

# Management of A Retained Double-J Catheter with Severe Encrustations: A Case Report

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Ever since firstly reported by Zimskind and colleague in 1967,<sup>1</sup> double-J ureteral catheter ( DBJ ) has become one of the most commonly used treatment modalities for internal drainage after endourological procedures. It was proven an effective method for post-operative treatment of ureteral calculi, ureteral stricture, congenital anomaly, ureteral or retroperitoneal tumor, or iatrogenic ureteral injury.<sup>2</sup> However useful it may be, the complications of an indwelling DBJ should be always kept in mind. For example, retrograde migration, breakage, encrustations, stone formation, or occlusion may occur. A forgotten ureteral double-J stent usually resulted in encrustations or stone formations, and became a nightmare of the urologists. Here we reported a case of extremely long DBJ indwelling duration, which led to massive encrustations. After a serial managements, the DBJ was completely removed endourologically, and the patient recovered uneventfully. To avoid the morbidity of forgotten DBJ, some feasible and effective preventive methods must be established, such as patient registry system in hospitals. (JTUA 20:187-9, 2009)

*Key words:* Double-J stent (DBJ), encrustation, percutaneous nephrostomy (PCN).

## CASE REPORT

A 55-year-old woman complaint of right flank pain for one month and consulted our nephrological clinic. She had received total hysterectomy about 7 years ago at another hospital, and the operation was complicated with right ureteral injury. Right ureter reimplantation was performed at that time, and a right DBJ was left behind. However, the patient was lost to follow-up after the operation. At our nephrological clinic, renal ultrasound showed marked right hydronephrosis, with an encrusted DBJ stent (Fig. 1A). Moderate left hydronephrosis (Fig. 1B) and bladder stone around the DBJ sent were also noted. KUB showed a right DBJ with huge stone burdens in right kidney and bladder, without obvious right ureteral encrustation(Fig. 2A). Huge bladder stone seemed to obstruct left ureter orifice, which resulted in left hydronephrosis.

The patient suffered from high fever (up to 39°C) and severe right flank pain at the arrival. Under the impression of right pyonephrosis, right pig-tail percutaneous nephrostomy (PCN) drainage was done, and yielded

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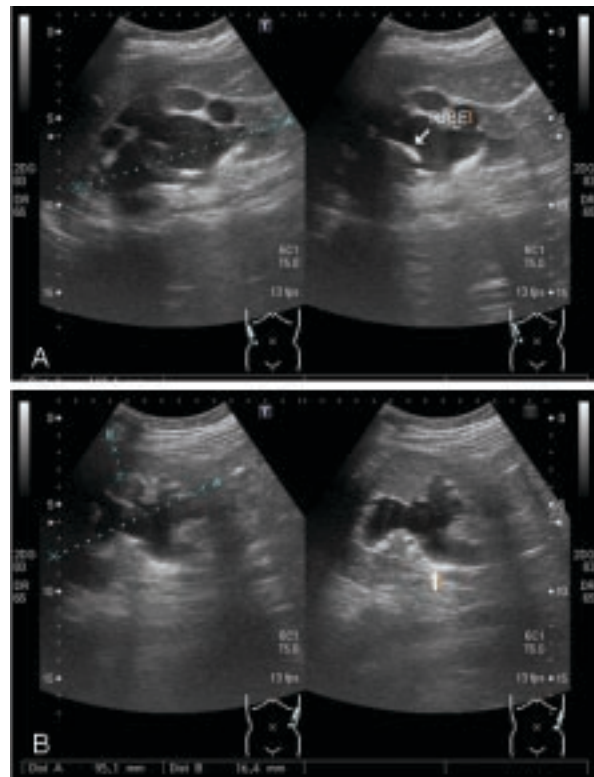


Fig. 1. (A) Marked right hydronephrosis with DBJ encrustations. (B) Moderate left hydronephrosis.

