THE FERTILITY CENTRE
Chelsea and Westminster Hospital
West Middlesex University Hospital

INTRACYTOPLASMIC SPERM INJECTION (ICSI) PATIENT INFORMATION SHEET

The technique of intracytoplasmic sperm injection or ICSI has been used since 1992 in order to assist fertilisation, particularly when the sperm sample is of poor quality. This procedure is an extension of IVF in that gametes (eggs and sperm) are collected. Unlike IVF, however where the sperm and egg are placed together in a dish to allow fertilisation, ICSI involves a skilled embryologist to inject a single sperm into the center of each egg using a micro-injection needle. Prior to the injection procedure, the eggs are stripped away from their surrounding cells using an artificial enzyme (substance), which is very similar to that released by the sperm normally. This allows not only precise injection but also the assessment of the egg's maturity status, which is clinically important for ICSI.

WHO NEEDS ICSI?

This technique has been reported to be beneficial in the following cases:

1. when one or more of the sperm parameters are poor such as
   - low count
   - poor movement (motility or progression)
   - high percentage of abnormal forms (poor morphology)

2. when a previous IVF treatment has shown poor outcome where either none, or few, of the eggs have fertilised

3. when sperm has to be isolated from either the epididymis (PESA) or testicles (TESA), through surgery, or from urine (retrograde ejaculation)

WHAT ARE THE DISADVANTAGES ASSOCIATED WITH ICSI?

Following egg collection and subsequent removal of surrounding cells, it is not uncommon to find that some of the eggs are not suitable for injection as they are not mature enough. Occasionally, if only a few eggs are retrieved, none may be suitable for ICSI.

ICSI is still considered as an invasive technique, which means that some eggs may not survive the injection procedure (we estimate this to occur in approximately 10% of injected oocytes). In addition, some eggs may be damaged before injection when their surrounding cells are artificially removed (<5% of cases).

WHAT ARE THE RISKS ASSOCIATED WITH ICSI?

ICSI is a newer procedure compared to IVF which has been used since 1992, and children/young adults conceived through this method are still young. Consequently, follow-up studies, although thorough, do not include effects that may be seen in older children or in the next generation.

Although studies are ongoing, the information currently available has found that children born following ICSI have a slightly increased risk of chromosomal abnormalities. The risk is about 0.9% as compared to 0.6% in children born following IVF treatment or conceived naturally. Most of these abnormalities relate to increases in the number of sex chromosomes (i.e. an extra X or Y). Part of the explanation is that men with very low sperm counts have a much higher risk of having a sex chromosome abnormality themselves or an abnormality on the Y chromosome which could be passed onto their male child.
Therefore problems that have been linked to ICSI may have been caused by the underlying infertility, rather than the treatment itself.

Likewise, men who do not have tubes that carry sperm from the testes to the penis, a condition called Congenital Bilateral Absence of the Vas Deferens (CBAVD), have a more than 60% risk of being carriers for the cystic fibrosis gene which could be passed to their male child. For this reason we advise all men who have very low sperm counts to have a male genetic testing (chromosome analysis, cystic fibrosis screen and Y chromosome analysis) before embarking on ICSI. We can arrange genetic counseling and screening of the female partner if an abnormality is found.

Patients who conceive with ICSI treatment may wish to have prenatal screening tests which can be arranged through your obstetrician.