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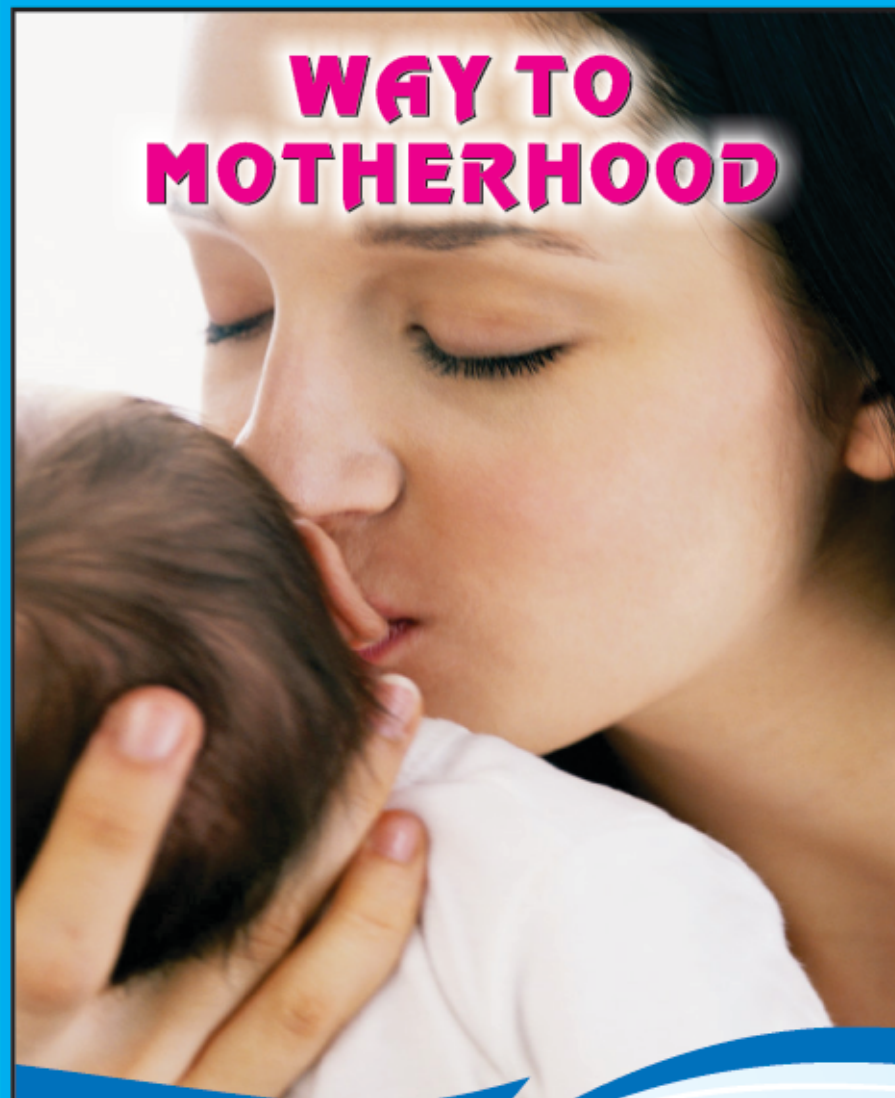
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WAY TO MOTHERHOOD



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: Author :

Dr. Ajay Valia
M.D., D.G.O. (Mumbai)

Disclaimer

This book is for guidance only and should not be used for treatment by self. No treatment should be done without consultation with the doctor.

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PREFACE

Every married couple wishes for a baby who fills their life with joy, love and satisfaction. However 10-15% of the couples are not blessed with this joy because of some causes of infertility. Both the wife and husband are required to be investigated to know the cause of infertility.

This book has been written with the purpose of solving the basic queries of the married couple - which includes the basic physiology of reproduction, causes of infertility & the ways and means of their management with special reference to Intra uterine insemination and In vitro fertilization.

The couple undergoing infertility management undergoes a lot of mental, physical and social stress. Any mode of management requires to be discussed completely between the couple and the concerned doctor. The couple requires to be very compliant and patient whatever mode they decide for.

Modern medical science has made great leaps and bounds. The treatment of infertility encompasses many different types of procedure, in which the success rate is 10-20% per cycle and hence do not get frustrated and do the treatment with lots of patience.

Fate + Hardwork (Those of Doctor & Couple) => Success

Infertile couples now have the new methods of modern science to help them to fulfill their empty lives, but besides that there is an excellent alternative option of adoption. Infertile couples can also remain involved in social activities.

Dr. Ajay Valia

Isha Hospital

FEMALE REPRODUCTIVE SYSTEM:

The organs of reproduction can be divided into two:-

- A. The external genital organs.
- B. The internal genital organs.