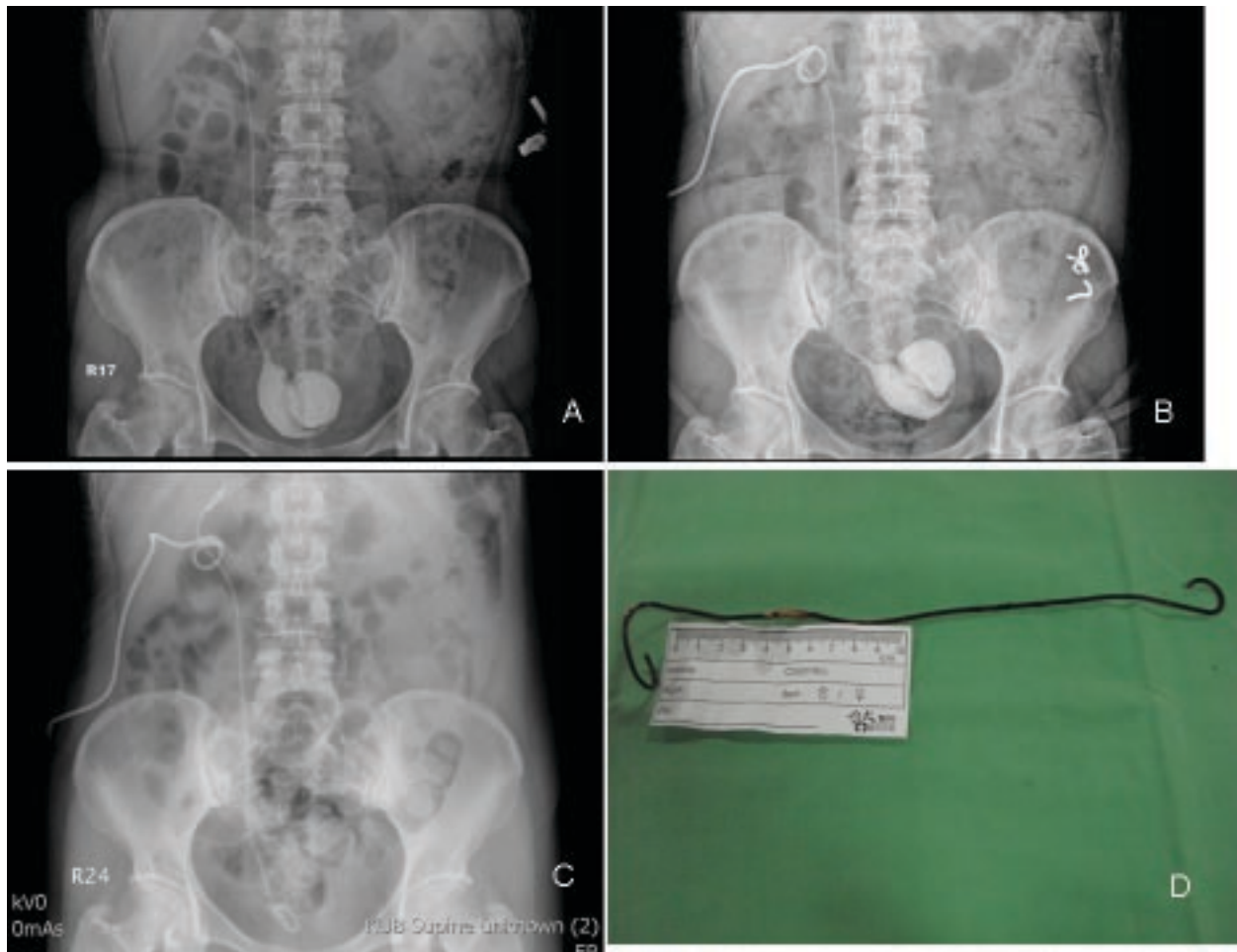


Fig.2. (A) Retained right DBJ with right renal and bladder stones. (B) KUB after ESWL for right renal encrustations. (C) KUB after cystolithotripsy and right DBJ replacement. (D) Endourologically removed right DBJ catheter

pus-like fluid. Fever and flank pain subsided much after PCN drainage. Then, we performed right extracorporeal shock wave lithotripsy (ESWL) for right renal stones, which resulted in satisfactory stone fragmentation (Fig. 2B).

