

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

Urology Case Reports

journal homepage: www.elsevier.com/locate/eucr

Obstruction of a ureter orifice by suprapubic catheter

Matan Mekayten^{*}, Mordechai Duvdevani

Faculty of Medicine, Hebrew University of Jerusalem, Israel, Department of Urology, Hadassah Hebrew University Medical Center, Jerusalem, Israel

ARTICLE INFO

Keywords:

Suprapubic catheter
Obstructive uropathy
Wandering catheter
Meningomyelocele
Spina bifida

ABSTRACT

An Indwelling suprapubic catheter is an established solution for patients with meningomyelocele neurogenic bladder. We report on a case in which a routinely replaced suprapubic catheter obstructed the left ureter orifice. The catheter drainage holes were inside the distal left ureter which compromised urinary drainage from the other kidney as well. As a result, the patient suffered from acute renal failure. During his hospitalization, the catheter was replaced and re-located, and renal function rapidly improved. This case emphasizes that even procedures that have been routinely performed for decades can manifest with an unusual complications.

Introduction

Meningomyelocele is a birth defect that occurs as a result of neural tube closure failure during embryogenesis. This causes bladder dysfunction in addition to other disorders. Urologic surveillance is an important component of these patients' health, with renal failure being the most common cause of mortality of all ages.¹ Since bladder dysfunction is permanent, it is necessary to allow for effective and safe bladder drainage, under low pressure, to avoid renal deterioration.

Case presentation

A 34-year-old male arrived referred to Emergency Department at our institution with acute kidney failure discovered at a community clinic. Past medical history included meningomyelocele with neurogenic bladder, paraplegia, and pressure sores secondary to immobility, chronic osteomyelitis, Nephrolithiasis, Diabetes Mellitus and Obstructive sleep apnea and Hypothyroidism. During last fifteen years the patient had regular suprapubic catheter replacement uneventfully. Last replacement performed 10 days earlier (catheter BARD® whistle tip 24 French). The patient contacted the family physician with uremic presentation of malaise and nausea with diminished urine output per catheter, with no urine leakage otherwise. Laboratory findings included acute renal failure with creatinine level 269 mmol/L, while three months before normal creatinine level was 101 mmol/L. Physical examination and lab were unremarkable otherwise.

Upon referral to the hospital, the patient underwent preliminary evaluation, including catheter flushing, which reported to be difficult

with no residual volume. A computed tomography test was performed, demonstrating bilateral hydronephrosis, with an empty bladder. The tip of the suprapubic catheter located inside left ureteral orifice, for a few cm long. This way catheter drainage holes were all inside the distal left ureter, which interferes with the drainage of urine from both kidneys. The catheter balloon that was in the bladder and prevented urine from draining out (Figs. 1 and 2).

Upon admission the patient underwent sterile catheter replacement and creatinine monitoring. A fast recovery of symptoms and renal function was noticed with rapid decline of creatinine level later. The patient had no post obstructive polyuric phase and no infectious signs or symptoms.

Discussion

Proper renal drainage in patients with neurogenic bladder is of paramount importance. A simple and effective solution a permanent urethral or suprapubic catheter. Urologic monitoring for these patients is important, and in particular, the bladder drainage under low pressure.

The patient presented herein arrived for evaluation following routinely replaced suprapubic catheter that spontaneously wandered to the distal part of the left ureter. Patients with wandered urinary catheter may present in various forms including urinary leakage, pain, and some have been asymptomatic.

In the literature, there are several cases of urinary catheter stray placement - including distal ureter and even ureteral rupture due to balloon inflated in the ureter,² but these have been reported in urethral catheter and not by suprapubic drainage, which should be less prone for

^{*} Corresponding author.

E-mail address: mc10matan@gmail.com (M. Mekayten).

<https://doi.org/10.1016/j.eucr.2021.101756>

Received 27 May 2021; Received in revised form 13 June 2021; Accepted 14 June 2021

