A 17-year-old indwelling ureteral stent with large vesical calculus at one end: The tombstone of a forgotten Double “J” stent

Rudra P. Ghorai, Harkirat S. Talwar, Ankur Mittal, Tushar A. Narain, Vikas K. Panwar

Department of Urology, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

ABSTRACT

Objective: To highlight the presentation and management of a 17-year-old forgotten ureteral stent with a large vesical calculus at one end, a very rare yet devastating complication of ureteral stenting. Case Presentation: A 65-year-old gentleman presented with complaints of lower urinary tract symptoms for two years with a history of ureterolithotomy done 17 years ago. Imaging revealed a forgotten ureteral stent embedded in a large vesical calculus. He underwent a percutaneous cystolithotomy with removal of the forgotten stent. Conclusion: DJ stent is commonly used in urologic practice. It is a double-edged sword as it can lead to severe morbidity in patients who have forgotten stent. Knowledge of DJ stent-related complications and need of timely removal will help primary care physician in providing better health care. Proper counselling of patients before and after the placement of stent and maintenance of stent registries play a major role in avoiding this dreadful complication.

Keywords: Forgotten ureteral stents, urolithiasis, vesical stone

Introduction

Double “J” (DJ) ureteral stent has varied applications in the current urologic practice. It was first described by Zimskind et al. in 1967.[1] The more common uses of DJ stent are to relieve ureteral obstruction due to either luminal compromise (stones) or extrinsic compression (retroperitoneal tumor and fibrosis) and to provide drainage after ureteral surgery or ureteral injury.

However, despite the various benefits, these ureteral stents come with their own share of short term as well as long-term complications[2] like stent migration, encrustation, breakage, fragmentation, formation of stones, infection, pyonephrosis, and may even lead to a non-functioning kidney. A thorough literature search revealed that the longest a ureteral stent had been indwelling in a patient was 23 years. In our study, DJ stent had been forgotten for 17 years, which is the second longest to the best of our knowledge. Highlighting this fact, herein we describe the clinical presentation and management of a patient with a forgotten DJ stent for 17 years with formation of vesical calculus at one end of the stent.

Case History

A 65-year-old gentleman from a rural background; known hypertensive well controlled on medications presented with complaints of poor urinary flow, increased urinary frequency, and nocturia for 2 years. He underwent ureterolithotomy with...
left sided DJ stenting elsewhere 17 years ago for a ureteral stone. Patient didn’t follow-up ever since and had forgotten about his indwelling stent. He had no history of fever, hematuria, dysuria, or flank pain. General physical examination was normal. Digital rectal examination showed grade 2 prostatomegaly. All laboratory blood investigations were within normal limits. Serum prostate specific antigen was 1.2 ng/ml. Urine routine examination showed 7–10 pus cells/hpf and urine culture was sterile. An ultrasound abdomen revealed a large 5 cm urinary bladder calculus with impacted DJ stent and left gross hydroureteronephrosis with thinning of parenchyma. Right kidney was normal. An abdominal X-ray revealed an encrusted left sided DJ stent with its lower end showing a large radio opacity suggestive of a vesical calculus. On a computed tomography scan, a large 5.5 cm × 4 cm × 5.3 cm vesical calculus of size was visible with the distal tip of DJ stent embedded in it and left moderate hydroureteronephrosis. A few non-obstructive 4 mm stone in lower calyx of right kidney and 12.5 mm stone in mid calyx of left kidney were seen. Patient was planned for removal of the forgotten DJ stent along with bladder calculus and left renal stone. After preoperative optimization, he underwent percutaneous cystolithotomy using pneumatic lithotripsy along with removal of the forgotten DJ stent under intravenous antibiotic cover. Operative time was 40 min. with no perioperative complications. Postoperative period was uneventful. Suprapubic catheter was removed on day 4 and urethral catheter was removed after 2 weeks. Left retrograde intrarenal surgery (RIRS) followed by DJ stenting was done after 1 month for the left renal calculus. Stent removal was done 2 weeks post RIRS and on follow-up, patient is stable and is doing well.

