

## Spontaneous rupture of the ureter in a tetraplegic patient: An exceptional case report

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### Abstract

Spontaneous rupture of the ureter is very rare condition, and usually results from an obstruction of the urinary tract due to a stone. Few cases of spontaneous rupture are described in the literature, often considered theoretical because of the absence of an obvious etiology, as was the case of our patient where no cause was found, which makes the particularity of this clinical case.

**Keywords:** Rupture; Rare; Non traumatic; Spontaneous; Ureter; Double J probe; Urosepsis

### 1. Introduction

Spontaneous rupture of the ureter is defined as non-traumatic urinary leakage from the ureter. It is a rare situation and represents a potential urological emergency. [1 ;2]. Classically it is caused by ureteral obstruction by a stone, stenosis or tumor. [3 ;4]

Few cases of spontaneous rupture of the ureter have been described in the literature.

The diagnosis remains difficult in view of the atypical symptomatology, and management is not yet standardized.

We describe the case of a male patient with a spontaneous rupture of the left ureter, who benefited from drainage by double J probe and ureteroscopy.

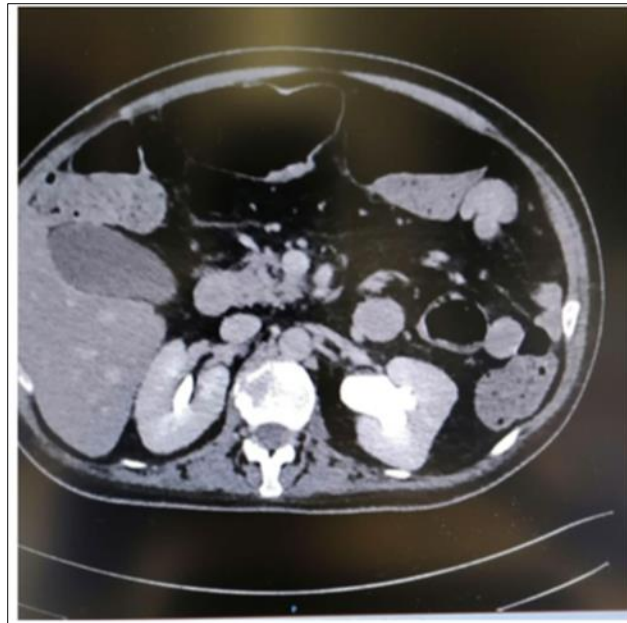
### 2. Case report

A 42-year-old male patient, with history of tetraplegia following an old C3C4 medullary trauma, type 2 diabetic on metformin, active smoker, with an indwelling urinary catheter for neurogenic bladder, initially hospitalized for the management of a sacral eschar.

The evolution during his hospitalization was marked by the appearance of a left nephritic colic, with macroscopic hematuria, and fever.

The clinical examination revealed a stable patient with flank sensibility. Biology has shown an inflammatory syndrome with leukocytes 14000 g/l, a crp 80 and a normal renal function. The abdomino-pelvic scanner shows an uretero-pyelo-caliceal dilatation (Fig1) with extravasation of contrast product, at the pelvic ureter, without visualization of an obstacle (spontaneous rupture), nor of a stone in the urethra or in the bladder (Fig 2).

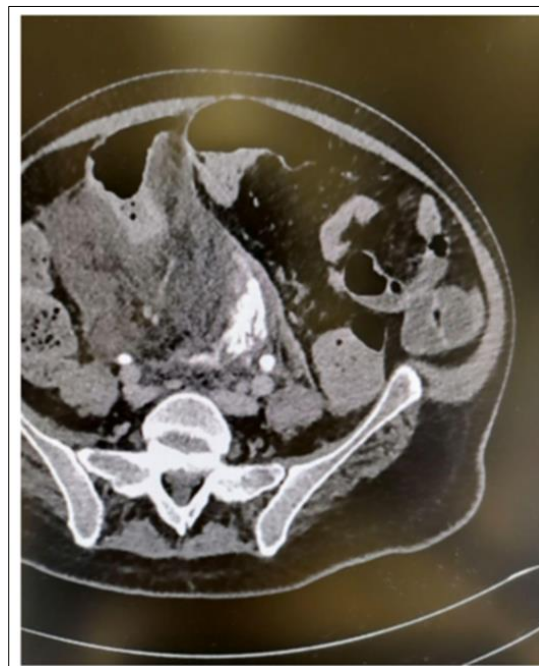
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**Figure 1** Scannographic image showing dilatation of the left renal cavities

