Case Report

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Forgotten Double J Stent with Maximum Stone Burden

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ABSTRACT

Double J stent or DJ stent, is a self-retaining ureteral stent mainly used to provide effective drainage of kidney into urinary baldder. However, because of widespread use, lack of patient education or due to lack of adherence to regular follow up, patients may end up with a forgotten DJ stent which can stay undiagnosed in the pelvi-ureteral system for years and cause a lot of complications before coming to attention. We present a unique case of repetitively neglected (forgotten) DJ stent in a 28-year-old male, who had the stent placed 11 years back as a part of Percutaneous Nephrolithotomy (PCNL) and now presented with encrusted DJ stent with large bladder calculus and calculus deposits along entire length of the stent. To our knowledge, this study reports the forgotten stent with the maximum stone burden available in literature.

Introduction

Double J Stent, a self-retaining ureteral stent used for renal drainage is widely used in urologic practice. It is used as a part of routine ureteroscopy for stone disease, after a multitude of reconstructive surgeries to allow for ureteral healing, for obstructive uropathy, before Extracorporeal Shock Wave Lithotripsy (ESWL), obstructive anuria etc. [1] However, serious complications such as encrustation, migration, stone formation, fragmentation and infection can be seen if the stents have been placed for a long time. [2] Damiano et al. observed flank pain in 25.3%, irritative bladder symptoms in 18.8%, hematuria in 18.1%, and fever in 12.3%, of the patients. [3] Patients who are more inclined to neglect or to forget about their stent are those who are generally asymptomatic. [4] As the duration of time the stent remains indwelling increases, the incidence of encrustation over DJ stent also increases. [5] The literature suggests that the DJ stent generally needs to be replaced or removed within 6 weeks to 6 months. [6]

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Case presentation

A 28-year-old male have presented with a complaint of intermittent pain in right flank region for 5 months. On eliciting detailed history from the patient, the past medical history revealed that he had undergone right sided PCNL with placement of DJ stent for right renal stone about 11 mm in size 10 years back (in 2011) in another hospital. However, the patient was lost to follow up for stent removal and had presented to the former hospital's OPD as a case of forgotten right sided DJ Stent after 5 years (in 2016). The patient underwent open cystolithotomy in 2016 for the same at that hospital. The bladder stone was removed, however; due to the fixity of DJ stent at the upper end, the DJ stent could not be brought down and was cut at the lower end. The patient was again lost to follow up and now presented to our OPD in 2020. On examination, the patient was afebrile. All blood reports and urinalysis were normal.

Plain X-ray kidney, ureter and bladder (X-ray KUB) revealed a large urinary bladder calculus measuring approximately 7.3 cm in the largest diameter with encrusted Double J stent and calculus deposits along the entire length of stent measuring approximately 25 cm in length (Fig. 1).

Non-contrastcomputed tomography kidney ureter bladder (NCCT-KUB) showed Grade III hydronephrosis in right kidney and upper end of DJ stent in situ. There was dilated right ureter with DJ stent in situ with calculus deposits around the stent extending up to renal pelvis. Urinary bladder had a 7.3 x 6.1 cm calculus (620 HU) and lower end of DJ stent in situ. (Fig. 2).

Subsequently, the patient was operated as a case of open cystolithotomy in our hospital and around 8 cm calculus was retrieved from the bladder. An attempt to retrieve the whole DJ stent was made, however; only the lower half could be retrieved. The upper half, due to its fixity, could not be removed (Fig. 3).

Post operative X-Ray KUB showed residual encrusted Double J stent in the renal pelvis and upper half of ureter (Fig. 4).

The patient was then discharged in a stable condition and admitted again for the residual encrusted Double J stents. Right sided Percutaneous Nephrolithotomy (PCNL) with right sided Ureteroscopic Lithotripsy (URSL) was done. Post-operative plain X-ray KUB showed clearing of residual encrusted DJ stent and accompanying calculus deposits in the renal pelvis and upper half of ureter (Fig. 5).

