Percutaneous suprapubic cystostomy (SPC) is a procedure performed to manage urinary retention when urethral catheterization is contraindicated or to improve the quality of life in cases such as neurogenic bladder. Although a simple procedure, it is associated with serious complications, increasing the morbidity and mortality. This case study demonstrates a delayed presentation of small bowel obstruction caused by a suprapubic catheter traversing through the ileal mesentery in a patient with no prior bowel surgeries. Few cases report this complication and this is possibly the first case to be reported six years after SPC placement.

Introduction

A percutaneous suprapubic cystostomy (SPC) procedure is performed to drain the urinary bladder when urethral catheterization is difficult or as an alternative to a long-term urethral catheter. These cases include urethral trauma, urethral stricture disease, bladder neck obstruction, prostatic enlargement, and neurogenic bladder. Studies have shown that SPC markedly improves urological quality of life and ease of management, achieving 84.5% patient satisfaction. The contraindications for this procedure include inability to distend the bladder, bladder cancer, dilated loops of bowel, coagulopathy, and possible bowel adhesions overlying the bladder secondary to prior lower abdominal surgery. Even though it appears to be a simple procedure, it is associated with complications such as infection at the insertion site, bleeding, difficulty inserting the tube/catheter, trauma to the bowel, fistula formation, and catheter migration into the ureter causing ureteral obstruction. We report an extremely unusual case that followed a suprapubic cystostomy performed six years prior to the discovery of the complication.

Case presentation

A 65-year-old female patient, who had a percutaneous suprapubic catheter placed in November of 2011 for neurogenic bladder and bilateral hydronephrosis came to the emergency room in August of 2017 with the complaints of diffuse abdominal pain, nausea, vomiting, and diarrhea of one day duration. Her past medical history included morbid obesity, neurogenic bladder secondary to diabetic cystopathy, uncontrolled type 2 diabetes mellitus, hypertension, stage II chronic kidney disease, congestive heart failure, chronic atrial fibrillation, seizures, hypothyroidism, rheumatoid arthritis, and Turner’s syndrome. Prior to SPC placement she had no prior history of abdominal surgery.

She had reported two similar episodes of abdominal pain since placement of the suprapubic catheter. The first episode occurred in December 2013 when her suprapubic catheter could not be reinserted by a home health nurse. She was brought to the emergency department where it was reinserted without difficulty and her pain resolved. Her second episode was in March 2017. She was diagnosed with a small bowel obstruction and was successfully treated with conservative management, which included bowel decompression with a nasogastric tube, IV fluid hydration, anti-emetics, and pain control. The suprapubic catheter was not identified as the source of the obstruction at that time.

The patient’s physical exam on presentation demonstrated generalized abdominal tenderness and distension. A CT scan performed as part of her workup revealed small bowel obstruction...
On hospital day 2, the patient failed conservative management and was taken to the operating room by General Surgery and Urology for exploratory laparotomy. Intraoperatively, she was found to have obstruction of her distal ileum due to entrapment from the suprapubic catheter. The suprapubic catheter could be seen coming from the lower abdomen, extending through the small bowel mesentery into the bladder. The bowel was noted to be significantly adherent to the pelvis, and thus a partial small bowel resection with primary anastomosis was performed due to concern for the viability of the involved bowel. The suprapubic catheter was replaced and inserted into the bladder during the surgery. Pathology from the resected small bowel showed focal chronic inflammation and peritonitis amid hyalinized fibrous adhesions on serosa at the site of luminal narrowing.

The patient had a prolonged post-operative course that was complicated by her extensive co-morbidities. She later required reintubation due to respiratory failure and eventually succumbed to her illness.

**Discussion**

Percutaneous suprapubic cystostomy carries with it a complication rate of up to 10% and a mortality rate ranging from 0.8 to 1.8%. The most serious complication associated with this procedure is bowel injury which is seen in 2.4–2.7% of patients. To our knowledge, this is only the fourth case reported where the catheter punctured the bowel mesentery and caused small bowel obstruction by entrapping a loop of bowel between the catheter and abdominal wall. However, this is the first case reported where six years had passed between the initial time of catheter insertion and...

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**Fig. 1.** CT imaging at the time of admission. (A) Distended loops of bowel consistent with small bowel obstruction. (B) Entrapment of small bowel under the SPC.

**Fig. 2.** Intraoperative pictures (A) Suprapubic catheter piercing the mesentery of the small bowel. (B) Hemostat showing the hole in the mesentery.
discovery of small bowel obstruction related to the catheter. We suspect that the initial punch used to insert the catheter must have traversed through the mesentery and into the bladder but avoided the major blood vessels in the mesentery, which is how the affected segment of bowel remained viable for many years following the tube placement.

Turner’s syndrome is not associated with any known bowel abnormalities that puts patients at higher risk for bowel injury during SPC placement, but the syndrome is well associated with short stature, which is a risk factor. Other risk factors associated with SPC complications include obesity, prior lower abdominal surgeries, small bladder capacity, a short distance between symphysis pubis and umbilicus, and the absence of pre-operative pelvic imaging.5

Although this case presented with a rare complication, we must find ways to prevent these complications. One suggested method is through the use of ultrasound-guidance in the procedure that can help to confirm the absence of structures between the abdominal wall and distended bladder. Suprapubic catheter insertion can also be performed with the use of CT or MRI guidance with enhanced safety, however, this will add to the cost of the procedure. This procedure has also been successfully performed under fluoroscopy guidance.5 In addition, the initial set-up of the procedure such as distension of the bladder and the Trendelenburg positioning help prevent this complication, although they did not help in our patient due to her obesity and short stature. Along with due diligence, identifying risk factors, the use of additional imaging modalities, intra-operative bladder distention, and Trendelenburg positioning should reduce the incidence of this complication.

Conclusion

Suprapubic catheter placement can be associated with significant morbidity and necessary precautions must be taken perioperatively for prevention. When faced with risk factors, it may be prudent to use imaging guidance or an open procedure to place the catheter. Any patient who has a suprapubic catheter and presents with any abdominal complaints even six years after suprapubic catheter placement should be evaluated for complications related to the catheter.

Declaration of interest

None.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.eucr.2018.01.024.

References

1. Lavelle Rebecca S, et al. Quality of life after suprapubic catheter placement in patients with neurogenic bladder conditions. Neurourol Urodyn. 2015;35(7): 831–835. https://doi.org/10.1002/nau.22912.
2. Hamdy Freddy C, Eardley Ian. "5.2: Retention in men." Oxford Textbook of Urological Surgery. Oxford Univ Press; 2017.
3. Ahluwalia Rs, et al. The surgical risk of suprapubic catheter insertion and long-term sequelae. Ann R Coll Surg Engl. 2006;88(2):210–213. https://doi.org/10.1308/003588406x95101.
4. Bashir Yasir, et al. First Irish and tenth case of small bowel obstruction secondary to suprapubic catheterisation in the world. Case report and case review of a rare complication of suprapubic catheterisation. Int J Surg Case Rep. 2017;41:50–56. https://doi.org/10.1016/j.ijscr.2017.10.005.
5. Jacob Prem, et al. Suprapubic catheter insertion using an ultrasound-Guided technique and literature review. BJU Int. 2012;110(6):779–784. https://doi.org/10.1111/j.1464-410x.2011.1088z.x.