

Perineal-guided endoscopic extraction of ejaculatory duct stones to treat obstructive azoospermia

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Objective: To report a case of transurethral endoscopic treatment of ejaculatory duct stones with transrectal ultrasound (TRUS)-guided perineal needle implant and ureteroscopic extraction of deferent duct stones in an infertile man.

Design: Case report.

Setting: Department of Urology, University of Catania, Italy.

Patient(s): A 33-year-old man with azoospermia, low ejaculate volume, perineal discomfort, and unilateral seminal tract dilatation caused by obstructing lithiasis of the ejaculatory and deferent ducts.

Intervention(s): Transurethral endoscopic treatment of ejaculatory duct stones with TRUS-guided perineal needle implant and ureteroscopic extraction of deferent duct stones.

Main Outcome Measure(s): Improvements in symptoms and seminal parameters.

Result(s): The patients had successful relief of symptoms and correction of obstructive azoospermia.

Conclusion(s): This new technique allows a more rapid and targeted identification of ejaculatory duct lithiasis, and the ureteroscope enables management of distal seminal stones through the normal anatomic tract. (*Fertil Steril*® 2011;95:2430.e11–e14. ©2011 by American Society for Reproductive Medicine.)

Key Words: Ejaculatory duct obstruction, infertility, treatment

Ejaculatory duct obstruction (EDO) is a well-recognized cause of infertility and is diagnosed in approximately 5% of infertile men. The standard treatment for EDO consists of a midline resection of the verumontanum with an electrocautery loop using a transurethral endoscope, but often several passes of the loop are required to visualize the ejaculatory ducts. We report a personal surgical technique in the case of a 33-year-old man presenting with infertility, low ejaculate volume, and perineal discomfort and associated ejaculatory and deferent duct stones. After perineal transrectal ultrasound (TRUS)-guided implant of a needle on the ejaculatory duct stone, a transurethral resection of the ejaculatory duct and subsequent ureteroscopic exploration of the dilated deferent duct allowed extraction of both stones.

CASE REPORT

A 33-year-old man presented with a 2-year history of infertility with azoospermia, low ejaculate volume, and perineal discomfort with ejaculation. He denied a history of hematospermia, lower urinary tract symptoms, epididymitis, prostatitis, or testicular trauma. Clinical examination showed normal genital and secondary sexual char-

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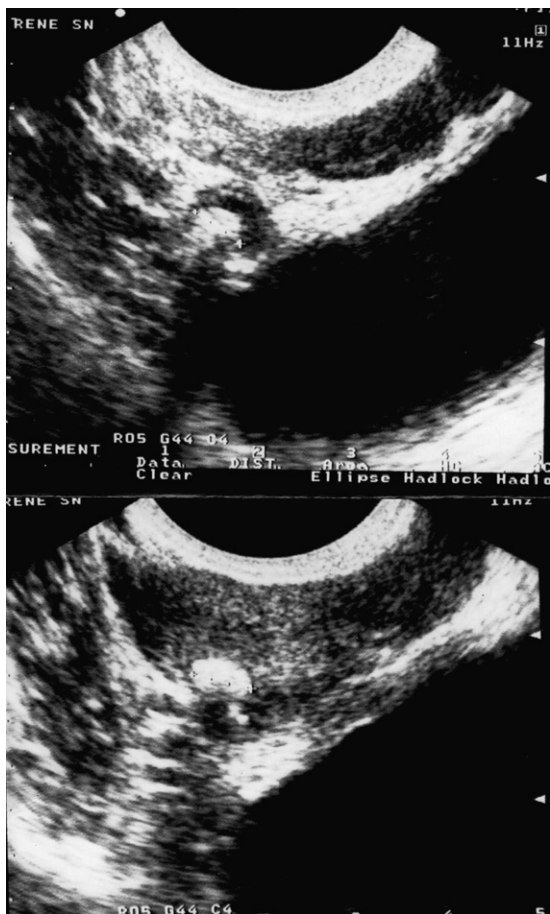
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acteristics. The epididymis was not tender or dilated. Results on digital rectal examination were negative. Results on urine routine/microscopic analysis were within normal limits. Urine for acid-fast bacilli and polymerase chain reaction for mycobacterium tuberculosis was negative. Analysis of the semen revealed a negligible ejaculate volume of <0.1 mL, with complete azoospermia. Postcoital urine studies did not detect any motile or dead spermatozoa, and semen culture was negative. Hormonal studies showed normal values. Testicular biopsy revealed normal spermatogenesis, and testicular sperm extraction was performed for cryopreservation.