The External Genital Organs:

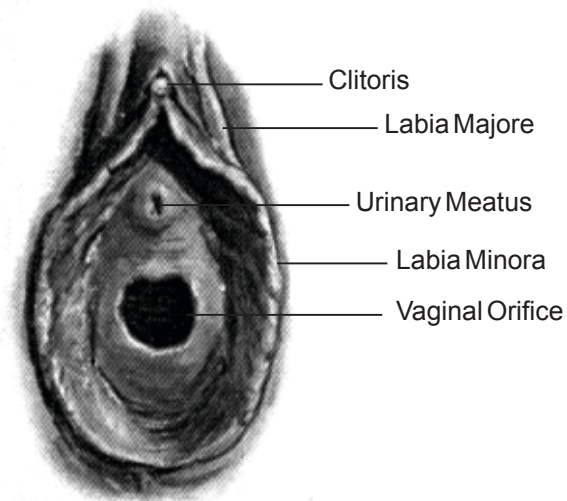
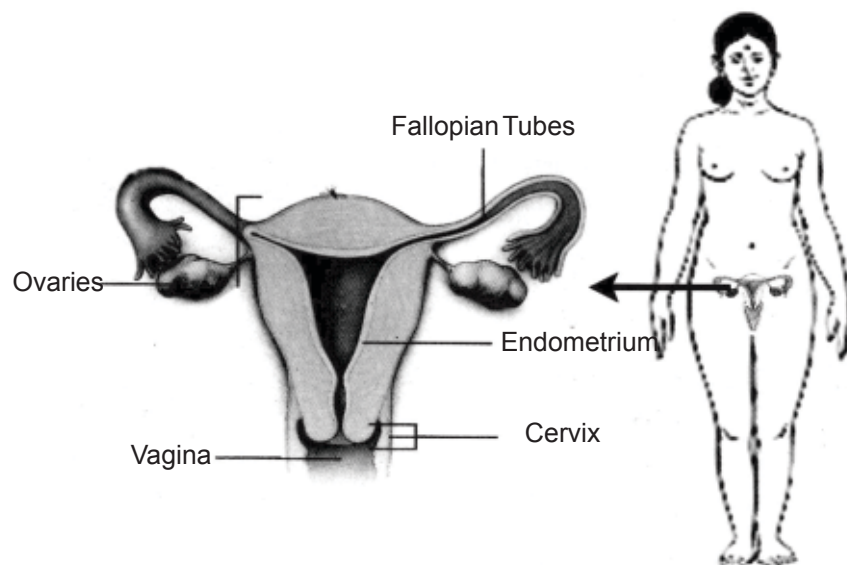
1. **Mons Veneris** – It is the pad of fat lying in front of the pubic bone which is normally covered by hair after puberty.
2. **Labia Majora** – The labia majora are the two elongated folds of skin projecting downwards and backwards from the mons veneris towards the anus. Usually, it covers the clitoris, urethral and vaginal openings. It contains fat, blood and lymph vessels. It is covered by hair.
3. **Labia Minora** – Labia Minora are two thin folds of skin one on each side, just within the labia majora. They are seen only when the labia majora are separated. They contain blood vessels.
4. **The Clitoris** – This is highly excitable erectile structure in the female – corresponding to the penis of the male and is situated in the most anterior portion of the vulva and projects between the two folds of labia minora in front of urinary opening. It is one inch long. Its stimulation causes female orgasm.
5. **The Vestibule** – This is the triangular surface which is bounded anteriorly by the clitoris, laterally by the labia minora and posteriorly by the anterior margin of the hymen.
6. **Hymen** – This is an incomplete septum of mucous membrane which closes the vaginal orifice. The hymen is

usually ruptured at the first coitus and its intact presence is usually a sign of virginity. However, there are exceptions like sportswomen, dancers and those who induce in heavy exercises. If it is very rigid it could be intact in married women also.

7. **Perineum** – This is the space between the posterior vaginal wall and the anterior anal wall.
8. **Urinary Meatus** – It is a small opening between the clitoris and vaginal orifice. It is the external opening of the urethra which is about 1½ inches in length.
9. **Vaginal Orifice** – It is situated below the urinary meatus. It receives the penis during intercourse, menstrual blood comes out through this route and during childbirth the baby comes out through the vaginal orifice. Around the vaginal orifice are situated the Bartholin's glands. They secrete a lubricating mucous during coitus which facilitates intercourse.

The Internal Genital Organs:

1. **Vagina** – This is the tubular muscular canal connecting the uterine cervix to the vulva. It is a potential space that opens during coitus, instrumentation or examination. It is situated between the bladder in front and the rectum behind. The cervix is the mouth of the uterus which dips into the vaginal canal.
2. **Cervix** – A conical tubular projection from lower end of the uterus into the upper part of the vagina. Its glands secrete lots of mucous like fluid especially during ovulation and the mouth opens up and becomes favourable for entry of sperms and helps fertilization. Later it closes and the secretions become thick preventing backflow of seminal fluid thus aiding conception.



3. **The Uterus** – It is situated between bladder and rectum. It is the hollow muscular organ lined by endometrium which is shed every month. It is the most important organ since it shelters the baby.

In a nulliparous woman it measures about 8 – 9 cms in length, 6 cms across its widest part and 4 cms across the thickest part and weighs about 45 – 55 g.

4. **Fallopian tubes** – These are delicate tubes arising from the sides of the uterus about 10 cms in length. The lateral ends of the tubes are stretched into finger like processes called fimbriae which lie near the ovaries.
5. **The Ovaries** – These are almond shaped structures situated on either side of the uterus. The ovaries produce one or more ova every month.

