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Inflammation and infection

Ureteral stump empyema with calculi

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A B S T R A C T

A 52-year-old man with a history of right nephrectomy for a nonfunctioning kidney, consults after 22 years for fever with right lower abdominal pain. Surgical exploration was thereafter performed and the right ureteral stump was removed en bloc. Pathological examination of the right ureterectomy specimen revealed a significant acute and chronic ureteritis due to stone without any signs of malignancy. Owing to the low incidence of complications associated with ureteral stump, we suggest that if ureteral remnant becomes symptomatic, a distal ureterectomy should be performed without any delay avoiding subsequent complications of the stump.

Introduction

Ureteral stump, which is a segment of ureter remaining after nephrectomy, can occasionally, cause a significant pathology with a various symptoms called ureteral stump syndrome,[1] which is clinically interpreted as febrile urinary tract infections, lower quadrant pain, and haematuria.[2] Empyema of the ureteral stump or hydro-pyoureter presents purulent fluid collection in the stump usually dilated elliptically.[1] It is an uncommon disease entity presenting with a reported incidence of 0.8–1% in patients who have undergone nephrectomy.[3] Time from surgery to symptom occurrence may range from months and years.

We report a rare case of empyema of the ureteral stump with calculus in a men patient twenty two years post nephrectomy for a nonfunctioning kidney and to discuss the clinical features, the etiological factors and the therapeutic approaches of this uncommon disease entity.

Case report

A 52-year-old man with a history of high blood pressure, diabetes and right open nephrectomy performed on January 1993through a lumbar approach for a nonfunctioning kidney with hydropyonephrosis resulting from chronic obstruction of the pelvic ureter caused by a centimetric stone. The contralateral kidney was healthy. A calculus was known to be retained in the right ureteral stump. Histological study of the surgical specimen showed lesions of lithiasic pyonephrosis. After more than twenty two years with no urological symptoms, the patient experienced fever, right lower abdominal pain and a significant impaired general status with nausea and vomiting. He was referred to our department, in December 2015.Physical examination revealed a temperatureat 39 °C, blood pressure and pulse were normal, pain in both right iliac fossa and right flank without signs of peritoneal irritation. The following laboratory tests were performed: white blood count of 11.500/mm3 with 84% of neutrophils, CRP levels of 145.2mmol/and a creatinine level of 88 μmol/l. Urinalysis shows cloudy urine, innumerable leukocyturia but the urine culture was negative. Urinary tract x-ray film showed calcification facing the presumed path of the right pelvic ureter (Fig. 1). Computed tomography(CT)scan was therefore performed revealed a tubular structure of approximately 148.6 × 25.0 mm since the level of surgical ligation of right nephrectomy, descended along the retroperitoneal space, crossed anteriorly to the common iliac vein down to the level of a calcified obstructing stone in the bottom of this mass. The wall of the latter exhibited an enhancement and thickening with a hypodense content and inflammatory signs. The contralateral kidney was in compensatory hypertrophy without anomaly. The final diagnosis was a right ureteral stump empyema with calculus. Resuscitation was started with rehydration and a broad-spectrum antibiotic based on 3rd generation cephalosporin and quinolone. Surgical exploration was performed through an ilio-pelvic incision showed a significant expansion of the right ureteral stump which is dissected in to and removed en bloc with the calculi (Fig. 2). The pathological examination of the specimen right ureterectomy revealed a significant acute and chronic ureteritis gallstone without any signs of malignancy. The postoperative course was uneventful and the patient recovered. After a mean follow up of 6 months, the patient had an excellent outcome.

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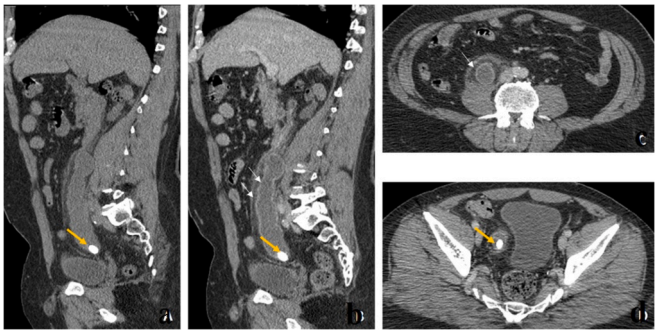

Fig. 1. Computed tomography(CT) scan
a, b: Coronal section: tubular structure descended along the retroperitoneal space, down to the level of an obstructing stone.
c, d: Axial section: Peripheral enhancement and thickening (white arrow) of the ureteral stump with a hypodense content and inflammatory signs.

Discussion

The standard therapeutic management of a poorly or non-functioning kidney connected to a refluxing, obstructed or dysplastic hydroureteris nephrectomy with total or proximal ureterectomy.[2]

The complete removal of the ureter understates the risk of future disease associated with the distal ureteral stump (DUS). However, supporters promoting subtotal ureterectomy consider that the DUS is rarely an issue and opt to avoid the added morbidity of a second incision to remove the distal ureter.[1,2]

There is virtually no documentation about the natural history of the remnant DUS.[2,4]

A long stump could be a risk factor in the pathogenesis of ureteral stump syndrome. It acts as a diverticulum from wich urine cannot be effectively drained. Thus, this can lead to the stone formation, recurrent bacteriuria, haematuria and even malignant degeneration.[4] In fact, some authors have reported the ureteral stump syndrome, consisting of empyema, chronic ureteritis, or transitional cell tumor. Empyema of the ureteral stump, is an uncommon disease entity presenting with a reported incidence of 0.8–1% in patients who have undergone nephrectomy.[3]

