

## CASE REPORT

# Ureteral Stent Forgotten for 10 Years; A Challenge When Choices are Limited

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### CASE REPORT:

A 25 – year old man presented with a forgotten left ureteral stent for 10 years. The stent was heavily encrusted particularly at the upper and lower ends with severe hydronephrosis of the kidney. In view of the limited therapeutic options including the endourologic facilities, the patient underwent vesicolithotomy of the lower end of the stent. The residual stent was left for a second step procedure but the patient disappeared. A brief review of the literature for the current international experience of such cases was carried out.

**KEYWORDS:** ureteral stent, complications.

### INTRODUCTION:

Ureteral stents are a mainstay of today's urological armamentarium <sup>(1)</sup>. They are typically placed to prevent or relieve ureteral obstruction secondary to a variety of intrinsic or extrinsic etiologies, such as calculi, ureteral strictures, congenital anomalies such as ureteropelvic junction (UPJ) obstruction, retroperitoneal tumor or fibrosis, or iatrogenic injuries. Ureteral stents are also commonly placed for urinary diversion, to provide postoperative drainage or prior to surgical procedures to help identify or prevent injury to the ureters <sup>(2)</sup>. The ideal stent material should be biocompatible and radiopaque, relieve intraluminal and extraluminal obstruction, resist encrustation and infection, cause little discomfort to the patient, and be widely available at a reasonable cost. To date, no stent material meets all of these criteria <sup>(3)</sup>. Thus, different complications may occur with short – or long – term use of indwelling stents. These complications vary from minor side effects such as hematuria, dysuria, frequency, flank and suprapubic pain, to major complications such as vesico – ureteric reflux, stent migration, encrustation, urinary infection, stent fracture, necrosis and ureteral fistula <sup>(3,4)</sup>. The stent related complication can be directly lethal for the patient or indirectly can cause death because of complications related to operative intervention <sup>(5)</sup>.

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A new validated quality of life and impact questionnaire has been developed and has shown that 76% of patients suffer at least some type of morbidity related to the stent <sup>(1)</sup>. Encrustation is a frequent and well described phenomenon that sometimes makes stent removal difficult. The main predisposing factors are: duration of stenting, history or concomitant stone disease, urinary tract infection or bacterial colonization, pregnancy and chemotherapy <sup>(6)</sup>. We present a 25 – year old young man with a forgotten ureteral stent for 10 years and his management in view of the limited therapeutic options available in our hospital. Also a brief review of the literature for the current international experience of such cases was carried out.

### CASE REPORT:

A 25 – year old male patient presented to the outpatient urology clinic in Al – kadhimia teaching hospital complaining of a seven day history of severe dysuria, frequency, urgency and left loin pain. When the patient was 15 – years old, he underwent an open surgery for his left renal UPJ obstruction. Since then he used to have recurrent attacks of urinary tract infections and loin pain which were treated by symptomatic analgesics and antibiotics. The patient did not give a history of a urinary stone disease. On physical examination he was a well built young male, and his vital signs showed a temperature of 36.8 °C, a blood pressure of 130/70 mm Hg, a pulse rate of 82 beats / minute regular and a respiratory rate of 14 breaths / minute. Abdominal examination showed a left side loin scar, and tender suprapubic area. Rectal examination was normal. Urinalysis showed alkaline urine (PH 8.5), 80 pus cells /high power

field (HPF). Urine culture was negative as the patient was on antibiotic therapy. A complete blood count showed white blood cells  $9.8 \times 10^3$  and neutrophils 76%, hemoglobin 14.9 g/dl, hematocrit 46%, platelet count  $230 \times 10^3$ /ml. Blood group and Rh was B+ve. Coagulation profile showed a prothrombin time of 13 seconds, a partial thromboplastin time of 30 seconds, and an international normalized ratio of 1.2. Renal function tests showed a urea of 3.5

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mmol/l and creatinine of 70  $\mu$ mol/l. Abdominal ultrasonography revealed a left kidney with severe hydronephrosis, renal parenchyma thickness 5 mm and a ring like echogenic shadow at the lower calyces extending to the renal pelvis and proximal ureter. The right kidney was normal. The urinary bladder showed an intravesical ovoid echogenic 3.5 cm shadow. Plain abdominal X – ray film (Figure 1) showed a calcified ureteral stent with more calcification over the upper and lower ends. In Intravenous urogram (IVU) (Figure 2) the left kidney showed delayed excretion of contrast and hydronephrosis. The right kidney was normal. Radionuclide renography was not available. Short bulbar urethral stricture was discovered during panendoscopy and optical urethrotomy was done. Obviously the patient had a forgotten ureteral stent for 10 years since his open surgery for the UPJ obstruction. Managing such a calcified stent, in the absence of therapeutic options such as extracorporeal shock wave lithotripsy (ESWL), percutaneous nephrolithotripsy (PCNL), ureteroscopic lithotripsy was a challenge. The problem had been discussed with the patient including the therapeutic options available to remove the stent.

