



FERTILITY FACT SHEET

San Ramon / Orinda / San Jose

INTRACYTOPLASMIC SPERM INJECTION (ICSI)

Intracytoplasmic sperm injection (ICSI) is a laboratory procedure developed to help infertile couples undergoing in vitro fertilization (IVF) due to severe male factor infertility. ICSI involves the insertion of a single sperm directly into the cytoplasm of a mature egg (oocyte) using a microinjection pipette (glass needle). ICSI has been available for more than fifteen years and achieves a high overall fertilization rate.

A variety of sperm problems can account for male infertility. Sperm can be completely absent in the ejaculate or present in low concentrations. Sperm may have poor motility or an increased percentage of abnormal shapes and forms. There may also be abnormalities in the series of steps required for fertilization, such as sperm binding to and penetrating the egg. Deficiencies in any of these aspects of sperm function will generally lead to lack of fertilization.

ICSI can facilitate fertilization by sperm that will not bind to or penetrate an egg. It can also be used to treat men with extremely low numbers of sperm. However, ICSI is generally unsuccessful when used to treat fertilization failures that are primarily due to poor egg quality.

Indications for ICSI

- *Very low numbers of motile sperm with normal appearance.*
- *Problems with sperm binding to and penetrating the egg.*
- *Prior or repeated fertilization failure with standard IVF culture and fertilization methods.*
- *Frozen sperm collected prior to cancer treatment that may be limited in number and quality.*
- *Absence of sperm secondary to blockage or abnormality of the ejaculatory ducts that allow sperm to move from the testes. In this situation, sperm are obtained from the epididymis by a procedure called microsurgical epididymal sperm aspiration (MESA).*
- *Absence of sperm in the ejaculate, but presence of sperm in the testes. Sperm can be obtained by testicular biopsy.*

ICSI is not a perfect technique. It is rare but eggs may be damaged by the ICSI process. Some eggs have membranes that are difficult to pierce. In other instances, the fertilized egg may fail to divide, or the embryo may stop growing at an early stage of development. The percent of eggs that undergo successful fertilization with ICSI is about 60%. Most eggs (80-90%) that fertilize will go on to divide. Other factors such as poor egg quality and maternal age may cause these percentages to drop. Very severe male factor can also be responsible for lower fertilization, poor embryo growth, and a lower pregnancy rate.

There does appear to be a slight increase in the chance of having a child with a genetic or chromosomal abnormality in ICSI pregnancies. These are likely related to the characteristics of the infertile man rather than to the ICSI procedure itself. Therefore when a couple is using ICSI for a severe male factor, there may be a greater risk of an abnormality than in a couple using ICSI for a mild male factor.

Men who have sperm counts of less than 5 million per ml. should consider having chromosome testing (karyotype) done for themselves, since they may have a 5-10% chance of having abnormal chromosomes. Chromosomal abnormalities in ICSI offspring can be detected with prenatal genetic testing such as amniocentesis or C.V.S.

ICSI is a technique that has been a major breakthrough for the treatment of male infertility, and has allowed many men to become biological fathers who otherwise would not have been able to conceive with their partner.