

## Letter

## Endoscopic management of adolescent closed Cowper's gland syringocele with holmium:YAG laser



Dear editor,

The term “syringocele” originated from Greek words “syringo” meaning tube and “cele” meaning swelling and was first coined by Maizels et al. [1] in 1983 to represent a spectrum of dilatation of the normal Cowper's gland duct. They classified syringocele into four morphological types: Simple, perforate, imperforate, and ruptured. Melquist et al. [2] simplified the classification by dividing syringocele into two groups: Closed and open syringocele. Usually diagnosed in the pediatric population, only 10 cases of adult syringocele were reported in literature till 2007 [3]. Endoscopic management is preferred in most symptomatic adolescent patients and various energy sources employed for endoscopic marsupialization include cold knife urethrotomy, electrocautery, or holmium laser [4,5]. Use of holmium laser is reported only in three cases with maximum follow-up of up to 1 year [6–8]. We herein report three additional cases of adolescent closed syringocele, provide detailed technique of laser marsupialization, and report its long-term postoperative outcome. The study was approved by the University of Miami Ethics Committee (study ID: 20180511). All patients consented to treatment and also to utilize their information as a part of publication.

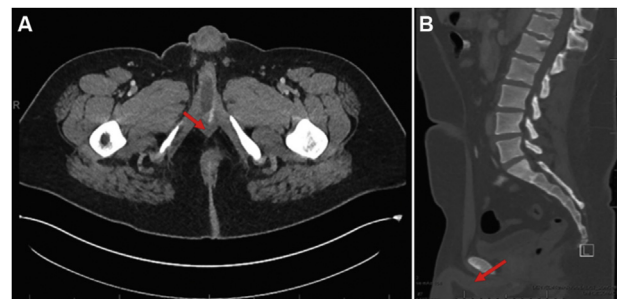
Case 1 is a 19-year-old male presented with a history of straining to void associated with progressively worsening and bothersome perineal discomfort after sitting for long periods of time for about 1 year. He was evaluated for perineal pain at an outside institution and was detected to have a midline Cowper's duct cyst on computerized tomographic (CT) scan (Fig. 1). His uroflow was obstructed. He underwent endoscopic deroofting of the syringocele using holmium:YAG laser on an outpatient basis and was discharged home without a foley catheter (Fig. 2). He presented for follow-up after 6 weeks and reported that his symptoms had abated.

Case 2 is a 16-year-old male who presented with obstructive urinary symptoms and congenital phimosis. After circumcision, his obstructive urinary symptoms

persisted and uroflow revealed  $Q_{max}$  of 11.3 mL/s with postvoid residual urine of 90 mL. On cystoscopy he was found to have closed syringocele. After endoscopic holmium:YAG laser incision of syringocele, he noted dramatic improvement in his urinary symptoms. His  $Q_{max}$  was 20.1 mL/s and residual urine reduced to 12 mL at 6-week follow-up. Thirteen years after the surgery, he remained asymptomatic.

Case 3 is a 13-year-old male who underwent CT scan for evaluation of lower abdominal pain and was detected to have syringocele. He had an intermittent urinary stream and terminal dribbling. His  $Q_{max}$  was 12.6 mL/s. After discussion with the parent and making them aware that the abdominal pain was unlikely to be due to the syringocele, the patient underwent endoscopic management. His postoperative uroflow at 6 weeks revealed  $Q_{max}$  of 18.9 mL/min. He remained asymptomatic at 4 years follow-up.

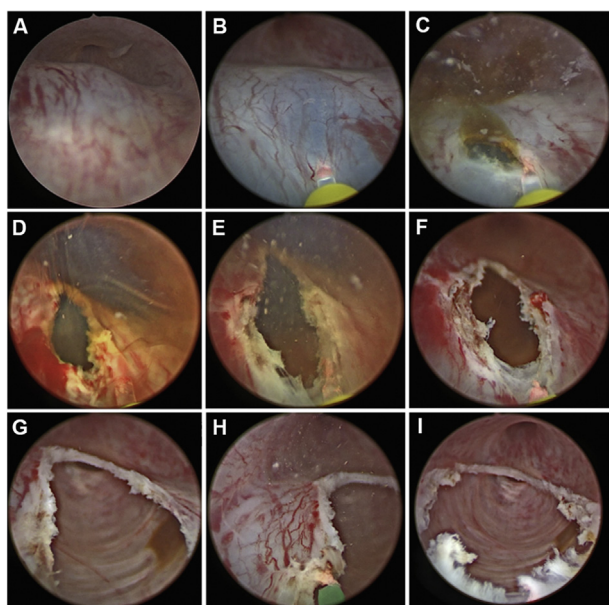
Under general anesthesia, cystoscopy was performed with 17 Fr sheath and a 30° telescope, and syringocele was identified (Fig. 2A). A 550-micron laser fiber was passed through working channel through a 5 Fr ureteric catheter to stabilize laser fiber. The most distal portion of syringocele bulging in urethra was initially incised with holmium laser



**Figure 1** Syringocele of the bulbourethral gland. (A) Axial imaging with syringocele pointed by the red arrow; (B) Sagittal imaging pointing the syringocele with the red arrow.

