CLINCAL CASE

SPONTANEOUS RUPTURE OF DOUBLE J URETERAL STENT

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Abstract

The double J stent is widely used in urological endoscopic surgery with different indications (ureteral stenosis, ureteropelvic junction obstruction, retroperitoneal tumor or fibrosis) and can be a subject to multiple complications including migration, encrustation, stone formation and fragmentation which is a rare complication. We are reporting a rare case of a 42-years-old, followed for cervical cancer since 2018 revealed by an acute obstructive renal failure drained by a left double J ureteral stent (of long duration) and right percutaneous nephrostomy. The patient maintained the double J stent for 2 years. On clinical examination there was a lumbar tenderness on the left side and a hardened vaginal cervix on bimanual vaginal examination. The patient underwent a renovesical ultrasound showing a minimal left ureterohydronephrosis. The uroscanner with reconstruction revealed a fragmented double J stent on the left side.

Keywords*: spontaneous rupture, double J stent, etiopathogeny, management*

Introduction

The double J ureteral stent is generally placed to routinely bypass an obstacle including obstructive ureteral stones or to relieve ureteral obstruction due to an extrinsic etiology, ureteral stenosis, congenital abnormalities (ureteropelvic junction obstruction), retroperitoneal tumor or fibrosis. Stents are usually placed before some open abdominopelvic procedures in order to prevent ureteral injuries and to help to identify the ureters [1,2]. The double J stent can be a subject to multiple complications including spontaneous rupture in vivo which is a rare event, migration, infection, pyelonephritis, encrustation, and stone formation have been noted [3,4]. We are reporting a rare case of spontaneous double J ureteral stent rupture and discussing the predisposing factors of this rare complication according to the literature.

Case presentation

Mrs. S.M., 42 years old, mother of 4 children, followed for cervical cancer since 2018 revealed by an acute obstructive renal failure drained by a left double J ureteral stent (of long duration) and right percutaneous nephrostomy, with normalization of renal function within 3 days. In addition to this, the patient has received 23 sessions of radiotherapy and 4 sessions of chemotherapy. The patient maintained the double J stent for 2 years. On clinical examination, her vital signs were as following: heart rate: 89 beats per minute and regular; blood pressure: 12/70 mmHg; respiration: 18 per minute; and body temperature: 37.8°C. There was a lumbar tenderness on the left side and a

hardened vaginal cervix on bimanual vaginal examination. The patient underwent a renovesical ultrasound showing a minimal left ureterohydronephrosis. The uroscanner with reconstruction revealed a fragmented double J stent on the left side (Figure 1). The renal function was normal, the hemoglobin level was 10 g/dL and cytobacteriological examination revealed a sterile urine.

We took the patient to the operating room and the broken double J was removed by flexible ureteroscopy under visual control, the patient was under general anesthesia and postoperative follow-up was uneventful.

Figure 1 – A fragmented double J stent on the left side

Discussions

The use of a ureteral stent left indwelling for different periods of time to relief ureteral obstruction had become increasingly popular. Ureteral stents have been used for more than 30 years in the management of nephroureterolithiasis. Zimskind et al. [18] in 1967 were the pioneers in the use of long-term ureteral silicone stent, inserted cystoscopically. Finney [8] later improved the shape of this device, reporting in 1978 a double J stent. The indications for stent insertion include treatment of ureteral or kidney stone, ureteral trauma or stricture, genitourinary reconstructive surgery, hydronephrosis during pregnancy, obstruction due to malignancy, or retroperitoneal fibrosis [19]. The indications for stent insertion expanded during the last years, and now ureteral stents are frequently inserted as an almost routine procedure in cases of ureteral obstruction.

The double J sent allow urine to be drained from the kidney to the bladder without external derivation [6,7]. The major late complications in patients with indwelling ureteral stents include stent migration [12], stent fragmentation [13, 14], or worsened hydronephrosis with flank pain and could be responsible for significant morbidities [9]. the etiology of encrustation is not completely clear. The incidence of encrustations is significantly higher for stone formers. Stent migration and fragmentation are rather late complications associated with indwelling ureteral stents. El Faqih et al. [17] found an incidence of stent migration of 3.7% and one of stent fragmentation of 0.3%. The frequency of fragmentation of the ureteral stent varies between 0.3-10% in the literature [1,10].

The clinical presentation can vary from low back pain with hematuria to sepsis. Patients may experience some untoward early effects such as lower abdominal pain, dysuria, fever, urinary frequency, nocturia, and hematuria [15,16]. Our patient was admitted for left low back pain.

Stent breakage has been attributed to the effect of urine solution and to an indwelling time of more than 1 year, which may accelerate the degradation of the stent material and thus cause an early mechanical failure. Various mechanisms have been reported in the literature, interaction with urine and an inflammatory reaction in situ is responsible of initiating and promoting the degradation of the stents [5]. Our patient has been wearing the probe JJ for 2 years, which is consistent with the literature. According to al and Ilker [5], a significant number of leukocytes are found in the urine with or without infection, which is usually involved in the depolymerization of biomaterials of stents by releasing of lysosomal enzymes. In addition, if stents are kept for more than 6 months, degradation of stent polymers and hardening of polyethylene and polyurethane may lead to fragmentation [5,11]. The recovery of a

fragmented double J ureter may be technically difficult. Usually, a trans ureteral procedure is sufficient for stent removal. However, various methods such as flexible ureteroscopy have been described for the removal of fragmented stents [7,11] In our case, the JJ stent was removed endoscopically under general anesthesia. The postoperative follow-up was simple, with regression of loin pain.

Conclusion

Fragmentation of the double J stent is a rare phenomenon; the most reported mechanism is the interaction of the catheter with the urine and the inflammatory reaction with a duration of more than six months. This complication may be responsible for renal failure. The procedure of stent positioning, well tolerated by patients, carries immediate and late complications, the latter being reduced by regular follow up with plain abdominal X ray, renal ultrasonographic examination and urinalysis with urine culture.

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