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Case Report

Neglected case of recurrent abdominal pain due to a chronically retained and broken double J (DJ) stent following percutaneous nephrolithotomy (PCNL): A case report [☆]

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ABSTRACT

Double J (DJ stent) is commonly used in urology practices. Short- and long-term complications of indwelling catheters are increasingly noted resulting in significant morbidity and at times mortality. Retained and broken DJ stent is however rare complication with few cases reported in the literature. We present a case of neglected retained and broken DJ stent in a 55-year-old male who had undergone percutaneous lithotripsy (PCNL) 4 years back presenting with recurrent abdominal pain and was misdiagnosed as peptic ulcer disease at various centers. Radiological investigations including ultrasound, radiographs, and computer tomography helped in identifying the retained and broken DJ stent. Patient improved with conservative management and left against medical advice for definite treatment. Patient education and ensuring proper follow-up can reduce the likelihood of complications associated with DJ stents.

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Introduction

Double J (DJ) stent is frequently used in urological endoscopic practices as a conduit for urine from the kidney to the urinary bladder, providing rest to the ureter following a wide range of urological surgeries and procedures. With the increasing

use of DJ stent, there is also proportionally increased associated morbidity. Short-term and long-term complications of indwelling DJ stent have been reported. Pain, bladder irritation, infection, hematuria, and stent syndrome are some of the short-term complications [1]. Retrograde systemic inflammatory response syndrome and urinary sepsis are some of the dreaded complications. Long-term retention of DJ stent can

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lead to encrustations, urolithiasis, fragmentation and fracture, blockage of stent, migration as well as declining renal function, and eventual mortality [2]. Neglected chronically retained and broken DJ stent is a rare scenario with very few cases reported in the English literature. In this case report, we present a case of chronically retained and broken DJ stent following percutaneous nephrolithomy (PCNL) who had recurrent abdominal pain managed empirically at various other centers.

Case presentation

A 56-year-old male presented to the radiology department for an ultrasound for a complaint of recurrent abdominal pain for the last 10 days predominantly in the right hypochondrium. He also gave a history of high-grade fever and burning micturition for the last 3 days.

The patient was known hypertensive and on medication for the last 3 years. On enquiry, he gave a history of certain operative procedures 4 years back in the right kidney, however, no documentation was available. The patient has experienced multiple episodes of abdominal pain and irritable urinary symptoms following the procedure and was treated for peptic ulcer disease and urinary tract infection at various centers.

Physical examination revealed that the patient was febrile and appeared ill. Other vital signs were normal. A healed surgical scar of 1 cm was observed over his right flank, along with right costovertebral angle tenderness. The results of laboratory tests revealed a raised WBC count of $17.12 \times 10^9/L$ ($4.5-11.0 \times 10^9/L$) with neutrophilia (90%), decreased hemoglobin

and platelet count of 10.3 g/dL (13.5 g/dL-17.5 g/dL) and $98 \times 10^9/L$ ($150-400 \times 10^9/L$) respectively. Some other notable abnormalities were urea 238.98 mg/dL (7-30 mg/dL), creatinine 8.93 mg/dL (0.7-1.2 mg/dL), triglyceride 436.3 mg/dL (< 150 mg/dL), ALT 197.4 u/L (7-56 u/L), AST 240.2 u/L (10-40 u/L), Alpha-amylase 277.7 U/L (30-110 u/L), and lipase 579.8 u/L (0-160 u/L).

An abdominal ultrasound was performed which demonstrated grade I hepatic fatty infiltration, and mild hydronephrosis of the right kidney with multiple calculi largest measuring 4.5 mm in the mid-pole calyx. Increased thickness of the urothelium of calyces and pelvis was also noted suggesting infection. On tracing the echogenic structure, discontinuity was noted within the upper-ureter (Fig. 1). Distally, a coiled tubular structure was noted in the right ureterovesical junction and urinary bladder (Fig. 2). An X-ray KUB demonstrated a DJ stent with discontinuity at the upper part (Fig. 3). A plain computed tomography scan of the KUB region was performed which showed a broken encrusted DJ stent with a gap of about 3 cm in the proximal ureter. The distal part was noted extending from the mid-ureter and coiling in the urinary bladder (Figs. 4 and 5). The patient was kept on intravenous medication and symptoms were relieved. Patient then left the hospital against medical advice due to financial constraints and was lost to follow-up.

