



FORGOTTEN, ENCRUSTED, CALCIFIED STENTS; HOW WE MANAGED AND THEIR OUTCOMES, A RETROSPECTIVE STUDY

Surgery

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ABSTRACT

Double J stents are used in various genitourinary surgeries and frequent use can also leads to complications like prolonged stenting due to forget to remove stents or timely exchange, encrustation, stone formation, stent fragmentation, migration and sometimes chronic renal disease (CRD) with renal failure. Since May 2022, 9 such patients were treated at our centre by different methods including Cystoscopy, Cystolithotripsy (CLT), Flexible and Semi rigid ureteroscopy (fURS, URS), Per cutaneous nephrolithotomy (PCNL) and nephrectomy. Out of 9 patients, 2 patients underwent nephrectomies due to non functioning kidneys. To conclude, patient education in his/her local language, regular follow up with frequent phone calls, maintaining stent registry and health insurance to avoid economical burden for frequent follow up are necessary for prevention of such complication and become anephric.

KEYWORDS

INTRODUCTION-

Double J stents are used in various genitourinary surgeries for both preoperative and post operative indications to avoid any obstruction of renal pelvis and ureters, for identification of ureters in abdominal-pelvic surgeries, in malignancies of cervix and in different congenital conditions to drain urine and prevent patient from end stage renal disease from surgical cause[1-3]. Their frequent use also leads to complications like prolonged stenting due to forget to remove, encrustation, stone formation, stent fragmentation, migration and sometimes chronic renal disease (CRD) with renal failure[4,5]. Multi model treatment with surgery, shock wave lithotripsy, endoscopic treatment is needed in such cases. We retrospectively reviewed and how we managed such cases at our centre.

Materials and methods-

Since May 2022, 9 such patients were treated at our centre. Out of them 6 patients were males and 3 were female. 5 patients were referred to us from other centres. For management of patients, all preoperative investigations were done for anaesthesia fitness and patients were explained about possible outcomes pre operatively. Plain X ray KUB and NCCT KUB were done in all patients and renal scan was done where indicated. Combined endoscopic treatment methods including Cystoscopy, Cystolithotripsy (CLT), Flexible and Semi rigid ureteroscopy (fURS, URS), Per cutaneous nephrolithotomy (PCNL) and nephrectomy were used for management of these patients.

Case 1

A 43 year old male who underwent left PCNL and double J stenting 3 years ago. He presented to us with pain abdomen and dysuria. On X ray and NCCT KUB, he was found to have left DJ stent with encrustation at lower end. He underwent Cystoscopy and CLT of encrusted stent followed by removal of stent successfully.



Fig. 1: Encrusted left DJ stent.

Case 2,3

Both patients were 42 years male who underwent left PCNL, 7 years back and right pyeloplasty, 4 years back respectively. They presented

with fever and ultrasound of KUB region was suggestive of pyonephrosis for which per cutaneous nephrostomy (PCN) tube was placed. Functional scan was done which was suggestive of non functioning kidney. Later on both of them underwent nephrectomy. Post operatively patients were discharged with stable vitals.

Case 4

A 52 yrs old female presented with fever, dysuria and right flank pain. Patient underwent right PCNL 4.8 years back. X ray KUB showed encrusted stent so she underwent CLT and flexible ureteroscopy and forgotten, encrusted stent was removed successfully. Intravenous antibiotics and antipyretics were given and patient was discharged after becoming afebrile.



Fig. 2: Removed stent with encrustation.

Case 5

37 year old male patient presented to us with high grade fever and dysuria. WBC counts were raised. X ray KUB was suggestive of DJ stent in situ. Past history was suggestive of left URSL, 1.8 yrs back. He was planned for Cystoscopy and DJ stent removal. DJ stent was fragmented while removal. The lower end was removed with semi rigid ureteroscope and upper end removed with PCNL. Patient did well post operatively and was discharged.



Fig.3, 4: Fragmented DJ stent in left kidney and ureter.

