

# **PATIENT'S FACT SHEET**

## **Sperm Recovery after Spinal Cord Injury in Men**

There are more than 10,000 spinal cord injuries per year in the United States. The majority of these injuries occur in healthy men of reproductive age. Spinal cord injury may produce both sexual and reproductive problems. Following spinal cord injury, the majority of men lose the ability to ejaculate. Additional factors that predispose spinal cord injured men to infertility include potential abnormalities of sperm production, chronic genitourinary infections due to abnormal bladder function, and blockage of the ducts transporting sperm within the male reproductive tract. Management of male infertility due to spinal cord injury includes a number of different methods to obtain sperm. The techniques, which are described below, provide sperm that can be utilized with various forms of assisted reproductive techniques. Your physician will discuss which techniques are most appropriate for you.

### **VIBRATORY STIMULATION**

A small hand-held medical vibrator applied to the head and shaft of the penis can stimulate ejaculation in some men who are otherwise unable to ejaculate. Store-bought vibrators, however, are usually not strong enough to stimulate ejaculation. Vibratory stimulation does not require anesthesia, and it successfully obtains semen in up to 80% of men who have upper spinal cord injuries (above the 10th thoracic vertebra, T10), although it is typically not successful in men with lesions below T10. The semen sample is then processed for either intrauterine insemination (IUI) (placing the semen directly into the woman's uterus), or in vitro fertilization (IVF) (combining the sperm with the eggs in a dish) and intracytoplasmic sperm injection (ICSI). ICSI involves injecting a single sperm directly into an egg to facilitate fertilization.

Some men may be able to perform vibratory stimulation at home and subsequently place the collected semen specimen directly into their partner's vagina. A possible side effect of vibratory stimulation, as well as electroejaculation described below, is autonomic dysreflexia, a potentially life-threatening condition that can cause extremely high blood pressure.

Patients should not use this technique before being evaluated by a physician. Autonomic dysreflexia is more common in men with spinal cord injury at the level of the seventh cervical vertebrae (C7) or higher.

### **ELECTROEJACULATION**

Ejaculation can be achieved by directly stimulating nerves with an electrical probe placed in the rectum. Semen can be obtained in greater than 90% of neurologically impaired men, including those with lower spinal cord injuries for whom vibratory stimulation is usually unsuccessful. Some of the sperm go into the bladder rather than out of the penis. This is known as retrograde ejaculation. Retrograde ejaculation requires that sperm be retrieved from the urine. The semen is then processed for either IUI or IVF and ICSI. Although electroejaculation typically doesn't require anesthesia in men without sensation, it is usually performed in a monitored procedure room. Men with sensation, however, will require a general anesthetic, since the procedure may be limited by the patient's experience of and tolerance to pain.

### **SURGICAL SPERM RETRIEVAL**

Sperm are usually present in the reproductive tract of spinal cord-injured men. If an adequate semen sample cannot be obtained using vibratory stimulation or electroejaculation, sperm may be removed from nearly any site along the path of ejaculation, including the vas deferens, epididymis, or testis. Microsurgical epididymal sperm aspiration (MESA), percutaneous epididymal sperm aspiration (PESA), testicular sperm extraction (TESE), and percutaneous testicular sperm aspiration are examples of techniques that are used for men with acquired or congenital obstructions along their reproductive tract. Compared to MESA and TESE, the percutaneous methods have the advantage of not requiring an incision into the scrotum; however, MESA is the technique with the lowest amount of contamination with blood cells, and the method that is most likely to obtain sufficient amounts of fluid for immediate use with ICSI as well as for sperm cryopreservation. All of these surgical sperm retrieval techniques yield specimens that require IVF and ICSI, and the best method for a patient is determined on an individual basis. To date, the combination of microsurgical epididymal sperm aspiration and ICSI is associated with the highest published pregnancy rates.

All of the sperm acquisition techniques described in the sections above are associated with low pregnancy rates when the semen samples are used for intrauterine inseminations (IUI). This is because semen samples obtained by vibratory stimulation or electroejaculation usually contain sperm with poor motility, and the surgical sperm retrieval techniques obtain relatively low numbers of sperm. Pregnancy rates are improving as techniques for sperm retrieval increasingly become refined and ICSI is used to fertilize eggs.