

# Management of forgotten double J stent and severe multiple large encrusted stones in the bladder and renal pelvis

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## KEY WORDS

double J stent ▸ severe encrustation

## ABSTRACT

A female patient from a remote village and poor socioeconomic background presented to our clinic with abdominal pain at the right flank. She had a history of endoscopic double J stent placement four years prior. However, the details were not available, as neither the patient nor her relatives were aware of the history. An ultrasonography was performed and revealed moderate hydronephrosis of the right kidney with two calculi measuring 2.9 cm at the pyeloureteral junction (PUJ), a 2.6 cm calculus in the renal pelvis, and a 4 cm vesicle calculus. An intravenous urography revealed delayed excretion of contrast medium in the right kidney. A cystoscopy was then performed and the lower end of the forgotten double J stent was cut along with the encrusted stone in bladder [1, 2]. Removal of the large encrusted bladder stone was aided by lithotripsy. This was followed by the removal of the two PUJ calculi and the remaining portion of the encrusted double J stent, which was extracted with relative ease via a right-sided open pyelolithotomy [3]. The post-operative course was uneventful and her kidney function test was absolutely normal following the procedures. The patient was found to be stone-free and was discharged home. In light of this situation we have deemed it necessary to maintain contact and ensure regular follow-up visits for patients with double J stent placements in order to avoid such dangerous complications in the future. By following this custom, we aim to reduce the patient morbidity and avoid any unnecessary inconvenience.

## INTRODUCTION

The double J stent provides a convenient means of drainage for the upper urinary tract. It is a common procedure in daily urologic practice. The indications of double J catheter placement include the relief of ureteral obstruction secondary to diverse etiologies, accommodating adequate postoperative drainage, and preventing ureteral injuries during surgical procedures. During the last decade significant improvements have been made in stent design and material in order to reduce complications. However, serious complications such as migration, fragmentation, encrustation, and stone formation still occur, especially when stents are left in place for long periods of time. Furthermore, a forgotten stent is very frequently complicated and poses a management and legal dilemma. Herein we report a case of a forgotten double J ureteral stent complicated by stone formation at its renal pelvic and vesicle ends.



Fig. 1. X-ray KUB 1: Revealed double J stent *in situ* with encrustation over both ends.

## PATIENTS AND METHOD

A 40-year-old female patient from poor socioeconomic background presented to our out-patient department with intermittent right flank pain and burning micturition since one week. The patient was clinically diagnosed with uncomplicated nephrolithiasis. Abdominal and pelvic ultrasonography revealed moderate (22 x 5 mm) hydronephrosis on the right side, a 7 mm calculus at the upper pole, a 14 mm calculus at the renal pelvis, a 34mm calculus in the bladder, a double J stent *in situ*, and cystitis.

Upon asking for a detailed history, neither the patient nor her relatives were even able to give a history of double J stenting. Further research of the patient's records revealed that the patient had a history of endoscopic double J stent insertion for renal calculus four years ago. The patient, however, was totally unaware of this. The patient was qualified for surgery. Preoperative investigations consisted of a hemogram, urine culture, serum biochemistry, abdominal ultrasonography, plain radiography, and intravenous urography. We deduced that the reason for stent retention was simply a matter of poor compliance.

Laboratory examinations revealed a total leucocyte count of 12,000 per cu mm. Urine microscopy revealed plenty of pus cells. Serum creatinine was normal.

Intravenous urography revealed moderate hydronephrosis with a calculus measuring 2.9 cm at the right pyeloureteral junction and



Fig. 2. Intravenous urography film.

another 2.6 cm calculus in the inferior calyx with delayed excretion of contrast on the right side. There was also a 4cm bladder calculus encrusted along lower end of the double J stent.

Subsequently, the course of the disease and prognosis was explained to the relatives. The patient's fitness for surgery was assessed by an anesthesiologist. The treatment decision was based on the clinical presentation and diagnostic imaging findings. In this case we decided to recommend a combination of transurethral cystolithotripsy with lithoclast for the bladder stone and an open pyelolithotomy and ureterolithotomy for the renal stones.

### Operative procedure

After cutting the vesical end of the stent and cystoscopic removal of the bladder stone with the help of a lithotripter in two settings, the renal pelvic coil of the stent along with the calculus that was formed on it was extracted through a right open pyelolithotomy and ureterolithotomy with relative ease.

### DISCUSSION

The double J stent is a double-edged weapon and, though it is regularly used, not always justified. Certain precautions and

guidelines should be abided by for its appropriate use. When it is necessary, the patient and the patient's relatives should be thoroughly informed about the need, consequences, and complications, as well as its timely removal. The use of the double J stent should be documented (name, address, and contact information). The practice of such protocols will avoid unnecessary morbidity and, not to mention, legal problems.

