

## Information for Patients

# Surgical Sperm Retrieval

About one man in a hundred produces no sperm (10-15% of all sub fertile men) - a condition known as azoospermia. Various factors can contribute towards these conditions, some of which may be inherited. Surgically retrieved sperm are used in an IVF/ICSI treatment cycle to achieve pregnancy.

### What is surgical sperm retrieval (SSR) and what does this treatment involve?

SSR is a technique for collecting sperm directly from a man's testicles or epididymis. It is a procedure usually carried out as a day case under general anaesthetic. An SSR is usually planned in advance, but in exceptional circumstances can also be carried out as an emergency procedure. This would usually be if the man is unable to produce a sperm sample on the day of his wife's or partner's egg collection. The procedure is carried out under general or spinal anesthetic or with sedation. The clinical team may use different methods of SSR. Your hormone (FSH) level and testicular size will determine the method of SSR. Your surgeon will advise you which procedure will be suitable for you.

### Who may benefit from surgical sperm retrieval (SSR)?

SSR is intended to help men who have no sperm in their ejaculate or less commonly for men with extremely low quality sperm. This can be the result of a number of causes:

- Men who have had a vasectomy (the male sterilisation operation), that is, removal of vas deferens (the tube which carries the sperm to the penis) or a failed vasectomy reversal.
- Men who are carriers of certain genetic conditions, such as cystic fibrosis. These men do not have a vas deferens.
- A blockage in the epididymis, (the structure connecting the testis to the vas deferens). This can be due to previous testicular surgery/trauma or any previous infection in the genital region.
- Men who do not produce sperm in their semen, for example in cases of retrograde ejaculation.
- History of undescended testes and any testicular surgery.

- Illness (such as mumps in adolescence affecting the testis).
- May be suitable for men with spinal injury and where there are problems with normal ejaculatory function (such as Multiple sclerosis, Diabetes).
- Men with congenital or acquired endocrine conditions (hormone producing condition for spermatogenesis).
- Men with genetic condition (eg. Klinefelter syndrome).
- Medications (eg steroids, testosterone, opioids).

Most of these men produce healthy sperm in the testicles which can be retrieved by SSR. Unfortunately some men have testicles that fail to produce any sperm at all.

For some of these men it may be possible to surgically retrieve sufficient sperm directly from the testes for use in the assisted reproduction treatment (IVF/ICSI).

## Pre-operative (pre-op) appointment

Once you are listed for SSR, you will be sent a separate appointment to see a consultant in order to sign both the HFEA consent forms and a surgical consent form. This appointment will be held in the Department of Reproductive Medicine.

You will also be invited to attend a pre-op assessment, usually 1-2 weeks before your surgery date. This will be held in the Admissions Department, which is based in the new Saint Mary's Hospital building. This appointment will involve an assessment to ensure that you are fit and well to undergo the procedure.

## What are different methods of SSR?

There are different methods of SSR. The cause of your azoospermia will determine the best way to retrieve sperm in your individual case.

### 1. Percutaneous Epididymal Sperm Aspiration (PESA)

PESA is performed in theatre at the Old Saint Mary's Hospital, under sedation. It is a short, relatively painless procedure and requires no surgical incision.

It is the least invasive method and involves inserting a fine needle into the epididymis, from which fluid is aspirated. This fluid is then inspected immediately by embryologists under a microscope for sperm content and motility. The procedure takes about 20-30 minutes. If the aspirates fail to show any viable sperm then the surgeon will proceed to the other options (TESE), usually on another day. This is particularly suitable for men who have had a vasectomy, obstruction or who were born without a vas deferens (cystic fibrosis).

We will inform you of the outcome of the PESA procedure on the day of procedure.

## 2. Testicular Sperm Aspiration (TESA)

A fine needle is used with a biopsy gun to remove small lengths of seminiferous tubule (sperm producing tubules). These are then carefully dissected under a microscope by embryologists.

## 3. Micro-epididymal Sperm Aspiration (MESA)

Instead of using a needle in PESA, a small cut is made through the scrotum and into the epididymis. Fluid is collected under microscope and taken for microscopic examination by embryologists to see if there is any viable sperm.

