Male infertility

About 30 per cent of infertility cases experienced by Australian couples are found to be related to male infertility. This is exactly the same rate as female infertility cases.

A further 30 per cent of infertility cases affecting a couple can be traced to problems with both the male and female, while the remaining 10 per cent of cases are unknown.

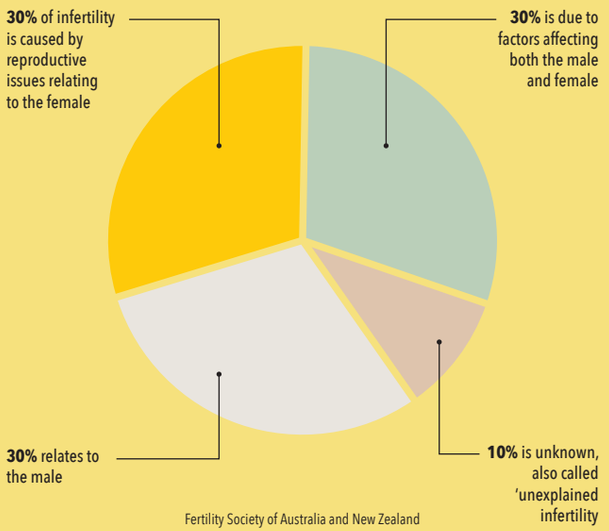
In the past, initial investigations of fertility problems centred around the woman, who often underwent invasive testing to look for possible causes of infertility.

Nowadays, it is common practice for Fertility Specialists to undertake a comprehensive fertility history of both partners in the early stages of investigations.

With the majority of male infertility cases relating to abnormal sperm, simple tests, such as a semen analysis, can be ordered to find the cause of fertility problems.

Many cases of male infertility can be overcome with treatment or with the help of assisted reproductive technologies such as IVF, but it is important to begin investigations early to find the cause of male infertility so patients have the best chance of conceiving.

Causes of infertility



Fertility Society of Australia and New Zealand

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Male infertility

Causes of male infertility

The main causes of male infertility are:

- The quantity or quality of sperm
- The ability of sperm to reach the egg
- Medical conditions or hormonal problems
- Lifestyle or environmental factors, and age
- Sperm DNA fragmentation.

The quantity or quality of sperm

Issues with the quantity or the quality of the sperm can include:

- low sperm count (oligospermia) – less than 15 million sperm per millilitre of semen
- complete absence of sperm (azoospermia) – can be due to a blockage or issue with the testes
- abnormally shaped sperm (poor morphology) – defects such as a large or misshapen head or a crooked tail can stop sperm reaching and/or penetrating the egg. At least 4 per cent of sperm should be normal
- problems with the way sperm moves (motility) – sperm reaches the egg by wriggling and swimming through the cervix, uterus and fallopian tubes. A motility rate of 40 per cent or more is normal.

The ability of sperm to reach the egg

A number of factors can affect the sperm's ability to reach the egg so fertilisation can occur, including:

- damage to the testicles as a result of past or present infection, injury, congenital defect, undescended testicles, cancer or cancer treatment, such as chemotherapy or radiotherapy
- varicocele – a collection of swollen veins in the scrotum which can sometimes affect fertility
- blockage or obstruction in the network of tubes from the testes
- erectile or ejaculation disorders, including retrograde ejaculation (when semen enters the bladder)
- sperm antibodies that can decrease sperm motility or stop it penetrating the cervical mucous.

Medical conditions or hormonal problems

A number of medical and genetic conditions can disrupt male fertility, including diabetes and multiple sclerosis.

Sometimes, there can be problems with the levels of male sex hormones in the body. For instance, failure of the pituitary gland to produce hormones, which in turn stimulate the testicles to produce testosterone.

Lifestyle or environmental factors and age

An increasing amount of research has shown certain lifestyle or environmental factors, such as pollutants, can adversely affect sperm quality. These include:

- smoking
- recreational drugs
- alcohol
- stress
- being overweight
- lack of exercise
- excessive heat, sometimes as a result of certain occupations.

Age is now recognised as a factor in male infertility much earlier than previously thought. From the age of 35, men are roughly half as fertile as they were at 25. From the age of 55, their fertility begins to decrease dramatically.

Frustratingly, in many cases of male infertility, no cause can be found for sperm abnormalities.

Sperm DNA fragmentation

High levels of DNA fragmentation in sperm can be a factor in male infertility. Sperm DNA fragmentation means the DNA stored in the head of the sperm has been damaged.

Oxidative stress is a cause of male infertility. Reactive oxygen species (ROS) can interfere with sperm motility and fertilisation, as well as embryo development.

Studies have shown that environmental and lifestyle factors such as poor diet, smoking, excessive alcohol and drug use, pollution, exposure to toxins, chemicals, radiation and excessive heat can cause sperm DNA fragmentation.

Damage to DNA also increases with age, with men over the age of 50 more likely to have fragmented sperm than younger men.

Varicocele repair and use of antioxidants may decrease DNA fragmentation.

Diagnosing male infertility

The first step in diagnosing male infertility is to see your GP or Fertility Specialist for a comprehensive fertility check-up and history, which will examine age, frequency of intercourse, time spent trying to conceive, previous pregnancies, including from previous relationships, genital history, including previous genital or pelvic infections, medications and lifestyle factors.

A physical examination will also be carried out.

Certain tests will then be conducted. These include:

- Blood and urine samples to assess general health and look for any conditions that may affect fertility, including STDs and levels of certain hormones that control sperm production
- Semen analysis to check sperm count, motility and morphology
- Sperm Chromatin Integrity Test (SCIT) to check for Sperm DNA fragmentation

Further tests may be recommended depending on the outcome of initial investigations and can include genetic testing, ultrasound or MRI, testicular biopsies and/or fine needle aspirations, and antisperm antibodies tests. In many cases, frustratingly no cause for abnormalities can be found.

Treatment

The good news is that the causes of many types of male infertility can be treated. A healthy male continually produces sperm, with the process taking 74 days from the start of the process to maturity. This means lifestyle changes and treatment can in some cases lead to an improvement in sperm quality in just over two months.

Sometimes, ceasing certain medications or treating conditions with other medications or hormones may be necessary, while surgery is also an option in other cases.

While some problems relating to male fertility can be addressed with lifestyle changes or treatment, in other cases, the best or only option to achieve a pregnancy is through assisted reproductive technologies, such as IVF.

Newer techniques are also allowing Fertility Specialists to achieve better outcomes for patients by using sperm selection techniques to choose the best quality sperm for IVF, increasing the likelihood of success.

Less damaged sperm can be selected for fertilisation using specific sperm washing and selection techniques, such as physiological intracytoplasmic sperm injection (PICSI).

In some cases, sperm can be extracted from the testes during procedures such as testicular sperm aspiration (TESA) or microsurgical testicular sperm extraction (micro TESE).