

Renal lithiasis in trifid pelvis Presentation of a case**Litiasis renal en pelvis trifida. Presentación de un caso****Litíase renal em pelve trífida. Apresentação de caso**Juan Valiente Pérez^{1*} , Arsenio Luna Semanat¹ , Higinio Viel Reyes^{II} ^IHospital General Docente "Dr Agostinho Neto". Guantánamo, Cuba.^{II} Universidad de Ciencias Médicas de Guantánamo. Guantánamo, Cuba.***Corresponding author:** fjuanvalienteperez@gmail.com**Received:** 13-01-2025 **Accepted:** 26-02-2025 **Published:** 14-03-2025**ABSTRACT**

Urinary tract stones are very common among the adult population, affecting between 8% and 12% of people in Cuba, making them the third most common urological disease after infections and prostate disease. We present the case of a 59-year-old male patient with a four-year history of aching left lumbo abdominal pain and hematuria. Imaging studies (renal ultrasound and plain and contrast-enhanced renal computed tomography) revealed a 13 mm stone located at the urethra-pelvic junction of a trifid pelvis of the left kidney, with moderate pyelocaliectasia. It was concluded that the stone was a congenital anomaly of the renal pelvis, based on its shape in a trifid pelvis. A left percutaneous nephrolithotomy was performed using minimally invasive surgery. The patient made a satisfactory outcome and was discharged four days after the procedure.

Keywords: lithiasis; ureteropelvic junction; trifid pelvis; pyelocaliectasia; nephrolithotomy

RESUMEN

La litiasis en las vías urinarias es muy frecuente entre la población adulta, afecta en Cuba entre el 8% y el 12% de las personas, lo que constituye la tercera enfermedad urológica más frecuente tras las infecciones y la patología prostática. Se presentó el caso de un paciente de 59 años de edad con antecedentes de dolor lumboabdominal izquierdo tipo gravativo, más hematuria desde hace cuatro años, al que se le realizaron estudios imagenológicos (ultrasonido renal y tomografía axial computarizada renal simple y contrastada), encontrándose una litiasis de 13 mm alojada en la unión ureteropéllica de una pelvis trífida del riñón izquierdo, con pielocaliectasia moderada. Se concluyó que se trataba de una anomalía congénita de la pelvis renal, de acuerdo a su forma en una pelvis trífida. Se le realizó una nefrolitotomía percutánea izquierda, mediante cirugía de mínimo acceso. El paciente evolucionó satisfactoriamente y fue dado de alta a los cuatro días de la intervención.

Palabras clave: litiasis; unión ureteropéllica; pelvis trífida; pielocaliectasia; nefrolitotomía



RESUMO

A litíase do trato urinário é muito comum na população adulta, afetando entre 8% e 12% da população cubana, o que constitui a terceira doença urológica mais comum depois das infecções e da patologia da próstata. Foi apresentado o caso de paciente de 59 anos com história de dor lomboabdominal esquerda do tipo grave, além de hematúria há quatro anos, que realizou exames de imagem (ultrassom renal e tomografia computadorizada renal simples e contrastada), encontrando cálculo de 13 mm alojado na junção

ureteropélvica de pelve trífida do rim esquerdo, com pielocaliectasia moderada. Concluiu-se que se tratava de uma anomalia congênita da pelve renal, conforme seu formato em pelve trífida. Foi realizada nefrolitotomia percutânea esquerda com cirurgia de acesso mínimo. O paciente evoluiu satisfatoriamente e recebeu alta quatro dias após a intervenção.

Palavras-chave: litíase; junção ureteropélvica; pélvis trífida; pielocaliectasia; nefrolitotomia

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INTRODUCTION

Lithiasis in the urinary tract is a disease known since millenary times. It is very frequent among the adult population and affects between 8% and 12% of people in Cuba; it is the third most frequent urological disease after infections and prostatic pathology. It is estimated that between 10 and 12% of the population suffers from it during their lifetime.^(1,2)

Congenital anomalies of the urinary tract account for 10% of the population. They often have a hereditary basis and are associated with anomalies of other systems, predisposing to recurrent infections and urolithiasis. Some are of no clinical significance, while others cause health problems and can even compromise the patient's life.^(3,4)

The anatomical variants of the pelvis are:

- According to its situation in relation to the renal sinus: intrarenal and extrarenal
- According to its shape: bifid, trifold, ampullar and canalicular

Bifid pelvis is seen in 10% of the population and is so common that it is practically considered a normal anatomical variant. It originates when a single ureteral bud bifurcates at or above the theoretical zone of the ureteropelvic junction; it arises from the mesonephric duct in the fifth week of embryological life. This structure then divides into two or three before reaching the metanephrogenic blastema. When there is a trifurcation or more divisions they are called "trifold" or "multifold" pelvises.^(5,6,7,8)



It is an extremely rare variant of congenital anomaly of the renal excretory system and therefore publications in the literature are infrequent; only one case of bilateral triple renal pelvis was found by the authors, after an exhaustive search.⁽⁹⁾

For all the above mentioned, it was decided to present a clinical case of lithiasis in a patient with an uncommon renal malformation such as trifid pelvis of the left kidney, attended in the consultation of Lithiasis of the Urology Service of the General Teaching Hospital “Dr. Agostinho Neto” of Guantánamo, Cuba, in 2020.

CASE PRESENTATION

A 59-year-old patient with a history of left lumbo abdominal pain of the gravitational type plus hematuria for the past 4 years

Imaging studies such as renal ultrasound and simple and contrasted computed axial tomography (CT) were performed (Figures 1-4), finding a 13 mm lithiasis lodged in the ureteropelvic junction of a trifid pelvis of the left kidney, with moderate pyelocaliectasia.