Available online 15 June 2021

2214-4420/© 2021 Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

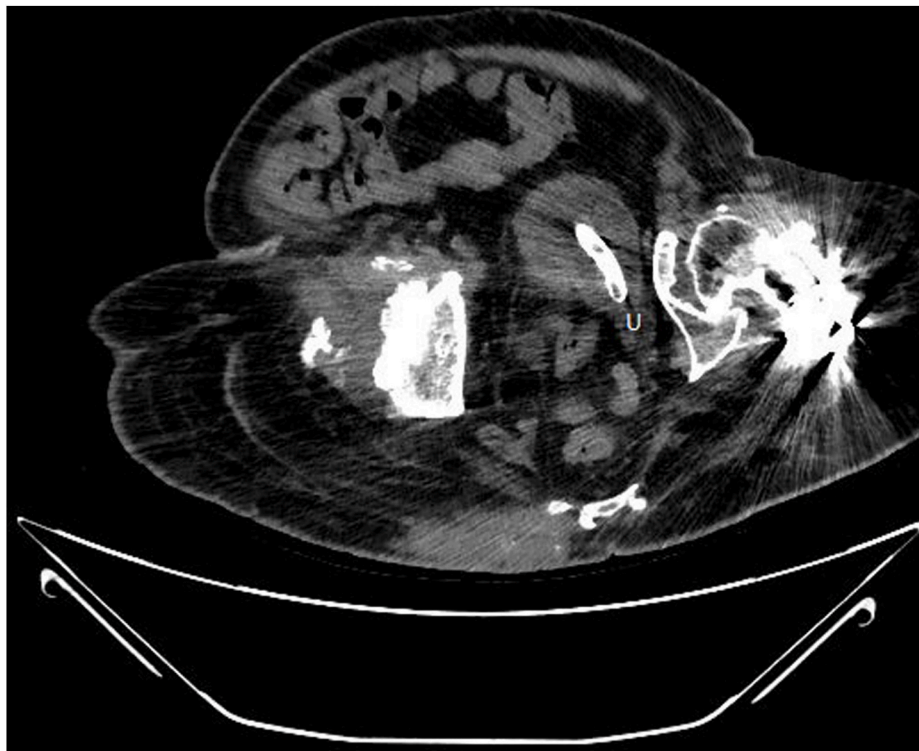


Fig. 1. Computed tomography shows suprapubic catheter tip inside the distal ureter. U –ureter.



Fig. 2. Three dimensions Computed Tomography reconstruction demonstrating suprapubic tract and relative location.

these complication due to is short and direct route to the bladder.

Suprapubic catheter has its limitation as there is higher risk for damage of adjacent structures such intestine, blood vessels, and even urinary tract perforation. Vaidyanathan et al. published a case study about an unintentional placement of a suprapubic catheter tip in the

urethra, causing urinary drainage failure.³ Borrero et al. reported a ureteral obstruction due to ureteral insertion of suprapubic catheter, but clinical course was different as the patient was septic and not with acute renal failure.⁴ Special attention should be paid to patients with a neurogenic and fibrotic bladder that is often accompanied by a diminished pain perception, which may make a simple catheter replacement to one with later complications.⁵

This case presented here had an indolent clinical course. Although the catheter drained well in the first few days, the catheter ceased to drainage while the patient was not under medical supervision. Since catheter holes were inside the left ureter, the urinary bladder was not drained.

To the best of our knowledge, this clinical course has not yet been published. The present presentation is an important reminder of the importance of follow-up and patient’s education even when dealing with a regular and simple procedure.

This case emphasizes that even procedures that have been routinely performed for decades can surprise you with unusual complications.

Conclusions

A suprapubic catheter is a good and safe solution for neurogenic bladder, but urinary drainage must also be carefully monitored after proper routine replacement. Some clinical scenarios necessitate prompt diagnosis and adequate management and require creativity about possible complications.

Funding

The authors did not receive any specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

References

1. Muller T, Arbeiter K, Aufricht C. Renal function in meningomyelocele: risk factors, chronic renal failure, renal replacement therapy and transplantation. *Curr Opin Urol*. 2002 Nov;12(6):479–484.
2. Crawford RLH, Liston T, Bong AS, Cunnane MJ. Obstructed kidney and sepsis secondary to urethral catheter misplacement into the distal ureter [Internet] *BMJ Case Rep*; 2015 May 14 [cited 2021 Jan 16];2015. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4434285/>.
3. Vaidyanathan S, Hughes PL, Soni BM, Oo T, Singh G. Inadvertent positioning of suprapubic catheter in urethra: a serious complication during change of suprapubic cystostomy in a spina bifida patient - a case report. *Cases J*. 2009 Dec 22;2:9372.
4. Borrero GO, Miller PR, Vora K, Nepjuk CA. Acute ureteral obstruction as a complication of suprapubic catheterization. *Urol Radiol*. 1988 Dec 1;9(1):171–173.
5. Anderson BW, Greenlund AC. Ureteral cannulation as a complication of urethral catheterization. *Kor J Urol*. 2014 Nov;55(11):768–771.