Case report

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Percutaneous neo-cystolithotripsy for multiple calculi in Mainz pouch neobladder

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Introduction

Continent urinary diversion has greatly improved the patient's quality of life following cystectomy for malignant and benign conditions. However, it is not without complications. One of such is stone formation in long run. Prevalence of stones in urinary diversions ranges from 3% to 43%. Herein, we report an unusual case of multiple calculi occurring in Mainz Ileo caecal pouch neobladder and the first reported case of minimal access removal of neobladder calculi in Sri Lanka.

Case report

A 10 years old boy who had ectopia vesicae and underwent repair in early neonatal period with partial success and ended up with a contracted bladder and total incontinence. He had undergone a Mainz II neobladder and Mitrofanoff continent urinary diversion 4 years back. Subsequently he presented with recurrent abdominal pain. Physical examination was unremarkable and ultrasound scan demonstrated multiple calculi in the neobladder. X-ray KUB showed multiple radio opaque shadows in the neobladder area (Figure 1).

Figure 1.

After filling the neobladder with methelen blue through the Mitrofanoff conduit, it was accessed via percutaneous route with a needle puncture (Figure 2) and serial dilatation with Alken metal dilators over a guide wire was carried out. Neobladder was accessed with nephroscope through 30F Amplatz sheath (Figure 3) and larger stones were fragmented using pneumatic lithotripter before extraction. Complete stone clearance

Figure 2.

Figure 3.

was achieved and supra-pubic catheter was placed through the access site. Supra-pubic catheter was removed after two weeks and self-catheterization was resumed.

Discussion

Following urinary diversion patients are at increased risk of long-term complications, including stone formation at the upper urinary tract and reservoir or conduit. A series of 800 patients with Mainz pouch diversions, with a median follow-up of 7.6 years, showed a 10.8% incidence of stones in reservoirs with an intussuscepted ileal nipple and 5.6% in reservoirs with an appendiceal stoma (2). Risk factors for stone formation in continent reservoirs are directly related to presence of residual urine, mucus, acidic urine and bacterial colonization. These factors are exacerbated by not irrigating the pouch in regular basis (3,4). Struder and associates did not report a single case of neobladder calculi in their twenty-year experience on 482 patients, because all the patients were kept under stringent lifelong follow-up protocol and monitored by a dedicated team (5). Foreign bodies, and use of nonabsorbable staples are other causative factors implicated in the formation of stones and the mean time to stone formation is 34 months (6).

The presentation of neobladder calculi can be asymptomatic; hence, they are incidentally diagnosed on follow-up or the patient may present with dysuria, frequency, urgency incontinence, suprapubic pain, haematuria, and recurrent urinary tract infection.

Initial investigation should include renal function tests. Plain x-ray KUB will show the number and location of stones. USS KUB will give additional information on status of upper tracts and post CIC residual volume. Abdominal CT scan may be useful to delineate the anatomy before embarking percutaneous access.

Various methods have been described to access neobladder for stone removal. Those include endoscopic approach, percutaneous and open approach. Unfortunately, endoscopic approach was out in our case since there was no access through the urethra. Therefore, we selected percutaneous access which is essentially more advantageous than open approach. We could achieve complete clearance of the stones without

any complications. As the majority are infected stones, it is imperative to achieve a complete stone clearance. Pre-vention is one of the most effective measures to deal with this complication. Maintaining adequate intake of fluids, daily irrigation of the pouch with normal saline, voiding by clock or double voiding, performance of regular clean intermittent catheterization in those who void ineffectively, and antibiotic prophylaxis in those who develop recurrent urinary tract infections are the recommended preventive measures (7). Strict adherence to the above-mentioned measures and lifelong follow-up with biochemical investigations, ultrasonography and annual pouchoscopy will eradicate the problem (8).

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