



# SURGICAL SPERM COLLECTION (SSC)

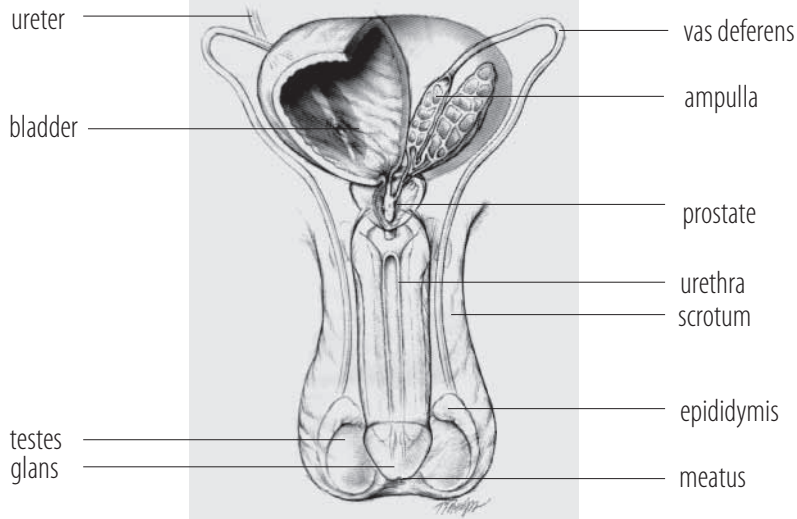
This patient information sheet should be read in conjunction with the sections on Intra Cytoplasmic Sperm Microinjection (ICSI) and In Vitro Fertilization (IVF) in the patient information booklet.

## 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. During ejaculation they are carried from the epididymis 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 10–15% 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 all patients with azoospermia are reviewed by a urologist.

FIGURE 1



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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 varicocele (benign testicular cysts). A significant proportion of men with non-obstructive azoospermia have testicular failure caused by chromosomal abnormalities such as Klinefelter's syndrome or abnormalities of the Y chromosome. Your doctor will discuss in detail what the problem is and how best it might be treated. If azoospermia is due to chromosomal abnormalities the concern is that male offspring could inherit the disorder, and therefore the implications of inheritance of the genetic disorder need to be considered.

## SURGICAL SPERM COLLECTION.

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

## 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 anesthetic. Sperm collected using this procedure are often of poor quality but are usually suitable for cryostorage. One aspiration may provide enough sperm for several attempts at IVF using ICSI. MESA can be performed well in advance of any proposed IVF procedure.

## TESTICULAR SPERM EXTRACTION (TESE).

TESE involves taking a small piece of tissue 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 thus performed typically twenty four hours prior to the egg collection procedure. Originally TESE was only performed in cases of non obstructive azoospermia, however because the procedure can be performed under local anesthetic using a biopsy needle it has become the method of choice for all types of azoospermia in some clinics. A surgical biopsy may be less damaging to the testis than a needle biopsy, and is probably less painful.



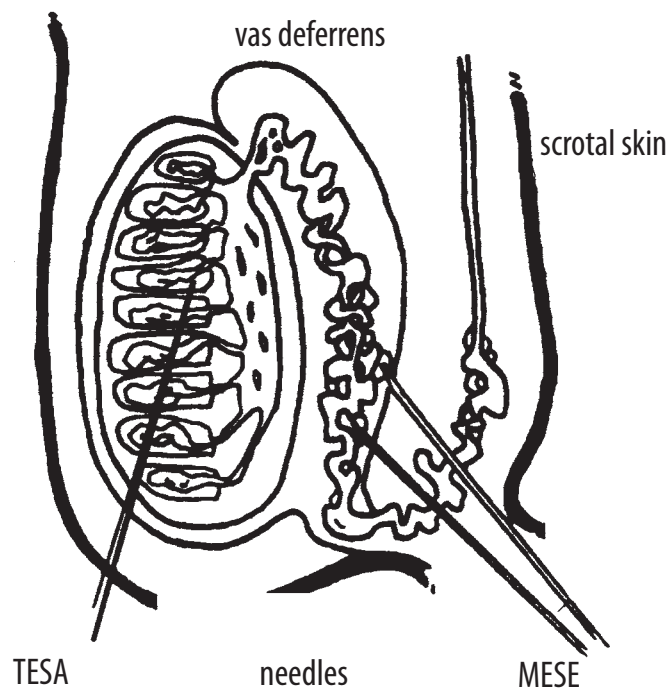
In some cases live sperm will not be obtained. Your options are:

1. The IVF oocyte (egg) collection may be cancelled, or
2. Any oocytes collected can be frozen.

Please discuss these options with your doctor prior to commencing an IVF procedure.

If you decide to use donor sperm for your next IVF cycle, you will need to discuss this with the clinic counsellor prior to commencing an IVF procedure.

FIGURE 2



## NON-USE OF 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.



## PERCUTANEOUS EPIDIDYMAL SPERM ASPIRATION (PESA).

PESA is a simple technique to obtain sperm for Intra Cytoplasmic Sperm Injection (ICSI) in men who have an obstruction of the vas deferens, either due to vasectomy or other obstruction. To minimize scarring and damage, PESA usually is attempted on one side only. It is sometimes necessary to aspirate from both sides. Sufficient sperm for ICSI is obtained in 80% of attempts. In 10% of cases enough suitable sperm is found for cryopreservation.

The procedure is performed in the Canberra Fertility Centre rooms (Figure 3). After the procedure the man will be asked to wear a very tight pair of underpants to provide support to the scrotum. There is no other special preparation for the patient.

PESA is performed under local anaesthetic. This means that an anaesthetic is injected into the scrotum by the specialist to make the area numb. When this has been achieved the doctor will swab the scrotum with a warm antiseptic. The doctor will examine the testes to locate the vas deferens by gently feeling the scrotum. A small needle will be inserted into the vas deferens and the doctor will instruct the nurse assisting to draw back on the plunger in order to aspirate seminal fluid. When fluid is obtained it is passed to the andrologist to be examined for motile (moving) sperm. The procedure may need to be attempted again until motile sperm have been found.

The procedure is usually performed just prior to the woman's oocyte collection (on the same day). If no sperm is retrieved the oocyte collection may be cancelled.

FIGURE 3

