

ARTIFICIAL INSEMINATION AND SPERM MANIPULATION

Artificial insemination is a rapidly advancing science used to improve sperm quality. A number of different techniques may be employed depending upon the needs of the patient. Insemination is accomplished by placing a very small catheter through the cervix and injecting the concentrated sperm into the uterine cavity. The improvement of the sperm quality and the physical placement of the sperm into the uterus usually result in an improved chance of pregnancy.

The different types of sperm preparation offered are as follows:

- [Sperm Washing](#)
- [Density Gradient](#)
- [Refrigeration/Heparin Incubation](#)
- [Retrograde Wash](#)
- [Donor Sperm Insemination](#)

Chance of Success

Using sperm manipulation along with properly timed insemination by identifying the LH surge; the chances of a pregnancy through six cycled attempts are between 15 and 40 percent. Though no one technique comes in "one size fits all"; there is a good probability that one of the techniques may be applicable to most circumstances.



Sperm Washing

This technique removes the sperm from its natural fluid and places it in an artificial fluid that improves sperm motility, longevity, and its ability to penetrate the egg. This procedure takes about thirty minutes after the semen is liquefied (which may take up to one hour). The wash is done the day of the insemination and the sperm are then placed on the cervical mucus or directly into the uterus depending upon the patient's particular infertility problem. Washing is the most helpful process to handle fragile sperm, such as frozen-thawed and sperm with antibodies.

Density Gradient

After four years of research conducted at two large infertility centers, the sperm preparation technique that has shown the best results has been the density gradient centrifugation procedure. The sperm are washed then separated by putting it through two different concentrations of a colloidal solution. This separates the sperm with the best movement from those with poor or no movement. It also helps to reduce or eliminate the presence of white blood cells. The procedure takes about two hours to complete. Occasionally, this technique cannot be used due to the sperm count or motility being too low, in such cases other techniques may be used.

Refrigeration/Heparin Incubation

If the SPA suggests a capacitation or acrosome reaction defect, a sperm penetration enhancing treatment may be employed. The technique involves obtaining two sperm samples approximately 24 hours apart. The first sample undergoes refrigeration in a capacitation-stimulating medium; the second sample is incubated with the chemical heparin. Both of these treatments help to improve the sperm's penetration capacity which increases its ability to fertilize.

Retrograde Wash

Patients with retrograde ejaculation can yield acceptable samples for intrauterine insemination. The retrograde sperm wash serves to concentrate available sperm, enhance motility and eliminate prostaglandin in the seminal fluid which may cause intrauterine cramping.

Liquefied semen is mixed with Sperm Wash media, centrifuged and decanted to remove the supernatant. Retrograde samples are also evaluated and may be washed with Sperm Wash media and combined with washed antegrade samples for direct intrauterine insemination or utilized separately as an intracervical insemination. This preparation may be combined with other preparations such as density gradient to remove white blood cells or other unwanted debris.

Donor Sperm Insemination

Patients using donor sperm samples for their insemination can have their samples shipped to the Abbott Northwestern Hospital Andrology Laboratory. Our laboratory can prepare samples for artificial insemination for both intrauterine insemination and intracervical insemination. Your doctor can recommend which type of insemination is correct for you. We can also wash intracervical insemination donor vials in order for them to be used for an intrauterine insemination.