Etiology of the empyema of the ureteral stump could be: Calculus in the ureteral stump, Inflammation; Vesico-ureteral reflux; hydro- and pyo-ureteronephrosis. Multisession Computed tomography (CT) with IV contrast is the best imaging technique for diagnosis. It showed an elliptic dilatation of ureteral stump with wall enhancement and thickening. The unopacified ureteral stump was dilated down to the level of a calcified obstructing stone at the pelvis, extrinsic wall compression, or stump tumors.[1,3] In our report, the wall of the ureteral stump in CT, exhibited an enhancement and thickening with a hypodense content and inflammatory signs. The stone has been seen at the bottom of this mass. Some complications could be occur mainly a secondary psoas abscesses. Other complication has been described such as fistulization between ectopic ureteral stump and uterus following nephro-ureterectomy. The commonly used treatment of empyema of the ureteral stump is a surgical removal of the stump, regardless of underlying diseases.[1,3] In our case, we had to perform an open stumpectomy by retroperitoneal access allowing dissection of the entire wall of the ureteral stump. Several minimally invasive techniques have been with varying results. Transurethral fulguration of the stump lumen after initial abscess drainage using ureteral catheter has been reported by Ikeda D et al.[1] with no recurrence of urinary tract infections. Laparoscopic approach for distal ureterectomy has been also described as a viable alternative option with uneventful postoperative course.[5] In our report, after a mean follow up of 6 months, the patient had an excellent outcome without occurrence of complications. We recommend removal of the whole uereter during nephrectomy when potential complication in remaining stump is highly possible.

Conclusion

Owing to the low incidence of complications associated with aureteral stump, nephrectomy with proximal ureterectomy has beenrecommended as the standard care fora poorly or non-functioning kidney except for urothelial tumors. If a symptomatic ureteral remnant is present, then distal ureterectomy should be performed without delay avoiding subsequent complications of the stump.

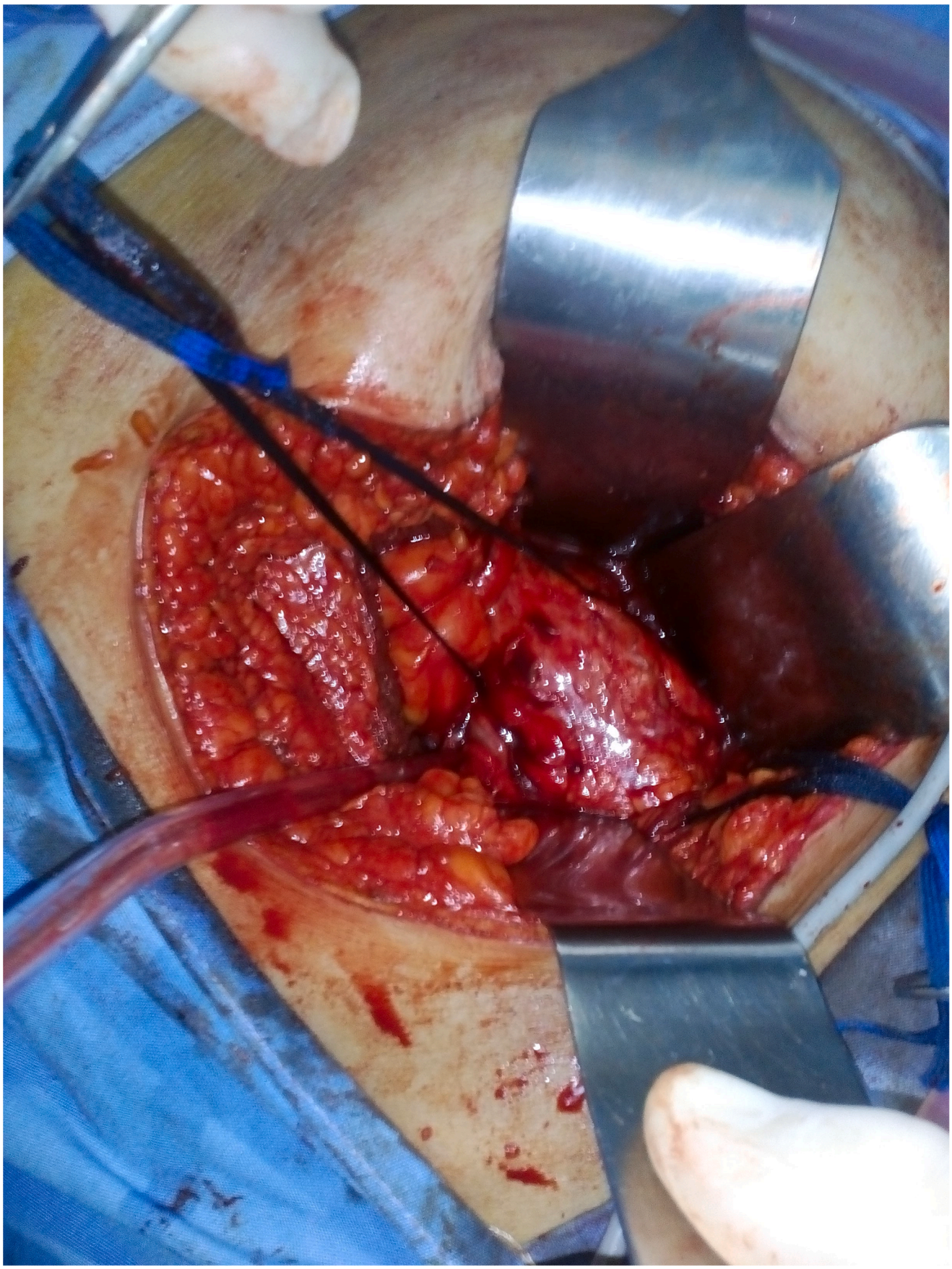

Fig. 2. Surgical exploration: significant expansion of the right ureteral stump.

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