

# Combined Approach for Management of Calculi in Ileal Conduit

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## Abstract

Urinary stones after urinary diversion are more common than general population. Renal stones are best managed with ESWL. The struvite stones fragment easily. The dilated refluxing ureter facilitates passage of fragments. Obtaining an access for nephrolithotomy is difficult with risk of sepsis. Large stones require percutaneous nephrolithotomy. For persistent stones in ureter, not responding to medical management, ureteroscopy, and lithotripsy is required. Retrograde access in urinary diversion is challenging, due to difficulty in locating the neo-ureteric orifice. Even for experienced endourologist. The best approach will be a combined antegrade and retrograde access.

**Key words:** Calculi, ESWL, Ileal conduit, Percutaneous nephrolithotomy, Retrograde intrarenal surgery, Urinary diversion

## INTRODUCTION

Patients on urinary diversion have higher incidence of urinary stones. Overall incidence of stones in urinary diversion is 3–43%.<sup>[1]</sup> Incidence in conduit is 11–12%.<sup>[2]</sup> For ureteric calculi up to 10 mm medical management preferred.<sup>[1]</sup> Irrespective of the diversion type, the main difficulty in ureteroscopy is in locating the neo-ureteric orifices.<sup>[1,3]</sup> Ureteroscopy, semi-rigid, or flexible may require a combined endoscopic access. Procedure begins by gaining antegrade access with ultrasound guided puncture. Re-puncturing can be done onto an appropriate calyx for passing a guide wire below. The guide wire from above is retrieved below in the conduit. Following the guide wire, the neo-ureteric orifice is identified and ureteroscopy done.

## CASE REPORT

A 63-year-old male presented with complaints of pain right upper abdomen, on and off for 2 months. Fever with rigors was present for 10 days. A known patient of carcinoma

bladder, radical cystectomy, and ileal conduit diversion done 1 year back elsewhere. The operative notes were not available. Plain CT KUB showed dilated right ureter with 10.1 by 6.4 mm calculus of HU 415 in the ureter 4–5 cm above the conduit. The left ureter was dilated but without stones. The right kidney showed multiple stones in all calyces. Largest was in the upper calyx of size 2 cm. The left kidney had a stone of size 8 mm in middle calyx. Total leukocyte count was 21,000, with neutrophil predominance. The serum creatinine was 2.8 mg. The electrolytes were normal. The patient was managed in ICU. Mild metabolic acidosis presents. Blood for culture taken and injection meropenem started. Patient taken up for procedure after 18–24 h. Under regional anesthesia in supine position scopy through the conduit with 8-9.8 F storz semi-rigid ureteroscope carried out. The ureteric openings we are not identified. Patient changed to prone position, using ultrasound right middle calyx targeted and punctured with 18 G/21 cm two – part needle. Under C-arm diluted contrast injected slowly and pyelogram taken. The right upper ureter was dilated, ureteric calculus seen as a filling defect above the conduit, partially obstructing the lumen. A 0.035 terumo guide wire was passed across into the conduit and ante-grade stenting (6 F) done. The patient recovered well after the procedure and shifted to the ward after 2 days. Discharged after one more day in ward. He was on appropriate antibiotics, culture was *Escherichia coli* with significant colony counts. Silodosin given for 4 weeks. Repeat CT KUB taken [Figure 1a and b]. The ureteric calculus was in the same position. Ureteroscopy was decided. Under general anesthesia and supine position loopogram done [Figure 1c].

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A bit redundant conduit with Bricker anastomosis made out. Both the ureters were dilated and refluxing.

Using 8-9.8 F semi rigid ureteroscope scopy into conduit done and advanced along the side of the stent into the ureter. The ureteric calculus broken using storz Holmium-Yag LASER with medium fiber with setting 0.5 energy, 20 hz frequency, and 10 watts power. The stone was soft and easily broken. A 0.035 terumo guide wire passed into the pelvis. Storz Flex X 2 flexi scope was back loaded onto the guide wire to prevent buckling of scope. The scope was advanced into the renal pelvis under endovision. Stones in the calyces were broken with small fiber with same LASER settings [Figure 1e and f]. A stent was placed [Figure 1d]. After 8 weeks repeat CT KUB taken. There was complete stone clearance on the right side. The left renal calculus was present. The DJ stent removed. The serum creatinine was 2.0 mg/dl. The patient is on follow-up for 8 months. Three monthly USG KUB and serum creatinine were done. Serum creatinine is 2.2 mg on last follow-up. Monthly urine culture was done. He was on nitrofurantoin prophylaxis for 3 months. He takes Auxisoda two tablets 3 times a day.