Male Reproductive System:-

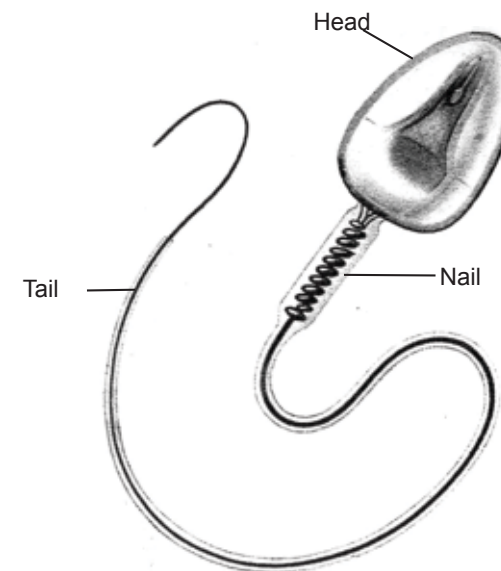
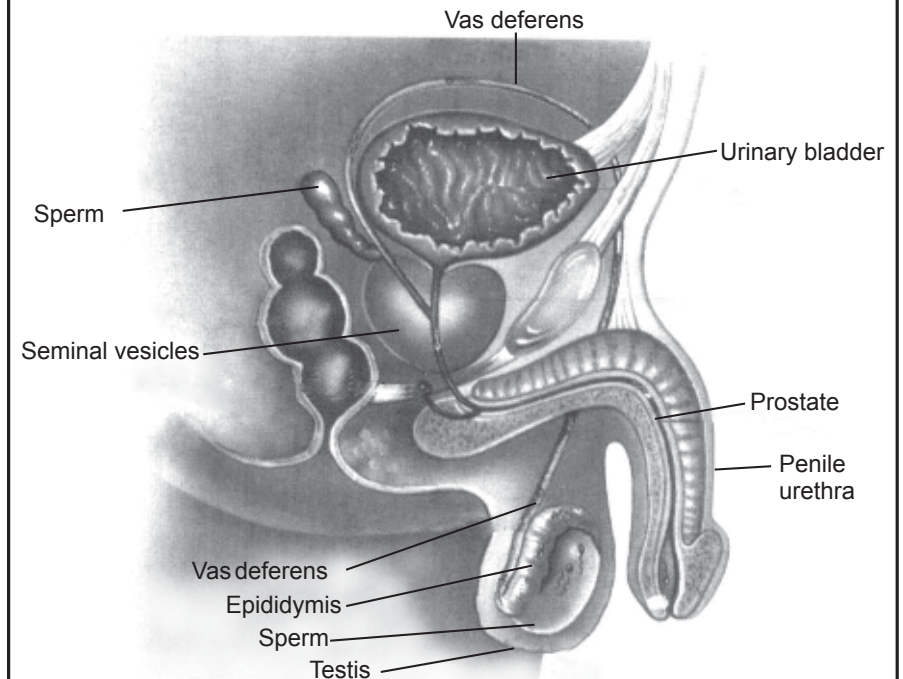
The organs are mainly external and consist of the Penis, Scrotum and Testes.

1. **The Penis** – It is the main organ involved in the sexual union with the female. It is a long cylindrical structure, soft and elastic arising from the pubic arch. The end of the organ is conical in shape and called as the glans penis. It contains the opening of the urethra. The skin over the penis is delicate, elastic and hairless except at the base. The skin covering the glans is called prepuce. This organ during sexual excitement gets engorged and erectile due to dilatation of blood vessels.
2. **The Scrotum** – This consists of a pendulous sac, with rugose skin and encloses the testes and their associated ducts and the lower part of the spermatic cord. Scrotum is divided by a raphe in 2 parts.

3. **The Testis** – There are two testis, oval in shape and placed in the scrotal sac. The testes have two primary functions – production of a major male sex hormone, testosterone and the production of sperms. Fertilization between sperms and ovum results in pregnancy. If the temperature of the scrotum increases due to any cause, disturbance in spermatogenesis occurs. This leads to a decreased count and motility of sperms. One of the causes is varicocele – which is dilatation of veins of the testis. If there is presence of varicocele in the male, ligation of the veins is the treatment.
4. **Epididymis & vas deferens** – These are tubular structures which aid in the transportation of the sperms from the testes. These lie just around the testes. The upper end of epididymis is broad & lower end is narrow from where the vas deferens start. These tubes open at level of the urethra. Sperms undergo further maturation and capacitation in the epididymis.
5. **Seminal Vesicles** – They are paired, monotubular convoluted structures about 1 inch in length with a muscular component. They secrete a mucoid vehicle for the spermatozoa and also elaborate body's only source of fructose, which is used as an essential nutrient for maintenance of spermatozoa viability.
6. **Prostate gland** – It is a fibromuscular glandular organ surrounding the vesicle neck and the male urethra and about 1 inch in breadth. The secretions are important for ejaculatory clot lysis. In aged males it undergoes hypertrophy and causes urinary symptoms.

