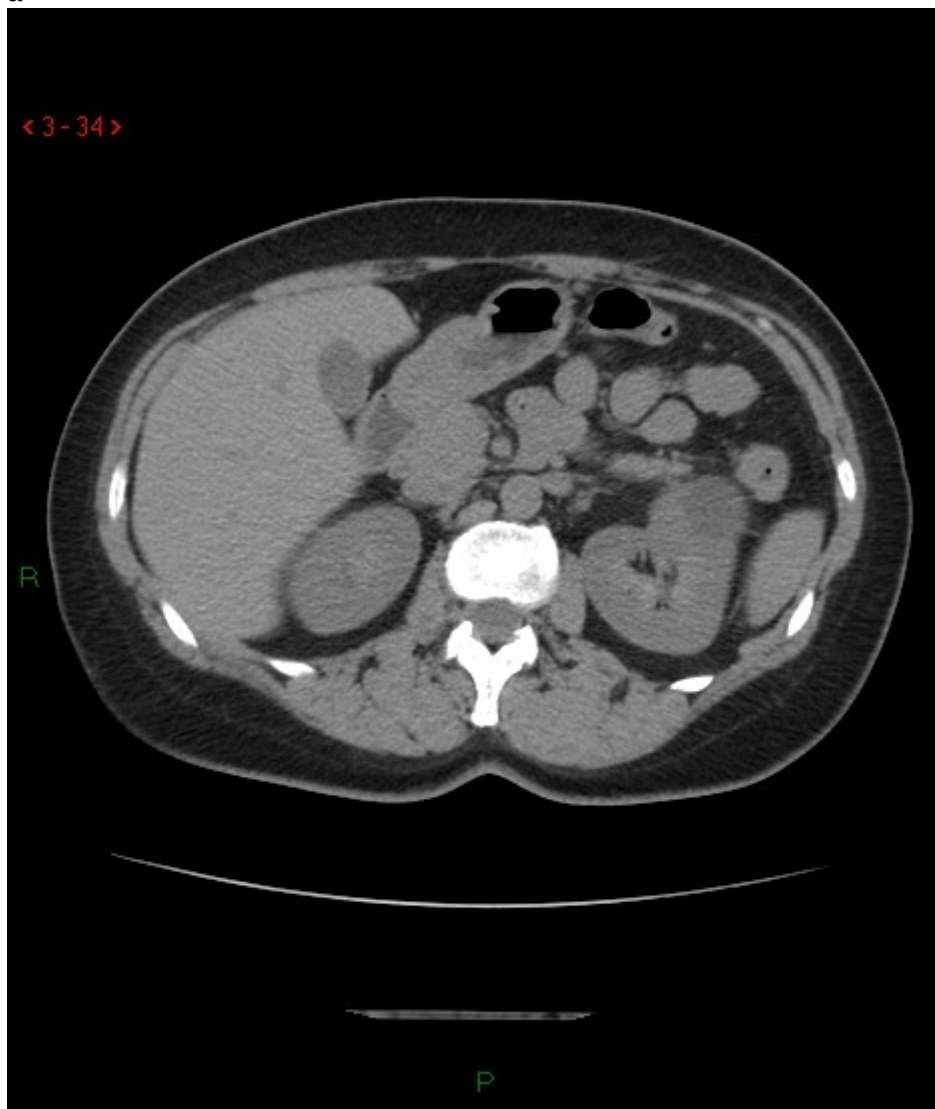


**Description:** Left paravertebral radiodense opacity suggesting the ureteral lithiasis seen in ultrasound

**Origin:**

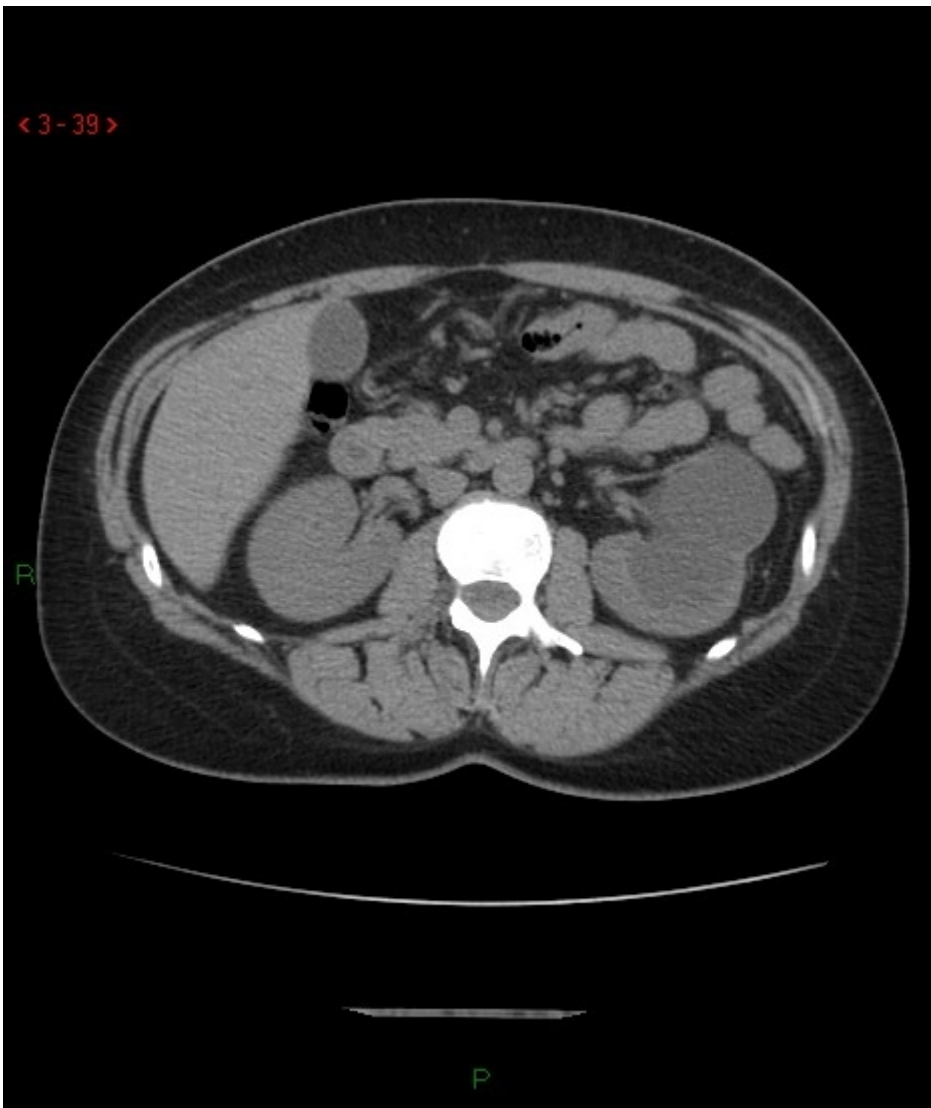
**Figure 3**

a



