

Abstract

Equipment malfunction is a relatively common occurrence in surgery. It places the surgeon in a difficult position of quickly devising an innovative solution to safely complete the surgery. If time permits, one may rely on expert opinion and anecdotal evidence to navigate these situations. Otherwise, one must rely on one's own experience.

Our case describes a patient undergoing a transurethral resection of a bladder tumor and the challenges of associated equipment failure. During the procedure, the ceramic beak of the resectoscope became dislodged. The complexity of its removal became amplified due to the patient's altered anatomy and the lack of necessary equipment.

Ultimately, we were able to safely remove the resectoscope beak in a staged procedure using the holmium laser and we were able to resect the patient's bladder tumor.

Cystoscopic equipment malfunction is not well documented in literature, however as each procedure is highly variable the solution requires improvisation. Our two-staged procedure demonstrates the creativity necessary to obtain the safest and best outcome for the patient.

Introduction

- Reports of intravesical foreign bodies in literature have increased. Given the uniqueness of each foreign body, one must tailor the approach to removal for each object. (8)
- The resectoscope has a variety of uses in today's urology practice including transurethral resection of prostate and bladder.
- The ceramic beak at the tip of the scope serves as an insulator to the electrode.
- Beak detachment is a relatively rare occurrence in literature, and a variety of methods of explantation have been used including
 - laser fragmentation (3, 4, 6)
 - removal using an embolectomy balloon (2)
 - removal using a flexible cystoscope (1)
 - capture within rollerball attachment of the scope (7)
- The beak is rigid, smooth, and cylindrical and the ceramic is very hard making its removal challenging.

Figure 1. Resectoscope with arrow pointing to the ceramic beak (courtesy of olympus-europa.com)



Case

A 78 year old male with a PMH significant for a mechanical aortic valve (on coumadin), CAD s/p CABG and metastatic prostate cancer (on Lupron) with a newly found 8cm left postero-lateral bladder wall mass.

The patient was taken to the OR for a transurethral resection of bladder tumor.

- Entrance into the bladder was challenging due to a long, dense, circumferential peno-membranous stricture.
- Once the stricture was dilated the 26F resectoscope was passed into the bladder with resistance, however at that point the ceramic beak was identified within the lumen of the bladder.
- Multiple attempts were made to remove the beak with the stone basket, flexible and rigid graspers, but we were unable to explant it.
- The case was then aborted as the holmium laser was unavailable and passage into the bladder was challenging. A urethral false passage was identified.

Repeat cystoscopy in 1 week: Taken to the OR for beak removal and TURBT

- The resectoscope beak was identified in the bladder, and a 1000 micron laser fiber was used to laser the beak in half.
- A lithotrite stone crusher was used to further fragment the beak and the pieces were evacuated out. Removal of all fragments was confirmed with repeat cystoscopy and fluoroscopy.
- The TURBT was then completed and the patient had an uncomplicated postoperative course.

Patient found to have pT1 high grade bladder cancer with sarcomatoid and micropapillary differentiation.

