Inadvertent ureteric cannulation following suprapubic catheter change –
Case report and review of the literature

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ABSTRACT
Suprapubic catheterisation (SPC) is a common urological intervention. We present a rare case of ureteric cannulation following SPC catheter change and summarize the literature around this rare phenomenon. To our knowledge, our case is the first to have occurred in a patient without a neuropathic bladder.

1. Introduction
Suprapubic catheterisation (SPC) is a common urological intervention. We present a rare case of ureteric cannulation following SPC catheter change and review previous cases that have been reported in the literature.

2. Case presentation
A 61-year-old male with urethral stricture disease underwent a routine SPC change in the community. A 16 French (16Fr) Foley Catheter was replaced and 10mls of water instilled in the balloon. The SPC tract had been created one-year prior due to severe obstructive lower urinary tract symptoms related to urethral stricture disease after he was deemed a poor candidate for urethroplasty.

Within 5 h of the change, the patient presented to hospital with fever, rigors and right flank pain. His white cell count and C-reactive protein were elevated to 29.0 x 10^9/L and 225 mg/L respectively. His renal function was impaired with a creatinine of 205 ummol/L and estimated glomerular filtration rate (eGFR) of 25ml/min as compared to his baseline of 79 ummol/L and >90 ml/min respectively. A venous blood gas performed at his presentation revealed a pH of 7.24 and lactate of 3.0 mmol/L. The patient required inotropic support due to septic shock. A Non-Contrast Computed Tomography (CT) of the abdomen and pelvis was performed and identified that the SPC tip had cannulated the patient’s right ureter causing obstruction with associated hydroureteronephrosis (Fig. 1).

The SPC was deflated and changed to another 16Fr catheter. An ultrasound was performed 12 hours later and confirmed resolution of the hydroureteronephrosis. Urine specimens returned Escherichia Coli resistant to ciprofloxacin and nitrofurantoin. The patient required inotropic support for a further 24 hours and was treated with a total of 72 hours of intravenous piperacillin-tazobactam.

On the fourth day of admission, the patient was originally planned for discharge on a 7-day course of amoxicillin with clavulanic acid however developed acute onset of biliary vomiting and generalized abdominal pain. A CT with contrast of the abdomen and pelvis was performed and identified a new closed loop adhesive small bowel obstruction in the context of a childhood laparotomy for volvulus. The previously seen right hydroureteronephrosis however had resolved and the catheter tip was no longer within the right ureter (Fig. 2).

The patient was taken for a laparotomy, adhesiolysis and bowel resection and was discharged following a two week admission. This small bowel obstruction was not present on his initial CT at presentation (Fig. 1) and was felt to be unrelated to his initial presentation with urosepsis. The patient has since been discharged and at his most recent review 4 months following this admission has had three suprapubic catheter changes in the community without issue.

3. Discussion
To our knowledge, our case is the only documented one to occur in an individual who did not have an SPC created for a neurogenic bladder.1–5 In most cases, pain secondary to ureteric obstruction was not documented (n = 4). It has been suggested that the absence of pain may relate to the neuropathic population often having impaired sensation1,2

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related to the underlying aetiology of the patient’s neurogenic bladder. In some cases, this may be compounded by comorbid cognitive impairment. It is hypothesized that neurogenic bladders are inherently prone to this complication as the high pressures and poor compliance of neurogenic bladders leads to a small volume bladder with patulous ureteric orifices. This makes it easier for the tip of a foley catheter to inadvertently be placed in the ureter. We theorize that obstruction occurred via the catheter as the catheter tip in the ureteral orifice traumatized the distal ureter leading to resultant inflammation, oedema and impaired ureteral drainage.

Other authors have suggested that the risk of this complication may be reduced by using short-tip urinary catheters, fully retracting and securing the SPC insertion to prevent migration into the ureter and having a high index of suspicion for SPC misplacement in the context of decreased urine output. We would also suggest that in principle, when changing foley catheters in the SPC, clinicians should insert only an appropriate length rather than the whole length of the catheter to minimize risk of this complication. In high resource settings, ultrasound imaging has been suggested as a useful adjunct following catheter changes to ensure adequate placement, particularly in patients for whom this rare complication has previously occurred.

Consent

Consent was obtained from the patient’s legal guardian for publication of this article.

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Declaration of competing interest

Nil.

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