**Description:** Bilateral normal upper pole kidney **Origin:**

b



**Description:** Hydronephrosis on the left **Origin:**

C



**Description:** Left renal lithiasis and ureteral lithiasis, with hydroureter **Origin:**



d



**Description:** Left renal lithiasis **Origin:**

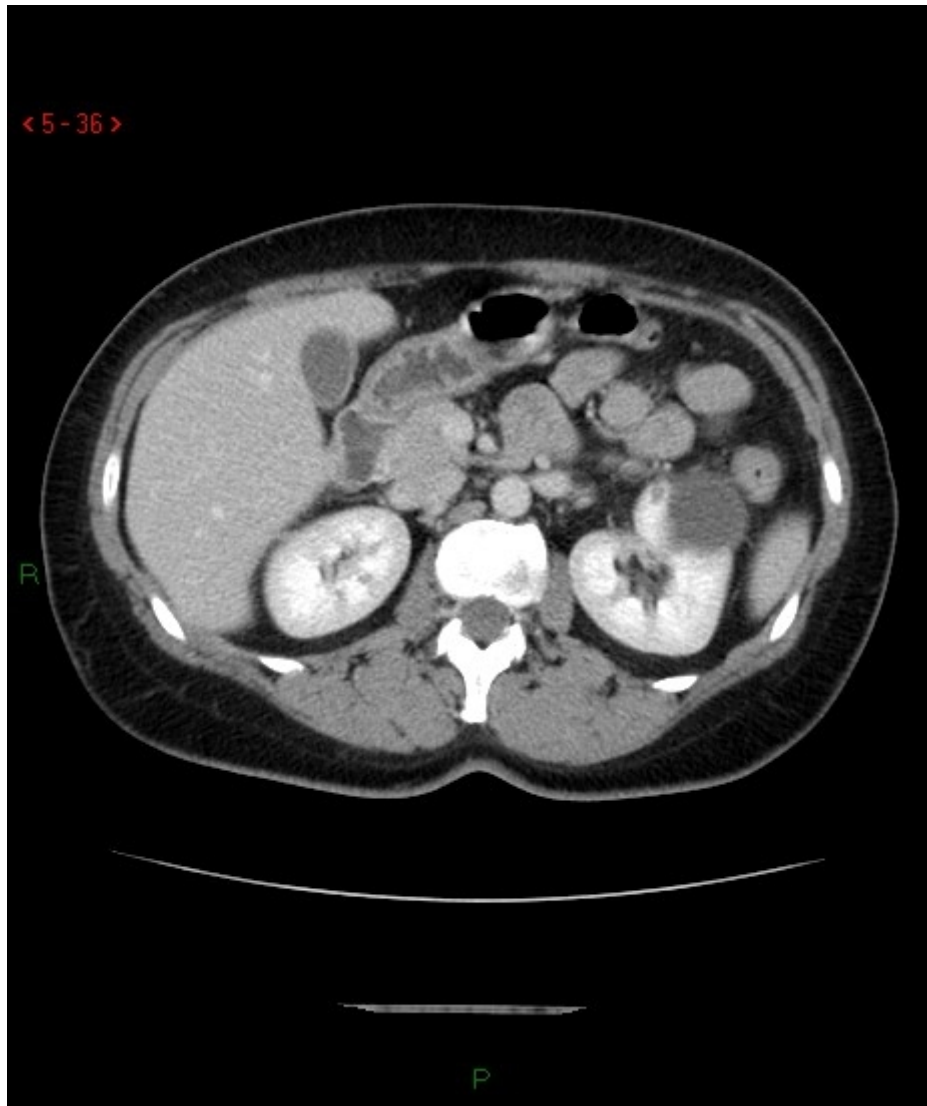
