CASE REPORT

Obstructed kidney and sepsis secondary to urethral catheter misplacement into the distal ureter

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SUMMARY

An 86-year-old woman underwent routine catheter replacement in the community. The new catheter failed to drain urine. Attempts to remove the catheter failed, both by the community nurse as well as by the urology team in the hospital. A CT scan confirmed that the catheter balloon was inflated in the distal right ureter. The patient was started on antibiotics and listed for cystoscopy under general anaesthetic. The catheter was visualised entering the right ureter and the balloon punctured using a wire under image intensifier guidance. Once removed, a new catheter was inserted. Very dilated ureteric orifices were noted. Post operatively the patient required HDU support for 48 h due to sepsis and on recovery was discharged home. The key learning point in this case is to always consider catheter misplacement in the ureter if it is not draining well and the patient presents with pain.

BACKGROUND

This case is important as it demonstrated a potentially life-threatening complication to a very common and routine outpatient procedure. It has highlighted that community nurses may be unaware of this possible complication or the signs to look out for. Our literature review has identified only 14 reported cases of catheter misplacement in the ureter.

CASE PRESENTATION

An 86-year-old woman with chronic interstitial cystitis underwent routine long-term urethral catheter replacement in the community by a district nurse. Soon after she was catheterised, the patient developed right-sided abdominal pain. There was minimal urinary output from the catheter. A different district nurse attended the patient the same day. However, she was unable to deflate the balloon and remove the catheter; hence, the patient was transferred to the hospital late in the afternoon.

An emergency department nurse was also unable to deflate the balloon and remove the catheter. The catheter was divided with scissors on the presumption that by removing the valve the balloon would automatically deflate. Unfortunately this failed and the catheter remained in situ.

On assessment by the urology team, the patient had a long-term catheter coming out from her

urethra, with the catheter completely divided. Her observations were normal, though her right-sided abdominal pain persisted. Attempts to deflate the balloon with a 21-gauge needle and syringe inserted into the inflated balloon tract failed. A gentle flush of the catheter with 2–3 mL of normal saline exacerbated her pain. There was minimal output from the catheter; however, with gentle traction, good volumes of urine bypassed the catheter.

INVESTIGATIONS

A radiologist using a portable FAST scanner in the emergency department performed an ultrasound scan. Although the views were poor, the inflated balloon was visualised and appeared to be in the bladder.

Blood tests were performed on admission; her renal function was normal, and white cell count was 9.1 and C reactive protein (CRP) 1. The following morning, her creatinine level rose to 200, her white cell count to 17.2 and CRP to 135. A CT scan that morning confirmed the catheter balloon was inflated in the distal right ureter, with obstruction in her right kidney ([figure 1](#)).

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for this patient (prior to CT confirmation) was an appropriately placed urinary catheter in the bladder; however, this had a failed valve which was the cause of the inability to deflate the balloon.

TREATMENT

Initial treatment for this patient was to ensure her bladder could drain adequately; therefore, a second catheter was inserted alongside her failed catheter. Medical management included analgesia for symptomatic relief. We were unable to obtain a CT scan out of hours to confirm the diagnosis. As the patient was not septic and blood tests were normal, we arranged a scan for the following morning.

Once we had the CT findings and abnormal blood counts, intravenous antibiotics were started and we arranged for a cystoscopy under general anaesthetic. This visualised the catheter passing into the right ureteric orifice ([figure 2](#)). Both her ureters were noted to be very dilated. A retrograde

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Figure 1 CT imaging showing the inflated balloon in the distal right ureter and an obstructed right kidney.

contrast study performed showed the inflated catheter balloon and dilated proximal ureter ([figure 3](#)).

Under image intensifier guidance, a wire was passed up through the catheter balloon port lumen and the balloon punctured. The catheter was removed and pus visualised draining from the right ureter. A ureteric stent was placed as well as a urethral catheter.

OUTCOME AND FOLLOW-UP

Postoperatively the patient became septic and required admission to the high dependency unit for 48 h for inotropic support. Following this, she recovered well and her blood counts normalised. A urology specialist nurse will perform all future catheterisations for this patient, using a teimans-tipped catheter with the tip pointing superiorly. A suprapubic catheter

would reduce the risk of misplacement in the ureter; however, this is contraindicated in this patient due to multiple previous abdominal surgeries.

DISCUSSION

Misplacement of a urethral catheter in the ureter is a rare and potentially life-threatening complication, with only 14 reported cases.^{1–12} Our case was further complicated due to failure to deflate the balloon, requiring a general anaesthetic and risk of ureteric injury. External compression on the balloon port lumen by the ureter is the likely reason we were unable to deflate the balloon normally. However, primary catheter failure or crystallisation in the balloon is also a possibility.

On review of this patient's medical notes, it was noted she had dilated ureteric orifices on previous flexible cystoscopies.

Figure 2 Urethral catheter visualised entering the right ureter.

Figure 3 Retrograde study, demonstrating the inflated catheter balloon and obstructed system.

She was, therefore, at much higher risk for this complication to occur. Being a female, she was also at higher risk due to having a much shorter urethra and the direction the catheter enters the

bladder. A suprapubic catheter would reduce the risk of misplacement in the ureter, though this is contraindicated in this patient due to multiple previous abdominal surgeries.

Learning points

- ▶ Always consider catheter misplacement in the ureter if it is not draining well and the patient presents with abdominal pain.
- ▶ Be aware of the increased risk in female patients with neurogenic bladders or known to have dilated ureteric orifices.
- ▶ Ultrasound may not be sensitive enough to identify the balloon position; if in doubt, arrange a non-contrast CT scan.

Contributors All authors were involved with care of the patient during her admission at Worthing Hospital. The literature review was performed by ASB and MJC. The article was written by RLHC and edited by TL, who was also the lead surgeon and consultant in charge of the patient's care.

Competing interests None.

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