Title
Spontaneous Ureteric Rupture and Its Implications in the Emergency Department: A Case Report

Permalink
https://escholarship.org/uc/item/0r9106pf

Journal
Clinical Practice and Cases in Emergency Medicine, 5(2)

Authors
Chua, Tallie Wei Lin
Wong, Evelyn

Publication Date
2021

DOI
10.5811/cpcem.2021.2.50652

Copyright Information
Copyright 2021 by the author(s). This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

Peer reviewed
Spontaneous Ureteric Rupture and Its Implications in the Emergency Department: A Case Report

Tallie Wei Lin Chua, MBBS, MMed, MRCEM, FAMS
Evelyn Wong, MBBS, FRCSEd, FRCEM, FAMS

Singapore General Hospital, Department of Emergency Medicine, Outram Road, Singapore

INTRODUCTION

Spontaneous ureteric rupture, or extravasation of the urine from the ureter in the absence of trauma or iatrogenic ureteric manipulation, is a rare condition. The literature, especially in emergency medicine, is fairly sparse. It may mimic many other causes of acute abdomen and itself requires prompt treatment. Thus, it is a diagnosis for which emergency physicians (EP) should have a high index of suspicion. We report a case of spontaneous ureteric rupture in the presence of a small, obstructing ureteric calculus. Informed consent was obtained from the patient for publication of this case report.

CASE REPORT

A 55-year-old female presented to the emergency department (ED) with acute onset right lower abdominal pain a few hours prior. The pain was non-radiating, constant, and gradually increasing in intensity. She reported one episode of gross hematuria at home with the onset of the pain but the hematuria resolved subsequently. The patient had vomiting with the pain but did not have any other gastrointestinal symptoms. She did not have any fever or chills.

The patient had no past medical problems but a previous surgical history of a total hysterectomy and bilateral salpingooopherectomy performed four years prior and a laparoscopic procedure converted to open deroofing of a hepatic cyst three years prior. During a computed tomography (CT) of the abdomen and pelvis ordered by her hepatobiliary surgeon three years prior, a small, right kidney mid-pole stone was noted. However, as it was not causing any symptoms and was relatively small in size, it was conservatively managed.

On physical examination in the ED, she was afebrile and hemodynamically stable. Examination of the abdomen revealed tenderness over the right flank and iliac fossa with rebound tenderness but no guarding.

Initial blood investigations showed a total white cell count of $11 \times 10^3$ per microliter ($\mu$L) (reference range $4.5 - 11.0 \times 10^3/\mu L$).
Spontaneous Ureteric Rupture

Chua et al.

CPC-EM Capsule

What do we already know about this clinical entity?
Spontaneous ureteric rupture is a rare urological emergency that has only been described in case reports and series, mainly in surgical and urological literature.

What makes this presentation of disease reportable?
Neither symptoms nor simple radiological or lab tests are reliable for diagnosis. Only computed tomography (CT) done in view of peritonitis revealed the diagnosis.

What is the major learning point?
Ureteric rupture requires prompt treatment. Providers need to be aware of this condition and when a CT should be done to minimize diagnostic delay.

How might this improve emergency medicine practice?
By increasing awareness about this rare disease, emergency physicians may have a higher index of suspicion and be better able to diagnose and manage this emergency.

Given the imaging findings, the patient was admitted to the urology service. She underwent urgent right percutaneous nephrostomy on the day of admission. Three days later, antegrade ureteric stenting was performed with a confirmatory nephrostogram the following day. She was subsequently discharged with a follow-up CT of the kidneys, ureters, and bladder in three weeks and urology clinic follow-up after the scan.

DISCUSSION
Spontaneous ureteric rupture is a rare urological emergency, which to our knowledge, has only been described in case reports and case series. The most common cause is lithiasis; other possible etiologies include metastatic invasion of the ureter, urinary retention from neurogenic bladder, connective tissue diseases, retroperitoneal fibrosis,[1] pregnancy,[2] ureteral strictures from a variety of causes such as previous instrumentation or radiation, autoimmune, or neoplastic causes.[3] The majority of the cases described are in the urological and surgical literature. The focus of these articles is often describing various treatment techniques

with mild neutrophilia. Serum electrolyte and creatinine levels were within normal range. Urinalysis showed microscopic hematuria with no casts. Point-of-care ultrasound did not reveal any intraperitoneal free fluid or the presence of an abdominal aortic aneurysm, and no findings suggestive of cholecystitis.

