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A Cerebral Palsy Patient with a Fractured Double J Stent: Case Report

Kopmuş Double J Stenti Olan Serebral Palsili Hasta: Olgu Sunumu

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Abstract

Double-J (DJ) ureteral stents are frequently used in urology to ensure urinary drainage. However, prolonged indwelling time may lead to serious complications such as infection, encrustation, and stent fracture. In this case report, we present the successful endourological management of a severely encrusted and fractured DJ stent in a patient with cerebral palsy.

Keywords: cerebral palsy, ureteral stent, complication

Özet

Double-J (DJ) üreteral stentler, üriner drenaj sağlamak amacıyla ürolojide sıklıkla kullanılmaktadır. Ancak uzun süre vücutta kalmaları durumunda enfeksiyon, enkrüstasyon ve kopma gibi ciddi komplikasyonlara neden olabilir. Bu olgu sunumunda, serebral palsili bir hastada uzun süreli unutulmuş, ciddi şekilde enkruste olmuş ve distal ucu kopmuş DJ stentin endoürolojik yöntemle başarılı şekilde çıkarılması sunulmuştur.

Anahtar kelimeler: serebral palsi, üreteral stent, komplikasyon

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Introduction

Double-J (DJ) stents are essential tools in various urological procedures [1]. With the increasing frequency of DJ stent use, stent-related morbidities have become more prevalent. In the short term, complications such as pain, irritation, infection, and hematuria may occur. In the long term, serious complications including encrustation, urolithiasis, stent migration, fracture, renal damage, and even death have been reported [2]. DJ stents may require removal through extracorporeal shock wave lithotripsy (ESWL), cystolithotripsy, laser lithotripsy, percutaneous nephrolithotomy (PNL), open surgery, or combinations of these approaches [3].

Cerebral palsy (CP) is a neurological disorder affecting motor function and is frequently associated with urological complications, particularly lower urinary tract dysfunction [4]. The management of urolithiasis in patients with CP is often challenging due to physical disabilities, anatomical variations, and accompanying comorbidities [5].

Fractured DJ stents are rare clinical occurrences. In this case report, we present the endourological management and single-session removal of a severely encrusted DJ stent that remained in situ for approximately 2.5 years.

Case

A 46-year-old male patient with a known diagnosis of cerebral palsy presented with complaints of nausea, vomiting, and right flank pain. His medical history revealed a urological intervention performed approximately 2.5 years earlier for a 1.5 cm right renal pelvic stone, during which a DJ ureteral stent was placed. The patient was under follow-up with diapers due to neurogenic overactive bladder.

On physical examination, right costovertebral angle tenderness was noted; the remaining systemic findings were unremarkable. Laboratory investigations including complete blood count, serum electrolytes, and renal function tests were within normal limits. Urine culture yielded growth of Pseudomonas aeruginosa.

Plain abdominal radiography and computed tomography revealed a DJ stent with severe encrustation at the proximal end and a fractured, encrusted distal segment (**Figure 1**). Intravenous antibiotic therapy was initiated. After one week of treatment, follow-up urine culture showed no bacterial growth.

Intervention

The procedure was initiated under general anesthesia with the patient positioned in the Galdakao-modified supine Valdivia position (**Figure 2**). A 17 Fr rigid cystoscope was advanced into the bladder, where the distal tip of the DJ stent was observed to be entirely encrusted with stone material. Laser lithotripsy was performed around the distal stent fragment using a thulium fiber laser (Soltive Premium, Olympus, Hamburg, Germany), allowing for successful extraction of the distal stent segment.

Subsequently, a 7 Fr semirigid ureteroscope was introduced into the right ureter. Encrustation was noted along the ureteral portion of the stent (**Figure 3**). Lithotripsy was again applied using the thulium fiber laser; however, the proximal tip of the stent was found to be heavily calcified and could not be mobilized.

Given the extensive encrustation of the proximal segment, a decision was made to proceed with endoscopic combined ıntrarenal surgery (ECIRS). A conventional PNL was performed

