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Percutaneous Nephrolithotomy, Ileal Conduit- Lithotripsy and Litholapaxy for a Neglected Encrusted Ureteral Stent

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ABSTRACT

Urolithiasis can result as a complication of urinary diversión, favored by urinary stasis, intestinal mucus, urinary tract bacteriuria, the metabolic derangements and the presence of foreign bodies. We present a 52- year-old male who underwent radical cystectomy with construction of a Bricker uretero-ileostomy. 5 years later he was found with a forgotten ureteral stent, a 6 cm calculi occupying the whole ileal conduit and a 13 mm calculi in the left renal pelvis. We present our experience in the successful endourological management of an encrusted neglected ureteral stent in an ileal conduit, achieving a stone-free status without complications.

Introduction

The current standard treatment for muscle-invasive non-metastatic bladder carcinoma is radical cystectomy followed by urinary diversion, the latter is a surgical procedure that aims to reroute the normal flow of urine using intestinal segments. Urolithiasis can result as a complication of urinary diversion in up to 32% of the patients, favored by urinary stasis, intestinal (1–3) We aim to present the case of a 52-year-old male who was referred to our clinic with a 6 cm ileal conduit calculi an encrusted neglected ureteral stent and a 13 mm calculi in the left renal pelvis (see Figs. 1–3).

Presentation of case

The patient is a 52-year-old male with a history of muscle invasive bladder carcinoma pT2BN0M0 diagnosed in November 2008 who underwent radical cystoprostatectomy in April 2009 with construction of a Bricker uretero-ileostomy with routine insertion of two ureteral stent. The right was removed a month after the procedure but the left was neglected for unknown reasons; He was lost to follow up and 5 years later in April 2014 was referred to our clinic for recurrent urinary tract infections, hematuria and flank pain. A CT of the abdomen and pelvis demonstrated left hydroureteronephrosis, a neglected encrusted ureteral stent, 13 mm calculi in the left renal pelvis as well as 6 cm calculi with 980 Hounsfield units (HU) at the distal end of the ureteral stent occupying the ileal conduit reservoir. His creatinine was 106.08 μmol/L, days before surgery for intravenous antibiotic therapy with ceftriaxone.

In supine position a rigid 27-Fr nephroscope was introduced trough an Amplatz renal sheath into the ileal conduit ostium, we used the amplatz to maintain normal pressure and adequate drainage of the conduit; With further visualization of the calculi occupying two thirds of the conduit. We proceed to fragment the stone using a handheld intracorporeal contact lithotripter (Lithobreaker). The stone was fragmented completely nevertheless the ureteral stent was rigid and it didn't allowed us to removed it as it was calcified in all its extension, subsequently a 5 mm trocar was inserted through the ileal conduit ostium, a metzenbaum laparoscopic scissors was inserted through the trocar to cut the distal end of the ureteral stent, with further extraction of the distal ureteral stent end and the small fragments of the calculi with

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Figure 1. Coronal CT demonstrating 6 cm ileal conduit stone associated with retained double J stent.

alligator forceps. The entire ileal conduit was inspected following retrieval of the stone fragments without evidence of structural abnormalities or residual fragments; We tried to advance a hydrophilic guidewire unsuccessfully and left a Foley catheter in the ileal conduit.

We proceed to re-accommodate the patient in prone position. Intravenous urography instead of retrograde pyelography was performed to delineate the anatomy of the left collecting system as we couldn't pass an open tip ureteral catheter through the ureter. The access site was the lower pole with a unique puncture using an 18 G x 20 cm percutaneous puncture needle, a hydrophilic guidewire (ZIPwire 0.035″) was inserted into the needle and placed in the ureter, the hydrophilic guidewire was exchanged for a stiff wire with a coiled end, inserted into the pyelocalyceal system. A 1 cm lumbotomy was used to cut the muscles within the tract to the kidney. Subsequently, the metallic dilator was introduced over the wire to widen the tract up to 28-Fr in order to advance the 28-Fr Amplatz sheath; A 27-Fr rigid nephroscope was inserted identifying the 13 mm calculi associated to the encrusted ureteral stent; We proceed to fragment the stone using a handheld intracorporeal contact lithotripter, with subsequently removal of the ureteral stent. The entire collecting system was inspected following retrieval of the stone fragments and the ureteral stent without evidence of residual lithiasis confirmed by fluoroscopy. Antherogradely advanced 6-Fr ureteral catheter was left in place as well as a 22-Fr nephrostomy; The procedure concluded without complications.

