Hybrid Method of Transurethral Resection of Ejaculatory Ducts Using Holmium:Yttriumaluminium Garnet Laser on Complete Ejaculatory Duct Obstruction

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INTRODUCTION

Infertility, defined as the inability to conceive after 1 year of unprotected intercourse, affects approximately 10% to 15% of reproductive age couples in the United States.1 Ejaculatory duct obstruction (EDO) is a relatively rare cause of infertility as male factor and is surgically correctable following an appropriate treatment. Complete EDO has been reported in 1% of all infertile men. Patients with complete EDO shows absent or low ejaculate, and azoospermia in the presence of a palpable vas deferens.2 EDO may show various symptoms including dysuria, hematospermia, pain during or after ejaculation, and perineal or testicular pain or discomfort.3 EDO may be congenital or acquired. The causes of EDO include congenital atresia, duct cysts, trauma, infection, inflammation and calculus formation.4 The standard method of establishing the diagnosis of EDO is seminal vesiculography. Dilated seminal vesicles can be filled with a dye solution under transrectal ultrasonography (TRUS) guidance; if duct obstruction is complete, the efflux of the dye solution cannot be seen during cystoscopy.5 With advances in noninvasive diagnostic methods, such as high-resolution TRUS and magnetic resonance imaging (MRI), the seminal vesicles can be accurately evaluated, thereby facilitating the diagnosis of EDO.

The treatment of choice for distal seminal tract obstruction is transurethral resection of the ejaculatory duct (TUREJD). Approximately half of men undergoing this procedure for EDO show improvement of their semen parameters and half of the

A 32-year old single man presented with azoospermia and low semen volume which was noted one and half a year ago. Transrectal ultrasonography and seminal vesiculography were performed to evaluate ejaculatory duct obstruction, and transurethral resection of the ejaculatory duct was performed using a hybrid technique of holmium:yttriumaluminium garnet laser with monopolar transurethral resection to overcome the narrow prostatic urethra. To our knowledge, this is the first report on the successful outcome of a hybrid technique applied for transurethral resection of the ejaculatory duct.

Key Words: Ejaculatory ducts, semen analysis, infertility, holmium

Case Report

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men who improve achieve a subsequent pregnancy. Here, we report a single case of EDO with a midline prostatic cyst which resulted in a narrow prostatic urethra. Thus, a hybrid technique using the holmium:yttriumaluminum garnet (Ho:YAG) laser and monopolar transurethral resection (TUR) was performed to overcome the narrow prostatic urethra. To our knowledge, our case is the first report of a hybrid technique used to treat TUREJD.

CASE REPORT

Patient history
A 32-year-old, single man presented with azoospermia and low semen volume which was noted one and a half a year ago. He had no other known medical problems. Semen analysis revealed that the total volume was 0.5 mL and had no identifiable spermatozoa. Bilateral vas deferens were palpable on physical examination. TRUS revealed a midline prostatic cyst of approximately 1.5 cm in diameter with dilated seminal vesicles (Fig. 1). Pelvic MRI revealed a 2 cm sized prostatic utricular cyst and mild dilatation of the seminal vesicle (Fig. 2A, B, C and D). Seminal vesiculography was performed to evaluate ejaculatory duct obstruction because of the prostatic utricular cyst (Fig. 2E). Under seminal vesiculography, the seminal vesicles and midline cyst were found to be filled with contrast media (Fig. 2D). Fluid which was aspirated from the midline cyst contained some spermatozoa on examination under light microscopy. Preoperative cystoscopy revealed a narrowing of the prostatic urethra near the verumontanum due to a midline prostatic cyst (Fig. 3A). Therefore, a diagnosis of a EDO was...
made and TUREJD was planned.

**Surgical procedure**

Under spinal anesthesia, the patient was placed in the lithotomy position. A 10 mL diluted indigo-carmine solution was injected through a midline cyst guided TRUS. Using a 24 Fr resectoscope (Karl Storz, Tuttingen, Germany) with a laser bridge and a Ho:YAG laser with a 550 μm laser fiber (Lumenis, Yokneam, Israel), unroofing of the midline prostate cyst was performed. During the unroofing process, the power was set at 2 J and 10 Hz. After the process, the diluted indigo-carmine solution was extravasated to the surrounding area. When sufficient space at the prostatic urethra was secured following incision with the Ho:YAG laser, a monopolar TUR was performed (Fig. 3B and C). Using TUR, the cystic wall was completely resected and a guide-wire was inserted through the ejaculatory duct. The ejaculatory ducts and their wall were visualized using a 6.5 Fr semi-rigid ureteroscope (Richard Wolf GmbH, Knittlingen, Germany) and appeared to be normal (Fig. 3D).

The patient was discharged the following day after the Foley catheter was removed. After a month, the patient did not have any lower urinary tract symptoms. A month later, postoperative semen analysis showed normal findings with a 3 mL volume. Concentration of spermatozoa was $15.2 \times 10^6/mL$.

**DISCUSSION**

In patients with suspected EDO, the standard procedure has
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Using the Ho:Y AG laser because of narrow prostatic urethra. The advantages of the Ho:YAG laser are as follows: precise unroofing using a small diameter laser fiber and avoidance of unnecessary coagulation, thereby minimizing damage to adjacent structures. In patients with EDO, this hybrid method may be a safe and satisfactory alternative treatment option to conventional TUREJD.

REFERENCES

1. Bang JK, Lim JJ, Choi J, Won HJ, Yoon TK, Hong JY, et al. Reversible infertility associated with testosterone therapy for symptomatic hypogonadism in infertile couple. Yonsei Med J 2013;54:702-6.
2. Jarow JP. Seminal vesicle aspiration in the management of patients with ejaculatory duct obstruction. J Urol 1994;152:899-901.
3. Ozgök Y, Tan MO, Kilciler M, Tahmaz L, Kibar Y. Diagnosis and treatment of ejaculatory duct obstruction in male infertility. Eur Urol 2001;39:24-9.
4. Pryor JP, Hendry WF. Ejaculatory duct obstruction in subfertile males: analysis of 87 patients. Fertil Steril 1991;56:725-30.
5. Yurdakul T, Gokce G, Kilic O, Piskin MM. Transurethral resection of ejaculatory ducts in the treatment of complete ejaculatory duct obstruction. Int Urol Nephrol 2008;40:369-72.
6. Donkol RH. Imaging in male-factor obstructive infertility. World J Radiol 2010;2:172-9.
7. Farley S, Barnes R. Stenosis of ejaculatory ducts treated by endoscopic resection. J Urol 1973;109:664-6.
8. Park MS, Kim YS, Yoon YR. A case of infertility because of ejaculatory duct obstruction. Korean J Urol 1992;33:917-21.
9. Fisch H, Lambert SM, Gobuloff ET. Management of ejaculatory duct obstruction: etiology, diagnosis, and treatment. World J Urol 2006;24:604-10.
10. Schroeder-Printzen I, Ludwig M, Köhn F, Weidner W. Surgical therapy in infertile men with ejaculatory duct obstruction: technique and outcome of a standardized surgical approach. Hum Reprod 2000;15:1364-8.
11. Johnson CW, Bingham JB, Gobuloff ET, Fisch H. Transurethral resection of the ejaculatory ducts for treating ejaculatory symptoms. BJU Int 2005;95:117-9.
12. Wang H, Ye H, Xu C, Liu Z, Gao X, Hou J, et al. Transurethral seminal vesiculoloscopy using a 6F vesiculoscope for ejaculatory duct obstruction: initial experience. J Androl 2012;33:637-43.