## DISCUSSION

Ureteroscopy was done as the stone still present after 4 weeks. As retrograde access is established, right intra-renal surgery was carried out with flexi ureteroscope. ESWL is contemplated on left side, if required. Common reasons for

stone formation are refluxing urine with mucus, infection, hypercalciuria due to metabolic acidosis, hypocitraturia, hyperoxaluria, hyperphosphaturia, pouch stasis, and contact of urine with non-absorbable sutures and staples.<sup>[1,3]</sup> Lower incidence of stones in conduits may be due to absence of urinary stasis. Infection may be the important reason as most of the stones are struvite (63.5%).<sup>[2]</sup> Stones are common in the kidneys as well as the pouch.<sup>[1]</sup> Management of struvite stone involves appropriate antibiotic therapy before, during, and after surgery.

Antibiotic prophylaxis must be considered for stone prevention. In patients with conduits, the most common colonizers were skin flora, *Streptococcus*, and *Staphylococcus epidermidis*.<sup>[1]</sup> In pouch most common were *E. coli*, *Enterococcus faecalis*, *Enterococcus faecium*, and *Proteus mirabilis*.<sup>[1]</sup> The upper tracts are easily colonized, because of refluxing ureters. For renal calculi up to 2 cm ESWL, except for larger stones is preferred to percutaneous nephrolithotomy. ESWL Preferred to PCNL because of difficulty in access and increased risk of sepsis, due to bacterial colonisation.<sup>[1,4]</sup> Flexible ureteroscopy can be technically challenging in patients with urinary diversions. Difficulty is seen more in pouch than in conduits. The redundant conduit or a large cavity as in a pouch causes buckling of the scope. Buckling can prevent scope advancement and decreases the deflectability of the tip. Follow-up is needed to detect early stone recurrence.<sup>[1]</sup> The risk of new stone formation after 5 years is 50-63%.<sup>[2]</sup> Risk of stone formation is even more in patients with persistent bacteriuria.<sup>[5]</sup>

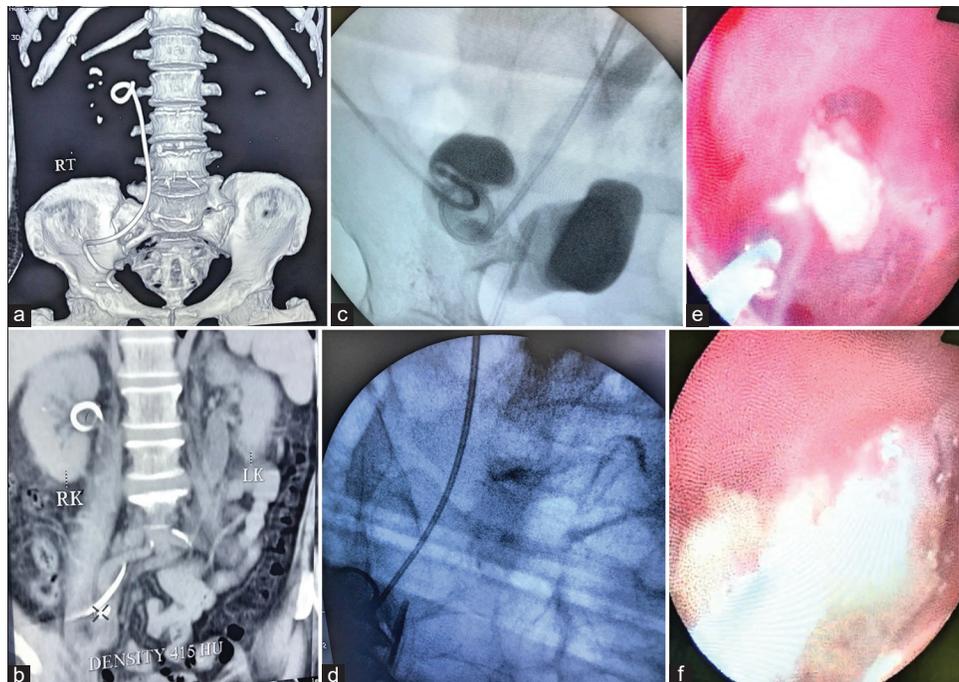


Figure 1: CT KUB, Pouchogram, Endoscopic view of RIRS

## CONCLUSION

Ureteroscopy can be effectively done by combined endoscopic approach for management of stones in a urinary diversion.

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