Case Report

A Simple but Often Neglected Technique for Managing Prolonged Urinary Leakage from Urethrovesical Anastomosis: The Side-Fenestrated Catheter Approach

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Abstract

Urethrovesical anastomotic leakage (UVAL) is a well-documented early complication following radical prostatectomy. While low-volume leaks are often self-limiting, persistent high-volume leaks (>300 mL/day), where most urine bypasses the catheter, may require invasive interventions. We report the case of a 58-year-old male with prostate adenocarcinoma who developed high-volume UVAL after undergoing laparoscopic radical prostatectomy, which was unresponsive to conservative measures. A side-fenestrated catheter was placed under local anesthesia via cystoscopy on postoperative day 2, leading to rapid resolution of the leak. The patient was subsequently discharged on postoperative day 4 following drain removal. This case highlights the effectiveness of a simple, minimally invasive side-fenestrated catheter approach for managing UVAL, offering an alternative to more invasive interventions such as bilateral percutaneous nephrostomy, suprapubic catheter placement, or even surgical revision of the urethrovesical anastomosis.

Keywords: *Radical prostatectomy, urethrovesical anastomosis, urine leakage*

Introduction

Urethrovesical anastomotic leakage (UVAL) is a common complication following radical prostatectomy. Low-volume leaks (<300 mL/day) typically resolve with conservative management, but high-volume leaks (>300 mL/day) can result in prolonged catheterization, extended hospital stays, and decreased quality of life. In cases where most of the urine bypasses the catheter, interventions such as percutaneous nephrostomy, suprapubic catheter placement, mono-J ureteral stents, or even surgical revision of the urethrovesical anastomosis may be required.[1,2] These approaches, while effective, are invasive and associated with increased morbidity. Despite the prevalence of UVAL, no standardized protocol exists for managing persistent high-volume leaks.

This report presents the use of a side-fenestrated catheter for persistent high-volume UVAL. This minimally invasive approach can reduce the need for more invasive interventions and facilitate recovery in selected cases.

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Case Report

A 58-year-old male with prostate adenocarcinoma (Gleason score 6 [3 + 3], a PSA level of 4.7 ng/mL, and cT1c stage) declined active surveillance and radiation therapy and underwent transperitoneal laparoscopic nerve-sparing radical prostatectomy. The surgery was uneventful, with a watertight urethrovesical anastomosis performed using the Van Velthoven technique with a 3–0, 27 mm, 5/8 taper point V-loc suture (Covidien). A 12 Fr drain was inserted into the Retzius space postoperatively.

On the day of the surgery, fluid output was measured as 1500 mL from the catheter and 300 mL from the drain. On the postoperative day one morning, it was noted that

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in the last 2 hours, the fluid output from the catheter was 200 mL, while the drain was 150 mL. Creatinine analysis of the drain fluid confirmed a urine leak (52 mg/dL). Saline irrigation of the urethral Foley catheter confirmed it was not obstructed by clots. Noncontrast CT imaging revealed that the drain was positioned away from the anastomosis site, the urethral Foley catheter was in the bladder, and there were no fluid collections in the abdomen or around the anastomosis [Figure 1]. Conservative measures, including gentle catheter traction, deflation of the catheter balloon, and securing the catheter to the penis, were implemented. Following these efforts, urine output from the drain remained high (1800 mL), with 2600 mL from the drain by the end of postoperative day 1.

On postoperative day 2, retrograde cystography confirmed a significant anastomotic leak [Figure 2]. During the first 14 hours of postoperative day 2, the urine output from the catheter was 2560 mL, while the drain output was 1460 mL. The urethral Foley catheter was removed, and under local anesthesia (topical anesthetic lidocaine gel was applied to the urethra), a 9.8 Fr semirigid ureteroscope was used for cystoscopy. No significant defect or separation was observed at the urethrovesical anastomosis site. A handmade 18 Fr side-fenestrated catheter was inserted into the bladder through a guide wire [Figure 3]. Following this procedure, 10 mL of drain output was observed during the rest of postoperative day 2 and throughout postoperative day 3. The patient was discharged on postoperative day 4 after drain removal. The urethral catheter was removed on postoperative day 16. The pathology report confirmed Gleason 6 (with tertiary pattern 4 at 2–3%), stage T2, with negative surgical margins. At the 6-month follow-up, the patient was fully continent with an undetectable PSA level (<0.008 ng/mL).

Discussion

Persistent or high-volume UVAL remains a challenging complication in urological practice. Traditional approaches such as percutaneous nephrostomy, suprapubic catheter placement, and mono-J ureteral stents, as well as less commonly utilized methods like percutaneous nephroureteral stents with suction and continuous needle-vented Foley catheter suction, which operate on the principle of redirecting urine flow away from the healing anastomotic line, have demonstrated effectiveness but are often invasive and technically demanding.[2-5]

This case highlights the efficacy of the side-fenestrated catheter, a minimally invasive solution that promotes direct drainage at the anastomotic site. Turner–Warwick[6] first proposed fenestrated catheters for urethral trauma to enhance the drainage of periurethral collections. Building on this concept, the technique has been suggested as a means to minimize anastomotic leakage following radical prostatectomies. Riikonen *et al*.[7] conducted a prospective randomized study comparing standard and side-fenestrated catheters in 214 patients. The incidence of urethrovesical anastomotic leakage (UVAL) was significantly lower in the side-fenestrated catheter group (5/108, 4.6%) compared to the standard catheter group (13/106, 12.3%) (P = 0.044), demonstrating the potential benefit of this approach in reducing postoperative leakage.