Figure 2: Tumor identified during in office cystoscopy

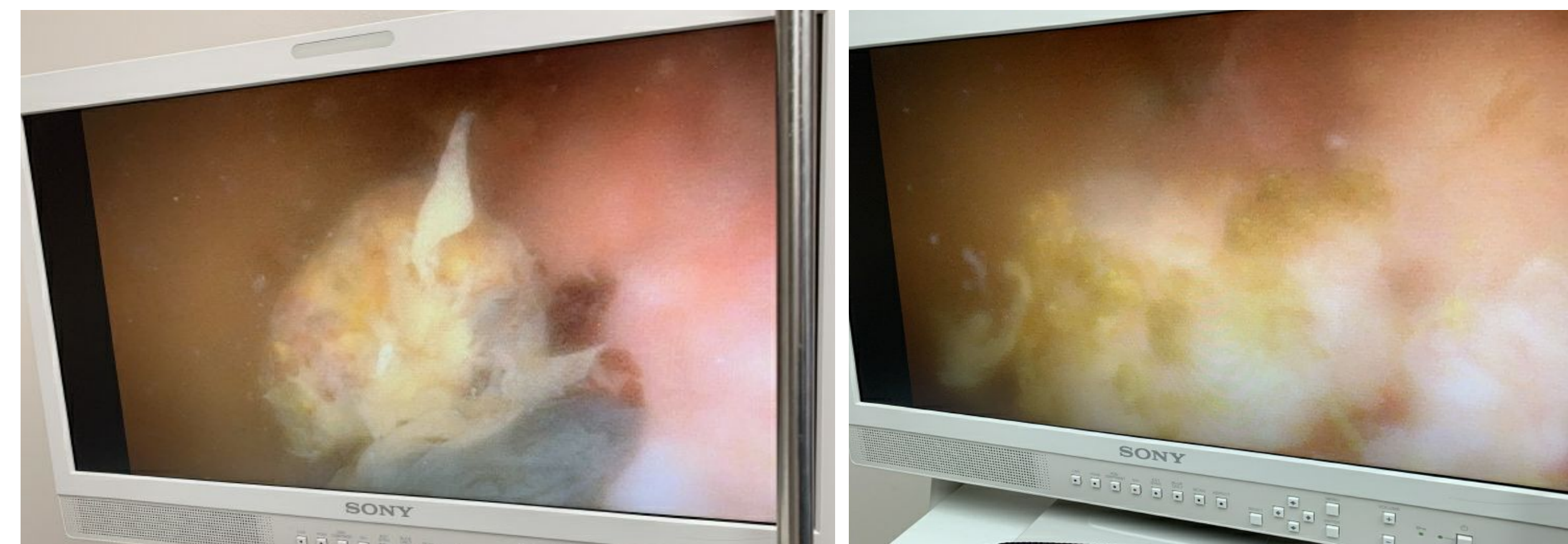


Figure 3: Resectoscope beak identified on fluoroscopy and cystoscopy

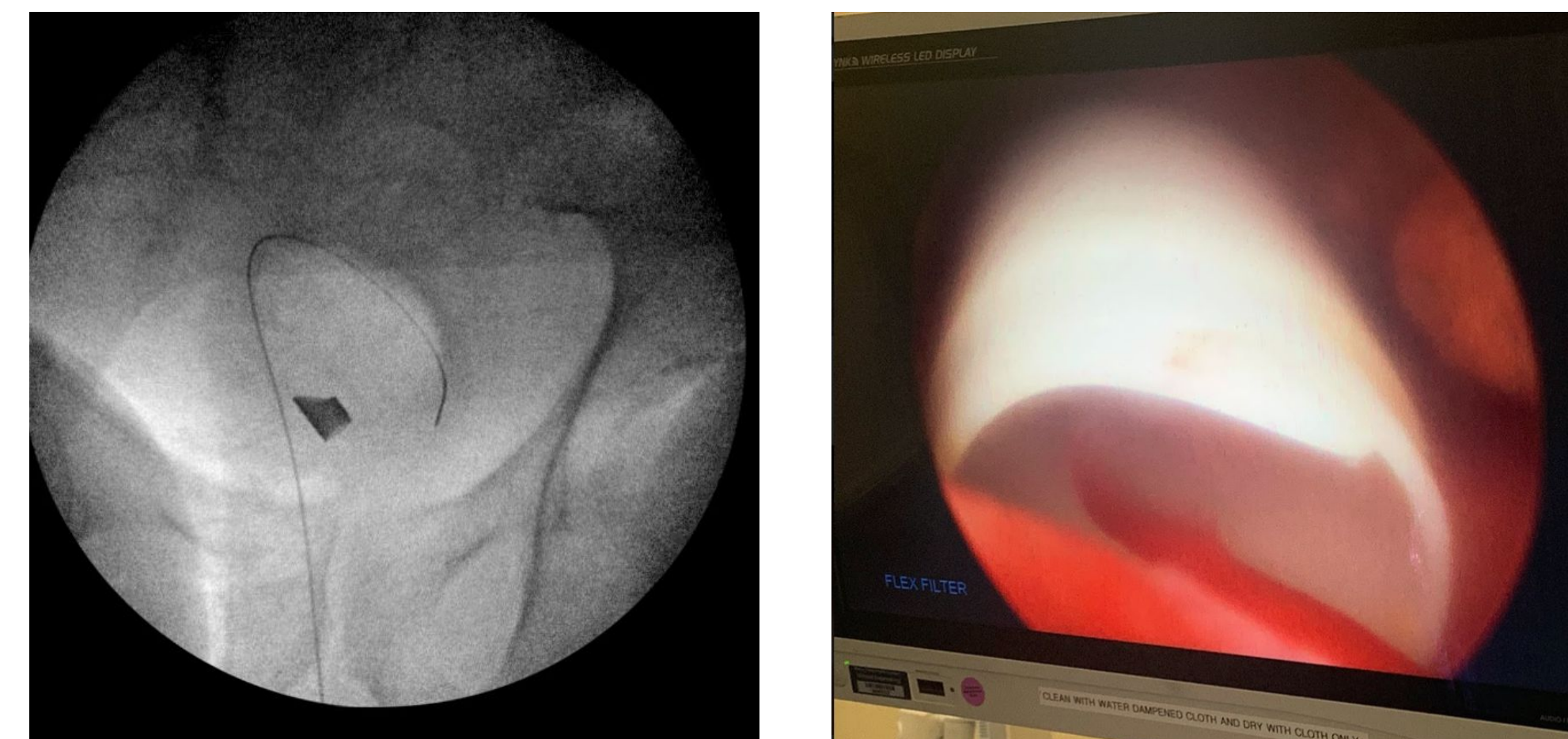


Figure 4: Laser fragmentation and successful removal of the beak



Discussion and Conclusion

Surgical instruments are used on a daily basis and are subject to a lot of wear and tear. Therefore, equipment failure is an accepted risk of every surgical procedure. Literature review found 8 recorded instances of a detached resectoscope beaks since 1988. This is most likely underestimated. These case reports document novel techniques for removing the insulating beak. Most of the reports discuss scenarios where the beak was within the lumen of the bladder, however Smith *et al.* and Grainger *et al.* removed intra-urethral beaks. Each of these cases came up with a slightly different solution.

Our case describes a similarly innovative solution for removal of the foreign body. We were faced with multiple obstacles in the diagnosis and treatment of this patient's bladder cancer. First, a dense urethral stricture required dilation. Second, poor scope mobility and visualization was encountered. Third, necessary equipment to complete the surgery was unavailable. Finally, creation of a urethral false passage required early termination of the procedure. All of these factors contributed to the decision to stage the removal of the resectoscope beak.

This case represents the safe removal of an intravesical foreign body in a staged procedure. When the patient returned to the OR, given the challenges encountered during the first procedure, every piece of endoscopic equipment was made available. In addition, the indwelling foley provided us with greater scope mobility. We were successful in removing the foreign body and resecting the bladder tumor. The patient did not require any further intervention.

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