FAQs on Infertility:

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Q1. Define 'infertility'.
Ans. Failure to achieve a pregnancy after 12 months or more after regular unprotected sexual intercourse (15 to 30% of couples)
Primary – Never had a child
Secondary – Failure to conceive following a previous pregnancy.

Q2. What is the fertility rate of humans?
Ans. Overall, human beings are not very fertile with maximum pregnancy rates of only 20-25% per cycle during the years of peak fertility (second and third decades of life).

Q3. What causes female Infertility?
Ans. Some of the most common causes include: Ovulation disorders such as PCOS, Damaged or Blocked Fallopian Tubes, Pelvic infections, Endometriosis, Uterine defects, Uterine Fibroids, Thyroid disease, Obesity, Stress, Smoking , Increased age, etc.

Q4. What is the male contribution percentage in infertility?
Ans. Males are the sole cause of infertility in approximately 20% of infertile couples and are an important contributing factor in another 20-40% of couples with reproductive failure. Heavy Alcohol consumption, Drug use, Smoking, Exposure to environmental toxins etc. can adversely affect Sperm count.

Q.5. What is unexplained Infertility?
Ans. It is the term used when no cause has been found for Infertility in either partner (20%)

Q6. Does age affect male fertility?
Ans. Semen volume, sperm motility and the proportion of morphologically normal sperm but not the sperm concentration decreases gradually as age increases.

Q7. How long does spermatogenic process take to complete?
Ans. The spermatogenic process is directed by genes located on Y-chromosomes 4 and takes approximately 70 days to complete. Another 12-21 days are required for the transfer of sperm from the testis to the ejaculatory ducts.

Q8. What is the initial evaluation of male factor infertility?
Ans. Initial evaluation should include detailed medical and reproductive history, physical examination and at least two properly performed semen analysis obtained at least 4 weeks apart.

Q9. Further evaluate oligospermia/azoospermia.
Ans. When a male presents with severe oligospermia or azoospermia, a hormonal profile of peripheral blood, including follicle-stimulating hormone (FSH), luteinizing hormone (LH), testosterone and estradiol levels, should be requested. In addition, in azoospermia, a karyotype should also be done.

Q10. Cell phones affect fertility adversely – Truth or Myth.
Ans. Microwaves produced by mobile significantly deplete superoxide dismutase activity and increase the concentration of malondialdehyde. This leads to decrease in sperm parameters.

Q11. what are the cause of congenital azoospermia?
Ans. Congenital causes include cystic fibrosis, congenital absence of vas deferens, ejaculatory duct or prostatic cyst and Young's syndrome.

Q12. What are the treatment options for varicocele?
Ans. Varicoceles are treated either by surgery (open with/without magnification and laparoscopy) or percutaneous embolization of internal spermatic vein.

Q13. What are the basic testes for infertility?
Ans.
- Transvaginal Sonography
- Blood tests
- Fallopian tubes assessment
- Semen analysis

Q14. What blood tests should be performed?
- **Ans.** Female – Blood count, prolactin, TSH levels and hormone testing for ovarian reserve.

Q15. What should we look for during a TVS?
Ans.
- Uterine abnormalities like fibroid/polyps
- Location of ovaries
- Antral follicle count (number of follicles present)
- Abnormal ovarian cysts such as:
    - Endometriosis, dermoid cyst, precancerous or cancerous lesions.

Q16. What cases should be exempted from 12 months' window period of inability to conceive as infertility?
Ans. Certain patients may have some recognized factors that would lead to problems in conceiving such as:
- Women with extremely irregular periods
- History of severe endometriosis
- History of previous tubal pregnancies
- Deranged anatomical factors
- Age >35 years.

Q17. Are contraceptives the culprits?
Ans.
- Yes, intrauterine device (IUD) users are twice at risk of infertility.
- Low monthly fecundity rates are noted in women who discontinued oral contraceptives.

Q18. What is the aim of ovulation induction?
Ans. Ovulation induction aims to induce formation and ovulation of a dominant follicle in an anovulatory woman.

Q19. Which is the first-line drug for ovulation induction?
Ans. Clomiphene is the fertility drug of first choice for both ovulation induction and superovulation with IUI.

Q20. What other medicines are used for ovulation induction?
Ans. Letrozole, Human Menopausal Gonadotropin(HMG), Follicle Stimulating Hormone(FSH), GnRH analogues and GnRH antagonists, Metformin, Bromocriptine and Cabergoline.

Q21. How do we monitor follicular growth?
Ans.
- Transvaginal Sonography (TVS) – Baseline on day 2, then from day 7 or 8 onwards.
- Serial serum estradiol levels.
- Urinary LH assay.

Q22. What is the regime of clomiphene citrate (CC)?
Ans. The drug is given in a dose of 50-150 mg/day for 5 days starting from 2^{nd} to 6^{th} day of the cycle. Starting from 2^{nd} day reduces the antiestrogenic effect of the drug by the time ovulation occurs by day 14.