Discussion

DJ stents are widely used in urology for various indications such as ureteral stones, stricture, and malignancy. Despite

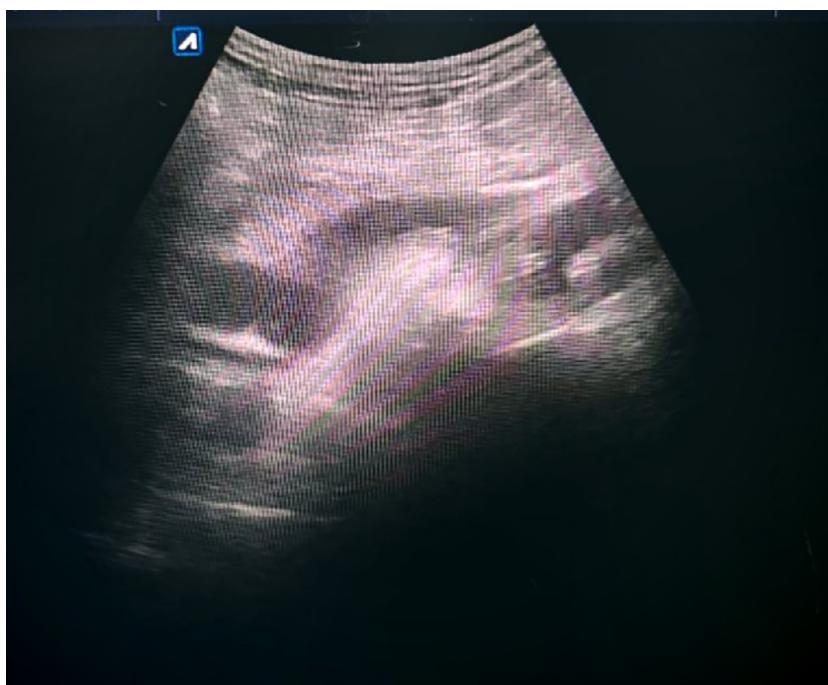


Fig. 1 – Ultrasound of the right kidney and upper ureteric region demonstrated 2 discontinued segments of DJ stent.

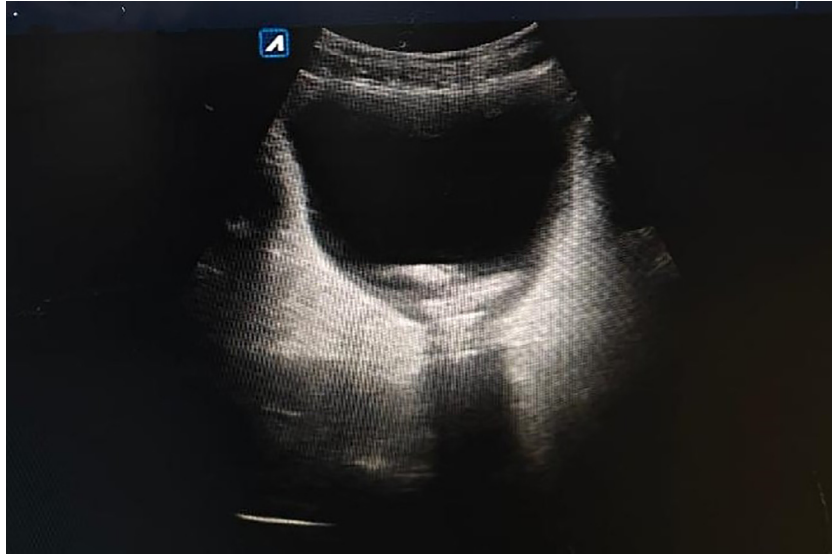


Fig. 2 – Ultrasound of the urinary bladder demonstrates coiled distal segment of DJ stent.



Fig. 3 – X-ray KUB demonstrates broken DJ stent.