Endourologic management of a forgotten double J stent is well established and there is an algorithm available. However, it should be managed endoscopically only by those well trained and sufficiently advanced in endourology. Open surgery has a role when multimodal endourology fails or when such a facility is not available, as in our case [10]. In case of severe encrustations, management modalities are more complex. Many investigators have employed ESWL, URS-SE, laser-lithotripsy, PCNL, chemolysis using various chemolytic agents administered via a percutaneous nephrostomy tube, and open surgery either alone or in combination with other procedures [5, 6]. With widespread usage of endoscopic instruments, a tendency to use relatively noninvasive interventions has been observed. However, in the literature, frequent usage of multimodal treatment principles is remarkable [5, 7, 8]. Especially in the presence of encrusted intrarenal segment of DJS, the use of PCNL and open procedures has been frequently reported [09].



**Fig. 3.** X-ray KUB 2: after first setting of cystoscopic lithotripsy, half of bladder stone removed and lower end of double J stent cut.



**Fig. 4.** X-ray KUB 3: after second setting of cystoscopic lithotripsy, whole of bladder stone with lower end of DJ stent removed.

**Indications for Ureteral Stent Placement [4]:**

- Relief of benign or malignant obstruction.
- Adjunct to stone therapy: i.e. obstruction, ESWL, intraluminal lithotripsy, ureteral instrumentation, or stone visualization.
- Perioperative placement: i.e. for alignment of drainage elements, maintenance of luminal caliber, identification of ureter(s), or after ureteral intervention.
- Management of urine leak: i.e. after trauma or surgery, or due to ureteral fistula.

**Characteristics of the Ideal Ureteral Stent:**

- Easily inserted from any access
- Resistant to migration



**Fig. 6.** Specimen 2: A double J stent with encrustation removed after right pyelolithotomy and ureterolithotomy.



**Fig. 5.** Specimen 1: After cystoscopic lithotripsy – the lower end of a double J stent removed together with a bladder calculus. In the third setting, a right-sided open pyelolithotomy and ureterolithotomy was performed through a flank incision and the renal pelvic coil of the stent along with calculus formed on it was extracted with relative ease. Following this treatment the patient was stone-free.



**Fig. 7.** Specimen 3: A complete double J stent with encrustation.

- Optimal flow characteristics
- Well tolerated by patient
- Biocompatible
- Biodurable
- Resistant to encrustation
- Nonrefluxing
- Radiopaque or visible at US
- Easily exchanged and removed
- Versatile
- Affordable

#### Consequences and Complications of Ureteral Stent Placement [4]:

- Irritative voiding symptoms
- Incontinence
- Suprapubic or flank pain
- Vesicorenal reflux
- Hematuria
- Pyuria
- Urinary tract infection
- Malposition
- Migration
- Inadequate relief of obstruction
- Encrustation
- Ureteral erosion or fistulization
- Fracture
- Forgotten stent

## CONCLUSION

This case represents a preventable complication of forgotten ureteral stents and the multimodal option for managing such complex cases. One should always consider the presence of severe encrustations when dealing with a forgotten stent. A combined urologic approach can achieve a safe and successful outcome in the treatment of forgotten stents.

## REFERENCES

1. Singh I: *Indwelling JJ ureteral stents - a current perspective and review of literature*. Indian J Surgery 2003; 65: 405-412.
2. Somers W: *Management of forgotten retained indwelling ureteral stents*. Urology 1996; 47: 431-35.
3. Arvantinos E, Gravas S, Karatzas AD, et al: *Forgotten, encrusted ureteral stents: A challenging problem with endourologic solution*. J Endourol 2006; 20:1045-1049.
4. Saltzman B: *Ureteral stents: indications, variations and complications*. Urol Clin North Am 1988; 15: 481-491.
5. Tsai CC, Shen JT, Huang SP, et al: *Use of a holmium laser to treat a forgotten double-J stent with whole stent encrustations: a case report*. Med Sci 2009; 25 (10): 567-571.
6. Vanderbrink BA, Rastinehad AR, Ost MC, Smith AD: *Encrusted urinary stents: evaluation and endourologic management*. J Endourol 2008; 22 (5): 905-912.
7. Kehinde EO, Al-Awadi KA, Tawheed A, et al: *Factors affecting the fate of prolonged forgotten 'J' stents*. Scand J Urol Nephrol 2001; 35: 222.
8. Santin M, Motta A, Denyer SP, et al: *Effect of the urine conditioning film on ureteral stent encrustation and characterization of its protein composition*. Biomaterials 1999; 20: 1245-1251.
9. Acosta-Miranda AM, Milner J, Turk TM: *The FECal Double-J: a simplified approach in the management of encrusted and retained ureteral stents*. J Endourol 2009; 23 (3): 409-415.
10. Somers W: *Management of forgotten retained indwelling ureteral stents*. Urology 1996; 47: 431-435.

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