Infertility

Reproductive Urologist and Gynecologist Involvement in Postvasectomy Sperm Retrieval Procedures at American Fertility Clinics

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OBJECTIVE
To evaluate reproductive urologist and reproductive endocrinologist practice patterns for postvasectomy surgical sperm retrieval at American private practice fertility clinics.

METHODS
Private practice American fertility clinics were contacted by telephone and administered a telephone survey. In states with multiple large cities, several clinics in different cities were surveyed. Our primary endpoint was to determine what specialty of physician (urologist or reproductive endocrinology gynecologist) performed sperm retrieval procedures. Secondly, we inquired about the location that these procedures were performed (urology vs gynecology clinic), type of anesthesia used, and cash cost for the procedure.

RESULTS
Two hundred and twenty-five infertility clinics were contacted (per state range 2-10). 90.2% (203/225) of clinics responded to our queries. Zero clinics had an on-site urologist. An on-staff gynecologist with reproductive endocrinology training performed postvasectomy sperm retrievals in 9.4% (19/203) of clinics. A urologist “partnered” with the infertility clinic performed sperm retrievals at the fertility clinic in 11.8% (24/203) of clinics. 18.7% (38/203) did not offer sperm retrieval on-site, but did have a referral pattern established with a local urologist. Among reproductive endocrinologist performing sperm retrievals, intravenous anesthesia was used in 76.9% (10/13) of clinics. The quoted costs for surgical sperm retrieval performed by a reproductive endocrinologist ranged from $1000 to 10,000.

CONCLUSION
Surgical sperm retrieval postvasectomy performed by an on-site reproductive endocrinologist was offered by 9.4% of contacted fertility clinics. The majority (76.9%) of these cases were routinely performed under intravenous anesthesia. Costs for reproductive endocrinologist performed sperm retrievals varied considerably. The reasons for, and safety of reproductive endocrinologists performing these procedures remains to be determined.

A
n estimated 11% of couples will struggle with infertility.1 Of these, 20%-30% are due to male factors, 20%-35% are from female factors, and 25%-40% are from combined factors.2 Azoospermia is defined by a complete lack of sperm in the ejaculate on 2 separate semen analyses. Azoospermia is the cause of male factor infertility in 10%-20% of cases.1 Azoospermia has obstructive and nonobstructive causes. Overall, approximately 40% of azoospermia cases are obstructive and 60% are nonobstructive.3 Obstructive azoospermia (OA) may result from epididymal, vasal, or ejaculatory duct obstruction, and is most commonly seen postvasectomy.2

The 2011 Best Practice Statement by the American Urological Association on the management of OA states that options for fertility for men with OA postvasectomy include vasectomy reversal or sperm retrieval in conjunction with in vitro fertilization/intracytoplasmic sperm injection.5 Sperm can be retrieved through percutaneous epididymal sperm aspiration (PESA), testicular sperm extraction (TESE), microsurgical epididymal sperm aspiration (MESA), or microsurgical TESE. The goals of sperm retrieval are to obtain the best quality sperm, adequate numbers of sperm for both immediate use and cryopreservation, and to minimize damage to the reproductive tract.6 No procedure is risk-free, and the risks of surgical sperm retrieval include: testicular and epididymal artery injury, long-term epididymal scarring, testicular infarction, infection, hematoma, and pain.7,8 These procedures have traditionally been performed by reproductive urologists, trained in microsurgery and male genital anatomy.

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Up to 70% of subfertile couples will have a female component to their infertility, and many couples will start their fertility work-up with a female evaluation. Fertility clinics staffed by primarily reproductive endocrinologists (gynecologists specialty trained in reproductive medicine) often serve as a couple’s initial resource for fertility guidance. While traditionally the female partner was treated by a reproductive endocrinologist, and the male partner was treated by a reproductive urologist, a growing number of reproductive endocrinologists are treating both partners and performing surgical sperm retrieval procedures. In this study, we sought to gain insight into postvasectomy sperm retrieval practice patterns at private practice fertility clinics throughout the United States.

METHODS
Our Institutional Review Board granted us an “exempt” status for this project. American private practice fertility clinics were contacted by telephone and queried using a telephone script regarding postvasectomy sperm retrieval practice patterns. First, clinics were asked if “sperm extraction procedures for men who have had a prior vasectomy” were performed at their center. If the clinic answered “yes,” we then asked what specialty of physician performed the procedures (reproductive endocrinologist vs urologist), the type of anesthesia used, and the cash cost. Reproductive endocrinologists are obstetrician gynecologists with specialty training in infertility.

A minimum of 2 fertility clinics per state were contacted. These were community fertility clinics and did not report an association with an academic medical center. In states with multiple large cities, several clinics in different cities were surveyed. Our primary endpoint was to determine what specialty of physician (gynecologist or urologist) performed sperm retrieval procedures. Secondary endpoints were the type of anesthesia used and the cash cost. Statistical evaluation was performed using Student’s t test with $P < .05$ considered statistically significant.

