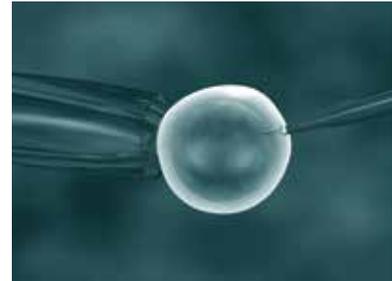


WHAT IS ICSI?

Intracytoplasmic sperm injection, or ICSI, is a twenty year old procedure originally designed to combat severe male factor infertility. Performed as part of an In Vitro Fertilization (IVF) protocol, this fertility technique differs from traditional IVF in one unique way.



In a standard IVF procedure each egg is exposed to approximately 50,000 sperm in order to achieve optimum fertilization results but when ICSI is performed, one lone sperm per egg is enough to do the trick. In ICSI, a single sperm is literally injected into an individual egg in the laboratory by way of a micromanipulation technique, utilizing a tiny pipette.

With traditional IVF, the man's ejaculate is washed and then used to fertilize eggs in a Petri dish. If millions of sperm are not present in the ejaculate from which 50,000 per egg can be obtained, the odds of fertilization plummet. When ICSI is added to the In Vitro Fertilization procedure either ejaculated sperm or sperm that has been obtained surgically can be used for fertilization. This is great news for men who have undergone cancer treatment and are considered sterile, or even men who have had irreversible vasectomies.

If an intended dad's semen does not contain a sufficient number of motile sperm, the physician may attempt to remove sperm directly from the testicles utilizing a needle. Another option might be to perform a biopsy of the testicular tissue, in an attempt to find sperm within the tissue itself. Both of these procedures if required would be performed under anesthesia.

ICSI is often indicated for the following conditions:

- Low sperm concentration (# million sperm/ml) or count (few total sperm in an ejaculate)
- Poor motility (movement) of sperm
- Inadequate percentage of ejaculated sperm that have a normal shape (morphology)
- Blockage(s) in the male reproductive tract, causing an absence of sperm in the semen
- Sperm can't penetrate through the egg's outer layer (the zona pellucida)
- Failed fertilization in a prior IVF cycle
- Poor fertilization rate in a prior IVF cycle
- Irreversible vasectomy
- Klinefelter's Syndrome (XXY Condition)
- Cancer survivors who have undergone chemotherapy, radiation, or both who now have diminished sperm production
- Spinal cord injury paralysis
- Antisperm antibodies in the male partner¹

Since ICSI is performed on the eggs in the laboratory, the patient experience with conventional IVF or IVF with ICSI is identical. These include the use of injected fertility medications, utilized to stimulate the ovaries into producing several mature eggs. Those eggs are then removed during the retrieval process. After fertilization, the resulting embryos will either be implanted or cryopreserved (frozen). In recent years, ICSI has been added to IVF cycles even if severe male factor infertility is not an issue.

In 2008 (most recent national findings), 64% of all IVF cycles in the United States included ICSI². Fertilization rates for ICSI are generally high, ranging from 50-80%, however, once fertilization takes place, success rates for ICSI are very similar to standard IVF without ICSI³.

Critics contend that ICSI is currently an over utilized protocol. Some research indicates that this procedure bypasses natural selection, which is the process by which heritable traits that increase an organism's chances of survival and reproduction are favored over less beneficial traits⁴. In nature, the process of natural selection would choose for the strongest sperm, and not allow weaker sperm to fertilize the eggs. Since this process is bypassed by the use of ICSI, it is possible that men might actually be able to pass on heritable traits of male infertility or possibly even some genetic defects to the children born through this procedure. However this theory assumes that the genetically healthiest sperm are the most active (motile) and normally shaped (morphologically normal). It is important to note that, were this a conclusively proven theory, it would logically follow that there would be no miscarriages due to genetic abnormalities among people who conceive naturally. As we all know, unfortunately, this is not the case.

Also important to be aware of are other factors that might affect the subsequent health of babies born through this IVF and ICSI, including advanced maternal or paternal age, or underlying health concerns in either or both of the parents. Issues of prematurity, low birth weight or multiple birth⁵ can also be significant.

ICSI may also raise the typical cost of an IVF cycle, although costs do vary somewhat based on state of residence, as well as the amount of medication required, embryo freezing, and health insurance.

So is ICSI right for you? Just as you should discuss other significant aspects of your treatment, such as elective single embryo transfer with your physician, ICSI should be talked about and weighed as an option taking your own individual diagnosis, age and personal concerns into account.

END NOTES

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