

Fate of Forgotten DJ Stent

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ABSTRACT

Introduction: Double J stent is one common armamentarium used in urological procedure. It can serve both therapeutic and prophylactic function. However the use of double J stent is invariably associated with minor to some of major complications. Forgotten DJ stent is one untoward issue of stenting patient that is largely preventable and entails complex urological procedure to remove it.

Methods: We performed descriptive study where data were collected prospectively from patients who have double J ureteral stent in situ after urological procedure. Stent left more than three months was defined as forgotten DJ stent. Demographic characteristics, clinic-radiological data and details of management were noted to evaluate the mode of presentation, associated complications and mode of treatment. The reason behind forgetting those stent was asked with study population and presented.

Results: The total of 27 cases of forgotten DJ stent cases were recorded during period of December 2013 to January 2018. Mean age of patient was 46.6 ± 12.25 years. The longest indwelling time was 10 years. Stent syndrome was common mode of presentation followed by encrustation. Majority (92.5%) of the patients were managed with endourological approach and 26% (7) of cases required more than one modalities of treatment.

Conclusions: The forgotten stent is an avoidable condition through proper patient counselling. When required the management necessitates simple cystoscopic to complex endourological intervention.

Key words: double J stent; endourological approach; stent syndrome

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INTRODUCTION

The use of indwelling stent is a routine practice in upper urinary tract surgery. First clinical application of ureteral stent was reported in 1967 by Zmskind and later in 1970.^{1,2} In 1972 Goodwin defined stent as mould for internal fixation which provides effective uninterrupted internal urinary drainage from kidney to bladder, reduce or eliminate urinary leakage and provide ureteral stenting.^{3,4}

JJ stents are usually made from silicon or polyurethane. Studies demonstrated two to four weeks as standard indwelling time for such ureteral stent.⁵ The characteristics of the ideal ureteric stent was elaborated by Denstedt et al. in 1943.⁶ Different complications can occur with the short or long term use of indwelling stents.⁷⁻⁹ A forgotten DJ ureteric stent can cause a spectrum of complications ranging from hematuria, stent occlusion, migration, fragmentation, encrustation, and stone formation. Serious complications like urosepsis, renal failure, fistula formation with iliac arteries and even mortality have been reported due to forgotten DJ stent. Studies consider variable period of more than three to six months to call it as forgotten stent.¹⁰ We discussed here management of 27 cases of forgotten DJ stent which otherwise get neglected most of the time.

METHODS

This is a retrospective study where data were collected prospectively involving the patients who underwent double J ureteral stenting for various urological indications. Patients were enrolled in the study at the time of stent removal appointment after written consent. The duration of stent placement was noted. Stent dwelling time more than three months were considered as forgotten DJ stent. Patient's awareness regarding the indwelling DJ stent was noted. Complete blood count, renal

function test, urine routine and microscopic examination, urine culture sensitivity was done in all cases before removal of DJ stent. All patients were evaluated for stent encrustation and associated stone burden with KUB and non-contrast enhanced stone protocol CT and/or IVP. Diethylenetriamine pentaacetic acid (DTPA) renography was performed to estimate renal function in selected case. Prophylactic antibiotic (third generation cephalosporin) was given. The management is planned depending upon the details of encrustation and the stone burden.

For stents with no encrustation gentle nontraumatic retrieval was attempted through 21 French rigid cystoscope under local anaesthesia. Ureterorenoscopy (URS) was performed using a 6.5 Fr/45 cm semirigid ureteroscope under fluoroscopic guidance. Percutaneous nephrolithotomy (PCNL) was carried out using an 9/11.5 Fr , 25 cm semirigid urteroscope or 24 Fr rigid nephroscope. Data were analysed with Microsoft excel 2007 and presented.

RESULTS

We encountered 27 cases of forgotten DJ stent cases during period of December 2013 to January 2018. Mean age of patient was 46.6 ± 12.25 years out of which 16 were male and 11 were female. The indwelling time was four months to 10 years. 22

Table 1. Management details of forgotten DJ

SN	Operative procedure	Number
1	Cystoscopic removal	15
2	Cystolithotripsy + PCNL	3
3	URSL +PCNL	3
4	URSL	2
5	Cystolitholapaxy	2
6	Cystolithotomy + Pylelolthotomy	1
7	Simple Nephrectomy	1



Fig 1. KUB images of forgotten stents (a) One year (b) Three years (c) Seven years (d) 10 years

patients presented to us within one year and five patients reported after one year. Stent syndrome was mode of presentation in 74% followed by encrustation or stone formation in 29.5% and urinary tract infection in 15%. Urinary bladder was the common site of encrustation (59.2%). We used multimodality approach for management of the forgotten stents (Table 1). Majority (92.5%) of the patients were managed with endourological approach and 26% (seven) of cases required more than one modalities of treatment.

