CASE REPORT

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Travel Story of the Double-J Stent in the Patient

Double-J Stentin Hastadaki Seyahat Hikayesi

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ABSTRACT

A ureteric JJ stent is an essential therapeutic tool for urology. JJ stent migration, which is an essential complication, may be limited to the ureter or may cause pelvis/ureter perforation, intra-abdominal solid organ injuries, hematoma, and even life-threatening sepsis. A 33-year-old male patient had stage 3 hydronephrosis and 1.5 cm calculi in the proximal right ureter. During surgery, optimal visualization could not be achieved because of edema. 4.8 Fr 26 cm JJ stent was inserted and checked by scope. On postoperative day 1, plain urinary system radiographs (DUSG) showed that the distal part of the JJ stent was mobilized to the ureter and pulled back into place during reoperation. DUSG taken on postoperative day 1 of reoperation showed that the distal end of the JJ stent migrated to the ureter again. He was given symptomatic treatment, and the JJ stent was planned to be removed after 3 weeks. Postoperative third-week DUSG showed that the JJ stent had migrated entirely to the renal pelvis. He was operated on; calculi was broken with a laser lithotripter, and a new 4.8 Fr 26 cm JJ stent was inserted and checked by scope. The JJ stent did not migrate in the DUSG taken 3 weeks after the last operation of the patient. The best way to avoid JJ stent complications is to avoid unnecessary stent placement. The patient's symptoms and complications should be considered when JJ stents are inserted. We found that a large calculus implanted in the ureter and hydronephrosis facilitated proximal migration of the JJ stent. The patient's JJ stent should be checked postoperatively.

Keywords: DJ, stent, ureter, calculi, migration

ÖZ

Üreter JJ stenti üroloji için önemli bir tedavi aracıdır. Temel komplikasyonlardan biri olan JJ stent migrasyonu üreter ile sınırlı olabileceği gibi pelvis/üreter perforasyonuna, karın içi solit organ yaralanmalarına, hematoma ve hatta hayatı tehdit eden sepsise neden olabilir. Otuz üç yaş erkek hasta evre-3 hidronefroz ve sağ üreter proksimalinde 1,5 cm'lik taş ile üroloji polikliniğine başvurdu. Opere edilen hastada ödem nedeniyle optimal görüntü sağlanamadı. Hastaya 4,8 Fr 26 cm JJ stent takıldı ve skopiyle kontrol edildi. Postoperatif 1. günde çekilen direkt üriner sistem grafisinde (DÜSG) JJ stentin distal kısmının üretere mobilize olduğu görüldü ve yeniden operasyonla yerine çekildi. Postoperatif 1. günde alınan DÜSG'de JJ stentin distal ucunun tekrar üretere migre olduğu görüldü. Ciddi semptomu olmayan hastaya semptomatik tedavi verilerek 3 hafta sonra JJ stent çekilmesi planlandı. Postoperatif 3. hafta çekilen DÜSG'de JJ stentin renal pelvise tamamen migre olduğu görüldü. Lazer ile taşı kırıldı ve tekrar 4,8 Fr 26 cm JJ stent takıldı. Skopiyle kontrol edildi. Son operasyondan 3 hafta sonra çekilen DÜSG'de JJ stent yerinde izlendi. JJ stent komplikasyonlarından korunmanın en iyi yolu gereksiz JJ stent takmamaktır. JJ stent takılan hastanın semptomlarına dikkat edilmeli ve olası komplikasyonlar akılda tutulmalıdır. İmpakte büyük taş ve hidronefroz varlığı JJ stentin proksimal migrasyonunu kolaylaştırdığını gördük. Hastanın JJ stenti postoperatif dönemde kontrol edilmelidir.

Anahtar Kelimeler: DJ, stent, üreter, kalkül, migrasyon

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Introduction

Symptomatic or asymptomatic ureteral calculi can affect renal function and cause obstructive neuropathies, such as hydronephrosis.

Medical expulsive therapy, shock wave lithotripsy and flexible-semirigid ureterorenoscopy are among the treatment options.

A ureteric JJ stent is one of the essential therapeutic tools of urology used in open ureteral surgeries, ureteral stricture, and surgical treatment of renal or ureteral calculi (1). JJ stent insertion is frequently preferred because it is a safe and minimally invasive option. However, it may also cause complications. JJ stent migration, which is one of them, is a significant complication that may be limited within the ureter or may cause pelvis/ureter perforation, intra-abdominal solid organ injuries, hematoma, and even life-threatening sepsis (2).

Case Report

After obtaining the patient's consent, we decided to share this case report.

A 33-year-old male patient was admitted to the urology outpatient clinic with complaints of frequent urination, incomplete emptying, and decreased urine pressure for 2-3 months. He also had a gunshot wound to the left groin 1 week ago, and ultrasonography revealed stage 3 hydronephrosis in the right kidney. His medical history included 15 pack years of smoking, hypertension, and a left groin operation due to SCI, and his family history was unremarkable.

