Surgical Sperm Retrieval

Information for patients
This booklet has been written to help you understand the purpose and methods of surgical sperm retrieval (SSR). We hope that it will answer some of the questions that you may have about your proposed treatment.

You can find further information at: www.leedsfertilityclinic.co.uk

**How to contact us:**

Please see page 22 for urgent and non-urgent contact details.
Why do I need surgical sperm retrieval?

During fertility investigations, you will have provided a sperm sample to assess the number of sperm you are producing and also how active (motility) and normal (morphology) they look. Unfortunately for some men this sample will contain no sperm (azoospermia). When this happens further tests are arranged to try to find out the cause including:

- Hormone blood tests (FSH / LH / Testosterone)
- Genetic tests (Karyotype / Y microdeletions ± Cystic Fibrosis carrier)
- Ultrasound tests (Testes)

You may be referred to a Urologist here at Leeds Fertility for a more detailed assessment and to discuss treatment options. These might include an operation to try to find sperm from inside the testis. There are many reasons why a man may not ejaculate sperm. There could be a blockage and/ or the sperm may not actually be developing inside the testis. Some men just do not ejaculate and in some men the sperm pass into the bladder rather than reaching the outside (retrograde ejaculation). It is usually possible to find sperm if the testis is producing them, but there is a blockage stopping them from getting out (obstructive azoospermia). If the testis is not working properly but the tubes are open, the sperm may not be present at all (non-obstructive azoospermia). The urologist will use the results of the tests and examination to judge the chances of a successful sperm retrieval operation.

Any sperm that is retrieved can be frozen at Leeds Fertility and may then be used for a future treatment of *in vitro* fertilisation with intracytoplasmic sperm injection (IVF + ICSI).
- **Testis**: Contains the cells that make sperm.
- **Epididymis**: Where the newly made sperm are stored before they are released.
- **Vas Deferens**: The tube that carries the sperm towards the outside.
- **Seminal vesicles and prostate gland**: Produce the fluid the sperm are released in.

Sperm is produced within tightly packed tubes in the testes under the control of hormones (FSH and LH) from the pituitary gland in the brain. New sperm should be produced throughout a man’s life and each batch takes about 72 days to reach maturity. The sperm is stored in the epididymis until it is released during ejaculation, via the vas deferens, prostate gland (where fluid is added) and the urethra.
It is possible to retrieve mature sperm from the epididymis or the testicle. Only mature sperm can be used in fertility treatment.

FSH and LH hormones from the pituitary gland in the brain control sperm production in the testes.
How is a surgical sperm retrieval done?

**PESA (Percutaneous Epididymal Sperm Aspiration)**
- This is usually done under local anaesthetic at Leeds Fertility. The surgeon will examine you to identify the epididymis before inserting a small needle directly into the epididymis and aspirating any fluid. An andrologist (sperm scientist) will examine the fluid under a microscope in the procedure room to see if any sperm are present. There may be several attempts on each side to find enough sperm for treatment or to decide that another type of procedure may be more suitable.
MESA (Microsurgical Epididymal Sperm Aspiration)

- This procedure requires a general anaesthetic. A cut is made in the scrotum to find the testis and epididymis. The surgeon uses an operating microscope to identify the tubules of the epididymis precisely to enable sperm extraction through a fine needle. The fluid is then examined for the presence of healthy sperm.

micro-TESE (Microdissection Testicular Sperm Extraction)

- This requires a general anaesthetic. A cut is made in the scrotum to find the testis. The testis is opened and by using an operating microscope, some of the fine individual sperm-producing tubes are removed for detailed assessment. The tissue will be examined in the operating theatre to see if sperm is obviously present before being transported to the Leeds Fertility laboratory for detailed examination, extraction and storage. A further sample may be sent to histopathology to establish what grade of sperm production is taking place (Johnsen’s Score) and exclude any underlying problem.
How successful is surgical sperm retrieval?

If the problem is a blockage (obstructive azoospermia), the chances of finding sperm suitable for fertility treatment are high (more than 90%). If there is a problem with sperm production and the testis is not working properly, the chances are lower, and may be zero. Some of the tests done before the operation will give some clues as to the chances of success e.g. identifying a high FSH hormone level in the blood and small testes on physical examination mean that normal sperm production is less likely. The operation may also identify a reason why the testis is not working properly. Some men may choose to go ahead with the operation even if the chances of success are slim to be sure they have tried everything to have their own genetic children before exploring other options.
You should make sure that your lifestyle is as healthy as possible to maximise your chances of success.

- Stop smoking completely.
- Make sure you have a normal body weight for your height.
- Reduce your alcohol intake.
- Consider taking a multivitamin tablet containing zinc and selenium.
- Do not use any street drugs or gym performance drugs (steroids).