Two weeks later, we underwent cystolithotripsy with a lithoclast and Holmium laser. Massive bladder stone fragments and the retained right DBJ were removed smoothly (Fig. 2D). Then we performed ureteroscopy to examine whole right ureter, and smooth ureteral mucosa was noted. Finally, we indwelled a new right DBJ stent, and the follow-up KUB (Fig. 2C) showed a stone-free status and proper position of DBJ.

No significant complication was noted, and the patient stood all the endourological procedures well. We removed right PCN two days after DBJ replacement, and reminded the patient to return to our out-patient clinic for DBJ removal.

## DISCUSSION

Although DBJ has been refined for improved durability in recent years, encrustation remains one of the most important side effects. Encrustations of retained DBJ, which mostly frequently noted in forgotten retained DBJ, occur in more and more patients as indwelling duration prolonged. In El-Fiqih's study,<sup>3</sup> encrustation rate was only 9.2% if DBJ was removed within 6 weeks. However, if a DBJ was left over for 12 weeks, 76.3% of the patients developed encrustation.

The component and risk factors of encrustation have been ever reviewed. Calcium oxalate (43.8%), especially monohydrate form, constitutes most of the encrustation.<sup>4</sup> Besides, silicone DBJ is found with significantly less incidence of encrustation than polyurethane stents.<sup>4,5</sup> However, extension of indwelling time would eliminate this difference. Other risk factors includes lithogenic

history, and urinary tract infection.<sup>6</sup> Besides, pregnancy does not seem to induce significant encrustation predisposition.

Therefore, poor compliance is the most important risk factor of DBJ encrustation.<sup>2</sup> It would be better to prevent, rather than to struggle in removing forgotten DBJ with severe encrustation. Some feasible methods have ever been proposed, including computerized registry system to track the patient.<sup>4</sup> Besides, distal traction suture attained to a DBJ, or using a ureteral catheter instead was ever suggested.<sup>2</sup> Biodegradable DBJ may have a role in this problem, but qualified commercial DBJ stenting in human being is till unavailable.<sup>7,8</sup> Urologic surgeons have to remind these patients, who necessitate DBJ stents indwelling, of the potential morbidities of forgotten DBJ. Some individualized and practical systems should be established in ward and outpatient clinic.

We reported one case of extremely forgotten DBJ stent, which was indicated initially after ureteral reimplantation. After serial endourologic procedure, the encrusted DBJ was removed smoothly with complication. After this case, we employed routine documents to inform patients with DBJ stents. All of these patients would be enrolled in our computer system. If patients lost follow-up, we contacted with them by phone to avoid forgotten DBJ. The long-term effectiveness would be further evaluated.

Serial urologic procedures were often practiced to remove the severe encrusted DBJ stent, and careful strategies should be established at first. The methodology depended on clinical status, and often comprised ESWL, ureteroscopy, cystolithotripsy, and even percutaneous nephrolithotomy (PCNL).<sup>2,6</sup> In our patient, we performed PCN drainage first to eliminate pyonephrosis. Then, ESWL and cystolithotripsy with Holmium laser were employed to break down the encrustations. The DBJ was removed then smoothly thereafter.

In encrusted DBJ, there was reported residual function of the affected kidney, and possible function recovery after DBJ removal could be expected.<sup>9</sup> After serial urologic procedures, we achieved similar clinical improvement in this patient. To the patients, a written and oral warnings of an installed DBJ cannot be over emphasized.

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