

A Tiny Stone Induced Ureteral Rupture

A 60-year-old previously healthy man with unremarkable medical history presented with a complaint of intractable flank pain for one day. The laboratory test results were within normal limits except for microscopic haematuria on urinalysis. He was afebrile and had no evidence of gross haematuria at home. Initial kidneys-ureters-bladder x-ray is shown in Figure 1.



Fig. 1. Kidneys-ureters-bladder (KUB) x-ray did not show any radiopaque lesion.

The renal ultrasound disclosed minimal accumulation of perirenal fluid without hydronephrosis. Intravenous pyelography demonstrated rupture of the left ureter with extravasation of contrast medium and stasis as shown in Figure 2.



Fig. 2. Intravenous pyelography demonstrated rupture of the left ureter with extravasation of contrast medium.

What is the diagnosis in the spontaneous rupture of the ureter?

- A. Urolithiasis
- B. Tuberculosis
- C. Retroperitoneal malignancy

- D. Transitional cell carcinoma
- E. Idiopathic retroperitoneal fibrosis

Discussion

The computed tomography (CT) scan without enhancement revealed a tiny intramural stone at the left ureterovesical junction in Figure 3 (arrow). After 2 days of unsuccessful conservative treatment, the patient underwent successful uretero-renaloscopic lithotripsy and double-J catheter placement (Fig. 4). The duration of ureteral catheter stenting was 14 days. The patient was discharged with good clinical results.



Fig. 3. Computed tomography revealed a tiny intramural stone at the left ureterovesical junction.



Fig. 4. The patient underwent successful placement of a double-J catheter.

Rupture of the ureter may be spontaneous or post-traumatic. Spontaneous rupture of the ureter is rare and usually results from urolithiasis. Precise diagnosis requires careful physical examination and detailed clinical history. The mechanism of rupture can be explained as either

Answer: A

pressure around the ureteral wall due to stone impaction, or a tear caused by pressure during the passage of the stone.¹ In addition, ureteral tumour, infection, and diseases of periureteral organs also have been reported to be potential causes of this problem. If the ureteral rupture is suspected on clinical grounds in the acute phase and is investigated by appropriate radiologic techniques, the diagnosis is likely to be spontaneous ureteral rupture. Careful monitoring with supportive measures may improve the conditions in most of the patients, thus obviating the need for surgical intervention.

There are few documented approaches to the treatment of spontaneous ureteral rupture worldwide. In cases caused by a distal ureteral stone with unremarkable symptoms, conservative treatments have yielded good results.² Ureteroscopic surgery may also play an important role if conservative treatment has failed.¹ Ureteroscopy has the advantage of being a minimally invasive procedure and a ureteral stent can be placed in the same procedure.³ However, further study will be needed to examine prospectively the pros and cons of conservative and interventional treatment in patients with spontaneous ureteral rupture.

REFERENCES

1. El-Boghdadly SA. Spontaneous rupture of the ureter proximal to ureteric stone. *J R Soc Med* 1985;78:255-7.
2. Lien WC, Chen WJ, Wang HP, Liu KL, Hsu CC. Spontaneous urinary extravasation: an overlooked cause of acute abdomen in ED. *Am J Emerg Med* 2006;24:347-9.
3. Kokterer A, Unal D, Dilmen G, Koc A. Spontaneous rupture of the renal pelvis caused by calculus: a case report. *J Emerg Med* 2007;33:127-9.

Chi Cheng Chen,^{1,3,MD}, Chao Hsiang Chang,^{1,3,MD}, Yao Lung Liu,^{2,3,MD}, Jiung Hsiun Liu,^{2,3,MD}, Chiu Ching Huang,^{2,3,MD}

¹Department of Urology, China Medical University Hospital, Taichung, Taiwan

²Division of Nephrology and Kidney Institute, Department of Internal Medicine, China Medical University Hospital, Taichung, Taiwan

³China Medical University, Taichung, Taiwan

Address for Correspondence: Dr Jiung-Hsiun Liu, Division of Nephrology and Kidney Institute, Department of Internal Medicine, China Medical University Hospital, No. 2, Yuh-Der Road, Taichung 404, Taichung, Taiwan. Email: jiunghsiun@yahoo.com.tw