# Case Report

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# A very atypical case report of urothelium encasing a double- J ureteral stent in a post-operative case of percutaneous nephrolithotripsy

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#### **ABSTRACT**

Double- J stent or ureteral stent is a commonly used prosthesis in post-operative cases of various urologic surgeries for adequate drainage of urine and also helps in passage of small and residual stones. This is a case report of a 32 year old female who came for follow-up for DJ stent removal after a successful and uneventful PCNL procedure. On cystoscopic examination the ureteral stent was found completely coated with urothelium. The urothelium was incised and ureteral stent removed.

Keywords: PCNL, Urothelium

#### INTRODUCTION

A percutaneous nephrolithotripsy is a minimally invasive procedure and preferred treatment of choice by urologists in removal of renal calculi. DJ stenting or a Double-J ureteral stenting is done after removal of stones in standard PCNL procedures. Indwelling stents provide adequate urinary drainage and also eliminate any urinary leakage after removal of nephrostomy tube.1

The widespread increase in the use of ureteral stents corresponded to increased complications usually mechanical.<sup>2</sup> The postoperative cloaking of the ureteral stent by the bladder epithelial lining or urothelium is extremely rare. We are hence delineating a case report of urothelium covered DJ- stent encountered during a stent removal procedure.

#### **CASE REPORT**

A 32-year-old female presented in the urology department with left flank pain and urinary complaints of dysuria and episodic haematuria. On local physical examination, she was found to have tenderness in left lumbar region. General examination and metabolic evaluation was normal. An intravenous urogram revealed a 2cm impacted calculus in the pelvis with gross hydronephrosis. She underwent left sided percutaneous nephrolithotripsy. Complete stone clearance achieved via inferior calyceal puncture and subsequent pneumatic lithotripsy. Antegrade stenting was performed and patient was discharged in stable condition. The patient presented after 2 weeks for ureteral stent removal under local anesthesia where no stent was found. Repeat X-Ray KUB showed DJ stent in situ; subsequently

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patient was subjected to stent removal under anaesthesia. On cystoscopic examination under spinal anaesthesia the stent was found to be completely covered by bladder urothelium and could not be visualized. The overriding urothelium was then incised using a Collin's knife and the ureteral stent was hence removed intact.



Figure 1: Unveiled stent after urothelium incision.



Figure 2: Incised urothelium using collin's knife



Figure 3: Indwelling ureteral stent with embossed urothelium.

## **DISCUSSION**

Renal calculi or nephrolithiasis has a 1%-5% incidence in South Asian countries.<sup>3</sup> Nephrolithiasis has predominance in males than females.<sup>4</sup> The basic pathophysiological factors in calculi formation include increased urinary concentration of lithogenic solutions,

volume depletion, urinary stasis, hypercalcaeuria and dietary factors (high protein diet).<sup>5,6</sup> The treatment modality for renal calculi can be a minimally invasive percutaneous nephrolithotripsy or a retrograde intrarenal surgery. A systemic and meta-analytic study revealed PCNL as a gold standard procedure for renal calculi removal with a higher stone free rate and decreased hospital stay in comparison to RIRS for stones >1.5 cms. Ureteral stenting is preferred as a precautionary measure in various retroperitoneal and urologic surgeries for maintaining ureteral patency, preventing ureteral stricture and obliteration of ureter by fragmented calculi by maintaining a dilated ureter. 7,8 Post operatively a ureteral or DJ stent is preferably removed between 2-3 weeks in lieu of various anticipated complications with long term side effects of keeping a stent. These complications usually range from mild discomfort, loin pain, mild haematuria to grave ones such as urinary tract infection, stent malposition or migration from initial placement, encrustation or lumen obliteration and rarely fracture of the stent. The complication encountered in this case of urothelium completely covering the ureteral stent is extremely rare.<sup>2</sup> This formation of the urothelium over the stent could be an immune response to the foreign body (stent). The stent materials could be responsible for this reaction; commonly used polymers for self-retained stents are thermoplastic materials such as polyurethranes, and thermoset elastomers such as silicone and hydrogels. Polyurethrane stents have better drainage capacity whereas the biocompatibility of silicone is better which could all be factors responsible for such an inflammatory response by the bladder epithelium.9 It has also been contemplated in certain studies that heparin coated double-J stents though rarely used prevents or reduces encrustation, inflammatory response and increases stability.<sup>10</sup> The urothelium or epithelial lining surface of the urinary bladder has high plasticity and various cellular functions which include creating an interface between pathogens and defence mechanisms, hence controlling permeability and immune responses.<sup>11</sup> Reactive proliferative changes with formation of nests of cytologically benign urothelium (von brunn's nests) due to reaction to the stent material could be a contributing factor to this pathology. 12 Metaplastic changes could also be contributory due to the influx of mast cell effector cells to stent and progressing fibrosis and inflammation by acting as immune system modulating cells.<sup>13</sup>

# CONCLUSION

Hence the presence of overlying urothelium on the ureteral stent could be an inflammatory proliferative immune response of the bladder epithelial lining to the stent material. The treatment employed in such a case is incision of urothelium with removal of stent and follow-up.

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