

# Surgical Techniques for Sperm Retrieval / Open Testicular Biopsy

## Reasons for having open sperm retrieval

As many as 10 - 15% of infertile men have no sperm in their ejaculate. This is called azoospermia. Around 40% of these cases are due to blockage somewhere in the reproductive tract. This means that although sperm are being produced, they cannot reach the outside. Defects in sperm production account for the rest. We may be able to get a clue as to the cause of the azoospermia based on the patient's history or with blood tests.

A man with an obstruction may still be able to father a child through sperm retrieval in the operating theatre. This will need to take place in an operating theatre that has direct access to an IVF laboratory as the sperm retrieved will need to be processed straight away. This cannot be done in public operating theatres. Currently Dr Thomas performs these procedures at Epworth Hawthorn and Epworth Richmond.

## What are the goals of surgical sperm retrieval?

1. To obtain good quality sperm for immediate use or storage.
2. To minimise injury to the testicle and reproductive tract.
3. To obtain tissue for examination by a pathologist who may give further information about the reasons for azoospermia.

## Pre-Operative Tests

A general fertility evaluation and clinical examination of the male partner will be done prior to surgery along with evaluation of the female partner. That is, although it might be assumed that the problem lies with the male, the whole clinical context needs to be taken into account. An ultrasound and some form of genetic testing can also be ordered.

## What are the types of surgical sperm extraction?

1. Percutaneous epididymal sperm aspiration (PESA). PESA involves inserting a needle into the epididymis or the collecting system of a testicle to withdraw some sperm. The advantage of this is that sometimes the sperm can be better quality although the technique is technically difficult.
2. Testicular sperm extraction (TESA). Sperm can also be taken directly from the testicle, which is technically easier and obtains a larger specimen. Often a tissue sample is also able to be produced. However, this technique is generally not appropriate if you have azoospermia that is not due to obstruction. If there is a sperm production problem, this technique is generally recommended as it also yields tissue for evaluation. This technique can be used, for example, subsequent to a vasectomy.
3. Open testicular biopsy. This is exactly as it sounds, where an incision is made in the skin over the testicle, with the patient asleep, such that a small piece of the testicular substance (around the size of two match heads) can be obtained. This has a waxy, yellow appearance, which I often liken to very tiny noodles. This gets the best specimen but is obviously the most invasive and potentially has a higher complication rate due to the possibility of wound infection and bruising.

## Once sperm is retrieved, is it able to be used straight away?

The sperm retrieved will need to be analysed by the Monash IVF laboratory and if appropriate, stored. Sometimes when a sample is aspirated with a needle, or indeed, an open biopsy, sperm are immediately recognised and we are able to give you a diagnostic result. Other times further processing will need to take place, which can take twenty four to forty eight hours. If a small quantity of viable sperm can be obtained, then they may be suitable for freezing for use at a later date. In this setting, when the sperm has been frozen or if indeed it is in poor condition, invariably sperm microinjection is required rather than expecting spontaneous fertilising.

## Pre-operative preparation

Specimen collection, whether under local anaesthetic or general anaesthetic, usually requires a six hour fasting period. If you are unsure of when to fast from please contact my staff. Fasting times are generally advised the day before the procedure.

It is important that you provide to me a comprehensive list of all your medications including herbal remedies, alternative remedies and prescribed medications. Herbal remedies such as fish oil can prolong bleeding time and it is recommended that these are brought to my attention and ceased at least a week prior to the operation. If you have any concerns about ceasing your medication prior to your operation, please let me know. Special arrangements often need to be made for patients taking Warfarin.

On the day of the operation please shower carefully but do not apply talcum powder. It is not necessary to shave.

### **Duration of the procedure**

A needle biopsy may take 10 to 20 minutes and an open biopsy often takes half an hour to an hour, depending whether or not the biopsy is done on both sides.

### **What happens during the operation?**

You will be admitted to the Day Surgery Department of the relevant hospital and you will be visited by the anaesthetist prior to commencing the anaesthetic. They will ask you questions about your general health and any other anaesthetic experiences. An anaesthetist may not be involved if you are having a local anaesthetic. An intravenous line will generally be placed in the back of the hand or at the level of the elbow. Whilst you are asleep antiseptic is applied to the operation area and either needle aspiration or open testicular biopsy carried out. The latter usually needs an incision of roughly 2 - 3 cm on either side of the scrotum and antibiotics are given intravenously to help to prevent infection. The resultant incision is then closed in three layers using dissolvable sutures, ie, no sutures need to be removed. Local anaesthetic is then injected and there may be some bruising and a small amount of bleeding from the incision edges but this will be checked carefully before you are discharged home.

### **Post operative care**

It is important to keep the operative area sensibly clean and no special agents need to be applied. You can shower normally after the first day and carefully pat the area dry. It generally helps to wear comfortable underwear, sometimes with extra padding. Results from the biopsy may take up to one week for the histology as the analysis is a very specialised procedure. A post operative review will be scheduled.

If you have any concerns whatsoever with the wound, this should be brought to my attention.

## Possible results of surgery or complications

1. No sperm may be obtained.
2. Further surgery may need to be scheduled in order to get a definitive answer regarding whether or not sperm can be obtained.
3. There may be a scar.
4. There may be bruising or rarely, infection.
5. Discomfort may persist for several weeks.