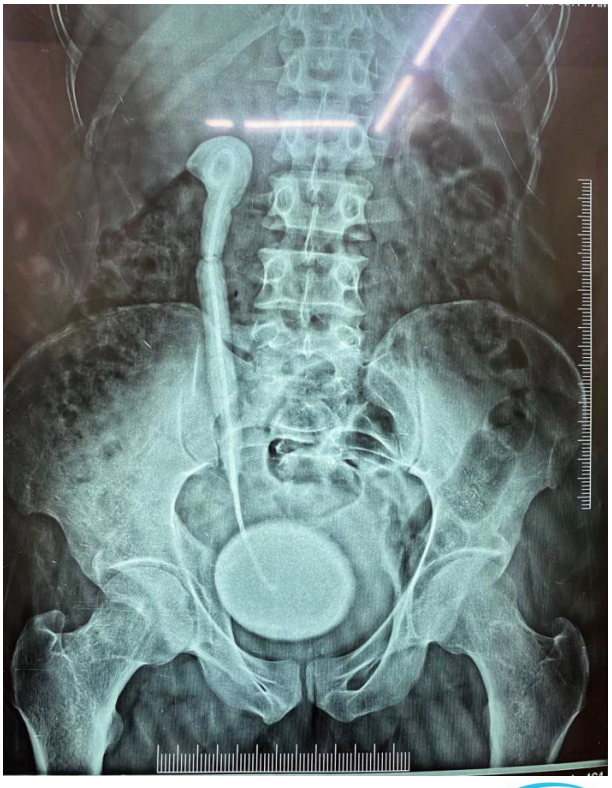

Fig. 1. Plain X-ray kidney, ureter and bladder (X-ray KUB) showing large bladder calculus with encrustations involving almost whole of the Double J stent.