Q23. When is hCG administered?
Ans. Human chorionic gonadotropin (hCG) is administered when the leading follicle is 18-20 mm.

Q24. When to withhold hCG?
Ans.
- If there are more than 4 follicles >16 mm or >8 follicles >12 mm as, it can cause ovarian hyperstimulation syndrome (OHSS).
- If serum E2 > 1500-2000 pg/mL.

Q25. What is ovarian reserve?
Ans. The resting follicle pool represents one ovarian reserve from which follicle will be recruited for maturation throughout life.

Q26. What test can identify the ovarian reserve?
Ans. Dynamic
- Clomiphene citrate challenge test
- GnRH agonist stimulation test (GAST)
- Exogenous FSH ovarian reserve test (EFFORT).

Biochemical
- FSH, estradiol, inhibin B, antimullerian, hormone.

Sonographic
- Antral follicle count, ovarian volume.

Histologic

- Ovarian biopsy.

Q27. What is intrauterine insemination?

Ans. Intrauterine insemination (IUI) is a method of assisted conception in which washed spermatozoa are deposited in the uterus at any point above the internal os around the time of anticipated ovulation.

Q28. What is the advantage of IUI?

Ans. This procedure helps in overcoming the problems of vaginal acidity and cervical mucus hostility and allows deposition of a good number of highly motile and morphologically normal sperms in the uterus near the fundus. IUI is often used to treat mild male factor infertility and couples with unexplained infertility.

Q29. What are the prerequisites for IUI?

Ans.

- Age <40 years.
- Patient capable of spontaneous/induced ovulation.
- At least one patent fallopian tube with good tubo-ovarian relationship.
- Sperm count >10 million/mL prewash orpostwash >3-5 million motile sperm with motility of >40%.
- Easy access to the uterine cavity via a negotiable cervical canal.

Q30. What should be the timing of insemination?

Ans. It should be as near to the ovulation as possible. 4 hours before or within 12 hours after ovulation yield good results

Q31. When to perform endometrial biopsy (EMB) in evaluation of female infertility?

Ans. EMB is not a part of initial work-up. It may be performed if the biphasic basal body temperature (BBT) curve is shorter than 11 days or if serum midluteal progesterone is less than 20, indicating a possible Luteal phase defect.

Q32. Which is the first test to evaluate uterotubal anomalies?

Ans. Hysterosalpingography. It is usually done after failed successive cycles of ovulation induction and in some centres after failed IUI.

Q33. When should an HSG be scheduled? Why?

Ans. The procedure should be scheduled in the mid follicular phase, which is 2-3 days after menses and before ovulation. It is scheduled after menses to decreases chances of retrograde flow of menstrual tissue and before ovulation to decrease the likelihood of women being pregnant.

Q34. Does HSG increase fertility by any way?

Ans. An HSG is thought to increase fertility by opening the tubes from the mechanical lavage of the dye, dislodging any mucous plugs and breaking down peritoneal adhesions. It may also stimulate the cilia within the lumen of the tubes.

Q35. What are the indications of hysteroscopy and laparoscopy while undergoing infertility treatment?

Ans. Hysteroscopy and laparoscopy are usually indicated in the following cases:

- When HSG (tubal patency test) shows evidence of blocked tubes or uterine cavity abnormalities like filling defects.
- Previous history of repeated failed IUI treatment
- Ultrasound suggestive of abnormalities, such as fibroid uterus, endometriosis, hydrosalpinx9, etc.

Q36. Why is hysteroscopy performed?

Ans. It is performed to further evaluate abnormalities diagnosed by HSG or to surgically address these conditions.

Q37. How does laparoscopic ovarian drilling help in improving ovulation in PCOS?

Ans. Electrosurgical reduction in the volume of ovarian stroma decreases ovarian androgen production and provides a better follicular environment. Reduction in androgen production causes lesser peripheral aromatization and elevated FSH levels and re-establishment of hypothalamic pituitary ovarian (HPO) axis.

Q38. What is the recommended procedure for ovarian drilling?

Ans. It has been recommended that a total of 4 punctures per ovary using a power setting of 30-40W for a duration of 4-5 seconds per puncture produce an optimal response.

Q39. Which women are at risk for diminished ovarian reserve?

Ans. It includes women older than 35 years, those who smoke, those with previous ovarian surgery and those with moderate to severe endometriosis.

Q40. What is ART?

Ans. It includes all treatments or procedures that include the in vitro handling of both human oocytes and sperms or of embryos for the purpose of establishing a pregnancy. This includes, but is not limited to, IVF and embryo transfer, gamete intrafallopian transfer (GIFT), zygote intrafallopian transfer (ZIFT), tubal embryo transfer, gamete and embryo cryopreservation, oocytes and embryo donation and gestational surrogacy.

ART does not include assisted insemination using sperm from either a woman partner or a sperm donor.

Q41. Is there any risk of acquiring viral disease like HIV/hepatitis during ART procedure?

