**INFERTILITY**

Infertility is defined as inability of a sexually active noncontracepting couple to achieve a clinical pregnancy in one year or more.

**TYPES OF INFERTILITY**

**PRIMARY:** In this case the pregnancy has never occurred.

**SECONDARY:** In this case, one or both members of the couple have previously conceived but are unable to conceive again after a full year of trying to do so without using any contraceptives.

**CONCEPTION:** The union of a healthy egg (ovarian follicle) with a healthy sperm results in the formation of a healthy zygote (embryo) which gets implanted on the healthy endometrium of the uterus resulting in a healthy pregnancy which continues up to 40 wks of gestation after which the baby is delivered.

Thus, for a healthy pregnancy to occur following prerequisite is mandatory:

- Ovulation resulting in a healthy egg
- Adequate sperm count
- Patent Fallopian tubes
- Planned physical relations between male and female partners during the ovulation
- Healthy endometrium for implantation
In recent times it is observed that more and more couples are having difficulty in normal conception and they take help of assisted reproductive techniques.

**CAUSES OF INFERTILITY**

- Age of female partner above 30 years as ovarian reserve is depleted year after year.
- Inappropriate dietary habits and sedentary lifestyle which makes female partner prone to polycystic disorders which hampers ovulation.
- Increased stress which also disturbs ovulation in female and decreases sperm count in male partners.
- Infrequent physical relations between husband and wife due to hectic lifestyle in urban areas.
- The fallopian tubes may be blocked due to infections like tuberculosis or any other pelvic infections which needs further evaluation and treatment.
- Addictions like tobacco & alcohol also decreases the sperm count.

**MANAGEMENT**

Hence when a couple comes for infertility treatment it all begins with a detailed history regarding lifestyle, addictions, if any, menstrual history, significant medical history and details as regards to the physical relations like frequency.

Clinical (physical examination) of both male and female partners are done.

Male is examined to rule out hernia hydrocoele or varicocele which hampers sperm production.

Female is examined for any vaginal or cervical pathology like infections or any septum or growth, uterine pathology like fibroid and ovarian pathology like cysts.

Clinical findings are followed by laboratory and radiology investigations for further evaluation and management.

**INVESTIGATIONS FOR THE FEMALE PARTNER**

**Laboratory tests:**
- CBC, ESR, Thyroid function test, Urine routine, Blood sugar levels, hormones like FSH, LH, PROLACTIN, AMH, Viral markers, blood group.

**INVESTIGATIONS FOR MALE PARTNER**

**Laboratory tests:**
- CBC, ESR, Blood sugar levels, Viral markers, Semen analysis for sperm count and to detect abnormal sperms, if any.

After the above investigations are completed then appropriate treatment is started.

In case, no abnormality is detected then the couple is counselled regarding fertile period of the menstrual cycle and planned relations.

**ASSISTED REPRODUCTIVE TECHNIQUES**

In case of any abnormality in any of the partners, then appropriate advice regarding Assisted Reproductive Techniques like IUI (Intrauterine Insemination) or IVF (In-vitro-fertilisation) is given.

IUI is a minor procedure which involves deposition of prepared semen in the vagina and this procedure is less invasive and can be done in any clinic by a qualified gynaecologist. This procedure is less expensive and is performed in couples where female partner is found normal and the sperm count is less. However, count should be within the range of 12 to 20 million per ml in a post-wash sample for better outcome.

IVF is an invasive procedure which is performed by a qualified infertility specialist after appropriate work-up and adequate counselling. In a nutshell, this involves ovaries to be stimulated and ovum pick up under anesthesia, embryo transfer and adequate medical support like progesterone and other hormonal preparations for the foetus to grow. The support given is subjective and is decided by the treating doctor.

A word of caution for all the patients enrolling for the IVF treatment would be that they are expected to make the necessary lifestyle changes before undergoing this treatment as it definitely involves patience, time and money.

**Radiology tests:**
- Basic ultrasound pelvis and abdomen.
- Folliculometry to check for ovulation.

**Diagnostic laparoscopic procedures:**
- Surgical (invasive) diagnostic tests are done to check for anatomical abnormalities.

- **Hysteroscopy:** Visualization of the uterine cavity with the help of hystroscope (telescope) to detect uterine abnormalities like fibroids, polyps, septum, etc.

- **Laparoscopy:** Visualization of the intraabdominal and pelvic organs to detect abnormalities like endometriosis, ovarian cysts, polycystic ovaries, etc.

- **Chromoperturbation:** Checking the fallopian tubes for patency.

- **Ovarian drilling:** In case of PCOD (polycystic ovaries) ovaries on both the sides are drilled (stimulated and cysts ruptured) using cautery.
Traditionally, infertility is defined as the inability to conceive after one year of unprotected sexual intercourse.

Worldwide, 10 to 14% of couples in the reproductive age group (20-40 years) face difficulty in conceiving.

In approximately 30% of cases the cause of infertility is of female origin, in another 30% of male origin and in another 30% of combined male & female origin. In 10% of couples, the cause of infertility is unexplained.

