Case Study of the Month

Multiorgan Failure 17 Years after Initial Stone Therapy: Forgotten Ureteral Stent in a Horseshoe Kidney

Gerald Pühse a,*, Hansjürgen Piechota a, Christian Scheffold b, Stephan Kloska c, Lothar Hertle a, Christian Wülfing a

a Department of Urology, University of Münster, Münster, Germany
b Department of Internal Medicine, University of Münster, Münster, Germany
c Department of Clinical Radiology, University of Münster, Münster, Germany

1. Case report

A 44-yr-old white man was referred as an emergency from a local hospital to the medical intensive care unit (ICU) at our institution for progressive multiorgan (hepatic, renal, and cardiac) failure of unknown cause. At the time of arrival the patient was conscious and hemodynamically stable but required oxygen supplementation. In reporting his history, the patient indicated that he had felt unwell and exhausted for the last few days and finally visited his local general practitioner because his feet no longer fit into his shoes. He did not recall other diseases or surgery in the past and had never been under continuous medication. On examination, the obese patient was in acute distress and presented...
Fig. 1 – Plain x-ray of the abdomen (a) shows the complete stone burden. The removed specimen (b) additionally reveals the hydronephrotic deterioration of the extensively dilated left part of the horseshoe kidney.

Fig. 2 – Sequential transverse computed tomography (CT) scans (A–D) of the abdomen showing the large stones in the left renal pelvis. Note ascites around the lower right lobe of the liver.
with generalised oedema and severe dyspnoea at rest. The diagnostic work-up revealed signs of heart failure with bilateral pulmonary effusions and an electrocardiogram showed an old anterior myocardial infarction. An echocardiograph showed a cardiac thrombus attached to the hypokinetic anterior wall of the left ventricle. Moreover, the patient had elevated liver function tests, elevated renal retention parameters (serum creatinine level of 2.8 mg/dl), and an elevated white blood cell count of 14,000/µl with a C-reactive protein level of 8.5 mg/dl. The platelet count was 227,000/µl and the partial thromboplastin time (PTT) and prothrombin time were 37 s and 40%, respectively. A Foley catheter draining cloudy urine prompted the ICU team to involve the urology service. Urologic examination revealed a soft abdomen and no flank pain; external genitalia and digital rectal examination were normal. The urine showed all signs of urinary tract infection. On ultrasound examination, both kidneys were difficult to assess due to severe anasarca involving also both flanks and the abdomen. In the left kidney several calculi with secondary hydronephrosis were suspected. In addition to a plain x-ray of the abdomen (Fig. 1a), a computed tomography (CT) scan was performed to rule out a renal abscess and get further information on the multiple abdominal calcifications and their relation to the urinary tract (Figs. 2 and 3A–D). The CT scan showed a horseshoe kidney with extensive stone formation in both kidneys and the urinary bladder. Surprisingly, a massively calcified double pigtail ureteral stent could also be seen in the left upper urinary tract. The patient acknowledged that a pigtail stent had been placed prior to extracorporeal shock wave lithotripsy (ESWL) therapy 17 yr previously. He

Fig. 3 – Sequential plain computed tomography scans (A–D) of the abdomen showing the large stone in the urinary bladder. The completely incrusted but not yet fractured ureteral stent extends from the dilated left renal pelvis all the way down to the bladder.
had then discontinued the treatment because of discomfort and pain. Consequently no urologic follow-up examination was performed, leaving the stent in situ since then (Fig. 4).

Because of the high-risk profile for general anaesthesia, the patient was primarily treated for his heart failure and his septic complications by antibiotic and diuretic therapy. The search for other septic foci outside the urinary tract did not reveal further abnormalities. Because the cardiac thrombus was old and adherent no surgery was required. The patient received anticoagulation. Three weeks later, combined epidural and general anaesthesia was performed for laparotomy and stone removal. The surgical approach to the retroperitoneum was done transabdominally by midline incision to allow excellent bilateral exposure and control. The root of the small bowel mesentery was incised medial to the coecum and extended to the area of the ligament of Treitz. The massively enlarged hydronephrotic left part of the horseshoe kidney was exposed and heminephroureterectomy was performed. The access to the right renal pelvis being ballooned by the stone located ventrally with few overlying tissue was uncomplicated. A right-sided pyelotomy was performed and a stone 5 × 5 × 4 cm in size was extracted from the right renal pelvis. Midline vesicotomy allowed extraction of the remaining bladder stone (4 × 3 × 4 cm in size) including the rest of the forgotten pigtail stent. Postoperative recovery was uneventful. Serum creatinine concentration remained stable around 2.0 mg/dl. The patient recovered rapidly and was discharged after 2 wk with all drains removed.

EU-ACME question

Please visit www.eu-acme.org/europeanurology to answer the below EU-ACME question on-line (the EU-ACME credits will then be attributed automatically). The answer will be given in Case Study of the Month: Part 2, which will be published in next month’s issue of European Urology.

Question:

Which one of the following statements about urolithiasis in horseshoe kidneys is true?

A. Horseshoe kidneys are associated with a higher risk of stone formation.
B. For anatomic reasons, the rates of complete stone clearance in horseshoe kidneys are better compared to those in normal kidneys.
C. The results of ESWL for horseshoe kidney stones concerning stone clearance are superior to those of percutaneous lithotripsy (PNL).
D. Patients with horseshoe kidneys do not present a higher incidence of colonic perforation during percutaneous procedures for stone therapy.