



## Case report

## Holmium laser-assisted endoscopic extraction of a fishhook from the male urethra

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## ARTICLE INFO

## Article history:

Received 6 October 2010

Received in revised form

23 December 2010

Accepted 18 April 2011

Available online 9 May 2012

## Keywords:

endoscopy

fishhook

holmium laser

male urethra

## ABSTRACT

A man 37 years of age presented with frequency and dysuria. Rigid cystoscopy revealed the presence of a fishhook in the anterior urethra. Initial attempts to remove the fishhook in one piece by forceps or a basket were unsuccessful. The fishhook was cut into two pieces using a holmium laser via a 9-Fr ureteroscope and removed by forceps. The anterior urethra experienced a minor tear during the procedure. He voided well without significant urethral stricture 6 months postoperatively. An open urethrotomy is usually indicated for unsuccessful endoscopic removal of foreign bodies from the male urethra, which often leads to recurrent urethral stricture. The novel use of a holmium laser to facilitate the endoscopic removal of a fishhook from the male urethra may reduce the risk of postoperative urethral stricture.

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## 1. Introduction

Various kinds of foreign bodies lodged in the male urethra have been reported, and the management of such cases can be challenging for urologists. First-line treatment is endoscopic extraction of the foreign body. However, the restricted space of the male urethra makes it very difficult for endoscopic instruments, such as forceps or baskets, to effectively remove a foreign body. Open surgery is indicated when endoscopic extraction is unsuccessful, which often leads to significant urethral stricture or a fistula postoperatively. We herein report the successful use of a holmium laser to facilitate endoscopic extraction of a fishhook lodged in a male urethra.

## 2. Case report

A man 37 years of age presented to the emergency department of our institution (Mennonite Christian Hospital, Hualien, Taiwan). He had experienced dysuria and frequency for several days. On physical examination, there was a palpable mass within the anterior part of the urethra. Initial renal ultrasonography showed hydronephrosis of the right kidney, but the plain abdominal film failed to reveal any ureteral stones. An abdominal computed tomographic (CT) scan showed calcified material in the anterior urethra (Fig. 1) and a radiolucent stone in the right distal ureter. The

patient was not married, and his socioeconomic status was of a lower class. He had a history of mental retardation but no medical diseases. Laboratory data showed that complete blood counts and blood biochemistry tests were within normal limits. Urinalysis revealed hematuria and pyuria. The patient was subjected to an endoscopic procedure under general anesthesia in the operating room. With a 22-Fr cystoscope, a fishhook was found in the urethra (Fig. 2). Initial attempts were made to remove the fishhook in one piece by forceps or a basket; however, they were unsuccessful because the hook was snagged in the urethra. The fishhook was then cut into two pieces using a holmium laser (with a pulse energy of 0.8 J and a pulse rate of 8 Hz) via a 9-Fr ureteroscope, and the fragments were removed with forceps using a 22-Fr cystoscope (Fig. 3). The anterior urethra experienced a minor tear during the procedure. A urethral catheter was put in place to prevent postoperative urethral stricture. After the surgery, we attempted to determine how and when the fishhook became lodged in the urethra. However, neither the patient nor his caregivers could provide any meaningful information on this issue. The patient was discharged after the urethral catheter was removed on postoperative day 8. The patient was doing well with a normal uroflow rate at the 6-month postoperative follow-up.

## 3. Discussion

Although rare, various kinds of foreign bodies in the male urethra have been described in the literature, including ballpoint pens, wires, Allen keys, and pins.<sup>1–4</sup> The clinical presentation may vary from asymptomatic to swelling of the external genitalia,

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Fig. 1. Computed tomography scan showing calcified material in the male urethra.

dysuria, urethral discharge, and urinary tract infection. The most commonly reported reasons for self-inflicted foreign bodies in the male urethra are of an erotic or sexual nature, especially sexual gratification or masturbation, a mental illness, or drug intoxication.<sup>3</sup> The patient in this case had a history of mental retardation, but it was not clear whether the fishhook was inserted by himself or by someone else.