Faced with this situation, the patient was admitted to the operating room where an attempt to raise the double J catheter was doomed to failure, hence the decision to lower the double J catheter. The evolution was favorable with a good clinical and biological improvement.

A left flexible ureteroscopy was performed 06 weeks later, showing no stenosis or ureteral lesions, nor calculus, so the decision was made to remove the double J probe. The evolution was favorable without recurrence after 01 year.



**Figure 2** CT image showing extravasation of contrast product in the distal left ureter

### 3. Discussion

Spontaneous rupture of the ureter is a rare condition. Currently no plausible explanation has been published in the literature. Nevertheless, theoretical mechanisms have been proposed, such as distal obstruction or migration of a stone within the ureter leading to a lesion weakening the ureteral wall, which could lead to ureteral rupture [5]. Other possible causes of ureteral rupture are: tumor invasion [6], idiopathic retroperitoneal fibrosis [7], posterior urethral valve and subvesical obstruction [8].

The symptomatology of a spontaneous rupture is usually indistinguishable from renal colic but sometimes mimics an acute abdomen, which makes diagnosis difficult due to the lack of specific symptoms. The differential diagnosis includes appendicitis, diverticulitis, cholecystitis, urinary lithiasis. Ureteral rupture may result in peritoneal irritation manifesting as gastrointestinal symptoms suggestive of peritonitis [9].

for our patient the symptomatology includes left renal colic, gross hematuria and fever. We had not found an obvious cause of these symptoms for our patient.

Ultrasound is the first line of investigation for renal colic [10]. It can demonstrate hydronephrosis, perinephric urinoma, calculus in the urinary tree or other abdominal abnormalities.

CT scan is the examination of choice for the diagnosis of leaky collecting system and urinoma. The latter may appear as septate or free collections. Late acquisitions after (5 to 20 min after contrast injection) are mandatory for the demonstration of the urinoma, which can go from 0 to 20 HU before contrast administration and enhance up to 200 HU after contrast administration. [11 ;12]. In our case the ultrasound was not performed, we directly performed a uroscanner in front of the abrupt symptomatology and without explanation, to have a panoramic view of the urinary tree.

Spontaneous rupture of the ureter can lead to serious consequences ranging from urinoma, perirenal or retroperitoneal abscesses to urosepsis. Therefore the management must be rapid, individualized, taking into account the condition of the patient and the grade of rupture of the ureter.

Treatment options include surgery and interventional radiology [13;14] and should be individualized. In our case , we performed a minimally invasive procedure consisting of percutaneous approach, with descent of a double J probe. This ensures urine drainage, regression of the urinoma and healing of the rupture in most cases. The placement of this drainage can be done by retrograde or anterograde procedure [15].

Four cases were reported in interventional radiology where double J catheter placement required a double approach (anterograde and retrograde) in collaboration with a urologist [15]. Spontaneous rupture of the ureter should always be considered in the presence of complex symptoms after renal colic.

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### 4. Conclusion

Spontaneous rupture of the ureter remains exceptional. The diagnosis is practically impossible to guess in front of the atypical symptomatology. The CT scan with late acquisition is the key examination.

It can be the cause of serious complications such as urinoma, retroperitoneal abscess or sepsis, hence the need for rapid and appropriate management.

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### Compliance with ethical standards

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#### *Disclosure of conflict of interest*

No conflict of interest.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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