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IN VITRO FERTILIZATION – AS AN EFFECTIVE METHOD OF INFERTILITY TREATMENT

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ABSTRACT
Reproduction for more than 7 years. About three thousand married couples passed IVF program and about 35% of them have found happiness of motherhood and fatherhood. The women with tubal-peritoneal and endocrine infertility factors and men with severe astenoteratozoospermia became parents, because the using of IVF and method intracytoplasmic sperm injection allows to fertilize eggs by single sperm. The bank of donor sperm is function in the Center of planning for the 9 years.

Keywords: In vitro fertilization and embryo transfer, chorionic gonadotropin, functional uterus.

INTRODUCTION
During IVF, mature eggs are collected (retrieved) from ovaries and fertilized by sperm in a lab. Then the fertilized egg (embryo) or eggs (embryos) are transferred to a uterus. One full cycle of IVF takes about three weeks. Sometimes these steps are split into different parts and the process can take longer.
In a normal pregnancy, a male sperm penetrates a woman's egg and fertilizes it inside her body after ovulation, when a mature egg has been released from the ovaries.
The fertilized egg then attaches itself to the wall of the uterus, or womb, and begins developing into a baby. This is known as natural conception.
However, if natural or unassisted conception is not possible, fertility treatment is an option.IVF has been used since the late 1970s. On 25 July 1978, the first "test-tube baby," Louise Brown, was born. Robert Edwards and Patrick Steptoe, who collaborated on the procedure, are considered to be the pioneers of IVF.
In 2010, Robert Edwards received the 2010 Nobel Prize in Physiology or Medicine "for the development of in-vitro fertilization."

In July 2013, an American couple had the first baby to be born through IVF as a result of next-generation DNA sequencing, a new way of screening embryos that improves IVF success rates and significantly reduces the cost of treatment.

DNA sequencing technology helps doctors screen embryos created by IVF to identify those most likely to lead to successful pregnancies.

Procedure

Techniques may differ depending on the clinic, but IVF usually involves the following steps:

1. **Suppressing the natural menstrual cycle**

The woman receives a drug, usually in the form of a daily injection for about 2 weeks, to suppress their natural menstrual cycle.

2 Super ovulation

Fertility drugs containing the fertility hormone follicle stimulating hormone (FSH) are given to the woman. FSH makes the ovaries produce more eggs than usual. Vaginal ultrasound scans can monitor the process in the ovaries.

3. Retrieving the eggs

The eggs are collected through a minor surgical procedure known as "follicular aspiration." A very thin needle is inserted through the vagina and into an ovary. The needle is which is connected to a suction device. This sucks the eggs out. This process is repeated for each ovary.

In 2011, researchers suggested that collecting 15 eggs trusted source from the ovaries in one cycle gives the highest chance of a successful pregnancy.

Frozen or donated eggs may also be used.

4. Insemination and fertilization

The eggs that have been collected are placed together with male sperm and kept in an environmentally controlled chamber. After a few hours, the sperm should enter the egg.

Sometimes the sperm is directly injected into the egg. This is known as an intracytoplasmic sperm injection (ICSI).

Frozen sperm, retrieved through testicular biopsy, may be used. This is believed to be as effective as fresh sperm in achieving a successful pregnancy.

The fertilized egg divides and becomes an embryo.

At this point, some centers offer pre-implantation genetic diagnosis (PGD) which can screen embryo trusted source for genetic disorders. This is somewhat controversial and is not always used.

One or two of the best embryos are selected for transfer.

The woman is then given progesterone or human chorionic gonadotrophin (hCG) to help the lining of the womb receive the embryo.

5. Embryo transfer

Sometimes, more than one embryo is placed in the womb. It is important that the doctor and the couple wishing to have a child discuss how many embryos should be transferred. Normally, a doctor will only transfer more than one embryo if no ideal embryos are available.

The transfer of the embryo is done using a thin tube, or catheter. It enters the womb through the vagina. When the embryo sticks to the lining of the womb, healthy embryo growth can begin.

The in vitro fertilization process breaks down into three essential components: induction of ovulation, fertilization of the oocyte, and development of embryos that are transferred into the uterus. Problems may arise resulting in failure at any one of these junctions. In 1984, the World Congress on In Vitro Fertilization was held, looking at 9,641 laparoscopies yielding 1,101 clinical pregnancies, with an overall pregnancy rate of 11 percent--clearly indicating that in vitro fertilization/embryo transfer (IVF/ET) was an idea whose time had come. Ovulation induction is monitored by both the use of ultrasound and daily estradiol levels, ultrasound indicating the number of oocytes that will be available for capture, and estradiol indicating in an indirect way the quality of those oocytes. It is a major aim in each patient to obtain at least four embryos, since this optimizes success rates. Ovulation induction at Yale is carried out with a high-dose human menopausal gonadotropin (HMG)/human chorionic gonadotropin (HCG) regimen. This regimen has insured us a success rate of 17 percent clinical pregnancies per laparoscopy. In the future, modification will occur in the process with cryopreservation of oocytes and embryos, and gamete manipulation. The modifications will be effected primarily to increase pregnancy rates. Research will continue mainly to delineate better biochemical markers for oocyte quality, but also to further explain the mystery of implantation.

Sometimes, IVF is offered as a primary treatment for infertility in women over age 40. IVF can also be done if you have certain health conditions. For example, IVF may be an option if you or your partner has:

- Fallopian tube damage or blockage. Fallopian tube damage or blockage makes it difficult for an egg to be fertilized or for an embryo to travel to the uterus.
- Ovulation disorders. If ovulation is infrequent or absent, fewer eggs are available for fertilization.
- Endometriosis. Endometriosis occurs when the uterine tissue implants and grows outside of the uterus — often affecting the function of the ovaries, uterus and fallopian tubes.
- Uterine fibroids. Fibroids are benign tumors in the wall of the uterus and are common in women in their 30s and 40s. Fibroids can interfere with implantation of the fertilized egg.
- Previous tubal sterilization or removal. If you've had tubal ligation — a type of sterilization in which your fallopian tubes are cut or blocked to permanently prevent pregnancy — and want to conceive, IVF may be an alternative to tubal ligation reversal.
- Impaired sperm production or function. Below-average sperm concentration, weak movement of sperm (poor mobility), or abnormalities in sperm size and shape can make it difficult for sperm to fertilize an egg. If semen abnormalities are found, your partner might need to see a specialist to determine if there are correctable problems or underlying health concerns.
- Unexplained infertility. Unexplained infertility means no cause of infertility has been found despite evaluation for common causes.
- A genetic disorder. If you or your partner is at risk of passing on a genetic disorder to your child, you may be candidates for preimplantation genetic testing — a procedure that involves IVF. After the eggs are harvested and fertilized, they're screened for certain genetic problems, although not all genetic problems can be found. Embryos that don't contain identified problems can be transferred to the uterus.
- Fertility preservation for cancer or other health conditions. If you're about to start cancer treatment — such as radiation or chemotherapy — that could harm your fertility, IVF for fertility preservation may be an option. Women can have eggs harvested from their ovaries and frozen in an unfertilized state for later use. Or the eggs can be fertilized and frozen as embryos for future use.

  Women who don't have a functional uterus or for whom pregnancy poses a serious health risk might choose IVF using another person to carry the pregnancy (gestational carrier). In this case, the woman's eggs are fertilized with sperm, but the resulting embryos are placed in the gestational carrier's uterus.

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