You should bear in mind any lifestyle changes you make will take more than three months (the life cycle of sperm) to have any effect on sperm production. Some men may need to take medication to help stimulate sperm production, dependent on your test results.
What will happen before the procedure?

Once the decision to proceed to SSR has been made you will be added to a waiting list. If you are self-funding you can book this privately either with Leeds Fertility (PESA) or with the Urology team (Mr Kayes).

Leeds Fertility will send you an appointment as the date for your procedure approaches for:

- Signing of consent forms for the procedure and the storage of your sperm if successful.
- Screening blood tests (HIV/ Hepatitis B/ Hepatitis C/ Syphilis) as we are currently only able to store negative samples here at Leeds.
- A pre-assessment appointment to assess your fitness for anaesthetic to ensure that you are fit to have the procedure done.

What will happen after the procedure?

1. If the procedure is done under local anaesthetic, you will expect to go home within the hour. If it is done under general anaesthetic, it usually takes 2-3 hours to recover and be discharged home.

2. We recommend that someone drives you home following the anaesthetic. Simple analgesia should be enough after the procedure e.g. paracetamol / ibuprofen.

3. Tight fitting underwear is recommended to provide scrotal support.
4. Minor discomfort and a little bruising should be expected. If you are experiencing anything more than this or there is significant swelling then you should seek medical advice. There is a very small risk of a haematoma (collection of blood) or infection developing, which may need medical attention.

5. You will either find out on the day that it has been successful or will receive a phone call, usually within 48 hours of the outcome:

   a. For those who have sperm frozen, a follow up appointment with the fertility team will be organised to discuss the next step.

   b. For those for whom sperm has not been found, a follow up appointment will be organised with our Urology team.
What happens next after a successful retrieval?

If sperm is retrieved it will be frozen here at Leeds Fertility. At your review appointment, your partner’s investigations will be reviewed. With surgically retrieved sperm, we recommend that you have IVF with ICSI to get the best result.

Occasionally we may recommend intra-uterine insemination (IUI) if there is plenty of stored sperm. We recommend that you read our information booklet on IVF & ICSI to understand the next step of treatment.

We also run a new patient evening, which provides talks on the IVF process that are free to attend. Although sperm has been retrieved, there are unfortunately no guarantees that it will produce a pregnancy. Not all sperm will survive the freeze-thaw process.
What if the SSR is unsuccessful?

Unfortunately for some men, sperm is not produced in the testes. At your follow-up appointment, if a biopsy was taken in theatre, the Urologist will review your histopathology report. If your Johnsen’s score is <8, there is unfortunately nothing further that can be currently done to help you have your own genetic children here at Leeds Fertility.

We will discuss the possibility of using donated sperm or considering adoption. This may obviously be an emotionally hard time for you and your partner; and we encourage you to access our specialised fertility counsellors who can offer support through this difficult time.
Regulation of Sperm storage

The storage of gametes (which include sperm) is controlled by the Human Fertilisation and Embryology (HFEA) Act of 1990 and there are a number of guidelines and requirements that must be met before gametes can be stored.

It is important that all those involved i.e. the patient, the referring doctor and the unit staff fully understands and complies with the Law.

Storage of Mature Sperm for Your Own Use

The following information is for your guidance. For further information please refer to the Human Fertilisation and Embryology Authority website: www.hfea.gov.uk

- Your right to confidentiality in this Act prohibits the normal exchange of information between clinicians without specific written consent unless it is deemed necessary for your continuing medical care.
- Before consenting to the storage of sperm you will receive verbal and written information and may wish to receive further counselling regarding the implications of taking the proposed steps.
• Anyone consenting to storage of their sperm must give their consent in writing prior to the storage.

• The consent must specify one or more of the following:
  • Whether the treatment is provided for yourself, or yourself and a named partner
  • Whether any sperm obtained can be used for research
  • The legal maximum period of storage is 55 years, allowed only with regular follow-up with a reproductive medicine medical practitioner
  • What is to be done with the sperm in the event of your death or you become incapable of changing or withdrawing your consent. This is a legal requirement.
    A. You may request that it is allowed to perish.
    B. You may donate it for research.
    C. Your named partner could be able to use it.
    D. You cannot donate it for the treatment of anyone else.

