

3rd Edition of the Clinical Cases Contest related to the non-surgical clinical management of renal lithiasis

Official Template

Title: Renal lithiasis in transplant patient with Bricker ileal conduit urinary diversion

Key words (between 3 and 6): lithiasis, renal transplantation, urinary
diversion

1. Summary (not over 150 words)

Clinical case report of a 66-year-old female patient, the patient has a history of cystectomy along Bricker urinary diversion from childhood and renal transplantation 8 years ago, with 1 cm lithiasis in the pyeloureteral junction.

The patient was evaluated at our center for obstructive uropathy, where she required admission to ICU. Urgent urinary diversion was performed by nephrostomy and an antegrade catheter was placed.

During the follow-up, the lithiasis ascent to the interpolar region is confirmed by image, deciding to perform extracorporeal lithotripsy (ESWL).

The patient evolved satisfactorily and showed complete resolution of the lithiasis after two ESWL sessions, this being the procedure recommended in current literature for lithiasis under than 2cm. Lithiasis in a transplant patient with a urinary diversion is a challenge for urologists due to the diagnostic and therapeutic peculiarities that it entails.

2. Introduction

Renal graft lithiasis is a rare complication (0.2-1.7%), but it can lead to significant morbidity and loss of graft functionality. On the other hand, the incidence of lithiasis in patients with urinary derivation involving ileal duct is higher (9-11%).

The diagnosis of this condition is complex, as transplant patients do not show the classic clinical features such as renal colic due to the denervation inherent to renal transplantation. Therefore, lithiasis may not be diagnosed until the patient presents an obstructive uropathy along fever and acute renal failure, requiring urgent treatment to prevent graft loss.

The treatment for patients with renal graft lithiasis is not different from the usual treatment for single-kidney patients. For patients with urinary derivation, retrograde endoscopic procedures can be technically difficult.

In these cases, it is recommended to perform ESWL for ureteral lithiasis and those under 2cm. In major renal lithiasis or in those cases where has ESWL has not been effective, the performance of percutaneous nephrolithotomy (PCNL) is recommended with the option of combined approach, if possible.

3. Description of the clinical case:

a. Relevant medical history

A history of cystectomy along Bricker urinary diversion from childhood (neurogenic bladder due to myelomeningocele) and living donor kidney transplant 8 years ago.

b. Diagnostic support studies and results

At the time of diagnosis, an abdominal computed tomography (CT) scan without contrast was performed.

c. Diagnosis

This CT scan showed a 1 cm lithiasis in the proximal ureter, associated with grade III ureterohydronephrosis of the renal graft located in the right iliac fossa.



Image 1. CT scan diagnosis: ureterohydronephrosis secondary to 1cm lithiasis in the proximal ureter.

d. Treatment

At the time of diagnosis, urgent urinary diversion is performed by nephrostomy to the renal graft along the placement of antegrade catheter. Given the patient's initial hemodynamic instability, she required a 24-hour admission to the intensive care unit (ICU) to achieve clinical stabilization. Subsequently, she was discharged on the fourth day of admission, the nephrostomy having been removed during the hospital stay.



Images 2 and 3. Nephrostomy and antegrade catheter placement.

e. Progress and monitoring

During the follow-up, ascension of the described lithiasis to the middle calyx is confirmed by image. The case is discussed during a clinical session deciding the performance of ESWL.

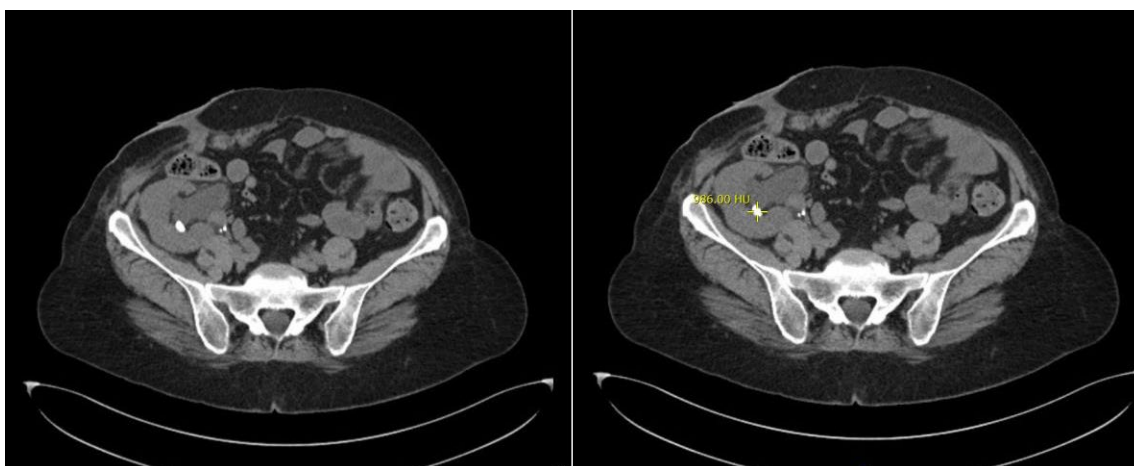


Image 4. Follow-up CT scan: Renal lower calyx lithiasis (986 UH).

