

case report

Incomplete spontaneous ureteral disruption

Zdravko Borković¹, Dubravka Srdoč¹, Goran Bedalov²

¹Department of Radiology, ²Department of Urology, Clinical Hospital "Dubrava", Zagreb, Croatia

Background. The aim of the authors was to present the case of spontaneous partial ureteral rupture during a renal colic, caused by an anorganic concrement in the proximal part of the left ureter, at the level of the transverse processus of L3.

Case report. On the excretory urography imaging, the dilatation of the canal system, cups, necks and pyelon, was observed. At the level of the pyeloureteric passage, the contrast medium was leaking. The leakage was found to be extending along the psoas muscle to the pelvis. On the transversal CT imaging scans, the contrast medium was seen along the medial and dorsal part of the perirenal space, and in the distal part, along the psoas muscle to the pelvis. The ureter was imaged from the pyeloureteric rupture to the site of the concrement. No signs of the damage of the renal parenchyma or perirenal bleeding were detected. During surgery, the site of the rupture was found and also a lot of the perirenal and periureteral liquid. After the extraction of the concrement, the suture of the rupture was made. Postoperative urography and CT showed a normal ureteral image.

Conclusions. At the spontaneous partial disruption of the ureter, the contrast medium is still seen in the ureter, distally from the site of the rupture and as extravasation along the psoas muscle.

Key words: ureter; rupture; tomography, X-ray computed

Introduction

Partial or complete ureteral disruption is often caused by trauma, but can also be a consequence of surgical or other diagnostic procedures. The spontaneous rupture of the ureter is a rare condition, but the most frequent cause is a concrement in the pyelon or ureter. Typical signs for this condition are the absence of renal parenchymal damage, perirenal collection of the urine and absence of haematoma that are always detected in dorsal or medial perirenal space in case of

Received 18 January 2002

Accepted 2 March 2002

Correspondence to: Zdravko Borković MD, Department of Radiology, Clinical Hospital "Dubrava", Av. G. Šuška 6, 10000 Zagreb, Croatia; Phone: +385 1 2902860; Fax: +385 1 263 695; E-mail: z_borkovic@net.hr

trauma.¹⁻³ After administration of contrast medium, the leakage and extravasation of contrast is always present. In case of the complete disruption, the contrast material is never seen distally from the site of the rupture, in contrast to the partial disruption where the contrast medium is always seen distally.³⁻⁵

For the differentiation of the disruption type, it is important to make also excretory urography and CT examination with contrast medium in addition to anamnestic or clinical data. We thus have more data on contrast position, haematoma or renal parenchyma damage. The disruption caused by trauma always presents the damage of renal parenchyma and the perirenal haematoma. CT examination is also important in following the position of the contrast and that of the urinoma.⁶⁻⁸

Case report

R. N., a 40-year-old woman, was hospitalised because of pain attacks, starting 2 weeks earlier, presenting as a renal colic. The day before hospitalisation, the pain was very strong, with colic characteristic in the area of the left hemiabdomen. Later on, the attack suddenly stopped. Clinical examination detected painful areas at the level of the left kidney and in the left hemiabdomen.

Laboratory examinations were normal, except for a great number of fresh erythrocytes in the urine.

Conventional radiological examination of urotract showed an anorganic concrement with the size of 8 × 4 mm large, at the level of the transversal processus of the L3 on the left (Figure 1).

Excretory urography was made with contrast medium (Telebrix 380, 60 ml). The right kidney was normal, but in the left one, the dilatation of the canal system, including the cups with necks and pylon, was found. The leakage of the contrast medium from pye-



Figure 1. X-ray of abdomen at the level of the transversal processus of L3 on the left, an anorganic concrement, with the size of 8 × 4 mm.



Figure 2. I.v. urography demonstrates the dilatation of the canal system at the left kidney and extravasation of the contrast from the ureter into the periureteral space along the psoas muscle to the level of the pelvis.

loureteric passage in the distal direction along the psoas muscle to the pelvis was also present on the left side. The renal parenchyma on the left was intact (Figure 2).

A conventional CT examination of the abdomen showed the dilatation of the canal system of the left kidney with the extravasation of the contrast medium into the medial and dorsal part of the left perirenal space, and also into the medial and partially ventral part of the peripyelic space. After the introduction of contrast medium, the left ureter shows opacification (Figures 3a,b,c,d). On the distally transverse scans, the contrast medium was seen along the psoas muscle to the pelvis. The findings in the right kidney were normal.

During surgical exploration, a large amount of liquid was found in a perirenal space and along the left ureter and psoas muscle. The site of spontaneous rupture was found at the level of the pyeloureteric junction; the ureter, though, was not completely disconnected from the pylon. The concretum was extracted through this part of the ureter and surgical suture was made.

All control laboratory examinations were normal. At the control excretory urography performed 5 days after surgical treatment, the dilatation at the middle of the canal system of the kidney was seen, but there was no more signs of the leakage of the contrast.