Case 6,7

Two male patients of 40 years and 50 years were presented to us with continuous fever, dysuria and right flank pain. They underwent double J stenting 2.6 years and 3 years back respectively for renal stone disease. On investigation, they were found to have DJ stent in situ with stones over renal end and planned for PCNL and stent removal. Both of them successfully underwent PCNL with stent removal and restenting. Patients were discharged with stable vitals and DJ stent was removed on further follow up.



Fig.5: Encrusted renal end of DJ stent.

Case 8,9

Two female patients of 38 years and 47 years old with carcinoma cervix underwent bilateral DJ stenting 2.9 years and 3 years back respectively elsewhere. They presented to urology OPD with fever, dysuria and flank pain. On evaluation they were found to have stent in situ. Both of them underwent Cystoscopy and semi rigid ureteroscopy and their stents were removed. Patients were asymptomatic after stent removal and discharged after putting per cutaneous nephrostomy (PCN) tubes for renal drainage.

DISCUSSION-

Placement of double J stent in urinary tract is a common practice worldwide. Stent encrustation is one of the most serious complications of stenting [8]. Technological advances in DJS design and materials allow patients to tolerate DJS more easily and this may cause a decrease in patient compliance for the removal. Patients may forget their in situ stents because they have no stent related complaints or neglect to visit to a hospital for stent removal for various reasons including poor education, lack of follow up and sometimes they are not informed about the DJS. It has been shown that there is a correlation between stent indwelling time and encrustation. Stent encrustation and fragmentation are probably related to the biomaterial of DJS. It has been shown that silicon had the least encrustation potential compared to polyurethane and hydrophilic coated polyurethane stents [16]. El-Faqih et al. reported that encrustation occurred in 9.2% of the stents under six weeks, 47.5% between 6–12 weeks and 76.3% after 12 weeks in removed DJSs which were placed for urinary stone disease [15]. Multi-modal endourology treatment forms the cornerstone of therapy for such cases [9–11]. Radiological studies play a pivotal role in evaluating the patient and determining appropriate management of the encrusted and retained stent. Furthermore, quantifying the stone burden associated with encrustation has prognostic significance, and contrast CT has been shown to help evaluate renal function [12]. A poorly functioning kidney with significant stone burden and forgotten stent may be better suited for nephrectomy rather than multiple procedures to eliminate all stones [8]. If no encrustation is visible on plain radiography, removal of the stent in a retrograde fashion may be attempted. Ideally, fluoroscopy should be available to determine if there is uncoiling of the proximal curl during removal, because this may be a site of encrustation. Calcifications along the ureteral component of the stent can be managed with retrograde ureteroscopy and laser lithotripsy. In our cases, the ureter accommodated the ureterscope after placing two guide wires. The encrustations usually affect the stent circumferentially, but in our cases the stent was not attached to the ureter. However, in a few cases, a prominent inflammatory reaction to the stent or to the initial stone causing symptoms that motivated the stent passage was observed and in such cases, surgeons should be extra-careful because pushing or pulling manoeuvres can easily perforate or even avulse the ureter. For proximal ureteral stent encrustations in men especially and renal stent encrustations of less

than 2cm, flexible ureterolithotripsy with a laser is indicated. For larger stent encrustations (more than 2cm), percutaneous lithotripsy is the preferred primary approach. In the case of simultaneous large proximal and distal encrustations, URS and PCNL are done to address both encrusted ends (proximal or distal) [13]. In the current scenario the miniaturized PCNL is also an option, but the lower success rates on higher stone burden and the risk of elevated intra renal pressure lead us to believe that standard PCNL can have a safer profile in this situation [14].

CONCLUSION-

We removed the retained, fragmented double J stents with encrustations/stones over it with multi model treatments after thorough literature review. Patient education in his/her local language, regular follow up with frequent phone calls, maintaining stent registry and health insurance to avoid economical burden for frequent follow up are necessary for prevention of such complication and become anephric.

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