



## Spontaneous Dissolution Mid-Shaft of a Double-J Ureteric Stent

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Submitted March 3, 2013 - Accepted for Publication September 5, 2013

### ABSTRACT

A vanishing shaft of a double-J ureteric stent is a rare complication of a “forgotten” ureteric stent. A retained “forgotten” ureteric stent is not only disastrous for the patient but also comes with severe medicolegal implications for the treating urologist. Herein we report such a case with its subsequent management.

### INTRODUCTION

Polyurethane double-J stents are widely used in modern urological practice. “Forgotten” indwelling stents can result in complications such as encrustation, pyelonephritis, recurrent obstruction, stent migration, and breakage, but the disappearance of the ureteric part of the stent is very rare. We present such a case of forgotten indwelling stent with spontaneous dissolution mid-shaft, and its management.

### CASE HISTORY

A 43-year-old male presented with complaints of lower urinary tract symptoms; predominantly frequency and dysuria. He had a past history of right open ureterolithotomy 13 years back and was subsequently lost for follow-up. His renal biochemical parameters were normal. Urinalysis showed pyuria and microscopic hematuria. A urine culture showed proteus growth. An ultrasound showed a normal left kidney/ureter with right renal pelvic and bladder calculi without any hydronephrosis. On a kidney, ureter, and bladder X-ray (KUB) (Figure 1) there was the appearance of the upper and lower part of an indwelling ureteral stent in the right renal pelvis and bladder area with stone formation, and an absence of any shadow in the ureteric area. On intravenous urography, the bilateral renal units functioned normally. Computed tomography, though relevant, was not done. Culture specific antibiotics were

administered. The lower fragment of the stent was removed by cystolithotripsy, and the upper fragment of the stent was removed by right-sided percutaneous nephrolithotomy (PCNL). No nephrostomy tube was placed but a new ureteral stent was given, which was removed after 3 weeks. Postoperative recovery was uneventful.

### DISCUSSION

Forgotten ureteral stents are observed in urologic practice because of poor compliance by the patient or failure of the physician to adequately counsel the patient. Though encrustation and breakage of a stent is commonly reported, disappearance mid-shaft is rarely reported [1]. On a literature search, only 1 such case has been reported to date [1]. El-Faqih and colleagues demonstrated that the rate of complication for polyurethane stents indwelling for less than 6 weeks was 9.6%, whereas the rate increased to 47.5% for stents left for 6 to 12 weeks, and even increased to 76.3% for stents left more than 12 weeks [2]. Kumar and colleagues supported the findings. They found that stents had fragmented into multiple pieces over a mean indwelling time of only 14 weeks [3].

Various mechanisms have been proposed to explain ureteral stent fragmentation. When the stent is exposed to different factors in the urine and the urothelium for a long time, it may lead to a loss of strength, elasticity, and flexibility of

**KEYWORDS:** DJ stent, forgotten

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**CITATION:** *UroToday Int J.* 2013 October;6(5):art 56. <http://dx.doi.org/10.3834/uij.1944-5784.2013.10.03>

the stent [3], and the degradation of stent polymers leads to loss of tensile strength and hardening of the stent. The tensile elongation (maximal elongation at the break point), known to be a sensitive indicator of the aging process of plastic materials, has been shown to diminish with prolonged deployment. In most cases of fractured stents, many leukocytes in the urine with or without infection were identified; this leads to depolymerization of biomaterials [4]. Polyurethane stents are especially prone to encrustation; this may be due to their higher tensile strength that contributes to their rigidity, which may encourage stasis with periluminal and endoluminal encrustation [5]. Encrustations are often composed of calcium oxalate, which is enhanced by rough surfaces, catheter holes, and edges (major characteristics of polyurethane stents) [5]. Due to encrustations, both ends of the stent may retain in situ and the central shaft may be degraded and may vanish due to a hostile urine environment caused by infections [1]. Irrespective of the material, with the passage of time, all stents are prone to ageing due to encrustation and the loss of tensile strength, resulting in stent fracture, breakage, and even stenturia [6]. Inspection of such stents has shown that these fracture lines generally pass across the stent side holes [3]. Ureteric peristaltic movement, resulting in mid-shaft vanishing with retained upper and lower ends, may enhance spontaneous dissolution of the mid-shaft.

In our case, the upper fragment was removed via PCNL, and the lower fragment was removed via a cystourethroscopic approach. Great care should be taken to prevent any urethral trauma while removing an encrusted, calcified fragment. If a periurethral approach is considered unsafe, then one should not hesitate to perform percutaneous cystoscopic removal of the fragment.

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Figure 1. Plain X-ray KUB showing the upper and lower fragments.