DISCUSSION

The double J ureteral stent allows direct internal drainage of upper urinary tract to the urinary bladder. The common indications are prophylactic stenting and relief of obstructive uropathy.^{4,12} The overall complications rate ranges from 70% to 79.2%.¹³ A forgotten DJ stent can cause spectrum of complications due to increasing encrustation and stone burden that happens mostly due to poor

patient compliance and or inadequate counselling by the physicians. Urinary tract infection, indwelling time, bio-incompatibility, malignancy and metabolic abnormalities has positive correlation with stent encrustation.^{11,14} A study by el-Faqih et al. states “the stent encrustation rate increases from 9.2% for an indwelling time of less than six weeks to 47.5% for six to 12 weeks and 76.3% for more than 12 weeks.”¹⁵

The presentation of forgotten stent varies. Damiano et al. observed flank pain in 25.3%, encrustations in 21.6%, irritative bladder symptoms in 18.8%, hematuria in 18.1%, UTI in 12.3%, and stent

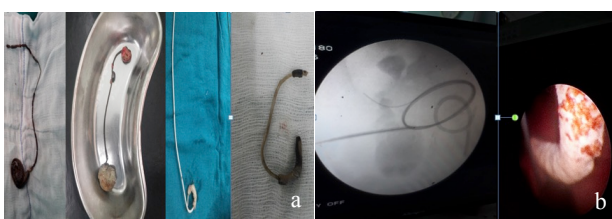


Fig 2. (a) Retrieved forgotten DJ stent with encrustations (b) PCNL

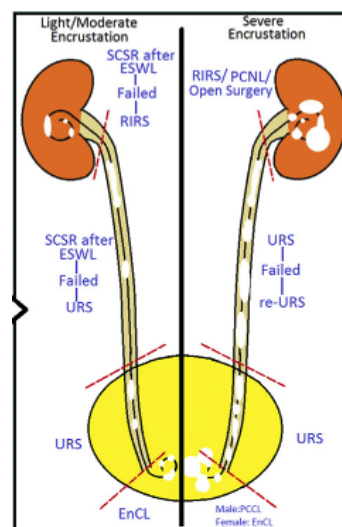


Fig 3. Management algorithm of encrusted DJ stent.¹¹

migration in 9.5% of the patients.¹³ Stent syndrome that comprises flank pain, suprapubic discomfort, irritative voiding symptoms and occasional hematuria is common among our study populations. Sohreb et al. reported forgotten DJ stent as old as 23 years with 14.2% mortality among the 28 study subjects in 13 years.¹⁰ The management of forgotten DJ stent is challenging and mandates complex endourological intervention or open surgery^{16,17} Sancaktutar et al. has illustrated the management algorithm of encrusted DJ stent with multimodality approach depending upon the site and severity of encrustation and available resources (Fig. 3).¹¹ Among our study populations 37% of the patients were unaware of the stent inside their body, 33% confused drain tube with DJ stent and 30% patient was noncompliant with the follow up. Primary prevention can be done with judicious use of DJ ureteral stent. El Harrech et al. in his randomised controlled trial concluded that “Uncomplicated ureteroscopy for distal ureteral calculi without intraoperative ureteral dilation can

safely be performed without placement of a ureteral stent.”¹⁸ A systematic review and meta analysis published in Journal of Endourology in 2018 states that “Compared with double J stent, externalised ureteral catheter is also an effective alternative for patients with upper urinary stones in tubeless PCNL and could help patients reduced stent-related discomfort and avoided cystoscopy for DJS removal.”¹⁹ Prevention is the best management that can be attained with patient counselling, data recording and tracking. Study has reported the decline of incidence of forgotten stent from 12.5% to 1.2% with the use of computer based tracking software.³

CONCLUSIONS

A forgotten DJ stent invariably results in some type of complications that requires complex and multimodality approach for management. The judicious use, patient counselling and data recording can help to prevent the untoward effects of forgotten DJ stent.

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