



INTRACYTOPLASMIC SPERM INJECTION (ICSI)

AGREEMENT OF UNDERSTANDING AND INFORMED CONSENT

Intracytoplasmic sperm injection (ICSI) is a type of assisted fertilization that involves the injection of a single sperm directly into a single egg. Over the past several years, various methods of assisted microsurgical fertilization (micromanipulation procedures) have been developed for use when the male partner exhibits severely low sperm counts and/or poor sperm motility (oligoasthenospermia or asthenospermia). The success rates for earlier forms of micromanipulation, such as partial zona dissection (PZD) or subzonal insertion of the sperm (SUZI) were disappointing, never achieving greater fertilization rates than 25%. In addition, these techniques led to frequent polyspermic fertilization in which an egg is fertilized by more than one sperm. ICSI allows a much more precise control over fertilization resulting in normal fertilization of up to 50%.

Eggs/oocytes for ICSI are removed during an *in vitro* cycle in which a course of fertility drugs such as Pergonal, Metrodin, Lupron and hCG are taken. When several follicles are sufficient in size and the lining of the uterus is mature, retrieval of the eggs/oocytes is scheduled. This procedure is most commonly performed in the office intramuscular or intravenous sedation depending on the patient's desired level of pain control. Following aspiration of the eggs/oocytes, the cells surrounding each egg/oocyte are carefully removed. They are then examined under a microscope. Only those eggs/oocytes that have extruded the first polar body are suitable for injection. Typically 70% of the eggs that are obtained are suitable for the ICSI procedure.

A semen sample is prepared through special laboratory process that allows the extraction of as many motile sperm as possible, although, theoretically, number of sperm needed is equal to the number of eggs/oocytes to be injected. Using a microscope that magnifies the egg/oocyte and sperm 400 times, the embryologist uses one micropipette to hold the egg to stabilize it and another to inject the sperm into the egg/oocyte. The fertilized egg/oocyte is then incubated until it has developed to the desired stage and transferred into the uterus (IVF) or fallopian tube (ZIFT). Any excess embryos can be cryopreserved (frozen) and used at a later date if so desired.

This technique, pioneered by a group of Belgian physicians, has resulted in 289 live births as of April, 1994. Of these, 7 children had major malformations or birth defects. This percentage of major birth defects (7 out of 289, or, 2.4%) falls within the normal range of malformations in the general population. Recent information, however, indicates an increase in the incidence of major birth defects in pregnancies conceived using ICSI as compared with pregnancies conceived during natural occurring cycles (8.6% as compared to 4.2%). In addition, the information shows that there is an increased incidence of major birth defects in pregnancies conceived using any type of IVF as compared with pregnancies conceived during natural occurring cycles (9.0% as compared to 4.2%) (*New England Journal of Medicine, Volume 346:725-730, March 7, 2002, Number 10*)

Risks:

I understand any of the following may occur which would prevent the establishment of fertilization:

- 1.) Poor development or maturation of the eggs/oocytes could lead to cancellation of the procedure.
- 2.) Poor integrity of the cell membrane can cause the egg/oocyte to die with micromanipulation and sperm injection.
- 3.) Fertilization, as denoted by the presence of two pronuclei 14-20 hours after the procedure may not occur.
- 4.) Embryo development and implantation may not occur.
- 5.) Emergencies beyond our control may make the procedure unavailable.
- 6.) The partner may not be able to produce an adequate semen sample.

Other risks in the procedure may be inherent in the cause of male factor infertility. Many men who can benefit from ICSI are unable to produce sperm because they carry genetic abnormalities. With ICSI, these genetic abnormalities may be passed on to the child resulting in a child (especially a male child) who is sub-fertile or infertile as an adult. Researchers have found a higher than normal rate of whole chromosome and single gene defects, including mutations of the cystic fibrosis gene, among men with unexplained infertility. Many cystic fibrosis gene carriers do not display symptoms, but are born without the vas deferens making it impossible to pass on the gene without intervention. With testicular biopsy and ICSI, however, the gene could be passed on to the child. Karyotyping of the male patient along with DNA testing for mutations in the Cystic Fibrosis gene are available to rule out such possibilities.

I have had the opportunity to ask any questions I have about my participation in the ICSI procedure. Future questions will be addressed by Dr. Couvaras or his associate

My participation is voluntary. I understand that my insurance company may not pay some or all of the above procedures and I will be personally responsible for the expenses of this treatment. These include IVF fees, embryologist fees, and physician fees.

I have read this form, along with the IVF consent form, and agree to undergo the procedure outlined above.

Patient Signature

Date

Partner/Spouse Signature

Date

Witness

Date

Revised 2/7/02