Delayed presentation of a detached resectoscope beak and treatment with thulium laser

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Abstract

Intraoperative detachment of a resectoscope beak is an extremely rare and unusual event. Retrieval of the ceramic beak can be difficult due to the sheath's large size relative to the urethral lumen. Our report describes the retrieval of a calcified ceramic resectoscope beak from the urinary bladder 4 years after transurethral resection of the prostate (TURP). The calcified beak was successfully fragmented into 3 separate pieces with a thulium laser. This method allowed for safe removal of each fragment through the urethra.

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Introduction

Surgical treatment for symptomatic benign prostatic hyperplasia often involves transurethral resection of the prostate (TURP). The resectoscope used for this procedure contains a ceramic beak for insulating purposes. On rare occasions, the insulating beak can detach from the resectoscope and become lodged in the urinary bladder or prostatic fossa.[1,2] Retrieval of the beak during the intraoperative procedure can be difficult on account of its relatively large width in comparison to the urethral diameter. We describe a unique case in which a calcified ceramic resectoscope beak was found in the urinary bladder 4 years after TURP. The large calcified ceramic beak was successfully retrieved after fragmentation with a thulium laser.

Case report

A 74-year-old male was referred to the urology outpatients department complaining of urinary frequency and intermittent suprapubic pain for the preceding year. His past medical history included a TURP in 2006 and a left-sided total hip replacement. A urine dipstick was positive for red cells and routine blood investigations showed a creatinine of 83 µmol/L and a prostate-specific antigen level of 1.4 ng/mL. At cystoscopy, a bladder stone was observed and the patient was scheduled for laser cystolitholapaxy under general anesthetic.

In the interim, a plain abdominal film of the kidneys, ureters and bladder (KUB) was performed which surprisingly showed a metallic object in the bladder consistent with a resectoscope sheath tip (Fig. 1). It was completely calcified as determined at cystoscopy (Fig. 2). The calcified ceramic beak was not retrievable intact as it was considerably larger than the diameter of the urethral lumen. After complete removal of the calcified outer shell, the beak was fragmented into 3 pieces using a thulium-YAG laser with a 550 micrometre fibre at frequencies of 8 to 10 Hz. Laser power was adjusted to between 80 to 100 mJ and 2.7 kJ were used in total. Each piece was evacuated without difficulty after fragmentation and the patient was discharged the same day.

Discussion

Detachment of a resectoscope beak during TURP is an extremely rare event. While 4 cases have been previously described, our case was particularly unusual as the ceramic beak detachment was not recognized at TURP in another institution. In the intervening period, the ceramic beak had become calcified rendering it indistinguishable from a bladder stone at cystoscopy, but more obviously a metallic foreign body on KUB.

Previous authors have retrieved resectoscope beaks through different methods. Perhaps the easiest method would be to grasp the tip with an endoscopic forceps.[1] However, this method is often not possible due to the wide, rigid nature of the ceramic tip possibly further bulked up and roughened by calcification as in our case. Alternative methods have included the use of an embolectomy balloon[2] or sliding the roller-ball electrode from the resectoscope through the lumen of the beak and removing the entire unit through the urethra.[3] However, laser fragmentation was essential in our case due to the calcific enlargement of the beak. Applying the thulium laser allowed us to remove the calcified shell and then fragment the metallic tip into 3 smaller pieces

Fig 1. Intravesical foreign body consistent with resectoscope beak.

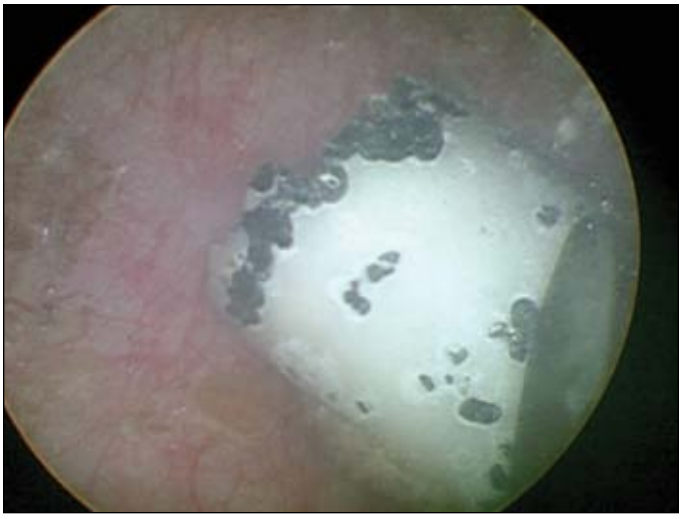

Fig 2. Cystoscopy image demonstrating calcified resectoscope tip in the urinary bladder after decalcification with the laser. Black circles are due to focal destruction of white insulating material by laser.

and retrieve each piece individually and safely. We found this to be an effective method as the laser fragmented the calcification off rapidly, and it also cut through the ceramic tip with ease.

The thulium laser (λ = 2 microns) possesses a number of potential advantages over the Holmium:YAG laser in this setting. Firstly, the laser's wavelength produces 4 times less thermal damage to soft tissue when compared to the 2.12-mm Holmium:YAG laser therefore reducing the risk of bladder preforation or damage to neighbouring bladder tissue.[4] Secondly, the thulium laser offers greater flexibility for use in ureteroscopes and higher irrigation rates for improved visibility, making challenging procedures more feasible.[5] Finally, the thulium laser fibre is about 5 to 10 times more efficient than the conventional holmium:YAG laser for vaporizing urinary tract calculi at identical pulse energies and for total number of pulses delivered, perhaps making this option a more cost-effective alternative.[6]

Conclusion

We report an unusual delayed complication after TURP. We also describe a novel, safe and effective technique for removing a calcified, ceramic-lined, metallic resectoscope beak from the urinary bladder.

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