

Case – Endoscopic management of severe ventral urine leak post-robot-assisted laparoscopic prostatectomy

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Introduction

Vesicourethral leakage following robot-assisted laparoscopic prostatectomy is an uncommon complication, and the majority of cases are managed conservatively.¹ Persistent leakage, which is refractory to conservative measures, may require more invasive management. Herein, we describe a novel approach for managing urine leaks endoscopically, without the need for percutaneous nephrostomy tube insertion.

Case report

A 70-year-old male with history of atrial fibrillation on dabigatran was found to have unfavorable intermediate risk prostate cancer following a TRUS biopsy. He underwent a radical robotic assisted laparoscopic prostatectomy and bilateral pelvic lymph node dissection. The vesicourethral anastomosis was performed using two running 3-0 V-loc sutures with the anastomosis-knot tied anteriorly over an 18 French Council-Tip catheter. A self-made fenestration as described by Riikonen et al and Diamand et al. is routinely used at our centre and was in this case.^{2,3} An intraoperative leak test was performed and was negative. A Jackson-Pratt (JP) drain had been placed to monitor for urine leakage, which was removed on post-operative day (POD) 2 without difficulty. He was discharged home in stable condition without any acute surgical concerns and instructions to resume anticoagulation on POD 5.

On POD 6, one day after restarting anticoagulation, the patient presented to the emergency department with abdominal pain. Computed tomography (CT) scan demonstrated a pelvic hematoma. He started to develop gross hematuria. His blood work was reassuring with no significant drop in hemoglobin and vital signs within normal limits. He was discharged home.

On POD 13, the patient returned to the emergency department febrile, in rapid atrial fibrillation and with persistent hematuria. Repeat CT scan demonstrated a large pelvic collection concerning for abscess. Idarucizumab, a monoclonal antibody fragment that binds to and reverses the effects of dabigatran, was administered in order for interventional radiology to place a transrectal drain. The fluid collection was favored to be an abscess and so a transrectal drain was felt to be a reasonable approach. A sample of the collection was analyzed which revealed a creatinine level consistent with a urine leak. A CT cystogram was performed which demonstrated a urine leak in the posterior urethra (Figure 1).

The patient remained in rapid atrial fibrillation with persistently elevated drain outputs despite conservative measures. The catheter was placed on traction on POD14 and remained on traction for ~24 hours, though the transrectal drain and foley outputs were 51.0% and 49.0% split, respectively. Given the persistent rapid atrial fibrillation, it was felt that a conservative approach was likely less appropriate. On POD 15, the patient was brought to the operative room and the catheter removed to facilitate cystoscopy, which demonstrated a large defect encompassing the entire ventral anastomotic line. Cook Medical 7 French Bander ureteral diversion, single-J stents were placed bilaterally in a retrograde fashion. The open-ends, coming through the urethra, were then brought individually into the distal aspect of the 18 French Council-tip Foley using a 14-gauge angio-catheter needle and allowed to drain directly into the Foley urine collection bag (Figure 2).

Following bilateral stent insertion with drainage through the Foley, the output from the transrectal drain ceased and the drain was removed two days later. The patient was discharged home with the stents and Foley in situ. A repeat cystogram four weeks later revealed complete resolution of the bladder neck anastomotic leak (Figure 3). The stents and Foley were removed without issue. The patient was referred for biofeedback following catheter removal. After eight weeks of pelvic physiotherapy and biofeedback he achieved complete continence.

Discussion

Vesicourethral leakage is the most common short-term complication of robot-assisted laparoscopic prostatectomy with an estimated incidence of 0.3% - 15.4%.¹ The majority of these cases are managed with conservative measures, with more invasive techniques only being used in 0.9% - 2.3% of patients.⁴ Non-operative techniques described include: catheter traction, suctioning of the perivesicular space and needle-vent suctioning through the catheter.^{1,4} More invasive measures including percutaneous nephroureteral stents placed on suction as well as a “body flossing” technique described by Bajaj et al. which consists of bilateral percutaneous nephrostomy tubes with subsequent externalization of stents through the penile urethra.^{5,6} Both of these procedures require a multidisciplinary approach including interventional radiology and may not be the ideal management option for patients receiving anticoagulation.

Case: Endoscopic management of severe ventral urine leak post-RALP

Endoscopic management involving the injection of tissue sealants and hemostatic agents has been described.^{4,7} In one case report, a combination of Floseal (Baxter Healthcare, Deerfield IL) and Tisseel (Baxter Healthcare) was injected into the ventral defect with near complete resolution and excellent functional outcomes, though the patient also had an open cystotomy with suprapubic catheter insertion.⁴

Our cystoscopic approach allowed the patient to resume therapeutic anticoagulation while in rapid atrial fibrillation and provided a minimally invasive solution for a patient with persistent vesicourethral anastomotic leakage. The management obviated the need for nephrostomy tubes, which are bothersome for patients and have been shown to have a negative impact on quality of life.⁸ We acknowledge that this is a single case and that the urine leaks tend to resolve with time, and it is certainly possible that the leak would have sealed without the placement of stents. This is, however, to our knowledge, the first case described in the literature using externalized single-J stents and represents a novel approach which can be added to the urologists armamentarium for the management of persistent vesicourethral leakage following radical prostatectomy.

Conclusions

Persistent urine leak following radical prostatectomy is a rare complication and can be managed with a variety of minimally invasive approaches. Herein, we describe a novel approach the urologist alone may employ to manage persistent urine leaks.

References

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Figures and Tables

Fig. 1. (A) Axial slice from computed tomographic (CT) scan of pelvis demonstrating extravasation of contrast posterior to the bladder. (B) Coronal slice from CT scan of pelvis demonstrating defect in the posterior urethra. (C) Sagittal slice from CT scan of pelvis showing extravasation of contrast from ventral bladder neck and arrow sign pointing to defect.





Fig. 2. Radiographic images of successfully placed single J ureteric stents with penile externalization. Transrectal drain noted in situ.



Fig. 3. (A) Axial slice of computed tomography (CT) demonstrating resolution of extravasation of contrast posterior to bladder. (B) Sagittal slice of CT demonstrating resolution of anastomotic leak involving ventral bladder neck.