RESULTS
Two hundred and twenty-five infertility clinics were contacted, with a minimum of 2 from each state, (range 2 [Iowa, New Hampshire, Oklahoma, South Dakota, Vermont]-10 [California]) (Fig. 1). 90.2% (203/225) of clinics responded to our queries. An on-staff urologist was not present at any clinic that was queried. An on-staff gynecologist performed postvasectomy sperm retrieval in 9.4% (19/203) of clinics. A urologist that was “partnered” with the infertility clinic performed the procedure at the fertility clinic as needed in 11.8% (24/203) of clinics. 18.7% (38/203) of clinics did not offer surgical sperm retrieval on-site but did have a referral pattern established with a local urologist, who did the sperm retrieval off-site and had the sample transported to the fertility clinic.

The cities and states in which reproductive endocrinologist performed postvasectomy sperm retrievals were: Northport, Alabama; Pasadena, California; Parker, Colorado; Newark, Delaware; Miami & Pensacola, Florida; Lexington, Kentucky; Lafayette, Louisiana; Henderson, Nevada; Albuquerque, New Mexico; Charlotte & Winston Salem, North Carolina; Sylvania, Ohio; Tulsa, Oklahoma; Portland & Eugene, Oregon; Greenville, South Carolina; Beaumont, Texas; and Kirkland, Washington.

Of those clinics reporting that reproductive endocrinologists performed surgical sperm retrievals, anesthetic use varied. 52.6% (10/19) routinely used intravenous anesthesia, 10.5% (2/19) offered local or intravenous anesthesia, 5.3% (1/19) used local anesthesia alone, and 31.6% (6/19) did not know the answer to that question. Therefore, for clinics that were aware of what type of anesthesia was offered, 76.9% (10/13) routinely used intravenous anesthesia, 15.4% (2/13) offered local or intravenous anesthesia, and 7.7% (1/13) used local anesthesia alone. The quoted costs for surgical sperm retrieval performed by a reproductive endocrinologist varied from $1000 to 10,000.

DISCUSSION
The true prevalence of male factor infertility throughout the United States remains unknown. Among subfertile couples seeking reproductive assistance, a male evaluation is not performed in up to 27% of cases. Furthermore, access to male infertility care is limited by a number of epidemiologic, geographic, financial, socioeconomic, and health policy barriers. Community infertility clinics have become a primary resource of infertility information and care for couples struggling with infertility. Supporting this, a review of websites from 428 infertility clinics within the United States showed that 76% of these treatment centers were nonacademic practices. The male factor was acknowledged as a contributor to infertility in only 78% of websites, and mention of the male partner in general was lacking completely in 14% of websites. Only 23% of websites mentioned referral to a urologist. The authors concluded that patient directed information about the etiology, workup, and treatment of male factor infertility from websites is substantially variable and that couples searching online for infertility information may not have adequate information about the benefits of a male factor evaluation.

In this study, we queried 225 community infertility clinics across the United States. Surgical sperm retrieval postvasectomy was offered by reproductive endocrinologist in 9.4% of fertility clinics. Given their lack of male anatomy training, the reasons for reproductive endocrinologist to be performing these procedures is not known, but we can speculate for some potential reasons.

This may represent an access to care issue. An evaluation of male infertility urologist specialist distribution within the United States found considerable disparity in the geographic distribution of these physicians, with large areas of the country, specifically in the Midwest and Northwest regions, being underserved. However, the regions of the country that we identified reproductive endocrinologist performing postvasectomy sperm retrievals were not limited to these areas, and included cities in Alabama, California, Colorado, Delaware, Florida, Kentucky, Louisiana, Nevada, New Mexico, North Carolina, Oklahoma, Oregon, South Carolina, Texas, Washington,
and Ohio. Of these, Ohio is a Midwestern state and Oregon and Washington are Northwest states; however, most of the states where reproductive endocrinologists are performing sperm retrievals are not in areas lacking in access to reproductive urologist care.

Another potential reason for gynecologist involvement in postvasectomy sperm retrieval procedures may be from a perceived lack of importance of a male factor evaluation. A review of 428 American infertility clinics found that 22% of treatment centers failed to acknowledge male factor infertility on their webpages and 14% did not mention any role for the evaluation, diagnosis, and management of the male partner in subfertile couples. Among websites that acknowledged the potential for male factor infertility, referral for urologic evaluation was mentioned in <25% of websites. Since most of these websites are authored by fertility clinics, it suggests that community infertility clinics may not be well informed about the importance of a male factor evaluation.

However, this potential lack of male factor evaluation is worrisome. Up to 6% of men undergoing infertility evaluation may have some type of serious underlying medical condition, including genetic abnormalities, testis cancers, prostate cancers, diabetes mellitus, and hypothyroidism. In addition, there is a growing body of literature demonstrating an epidemiologic and epigenetic association between male factor infertility and cancer, and nonmalignant chronic diseases such as diabetes, cardiovascular disease, and even increased mortality. In short, a male factor evaluation is important not just for obtaining sperm for a pregnancy, but also to detect other medical issues that may be important for long-term paternity.

