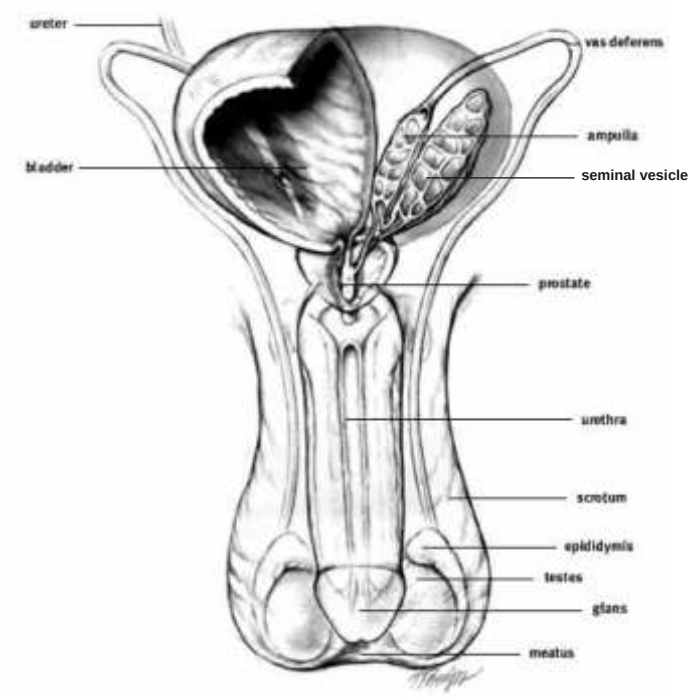
SURGICAL SPERM COLLECTION (SSC)

This patient information sheet should be read in conjunction with the sections on Intra Cytoplasmic Sperm Microinjection (ICSI) and In Vitro Fertilization (IVF) in the patient information booklet.

OVERVIEW OF THE MALE REPRODUCTIVE SYSTEM

The function of the male reproductive system is to produce, store and transport the sperm outside the body. The organs that produce sperm are the testes. Sperm production begins with immature sperm cells that grow and develop within the seminiferous tubules. These tubes are very tiny and the sperm inside them are not fully mature. As a result they are unable to move on their own. As they travel along the length of the epididymis they mature and become motile. The sperm are stored in the seminal vesicles and during ejaculation they are carried from the seminal vesicles to the penis along the vas deferens (Figure 1).



Until recently there was no treatment available for men who have a complete absence of sperm in the ejaculate (azoospermia), and it has been estimated that about 1015% of cases of male infertility are due to azoospermia. Azoospermia has many causes; some of the causes are called “obstructive” meaning that there is a blockage in the sperm delivery system. Other causes are “non obstructive” meaning that there is an absence or a very marked reduction of sperm production in the testes. It is strongly recommended that a Fertility Specialist review all patients with azoospermia.

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OBSTRUCTIVE AZOOSPERMIA

Obstructive azoospermia accounts for about 40% of azoospermia cases. Obstruction may result from defects in any of the ducts (passage ways) involved in the sperm delivery system. The obstruction may be either congenital (you were born with it) or acquired (you were not born with it). Vasectomy is a common form of male contraception. With this the vas deferens is cut forming an acquired obstruction. It is the most common cause of obstruction. Another cause is infection, which can scar the epididymis. Congenital obstruction can be due to either a malformation or the absence of a ductal structure. Congenital absence of the vas (CAV) is a genetic disorder associated with cystic fibrosis and with this the vas deferens is either absent or malformed. If CAV has been diagnosed your doctor will advise you on the correct course of action. In obstructive azoospermia the reason for the absence of sperm in the ejaculate is physical and in general, does not involve the process of sperm production. Therefore in most cases surgically retrieved sperm are normal in their function and fertilization rates and pregnancy rates are similar to those obtained using ICSI on ejaculated sperm. Also the incidence of birth defects does not appear different.
NOTE: If you have been diagnosed with CAV your doctor will discuss the inheritance of this genetic disorder and the effect on any children born.

