

PATIENT'S FACT SHEET

Intracytoplasmic Sperm Injection (ICSI)

Intracytoplasmic sperm injection (ICSI) is a laboratory procedure developed to help infertile couples undergoing in vitro fertilization (IVF) due to male factor infertility. ICSI, a form of micromanipulation, involves the injection of a single sperm directly into the cytoplasm of a mature egg (oocyte) using a glass needle (pipette). This process increases the likelihood of fertilization when there are abnormalities in the number, quality, or function of the sperm. ICSI is generally unsuccessful when used to treat fertilization failures that are primarily due to poor egg quality.

A variety of abnormalities can cause male infertility. Sperm can be completely absent from the ejaculate (azoospermia) or present in low concentrations (oligospermia). Sperm may have poor motility (asthenospermia) or have an increased percentage of abnormal shapes (teratospermia). There may also be functional abnormalities, which prevent the sperm from binding to and/or fertilizing the egg.

Indications for Intracytoplasmic Sperm Injection

- Very low numbers of motile sperm.
- Severe teratospermia.
- Problems with sperm binding to and penetrating the egg.
- Antisperm antibodies thought to be the cause of infertility.
- Prior or repeated fertilization failure with standard IVF methods.
- Frozen sperm limited in number and quality.
- Obstruction of the male reproductive tract not amenable to repair. Sperm may then be obtained from the epididymis by a procedure called microsurgical epididymal sperm aspiration (MESA), or from the testes by testicular sperm aspiration (TESA).

Fertilization occurs in 50% to 80% of injected eggs. The ICSI process may damage a small percentage of eggs. The fertilized egg may fail to divide, or the embryo may arrest at an early stage of development. Approximately 30% of all ICSI cycles performed in the United States in 1998 resulted in a live birth, which is comparable to rates seen with traditional IVF. Younger patients may achieve even more favorable results. Factors such as poor egg quality and advanced maternal age may result in lower rates of success.

ICSI does not increase the incidence of multiple gestation as compared to standard IVF. Because ICSI is a relatively new technique, first performed in 1992, long-term data concerning future health and fertility of children conceived with ICSI is not available. Some studies report that the incidence of a congenital malformation called hypospadias (urethra opening on underside of penis) is increased in babies conceived through ICSI. This is an area of ongoing investigation. Because some causes of male infertility are familial and are related to genetic problems, male offspring might have reproductive problems as adults. Despite these concerns, ICSI is a major advance in the treatment of severe infertility.