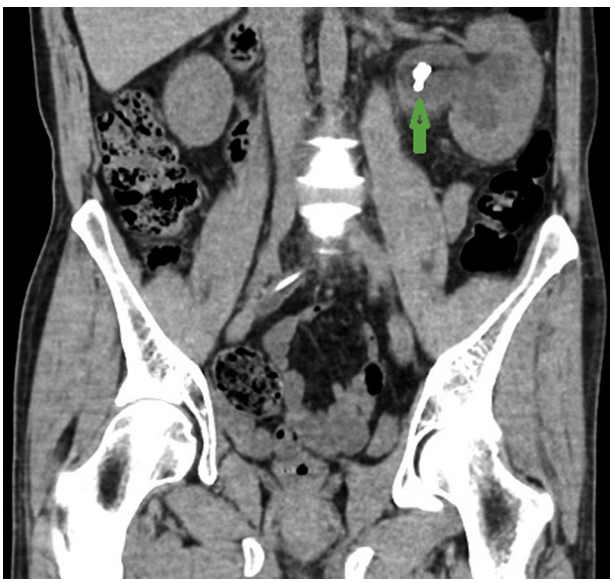

Figure 2. Coronal CT demonstrating left hydroureteronephrosis, 13 mm pelvic stone associated with retained double J stent.

Routine follow up was carried, the patient came for post-operative visit 8 days after the procedure and removal of the nephrostomy cathether was performed; He presented with good pain control, normal function of the uretero-ileostomy and without evidence of stomal stenosis or other structural abnormalities. Was scheduled for removal of the ureteral catheter 2 weeks after the post-operative visit. He was followed up every six months subsequently and was last seen in February 2017, 2 and a half years after the surgical intervention without stenosis of the uretero-ileostomy, pain, hematuria, urinary tract infection or urolithiasis. He self-reported a good.

Discussion

Urolithiasis among patients with urinary diversion is not negligible, with reported incidence up to 32%, and an exceedingly high risk of recurrence in patients with bacteriuria.[3] The risk factors for stone formation include retained intestinal mucus, metabolic abnormalities, chronic bacteriuria, foreign bodies (encrusted ureteral stent, metallic sutures) and urinary stasis. The patients present either asymptomatic or with voiding dysfunction, flank or suprapubic painm hematuria and recurrent urinary tract infections in up to 70% of patients. Contrastingly to anatomically normal patients the most common stones seen in urinary diversion are struvite stones (magnesium-ammonium-phosphate) followed by calcium phosphate.[1]

The surgical management of urolithiasis in patients with urinary diversion can be challenging because of postoperative changes in anatomy, the lack of experience and the high recurrence rate of stones. There have been many alternatives described for the management of this patients including extracorporeal shock wave lithotripsy (ESWL), Retrograde intracorporeal renal surgery (RIRS), percutaneous nephrolithotomy (PCNL) and open or laparoscopy extraction of the calculi. Each case is unique and must be.[2,4]

The success rate for PCNL have been well described, and range from 60 to 86%, with a stone free rate up to 87.5% in the Zhong et al. study. Regarding retrograde flexible ureteroscopy the main disadvantage is that it is technically challenging in patients with urinary diversion due to de distorted anatomy that difficult the access through the neoureteral orifice. ESWL has been used in patients with small urolithiasis with similar stone free rates compared with RIRS or PCNL.[2,3]

Conclusion

The surgical management of urolithiasis in patients with urinary diversion lacks expertise even though the incidence is not negligible. To our knowledge this is the first report of a combined approach (Endoscopic ileal conduit lithotripsy-litholapaxy and percutaneous nephrolithotomy) for the management of a stone occupying two thirds of the ileal conduit and a calculi in the left renal pelvis associated with a neglected encrusted ureteral stent placed 5 years before the intervention. Although challenging the surgical procedure was carried out safely and without complications, we underline that each case.

