

## 4th Edition of the Clinical Case Contest related to the non-surgical clinical management of renal lithiasis.

*Official template*

**Title: Transcatheter alkalinisation in patients with radiolucent lithiasis during hospital admission, an additional treatment in our therapeutic arsenal?**

**Keywords: Alkalinisation, ureteral catheter, radiolucent stones**

### **1. Abstract:**

We present a clinical case of an 80-year-old female patient who required admission to the urology department for complicated left renoureteral colic secondary to radiolucent lithiasis in the proximal ureter, requiring urinary diversion.

Given the characteristics of the case, it was decided to place an external ureteral catheter to offer us the advantage of initiating local transcatheter alkalinisation as well as intravenous alkalinisation, monitoring the patient with urinary pH during her hospital stay.

She progressed favourably, with the external catheter being replaced with a double J catheter prior to discharge, and the patient was followed up in outpatient consultations, maintaining oral alkalinisation treatment.

A control abdominal CT scan 4 weeks later showed no lithiasic fragments, and complete resolution of the lithiasis was achieved, maintaining a pH of around 6.2-7.2, and we considered including this treatment in patients with radiolucent lithiasis within the whole range of available therapeutic tools.

### **2. Introduction**

Treatment of radiolucent lithiasis is a therapeutic challenge, including alkalinisation with bicarbonate or Suby G solution in patients with nephrostomy or ureteral catheters, already described in case series and literature reviews, and may be an option for infectious stones and, in theory, also for uric acid stones.

In that group of patients with acute pathology diagnosed with complicated renoureteral colic secondary to this type of lithiasis, a urinary diversion by means of a ureteral catheter or percutaneous nephrostomy could be beneficial, offering the possibility of alkalinising the urine directly transcatheter, as well as being able to closely monitor the urinary pH of these patients during their hospital stay, constituting a way of accelerating and taking giant steps towards the solution of radiolucent lithiasis.

We present a case of a female patient with complicated renoureteral colic secondary to radiolucent lithiasis who required urinary diversion, using an external ureteral catheter to initiate alkalinisation by transcatheter irrigation of bicarbonate, achieving practically complete chemolysis in this case.

There are few articles in the literature on transcatheter ureteral irrigation during hospital admissions.

### 3. Description of the clinical case

#### a. Relevant background:

80-year-old female patient with the following history:

- Hypersensitivity to septrin, Dexamethasone, Ciprofloxacin, Nolotil.
- FRCV: HTA, DM2, DLP.
- Hypothyroidism.
- Glaucoma.
- Surgical interventions: Hysterectomy and double adnexectomy. Herniated discs.

Usual home treatment: Latanoprost + Timolol 50 udx quarterly, Omeprazole 20mg c/24h, Simvastatin 10mg c/24h, Spironolactone 25mg c/12h, Salbutamol 0.1mg c/8h, Irbesartan+Hydrochlorothiazide c/24h, Metformin 850mg c/24h.

An 80-year-old female patient attended the emergency department for left lumbar pain of more than 48 hours' duration, radiating to the left iliac fossa associated with fever  $>38^{\circ}\text{C}$  measured at home, with no other associated symptoms.

#### b. Diagnostic support studies and results:

Blood test:

- Blood count: haemoglobin 8.9 g/dL, 9830 leukocytes, 83% neutrophilia.
- Coagulation: AP 84%, INR 1.14.
- Biochemistry: creatinine 1.75 mg/dL, sodium 134 mmol/l, potassium 4.3 mmol/l. Abdominal X-ray: No clear radio-opaque images compatible with lithiasis.

Urgent abdominal CT scan: Left grade II ureterohydronephrosis secondary to obstructive lithiasis of 9.5 mm in the proximal ureter with associated thin liquid film secondary to rupture of fornices, showing signs of pyelitis in the left kidney without being able to rule out acute pyelonephritis.



**c. Diagnosis:**

Given the clinical manifestations and the results of the aforementioned complementary tests, hospital admission was decided by the Urology Department due to clinical symptoms compatible with complicated renoureteral colic secondary to left ureteral lithiasis leading to ureterohydronephrosis, requiring urinary diversion.

**d. Treatment:**

In retrograde pyelography performed in the operating room, a repletion defect compatible with radiolucent lithiasis was visualized, so urinary diversion with external ureteral catheter was decided to start alkalinization with transcatheter and intravenous bicarbonate.

During hospital admission, the patient was treated with empirical intravenous antibiotherapy with Ceftriaxone 2g every 24 hours until negative culture results and local alkalinization was started by administering 20 mL of 1/6 molar bicarbonate through the external ureteral catheter every 12 hours in addition to intravenous administration of 1/6 molar bicarbonate, monitoring the patient initially with venous gasometry and urinary pH.

**e. Evolution and follow-up:**

Given the good evolution of the patient, with urinary pH monitoring with Lit-Control® pH Up, the single ureteral catheter was changed to a double J catheter and oral alkalinization was started, maintaining a urinary pH around 6.5-7.2 to avoid the formation of calcium phosphate lithiasis, with favorable evolution, and the patient was discharged from the hospital.





treatment could advance the resolution of this type of lithiasis.

## 5. Conclusions and recommendations:

There is little scientific evidence regarding chemolysis and local alkalinization through nephrostomy catheters or ureteral catheters.

Thus, we present this case with complete resolution of a radiolucent lithiasis with significant ureterohydronephrosis, so it is not a trivial fact to consider this transcatheter alkalinizing treatment in selected patients, to try to create scientific evidence with this therapeutic option with few side effects and possibly high resolution rates.

## 6. Bibliographical references (\*of special interest, \*\*of extraordinary interest):

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