Transrectal ultrasonography (TRUS) showed a dilatation of the left seminal vesicle, with a 9-mm stone within the ejaculatory duct (Fig. 1). Magnetic resonance imaging also revealed a dilatation of the left deferent duct, with an obstructive endoluminal stone of 6 mm at 2.5 cm from the beginning of the distal deferent duct (Fig. 2). After TRUS-guided perineal implant of a needle with the tip located on the distal stone of the ejaculatory duct, the patient underwent transurethral resection of the ejaculatory duct. A stone obstructing the left ejaculatory duct located at the needle tip was discovered and removed. Subsequently transurethral seminal tract exploration was performed with a 6-French semirigid ureteroscope guided by a 0.032-inch Zebra guidewire under direct visualization. The ejaculatory duct orifice was identified using this guidewire, and the ureteroscope was injected with ease into the left seminal tract. Deferent duct access was not difficult because the deferent duct and the left ejaculatory tract were dilated. The deferent duct stone was removed. Stone analysis demonstrated a calcium–magnesium–ammonium phosphate composition. Our results support that

FIGURE 1

Transrectal ultrasound scan shows a stone with a dilated left ejaculatory duct.



Favilla. Treatment of ejaculatory duct obstruction. *Fertil Steril* 2011.

these stones may be related to infection and obstruction. The intra-deferent guidewire was kept for 24 hours and was discharged with the Foley catheter the next day.

In addition to a single dose of a broad-spectrum antibiotic given immediately before transurethral resection of the ejaculatory ducts, oral antibiotics were given while the catheter was in place. Three months later, semen analysis showed improvements in volume (3 mL), sperm count ($16 \times 10^6/\text{mL}$), and sperm motility (34% progressive motility), with no evidence of dilatation of the left seminal tract. The postoperative course was normal, and complications have not been observed during the follow-up period. No further follow-up data are available.

DISCUSSION

Ejaculatory duct obstruction is a well-recognized cause of infertility. It is often congenital and is diagnosed in approximately 5% of azo-

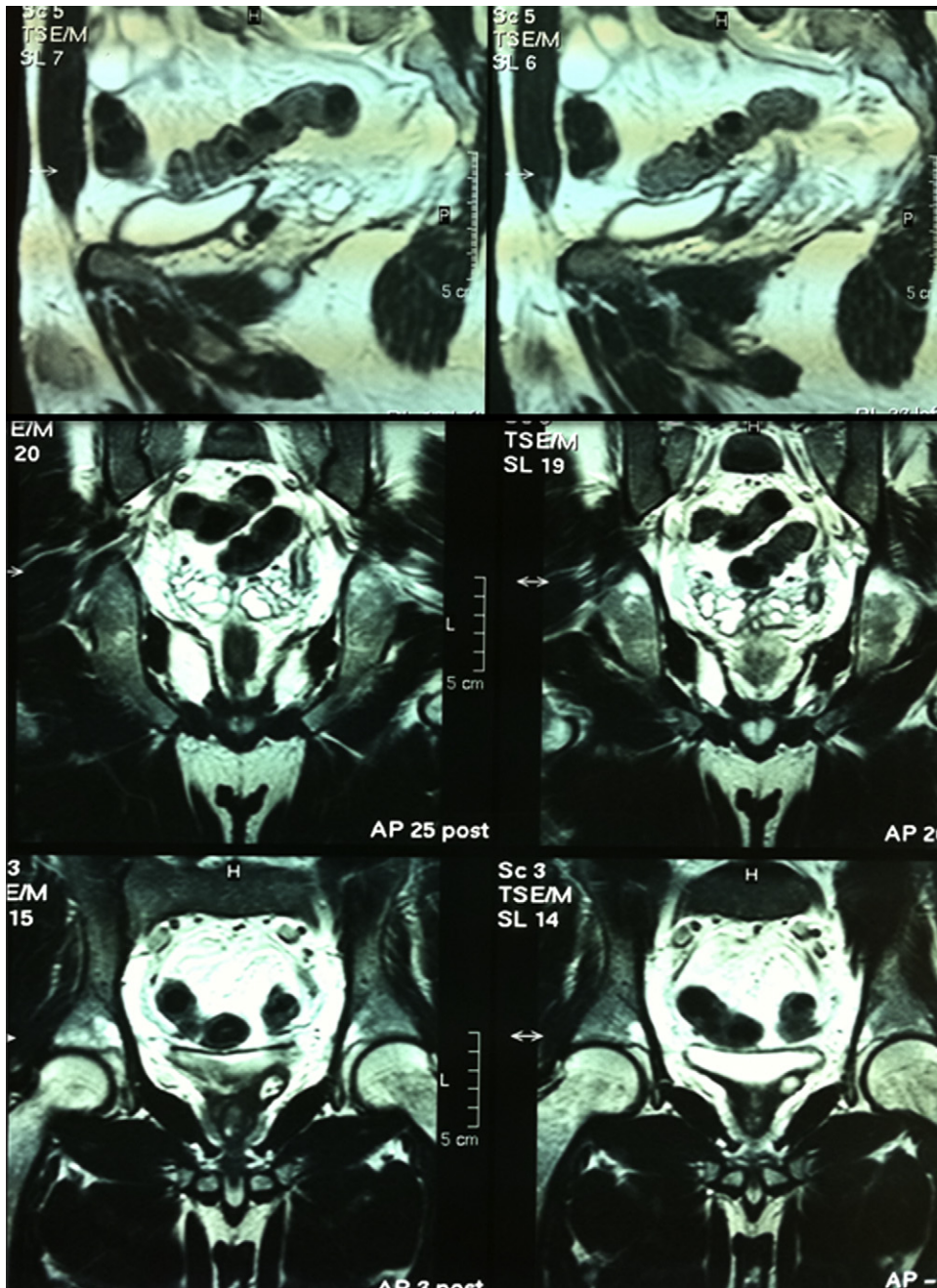
spermic infertile men; conversely, secondary EDO is a rare complication and is usually seen in chronic genitourinary infections (1). Semen analysis of patients with partial obstruction includes findings of oligospermia or azoospermia, decreased motility, and decreased volume (2).