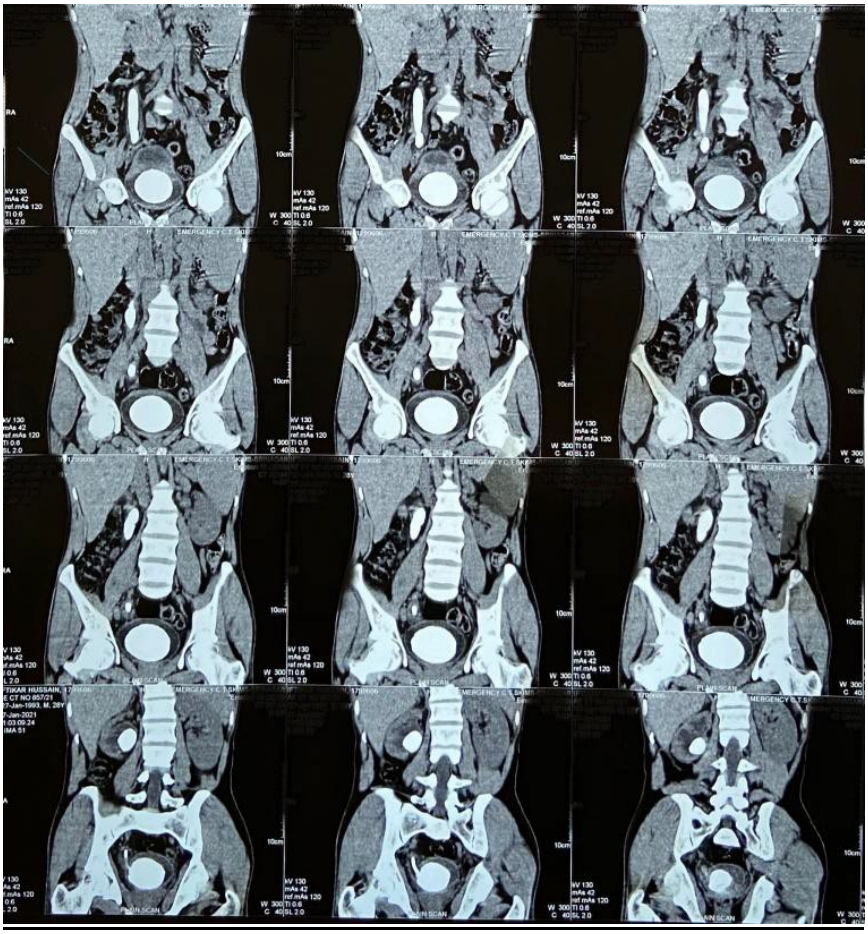

Fig. 2. Non-contrast computed tomography kidney ureter bladder (NCCT-KUB) shows dilated right ureter with DJ stent in situ with evidence of calculus deposits around stent extending up to renal pelvis and a urinary Bladder calculus.

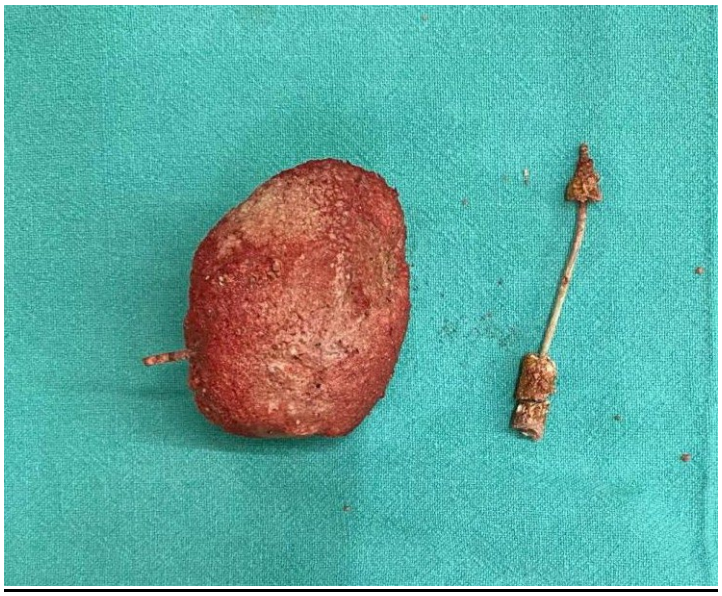

Fig. 3. Retrieved bladder stone with lower part of encrusted Dj stent and surrounding calculus material by open cystolithotomy.

Fig. 4. Plain X-ray kidney, ureter and bladder (X-ray KUB) shows residual encrusted Double J stent and accompanying calculus deposits in the renal pelvis and upper half of ureter.