What are the common causes of infertility?

**FEMALE INFERTILITY**
- Tubal blockage (Infection/Previous tubal ligation)
- Ovulation & menstrual irregularities, (PCOD)
- Endometriosis
- Poor ovarian reserve
- Fibroids & congenital uterine malformations

**MALE INFERTILITY**
- Blocked Vas deferens (Infection/Post ligation)
- Genetic Factors (Testicular Dysgenesis)
- Varicocele (Heat)
- Structural Abnormalities (Undescended Testis)
- Erectile Dysfunctions (Impotence)
- Life style related (Stress/Alcohol/Smoking/Drugs)

**UNEXPLAINED INFERTILITY**
- Standard tests for infertility did not find any cause for failure to conceive.

It is the dream of most men and women to become parents and have children to love and care for. It is one of the greatest blessings in a lifetime to become a parent. In Indian scenario as infertility is not only a personal problem but a social problem as well.

Infertility is not a dreaded disease but its consequences - emotional, financial and social - are absolutely devastating.

The treatment for infertility has a cafeteria approach with counseling and discussion sessions about the probable causes of sub-fertility and different treatment options available.

The aim of the treatment should be a guide through this bumpy journey with as few interventions as possible and make the road smooth and hassle free. The motto should be making happy not only to couple (from conception to safe motherhood) but also to the entire family.

Depending on the patients’ history and evaluation the treatment for infertility is medical, surgical or a combination of both. Medical treatment involves the use of medicines or injections for ovulation induction, i.e. for the growth of follicles and post rupture of the follicle, the treatment is timely intercourse or intrauterine insemination. Surgical treatment involves fertility enhancing laparoscopic surgeries, for eg., in case of an endometrial polyp hysteroscopic polypectomy is done. After the removal of the endometrial polyp in many cases the patient tries naturally and conceives. The combination of medical and surgical treatment is needed in some cases, for eg., for hydrosalpinx (diseased fallopian tube filled with fluid), delinking of the tubes is done before IVF/ICSI to prevent the fluid of the diseased tube from washing out the embryos and thus increasing the pregnancy rate post IVF/ICSI. Base line investigations that are personalized according to patient's history like Serum TSH, Serum Prolactin, FSH or Follicle Stimulating Hormone, LH or Luteinizing Hormones, FSH/LH ratio, Endometrial blood flow, Hysterosalpingogram (HSG), AMH or antimullerian hormone – Ovarian Reserve Analysis & a baseline USG are needed before commencing any form of treatment.

**LAPAROSCOPY SHOWING NORMAL UTERUS, OVARIES & TUBE**

Therapy of many of the causes of infertility includes lifestyle management comprising of diet and exercise as well as addressing issues of stress management, alcohol consumption, smoking etc.

**ASSISTED REPRODUCTIVE TECHNOLOGIES:**

**INTRAUTERINE INSEMINATION (IUI)**

It is a minimal invasive procedure. It is not painful and fasting or bed rest is not required after the procedure. It improves the pregnancy outcome significantly. IUI can be done in the cases where there is low sperm count and motility (male factor infertility), unexplained infertility—along with ovulation induction,
endometriosis, PCOS, sexual dysfunction and absence of male partner at the time of ovulation (using frozen sperms).

are fertilized with the recipient's husband's sperm. The resultant embryo is then transferred in the adequately prepared uterus of the recipient.

There are few techniques that can be used for success of subsequent IVF / ICSI cycle like laser assisted hatching, endometrial perfusion with G-CSF (granulocyte colony stimulating factor), PICS I (physiological ICSI) and sub endometrial blood flow.

**SURROGACY**

The term surrogacy is used when a woman carries pregnancy and gives birth to a baby for another woman. Surrogate carries the pregnancy created by the egg and sperm of genetic couple. The carrier is not genetically related to the child. The patient undergoes an IVF treatment with Gonadotropins to stimulate the ovary to produce multiple eggs. These eggs are united with the husband’s sperm to make embryos in the laboratory. The surrogate is tested and her uterus is prepared for embryo transfer. In this way the surrogate carries only the pregnancy and gives birth to the intended parent’s child.

Surrogacy may be advised under several other conditions where women produce eggs but they do not have uterus. This could be because they had hysterectomy (removal of uterus) performed due to either cancer, severe hemorrhage, ruptured womb, or they were born without a uterus. A woman whose uterus is malformed or damaged and is incapable of carrying a pregnancy to term. Women who suffer from medical problems such as diabetes, heart and kidney diseases and in whom a pregnancy would be life threatening. However, their long term prospect for health is good. Repeated miscarriages where the causes of miscarriage have been fully investigated may also require IVF surrogacy treatment.

The Centre for Human Reproduction popularly known as IVF Department at Dr L H Hiranandani Hospital has all facilities for surrogacy under one roof. All the procedures for the commissioning couple including investigations and ICSI cycle; and all the procedures for the surrogate including blood tests, sonography, antenatal checkups as well as delivery, neonatal care post-delivery pediatric care and advice are conducted in the Hospital itself. There is no need of stepping out of the Hospital at all.