

## Urinary stones in a continent catheterizable pouch: A case report

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### ABSTRACT

Changes in anatomy, as well as other metabolic factors, often result in the urinary tract infection and urolithiasis in patients after urinary diversion. The surgical management of stones in patients after urinary diversion is challenging. We report the case of a 21-year-old female presenting with fever. This patient had earlier undergone the creation of a continent urinary reservoir with appendicular catheterizable stoma for a failed exstrophy repair. We report the management of urinary stones occurring in this patient.

**Key words:** Continent urinary diversion, Pouch, Complications, Urolithiasis

Today in the practice of modern pediatric urology, there is usually very little need for incontinent urinary diversion in the patient with bladder exstrophy [1]. A non-refluxing colon conduit is usually recommended in a young child with a bladder that is too small to close, or in a failed closure where the bladder template is too small to reclose. This usually protects the kidneys from vesicoureteral reflux, and whenever clinically indicated, undiversion can be performed at an older age [1]. However, in India, many children with exstrophy come for treatment at a much later age and urinary diversion remains the only option. The main reason for delayed treatment remains poverty. Changes in anatomy that occur in the post-operative period, as well as other metabolic factors, often result in the urinary tract infection and urolithiasis in patients after urinary diversion [2].

The reported incidence of stones associated with urinary diversion ranges from 9% to 11% after ileal conduit diversion, 17% to 27% for pouch stones after Kock pouch diversion, and 11% to 12.9% after Indiana pouch diversion. These stones also have a 33–63% recurrence rate within 3–5 years after the initial intervention [3]. The surgical management of stones in patients after urinary diversion is challenging. Open operation monotherapy has a limited role in the treatment of urolithiasis in these patients on account of the high recurrence rate of stones, post-operative scar, tissue adhesion, and the changed anatomy. We report a case of urinary stones occurring in a patient with a continent catheterizable pouch and experience in the management of urinary tract stones.

### CASE REPORT

A 21-year-old female presented with complaints of lower abdominal pain and occasional fever of 2 months duration. This patient had presented to us earlier, at the age of 14 years with a history of failed exstrophy of the bladder repair. Her exstrophy was repaired at the age of 6 years at some other hospital. As the bladder plate was shrunken, she underwent cystectomy with an ileocecal continent urinary reservoir with appendicular catheterizable stoma [4,5]. Labial reconstruction with the remodeling of the genitalia too was done [4].

On examination, the vitals were stable. Plain X-ray abdomen (Fig. 1) and ultrasonography revealed multiple urinary calculi in the region of the bladder. A computed tomography scan revealed the continent urinary reservoir to be of adequate volume with no secondary changes (Fig. 2). The upper tracts appeared normal and there were multiple (six) calculi in the reservoir (Fig. 3). In view of a good functioning appendicular stoma, it was decided to perform open poucholithotomy.

A suprapubic transverse incision was made and abdomen opened in layers. The pouch was identified. Stay sutures were taken over the pouch and a small incision made on the pouch so as to extract the calculi. The calculi were extracted using litholapaxy forceps. Pouchoscopy was done to confirm that all the calculi were extracted. The patient withstood the surgery well and had an uneventful recovery. The patient was advised to perform frequent washes of her reservoir and to keep regular follow-up. Biochemical analysis of the stones revealed them to be triple



Figure 1: Plain X-ray abdomen



Figure 2: Computed tomography revealed the continent urinary reservoir

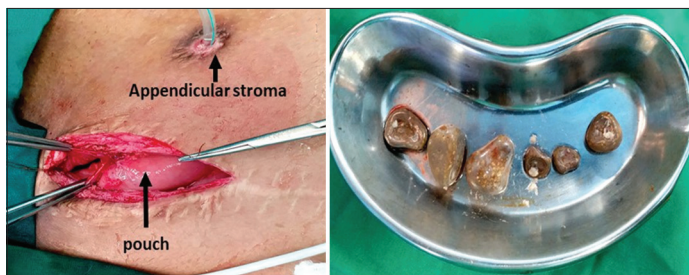


Figure 3: Multiple (six) calculi in the reservoir

phosphate calculi with infection being the cause of the same. The patient is free of stones and infections over the past 12 months.

## DISCUSSION

The management of urinary calculi in an augmented bladder and urinary diversion presents a unique challenge in that intra-abdominal spillage of urine and irrigation can lead to peritonitis and other complications associated with infected urine [6]. However, the principles of treatment remain largely unchanged from the treatment of calculi in an intact bladder. Endoscopic management

through a Mitrofanoff catheterizable conduit is not advisable, as disruption of the continence mechanism can occur [7,8].

Percutaneous access to augmented bladders has been reported, although the risk of extravasation of irrigant material can occur if the bladder is not adherent to the abdominal wall. Injury to bowel and bladder can inadvertently occur, although the incidence is rare [9]. In skilled hands, the percutaneous approach can prove as efficacious as open cystolithotomy. Open cystolithotomy is often the preferred approach for large stone burdens or multiple calculi. One novel approach to the percutaneous management of pouch calculi consists of the use of a flexible cystoscope through the catheterizable stoma followed by distention of the pouch. Percutaneous access is obtained under direct vision and a laparoscopic entrapment sac is passed through the percutaneous tract. The stones are then loaded into the sac and the sac is then partially extruded through the access tract. An Amplatz sheath is introduced into the sac and ultrasonic lithotripsy is performed to reduce the stones, allowing for extraction through the percutaneous site [10].

## CONCLUSION

Urinary stones are commonly occurring complications following the creation of a continent urinary pouch. They can be safely managed with surgical removal. Prevention with the use of drugs and hydration is a must.

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