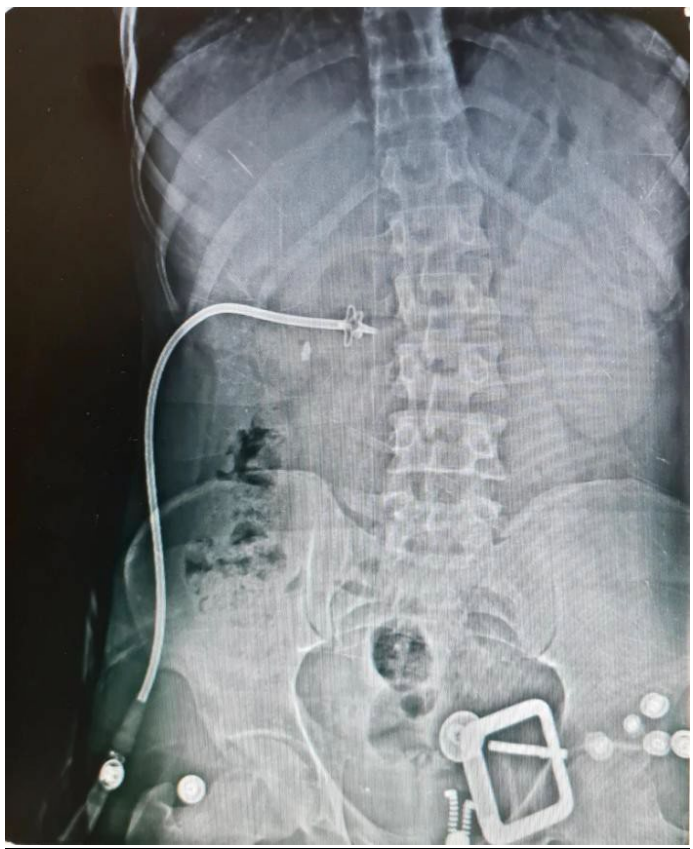

Fig. 5. Plain X-ray kidney, ureter and bladder (X-ray KUB) shows clearing of residual encrusted Double J stent and accompanying calculus deposits in the renal pelvis and upper half of ureter.

Discussion

DJ stents, which are indispensable in urological procedures, if forgotten, pose a major challenge both for the attending surgeon and the patient. A stent with an indwelling time period of more than 3–6 months can be termed as forgotten if not intended by the treating doctor. [7] The reasons behind a forgotten or retained stent can be attributed to inadequate counseling by the treating doctor and poor compliance from the patient and his or her family. [8] Various factors that have been linked with the formation of encrustations and stone on a stent such as long indwelling time, urinary sepsis, history of stone disease, chemotherapy, pregnancy, chronic renal failure, and metabolic and congenital abnormalities. [9] There have been extensive studies on the composition and the risk factors of encrustations. Calcium oxalate (43.8%), especially in its monohydrate form, constitutes most of the encrustation. [10] The incidence of encrustations is less with silicone DJ stents compared to polyurethane stents. [10, 11]

The clinical presentation of forgotten DJ stent includes flank pain, irritative voiding symptoms, hematuria, pyrexia, stent fragmentation and migration. In a study by Hao et al. [12] hematuria was the most common presentation, followed by pain and bladder irritation.

The management and intervention depend on the preoperative status of the patient, location and size of stone and encrustations as well as severity of encrustations. Stent migration and fragmentation is an important factor in determining the course of intervention. For the management of mild encrustation several studies have reported the role of ESWL followed by retrograde extraction of the DJ stent. In patients with moderate-to-severe encrustations and stone presence, modalities such as transurethral cystolithotomy (CLT), ureteroscopy and PCNL are used. [13, 14] It has been suggested in a number of studies that the distal part of the stent should be removed firstly, followed by the proximal end. [15] Patient counseling regarding DJ stent by the treating doctor is very important. Moreover, patient compliance is important and is reflected by the quality of counseling provided by the treating urologist. Maintaining a simple stent registry can achieve almost 98% of DJ stent removal at due date, which reduced morbidity associated with encrusted stent removal and anesthetic drugs. Sabharwal et al. reported a computer-based stent registry with patient-directed automated information system, and it sends automated SMS initially, followed by letters in case they fail to respond; however, a long-term prospective trial is needed for its efficacy. [16]

Conclusion

A forgotten DJ stent with encrustations and stone burden is a serious urological problem for the patient and treating doctor. They are a source of major burden on patients in terms of increasing morbidity, and additional procedures which can be simply avoided if the stents are removed in time. Hence it is of utmost importance that the patients and their attendants be counseled and informed about the presence of a stent in the patients' system after such procedures, and also be explained in detail about the hazards of a forgotten stent. A good practice should include mentioning the presence of DJ stent in bold letters on their discharge certificates and also keeping a log of patients' name, residence and contact numbers in a separate hospital or departmental database, so as to ensure timely follow up and removal.

Ethical Considerations

Consent

The consent was taken from the patient for the case report to be published.

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

All authors equally contributed in preparing this article.

Conflict of interest

Authors declare that there is no conflict of interest.

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