

Gigantic Stones in Orthotopic Neobladder

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Abstract: *Introduction-Radical cystoprostatectomy with pelvic lymph node dissection with ileal conduit or orthotopic diversion is the standard treatment of MIBC. These patients are at risk of urolithiasis and treatment is also challenging. We are sharing a case report of gigantic stones in orthotopic neobladder and its surgical management. Case report-A 50 year old gentlemen post operated case of radical cystoprostatectomy with orthotopic diversion 8 years back lost for follow up presented with complains of dull aching suprapubic pain, increased frequency of micturition and occasional hematuria. He was investigated and found to have gigantic stones in his neobladder and was medical stabilised and open poucholithotomy using infraumbilical incision was done and patient recovered well in postoperative period. Discussion-The incidence of bladder stones in continent U. D is 2.9-12.9% and multiple factors causing it are infection, metabolic factors, anatomical factors, surgical technique and non use of CIC. Patient may be symptomatic or asymptomatic. Lifetime prophylaxis and follow up is recommended in case of stone formation after urinary diversion. Conclusion-Stone formation is a long term complications in patient with neobladder reconstruction should be closely monitored, require timely prophylaxis and stone causing troublesome require removal either endoscopic or open.*

Keywords: Radical cystoprostatectomy, MIBC, muscle invasive bladder cancer, CIC, clean intermittent catheterisation, U. D., urinary diversion, neobladder, Urolithiasis, urinary stones

1. Introduction

Radical cystoprostatectomy with pelvic lymph node dissection is the standard treatment of muscle-invasive bladder cancer from the standpoint of long-term survival (1). Ileal diversion or orthotopic diversion can be performed according to the patient's preference and operation conditions.

Advances in urinary diversion techniques have greatly improved the health-related quality of life of patients undergoing radical cystoprostatectomy. While most patients do well after surgery, various long-term complications can occur, including stomal stenosis, uretero-intestinal anastomotic stricture, chronic renal insufficiency, vitamin B12 deficiency, electrolyte abnormalities, diarrhoea, and UTIs. These patients are also at increased risk of urolithiasis, which can cause sepsis, pouch infection, pyelonephritis, renal insufficiency, haematuria and pouch perforation.

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 (2). The surgical management of stones in patients after urinary diversion is challenging due to 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 aorthotopic neo bladder and experience in the management of urinary tract stones.

2. Case Report

A 50-year-old male patient presented to us with history of dull aching suprapubic pain, increased frequency of urine, low grade fever, intermittent hematuria. Patient presented to us earlier about 8 yrs back with muscle invasive bladder cancer and underwent open radical cystoprostatectomy with neobladder repair. A non-mobile, hard, and tender mass was felt upon examination in the suprapubic region measuring approximately 10×7 cm in size. His complete hemogram was within normal limits except for mild raised leucocyte

count. He had raised serum creatinine (2.2 mg/dL). five radiopaque shadows superimposed on one another in the suprapubic region suggestive of large neobladder calculi were revealed by a plain KUB radiograph (Figure 1). Non-contrast enhanced CT scan confirmed the same. The urine culture grew *Escherichia coli* and *Klebsiella pneumonia*, patient was placed on culture directed antibiotics and a decision to perform open poucholithotomy was done.

A infraumbilical midline incision was made and abdomen opened in layers. The pouch was identified. Stay sutures were taken over the pouch and a incision was made on the pouch. five calculi were extracted using litholapaxy forceps. (figure 2, 3) Water-tight closure of pouchotomy was performed in two layers with 3-0 polyglycolic sutures. The pouch was drained with an indwelling catheter for 2 weeks. The patient withstood the surgery well and had an uneventful recovery. Biochemical analysis of the stones revealed them to be triple phosphate calculi with infection being the cause of the same.



Figure 1



Figure 2



Figure 3

3. Discussion

The incidence of bladder stone formation in patients with continent urinary diversion is between %2.9 and %12.9 (3). Although stone formation is generally associated with infection, nonetheless, metabolic factors, structural factors, surgical technique, materials used, non-use of CIC may be effective in stone formation as well (4, 5). Urinary tract infections caused by urease-positive bacteria facilitate formation of urinary tract stones. Infection-induced stones are usually struvite, calcium ammonium phosphate, carbonate-apatite, magnesium ammonium phosphate stones. Calcium oxalate stones are encountered less likely (6). Metabolic factors cause stone formation, depending on the segment used for diversion. The length of the segment used, the origin of the segment, urine contact time, urine pH and urine content cause various metabolic changes (7). The most frequent metabolic complication is metabolic acidosis (8) which can result in hyperoxaluria, hypercalciuria, hyperphosphaturia, hypermagnesuria and hypocitraturia (9). Patients with bladder stones due to continent diversion are

usually detected incidentally. In symptomatic patients, dysuria, incontinence, recurrent urinary tract infection, gross hematuria, suprapubic pain and pressure sensation, difficulties in using CIC and during urination are common. Patients are first treated with the associated urinary tract infection and metabolic condition if present followed by endoscopic or open stone retrieval. Lifetime prophylactic treatment and follow-up is recommended in cases with formation of stones after urinary diversion. Stein et al. (10) recommended serum creatinine and bicarbonate measurements and USG every 6 months during the first 4 years and annual pouch endoscopy after 5th year. The recommended metabolic evaluation includes routine urinalysis, urine culture, urine volume, pH, creatinine, sodium, calcium, magnesium, phosphate, oxalate, potassium, carbondioxide, and uric acid measurements in 24-hour urine samples, twice. If stone disease is associated with metabolic factors, annual metabolic evaluation is required.

4. Conclusion

Stone formation is an important long-term complication in patients with neobladder reconstruction and it is related to several variables. These patients should be provided with appropriate prophylaxis to prevent stone formation and followed up closely. Medical treatment should be provided first if there is an underlying infection and then surgical treatment should be implemented by endoscopic or open methods. Prevention of recurrent stones with correction of metabolic abnormalities, increased fluid intake, and prophylaxis against recurrent infections are critical steps in avoiding recurrent stones.

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