e



**Description:** Left ureteral lithiasis and hydronephrosis **Origin:**

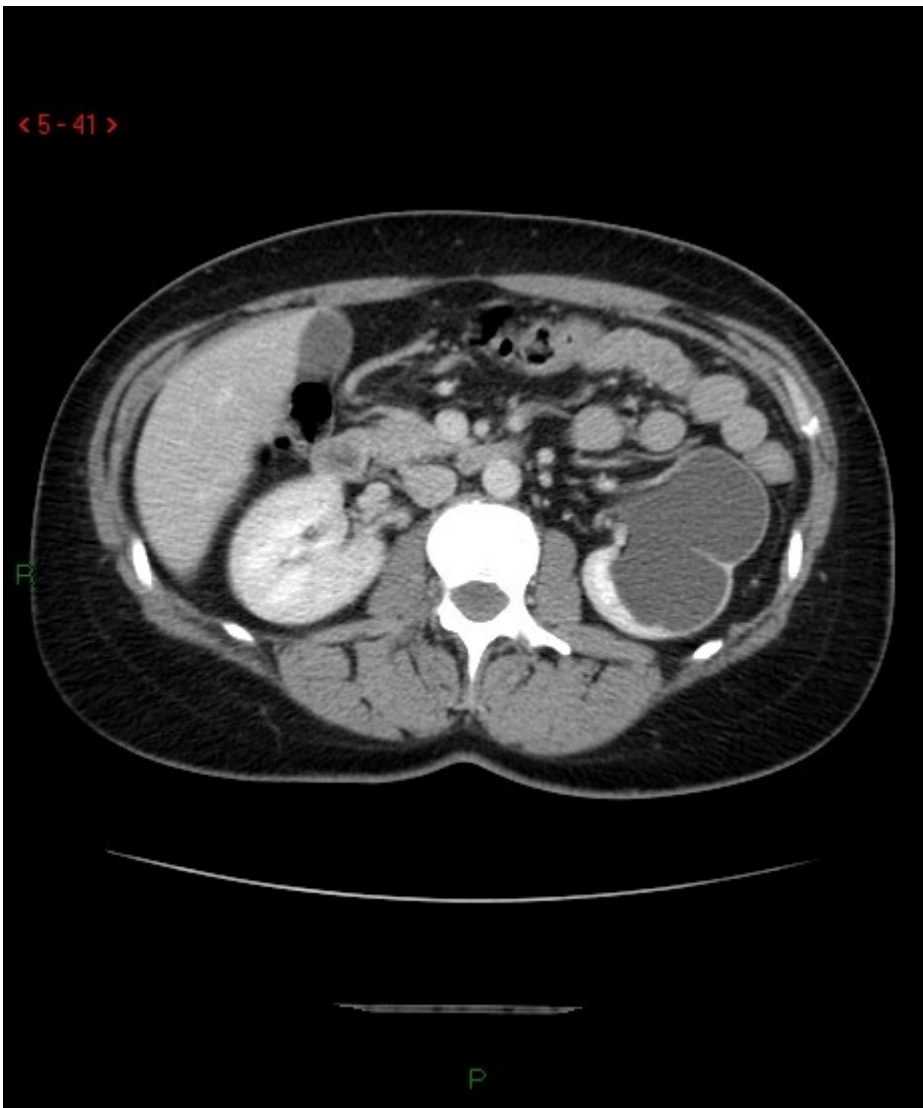
**Figure 4**

a



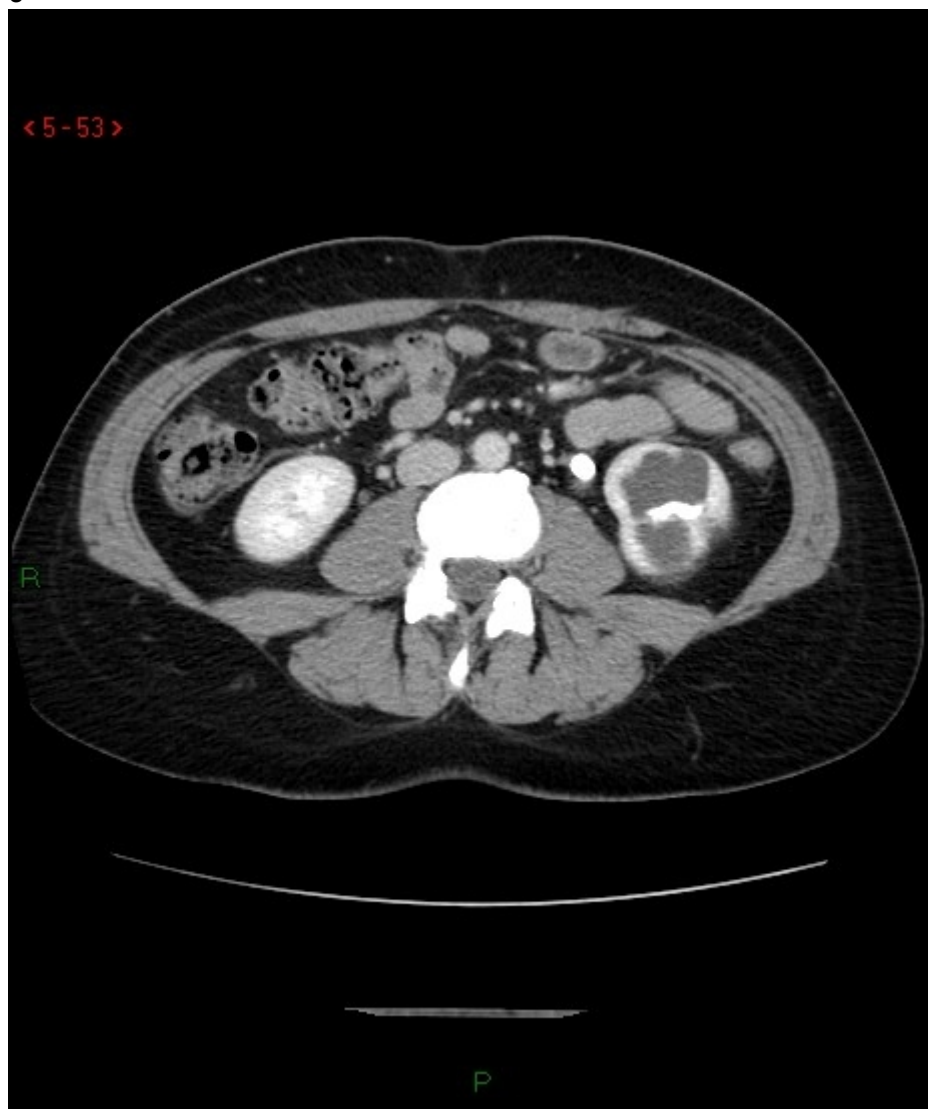
**Description:** Preserved, normal secretory function for the upper pole of the left kidney **Origin:**

b



**Description:** Grade 3 hydronephrosis of the left kidney **Origin:**

C



**Description:** Preserved secretory function of the left kidney. Hydronephrosis. Ureteral and renal lithiasis. **Origin:**