Discussion

DJ stent is commonly used in the treatment of various urological cases like obstructive uropathy, urolithiasis, renal transplantation, genitourinary trauma, genitourinary oncology, and reconstructive surgery. Complications due to DJ stents are common despite several improvements in design and composition of stents. Short-term complications are frequency, dysuria, hematuria (stent syndrome), pain and urinary tract infections. Long-term complications (after 3–6 months) include blockage, migration, fragmentation, encrustation, and hydronephrosis.[3]

DJ stent acts like a foreign body and irritates the trigone and ureteral wall leading to irritative voiding symptoms, hematuria, suprapubic discomfort. Bacterial colonization with biofilm formation followed by crystallization of organic compound present in urine occurs in forgotten stent. The adherent bacteria hydrolyse the urea to ammonia and increase the urinary pH which leads to precipitation of calcium, magnesium, and hydroxyl apatite and resulting in stone formation.[3]

Study by El-Faqih et al.[6] reported 10% incidence of DJ stent obstruction secondary to encrustation in 87 patients. There is no strict definition of “forgotten” DJ stent but literature considers a variable period of more than three to 6 months to consider a forgotten stent. Major cause of forgotten DJ stent is poor compliance of the patients. Management strategy of forgotten DJ include a preoperative imaging to identify stone burden and site of encrustation. Endourologic management is the first treatment of choice. Open surgery is preferred when endourology managements fail. A wide armamentarium of procedures is available for a surgeon to choose from including ureteroscopic lithotripsy, percutaneous nephrolithotomy, extracorporeal shockwave lithotripsy, open surgery either alone or in combination. While performing these surgeries, an important factor that needs to be considered is the possibility of bacteremia and urosepsis as these encrusted stents harbor a multitude of various pathogenic bacteria. Prophylactic intravenous antibiotic management tailored according to culture sensitivity and ensuring a sterile urine culture prior to the procedure are a mandate. It is essential to understand the clinical presentation of forgotten DJ stent by a primary care physician because they are the first primary contact of patients in daily practice. Knowledge about the wide use of DJ stenting in various urological procedures and the morbidity of forgotten DJ stents will help primary care physicians to guide patients for better healthcare and prevent serious complications.

Measures to prevent this devastating complication include[6]:
1. Judicial use of DJ stent in any urologic surgery
2. Proper counselling of the patient regarding the indication of placing the stent and its timely removal.
3. Periodic regular follow-up during the entire period of stent being in situ.
4. Maintenance of proper stent registry and documentation.
5. Telephonic contact of the patient once the due date of removal has passed.
6. Mobile applications and computer-based automated patient information systems which keep a track of stent placement and removals for timely notifications.

Key Messages

Double J stent is commonly used in urologic practice but it is a double-edged sword as it can lead to severe morbidity in patients who have forgotten stents due to poor compliance. Proper counselling of patients and maintenance of stent registries play a major role in avoiding the dreadful complication.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.
Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

References
1. Ray RP, Mahapatra RS, Mondal PP, Pal DK. Long-term complications of JJ stent and its management: A 5 years review. Urol Ann 2015;7:41-5.
2. Jhanwar A, Bansal A, Prakash G, Sankhwar S. Endourological management of forgotten double J ureteral stents: A single centre study. JOJ uro & nephron 2017;1:555566.
3. Robert M, Bouilaran AM, El Sandid M, Grasset D. Double-J ureteric stent encrustations: Clinical study on crystal formation on polyurethane stents. Urol Int 1997;58:100-4.
4. El-Faqih SR, Shamsuddin AB, Chakrabarti A, Atassi R, Kardar AH, Osman MK, et al. Polyurethane internal stents in treatment of stone patients: Morbidity related to indwelling times. J Urol 1991;146:1487-91.
5. Andriole GL, Bettmann MA, Garnick MB, Richie JP. Indwelling Double-J ureteral stents for temporary and permanent urinary drainage: Experience with 87 patients. J Urol 1984;131:239-41.
6. Sabharwal S, Macaden AR, Abrol N, Mukha RP, Kekre NS. A novel computer based stent registry to prevent retained stents: Will patient directed automated short message service and letter generator help?. Indian J Urol 2014;30:150-2.