

Use of transperineal fine needle aspiration of seminal vesicles to retrieve sperm in a man with obstructive azoospermia

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Objective: To report the successful and feasible use of transperineal fine needle aspiration of seminal vesicles (FNASV) for sperm retrieval in obstructive azoospermia.

Design: Case report.

Setting: Outpatient care in institutional clinic.

Patient(s): A 31-year-old man with obstructive azoospermia due to a middle prostatic müllerian cyst.

Intervention(s): Transperineal FNASV using a coaxial 17-gauge TruGuide needle.

Main Outcome Measure(s): Feasibility of sperm retrieval suitable for future in vitro fertilization.

Result(s): Transperineal FNASV made it possible to aspirate 11 mL of fluid with a sperm count of 100 million/mL and 15% motility. This sample was cryopreserved for in vitro fertilization using intracytoplasmic sperm injection.

Conclusion(s): Transperineal FNASV using a coaxial needle may be a further method for sperm retrieval to add to the repertoire of assisted reproduction technologies. (Fertil Steril® 2006;86:1764.e7–9. ©2006 by American Society for Reproductive Medicine.)

Key Words: Transperineal FNASV, obstructive azoospermia, müllerian cyst

Azoospermia is the most severe form of male factor infertility and occurs in about 5% of all investigated infertile couples (1). One treatment for infertility due to obstructive azoospermia is intracytoplasmic sperm injection (ICSI). Since 1993, when ICSI was introduced (2), several alternative microsurgical and suction techniques using hollow needles have been developed to recover spermatozoa. Nonetheless, there is still insufficient evidence to recommend any specific sperm retrieval technique for azoospermic men undergoing ICSI (3).

To minimize the invasiveness of surgery for sperm retrieval in terms of both costs and anesthesia requirements, a transrectal approach to perform a fine needle aspiration of the seminal vesicles (FNASV) has been recently described in an anorgasmic infertile man (4). This minimally invasive approach made it possible to obtain seminal fluid with a sperm count of 40 million/mL and 2% motility, suitable for subsequent in vitro fertilization and resulting in a successful pregnancy (4). Those encouraging results led us to perform an FNASV in a young man with obstructive azoospermia, using our original transperineal approach with a coaxial needle (5), with the aim of assessing its feasibility as a sperm retrieval technique.

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CASE REPORT

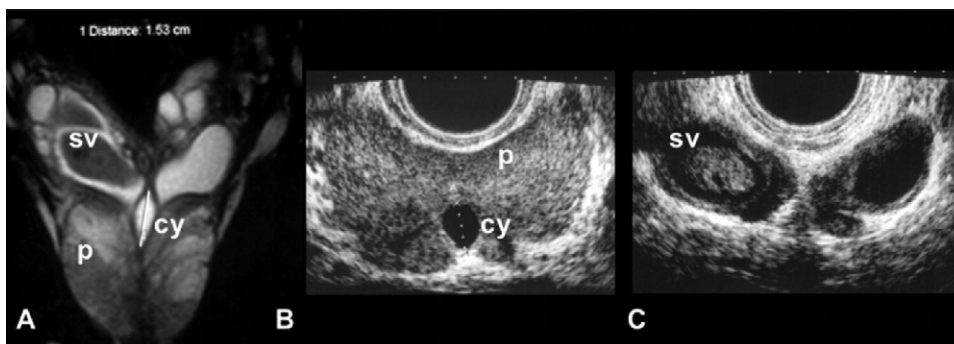
A 31-year-old otherwise healthy man was examined for suspected obstructive azoospermia. His clinical examination was negative. His routine laboratory and hormonal parameters were within the normal ranges. Semen analysis showed the following values: 1.8 mL volume, pH 7, absence of leucocytes, rare round cells, normal fluid thickness, complete fluidification after 18 minutes, normal viscosity, and complete absence of spermatozoa. Prostate magnetic resonance imaging with a rectal coil showed a bilateral seminal vesicle enlargement and the presence of an 8-mm-thick liquid mass, 15.3 mm long and 5 mm wide, that widened the proximal tract of the ejaculatory ducts (Fig. 1A).

The patient was informed about the potential risks and benefits of transperineal FNASV and provided written informed consent. Antibiotic coverage with a quinolone was orally administered. Neither bowel preparation with enema nor general anesthesia was necessary.