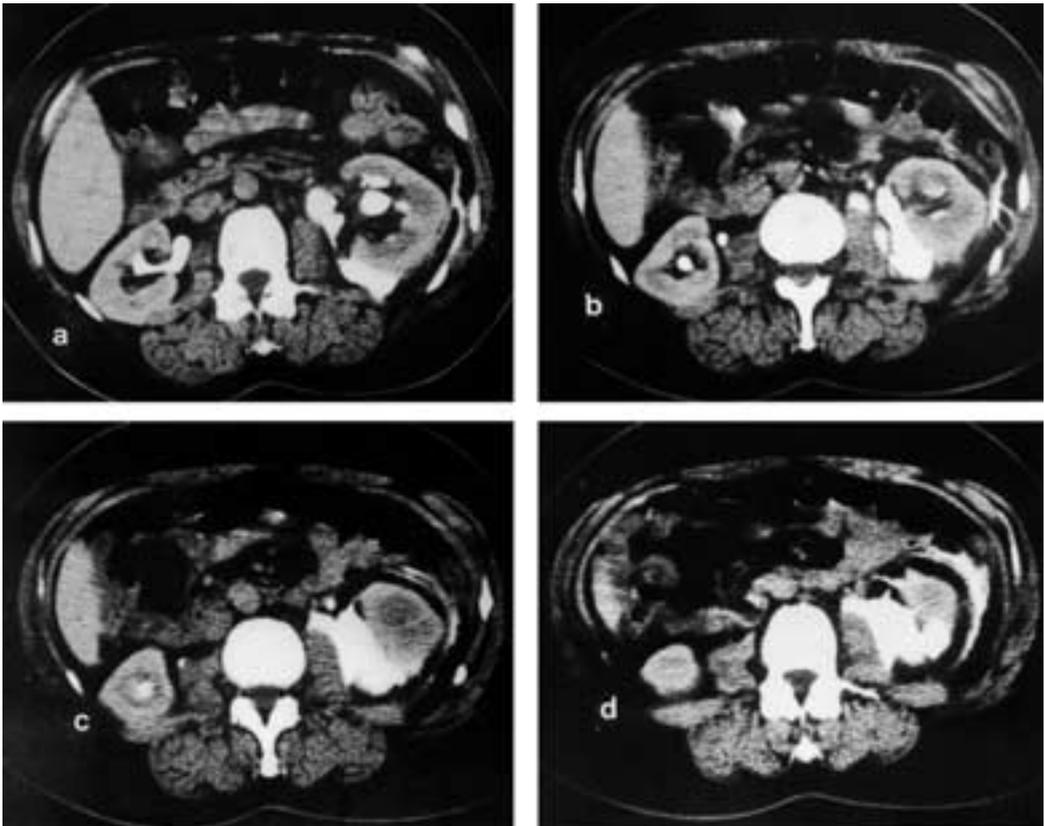


Figure 3. CT finding: (a) dilatation of the canal system of the left kidney, with the contrast leaking into the medial and dorsal perirenal space, without any sign of the trauma of the kidney or perirenal haematoma; (b) and (c) the contrast found in the medial part of the kidney and pylon; d) the contrast in the ureter dispersed distally along the psoas muscle and also in the periuretral space.

Discussion

Partial spontaneous rupture of the ureter is an extremely rare condition, mostly caused by ureteral stone. The rupture of the ureter and the pyelon with or without the rupture of the kidney can sometime occur as a result of blunt trauma. Such condition can be caused also by surgical or diagnostic ureteral procedures.

The CT image of blunt renal trauma showed the presence of extravasation, laceration and haematoma of renal tissue with perirenal haematoma. Contrary to traumatic disruptions, partial spontaneous and complete disruptions of the ureter have a characteristic CT image after contrast medium applications. This image shows an intact renal parenchyma, the absence of the perirenal haematoma and predominately perirenal fluid collection. At the complete disruption of the ureter caused by trauma the opacifications of the ureter oriented distally from the rupture were not observed, whereas those oriented distally along the psoas muscle is present.

In partial spontaneous disruption of the ureter, the contrast medium in the ureter is seen distally from the site of the rupture and as extravasation along the psoas muscle.

References

1. Kenney PJ, Panicek DM, Witanowski LS. Computed tomography of the ureteral disruption. *J Comput Assist Tomogr* 1987; **11**: 480-4.
2. Siegel MJ, Balfe DM. Blunt renal and ureteral trauma in childhood: CT patterns of fluid collections. *AJR Am J Roentgenol* 1988; **152**: 1043-7.
3. Barasch E, Kashdan B, Rathore A. Spontaneous perforation of the ureter diagnosed on Technetium 99m DTPA excretory urography. *Urol Radiol* 1988; **10**: 107-9.
4. Lang EK, Sullivan J, Frentz G. Renal trauma: radiological studies. Comparison of urography, computed tomography, and radionuclide studies. *Radiology* 1985; **154**: 1-6.
5. Mity HA. CT for diagnosis and management of urinary extravasation. *AJR Am J Roentgenol* 1980; **134**: 497-501.
6. Feldberg MA, Koehler PR, van Waes PF. Psoas compartment disease studied by computed tomography. *Radiology* 1983; **148**: 505-12.
7. Diamond DA, Marshal FF. The diagnosis and management of spontaneous rupture of the ureter. *Urol* 1982; **128**: 808-10.
8. Leuthardt R, Bernhardt E, Gasser T, Kummer M. Spontaneous perforation of the ureter: a rare complication of urolithiasis. *Eur J Pediatr Surg* 1994; **4**: 205-6.