* * * * *

Male Reproductive System



SPERM

The male and female together are responsible for the pregnancy. The man makes his contribution in the form of sperms. The female produces the egg or ovum and these two fertilize to form the baby. The male produces about 60-120 million sperms in 1cc. of seminal fluid throughout the year while female produces one egg only, once a month, and if there is an occasion for the egg to unite with the sperm during intercourse, the woman becomes pregnant. If the menstrual cycle is regular of 28 days the egg is produced around the 14th day and if irregular cycles, the egg is produced 14 days before the menstrual flow.

SPERM:

This is the male reproductive cell produced in the testis. The sperms are produced by the 'stem cells' in the testis and they are under the control of various hormones produced by the pituitary gland. The various stages of sperm maturation are : sperm cells / spermatogonia => Primary Spermatid => Secondary spermatocytes => Spermatid => Spermatozoa. This is called spermatogenesis. While passing through the epididymis they undergo maturation and capacitation. The fluid from the seminal vesicles and prostate forms the major part of the seminal plasma and provides nourishment to the sperms. It takes about 72 days for spermatogenesis.

The sperm is so minute that it is visible only through a microscope. It is made of three parts (a) the head, which contains the nucleus, (b) the middle piece or neck which stores energy for movement and (c) the tail whose movements help the sperm swim through the vaginal canal secretion.

THE EGG OR OVUM

This is the female reproductive cell produced by the ovaries. Egg is spherical in shape. Although the egg is larger than the sperm in size it cannot be seen by a naked eye. The eggs do not have any movement of their own.

The total content of eggs at birth in both the ovaries is about 100,000. At puberty the number of eggs left is only 30,000. In the female reproductive years (15-45 years) only 300-400 eggs undergo maturation and rupture, of these only 3 to 5 eggs get fertilized which result into a positive clinical pregnancy while the rest undergo degeneration. Every cycle only one egg is liberated from the ovary. After the egg is liberated from the ovary, it is picked by the fimbrial end of the fallopian tubes and moves within the tubes by the peristaltic movements of the tubes along with the help of the cilia or hair like processes lining the inner walls of the tube.

During this time if intercourse occurs between the male and female, about 2 to 5 ml of semen is deposited in the vagina which contains millions of sperms. The semen becomes gelatinous initially i.e. becomes clot and liquifies within half an hour. The sperms then quickly start moving up the cervix into the uterine cavity and into the tubes, by the lashing movements of the tail. Under favourable conditions, the union of the sperm and ovum occurs at the lateral end of the tube. The time taken for the sperm to reach the tubal end is roughly about 1 hour. One sperm penetrates the ovum, loses its tail and prevents further penetration by other sperms.

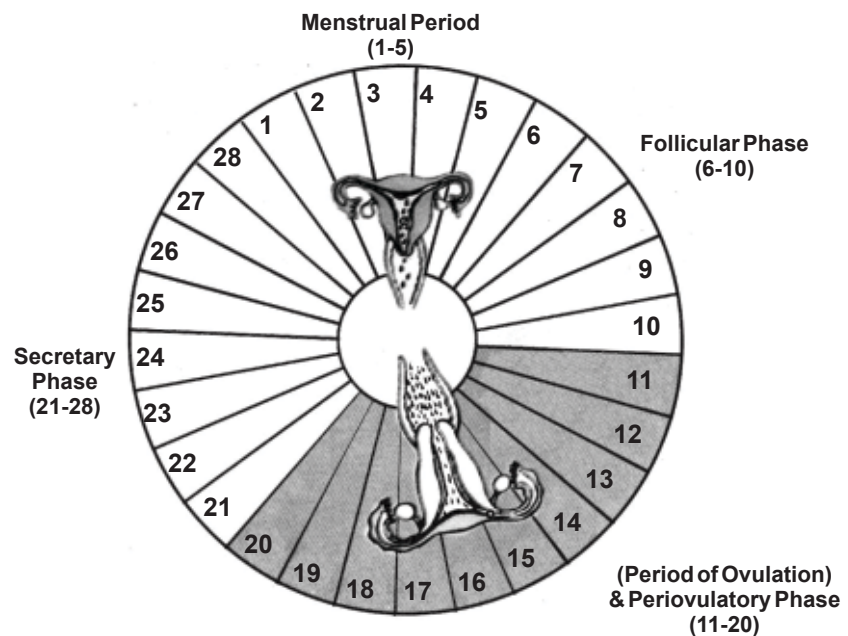
The sperm once deposited in the vagina retains capacity to fertilize the ovum only for 24 hours. The ovum once released from the ovary, retain its capacity to be fertilized only for 8-12 hours. Hence, intercourse in and around this period of ovulation can lead to a healthy pregnancy.

In many cases it has been found that the sperms remain alive in the uterus even 4-5 days after the intercourse. But it has proved by experiment on animals that fertilization by aged ovum and sperms leads to increased chances of missed abortions or a congenitally malformed baby. The fertilized ovum then starts dividing and by virtue of fallopian tube movements, it reaches the uterus and later gets implanted.