The patient refused referral to other center. Thus a decision to perform a 2 – step open surgery was made. The first step was to do vesicolithotomy with excision of the lower calcified stent and the second step was to explore the left kidney with a trial of removing the residual upper part of the stent keeping the possibility of nephrectomy. Vesicolithotomy was performed and a gentle and slow trial to pull the stent from the left ureteral orifice was attempted and the stent was pulled until a resistance was felt so the lower part of the stent with a 3.5 cm stone over the lower end was cut. The bladder wall was closed in layers and 16 Fr urethral catheter was introduced. The patient had smooth postoperative period and at the 17<sup>th</sup> postoperative day plain abdominal X – ray film (Figure 3) showed the residual ureteral stent and an IVU (Figure 4) showed no evidence of urinary extravasation. The patient disappeared and did not come for the second step surgery.

### **DISCUSSION:**

In this case report the ureteral stent was placed as part of the open surgical reconstruction for UPJ obstruction and it was forgotten for 10 years. The clinical indications for placement of stents or nephrostomy tubes intraoperatively in such open procedures remain controversial and vary among the urologists <sup>(7)</sup>.

Forgotten, encrusted ureteral stents represent a difficult problem for urologists, and a consensus on the best therapeutic approach is lacking <sup>(8)</sup>.

Literatures reported that the management strategy of patients with severely encrusted retained ureteral stents would include one or more of the following procedures: cystolitholapaxy, retrograde ureteroscopic manipulation, intracorporeal or extracorporeal lithotripsy, percutaneous nephrolithotomy, and open surgical removal to make them stent free <sup>(9, 10)</sup>.

Holmium laser was used as a single procedure to fragment stone on and around the stent <sup>(11)</sup> while other urologists reported the use of laparoscopic management of a heavily encrusted and stuck ureteral stent with minimal morbidity and very short hospital stay <sup>(12)</sup>.

Some urologists recommended minimally invasive surgery using extracorporeal shock wave lithotripsy (ESWL) and cystolitholapaxy as the first line of treatment of the extensively encrusted ureteral stent when the kidney has greater than 10% function <sup>(13)</sup>.

In our patient the affected kidney showed delayed excretion of contrast and hydronephrosis in IVU. The percentage of individual renal function could not be assessed due to the lack of radionuclide renography. The therapeutic alternatives were discussed with patient who underwent vesicolithotomy and the stent was pulled gently and slowly until a resistance was felt when the procedure was aborted to avoid possible injury to the ureter or pelvicalyceal system, or mechanical stent fracture. Thus, the available lower stent segment was cut by scissors close to the ureteral orifice. Fortunately no clinical or radiological evidence for such complications was encountered postoperatively. The patient disappeared with the residual stent in situ and did not come for further treatment.

Prevention of ureteral stent complications starts by proper selection of patients who need stent placement. Patients who require long – term indwelling stents must undergo stent changes every 3 to 4 months because Infection and encrustation, in particular, limit long – term use of stents <sup>(3, 14)</sup>. Besides every effort is made to optimize the system of ureteric stent follow up by patient education leaflet and by declaring removal date scheduling prior to discharge from hospital <sup>(15)</sup> to make sure that the patient and his/her family are aware of the fact that there is a ureteral stent which should be removed later on or replaced according to the underlying indication.

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**Figure 1:-Plain abdominal radiograph showing the forgotten stent on the left side with calcification mainly at the upper and lower ends (white arrows).**



**Figure 2: IVU film (15 minutes) showing delayed excretion of the left kidney with the retained calcified ureteral stent. The right kidney is normal.**

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**Figure 3 :** Postoperative plain abdominal radiograph showing the residual calcified ureteral stent (white arrows).



**Figure 4 –** Postoperative IVU film (30 minutes) showing delayed excretion and hydronephrosis of the left kidney (white arrow) with the residual calcified ureteral stent in the middle and lower third ureter.

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