



An alternative approach of cystoscopy-guided removal of a recalcitrant foley catheter

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ABSTRACT

Foley balloon malfunction can result in recalcitrant catheters. Management approaches for troubleshooting this rare occurrence have been described in the literature, including the more invasive methods such as the use of cystoscopy for direct visualization. We describe a case of our endourologic management of a retained 14F temperature-probe foley catheter in a fifty-nine-year-old female patient.

1. Introduction

Failure of a Foley balloon to deflate is the main cause of recalcitrant catheters and can be a result of various etiologies such as faulty valve mechanism, blockage of the inflation channel, and crystallization of the fluid within the balloon.¹

The literature describes various methods of troubleshooting this issue including balloon hyperinflation and balloon puncture.² Balloon hyperinflation is typically done with solvents such as ether or chloroform.¹ Direct or indirect puncture of the balloon has been described using the sharp end of a ureteral stent wire. Additionally, suprapubic needle-based puncture with the use of transabdominal ultrasound has been incorporated into algorithms for this problem. An endourologic approach with the use of cystoscopy and sheaths has been reported as an uncommon, yet available treatment option.¹ We describe an alternative approach of foley balloon puncture and removal under direct visualization with the use of cystoscopy.

2. Case presentation

We report a case of a retained foley catheter in a fifty-nine-year-old female patient after explantation of left shoulder arthroplasty and placement of left reverse total shoulder arthroplasty. At the beginning of the case, a 14F temperature-probe foley catheter was placed atraumatically. The surgery lasted 407 minutes and was uneventful throughout. However, during recovery in the post-anesthesia care unit, the nursing team experienced difficulty with foley removal. Of note, the

patient had no prior urologic history or baseline issues with urination. Additionally, the physical exam was noncontributory. The foley catheter was mobile and easily advanceable.

First, an attempt was made to further aspirate fluid from the balloon port. Next, the catheter was cut distal to the three ports. We then attempted more invasive methods including using the back end of an Amplatz wire to probe the balloon port. After failure, an attempt was made to insert a 20g angiocatheter needle into the balloon port followed by flush and aspiration. Ultrasound (US) was performed, which revealed catheter location within the bladder with an inflated balloon. Pelvis radiography was used to rule out any mechanical kinks in the catheter tubing.

After obtaining consent, the patient was prepped and draped. Topical anesthesia with lidocaine was applied, and a 2–0 vicryl suture with a tapered needle was placed through the distal end of the Foley catheter as the stay suture. The catheter was then pushed back into the bladder and a 17F rigid cystoscope was advanced into the bladder. Placing mild traction on the stay suture helped to prevent foley balloon migration during the procedure. An inflated balloon was visualized. A William's needle was advanced through the cystoscope and punctured the balloon which caused the balloon to deflate. No debris was seen within the balloon fluid. The cystoscope was removed. The catheter was then easily removed from the bladder by pulling on the stay suture with the catheter tip remaining intact. The patient tolerated the procedure well.

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3. Discussion

We describe a case of a recalcitrant foley catheter in fifty-nine-year-old women. Likely reasons for catheter retention in this case include intrinsic balloon valve dysfunction or obstruction of the inflation channel. Radiologic evidence excluded mechanical and anatomical kinks in the tubing; however, attempts at flushing the balloon were unsuccessful. Given the short duration of time that the catheter was in place, it is unlikely crystallization of the fluid in the balloon or tubing had occurred, and after puncture, no fragments were visualized endoscopically.

Attempts at following less invasive methods of treatment were unsuccessful in this case. It is suspected that the catheter valve malfunction prevented more readily and efficient options such as hyperinflation from being effective. Techniques that rely on the use of an angiocatheter or other sharp tools have been described in the literature.³ In female patients, transvaginal palpation of the foley balloon can aid in targeting of the needle.³ The use of ultrasound as guidance for a percutaneous puncture approach was also considered. In this situation, the patient's body habitus would have been an obstacle for both suprapubic and transvaginal approaches. Moreover, there was concern of overlying bowel making the transurethral approach most favorable for our patient.

Endoscopic management of undeflatable catheters has been reported in the literature.³⁻⁵ These operative methods are used as more final resorts, as they require the need for general anesthesia to be completed. Our approach using the cystoscope as means to push the transected and retracted catheter into the bladder followed by direct visualized needle puncture has been described in the literature.³ However, instead of using biopsy forceps to remove the catheter system once the balloon had been punctured, as described previously, we removed the cystoscope and pulled our stay suture to remove the catheter. This approach decreases length of the procedure and the theoretical risk of infection from the reintroduction of unnecessary instruments (i.e. biopsy forceps). Additionally, this approach forgoes the need for ultrasound, which may not be easily available.

Limitations of our approach exist. For example, male patients may present as more challenging given the longer length of the urethra. However, we still would consider this approach to be efficacious in the male patient, as long as the patient is able to tolerate the procedure. Second, this approach relies on the integrity of the stay suture. In the

event the stay suture was displaced while pulling the catheter, we would likely have used the biopsy forceps to remove the catheter system.

Ultimately, the goal of the techniques offered in the literature as well as ours involves safe and efficient removal of the malfunctioned catheter while maintaining patient comfort. A retained foley catheter can present a urologist with a troublesome yet resolvable situation. Numerous approaches and algorithms describing management of this issue have been reported in the literature. We review a cystoscopic approach for management of a recalcitrant foley after failing previous, less invasive methods. Replacing the role of biopsy forceps with the use of a stay suture as means to remove the foley decreases length of the procedure and risk of infection. Patient safety and comfort as well as efficiency in removal was maintained using our approach.

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Declaration of competing interest

No conflicts of interest.

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