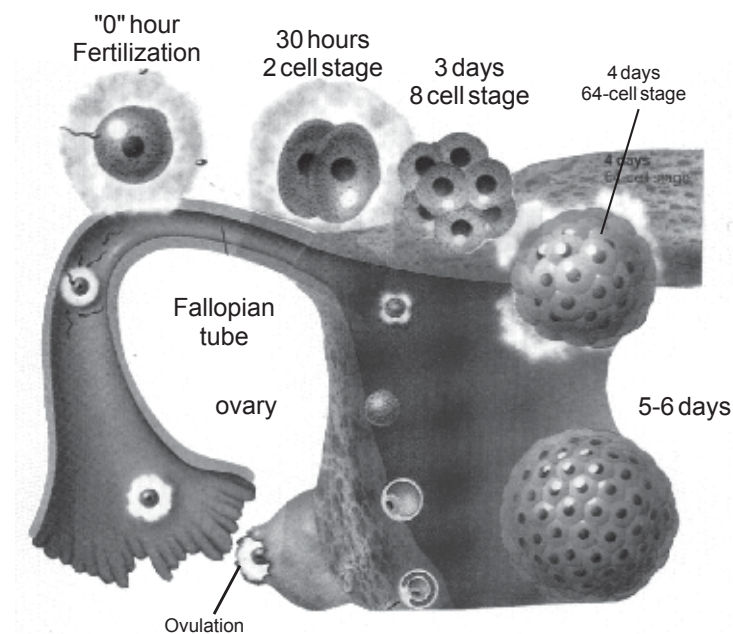
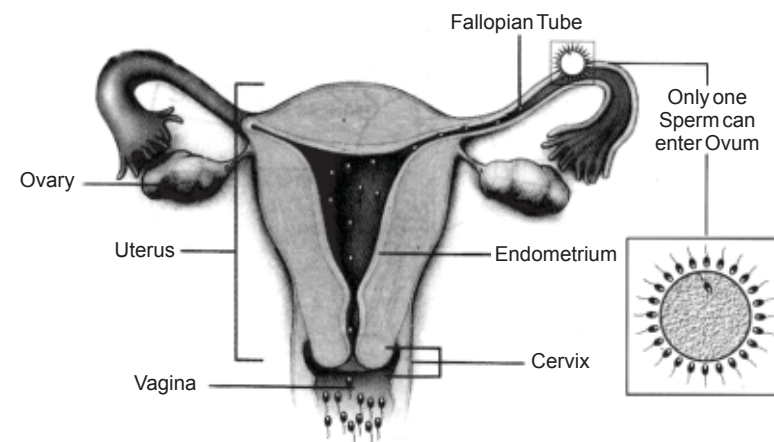
Pregnancy itself is a miracle and how the sperms reach the egg, fertilize and then form an embryo is truly an amazing story! About 2000 sperms out of the many deposited in the vaginal canal reach the fallopian tube but only about 100 sperms reach the vicinity of the egg, out of which only one unites with the egg and develops into an embryo.

Thus from the above basic physiology it is understood that for reproduction the following points are necessary:-

1. Deposition of viable motile sperms in vagina.
2. Passage of sperm through favourable cervix into the uterus and then to the fallopian tubes.
3. Regular ovulation and release of ovum from ovary which is then picked up by healthy fimbriae of the fallopian tube.
4. Union of ovum and sperm in ampullary region of fallopian tube leading to fertilization.
5. Migrations of the fertilized ovum into the uterus, and its implantation on the healthy deciduas (endometrium) which is ready to receive it.
6. Growth of the embryo into a healthy fetus in 9 months and then delivery.



MENSTRUAL CYCLE



IN FEMALE:

1. Vaginismus – poor penetration of vagina by the penis, not allowing penis to enter vagina.
Frigidity – problem of sperm deposition in vagina, decreased libido.
2. Vaginal Septum, thick hymen.
3. Cervical mucus hostility.
4. Uterine factors like synechiae, adhesions, polyps, fibroids, septae, unicornuate uterus, etc.
5. Fallopian tube factors –
Infection => blocks, adhesions, Immobilization
Chlamydia, gonococcal, TB infection => severe adhesions, hydrosalpinx.
Endometriosis => peritubular scarring
6. Pelvic factors like adhesions, endometriosis.
7. Anovulation or hypo ovulation.
Disorders of coordination in the hypothalamo – pituitary – ovarian – uterine axis, common conditions are – polycystic ovaries.
Hypogonadotrophic hypogonadism.
Premature menopause.
Ovarian resistance syndrome.

IN MALES:

1. Anatomical defects in penis leading to improper penetration of vagina and leading to non deposition of sperms in vagina eg. Hypospadias, phimosis.

2. Physiological – Psychological causes.
(A) Impotence – inability to have sustained erection for penetration and ejaculation.
(B) Premature ejaculation
(C) Retrograde ejaculation
3. Abnormalities in semen analysis –
Oligozoospermia – decreased count of sperms
Azoospermia – absent sperms
Asthenospermia – low or decreased motility
Teratospermia – abnormal sperms are more.
4. Varicocele – It is an abnormal dilatation of veins of the spermatic cord and testis. It exerts its effect by increasing scrotal temperature and causes faulty spermatogenesis, ligation of the varicocele gives good results.
5. Hypogonadotrophic Hypogonadism –
The levels of (FSH) Follicle stimulating Hormone produced by pituitary is low which leads to azoospermia, also there are low levels of testosterone produced by testis.
6. Block in the epididymis / Vas deferens / Ejaculatory duct.
7. Infection in the seminal vesicles or prostate gland.
8. Primary testicular failure.