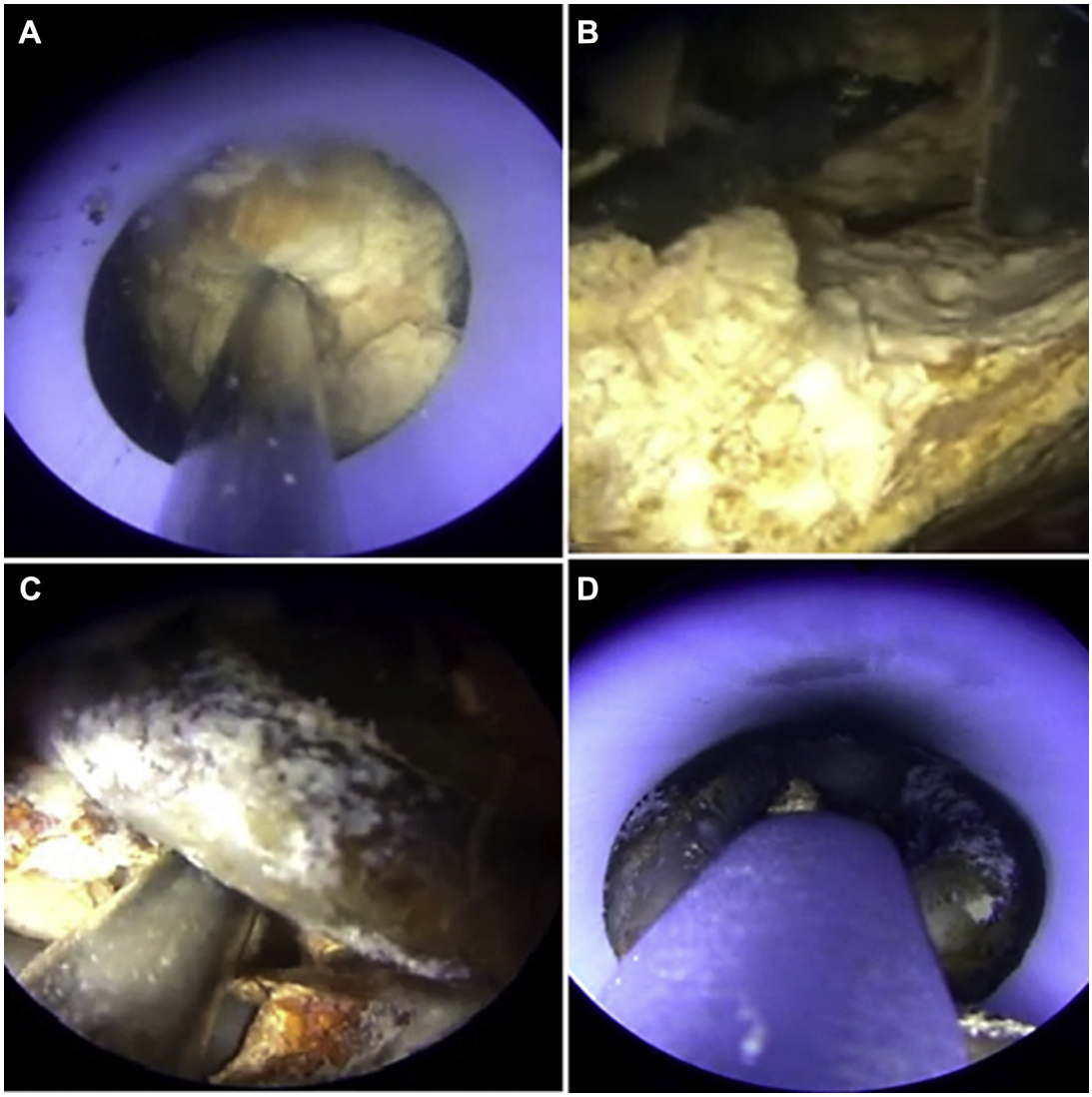

Figure 3. A. Fragmentation of the stone occupying 2/3 of the ileal conduit with the lithobreaker through an amplatz sheat. B. Two fragments of the Ileal conduit stone surrounding the retained double J stent, about to be cut with laparoscopic metzenbaum scissors introduced through a 5 mm trocar. C. Fragmentation of the proximal end of the retained double J stent in the renal pelvis using the lithobreaker. D. Alligator forceps extracting the double J stent from the renal pelvis through the amplatz sheat.

Continued close monitoring it's important in this patients in virtue of the high risk of recurrence due to the chronic asymptomatic bacteriuria and urinary stasis associated with the urinary diversion.

Conflict of interest

The authors have no conflict of interest to report.

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