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Ureteric orifice obstruction by catheter balloon Post-TURP: A rare cause of obstructive uropathy

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ABSTRACT

A 50-year-old male underwent small volume TURP for median lobe prostatic hypertrophy. Post-procedure, a 3-way urethral catheter was placed. He subsequently developed flank pain, anuria and creatinine rise. CT demonstrated bilateral obstructive uropathy.

In the absence of obstructing lesions, it was suspected that the catheter balloon may have caused obstruction of bilateral ureteric orifices. Balloon deflation (from 30 to 10 mL) and catheter repositioning resulted in rapid resolution of pain and resumption of urine output.

Urologists should consider the catheter balloon as a cause of obstructive uropathy, especially after procedures where normal trigonal anatomy is disrupted.

1. Introduction

Benign prostatic hyperplasia (BPH) is the most common cause of lower urinary tract symptoms (LUTS) in males. Transurethral resection of prostate (TURP) remains the gold standard for the surgical management of BPH, but complications are not uncommon.

Foley balloon-associated ureteric orifice (UO) obstruction is a rare cause of obstructive uropathy, having only been reported once in the literature.[1] This case demonstrates the importance of considering this diagnosis in the otherwise uncomplicated patient and initiating early catheter manipulation.

2. Case presentation

A 50-year-old male with LUTS secondary to BPH was admitted for elective TURP after failing medical therapy. Ultrasound revealed mild prostatomegaly of 41 cc with projection into the bladder lumen. This was corroborated on flexible cystoscopy which showed an enlarged, occlusive, median lobe and high bladder neck. His medical history was otherwise unremarkable.

The operation was uncomplicated and performed using monopolar resection. Intra-operatively, the patient was noted to have a high bladder neck and median lobe hypertrophy. Subsequent resection of the median lobe was undertaken. At the end of the procedure, a 22-French 3-way Foley catheter was inserted and 30 mL of water was introduced into the balloon. The catheter was pulled on traction to tamponade the prostatic fossa. Continuous saline bladder irrigation was initiated in recovery.

On the evening of day 0, the patient developed bilateral spasmodic flank pain that did not respond to oral analgesics or oxybutynin. The pain worsened over 6 h and was associated with two episodes of emesis. Examination revealed a soft abdomen, normal vital signs and light rosé urine on slow irrigation. His symptoms settled after 50 μg of subcutaneous fentanyl and a provisional diagnosis of bladder spasm was made. Urine colour remained clear and irrigation was ceased overnight.

Severe pain returned on the morning of day 1, accompanied by complete anuria. Blood biochemistry revealed a creatinine of 113 μmol/L and estimated glomerular filtration rate (eGFR) of 65 mL/min/1.73 m,[2] compared to a pre-operative baseline of 82 and 87, respectively, indicating acute renal impairment. Contrast-enhanced CT showed bilateral hydroureteronephrosis, delayed nephrogram, and marked perinephric and periureteric fat stranding, without obstructing lesions (Fig. 1). The bladder was completely decompressed and contracted around the indwelling catheter (Fig. 2).

; BPH, benign prostatic hyperplasia; TURP, transurethral resection of prostate; LUTS, lower urinary tract symptoms; UO, ureteric orifice.

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Fig. 1. Contrast-enhanced CT of the abdomen and pelvis, axial (left) and coronal (right) views, demonstrating mild hydronephrosis and hydroureter.

Fig. 2. Contrast-enhanced CT of the abdomen and pelvis, sagittal (left) and coronal (right), showing indwelling urethral catheter with completely decompressed and contracted bladder.

Radiographic evidence suggested the patient's presentation was related to a distal obstructive source. However, as no clear cause of obstruction could be identified on CT, it was suspected that the catheter balloon may have occluded both UOs.

Catheter manipulation and repositioning was initiated to restore UO patency. The balloon was deflated from 30 mL to 10 mL and advanced further into the bladder. This manoeuvre resulted in rapid improvement of obstructive symptoms and resumption of urine output.

The patient's symptoms had completely resolved by the evening of day 1, he was observed overnight and monitored for post-obstructive diuresis. Urine output was 2400 mL in the 24-h post-decompression. Renal function improved on day 2 (creatinine 101 μmol/L, eGFR 75) and he underwent a successful trial of void prior to discharge. Histologic analysis of resected prostate revealed 6 g of tissue consistent with BPH. Six-weeks post-procedure the patient's renal function had returned to baseline levels (creatinine 84 μmol/L, eGFR 85).

3. Discussion

TURP remains the standard treatment for men who fail medical therapy for BPH. Post-TURP a wide-bore 3-way catheter with well-inflated balloon is placed. While there are no formal guidelines dictating balloon volume post-TURP, they are typically inflated with 30 mL of sterile water. Some guidelines suggest balloon volume should be governed by the extent of resection, generally 15–20 ml more than the resected volume.[2,3]

Whilst over a dozen case reports[4,5] have highlighted the potential for catheter tips to cannulate the distal ureter and cause obstructive uropathy, a scenario similar to ours has only been reported once. Cuttino & Clark (1987)[1] reported a case of bilateral UO obstruction by catheter balloon in a 42-year-old male with spastic paraplegia and neurogenic bladder. This was radiographically demonstrated with an intravenous urogram. They too, had placed a Foley catheter with 30 ml of water and upon identifying the cause of obstruction, deflated the balloon to 10 ml. Subsequent decompression of the urinary tracts was recognised via resumption of urine output and halving of creatinine.

We hypothesize that the combination of small resection cavity and large balloon resulted in mechanical obstruction of bilateral UOs, causing upper tract dilatation. Furthermore, the catheter balloon was pulled on traction to tamponade the prostatic fossa, this may have further distorted trigonal anatomy, worsening the obstruction. Tailoring the balloon volume to reflect the resection volume may have prevented this occurrence. Given the small volume of resection, a balloon of 15–20 ml may have provided adequate tamponade whilst avoiding obstruction of the UOs. Furthermore, balloon deflation and catheter repositioning should have been trialled at the onset of obstructive symptoms. This simple, bedside manoeuvre could have addressed the pathology immediately, saving the patient from severe discomfort, the radiation and contrast exposure of a CT, and potential irreversible renal injury.

4. Learning points

1. Catheter balloons can cause UO obstruction in suitable anatomy.
2. Consider reduced balloon volumes for smaller prostatic resections.
3. Catheter balloon-related UO obstruction can be managed at the bedside via balloon deflation and catheter repositioning.

Consent

Patient consent was obtained in writing.

Conflicts of interest & financial disclosures

None.

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