A non-contrast abdominal computed tomography (CT) scan showed stage 3 hydronephrosis in the right kidney and a 1.5 cm calculi image in the proximal right ureter (Figure 1A). Endoscopic ureteral calculi treatment was planned, and intravenous pyelography (IVP) was performed preoperatively. IVP showed dilatation of the right renal pelvic structures and opaque calculi in the proximal ureter, but no passage of contrast medium through the ureter was observed at 60 min (Figure 1B).

During the operation, optimal visualization could not be achieved due to edema, and a 4.6 Fr 26 cm JJ stent was inserted and checked by scopy, and the operation was terminated after it was found to be in place. On postoperative day 1, plain urinary system radiograph (DUSG) showed that the lower end of the JJ stent was mobilized into the ureter (Figure 2). The patient had irritative symptoms such as renal colic, pain in the groin, and frequent urinary sensations, and the operation was planned again. When ureterorenoscopy was performed under anesthesia, it was seen that the JJ stent had migrated to the middle ureter, and the distal end of the JJ stent was grasped with the help of a grasper and pulled up to the bladder. The JJ stent was found to be in place when checked with a scope.

Plain urinary system radiograms performed on postoperative day 1 of his reoperation showed that the distal end of the JJ stent had migrated into the ureter again (Figure 3A). On suspicion that the JJ stent was *in situ*, a non-contrast abdominal CT scan was performed, and it was observed that the proximal end was in the inferior renal calyx and the distal end was in the distal ureter (Figure 3B).

He was discharged with symptomatic treatment, and the JJ stent was planned to be removed after 3 weeks, and ureteral calculi lithotripsy was planned in the same session.

No hydronephrosis was observed on USG performed in the outpatient clinic after the first week postoperatively.

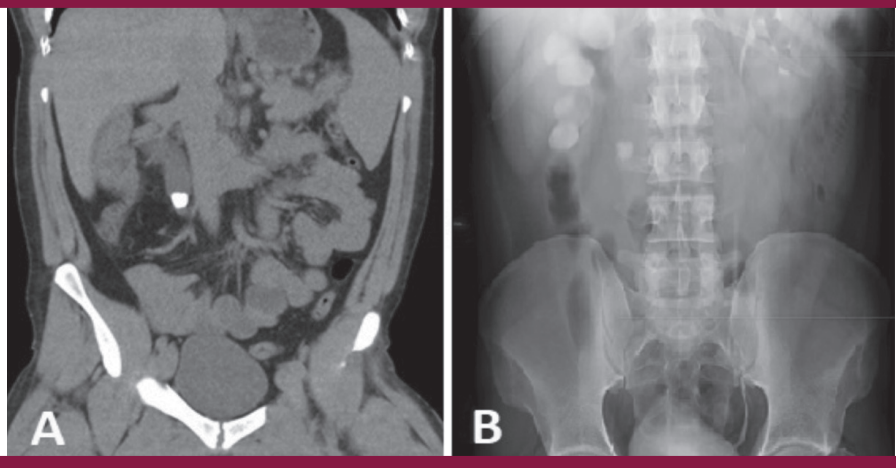

Figure 1. A) Preoperative non-contrast abdominal CT, **B)** Preoperative IVP 60th minute image
IVP: Intravenous pyelography, CT: Computed tomography

In the third week postoperatively, DUSG showed that the JJ stent had migrated entirely to the renal pelvis (Figure 4). The patient was operated on; the calculi was broken with a laser lithotripter, and a JJ stent was seen in the renal pelvis proximally. It was removed in one piece with a grasper. A new 4.6 Fr 26 cm JJ stent was inserted over the guide, checked by scope, and found to be in place.

Figure 2. Postoperative day 1 control DUSG
DUSG: Plain urinary system radiographs

When the patient had the JJ stent removed 3 weeks after the last operation, DUSG showed that the JJ stent did not migrate. The JJ stent was removed under local anesthesia (Figure 5).

Discussion

Ureteric JJ stent migration complications have been reported in up to 6% of the literature (3). However, while distal migration toward the bladder usually occurs, proximal migration occurred in our case, which is reported as a rare complication in the literature (4). According to the literature, our patient also had hydronephrosis with an impacted and large ureteral calculus, which are among the factors that increase stent migration (5).

According to the patient, short JJ stent length has also been shown to be among the factors that may increase migration; however, in our case, the stent length was determined according to the patient (6). In our case, the proximal end of the JJ stent was observed to be in the inferior calyx by the preoperative scope and postoperative DUSGs (Figures 3, 4). In their study on the factors affecting JJ stent migration, Slaton and Kropp (7) showed that localization of the proximal end in the calyces (especially in the upper calyx) instead of the renal pelvis increased the proximal migration of the JJ stent.

It has been reported in the literature that JJ stent migration may lead to severe injuries such as duodenal, rectal, and renal parenchymal injuries. However, our patient had no symptoms or findings other than renal colic (8,9,10).

