



# IVF

## A novel technique



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In-vitro fertilisation (IVF) is a process by which an egg is fertilised with sperm outside the body in-vitro (in glass tube), which is why children resulting from this treatment are often referred to as "test tube babies".

**INDICATIONS:** If fallopian tubes are irreparably damaged or blocked, IVF can overcome female infertility. It is also used in women with endometriosis, ovulatory dysfunction, IUI failures, immunological problems or unexplained infertility. **IVF with ICSI** can be done for male-factor infertility with low sperm count, poor motility or morphology or previous fertilisation failure in IVF.

### STEPS:

#### Controlled Ovarian Hyper stimulation

– Hormonal Injections are given to the women from Day 2 or Day 3 of the period. The response is monitored by serial ultrasounds and further injections are given accordingly. Once the eggs reach the desired size (18 mm), the final injection is given for egg maturation (egg-release injection).

**Egg Retrieval** – Egg retrieval is done 34 – 36 hours after final oocyte maturation injection. It is a trans-vaginal technique where an ultrasound-guided needle pierces the vaginal wall to reach the ovary. The follicular fluid is aspirated and the embryologist identifies the oocytes (eggs) in this fluid and keeps it in culture media in petridish which is put inside the incubator.

**Sperm & Eggs Preparation** – The motile and morphologically normal sperms can be obtained from the semen sample, prepared in the laboratory by Swim-up or density gradient technique and can be used for IVF.

In cases with erectile dysfunction, anejaculation (who are not able to ejaculate semen), obstructive azoospermia, congenital absence of vas deferens or spinal cord injury or other medical problems, the sperms are extracted directly from the testes and can be used to fertilise the egg by technique of ICSI. The sperms to be used for ICSI are centrifuged or washed

by Double-density method.

The eggs are stripped of the surrounding cells if patient is for ICSI.

**Co-incubation** – The eggs and sperms are placed together in a petridish to allow fertilisation to take place. **In cases of ICSI, a single sperm is injected directly into the egg.** The fertilised egg is passed to a cleavage medium (G1 from vitrolife) and left for about 40-48 hours until the embryo divides into of 6-8 cells.

**Embryo Culture** – The duration for which the embryo can be cultured inside the incubator is until the cleavage stage (D3) or blastocyst stage (D5). Embryo culture till the blastocyst stage increases the live birth rate per embryo transfer, but confers a decreased number of embryos for freezing.

**Embryo Selection** – Laboratories have developed grading methods to judge eggs and embryo quality. The morphological scoring system is the standard strategy for the selection of embryos for transfer to optimise the pregnancy rate. The **Time Lapse Microscopy (TLM)** system for IVF has shown to improve pregnancy rates and it is **available at Akanksha IVF Centre.**

**Embryo Transfer** – The embryos judged to be the best are transferred to the patients' uterus through a thin, plastic catheter. In the UK and according to HEFA regulations, a woman over 40 years may have up to 3 embryos transferred, but in younger women fewer embryos are transferred in order to minimise the risk of multiple pregnancies. **At Akanksha IVF Centre**, as a policy we are transferring 2 embryos in younger women to optimise the reproductive outcome.

**Adjunctive Medication** – Medication for luteal phase support are given to increase the success rate of implantation and early embryogenesis, thereby complementing and/or supporting the function of the corpus luteum. The luteal support medications include Progesterone and Estrogens.

**Success Rate** – The pregnancy rate per cycle varies between 30-45% depending upon age of the woman. The success rate at our centre where 600-700 cycles are done annually is between 40-45 % which is at par with other centres worldwide.



#### Frozen Embryo Transfer (FET) or IVF with Donor Eggs

– Patient can be offered frozen embryo transfer if they have excess embryos in index cycle which were cryopreserved. Patients who do not produce their own oocytes due to premature ovarian failure or diminished ovarian reserve, can use eggs produced by a younger woman (**DONOR OOCYTE**) which is fertilised by patients' husband's sperms.

The endometrial lining is prepared by giving exogenous estrogens and progesterone and the embryo transfer is done on D18 or D19. The success rate at Akanksha IVF Centre with FET or **Donor oocyte** is as high as 50-60%.

**Surrogacy** – Surrogacy or 'womb on rent' is another method to assisted reproductive technologies when another woman can carry child of a couple as due to certain reasons the woman is unfit to carry her own pregnancy.