



## Advancements and Importance of *In vitro* Fertilization

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### DESCRIPTION

*In vitro* Fertilization (IVF) is a method of assisted reproductive technology in which a male sperm and a female egg are combined outside the body in a laboratory dish. One or more fertilized eggs (embryos) are transferred to the woman's uterus where they can implant and develop in the endometrium. Serious complications from IVF drugs and procedures are rare. However, as with all treatments, there are some risks. The most common risks are injectable fertility drugs (gonadotropins) are usually used during the IVF cycle. These drugs help to stimulate the ovaries to develop large numbers of follicles that contain eggs.

Most symptoms of Ovarian Hyper Stimulation Syndrome (OHSS) are nausea, bloating, and ovarian failure. They usually disappear without treatment within a few days after egg retrieval. In severe cases, OHSS can cause large amounts of fluid to accumulate in the abdomen (belly) and lungs. This can lead to significantly enlarged ovaries, dehydration, difficulty breathing, and severe abdominal pain, very rarely (less than 1% of women who have eggs retrieved for *in vitro* Fertilization), OHSS can lead to blood clots and kidney failure. There is a link between ovarian cancer and fertility drug use. However, recent well-conducted studies have not shown a clear link between ovarian cancer and fertility drug use. *In vitro* Fertilization (IVF) is a fertility treatment that gave birth to babies called "test-tube babies." Louise Brown was the first baby born in England in 1978, to be conceived outside the womb. Unlike the simpler process of artificial insemination (where sperm are placed in the uterus and conception would otherwise occur normally), in IVF the egg and sperm are combined outside the body in a laboratory. Once one

or more embryos are formed, they are placed in the uterus. IVF is a complex and expensive procedure. *In vitro* fertilization is never the first step in fertility treatment unless there is a complete blockage of the fallopian tubes. Instead, it is reserved for when other methods such as fertility drugs, surgery, and artificial insemination have failed to produce eggs. They are then tested to determine if they are ready for egg retrieval.

Before egg retrieval, a drug is injected to mature the developing egg and induce ovulation. Timing is important. Eggs should be collected just before they emerge from the ovarian follicle. If the egg cells are removed too early or too late, they will not develop normally. Doctor may do blood tests or an ultrasound to make sure your eggs are at the right stage of development before egg retrieval. The IVF facility will give specific instructions to follow the night before and on the day of the procedure. Most women will be given pain medication and opt for light sedation or general anesthesia. During the procedure, doctors use ultrasound to find follicles in the ovaries and remove the eggs with a hollow needle. This step usually takes less than 30 minutes, but can take up to an hour.

The success rate of IVF depends on many factors, including the reason for infertility, where the surgery is performed, whether the eggs are frozen or fresh, whether the eggs are donated or own, and age. Improved Pre-implantation Genetic Screening helps to identify embryos that have chromosomal abnormalities. This examination helps improve pregnancy and live birth rates so couples can have healthy babies that are not affected by disease. Higher success rates with embryo vitrification. This process decreased the potential damage caused by traditional cooling techniques. Fast-freezing embryos also result in higher post-warming survival rates.

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**Received:** 25-Aug-2022, Manuscript No. BLM-22-18481; **Editor assigned:** 29-Aug-2022, Pre QC No. BLM-22-18481 (PQ); **Reviewed:** 12-Sep-2022, QC No. BLM-22-18481; **Revised:** 19-Sep-2022, Manuscript No. BLM-22-18481 (R); **Published:** 26-Sep-2022, DOI: 10.35248/09748369.22.14.507.

**Citation:** Mathews J (2022) Advancements and Importance of *In vitro* Fertilization. Bio Med. 14:507.

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