COMMON CAUSES

1. Marital disharmony
2. Inability to have proper sexual intercourse
3. Antisperm Antibodies
4. Unexplained infertility.

4 | INVESTIGATIONS FOR INFERTILITY

It is most important to remember that if a couple has infertility the cause could be in the male or female or in both. It is not right to blame the female always. To find the cause for infertility both the partners male and female have to be investigated as follows:-

1. **Semen analysis of the husband.**
2. **Trans-vaginal sonography**

With this the uterine size can be measured, presence of any tumor and deformity can be diagnosed. Ovarian cyst if present can be diagnosed, also the ovarian size, the number and size of ovarian follicles. And the exact day of ovulation can be known.

Pelvic inflammatory disease can also be diagnosed, i.e. infection of the fallopian tubes, ovaries, etc.

3. The following tests are done to know about the patency of the fallopian tubes.

- A. **Sono-Salpingography**
- B. **Hystero-Salpingography**
- C. **Lapro-hysteroscopy**

4. **Ovarian follicular study**

Monitoring the development of follicle-ovum and endometrium.

5. **Post Coital test**

To assess the viability of sperms once deposited in vagina and cervix.

To check cervical mucus interaction with sperms



The couple is asked to have intercourse in the morning. After 6 hours the fluid from vagina and cervix is examined for presence of viable sperms. Non viable sperms suggest hostile vaginal or cervical environment.

SONO-SALPINGOGRAPHY – S.S.GRAPHY

This is a short procedure to assess tubal patency, mobility and anatomy of the uterine cavity. It is done on 8th or 10th day of menses.

After an injection of an anti-spasmodic medicine, fluid is injected inside the uterine cavity with the help of a catheter or cannula. After this the Transvaginal probe is introduced in vagina and passage of fluid is seen through the tubes and the uterine cavity is also visualized. Passage of fluid through the tubes is known as a 'cascade-waterfall' sign.

Advantage: Assessment of tubal and uterine anatomy, patency, motility, etc. can be assessed easily.

HYSTERO-SALPINGOGRAPHY – HSG

It is the study of uterus and fallopian tubes using X-ray. It is done between the 8-12th day of the menstrual cycle. In this test 8-10 ml of a radio-opaque dye is injected into the uterine cavity through the cervix using a cannula, following which X-rays are taken. The X-rays reveal the uterine cavity and contour, internal structure of the tube, tubal patency and peritubal adhesions.

LAPROSCOPY

This test is primarily advised for couples married for more than 2 years. This test is done under short general anaesthesia, a

small incision is made below umbilicus and pneumoperitonium is created. Then a fibre optic laproscope is passed into the pelvic cavity and the organs are visualized. Any pelvic pathology like endometriosis, fibroids, pelvic infections, postoperative adhesions and congenital malformations can be assessed.

The patency of the tubes can also be confirmed, methylene blue dye is injected through the cervical canal, and spill of the same through the fimbria being visualised.

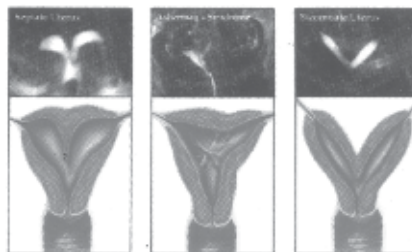
Operative laparoscopy

1. Adhesiolysis
2. Fibroid Myomectomy
3. Ovarian cyst
4. Fimbrioplasty
5. Endometriosis fulguration
6. Endometriosis removal.

HYSTEROSCOPY

In this the uterine cavity is visualized for anomalies and defects under local or general anaesthesia with the help of an optic called hysteroscope using distending media.

Now a days Diagnostic Laparoscopy as a procedure to diagnose patency of tubes is used with reservations. Instead Video-endoscopic-lapro-hysteroscopic procedures are used as corrective measures after preliminary investigations like Sono-Salpingography or Hystero-



Salpingography shows some anomaly or defect.

Operative Hysteroscopy:

1. Septum resection
2. Adhesiolysis in Asherman Syndrome
3. Lateral metroplasty
4. Endometrial polyp / fibroid
5. Foreign body removal
6. Cornual catheterisation

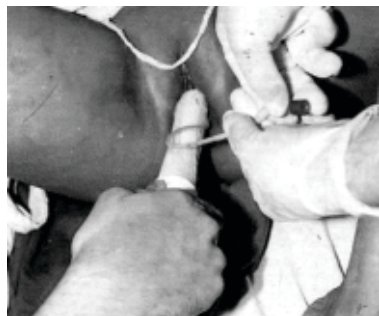
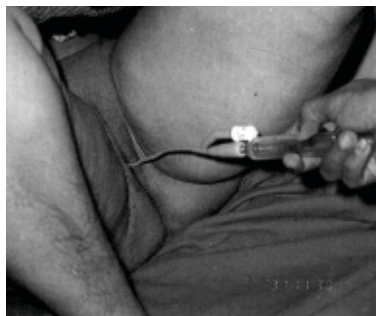
Advantages of Operative Laparoscopy + Hysteroscopy

1. Discharge from hospital within 24 hours.
2. Less pain and other complications
3. Patient can resume all activities from next day.
4. No need for any specific precautions
5. This operation is performed under General anaesthesia so patient does not feel any pain.