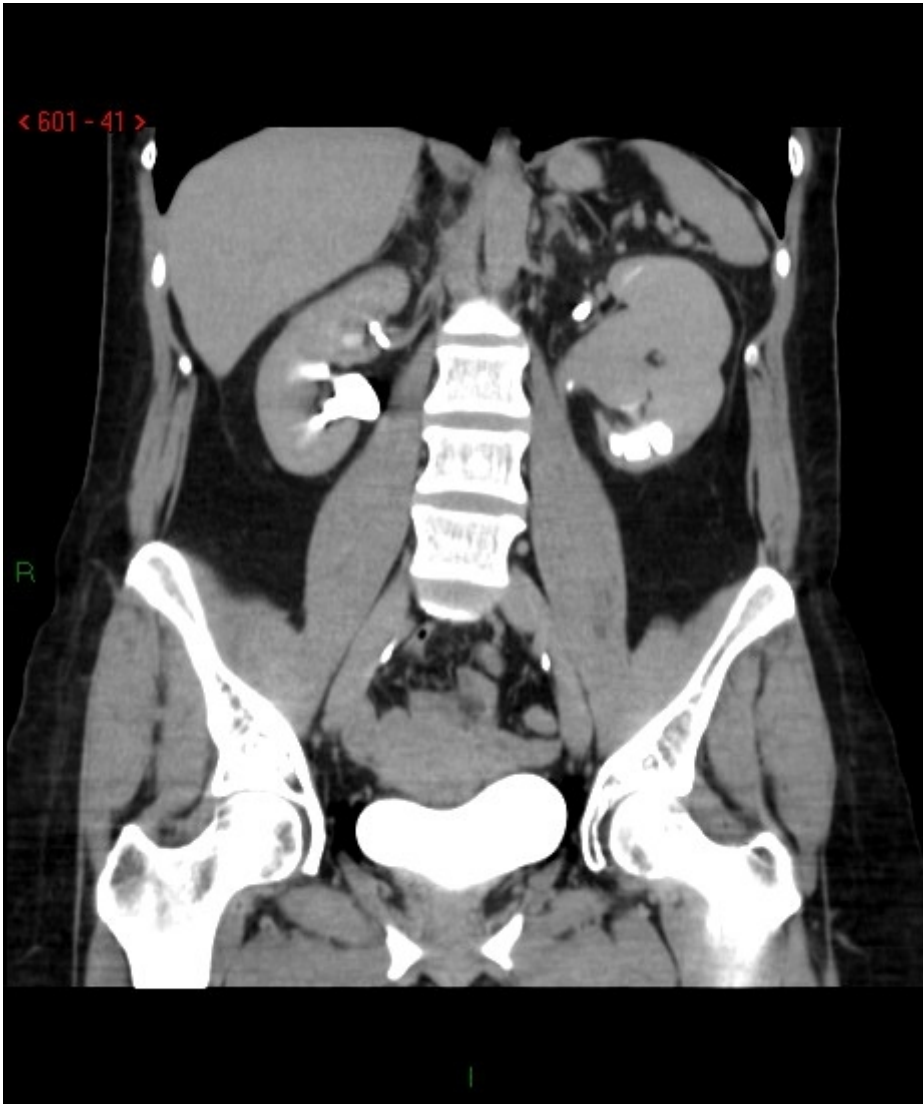
d



**Description:** Normal secretory function for the upper pole of the left kidney, but grade 3 hydronephrosis with preserved secretory function for the rest of the kidney. **Origin:**