Ans. No, as any other surgical procedure, ART procedures are performed under strict asepsis.

Q42. What are the chances of abortion after IVF? Are they increased as compared to spontaneous conception cycle?

Ans. The chances are the same as that of general population.

Q43. Who are the candidates of IVF?

Ans. IVF is usually considered for the couples who have:

- Absent or blocked fallopian tubes.

- Severe male factor infertility
- Advanced reproductive age as time to conception is critical and pregnancy rates with other therapies are low
- Other causes of infertility like-endometriosis, unexplained infertility
- Ovarian failure, although donor eggs would be required in this case
- When one or both the partners have in heritable diseases like hemoglobinopathies, cystic fibrosis which can he transmitted to the offsprings. In these cases, IVF with PGD is required.

Q44. Can stress levels affect the outcome of ART?
Ans. There is an evidence in literature to suggest that stress levels influence the outcomes of infertility treatment as well as contribute to a patient's decision to continue treatment. Psychological distress is associated with treatment failure and interventions to relieve stress are associated with increased pregnancy rates.

Q45. What is the most common complication of ART?
Ans. Multifetal pregnancy is the most common complication of ART. This can be prevented/minimized by limiting the number of embryos transferred to the uterus.

Q46. What is ovarian hyperstimulation syndrome (OHSS)?
Ans. OHSS is a complication associated with the use of fertility drugs. Mild OHSS results in enlarged tender ovaries but only minimal fluid in the abdominal cavity. Moderate and severe forms of OHSS are associated with fluid accumulation in the abdominal cavity or sometimes in pleural cavity surrounding the lungs. In its severe form, OHSS can result in nausea, vomiting, shortness of breath and dehydration.

Q47. When does one get to know the outcome of IVF/ICSI cycle?
Ans. The patient is asked to get Serum β-hCG levels (in blood) after 14 days of embryo transfer. Levels of β-hCG, if <2 U/mL are considered to be the negative outcomes after ART cycle.

Q48. Can ectopic pregnancy occur after in vitro fertilization (IVF)?
Ans. Ectopic pregnancy can occur within the section of the fallopian tube that passes through the muscle of uterus or within the short segment of fallopian tube. The incidence of ectopic pregnancy following IVF is 0.5-3%.

Q49. What are the rates of congenital malformation in the child born out of IVF/ICSI cycle?
Ans. They are the same as that in the general population, around -3% IVF/ICSI cycle does not increase the risk of congenital malformations in children born out of ART.

Q50. What is ICSI?
Ans. In intracytopalsmic sperm injection (ICSI), each egg is individually injected with a single sperm using tiny needle under microscopic guidance.

Q51. Who are the candidates for ICSI?
Ans. The common indication of ICSI is male factor infertility associated with an abnormal semen analysis. Another indication is unexplained infertility.

Q52. What are the various sperm retrieval techniques?

Ans.

- Percutaneous epididymal sperm aspiration (PESA)
- Testicular sperm aspiration (TESA)
- Microsurgical epididymal sperm aspiration (MESA)
- Microsurgical testicular sperm extraction (Micro-TESE)
- Testicular sperm extraction (TESE).

Q53. What is assisted hatching and how is it performed?

Ans. Assisted hatching involves weakening the zona to facilitate the emergence of the embryo following its transfer into the uterus after IVF.

Q54. What is blastocyst transfer?

Ans. Patients who undergo an embryo transfer on day 5 or 6 after egg collection are referred to as having a blastocyst transfer.

If the embryos are maintained in culture beyond day 3, blastocyst forms on day 5. Many clinics maintain the embryos in culture until the 5^{th} day to allow for improved selection of embryo to transfer.

Q55. What is embryo freezing?

Ans. Good quality embryos in addition to those embryos that have been selected for embryo transfer can be cryopreserved by freezing them in liquid Nitrogen. The embryos are frozen at a temperature of -196 C, leaving them in a state of suspended animation in which they can remain for many years.

Q56. What are the pregnancy outcomes after thaw embryo transfer cycles?

Ans. The outcomes from using cryopreserved embryo has uniformly been positive with no increase in birth defects/developmental abnormalities.

In fact, many studies have shown that use of frozen embryos for transfer significantly improved clinical and ongoing pregnancy rates as compared to fresh embryo transfers.

Q457. What is egg donation cycle?

Ans. Ovum donation allows a woman to become pregnant when she is unable to successfully conceive using her ovum egg. In this program, donor eggs are obtained from healthy females of 21-35 years of age after stimulation of their ovaries with gonadotropins.

Q58. What is embryo donation cycle?

Ans. It is the transfer of an embryo resulting from gametes (spermatozoa and oocytes) that did not originate from the recipient and her partner.

Q59. What is gestational surrogacy?

Ans. It is an agreement where a woman (called a host/surrogate) carries a pregnancy with an agreement that she will give the offspring to the intended parent(s). Gametes can originate from the intended parents(s) and/or a third party (or parties).