



SEMEN ANALYSIS

INTERPRETING SEMEN ANALYSIS RESULTS

It is well documented that male factor infertility accounts for 30% of couples experiencing infertility. Therefore, importance of a complete and thorough evaluation of the male partner cannot be underestimated, as ultimately clinical decisions are based on these results. Research has shown that laboratories do vary widely in their ability to provide accurate semen analyses. Semen analyses are best performed by scientists with extensive experience following the guidelines and criteria of the World Health Organisation.



The evaluation of the male partner begins with a simple laboratory test called a complete semen analysis, commonly known as a "sperm count." However there is certainly more involved than just counting the sperm. Semen analysis is done on a sample of seminal fluid collected after masturbation. Generally, it is preferable that men produce their samples in the comfort of their own home and deliver the sample to the laboratory within one hour. For patients that live further a field, City Fertility Centre has a discreet private room available.

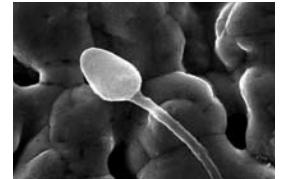
In order to obtain an accurate result, it is recommended that the analysis is performed after the couple has abstained from sexual activity for 3-5 days. Less than 2 days may result in a reduced sperm count. Abstinence periods of greater than 7 days results in a greater incidence of dead and morphologically abnormal sperm. It is a common misunderstanding of some male patients that they can improve their semen by "storing it up".

In the laboratory, the City Fertility Centre scientists analyse the following parameters; volume, sperm concentration, sperm motility (the number of moving and progression of sperm) and

sperm morphology (the shape of the sperm head, mid-piece and tail). In addition, the presence of antisperm antibodies can also be detected.

SPERMATOZOA

A normal sperm, as shown below, consists of three main regions that each play an essential role in achieving the ultimate goal of fertilising the egg. City Fertility Centre scientists assess the morphology of each of these regions in order to give an overall incidence of normal morphology.



1. **THE HEAD**, which is oval in shape and contains the genetic information of the sperm. It also has a region known as the acrosome that is responsible for the release of enzymes involved in the fertilisation process.
2. **THE MID PIECE**, contains mitochondria which are responsible for generating the energy required to "swim" towards the egg.
3. **THE TAIL**, this contains microtubules that propels the sperm along the female's fallopian tubes.

NORMAL RANGES AND GLOSSARY OF TERMS USED

PARAMETER	NORMAL RANGE
Volume	> 2.0ml
Sperm concentration	> 20 million sperm / ml
Normal morphology (shape)	> 14%
Motility	> 50% with forward progression

When parameters fall outside the normal ranges as defined above, the following terms are used:

- **OLIGOZOOSPERMIA** – reduced number of sperm present.
- **TERATOZOOSPERMIA** – reduced number of normal shaped sperm

- **ASTHENOZOOSPERMIA**- reduced number of motile/ progressive sperm
- **AZOOSPERMIA**- no sperm present in entire ejaculate.

TREATMENT OPTIONS

In the human it takes 64 days to produce a fully functional mature sperm. Although many of the factors that can affect this process are as still scientifically unknown, the following have been proven to have a negative effect upon sperm quality.

- Smoking
- Excessive alcohol
- Recreational drugs
- Some herbal supplements
- Prolonged exposure to chemicals such as pesticides and heavy metals
- Illness – in particular fevers



INTRAUTERINE INSEMINATION (IUI)

IUI is generally recommended when the semen result is normal or with mild parameters. Motile sperm are separated and concentrated from the seminal fluid and inseminated into the uterus. This can improve fertility by increasing the number of motile sperm that reach the egg. The sperm washing procedure separates the motile sperm from the seminal fluid and activates sperm motility.

IN VITRO FERTILISATION (IVF)

IVF is generally recommended when there is mild/ moderate male factor infertility. The semen sample is washed and concentrated and by directly placing eggs and sperm together in the laboratory the chances of successful fertilisation are increased. The resulting embryos are then transferred into the uterus.

INTRACYTOPLASMIC SPERM INJECTION (ICSI)

ICSI is performed in conjunction with IVF and usually recommended for severe male factor infertility. This technique maximises fertilisation rates by directly injecting a single sperm into an egg using micromanipulation pipettes. The

introduction of this technique has revolutionised the options available for couples with even the severest forms of male factor infertility.

SPERM ASPIRATION (PESA, TESA)

Sperm aspiration is performed in conjunction with IVF and ICSI. In men diagnosed with azoospermia, sperm may be obtained directly from the epididymis or testicular tissue. There are two main reasons why sperm may be absent from the semen: Obstructive azoospermia is the result of a blockage in the male reproductive tract. Sperm production in the testicle is normal but the sperm are trapped inside the epididymis as seen in patients that have undergone vasectomies. Non-obstructive azoospermia is the result of severely impaired or non-existent sperm production. A diagnostic procedure is usually recommended to confirm the presence of sperm.

CONCLUSIONS

Male infertility is a common problem in couples trying to conceive and the diagnosis of this can only be made by a complete semen analysis. Although the actual fertility of a semen sample can not be completely determined until it is known to achieve fertilisation, careful and thorough analysis of all the semen's parameters by a specialised laboratory can allow treatment options to be appropriately considered.

In most cases of male factor infertility, the exact cause of the problem often is not known; there are a variety of effective infertility treatments now available. Using the right technology, even couples with severe male factor infertility today have options to achieve the birth of their own biological child. As recent as only 15 years ago the only options for these couples were donor semen, adoption or childlessness.

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