

CASE REPORT

Successful Endoscopic Management of a Neglected and Encrusted Ureteral Stent with Giant Cystolithiasis and Nephrolithiasis Using Ho-YAG Laser Lithotripsy

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Encrusted and neglected ureteral stents pose therapeutic challenges to the urologist. Most of these patients are require to open surgery to extract the stent with stones in the renal and bladder segments. The authors present their experience with successful endoscopic management of this clinical problem. A 61 year-old male, who had PCNL for left staghorn calculus a year ago failed to follow-up for stent removal. CT scan showed a giant cystolithiasis and nephrolithiasis enveloping the ends of the stent. Successful laser cystolithotripsy was performed followed by a percutaneous nephrolithotripsy and antegrade stent removal two days later.

The operative time for the cystolithotripsy and PCNL were 180 and 200 mins. respectively. There were no intraoperative complications. The patient required prolonged intravenous antibiotic therapy and was discharged in good condition on postoperative day 5 with any serious complications.

Neglected, forgotten stents can be managed safely and effectively with endourologic techniques, offering the advantages of less pain, faster recovery and better cosmetic outcome.

Key words: encrusted ureteric stent, cystolithotripsy, percutaneous nephrolithotomy

Introduction

Neglected, forgotten and encrusted ureteral stents present as management nightmares to the urologist. When left untreated, these retained stents result to significant morbidity and mortality. Encrustations may take the form of thick calcifications which envelope the body of the stents to large staghorn and bladder calculi. Various combination therapies with extracorporeal shock wave lithotripsy (ESWL), cystolithotripsy, retrograde intrarenal surgery (RIRS), percutaneous nephrolithotomy (PCNL) and open surgery have

been used for retrieval of these encrusted stents. Some resort to open surgery for both renal and bladder components. The authors report their successful experience employing combined endourologic techniques to remove a neglected forgotten stent which has developed a large cystolithiasis and nephrolithiasis.

The Case

A 61 year-old male who post-PNCL one year earlier, failed to follow-up for stent removal. He had two previous open pyelolithotomies on the

same side for recurrent staghorn for the last three years. Unenhanced multi-slice CT scan revealed a large cystolithiasis and nephrolithiasis surrounding the distal and proximal ends of the stent (Figure 1). The patient was advised to undergo endourologic management.



Figure 1. Coronal view of the CT stonogram showing a giant cystolithiasis and nephrolithiasis enveloping the proximal and distal ends of the double J stent.

Intervention

Cystolithotripsy: After adequate antibiotic prophylaxis, the patient was placed in a lithotomy position. Using a 24Fr Karl Storz cystoscope, the bladder stone which enveloped the distal end of the ureteral stent was visualized (Figure 2). Using a LISA Laser Sphinx 30® (Katlenburg-Lindau, Germany), the authors performed cystolithotripsy

using a 320 micron fiber for a total of 180 minutes until the stone was completely fragmented to small pieces (Figure 3). Intraoperative course was uneventful.

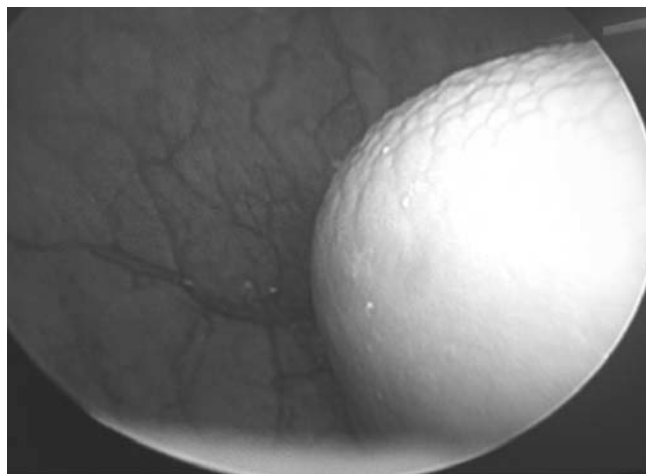


Figure 2. Cystoscopic view showing a 6-7cm cystolithiasis enveloping the distal tip of the J stent.



Figure 3. Cystoscopic view showing the completely fragmented bladder stone after laser cystolithotripsy. These were evacuated appropriately with an Elick stone evacuator.