Complication / Risks:

Like in other operations, side effects, complications and problems can occur in this operation. They may be as follows:

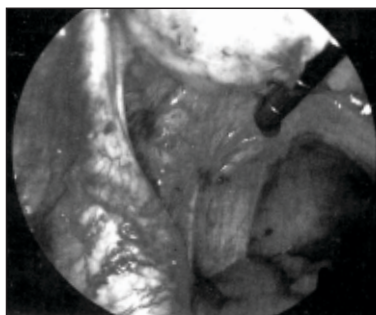
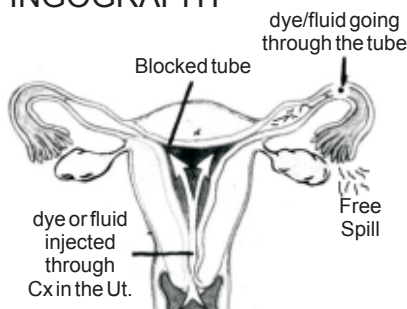
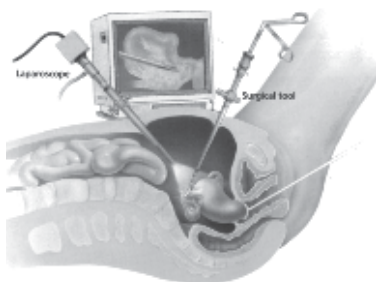
1. Haemorrhage
2. Infection (Local or General)
3. Bladder bowel injury and dysfunction
4. Cautery burns / injury
5. Other unforeseen unexpected complications



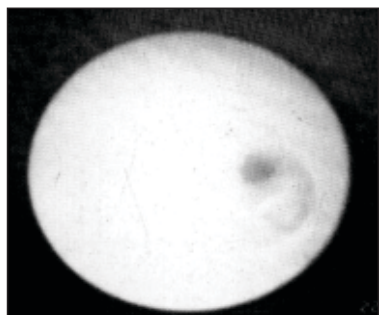
SONO-SALPINGOGRAPHY



HYSTEOSALPINGOGRAPHY



LAPAROSCOPY



HYSTEOSCOPY

INFERTILITY INVESTIGATIONS

(QUESTION – ANSWER)

Q: Why is laproscopic examination done in cases of Infertility?

A: Presently, defects of Uterus and Fallopian tubes can be diagnosed by techniques like Sonography, Sono-Salpingography, Hystero-Salpingography. So laproscopic examination is not generally required. If some problem / defect is detected during above examinations, then laproscopy is required and at that time Operative Video-Lapro-Hysteroscopy should be done.

Q: What is Asherman Syndrome?

A: Many a times, Endometrium is lost in females undergoing Curettage for abortion and it is replaced by non-functional Scar tissue. This can also happen after operations of Uterus. Such females can develop problems such as retention of menstrual blood, decreased flow, severe pain during menstruation and miscarriages. This condition is known as Asherman Syndrome.

Q: How does Foreign Body in Uterus prevent Conception?

A: Many times after abortion, pieces of fetal bone may be retained in the uterus or by mistake Copper-T may be retained inside or in case of illegal abortion, the small stick introduced for abortion may be retained inside. Such foreign bodies retained inside the uterus act as Copper-T

and prevent Conception. Many a times, such foreign bodies produce blockage of fallopian tubes.

FOLLICULAR STUDY

The egg in ovaries undergoes various stages of maturation and ultimately ovulation occurs. This process is governed by the hormones released from the hypothalamus and pituitary glands.

The whole thing is known as the hypothalamo-pituitary-ovarian-uterine axis. It regulates the menstrual cycles in females. If proper, then the woman menstruates regularly and attains a pregnancy. But if there is any disturbance in this axis then infertility can occur.

The follicular study is a serial study of growth of ovarian follicles preferably done with the help of Transvaginal sonography. The study starts from day 8-10 depending upon the length of menstrual cycles. The average rate of growth of follicle is 1.5mm/day from day 9 onwards. When follicle size reaches 18-20mm in size it is said to be mature and likely to rupture so as to release an egg / ovum.

The endometrial response is an important factor to assess coordination of hypothalamo-pituitary-ovarian-uterine axis. A good response is a 3 line endometrium with thickness between 8-11mm at the time of ovulation.

In this way sonography helps in diagnosing the growth of ovarian follicles and endometrium in different stages of menstrual cycles.