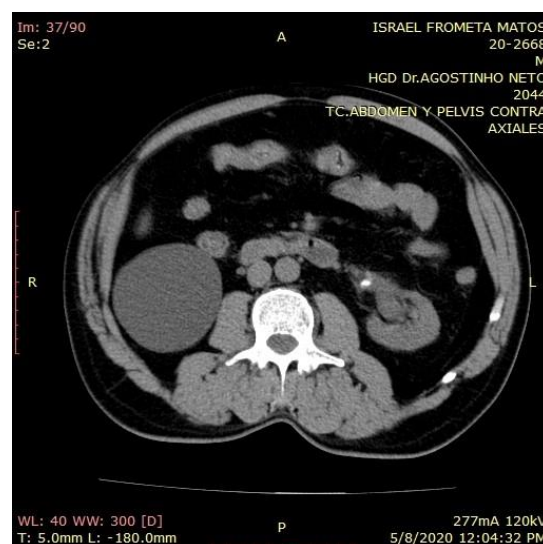


Fig 1: Axial view of the renal CT scan showing the location, size and repercussion of the lithiasis in the upper renal excretory tract





Fig. 2: Coronal section of the renal CT showing the location, size and repercussion of the lithiasis in the upper renal excretory tract (ureteropelvic junction in a trifid pelvis of the left kidney)



Fig 3: Sagittal view of the renal CT scan showing the location, size and repercussion of the lithiasis in the upper renal excretory tract (ureteropelvic junction in a trifid pelvis of the left kidney)



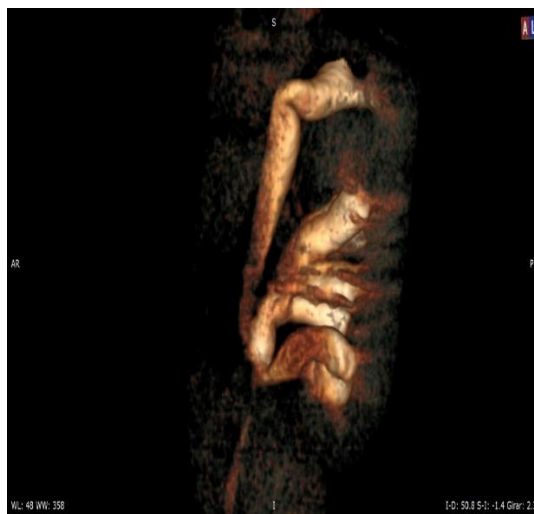


Fig. 4: 3D contrasted renal CT images showing the congenital anomaly (trifid pelvis) plus lithiasis at the ureteropelvic junction.

It was concluded that it was a congenital anomaly of the renal pelvis, according to its shape in a trifid pelvis, so his treatment was coordinated at the “Hermanos Ameijeiras” Clinical Surgical Hospital, for the performance of a left percutaneous nephrolithotomy by means of minimal access surgery.

The patient evolved satisfactorily and was discharged four days after surgery.

CASE DISCUSSION

There is a wide range of defects that are multifactorial in nature, but are commonly due to abnormal development during organogenesis. The multifaceted management of these conditions is aimed at preserving renal function and ultimately delaying the need for transplantation. With the advancement of ultrasonographic techniques, these conditions are more likely to be identified and diagnosed prenatally, often leading to early intervention for a better outcome.⁽¹⁰⁾

The importance of correctly recognizing and diagnosing the clinical manifestations of anatomic abnormalities of the kidneys and urinary tract is a priority. This congenital anomaly did not evolve to the detriment of the patient's health, since he was only a carrier of a stone that affected his quality of life, which was solved by a minimal access surgical technique.⁽¹¹⁾

There is a report in the reviewed literature of a case of left trifid renal pelvis with a coralliform (staghorn) calculus treated by percutaneous nephrolithotomy. If the trifid pelvis is an extremely rare anomaly, this case adds to it and this makes it extremely interesting. According to the authors, it represents a peduncular arrangement or an elongation of the major calyces in association with a rudimentary pelvis, the same becoming significant only in the presence of pathological conditions such as obstruction by ureteropelvic junction stenosis.⁽¹²⁾



In the case study, the appearance of three major drainage systems resembles renal pelvises rather than elongated major calyces. Previously, a trifid pelvis was diagnosed intraoperatively in the exploration of an obstruction of the ureteropelvic junction; nowadays, with the diagnostic means that exist, prenatal (intrauterine) diagnosis can be made, which makes it possible to take action as early as possible and thus avoid damage to the affected kidney.⁽¹²⁾

Other authors suggest that in cases of trifid pelvis without any abdominal symptoms, it may be difficult to diagnose whether this anomaly exists or a purely peduncular arrangement with elongation of the major calyces in association with a rudimentary pelvis, since it is an embryological anomaly.⁽¹³⁾

Pejčić et al.⁽⁹⁾ concur that these abnormalities become significant in the presence of pathologic conditions, and report on a 55-year-old man who was evaluated for papillary bladder cancer. It was noted a bilateral trifid pelvis on intravenous urogram and confirmed by renal CT.

Minimal access surgery (percutaneous nephrolithotomy) is the best surgical treatment option for patients with lithiasis in congenital anomalies of the renal pelvis (trifid pelvis). It can be said, after an exhaustive bibliographic review and several consultations with specialist colleagues from several provinces, that this is a unique case in the country.

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Conflicts of interest:

The authors declare that there are no conflicts of interest.

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