The patient was placed in the lithotomy position. A real-time transrectal ultrasound (TRUS) was carried out using the Siemens Sonoline Omnia Diagnostic Ultrasound System, with a 7.75-MHz linear probe inserted into the rectum. The TRUS confirmed a 13 × 5 mm midline anechoic prostatic cyst structure, marking the ejaculatory ducts (Fig. 1B), with remarkably dilated seminal vesicles (Fig. 1C). Ultrasonography revealed no abnormalities of the prostate and urethra. Two milliliters of 1% mepivacaine was administered to the apex of the prostate, using a single 22-gauge spinal needle inserted transperineally 1.5 cm above the rectum on the

FIGURE 1

(A) Rectal coil magnetic resonance imaging scan showing bilateral seminal vesicle enlargement and the presence of an 8-mm-thick liquid mass, 15.3 mm long and 5 mm wide, which widened the proximal tract of the ejaculatory ducts. (B) Transrectal ultrasound scan showing a 13 × 5 mm midline anechoic prostatic cyst structure, with (C) remarkably dilated seminal vesicles. p = prostate; sv = seminal vesicle; cy = cyst.



Cerruto. Transperineal FNASV for sperm retrieval. *Fertil Steril* 2006.

median line. The needle was progressively retracted and 2 mL of anesthetic was administered along the needle path. Then, a coaxial 17-gauge TruGuide needle was placed, according to the previously described technique (5). All maneuvers were made under continuous ultrasound control.

Through the coaxial needle, a total of 11 mL of fluid was aspirated from both vesicles (4 mL from the right and 7 mL from the left). One milliliter of latescent liquid was aspirated from the median cyst. Analysis of the aspirated fluid showed a sperm count of 100 million/mL and 15% motility (5% with rapid motility and 10% with progressive motility). This sample was frozen and appropriately conserved for future in vitro fertilization using ICSI.

Microscopic analysis of the aspirated sample from the prostatic lesion made a diagnosis of müllerian duct cyst. Bacteriologic tests showed no growth. Semen analysis performed 3 months after the procedure showed an improvement of the ejaculate volume (2 mL) with a sperm concentration of 3 million/mL.

DISCUSSION

Transperineal FNASV may be a feasible and effective minimally invasive technique for semen retrieval from patients with obstructive midline prostatic duct cysts.

Both artificial insemination and ICSI require sperm which may be retrieved from the following sources: testis, epididymis, vas deferens, seminal vesicles, and deferential ampullae. The approach may be by open surgery, percutaneous puncture, and other rare procedures (6). Although currently testicular sperm extraction followed by ICSI is the standard technique, it has some drawbacks, including localized testicular fibrosis, bleeding, infections, and the need for local or, more commonly, general anesthesia.

Boehlen and Schmid developed a transrectal FNASV as a novel method for sperm retrieval to minimize these side effects (4). We modified this method, using a transperineal approach. Indications for either transrectal or transperineal FNASV might include obstructive azoospermia distal to the junction of the vas deferens and ejaculatory duct and any ejaculatory disorder (4). A potential drawback of transrectal FNASV could be rectal environment contamination. In contrast, the transperineal approach makes it possible to perform bilateral multiple punctures and aspiration with neither major complications nor the risk of rectal contamination. Therefore, the transperineal approach could be better than the transrectal route when multiple punctures and a bilateral seminal vesicles aspiration is required and in subjects with anatomically intact rectum (7). Moreover the use of a 17-gauge needle makes it possible to aspirate a larger amount of fluid than a transrectal 21-gauge needle (11 mL vs. 3 mL) (4), to obtain a notably higher sperm count (100 million/mL vs. 40 million/mL) (4).

The conventional transperineal approach could have the disadvantages of necessitating good local anesthesia at the perineal site of needle penetration and being more irritating than transrectal puncture and aspiration (7). Concerning local anesthesia, both transrectal and transperineal FNASV need anesthesia at the apex of the prostate. The transperineal approach may simplify the anesthetic injection at the prostate apex (5). Because the use of a coaxial needle significantly reduced the pain experienced during prostate sampling and improved patient compliance compared with the conventional transperineal biopsy technique (5), it is possible to obtain similar results using this approach for FNASV. Because no data are currently available that make a direct comparison between the transperineal coaxial needle and the standard TRUS-guided biopsy, it is not possible to distin-

guish which is better in terms of less pain and discomfort. In the present case, fluid was aspirated from both the seminal vesicles and the middle prostate duct cyst, with no particular patient discomfort.

A müllerian duct cyst may cause obstruction of the ejaculatory ducts with congestion of the seminal vesicles, resulting in low ejaculate volume and infertility (8). The TRUS-guided aspiration and emptying of the cyst could be an important diagnostic tool in the work-up of low ejaculate volume and male infertility, allowing a differentiation between müllerian duct cyst and ejaculatory duct cyst (9). In our case, the transperineal aspiration and emptying of the cyst allowed us to confirm the müllerian origin of the cyst and to reduce ejaculatory duct obstruction, thereby improving the semen analysis 3 months after the procedure.

CONCLUSION

Transperineal FNASV using a coaxial needle may be a further method for sperm retrieval to add to the repertoire of assisted reproduction technologies. Moreover, this technique may help both to perform a reliable diagnosis of middle prostatic müllerian cyst, and to treat the consequent obstructive azoospermia.

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