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NON-SURGICAL ALTERNATIVES FOR MEN DESIRING CHILDREN FOLLOWING A VASECTOMY

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In the late 1980's, Dr. Sherman Silber in St. Louis proved that sperm obtained directly from the scrotum could be used to successfully fertilize eggs and achieve viable pregnancies. While this procedure was originally intended for men who are born with an obstruction in the genital tract (congenital absence of the vas deferens), it has become clear over the past decade that men with previous vasectomies can benefit from similar procedures as well.

The development and maturation of sperm occurs in the testes. The testes also produce most of the testosterone in men. The sperm begins its trip through the male ducts in an enlarged portion of the ducts called the epididymis. This duct eventually becomes the vas deferens (vas). Along the route of the vas, the prostate and seminal vesicles add the fluid portion of the ejaculated semen. When a vasectomy has been performed, the vas deferens is blocked before the area where the seminal vesicles add the fluid. That is why these men still produce semen, but no sperm. Dr. Silber microsurgically removed sperm from the epididymis and achieved viable pregnancies through assisted reproductive procedures, thus proving that sperm do not have to make the trip through the ducts to achieve fertilizing potential.

Vasectomies represent an important and effective method of "permanent" birth control. For a variety of reasons, a small percentage of men who have a vasectomy later desire more children. Until recently, if semen was not frozen at the time of the surgery, microsurgical reversal of the vasectomy has been the only option for these men. Vasectomy reversal has several disadvantages, however. Vasectomy reversal represents major surgery of the scrotum. Most men with longstanding vasectomies develop sperm antibodies that may inhibit fertilization, even if the reversal procedure is surgically successful. Finally, reversals done more than 7 years from the original procedure are associated with very poor pregnancy rates. Unfortunately, many men seeking fertility after a vasectomy fall into this last category.

Removing sperm directly from the scrotum, combined with In-vitro fertilization (IVF), represents an excellent alternative to vasectomy reversal. The original microsurgical approach is known as "Microsurgical epididymal sperm aspiration," or "MESA." This procedure produces enough sperm to freeze for future use. However, like vasectomy reversal itself, the procedure involves major surgery of the scrotum, is relatively

expensive, and can often only be performed once on each side because scar tissue hinders the ability to find the duct on subsequent attempts.

Over the past few years, HRC doctors have developed two non-surgical alternatives to MESA. The first approach is called, “Percutaneous epididymal sperm aspiration,” or, “PESA.” The second alternative is called, “Testicular sperm extraction,” or, “TESE.” Both procedures can be done using local anesthesia. With PESA, a small needle is guided through the skin into the epididymis, and a small amount of fluid containing sperm is aspirated. In contrast, with TESE, a small amount of tissue is directly removed from the testis using a small biopsy needle. In either case, relatively small numbers of sperm are obtained, and these can fertilize the female partner’s eggs through Intracytoplasmic sperm injection (ICSI), where individual sperm are actually injected into the eggs.

None of these procedures produce enough mobile sperm for simple artificial inseminations. Potential complications of the non-surgical procedures include infection and bleeding. Bleeding under the scrotal skin can theoretically cause the formation of a painful blood clot known as a hematoma. In over 5 years of performing these procedures, we have not seen either of these complications.

Before proceeding with any of these treatments, the male partner should be evaluated by the person who will perform his procedure. An appropriate history and physical examination should be performed, focusing on potential factors that could impact on likely successful aspiration of sperm. The physical exam can identify potential problems that might be encountered and can help the physician estimate the likelihood of finding adequate amounts of viable sperm. We measure serum levels of testosterone and FSH in the men to make sure they are producing enough hormones to sustain normal sperm development.

As with routine IVF cycles, the female partner uses injectable hormones to both stimulate multiple egg production and to control the timing of ovulation. The egg retrieval is done vaginally, using an ultrasound probe to guide a needle into the ovaries. This procedure can be done with local anesthesia, or with conscious sedation. The PESA or TESE is done on the same day, and the eggs are inseminated shortly after the conclusion of both procedures. Three days later, a small number of embryos are inserted through the cervix into the uterus. The number of embryos transferred depends on the age of the woman and the quality of the embryos. Extra embryos can be frozen for future use. Over the past year, the doctors at HRC have been addressing the issue of multiple births by transferring lower numbers of embryos in younger patients. We can do this, in part, because of the quality of our freezing program, giving couples a realistic second chance.

The choice of procedure is largely dependent on physician preference. All three variations of the male procedure are available at HRC. Over the past several years, we have experienced a 20-30% ongoing pregnancy rate with non-surgical sperm extraction procedures. The success rates vary, based on various factors, maternal age being one of the most important. We believe, that for couples in whom the male partner has a vasectomy more than 7 years old, these success rates following single procedures are greater than the overall success rates with vasectomy reversal. For younger women, the overall success rate following the initial combination of PESA/ TESE and IVF, is enhanced if there are frozen embryos available for another embryo transfer.