

A double J stent misplaced in the inferior vena cava during Boari flap repair

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ABSTRACT

A 30-year-old lady underwent a Boari flap repair for post-hysterectomy mid-ureteric stricture. The upper end of the double J stent inserted during the procedure was misplaced in the supra-renal inferior venal cava. Cystoscopic stent removal could be performed uneventfully, while the stricture was managed by endoureterotomy.

Key words: Boari flap repair, complication, DJ stent, endovascular migration, ureteric stent

INTRODUCTION

Double J (DJ) stents are very commonly used in urology. If used judiciously, stenting does not cause major complications. Endovascular migration of DJ stents is very rare.^[1] We report an unusual case of a DJ stent that was misplaced into the supra-renal portion of the inferior vena cava (IVC) during a Boari flap procedure.

CASE REPORT

A 30-year-old lady underwent an open abdominal hysterectomy. Six months later, she presented with right flank pain and was diagnosed to have a mid-ureteric stricture. A Boari flap repair was performed with insertion of a DJ stent. In view of persistent flank pain and urinary infection 6 weeks after the repair, computed tomography (CT) urography was performed. To the surprise of the treating urologist, the

CT showed that the stent had traversed through the Boari flap and entered the IVC, with the upper coil of the stent in the supra-renal IVC [Figure 1]. The lower end of the stent was well placed in the bladder. There was no retroperitoneal hematoma. Further, the normal upper ureter was not connected to the Boari flap but was in continuation with the lower ureter [Figure 2]. The Boari flap, unconnected to the upper ureter, appeared like an out-pouching from the bladder.

At this stage, the patient was referred to our center for further management. After discussion with the patient, it was planned to remove the stent cystoscopically with a vascular team on standby. Surgical readiness was kept for exploration in the event of bleeding from the IVC. Reassessment of the stricture was planned after the stent was managed. The stent was removed cystoscopically with no complications. The stricture was subsequently managed by endoureterotomy and a stent was placed in the normal ureter. Two months after stent removal, the patient is doing well.

DISCUSSION

DJ stent is frequently used in urology practice. It is usually well tolerated and is devoid of major complications. Endovascular migration or positioning of the DJ stent is a rare occurrence. It has been reported both during open and endourological procedures.^[1-4] During retrograde placement of the stent, there can be a simultaneous perforation of the ureteral wall and an adjacent inter-communicating vein through which the stent gets direct access to the vascular system. Through the vein, the stent gets pushed up in the IVC. Such perforations can happen if the rigid reverse end of

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Figure 1: Stent has the upper coil in the inferior vena cava (single arrow) and lower coil in the bladder through the Boari flap (double arrow)

the guide wire is mistakenly pushed in the ureter or during a difficult ureteroscopy complexed by poor vision and lack of fluoroscopic guidance.^[2]

During open surgery, a transected vein can be mistaken for the ureter.^[4] Not only does the vein get anastomosed to the urinary system but also the stent gets placed in the vascular system through the vein. After such an occurrence, the patient can have significant hematuria that continues till the vein gets thrombosed. Kim *et al.*^[4] have reported cardiac migration of the stent during a difficult hysterectomy. In the presence of significant bleeding and bladder injury, the transected right ovarian vein was mistaken for ureter and anastomosis to bladder. The DJ stent, via the ovarian vein, migrated to the heart.

The present case is novel because endovascular positioning of the stent occurred during an elective Boari flap repair. We postulate that the surgeon mistook the gonadal vein as the upper ureter and anastomosed it to the Boari flap. The stent had a straight access to the IVC through the gonadal vein. This is further suggested by the fact that the proximal ureter was not connected to the Boari flap and it remained joined to the normal lower ureter. It is difficult to explain why the patient did not have bleeding from the gonadal vein or from the stent once the stent was placed in the IVC. It is possible that some degree of hematuria was ignored as a normal post-surgery consequence. Absence of prolonged post-operative bleeding could be due to intra-catheter blood clotting and gonadal vein



Figure 2: The right lower ureter is in continuity with the normal upper ureter while the Boari flap is not connected to the upper ureter. Stent exits through the Boari flap and has upper coil in the inferior vena cava

thrombosis. This problem could have been avoided by proper intra-operative identification of the ureter.

In the retroperitoneal space, both the ureter and the gonadal vein run parallel to each other, with the ureter lateral to the vein. It is important to trace the tubular structures on both the sides and to look for peristalsis to confirm it to be the ureter. Intra-operative hydration and diuretics would help document efflux of urine from the cut end. Excessive bleeding from the cut end should raise an alarm for wrong diagnosis. If in doubt, ureteral stents can be placed safely with fluoroscopic assistance, and any positioning problems can be identified and corrected at the time of insertion.

The management of a ureteral stent that has migrated into the vascular system includes open surgical techniques,^[2] interventional radiological techniques^[1] and transurethral removal.^[5] In the present case, cystoscopy was selected for removing the migrated DJ stent as it had one accessible coil in the bladder and was placed for over 6 weeks without any urinary bleeding. There was no retroperitoneal hemorrhage or bleeding focus on abdominal CT.

REFERENCES

1. Falahatkar S, Hemmati H, Gholamjani Moghaddam K. Intracaval migration: An uncommon complication of ureteral Double-J stent placement. *J Endourol* 2012;26:119-21.
2. Sabnis RB, Ganpule AP, Ganpule SA. Migration of double J stent into the

- inferior vena cava and the right atrium. Indian J Urol 2013;29:353-4.
3. Michalopoulos AS, Tzoufi MJ, Theodorakis G, Mentzelopoulos SD. Acute postoperative pulmonary thromboembolism as a result of intravascular migration of a pigtail ureteral stent. Anesth Analg 2002;95:1185-8.
 4. Kim TN, Lee CH, Kong DH, Shin DK, Lee JZ. Misplacement or migration? Extremely rare case of cardiac migration of a ureteral J stent. Korean J Urol 2014;55:360-2.
 5. Tang Z, Li D, Xiao L, Wan Y, Luo K, Huang L, *et al.* Re: Intracaval migration: An uncommon complication of ureteral Double-J stent placement. J Endourol 2012;26:1100-1.

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