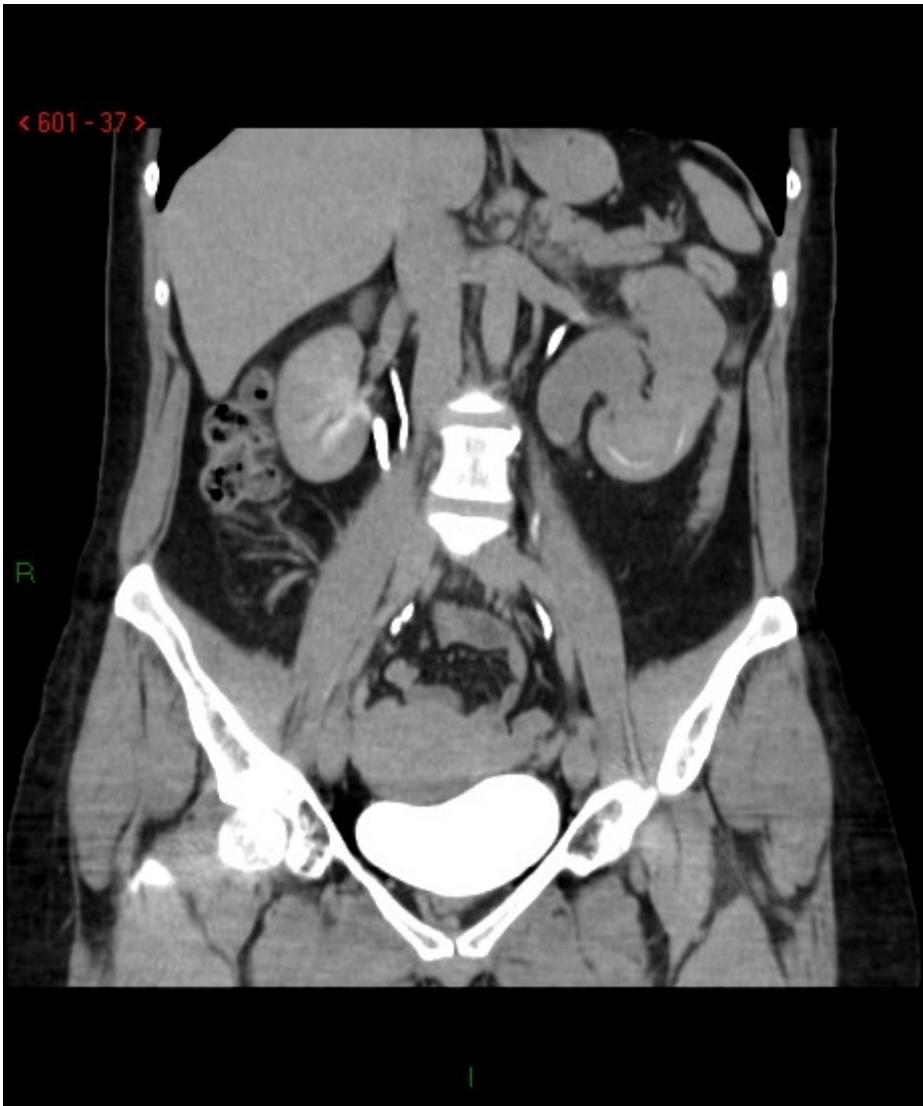
**Figure 5**

a



**Description:** Bilateral double renal pelvis, with preserved excretory function of both kidneys **Origin:**

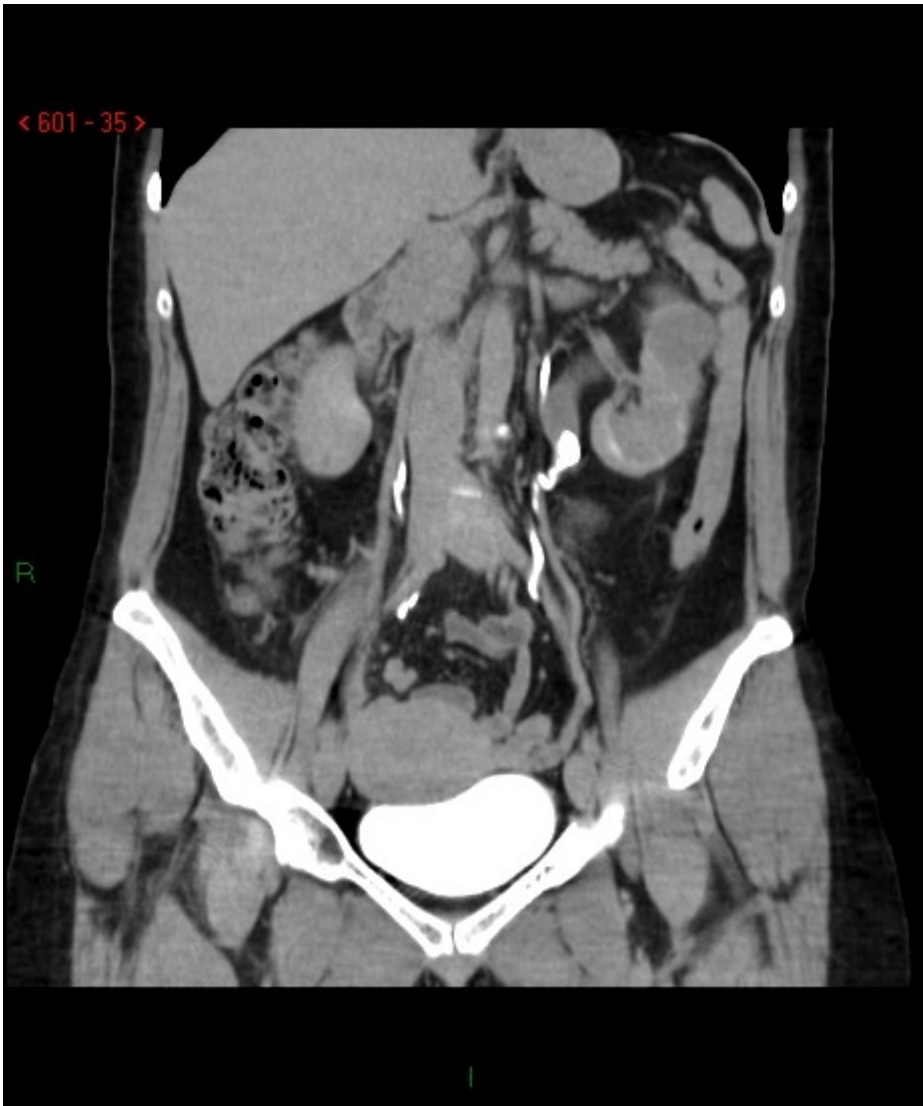
b