The differential diagnosis in this patient was broad and included appendicitis, renal colic, diverticulitis, etc. However, the presence of rebound tenderness and persistent pain prompted the decision for the patient to undergo a CT of the abdomen and pelvis in the ED. Meanwhile, intravenous ceftriaxone was administered in view of the presence of peritonitis. The contrast-enhanced CT showed no evidence of acute appendicitis but found a 0.3-centimeter right upper ureteric calculus, with upstream hydronephrosis and ureteric rupture (Image 1–3).

Image 1. Axial view of computed tomography with intravenous contrast administered showing perinephric leakage (arrow) of contrast showing evidence of ureteric rupture.

Image 2. Axial view of computed tomography with intravenous contrast administered showing hydronephrosis (arrow) of the right renal pelvis.
Complications that may arise from this condition, which EPs should be cognizant of, include formation of urinomas, or perinephric or retroperitoneal abscesses. Urosepsis and its attendant risks is also possible following ureteric or perinephric rupture. Thus, prompt treatment and admission of this diagnosis, once made, is necessary.

CONCLUSION
Spontaneous ureteric rupture is an uncommon urological emergency. Not only are signs and symptoms varied and at times non-specific, laboratory and plain radiographic studies also provide little definitive evidence for diagnosis. Diagnosis is usually only made if emergency physicians order advanced imaging. To avoid potential complications, EPs need to be aware and have a high index of suspicion of this condition to make an accurate and timely diagnosis of ureteric rupture.

The authors attest that their institution requires neither Institutional Review Board approval, nor patient consent for publication of this case report. Documentation on file.

REFERENCES
1. Eken A, Akbas T, Arpaci T. Spontaneous rupture of the ureter. Singapore Med J. 2015;56(2):e29-31.
2. Nathan S, Kerwin R, Lorge F, et al. An uncommon cause of acute abdominal pain: spontaneous ureteral rupture. Clin Surg. 2019;4:2369.
3. Stravodimos K, Adamakis I, Koutalellis G, et al. Spontaneous perforation of the ureter: clinical presentation and endourologic management. J Endourol. 2008;22(3):479-84.
4. Low LS and Nair SM. Spontaneous distal ureteric rupture: a rare case report and review of literature. Asian J Urol. 2020;7(1):61-3.
5. Chen G-H, Hsiao P-J, Chang Y-H, et al. Spontaneous ureteral rupture and review of the literature. Am J Emerg Med. 2014;32(7):772-4.
6. Paajanen H, Kettunen J, Tainio H, et al. Spontaneous periurethral extravasation of urine as a cause of acute abdomen. Scand J Urol Nephrol. 1993;27(3):333-6.
7. Akpinar H, Kural AR, Tufek I, et al. Spontaneous ureteral rupture: Is
immediate surgical intervention always necessary? Presentation of four cases and review of the literature. *J Endourol.* 2002;16(3):179-83.

8. Liu S-Y, Lin J-N, Huang C-Y, et al. Spontaneous rupture of the ureter mimicking acute appendicitis: two case reports. *J Acute Med.* 2011;1(2):61-3.

9. Pace K, Spiteri K, German K. Spontaneous proximal ureteric rupture secondary to ureterolithiasis. *J Surg Case Rep.* 2017;2016(11):rjw192.

10. Moak JH, Lyons MS, Lindsell CJ. Bedside renal ultrasound in the evaluation of suspected ureterolithiasis. *Am J Emerg Med.* 2012;30(1):218-21.

11. Riddell J, Case A, Wopat R, et al. Sensitivity of emergency bedside ultrasound to detect hydronephrosis in patients with computed tomography-proven stones. *West J Emerg Med.* 2014;15(1):96-100.

12. Ratkowski KL, Lin M, Bhalla S. Spontaneous ureteral injury. *Appl Radiol.* 2018;47(7):38-9.

13. Pampana E, Altobelli S, Morini M, et al. Spontaneous ureteral rupture diagnosis and treatment. *Case Rep Radiol.* 2013;2013:851859.