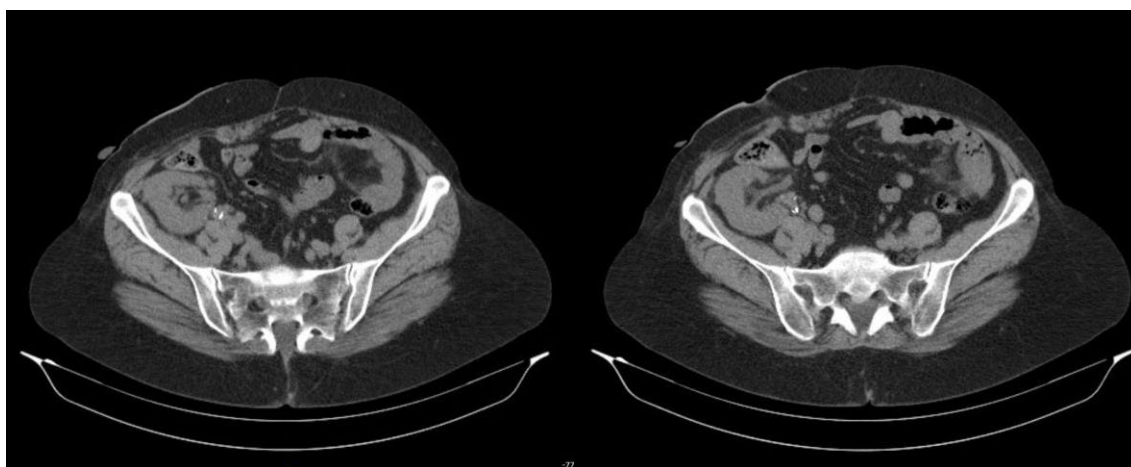


Image 5. Abdominal x-ray: radiopaque lithiasis of 1cm.

Two sessions ESWL were carried out, after which a 24-48h admission is decided for observation, the absence of lithiasis is confirmed through an abdominal X-ray and abdominal CT scan, ureterohydronephrosis was not observed.



Image 6. Abdominal x-ray: absence of radiopaque lithiasis after ESWL.



Images 7 and 8. Abdominal CT scan after ESWL: absence of lithiasis and residual ureterohydronephrosis.

f. Clinical results

During a follow-up period of 24 months (about 2 years), the patient is asymptomatic and free of lithiasis according to the imaging tests performed (ultrasound and CT scan).

4. Discussion

Lithiasis in transplant patients is a rare complication, although it is important to take it into account due to the potential risk of loss or dysfunction of the renal graft in case of obstructive uropathy. It has been estimated that the average time of lithiasis appearance in transplant patients is

between 1.6 and 3.6 years after renal transplantation. It is also possible that the renal graft has transferred lithiasis or microlithiasis, which have not been observed previously using imaging tests on the donor or it has been decided not to remove them prior to the transplantation of the graft.

On the other hand, patients with urinary derivations have a higher risk of having lithiasis due to metabolic abnormalities (related to metabolic acidosis), chronic bacteriuria, urinary ectasia due to ureteroileal anastomosis stricture, as well as concomitant pathologies that favor lithiasis onset such as diabetes mellitus or arterial hypertension, among others. Therefore, it is important to prevent urinary tract infections, treat the observed metabolic abnormalities and control the concomitant pathologies in this type of patient.

It is also important to consider that transplant patients receive immunosuppressive treatment, increasing the risk that, if they experience obstructive uropathy secondary to lithiasis, these patients may develop a severe urinary infection. Likewise, these patients, due to the inherent renal and ureteral denervation of the renal graft, will not present the classic renal colic features, delaying early diagnosis.

Therefore, both because of the present risk of lithiasis onset in a patient with urinary diversion as well as the potential risk posed by this pathology and its consequences in transplanted patients, it is very important to consider it during follow-ups for this type of patients and to carry out the appropriate treatment as early as possible and adequate prevention to reduce the incidence of this pathology.

For this type of patient, it is recommended to follow the same therapeutic algorithm as the one used for single-kidney patients. In asymptomatic patients or with lithiasis under 1-2cm, starting conservative treatment by observation and close follow-up or ESWL is preferred. Despite this, endourological treatment using flexible anterograde ureterorenoscopy (URS) or PCNL (especially microPCNL 14-18Ch) is considered superior to ESWL in terms of lithiasis-free rate, achieving complete resolution of lithiasis in a single surgical procedure, involving on the other hand a greater risk of bleeding and graft compromise. For patients with lithiasis over 2 cm, the treatment of choice consists of micro-PCNL associated or not with combined treatment using antegrade or retrograde URS, if feasible. Given the usual pelvic and superficial position of renal grafts, percutaneous approach is usually performed with the patient placed in a supine position (Valdivia-Galdakao).

There is no clear literature consensus about the follow-up that this type of patient should have. Generally, it is recommended to perform an imaging test (preferably an ultrasound) 3 months after the active treatment of lithiasis was performed and subsequently every 6 months.

5. Conclusions and recommendations

Lithiasis after renal transplantation requires vigilance, high suspicion to make early diagnosis and appropriate therapeutic management; this being especially important in patients with urinary diversion due to the higher incidence and recurrence of lithiasis. The therapeutic algorithm for these patients is not different from single-kidney patients, considering the anatomical peculiarities and the difficulty of retrograde access. Monitoring and control of concomitant pathologies that favor lithiasis formation and treatment and prevention of associated metabolic alterations of these patients is essential to prevent the recurrence of the lithiasis in this type of patients.

Lithiasis in transplant patients with urinary derivations is a challenge for urologists due to the diagnostic and therapeutic peculiarities that it entails.

6. Bibliographic references (*of special interest, **of extraordinary interest)

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