

IVF

In Vitro Fertilization (IVF)

In vitro fertilization(IVF) literally means "fertilization outside human body" or in broader terms. in the laboratory.

- Controlled ovarian stimulation
- Egg aspiration
- Semen(sperm) collection
- Fertilization
- Embryo transfer
- Blastocyst transfer
- Abnormalities of the uterus

IVF was the first procedure used to fertilize eggs outside a woman's body. In 1978, the first "test tube baby," was conceived through IVF. Most assisted reproductive technologies (ART) are derived from the IVF procedure.

In an IVF Procedure, the doctor:

- prescribes hormonal medications to stimulate the ovaries,
- gathers the eggs,
- fertilizes the eggs in vitro (outside the body),
- transfers the resulting embryos through the cervix into the uterus

Follicular Stimulation and Monitoring

At the start of the woman's cycle, the physician prescribes hormones or other medications. These control the timing of the cycle and stimulate the development of multiple follicles, sacs of fluid in the ovary that may contain an egg. Usually, the patient can take these medications at home. After several days, the patient returns to the clinic for a vaginal ultrasound and blood tests that help determine the cycle's progress and the number of follicles. More than one visit may be required.

When the doctor is satisfied with the progress of the cycle and the number of follicles, the patient is instructed to administer an additional injectable medication. This ensures that the eggs will mature on schedule for the retrieval. A minimum number of follicles must develop to make the retrieval worthwhile.

Oocyte (Egg) Retrieval

Egg retrieval is normally performed under anesthesia or intravenous sedation. Guided by ultrasound monitors, the doctor inserts a needle through the vagina and into the ovaries. The doctor then draws back the needle to remove the eggs from the follicles. Not all follicles contain eggs. Following the procedure, patients recuperate in a recovery room.

Patients usually receive intravenous antibiotic therapy during the egg retrieval process. Certain

patients will be asked to take additional antibiotics by mouth for 3 to 4 days following retrieval.

Fertilization and Incubation

Once the eggs have been retrieved, an embryologist prepares the eggs and sperm from the partner or a donor. The eggs and sperm are mixed in the laboratory to promote fertilization. In cases of severe male infertility, the embryologist can inject a single sperm directly into an egg - this technique is called Intracytoplasmic Sperm Injection (ICSI).

The fertilized eggs, called embryos, are incubated for several days.

Embryo Transfer Procedure

If the embryos develop normally, the embryologist selects the best candidates to transfer into the woman's uterus. Based on the individual situation, the physician and the patient determine the number of embryos to transfer. The physician uses a small catheter to pass the embryos through the cervix and into the uterus. After the transfer, which requires no anesthesia, the patient must rest in a recovery room.

Embryo Transfer

If more good embryos than are needed for the transfer, they can, in some cases, be frozen for use in another treatment cycle.

The physician will prescribe hormonal therapy after the transfer to improve the chances for conception.

If one or more of the embryos implant in the uterus, the woman may become pregnant. However, as in the natural reproduction process, there is a risk that pregnancy will not occur.

Variations on the IVF Procedure

Transfer of cryopreserved embryos

This procedure uses embryos that were salvaged from a previous IVF cycle and frozen. The embryos are thawed and transferred into the uterus.

Gamete intrafallopian transfer (GIFT)

Based on IVF, but this procedure does not involve fertilization outside the body. The eggs are mixed with sperm, then surgically placed into the fallopian tubes to allow natural fertilization. GIFT requires anesthesia as well as time in the recovery room.

Intracytoplasmic Sperm Injection (ICSI)

Based on IVF, but the eggs are not merely mixed with sperm in a dish. Instead, a single sperm is directly injected into each egg. ICSI is particularly useful when the man has an extremely low sperm count.

Assisted hatching

A microsurgical procedure in which the embryologist chemically dissolves a small area of the zona

pellucida, the shell surrounding the embryo, to facilitate hatching of the embryo and implantation.