**Description:** Bilateral duplication of the lumbar ureter **Origin:**



C



**Description:** Partial duplication of the left ureter **Origin:**

d



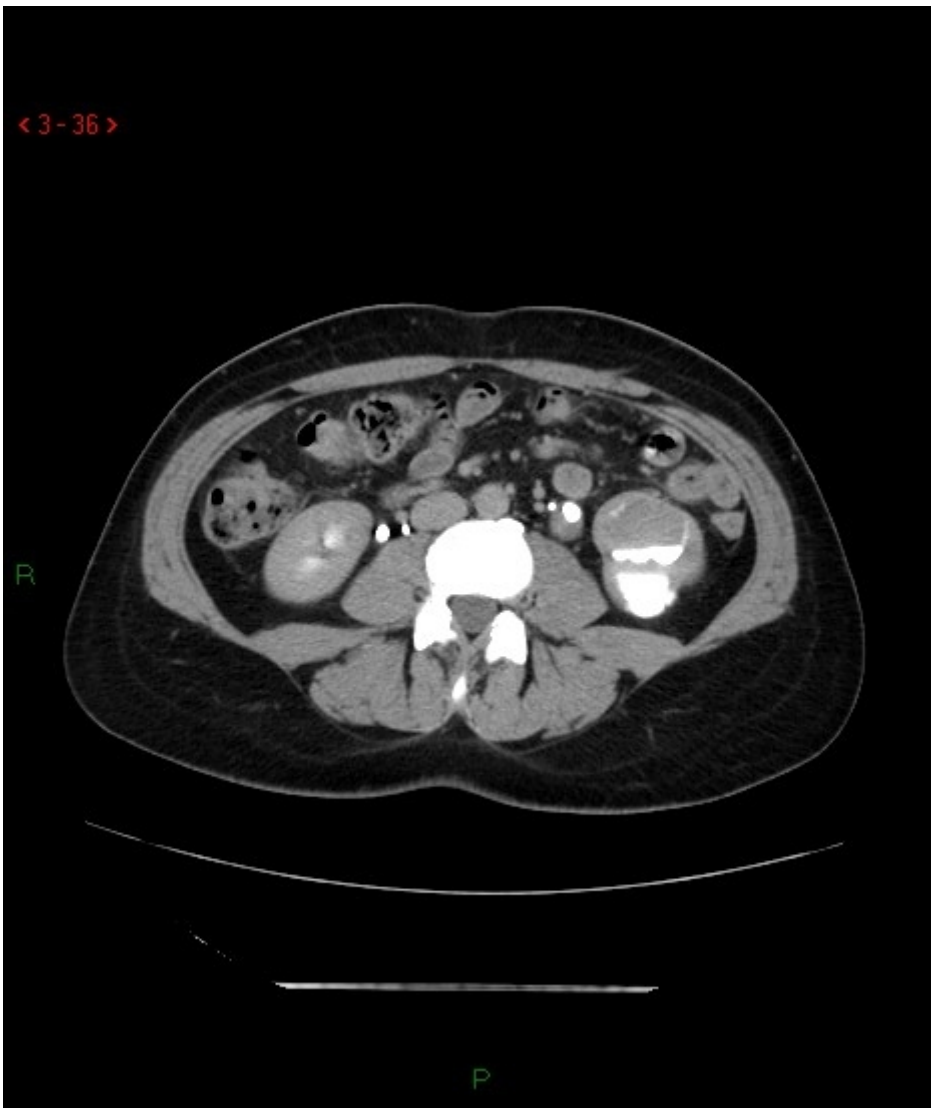
**Description:** Partial duplication of the left ureter with joining point **Origin:**

