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Large pelvic hematoma following UroLift procedure causing renal failure requiring dialysis

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ABSTRACT

The prostatic urethral lift procedure is a minimally invasive treatment option for lower urinary tract symptoms due to benign prostatic hyperplasia, with reported benefit of less adverse effects than traditional treatments. While complications are usually minimal, our patient developed a large pelvic hematoma and the first case of organ failure after prostatic urethral lift. He required temporary dialysis during his extended postoperative admission, and his chronic kidney disease permanently progressed from stage III to stage IV. This case highlights the need for research into the safest preoperative and operative approach for prostatic urethral lift procedures in patients with comorbidities.

Introduction

Compared to traditional modalities such as transurethral resection of the prostate (TURP), the UroLift® prostatic urethral lift procedure effectively treats voiding symptoms from benign prostatic hyperplasia (BPH) with less bleeding and shorter duration postoperative incontinence.[1,2] The most frequently described UroLift® complications are self-limiting dysuria and hematuria.[1] Two recent reports describe pelvic hematoma after UroLift®: one underwent conservative treatment, the other fulguration and tying off of small vessel under general anesthesia.[3] We describe a third large pelvic hematoma, with blood loss contributing to acute renal failure requiring dialysis. After extensive literature search, we believe this is the first incidence of single organ failure after UroLift®.

Case presentation

An 83-year-old male with prostate cancer treated with radiation in 2017 presented to urology clinic with voiding complaints. Medical history included chronic kidney disease (CKD) stage III [baseline creatinine (Cr) 1.92 mg/dL, glomerular filtration rate (GFR) 34] and atrial fibrillation on warfarin. He endorsed urinary frequency and nocturia every 2 h, stream intermittency, and incomplete emptying. International Prostate Symptom Score was 17 (moderate voiding symptoms). Prostate measured 25 g on transrectal ultrasound. Cystoscopy revealed visually obstructing prostate with non-protruding median lobe, no urethral strictures. Uroflow demonstrated: low flow rate, small voided volume, post void residual 97 mL. Maximal medical therapy was unsuccessful. One week before surgery, he was bridged from warfarin to enoxaparin, with final enoxaparin dose given the morning of procedure.

UroLift® was performed under general anesthesia, employing five prostatic implants: two in each lateral lobe, one pinning the median lobe from left to right per recommended technique (Figs. 1 and 2).[4] At completion, an anterior channel was visible. No complications occurred intraoperatively; blood loss was minimal. Foley catheter placed for removal in recovery, to which he was transferred in stable condition.

Upon catheter removal, he experienced syncope. He was monitored 2 h on bed rest while receiving 2 L intravenous normal saline. He then experienced another syncopal episode upon standing. Systolic blood pressure (BP) was 80 mmHg from preoperative 120 mmHg. Suprapubic mass palpated. He was transferred to a local Emergency Department (ED) for evaluation.

ED evaluation revealed BP 63/33 and hemoglobin (Hb) 8.7 g/dL, ~2 points below preoperative values. Abdomen was moderately distended. After resuscitation, BP improved temporarily. Hb dropped further to 7.3 g/dL with normal internal normalized ratio. Despite Cr 1.99 mg/dL (GFR 34), CT torso with intravenous contrast was performed to rule out significant vascular injury, demonstrating 15cm hematoma in the space

Abbreviations: TURP, transurethral resection of the prostate; BPH, benign prostatic hyperplasia; CKD, chronic kidney disease; GFR, glomerular filtration rate; BP, blood pressure; ED, Emergency Department; PRBC, packed red blood cells; SICU, surgical intensive care unit; POD, postoperative day.

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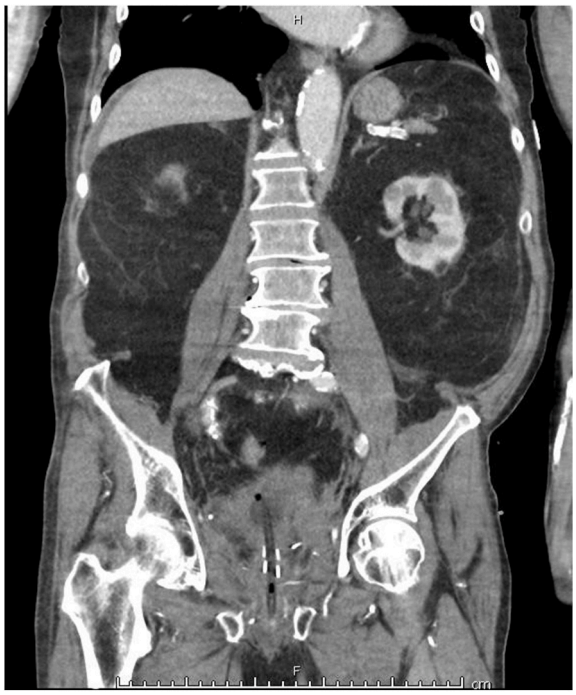

Fig. 1. Visualization of intraurethral portions of UroLift® prostatic urethral lift devices.

