



ORIGINAL RESEARCH PAPER

General Surgery

CASE SERIES OVER RETAINED IATROGENIC FOREIGN BODIES IN THE URINARY TRACT ACTING AS NIDUS FOR SECONDARY CALCULUS FORMATION - A RARE COMPLICATION

KEY WORDS: Retained iatrogenic foreign body, Secondary calculus formation, Foley catheter fragment, Double-J stent encrustation, Forgotten ureteral stent, Urinary tract foreign body, Cystoscopic removal, Chronic kidney disease.

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INTRODUCTION

Retained iatrogenic foreign bodies in the urinary tract, though rare, represent a significant source of morbidity. These objects, including fragments of urinary catheters and indwelling Double-J (DJ) stents, frequently act as a nidus for the formation of urinary calculi (stones) over time [1, 3]. The process involves local inflammation, urinary stasis, and often colonization by urease-splitting bacteria (e.g., *Proteus*) which accelerate the precipitation of salts like struvite and calcium phosphate [1, 4]. This case series highlights three distinct iatrogenic complications-retained Foley's catheter tip and neglected DJ stents-all resulting in secondary calculus formation, and emphasizes the critical need for post-procedural vigilance.

AIMS AND OBJECTIVES

The primary aim of this case series is to describe the varying clinical manifestations and management challenges associated with different types of retained iatrogenic foreign bodies in the urinary tract that lead to secondary calculus formation. The objective is to highlight the high risk of severe complications, such as irreversible renal injury, associated with long-term retention and the importance of timely endoscopic or surgical intervention.

METHODOLOGY

Study Design, Setting, and Sample Size

This was a retrospective case series of three patients (two male, one female) managed in the Department of General Surgery, New Civil Hospital, Surat, over a defined period.

METHODOLOGY

Clinical data, including patient demographics, presenting complaints, past history, laboratory reports (Hb, Creatinine), radiological findings (X-Ray KUB, USG, CT KUB), operative notes, and outcomes, were analyzed from the official discharge summaries and hospital records. Management modalities, spanning endoscopic removal to conservative care, were reviewed.

RESULTS

Three cases of iatrogenic foreign body-induced calculus formation were treated:

Case 1: Retained Foley's Catheter Tip

- Patient: 30-year-old male with a history of multiple prior urethral catheterizations.
- Presentation: Dysuria and burning micturition for two months.
- Key Findings CT KUB revealed a tubular mobile hypodense structure with a central
- hypodense area in the urinary bladder, considered a bladder calculus or foreign body with secondary calculus formation. USG showed an approximately 18mm mobile calculus.
- Management & Outcome: Successful cystoscopic-guided foreign body removal revealed a retained approx. 1 cm X 0.5 cm Foley's catheter tip acting as the stone nidus. This is

consistent with successful endoscopic management reported in the literature [2, 4].



Case 2: Neglected, Heavily Encrusted DJ Stent

- Patient: 60-year-old male
- Presentation: Chronic Kidney Disease (CKD) with right-sided non-functioning calcified DJ stent, presenting with burning micturition, abdominal pain, and vomiting.
- Key Findings: X-ray KUB showed a calcified DJ stent on the right side. USG revealed a right-sided non-functioning kidney with gross hydronephrosis and multiple renal calculi, indicating massive encrustation and obstruction.



- Management & Outcome: The patient required chronic care, including hemodialysis for CKD. Due to the stent becoming stiff from heavy encrustation and high stone burden, successful endoscopic removal was not feasible, and the stent was left *in situ*. This scenario illustrates the severe, life-long morbidity of a neglected stent, mirroring cases of irreversible kidney injury reported elsewhere [1].

Case 3: Calcific Deposits on DJ Stent

- Patient: 26-year-old female who was lost to follow-up after right open pyeloplasty.
- Presentation: Presented for delayed DJ stent removal.
- Key Findings: X-ray KUB showed the DJ stent *in situ*.



- Management & Outcome: Successful cystoscopic DJ stent removal [9]. Intraoperatively, a visible layer of calcific deposits over the stent was observed upon removal, confirming encrustation due to prolonged indwelling time, a known risk factor [5].

DISCUSSION

The complications observed across these three cases underscore the complex morbidity arising from iatrogenic foreign bodies.

Case 1 serves as a classic example of how a retained catheter fragment acts as a nidus, leading to calculus formation, but was manageable with minimally invasive techniques [2].

Cases 2 and 3 highlight the complication spectrum of indwelling DJ stents. While Case 3 had manageable encrustation, the severity of Case 2 demonstrates a neglected stent complication, a major challenge in urological practice [5]. Long-term indwelling time, patient non-compliance, and the presence of infection contributed to the massive calcification and stiffness of the stent in Case 2, leading to ureteral avulsion risk and the need to leave the stent *in situ*—a scenario leading to increased morbidity, including chronic renal failure, as emphasized in the literature [1, 6]. The necessity of open or multi-modal endoscopic approaches (PCNL, open surgery) for severely encrusted forgotten stents is well documented, confirming the complexity noted in Case 2 [6].

CONCLUSION

This case series underscores the grave risk associated with retained iatrogenic foreign bodies in the urinary tract, which frequently serve as a nidus for secondary calculus formation. While Case 1 and 3 were successfully managed endoscopically by removing the catheter tip and the calcified stent, respectively, the negligence in Case 2 resulted in a heavily encrusted stent that could not be removed, leading to severe chronic morbidity and the need for long-term dialysis.

Post-procedure vigilance and ensuring the timely and complete removal of all surgical adjuncts are essential preventive measures to avoid such severe complications. Prompt imaging and timely management can prevent chronic morbidity.

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