In our case, the side-fenestrated catheter resolved the leak rapidly allowing early discharge and avoiding invasive interventions. These results are consistent with previous findings by Kymala *et al*., who presented a series of three cases, and by Diamand *et al*.,[8,9] who documented a single case, both supporting the efficacy of this approach. In the literature, two algorithms have

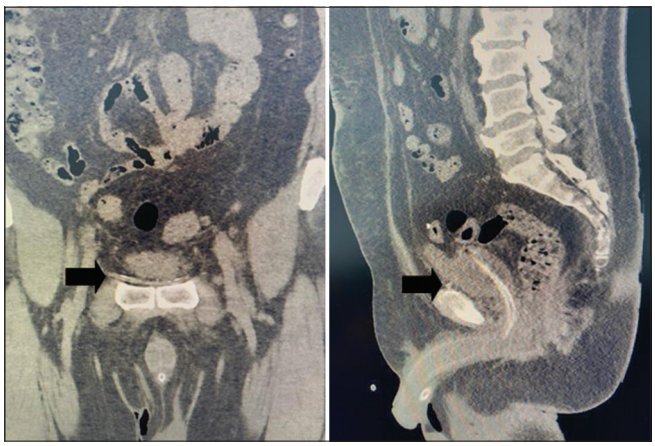

Figure 1: The drain is far from urethrovesical anastomosis site. The urethral Foley catheter is in bladder. Non-contrast CT images had normal early postoperative appearance

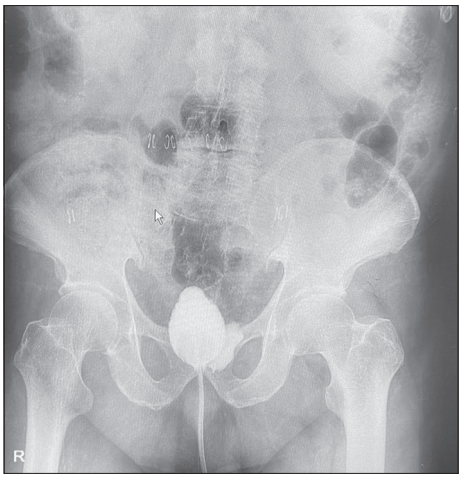

Figure 2: Retrograde cystography showing urethrovesical anastomotic leakage

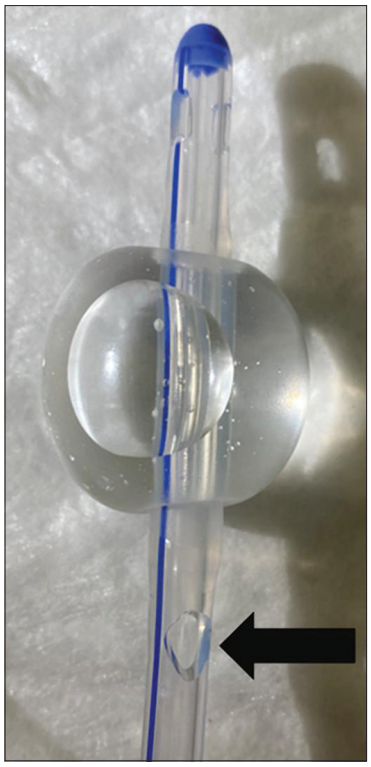

Figure 3: A hand-made side fenestrated catheter (fenestration created using scissors)

been proposed for managing UVAL. According to the algorithm by Do *et al*.,[1] surgical revision of the urethrovesical anastomosis would have been necessary for our patient due to the more than 1000 mL of urine drainage per day. In contrast, the algorithm proposed by Tyritzis *et al*.[2] advocates for a stepwise approach, starting with suprapubic catheter placement and percutaneous nephrostomy. If leakage persists despite these measures, endoscopic evaluation is recommended, followed by surgical revision of the urethrovesical anastomosis if required. Alternative methods, such as bilateral percutaneous nephroureteral stents with suction or continuous needle-vented Foley catheter suction, may also be effective but require specialized equipment and prolong hospital stays.[4,5] In comparison, the side-fenestrated catheter is simple, requires no additional equipment, and has minimal impact on quality of life.

The management of persistent or high-volume UVAL following radical prostatectomy poses a significant challenge in clinical practice. This case demonstrates that the side-fenestrated catheter approach offers a simple, minimally invasive, and effective solution for managing UVAL, potentially reducing the need for more invasive interventions. While further studies are needed to establish standardized protocols, this technique represents a practical option in appropriate cases, balancing efficacy and patient quality of life. Conducting prospective studies comparing the side-fenestrated catheter technique with other drainage methods would provide valuable evidence to validate its effectiveness and define its role in clinical practice.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his names and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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