

Urethroscopic Holmium: YAG Laser Ablation of Large Urethral Stone after Two-Stage Urethroplasty

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Abstract:

Hairball in a urethral diverticulum has rarely been reported. These hairballs are usually formed in the diverticulum coated with a hair bearing epithelium and can lead to urinary obstruction or infection. Using laser is a safe way to ablate such stones.

Keywords: hairball stone; laser, holmium-YAG; urinary stone

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Introduction

Two-stage urethroplasty using scrotal flap has some complications. Hair bearing urethra (1) and urethral diverticula (2), and each occurs at a rate of between 5% and 15% following hypospadias repair or urethroplasty. However, hairball stone formation in a urethral diverticulum has been reported in more rare cases (3). We present an interesting and rare case of giant hairball stone in urethral diverticulum after two-stage urethroplasty treated by Holmium: YAG Laser ablation.

Case report

A 70-year-old male presented with slowly decreasing urinary force and caliber. An open cystostomy had been performed for him in another center after unsuccessful try to pass a urinary catheter. The patient denied gross hematuria, and there was no history of urinary tract infection (UTI). There were not any constitutional signs or symptoms.

In past medical history, a history of PFUDD (urethral distraction defect associated with pelvic

fracture) was present from 30 years earlier and a two-stage urethroplasty using scrotal flap had been performed on him. The patient was symptom-free till two years before presentation, when the force and caliber of his urination was reduced. Physical examination revealed scar of previous urethroplasty in perineum (Figure 1). A solid stony mass was also palpable in perineum. The mass was not tender or painful. There was no adhesion to skin. No regional lymphadenopathy was detected.



Figure 1. Pelvic X-ray with an opaque mass in perineum

Both testicles had normal size without any mass or nodules. Other physical findings were normal.

In urethroscopy, a wide-mouth diverticulum in penobulbar urethra was seen with a large hairball stone in it. The stone size was 3×2 cm. There was a moderate stricture proximal to the diverticulum.

We suggested the patient an excisional removal of the stone. But, as he did not accept to undergo perineostomy, we decided to use Holmium: YAG Laser to ablate the stone.

Under spinal anesthesia and in dorsal lithotomy position, cystourethroscopy was performed using a 17-French cystoscope and 0-degree lens. The stricture was dilated using coaxial urethral dilators over a guide wire. The rest of the urethra, prostate, bladder neck, and bladder were endoscopically normal.

A 550-micron holmium: YAG Laser fiber was used to ablate the hairball stone. Laser settings of 400 W and 1.8 Hz and 7 pulses per second were used. Urethral hairball stone destruction was performed successfully and completely. A two-prong grasper was used to remove all remaining of the stone that had not been irrigated out. The patient was discharged on the next day and the foley catheter was removed a week later.

Discussion

Skin flap urethroplasty can lead to some complications such as recurrent stricture, troublesome post-void dribbling, and diverticulum formation (4). Stones are rarely seen in the urethra and are usually encountered in men with urethral stricture and diverticulum. Urethral diverticulum and hair bearing urethra are known complications of hypospadias repair and urethroplasty. These complications are more frequent in two-stage urethroplasty rather than one-stage technique. Fortunately, the incidence of hair bearing urethra following urethroplasty is decreasing due to the prevention strategies (5). Several methods have been used to prevent the growth of urethral hair, including avoidance of the use of hair-bearing skin (6), the use of depilating agents (7), and the use of preoperative thermocoagulation procedures (8).

Urethral hair may act as a nidus for UTI and a urethral hairball may result in obstruction of the urine flow.

Hairballs forming within a urethral diverticulum

have rarely been reported. Our patient was treated due to the symptoms of urinary obstruction. On initial workup, there was no hematuria. There was no history of UTI or urinary stone.

As the stone found in the diverticulum was giant, the patient was suggested to undergo a surgical excision; but, as he did not accept to have a perineostomy, we decided to use laser. We chose the Holmium: YAG Laser, because of its familiarity to urologists, its wide safety margin when working in a closed space, such as the urethra, and its known effectiveness for destruction of the urinary stones.

Conclusion

Urethral stone and hairball formation is a complication mostly observed in patients treated with two-stage urethroplasty using scrotal flap. In order to ablate urethral stones, holmium: YAG Laser represents a minimally invasive approach that uses equipment and techniques that are familiar to the endourologists.

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