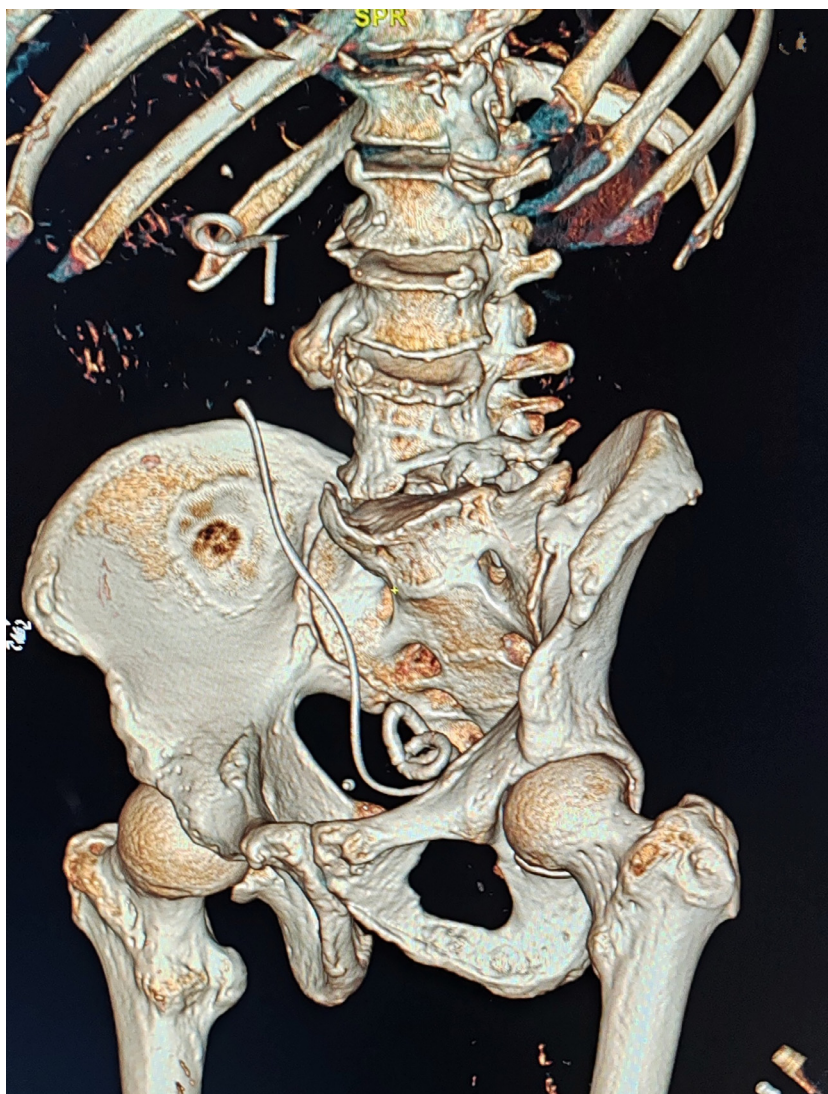


Fig. 4 – Volume rendered image of the KUB region.

their benefits, they can sometimes cause complications like forgetting, retention, and breakage, leading to serious health issues.

Retained DJ stents can occur due to several reasons, including patient noncompliance, lack of proper follow-up, failure to remove the stent, and technical difficulties during insertion or removal. The most common reason for retained stents are patient noncompliance, accounting for approximately 40% of cases [3]. Another study reported that around 25% of patients did not receive adequate information about the importance of stent removal, resulting in delayed or failed removal. Technical factors, such as difficult access to the stent location or stent migration, can also contribute to retained stents [4].

Patients with retained DJ stents may present with various symptoms, depending on the duration of retention and individual factors. Common complaints include flank pain, dysuria, hematuria, and recurrent urinary tract infections (UTIs). Some patients may remain asymptomatic until the stent migrates or becomes encrusted, leading to acute kidney

injury or pyelonephritis [4]. Delayed diagnosis can result in more advanced renal damage and poorer outcomes [5]. Therefore, it is crucial to maintain close follow-up and monitor patients for signs of complications. Imaging studies play a vital role in the diagnosis of retained double-J stents. Radiography, computed tomography (CT), and ultrasonography can help identify the presence and position of the stent. CT scans are particularly useful in detecting encrustation, migration, or fracture of the stent. The primary goal of managing retained DJ stents is to alleviate symptoms, prevent further complications, and preserve renal function. Endoscopic methods, such as retrograde intrarenal surgery (RIRS) or PCNL, are usually preferred for removing forgotten stents [6]. RIRS allows for direct visualization and removal of the stent through a flexible scope inserted through the urethra and bladder. PCNL involves puncturing the kidney and inserting a guidewire through the nephrostomy tract to extract the stent. Both techniques have advantages and disadvantages, and the choice between them depends on factors such as stent loca-



Fig. 5 – CT Maximum intensity projection (MIP) of the KUB region demonstrates a broken DJ stent.

tion, size, and patient comorbidities [6]. Open surgery may be necessary if endoscopic approaches fail or are contraindicated [5]. In addition to retention, DJ stents can also break during insertion or removal, leading to fragmentation and lodging of stent parts in the ureter or kidney. Broken stents pose additional challenges and require specialized techniques for retrieval. One method involves using stone retrieval basket to grasp and extract the stent fragments through an endoscope. Alternatively, interventional radiologists may employ image-guided techniques, such as fluoroscopy and contrast injection, to locate and retrieve the broken pieces [7].

Conclusion

Retained and broken double-J stents can lead to significant morbidity and compromise renal function if left untreated. Clinicians should be aware of the risk factors, clinical presentation, and diagnostic modalities to provide timely and appropriate care. Endoscopic methods are often successful in removing forgotten stents, while open surgery or special-

ized techniques may be required for broken stents. Emphasizing patient education and ensuring proper follow-up can reduce the likelihood of complications associated with DJ stents. Further studies could focus on developing new materials or designs for stents that minimize the risk of retention or breakage.

Patient consent

We confirm that we have taken written informed consent from the patient himself and have been given approval for the information to be published as a case report.

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