e



**Description:** Duplication of the left lumbar part of the ureter with dilatation of one **Origin:**

f



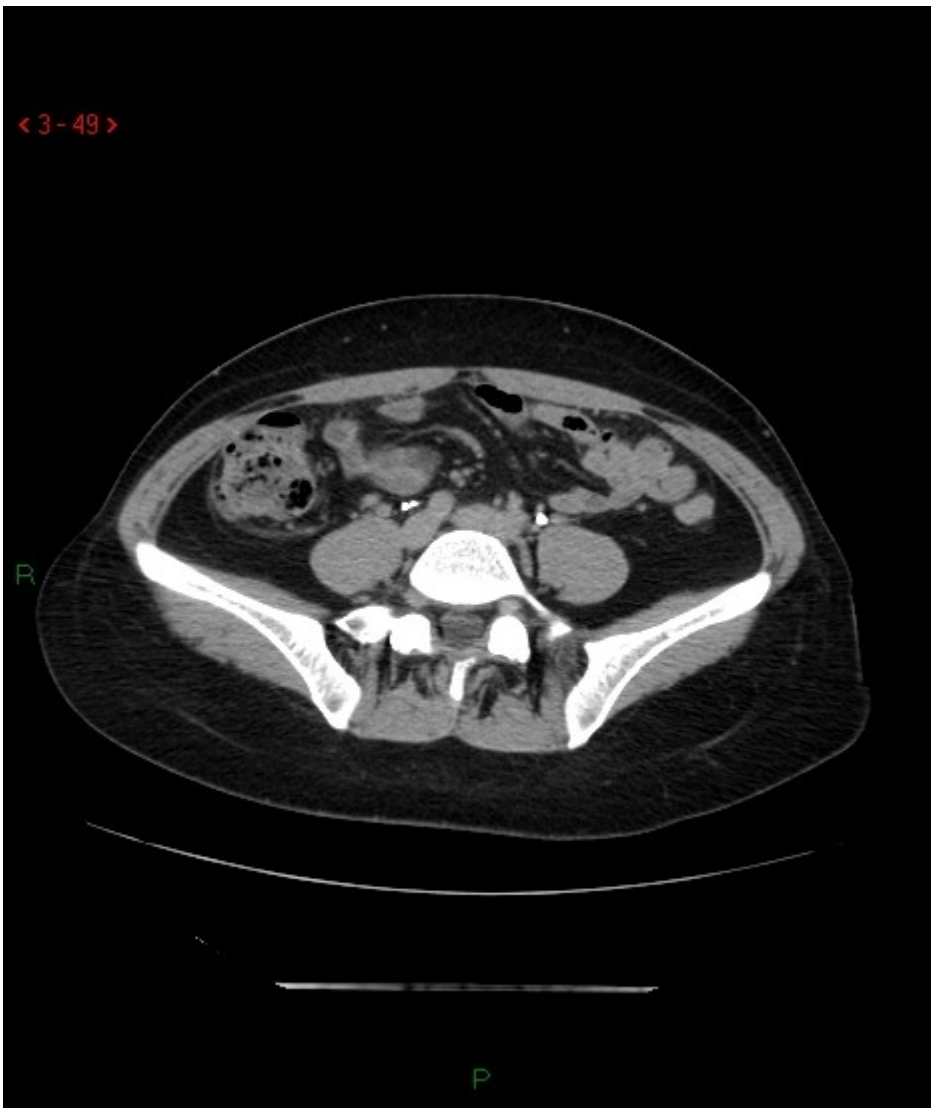
**Description:** Duplication of the left lumbar part of the ureter with dilatation of one **Origin:**

g



**Description:** Partial duplication of the left ureter with joining point **Origin:**

h



**Description:** Just one ureter is seen on the left, on the right side the duplication is still present, the joining point being lower (not shown) **Origin:**