## 4. Testicular Sperm Extraction (Open conventional TESE)

If no sperm is found in PESA, TESA or MESA, TESE will be performed. This procedure is performed in the New Saint Mary's Hospital. There are two ways of performing TESE procedure:

- **Single biopsy (unifocal)**

If the hormone level and testicular size is normal then a small incision is made into the testis itself. A small sample of testicular tissue is taken which is then examined for sperm. Stitches are applied that are dissolvable and so will not need to be removed. Pain relief is given in the form of local anaesthetic and nerve block to the genital region.

- **Open scrotal exploration and multifocal testicular biopsies**

This involves performing a midline or horizontal incision on the scrotal skin. Three to four biopsies are taken from each testicle in different areas. Stitches are applied that are dissolvable and so will not need to be removed. Pain relief is given in the form of local anaesthetic and nerve block to the genital region. This provides pain relief for 15-16 hours. This procedure will cause some pain and tenderness afterwards, however full recovery is expected within a few days. Samples are passed to the laboratories where an embryologist checks it for sperm suitable for use in further treatment.

It is not possible to tell you on the day if sperm were present in the biopsy material, as it may require special culture technique. It may take 3-5 days before the embryologist will be able to give you any information about the presence or absence of sperm in the biopsy material. This result will be informed to you in the clinic appointment, usually in 1-2 weeks.

## Effectiveness of SSR

Surgically retrieved sperm, if viable, are stored frozen and this does not affect their ability to subsequently fertilise an egg. However, surgically retrieved sperm are not comparable to normally ejaculated sperm. As the number of sperm retrieved by surgical means is usually low in numbers with reduced motility and may not be mature, and therefore cannot successfully fertilise an egg using IVF techniques. Because of this, the embryologist will pick out a single sperm to inject into each egg, this procedure is called Intracytoplasmic Sperm Injection, (ICSI). Fertilisation rates are dependent upon quality of sperm and oocytes (eggs). If non-motile sperm are all that are available for selection, it is impossible

to tell whether the sperm is alive or dead, so fertilisation rates will be adversely affected. It is also possible that no sperm at all will be obtained after the stored frozen sperm is thawed.

## Possible Complications

SSR is a relatively low risk procedure. Possible complications include pain, bleeding, infection, haematoma (swelling of testicles with blood in the testicle) that would require immediate exploration of testicle within few hours of surgery. The risk of these complications occurring is small. There is very small risk of testicular damage and chronic testicular pain, but these occur rarely. Any procedure that requires a general anaesthetic also carries an increased risk of complications of anaesthesia.

## Preparing for SSR

Before coming to the hospital (24 hours prior) you should shave all the hair off the scrotum or use a cream depilatory. You should bring with you a tight pair of 'slip'-style underpants or swimming trunks – not boxer shorts.

You will need to be accompanied by a driver or to arrange a lift/taxi as you will not be able to drive for 24 hours after the procedure.

## Prior to your procedure

You will be required to fast (this includes no chewing gum and sucking on sweets) for at least 6-8 hours prior to the procedure. You are also advised to avoid alcohol for at least 24 hours.

## After your procedure

You will be able to leave the unit about four hours after the procedure. As with any surgical procedure, there is a slight risk of bleeding, bruising or infection. In order to reduce this risk we would advise you to wear reasonably tight fitting pair of underpants rather than boxer shorts for at least 48 hours (including overnight) from the day of your operation and then wear your own scrotal support (jock strap) daily (changing every day) for further 12 days to minimise discomfort and protect your scrotum and testes.

Showering is advised and avoid hot baths to prevent infection.

You should avoid alcohol, taking drugs that contain aspirin and refrain from strenuous exercise for the few days after SSR.

Sexual activity is not advised for a week after the procedure.

If you had an open SSR procedure you would be advised to be off work for 7-14 days. If you experience any discomfort, you may take up 4g (usually 8 tablets) of paracetamol, **OR** 240mg codeine, **OR 1200mg ibuprofen in any 24 hours.**

You should follow the information on the medication to ensure you do not exceed the recommended dosage in any 24 hour period.

## Contact Details

### For queries regarding your pre-op appointment:

Admissions Office: (0161) 276 6310, Monday – Friday, 9.00 am – 4.00 pm.

### For general queries or concerns regarding your procedure:

Andrology Secretary: (0161) 276 6770, Monday - Friday, 9.00 am – 4.00 pm.