In some cases of partial obstruction, semen parameters can approach normal values, with decreased motility being the only abnormal finding. However, low ejaculate volume (<1 mL) is suggestive of EDO. A retrospective review revealed a mean ejaculate volume of 1.1 mL in patients with symptomatic EDO (3). Other possibilities at presentation with stones in the ejaculatory ducts include terminal dysuria, painful ejaculation (4), and hematospermia (5). It is plausible that this patient had a contralateral partial ejaculatory duct obstruction that reflects a disturbance of ejaculation: sperm quality could be impaired during transit through the distal vas deferens and ejaculatory ducts. This condition is in some cases associated with chronic obstructive prostatitis, as reported in a recent study (6). Calcifications can be seen along the ejaculatory duct and may cause obstruction. Calcifications within the substance of the prostate can be associated with prior inflammation. How inflammation can lead to EDO has not been fully characterized; proposed mechanisms include inflammation involving the ducts, changes in compliance, or adjacent tissue impinging upon on the duct (3, 7).

Ejaculatory duct obstruction is treated by transurethral resection or incision of the ducts (1–3). Although improvements in semen parameters in 60%–70% of patients, with pregnancy rates of 20%–30%, have been reported after transurethral resection of the ejaculatory ducts (1, 3, 6), surgical therapy can also fail and can be associated with significant complications (7). For this reason, in this referred case we also performed a testicular biopsy with sperm retrieval technique at the same time to provide additional information about fertility and to avoid additional surgery in case of treatment failure. Transrectal ultrasound and endorectal coil magnetic resonance imaging are the two accurate modalities available for evaluation of the seminal and ejaculatory system (3, 8). Transrectal ultrasound should be the initial investigation of choice in all such patients because it can provide excellent anatomic delineation of pathologic changes in the seminal vesicle and ejaculatory ducts. Vasography and vasal-fluid microscopy are included in the diagnostic workup, and scrotal exploration is part of the treatment algorithm in some cases. Transurethral resection of the ejaculatory ducts is an effective treatment in well-selected cases of complete and partial ejaculatory duct obstruction. The standard treatment for ejaculatory duct obstruction consists of a midline resection of the verumontanum with an electrocautery loop using a transurethral endoscope, but often several passes of the loop are required to visualize the ejaculatory ducts. Compared with the standard procedure, our technique with TRUS-guided perineal implant of a needle with the tip located near the stone allows a more rapid and targeted identification of the ejaculatory duct lithiasis. Finally, because a small proportion of normospermic men with lithiasic obstruction of the ejaculatory duct before transurethral resection will become azoospermic thereafter (9), it may be advisable to offer cryopreservation of sperm in selected patients.

FIGURE 2

Magnetic resonance imaging shows the dilated deferent duct and a stone at 2.5 cm from the beginning of the distal deferent duct.



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