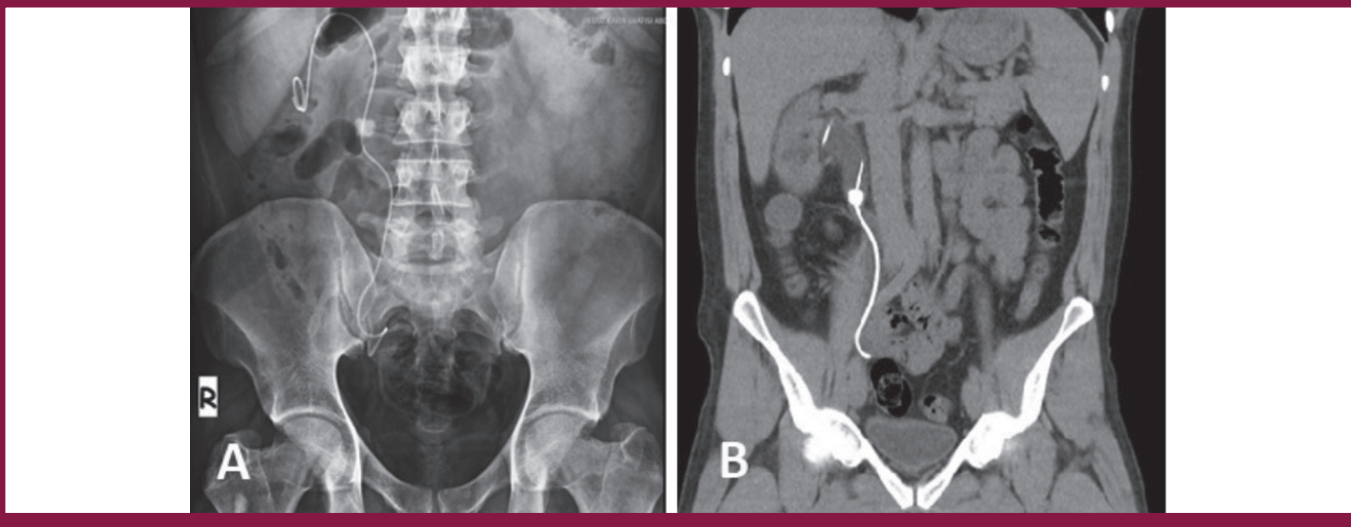

Figure 3. A). Control DUSG taken on the 1st postoperative day of the re-operated patient, **B)** Abdominal CT without contrast
CT: Computed tomography, DUSG: Plain urinary system radiographs

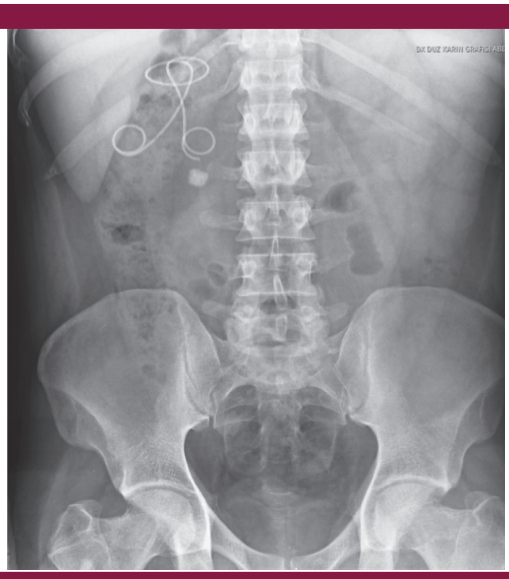

Figure 4. DUSG taken at the 3rd postoperative week
DUSG: Plain urinary system radiographs

Figure 5. Postoperative 3rd week control DUSG after lithotripsy
DUSG: Plain urinary system radiographs

Conclusion

Although JJ stent insertion is a method commonly used in urologic interventions, it may cause complications. The best way to avoid these complications is to avoid unnecessary JJ stent placement. However, complications should be considered in JJ stents placed in necessary cases according to the signs and symptoms of the patient. We found that the impaction of large calculi in the ureter and hydronephrosis facilitated the proximal migration of the JJ stent. The patient's JJ stent should be checked postoperatively before discharge.

Ethics

Informed Consent: After obtaining the patient's consent, we decided to share this case report.

Authorship Contributions

Surgical and Medical Practices: S.Y., Ö.Y., Concept: H.H., Y.E.K., Ö.Y., Design: S.Y., Y.E.K., Ö.Y., Data Collection or Processing: H.H., Y.E.K., Analysis or Interpretation: C.Y., Y.E.K., Ö.Y., Literature Search: S.Y., C.Y., H.H., Y.E.K., Ö.Y., Writing: S.Y., C.Y., Y.E.K.

Conflict of Interest: There are no conflicts of interest between the authors.

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