



# Fact Sheet

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The Patient Education Website of the American Society for Reproductive Medicine

## Surgical techniques for sperm retrieval: what should I know?

### **Why would I need to have sperm removed surgically?**

As many as 10% to 15% of infertile men have no sperm in their ejaculate (the fluid released from the penis during orgasm). This is called azoospermia. Forty percent of cases are due to a blockage (obstruction) in the reproductive tract. Problems with sperm production account for the rest.

Depending on the cause, a man with azoospermia may still be able to father a child. A man with an obstruction may be able to have sperm retrieved with special surgical techniques. In vitro fertilization (IVF) is often needed to achieve pregnancy for these cases. Sperm retrieval may also be possible for men who have problems with sperm production.

Information about surgery to repair blockage and improve sperm production can be found in the ASRM fact sheets *Fertility options after vasectomy* and *Varicocele*.

### **What are the goals of surgical sperm retrieval?**

1. To obtain the best quality sperm
2. To obtain enough sperm for immediate use and/or for freezing
3. To minimize injury to the testicle and reproductive tract

### **What is involved in surgical sperm retrieval?**

There are several ways to retrieve sperm; the technique used depends on:

1. Whether the procedure can be done through the skin or requires an incision (percutaneous vs. open)
2. Amount of tissue required and method of retrieval (biopsy vs. aspiration)
3. Location from which tissue is taken (testicle, epididymis or vas deferens)
4. Instruments used (microsurgical vs. conventional)

### **Why choose one method over another?**

Each technique has its advantages and disadvantages. For example, percutaneous (through the skin) methods usually only require local anesthesia, and the surgeon does not need to use microsurgical equipment. However, with an open procedure, the surgeon can reach different locations and see the area more clearly.

### **Are other tests needed?**

A fertility evaluation of the man should be done along with the evaluation of the female partner. If the semen analysis shows you have no sperm (azoospermia) or very few sperm (severe oligozoospermia), you should have a complete history, physical exam, and possibly laboratory testing. Sometimes a testicular biopsy is needed. This procedure takes a small piece of tissue from the testicle and can show whether azoospermia is due to a blockage or a problem producing sperm. A urologist that specializes in reproductive medicine and surgery can recommend the sperm retrieval method that is best for your particular situation.

### **Once sperm is retrieved, is it used right away?**

Your urologist may coordinate the sperm retrieval surgery with your partner's reproductive specialist so fresh sperm can be used or sperm can be frozen and used later. When IVF is also done,

surgically retrieved sperm will be injected directly into an egg in a process called intracytoplasmic sperm injection (ICSI).

### **What are the types of surgical extraction available?**

#### **MESA (Microsurgical Epididymal Sperm Aspiration)**

This technique may be done by itself or during reconstruction surgery for a blockage. An incision is made in the skin of the scrotum and the testicle is exposed. An operating microscope allows the surgeon to see the epididymis (the tube through which sperm travel after leaving the testicle) under magnification. Fluid from the epididymis is examined for sperm that move. If moving (motile) sperm are seen, the fluid is taken for immediate use or frozen for future use.

#### **PESA (Percutaneous Epididymal Sperm Aspiration)**

Sometimes PESA is used instead of MESA because it can be done under local anesthetic. However, this technique is less dependable and fewer sperm are collected. With PESA, there are sometimes not enough sperm to freeze for later use.

#### **TESE (Testicular Sperm Extraction)**

Sperm can be taken directly from the testicle when there are no sperm in the epididymis or if you have a sperm production problem (nonobstructive azoospermia). A needle is inserted (aspiration) or a tissue sample (biopsy) is taken through the skin. However, these techniques are generally not appropriate if you have azoospermia that is not due to obstruction. An open approach is usually recommended for men with a sperm production problem.

#### **Microsurgical vs. Conventional**

Open testicular sperm extraction can be done with an operating microscope (microsurgical) or without (conventional). The microsurgical technique has higher sperm retrieval rates than the conventional method. Sperm have been found with microsurgical TESE even when sperm production by the testicles is so low that none are seen in the semen. Other advantages of using the microsurgical technique are the lower chance of injury to the testicular blood supply, less loss of testicular tissue, and less blood in the biopsy specimen. This is important since testicular bleeding can lead to scar formation, which can damage a testicle.

#### **What about ICSI?**

ICSI with IVF has made it possible for some men to have biological children who couldn't before. ICSI can be used with immature sperm that otherwise may not be able to fertilize an egg. Also, ICSI can improve the chances of pregnancy when very few sperm are available. For more information about ICSI, see the ASRM fact sheet *Intracytoplasmic sperm injection (ICSI)*.

#### **Be prepared!**

Understanding the diagnostic evaluation, treatment options, treatment outcomes, and potential complications of surgical sperm retrieval will help you prepare for your appointment with the urologist and to help you select the best option.

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