Figure 1. Fractured DJ stent on KUB

Figure 2. Galdakao-modified supine Valdivia position

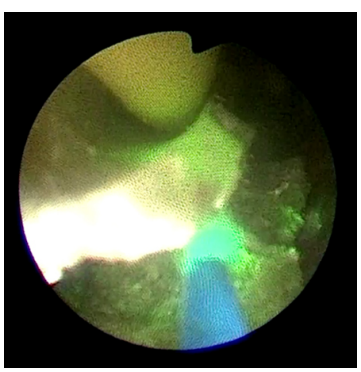

Figure 3. Encrusted DJ stent at ureteroscopy

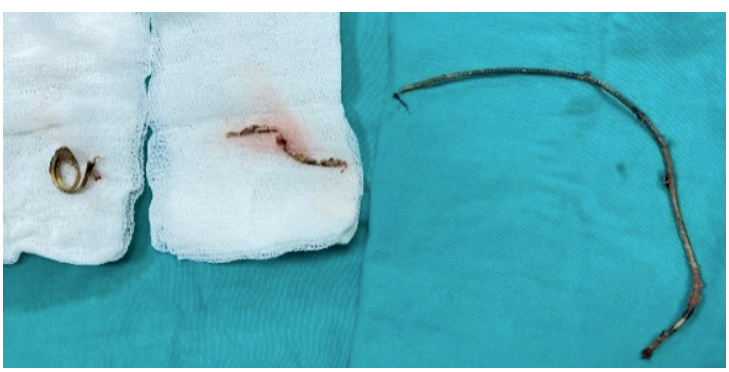

Figure 4. Postoperative fractured DJ stent

on the right side, with tract dilation up to 30 Fr using a balloon dilator. The stent was successfully extracted in three separate fragments (**Figure 4**). ECIRS provided a comprehensive approach by enabling simultaneous access to both the upper and lower urinary tracts, and was considered the optimal strategy in this complex case.

A new DJ stent was inserted at the conclusion of the procedure. The postoperative course was uneventful, and the patient was discharged on postoperative day 3 following completion of intravenous antibiotic therapy. Complete stone clearance was confirmed, and the newly placed DJ stent was removed two weeks later via cystoscopic intervention.

Discussion

CP refers to a heterogeneous group of non-progressive disorders that affect movement and posture development, lead to activity limitations, and result from injuries to the developing fetal or infant brain [6].

It is estimated that more than one-third of individuals with CP develop neurogenic lower urinary tract dysfunction (NLUTD), which may manifest clinically as urinary incontinence, urinary retention, recurrent urinary tract infections, and particularly urolithiasis [7].

Although a direct causal relationship between detrusor overactivity and stone formation has not been fully established, incomplete bladder emptying and recurrent infections may contribute to crystal aggregation and an increased risk of stone formation [8].

NLUTD is recognized as a significant risk factor for bladder stone formation [9]. Due to the underlying neurological impairment, these patients face greater diagnostic and therapeutic challenges in the management of urinary stone disease compared to the general population. Furthermore, bladder stones in patients with NLUTD tend to recur more frequently and are associated with increased morbidity [10].

Encrusted and calcified DJ ureteral stents represent a significant urological challenge for both patients and treating physicians. When not intentionally left in situ for extended durations by the clinician, DJ stents retained for more than 3 to 6 months are classified as "forgotten stents" [11]. Although there is no universally accepted guideline regarding the optimal timing for stent exchange or removal, El-Faqih et al. demonstrated a notable increase in encrustation rates in parallel with the duration of indwelling: 9.2% for less than 6 weeks, 47.5% for 6–12 weeks, and 76.3% beyond 12 weeks [12].

Prolonged stent retention is associated with major complications, including urinary tract infections, migration, stone encrustation, and multiple stent fractures. Ülker et al. showed that forgotten DJ stents can be safely and effectively managed through endourological techniques in a single session. Technological advancements and the miniaturization of endoscopic instruments have further facilitated the treatment of severely calcified and complex stents via minimally invasive approaches [13]. In the present case, the forgotten and heavily encrusted DJ stent was successfully removed endoscopically in a single session using the ECIRS technique. Despite the availability of various endourological treatment modalities, prevention of stent encrustation remains the most effective strategy.

In this context, biodegradable ureteral stents have been proposed as an ideal option for providing temporary urinary drainage without the need for subsequent removal or follow-up [14]. Ongoing research continues to explore the potential of biodegradable materials in preventing forgotten stents and associated complications without necessitating additional surgical interventions [15].

Conclusion

Forgotten and encrusted DJ stents can lead to serious complications, especially in patients with neurogenic lower urinary tract dysfunction. This case demonstrates that ECIRS allows for safe and effective single-session removal of such stents. However, prevention remains the most effective strategy. Biodegradable stents offer a promising solution to eliminate this clinical problem.

Ethics Committee Approval: N/A
Informed Consent: The patient's legal guardian was informed of the study's purpose, and written informed consent was obtained for the publication of this case report and its associated medical images. The patient's identity has been protected, and no personal identifiers are disclosed.
Publication: The results of the study were not published in full or in part in form of abstracts.
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