Other potential reasons for reproductive endocrinologists to perform postvasectomy sperm retrievals include scheduling concerns and financial gain. The majority of urologists perform postvasectomy sperm retrievals in a scheduled fashion, in advance of the egg retrieval, and cryopreserve the sperm. This is because no differences in fertilization rates, embryo quality, blastocyst formation, clinical pregnancy, and live delivery rates have been seen in studies comparing the functional outcomes of fresh vs frozen sperm in couples using reproductive technologies.

Data like this highlight that scheduling these procedures does not affect reproductive outcomes and can therefore allow for them to be performed by urologists in a scheduled manner. The potential for financial gain certainly does exist, as fertility clinics quoted us a range of $1000 to $10,000 for postvasectomy sperm retrieval procedures.

In up to 93.8% of clinics, sperm retrievals were performed using intravenous anesthesia (76.9% of aware clinics offered only intravenous anesthesia, 15.4% offered local or intravenous anesthesia), exposing the patient to the risks of an anesthetic reaction. When done by a reproductive urologist using a local spermatic cord block for anesthesia, postvasectomy sperm retrieval (via PESA or TESE) can usually be done safely and comfortably. General or intravenous anesthesia requires the presence of an anesthesiologist, with the associated costs and risks. Therefore, having these procedures performed by a reproductive urologist with local anesthesia offers the patient the option for intravenous or local anesthesia, providing an opportunity for minimized cost and risks for the male.

No procedure is without risk, and postvasectomy sperm retrievals are no exception. Overall, the incidence of hematomas and other complications after MESA, PESA, or TESE is low. Though rare, permanent testicular devascularization may also occur in 4.5%-6.7% of cases, although reports of this are mostly anecdotal. PESA may cause permanent proximal epididymal obstruction, making future epididymal aspiration attempts more difficult and precluding the option of later microsurgical vasal reconstruction. One study of repeat PESA procedures found that only 26% of men had sperm on repeat PESA, likely due to epididymal scarring. Lastly, some studies have found decreased testosterone levels after surgical sperm retrieval, which may necessitate androgen replacement in 5%-10% of men. Given
that reproductive endocrinologists are exclusively trained in female anatomy, the potential for these complications may be higher than when performed by reproductive urologists (although there is currently no data looking at this outcome). Similarly, patients experiencing these complications may be better treated by a urologist, although again there is no data looking at this outcome.

Finally, the issue of how to proceed if sperm is not found at the time of a retrieval procedure should be addressed. As mentioned above, some men will not have sperm on repeat PESA procedures, likely due to epididymal scarring. In addition, we now know that there is a decline in male fertility with advancing age. A recent meta-analysis looking at the effect of male age on male fertility identified an age-associated decline in semen volume, percentage and progressive motility, normal morphology, and higher sperm DNA fragmentation rates. Compounding these factors, men >5 years postvasectomy have been shown to have a lower sperm yield, and lower numbers of spermatozoids on testis biopsy, compared with their fertile counterparts. A reproductive urologist evaluation would generally take these factors into consideration, optimizing hormonal factors in order to maximize the chances of a successful sperm retrieval. Finally, the decision for how to proceed if sperm are not found on PESA or TESE for a postvasectomy male is best made by a urologist. If sperm were to not be found the couple would likely freeze the eggs, with the associated costs and oocyte loss.

Limitations of our study included that it was a random sample of private practice American fertility clinics. These findings may not have been completely representative of American fertility practice patterns. Nevertheless, we did seek to adequately sample clinics from every state and all major cities throughout the United States. Also, we asked these questions of whoever answered the phone at the fertility clinics. There is the potential for erroneous information to be transmitted. There were times that if the person answering the phone did not know the answers to our questions, they would “ask someone else” and call us back with the accurate information.

The workup of the subfertile man includes a focused history and careful male genitourgological examination, and possibly laboratory hormonal evaluation and genetic testing. Though extensively trained in female pelvic anatomy, the lack of training in male anatomy among reproductive endocrinologists performing procedures on males may pose a medico-legal issue with regards to the qualifications needed to properly work up male infertility and prevent future complications. Moreover, surgical sperm retrieval may require medical and hormonal optimization beforehand, with the goal of maximizing sperm retrieval rates at the time of the procedure.

CONCLUSION

In 9.4% of American fertility clinics, surgical sperm retrieval postvasectomy was performed by an on-site reproductive endocrinologist, and in 30.5% of clinics this was performed by either a urologist partnered with the infertility clinic or referred out to a local urologist. The majority (76.9%) of cases performed by reproductive endocrinologists were routinely performed under intravenous anesthesia, with the potential for increased risk and cost. Costs for sperm retrievals varied considerably among infertility clinics. The reasons for, and safety of reproductive endocrinologists performing these procedures remains to be determined. However, there is a growing body of evidence that there is considerable value, extending beyond sperm extraction, in the urological evaluation of the subfertile man. Urologists should continue to be the primary physicians performing postvasectomy sperm retrieval procedures.

References

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