



FERTILITY FACT SHEET

San Ramon / Orinda / San Jose

PICSI Fact Sheet

for Couples undergoing 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.

There is now an alternative to the standard ICSI procedure called the PICSI procedure. This alternative to the standard ICSI was developed to help in the selection of sperm by the laboratory staff. The PICSI procedure does this by using a tissue media that is commonly used in the in-vitro fertilization lab today and it is also a major component that surrounds the cells of the egg. This procedure is FDA approved and is just finishing a post market clinical trial which we participated in. We found that 10 out of 21 patients in our own center who participated in this study became pregnant. This study was a randomized study. Further published reports will come out later this year.

The procedure is very simple for the lab and the major difference between what the ordinary ICSI procedure and the PICSI procedure is the actual dish with the hyaluronan. The hyaluronan enzyme is the agent that acts like a “magnet” to attract the strongest healthiest sperm. This enzyme allows for the sperm to bind to this layer. By the sperm binding to the dish it allows the lab to have criteria for selection that is more than just visualization. Sperm that binds to the hyaluronan show improved DNA integrity and fewer DNA mistakes than those that do not bind.

Indications for PICSI/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.*

PICSI/ICSI is not a perfect technique. It is rare but eggs may be damaged by the PICSI/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 PICSI/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 PICSI/ICSI pregnancies. These are likely related to the characteristics of the infertile man rather than to the PICSI/ICSI procedure itself. Therefore when a couple is using PICSI/ICSI for a severe male factor, there may be a greater risk of an abnormality than in a couple using PICSI/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 PICSI/ICSI offspring can be detected with prenatal genetic testing such as amniocentesis or C.V.S.

PICSI/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.