Percutaneous nephrolithotripsy - Two days later, PCNL was performed. After insertion of an 8Fr open-ended ureteral stent into the left collecting system, the patient was placed in the prone position. Under fluoroscopic guidance, a posterior upper pole access was obtained with an 18G percutaneous access needle. The tract was dilated

to 30Fr with semi-rigid fascial dilators, followed by insertion of the 26Fr. Karl Storz rigid nephroscope. The stone was visualized and percutaneous nephrolithotripsy was performed using the LISA Laser Sphinx 30® (Katlenburg-Lindau, Germany). The stent was gradually unravelled and freed of encrustations, taking careful note to avoid breakage (Figure 4). The stent was then extracted intact and stone fragmentation was completed. A 20Fr Karl Storz flexible nephroscope was used to inspect the different calyces and assure complete stone clearance. A 20Fr Foley catheter was inserted into the nephrostomy tract with the balloon inflated up to 5cc. Post-procedural antegrade pyelogram showed no filling defects within the collecting system and no extravasation. The patient recovered fully. The operative time was 200 minutes with negligible blood loss.

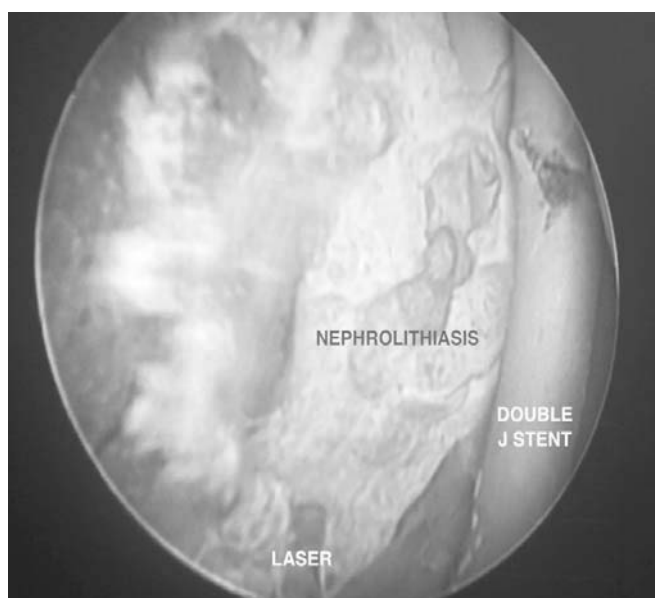


Figure 4. Endoscopic view showing the proximal end of the double J stent as it is being unravelled with laser lithotripsy during the percutaneous nephrolithotomy.

Outcome

The patient tolerated both of these procedures well. The nephrostomy tube was removed on postoperative day one and after completion of antibiotic coverage, the patient was discharged on postoperative day five without complications.

Discussion

Neglected, forgotten and encrusted ureteral stents from poor patient follow-up or from failure of the physician to provide counselling on the presence of the ureteral stent and its timely removal. Serious complications include encrustation and formation of either large cystolithiasis at the distal tip and nephrolithiasis at the proximal end which render retrograde extraction impossible.

Succeeding sequelae include recurrent urinary tract infection with life-threatening sepsis, hematuria, obstruction and renal failure. Lee et al reported a rare complication of renocolic fistula secondary to a perinephric abscess resulting from an indwelling ureteral stent.¹ Fragmentation is another important complication of the forgotten stents. It is the result of loss of tensile strength, which is due to hardening and degeneration of the stent polymers. The risk of encrustation and fragmentation is dependent on the type of material of the stent. Silicone was found to be least prone to encrustation, followed by polyurethane, silitek, percutflex and hydro gel coated polyurethane.²

Although endourological management of these stents achieves success in majority of the cases with minimal complications, the best treatment that remains is prevention of this complication. The treating urologist should be very selective in placing the stents and they must be tracked very closely by documenting insertion and removal of the stents. All patients should be counseled with respect to the complications of long term use and advised when their stent should be changed or removed. The degree of encrustation is dependent on the indwelling time, so, it is necessary to retain the stent to a short interval only. Reports state that the recommended indwelling time between 2-4 months is safe.² Open retrieval may be employed to manage these cases but endourological management have been proven highly successful and safe and obviates the need for open surgical techniques, resulting to better quality of postoperative recovery.^{3,4} Ultimately, the choice of treatment depends on the burden and site of encrustation, the available technology and the function of the affected kidney. A feasible option for the treatment of the giant cystolithiasis

would be to use a combined pneumatic and ultrasonic lithotripter using a standard sized (30Fr) nephroscope inserted into the bladder. This shortens the operative time because of the facility of both stone breakage and evacuation. The authors opted to use the Holmium:YAG laser lithotripter to demonstrate its efficiency in the treatment of a clinical problem such as this. Assessment of stone burden is important to make an appropriate operative plan. A logbook of patients with indwelling ureteral stents may also be required in order for the physician or other allied medical professionals to advise the patients on their prompt removal.

References

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