

Unexpected complication: renal parenchymal perforation with double-J ureteral stent

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Abstract Double-J ureteral stent is commonly used in various endourological procedures. This procedure may cause some complication. We present a case of renal parenchymal perforation due to double-J stent insertion.

Keywords Double-J · Renal · Perforation

Introduction

Ureteral stent implantation is a commonly used procedure in modern urology. Although complications occur rarely, the most frequent complications are malpositioning, encrustation, fracture of the stent, ureteral erosion, ureteroarterial fistula, and knott ledge of the stent [1]. After review of the literature, we also found rare complications like pulmonary thromboembolism due to intravascular migration of ureteral J stent [2], ureter and renal vein perforation during stent implantation [3], and stent migration to extraperitoneal area [4]. Many complications have been associated with ureteral stenting.

However, this is the first report of a renal parenchymal hematoma. Nevertheless, data are lacking and some points need to be clarified.

Case report

A 50-year-old male patient presented to our emergency room with left side of renal colic in April 2005. His kidney ureter bladder (KUB) graphy, revealed three opacities in left renal middle (4 mm) and inferior pole (7 mm) and a 6-mm-wide opacity at left ureter inferior end. Ultrasonography revealed a grade 1 ecstacy of collecting system and the parenchyma thickness was calculated as 23 mm. His laboratory results were as follows: urea 222 mg/dl, creatinine 11.2 mg/dl, hemoglobin 11.8 g/dl. Medical history revealed right nephrectomy (1993) and extracorporeal shock wave lithotripsy for left nephrolithiasis (2003). With ureterorenoscopy, the stone at the inferior end of ureter was removed with a forceps. A 4.8-Fr, 28 cm (closed tip) double-J stent was inserted into the collecting system under fluoroscopy. On the postoperative first day, tachycardia and atrial fibrillation were seen. Total urinary output was 80 cc/day, and hemodialysis was performed. Hemoglobin level decreased to 7 g/dl and daily urinary output was 200 cc, thereafter. We took a KUB and detected that the proximal end of double-J stent was not bended in the collecting system (Fig. 1). Computerized tomography (CT) taken on the second day showed that the tip of the stent has perforated the renal parenchyma, bended at subcapsular area, and a hematoma (8 × 3 cm) located posteriorly to the left kidney, pushing forward anteriorly was detected (Fig. 2). Four units of erythrocytes suspension were transfused to our patient in postoperative period. On the third postoperative day, we repositioned double-J stent in pelvis renalis under fluoroscopy (Fig. 3). Diuresis was accomplished afterwards and creatinine levels decreased gradually. The patient was discharged on the ninth postoperative day with a creatinine value of 1.3 mg/dl. During follow

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Fig. 1 Postoperative KUB: proximal end of double-J stent is direct to lateral of kidney

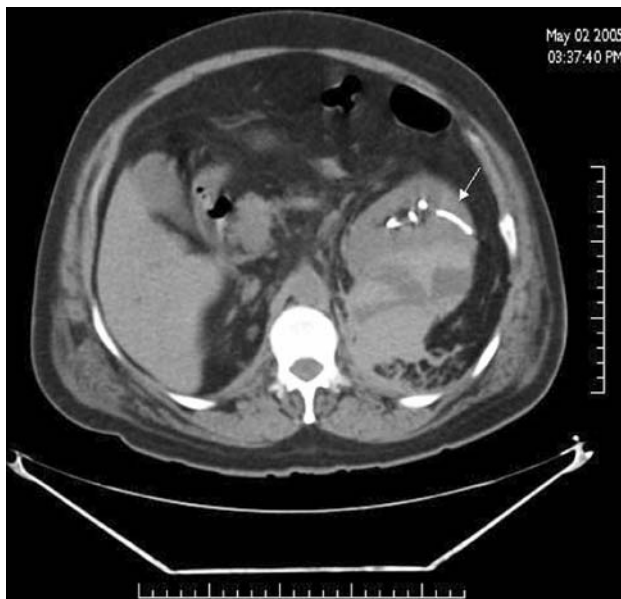


Fig. 2 Postoperative second day CT imaging: proximal end of ureteral double-J stent is perforation in parenchyma and 8 × 3 cm hematoma at posterior of kidney

up, we detected a decrease in hematoma volume at 2 years (Fig. 4). At this time, urea was 28 mg/dl, and creatinine was 1.2 mg/dl.



Fig. 3 In non-contrast CT: ureteral double-J stent in collecting system after repositing

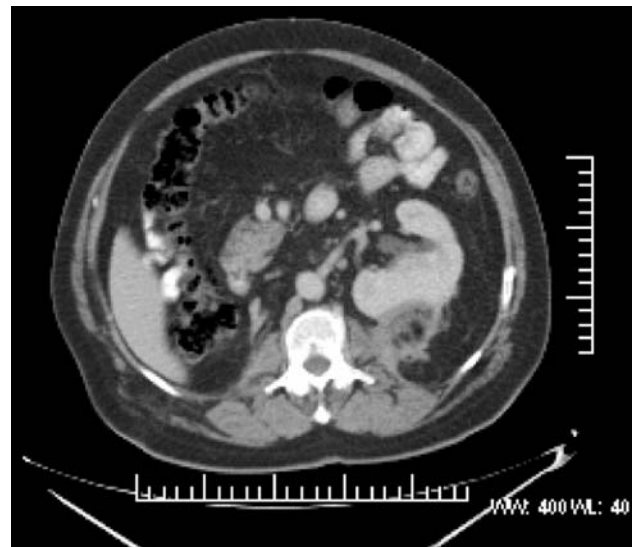


Fig. 4 In postoperative second year with contrast CT: small hematoma at lower portion of left kidney

Comment

Ureteral stenting is a safe and simple procedure; however, significant morbidities can be associated with ureteral stent placement. Irritative symptoms, flank pain, hematuria, and suprapubic pain are commonly seen. Sometimes, it may also cause serious complications, such as thromboemboli, hemoperitoneum, and ureteroarterial fistula [3, 5–7]. Stents made up of stiffer materials may cause serious complications, including, penetrating the ureter, collecting system,

and renal parenchyma [8]. Fluoroscopic examination is useful in early diagnosis and prevention of some of these complications. Unfortunately, fluoroscopy is not always found in endoscopy rooms [4].

We report a rare complication of ureteral stenting. We could not find any report related to renal parenchyma injury and hematoma formation during the double-J stent implantation. Ureterorenoscopy was used in this case. There was semi-reconstruction of proximal loop of ureteral stent in collecting system (Fig. 1). It could be safe to insert the stent by Seldinger method instead of by closed tip stent insertion method. However, to our knowledge, there is no study comparing the two methods in the literature. In addition to double-J insertion, heparin infusion during dialysis in post-operative period could have expanded the hematoma. After repositioning of double-J stent under scopic examination, diuresis was accomplished and after a short period with minimal hematuria, urinary parameters turned to normal. Chitale et al. have presented a case similar to ours. They have reported a hemoperitoneum following an uneventful insertion of ureteric stent. They could not explain how ureteric stent caused intraperitoneal rather than retroperitoneal hemorrhage [5].

It could be a more safe method to insert the guidewire into the ureter before inserting the stent instead of closed tip stent insertion. Ureteral stent insertion must be done under fluoroscopic control. It should be seen the reconstruction of proximal end of stent in collecting system. If a primary malpositioning of the stent is detected, it should be immedi-

ately corrected. Proper stent insertion should be checked via KUB and other radiologic modalities. This case should remind the endourologist about the serious complication following implantation of double-J stent which is used frequently worldwide.

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