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**Figure 2** Intraoperative images. (A and B) Cystoscopic view of the syringocele; (C) Endoscopic incision with holmium:YAG laser; (D–F) Endoscopic unroofing with holmium:YAG laser; (G and H) Resection of the edges of the cyst and cauterization of wall edges; (I) Syringocele cavity completely ablated and unified with urethral lumen after completion of unroofing.

at settings of 0.5 J and 5 Hz (Fig. 2B). Maroon-colored fluid was drained from the syringocele (Fig. 2C). Thereafter the roof of syringocele was incised in its entire length (Fig. 2D–2F). Any redundant mucosal membrane separating syringocele cavity from urethra is then vaporized with the aim of converting urethral lumen and syringocele into one cavity (Fig. 2G–I). Small bleeders, if encountered, were coagulated by defocusing the laser beam at same settings. Patients were discharged home without an indwelling per-urethral catheter. The first postoperative follow-up was at 6 weeks to confirm resolution of symptoms and uroflowmetry was done at this visit. The patients were then followed up annually.

Adolescent closed syringocele is very uncommon with only a few cases reported in the literature [9,10]. Clinically symptomatic syringocele requires surgical intervention [2]. Endoscopic treatment was typically performed with the cold knife, diathermy hook, or cauterizing scissors [4,5]. Piedrahita and Palmer [8] were first to describe the use of holmium laser for endoscopic deroofing of syringocele. After these, there were two more case reports describing laser deroofing of syringocele. Taskovska and Hawlina [7] used 230-micron laser fiber at setting of 0.8 J and 6 Hz. None of these three case reports mentioned detail surgical technique to treat this relatively uncommon pathology [7]. We provided detailed description of surgical techniques so as to provide technical nuances to novice urologist. All the previous three patients had postoperative catheter placed for period of 1–3 weeks. None of the patient in our series had postoperative catheter. We believe that per-urethral foley catheter is not needed after uneventful holmium laser deroofing of syringocele. In

adolescent male an indwelling catheter for 1–2 week might cause more harm in the long-term.

All the three previously reported cases had postoperative follow-up ranging from 6 to 12 months [6–8]. Two patients in our series completed 4- and 13-year follow-up. Our study thus demonstrates that the outcome of laser incision of syringocele is durable at long-term. In the literature, comparative data about the outcome of incision methods are scarce. The hemostatic nature of holmium laser definitely has an advantage over the cold knife. We believe that it also provides us confidence in avoiding postoperative urethral catheterization. Additional benefit of using the laser is that it also facilitates precise vaporization of syringocele wall, which we believe is likely to reduce risk of recurrence. Although ruptured syringocele can sometimes act as anterior urethral diverticulum, none of the patients had any symptoms of urethral diverticulum in long-term follow-up. Overall, the technique represents a simple and effective way of management of syringocele.

Based on our experience, we conclude that endoscopic unroofing of adolescent closed syringocele with holmium laser, can be performed in a safe and efficient manner without any complications and durable long-term outcome. Per-urethral foley catheter can be safely avoided in these patients after surgery.

## Author contributions

*Study design:* Hemendra N. Shah.

*Data acquisition:* Maria F. Becerra, Abhishek Bhat.

*Data analysis:* Maria F. Becerra, Nicholas Smith.

*Drafting of manuscript:* Maria F. Becerra.

*Critical revision of the manuscript:* Hemendra N. Shah, Abhishek Bhat, Nicholas Smith.

## Conflicts of interest

The authors declare no conflict of interest.

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Maria F. Becerra  
Nicholas Smith  
Abhishek Bhat  
Hemendra N. Shah\*

*Department of Urology, Miller School of Medicine,  
University of Miami, Miami, FL, USA*

\*Corresponding author.

*E-mail address:* [drhemendrashah@yahoo.co.in](mailto:drhemendrashah@yahoo.co.in) (H.N. Shah)

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