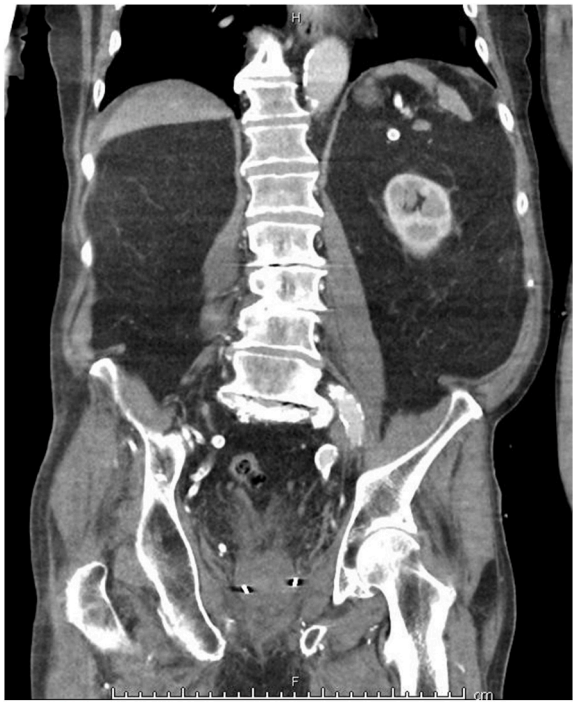

Fig. 2. Visualization of capsular portions of UroLift® prostatic urethral lift devices.

of Retzius (Fig. 3), no active extravasation. He was transfused two units packed red blood cells (PRBCs) and admitted to surgical intensive care unit (SICU) for monitoring. Foley catheter placed for strict fluid balance; hematuria noted.

By postoperative day (POD) 2, six more units PRBCs were given, stabilizing Hgb to 7.5 g/dL. Systolic BP remained 80–100 mmHg with no vasopressors. Creatinine continued to rise to peak of 6.71 mg/dL (GFR

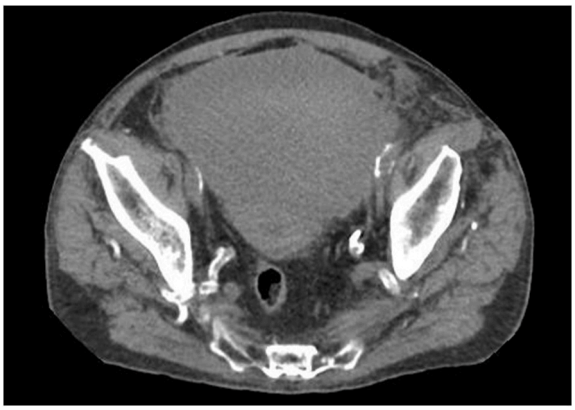

Fig. 3. Large pelvic hematoma compressing bladder several hours after UroLift® procedure.

8). He became hyperkalemic and oliguric; hemodialysis was initiated POD3. Final 2 units PRBCs were required that week for Hb target >8.0, bringing total transfusions to 10. Renal function slowly improved; last dialysis was POD8, the day he left SICU for floor care. Catheter removed POD9, revealing new onset urge incontinence. Discharge on POD12 was to rehabilitation due to deconditioning, then to home POD18. Discharge laboratory values included new baseline Cr of 2.64 mg/dL (GFR 23). He had progressed to CKD stage IV, due to prolonged hypotension from acute blood loss and contrast loading during hypovolemic state. In the 90 days postoperatively, he had three readmissions for recurrent fever and failure to thrive, twice with urinary tract infection. Six months postoperatively, he was diagnosed with bilateral lower extremity deep vein thrombosis and aortic stenosis causing systolic heart failure.

In urologic follow up, cystoscopy at two months demonstrated edema of bladder with external compression, no visible clips. Imaging at eight months revealed no pelvic hematoma. One year postoperatively, urinary frequency was worse compared to preop, with urge incontinence requiring pads. Comparative improvements included better flow and complete emptying.

Discussion

The UroLift® procedure effectively treats BPH.[2] Improvements in voiding parameters are reported with only mild dysuria and hematuria, less risk of blood loss, and shorter duration transient urge incontinence than traditional modalities such as TURP.[1] This remains true even when used for obstructive median lobes.[4] To date, there have been no cases of bleeding requiring massive blood transfusion.[2] One probability estimate of such an event was nearly zero.[2] Two case reports describe pelvic hematoma after UroLift®; one required conservative management, the other return to operating room.[3] In contrast, our patient required ten units PRBCs and developed acute renal failure requiring temporary dialysis, with progression from CKD III to IV.

Contributors to renal dysfunction included hypotension from acute blood loss anemia and use of intravenous contrast in a CKD patient. While contrast-induced nephropathy is not an independent risk factor for dialysis, acute and chronic renal failure may raise risk.[5] As first line treatment for pelvic hematoma is conservative, an alternate approach would have been to perform serial imaging, monitoring need for delayed intervention.

When reviewing studies of morbidities after surgery, patient selection should be discussed. At this time, there have been no studies of UroLift® in patients with CKD nor in previously radiated prostates. There are likewise no studies examining Urolift® complications in anticoagulated patients. Current guidance focuses on emphasizing complications to higher-risk patients.

Conclusion

The overall incidence of bleeding after UroLift® remains relatively low, with blood transfusion described as "not a risk due to the nature of the UroLift® procedure."[2] Our case and select others indicate this is no longer true with UroLift® rising in usage. While there was likely no further preoperative workup to predict our patient's complication, knowledge of added risks in patient selection provided from case studies may be helpful in treatment or technique choice. Research is necessary to determine the morbidity risk for Urolift® patients on anticoagulation, and with comorbidities such as CKD and radiation, as these are prevalent in urologic populations. In this way, the safest preoperative and operative approach can be designed.

Consent

Patient information de-identified prior to submission of case report.

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Declaration of competing interest

The authors certify that they have no affiliations with or involvement in any organization of entity with any financial interest or non-financial interest in the subject matter discussed in this manuscript.

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