NON-OBSTRUCTIVE AZOOSPERMIA

The three major causes for reduced sperm production are hormonal problems, testicular failure and possibly varicocoele. Your doctor will discuss in detail what the problem is and how best it might be treated. Up to 10% of men with non-obstructive azoospermia have chromosomal abnormalities including Klinefelter's Syndrome (presence of an extra X chromosome). If you have been diagnosed with a chromosomal abnormality your doctor will discuss with you the advisability of using surgically collected sperm. Also abnormalities of the Y chromosome called micro deletions or Yq deletions have been identified in 7% of males with severe oligospermia or azoospermia. The concern here is that it has been shown that these abnormalities are inherited and male offspring will be similarly affected. Again your doctor will discuss in detail the advisability of proceeding with surgically retrieved sperm if these abnormalities have been detected.

SURGICAL SPERM COLLECTION

There are three methods of surgically retrieving sperm from the testis. Your doctor will discuss with you the method of extraction he is proposing to use.

1.MICRO EPIDIDYMAL SPERM ASPIRATION (MESA)

MESA involves aspiration of sperm from the epididymis with a fine needle (Figure 2). It is a surgical procedure and is carried out under a general anaesthetic. Sperm collected using this procedure are often of poor quality but in addition to being used for ICSI sometimes are suitable for cryostorage. One aspiration may provide enough sperm for several attempts at IVF using ICSI. MESA is usually performed on the day of egg collection.

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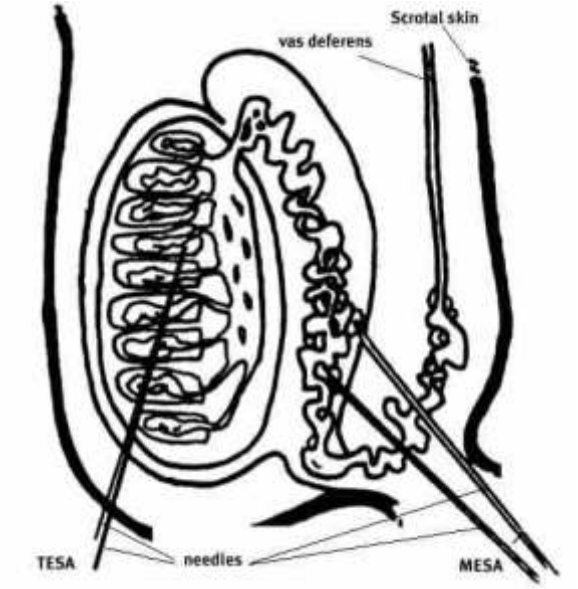

2.TESTICULAR SPERM ASPIRATION (TESA)

TESA involves taking a small piece of tissue directly from the testis and isolating the sperm from the seminiferous tubule (Figure 2). The number of sperm isolated is often very small (usually less than with MESA) and as a general rule these sperm cannot be cryostored. The procedure is performed on the day of the egg collection procedure.

3.OPEN SURGICAL BIOPSY

This procedure involves making a small cut in the scrotum and in the testis. A small piece of testicular tissue is removed and the site stitched. Post operatively this leads to more discomfort and male may not be able to work for a few days.
Occasionally a microscope is needed to determine which areas in the testis are to be biopsied and your fertility specialist will discuss this.
In some cases live sperm will not be obtained. The IVF Oocyte (egg) pick up will then be cancelled If you decide to use donor sperm for your next IVF cycle, you will need to discuss this with the clinic counsellor prior to the Oocyte collection.

IMMATURE SPERM

In some cases of non-obstructive azoospermia only immature sperm are obtained. Fertilization rates with immature sperm are often quite poor and even zero. Even if fertilization does occur and pregnancy follows an embryo transfer, the rate of miscarriage is two to three times higher than in pregnancies obtained using mature sperm. Recent studies have shown that this result may be linked to an increase in the level of a chromosomal disorder called Mosaicism, which is itself linked to sperm immaturity. For this reason we do not inject immature sperm or sperm that are immotile. If mature motile sperm cannot be located then the procedure will be abandoned. Please discuss the consequences of this with your doctor before commencing a SSC procedure.

CONSENTS

A consent form requesting the above techniques must be signed before commencing a surgical sperm collection.
This information sheet outlines the broad issues associated with SSC. As each case is different your doctor will advise you of a course of treatment that will be effective for you and it may differ from the outline given in this handout.

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