The composition, size, and origin of foreign bodies in the male urethra differ greatly, but the treatment is similar with endoscopic extraction the first-line treatment. Sometimes, a foreign body can be pushed back into the urinary bladder and grasped by forceps or a retrieval basket.<sup>2</sup> In this patient, it was impossible because the fishhook was snagged in the urethra. An open urethrotomy is



Fig. 3. Realigned fragments of the fishhook.

indicated in cases where endoscopic procedures are unsuccessful, which often leads to urethral stricture or a fistula.<sup>5</sup> We tried a novel approach using a holmium laser to facilitate removal of the fishhook. Because this method is less traumatic, we hoped to avoid an open urethrotomy and possible urethral stricture. Although it is possible that a high-energy laser can cause thermal injury to the urethra, the risk can be minimized with meticulous manipulation of the endoscopic procedure. In this case, the patient had a smooth recovery with no urethral stricture or fistula during the 6-month postoperative follow-up period.

Holmium lasers are used primarily for lithotripsy, but they are also used to cut soft tissues or tumors; however, the mechanisms differ. The holmium laser is highly absorbed by water. Because tissues are composed mainly of water, the majority of the holmium laser energy is absorbed superficially, which results in superficial cutting or ablation. By contrast, the holmium laser can cut through

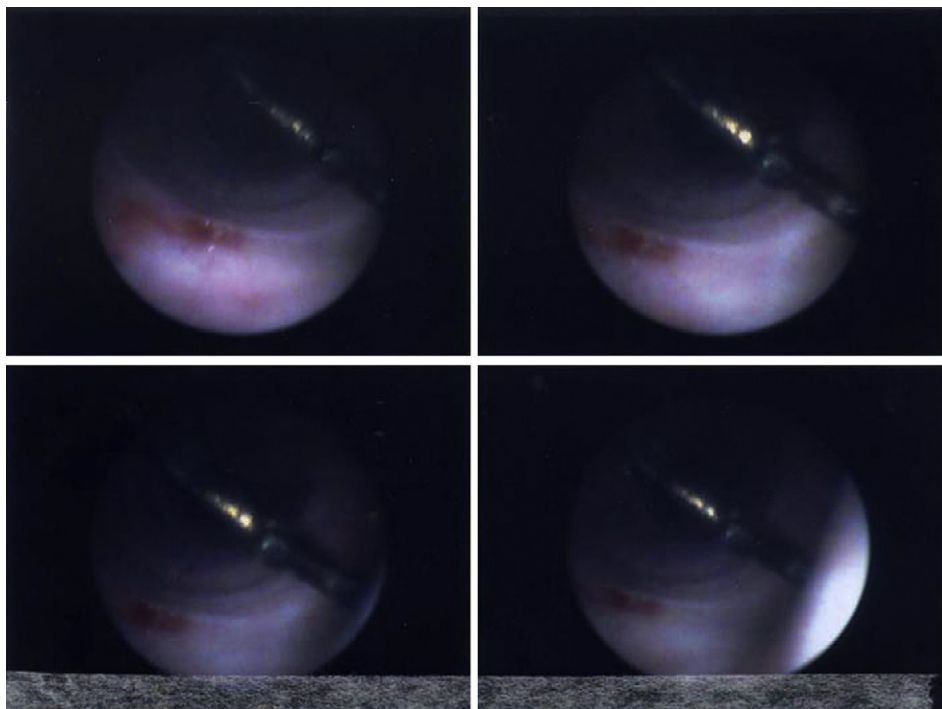


Fig. 2. Cystoscopy revealed that a fishhook was snagged in the urethra.

metal and cause stone evaporation primarily through a photo-thermal mechanism.<sup>6</sup> Recently, some authors demonstrated the effectiveness and safety of using a holmium laser to cut large or complex foreign bodies in vitro and within the human urinary bladder.<sup>6,7</sup> However, the restricted space in the urethra makes it more challenging for endoscopic extraction. It is recommended that treatment be commenced with low-pulse energy (e.g., 0.6 J) with a pulse rate of 6 Hz and that the pulse frequency be increased as needed to facilitate treatment.<sup>8</sup>

To the best of our knowledge, this is one of the earliest reported cases using a holmium laser to facilitate endoscopic removal of a foreign body from the male urethra. Other than a holmium laser, there are currently no other endoscopic tools that can cut a fish-hook in a male urethra, as we did in this case. We recommend that holmium lasers be considered in endoscopic extraction of foreign bodies from the male urethra.

#### Conflicts of interest statement

The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

#### Source of funding

Menonite Christian Hospital, Hualien, Taiwan.

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