Additional notes on the use of sperm after death (Posthumous use):

A difficult situation can arise if a female partner returns to the unit after their male partner has died and they wish to use the stored samples. This is why we ask you, and document your wishes, about what happens to your sample if you were to die. This makes sure that we can carry out your wishes for your sample.
• Legal Parenthood in the event of posthumous use of sperm:
  - All patients considering the possible use of their sperm after their death will need a counselling appointment to consider the implications fully.
  - Whenever sperm is used after death, the person to whom the sperm belongs must have told us their wishes on a written consent form before any treatment starts.
  - Leeds Fertility is legally required to consider the rights of the unborn child/children in deciding whether or not to conduct treatment.
  - In order to be legally recognised as the parent of a child born after a person has died, they must have completed the birth registration details on the HFEA form before their death. We can guide you and your family through this if necessary.

**Power Failure**

Whilst we take every effort to maintain the safety of your stored samples we must warn you of the small yet possible risk of power failure to the storage tanks leading to loss of your stored sample. This risk is lowered by the fact that storage facilities are alarmed and equipped with back up temporary power in the event of failure and there are on-call teams available however this does not completely remove the risk of sample loss.
Glossary

- **Azoospermia**: absence of no sperm in the ejaculate.
- **CCG**: a Clinical Commissioning Group decides on how treatment should be funded in local areas.
- **Eggs**: a woman’s lifetime supply of eggs is present in the ovary at birth. They reduce in number and quality with time. They pass on the half of the genetic instructions to the embryo/baby.
- **Ejaculate**: the male reproductive fluid containing sperm that is released from the body.
- **Embryo**: once the egg is fertilised with sperm, it begins to cleave (multiply its cells) and is called an embryo.
- **Epididymis**: a coiled tube that collects and stores sperm from the testicle.
- **Fertilisation**: fertilisation is when the genetic material from the egg and sperm combine to create a new and unique cell which may go on to develop into an embryo and then a baby.
- **Gonadotrophins**: hormones produced naturally by the pituitary gland to stimulate the testis to produce and release sperm e.g. FSH, LH. These drugs can be produced as medicines to stimulate sperm production in some cases.
- **Johnsen’s score**: a grade given to the stage of sperm development when looked at under a microscope in the laboratory.
- **MESA**: Microsurgical Epididymal Sperm Aspiration, a procedure to try to get sperm from the epididymis directly using a microscope, usually under general anaesthetic.
• **Micro-TESE:** Microdissection Testicular Sperm Extraction, a procedure to get sperm direct from the testicle using a microscope under general anaesthetic.

• **Non-Obstructive Azoospermia:** a sperm production problem is causing no sperm to be found.

• **Obstruction Azoospermia:** a blockage is stopping sperm from being found.

• **PESA:** Percutanenous Epididymal Sperm Aspiration, a procedure to try to get sperm from epididymis, usually under local anaesthetic.

• **Pituitary gland:** in the head, behind the nose, produces many hormones including those that control the ovary and testis.

• **Prostate:** a gland that is close to the bladder that adds fluid to the sperm.

• **Semen:** the male reproductive fluid containing sperm.

• **Sperm:** the sperm develop in testes and continue to do so throughout adult life. They pass on half of the genetic instructions to the embryo / baby.

• **Testis:** where sperm production and storage takes place.

• **Testosterone:** the hormone mainly produced from the testes, that helps give male features e.g. facial hair, deeper voice whilst being involved in sperm production.

• **Urethra:** the duct that allows urine and sperm to pass out from the body.

• **Vas Deferens:** the tube that allows sperm to pass from the epididymis into the urethra through the prostate to allow emission via the penis.
Useful resources

Human Fertilisation and Embryology Authority, HFEA
• www.hfea.gov.uk
  The regulatory body website has lots of information for patients.

British Fertility Society
• www.britishfertilitysociety.org.uk
  The UK professional society promoting high quality practice and research.

British Andrology Society
• www.britishandrology.org.uk
  The UK professional society of experts in sperm and sperm use.

British Association of Urological Surgeons
• www.baus.org.uk
  The UK organisation advising medical practitioners and patients involved in urological care.

Donor Conception Network
• www.dcnetwork.org
  Supportive network of families who have used donor sperm, eggs or embryos to conceive.
Fertility Network UK

- www.fertilitynetworkuk.org
  The UK’s leading fertility support network offering extensive information and support through treatment. They provide advice regarding funding and a variety of factsheets.

British Fertility Counselling Association

- www.bica.net
  The professional association of infertility counsellors in the UK.
Contact us

By post
• Leeds Fertility, Leeds Teaching Hospitals NHS Trust, Seacroft Hospital, York Road, Leeds, LS14 6UH

By Email
• leedsrmuenquiries@leedsth.nhs.uk

Online
• Web: www.leedsfertilityclinic.co.uk

By telephone

Mon-Fri 08.00-17.00
• Administrative queries: 0113 206 3111
• For clinical queries: 0113 206 3102

Saturday, Sunday and Bank holidays 08.00-12.00
• Clinical queries only: 0113 206 3102