If no cause of infertility is found by the above investigations then the following laboratory investigations can be done:

A. In Females

1. Hormones produced by the pituitary gland.
 - Prolactin
 - Follicle stimulating hormone –FSH, D2 FSH
 - Leutinising hormone –LH
 - Thyroid stimulating hormone-TSH
2. Hormones produced by Thyroid
T4 and T3
3. Hormones produced by the Adrenal gland
Serum Dihydroepiandrosterone (DHEAS)
Serum Testosterone
17-Ketosteroid levels in the urine.
4. Others - AMH, Sr Inhibin B.
5. Glucose tolerance test to rule out diabetes

Pituitary, Thyroid and Adrenal glands play a direct or indirect role in fertility. Hence an infertile female needs to undergo these investigations.

B. In Males:

1. Doppler study to rule out varicocele.
2. Scrotal Sonography and colour Doppler to assess size and diseases of testis and epididymis.
3. Trans rectal sonography to assess seminal vesicle disease
4. Hormones produced by the Pituitary, Thyroid and Adrenal glands.
 - S.T3, T4 and TSH
 - S.Prolactin
 - S.Leutinizing Hormone
 - S.FSH
 - S.Testosterone
5. Chlamydia antigen test – to rule out Chlamydia infection.
6. Tests of semen and sperms

- Sperm Survival test – to assess the surviving capacity of sperms.
- Semen culture – to diagnose the infecting organism in semen
- Sperm function tests – for viability and fertilizing capacity of sperms
- Quantitative seminal fructose examination – to assess any block in the epididymis or vas deferens.

Semen Analysis

The WHO criteria – The minimum requirement for successful fertilization are as follows:

Volume	:	1.5ml
Count	:	≥ 15 milli/ml
Motility	:	$> 40\%$
Progressive motility	:	$\geq 32\%$
Morphology	:	$\geq 4\%$
Vitality	:	$\geq 58\%$
White blood cells	:	minimum
Pus cells	:	1-2 / HPF

The following abnormalities of sperms are causes of infertility in males

1. Azoospermia – absence of sperms
2. Oligospermia – low sperm count in semen
3. Asthenospermia – low or decreased motility
4. Teratospermia – more of abnormal sperms.

* * * * *

5

TREATMENT OF INFERTILITY

A. COUNSELLING

- Sex education
- Timing of intercourse between 12-17th day of menstrual cycle increases chances of pregnancy.
- Measurement of Basal Body Temperature (BBT) using a special thermometer. At the time of ovulation the BBT is slightly lower and thus helps in deciding the time of intercourse.
- Marital harmony
- Group therapy

B. PREVENTION

- To practice safe sex
- To have one loyal partner 'husband & wife'
- To avoid abortions, unplanned pregnancies and gynec procedures when not indicated.
- Personal hygiene. Clearing of private parts pre and post intercourse. In males the glans penis should be clean of smegma.
- Proper understanding of anatomy and physiology of reproduction.

C. CORRECTION OF ANATOMICAL OR PHYSIOLOGICAL DEFECTS USING

1. Operative hysteron-lapro-video endoscopy
 - Uterus – breaking of synechiae / adhesion
 - Removal of submucous fibroid, polyp blocking cornual opening

- Removal of septa
- Cornual catheterization
- Tubes – adhesiolysis
- Pelvic – fulguration of endometriosis-
Cystectomy
- Salpingostomy etc.

2. Microsurgery for tuboplasty to open up any block in the fallopian tubes.

D. OVULATION INDUCTION

In cases where the cause of infertility is anovulation in females. It can be done using the following drugs.

- Clomiphene citrate (SERM, SEEM)
- Human Menopausal Gonadotrophin – HMG
- Follicular Stimulating Hormone – FSH
- Cabergolin
- Thyroxine

* * * * *

6 | IUI (INTRAUTERINE INSEMINATION)

This method involves the collection of semen usually by masturbation, and separation of the active sperms and its transfer into the uterine cavity of the female partner within 2 hours by an intrauterine cannula.

Insemination with the husband's sperms can be done when the husband suffers from some anatomical defect like hypospadias or from impotency.

Intrauterine insemination is a method where the fertility potential of a given sperm sample is enhanced. Here, the mobile sperms are isolated from the abnormal morphological forms, cellular debris and cells.

Common indications for IUI are:

1. Narrowing of the mouth of uterus and poor quality of cervical mucus.
2. Presence of Antisperm antibodies in the serum of the male and female.
3. Any surgery performed at the mouth of the uterus.
4. Poor quality of sperms – decreased count and motility
5. Ejaculatory disturbances like premature ejaculation or Retrograde ejaculation
6. Anatomical disorder of the organ or impotency on the part of the male
7. Unexplained long standing infertility

The following points have to be observed before IUI:

1. The couple should abstain from intercourse atleast 9 days before the date for IUI.
2. The semen sample should be collected under aseptic conditions
3. The genitalia should be washed before collection of semen sample for IUI.

4. The sample should be collected in a sterile wide mouth container.
5. In case of difficulty in collection, sample should be collected earlier and frozen so that the timing of the IUI is not disturbed.
6. In cases where the count and motility of the sperm sample is low, split ejaculate, i.e. Collection of the sperm sample into two parts is beneficial so that the first part of the collection containing the maximum number of sperms may be processes for the IUI.
7. Any patient who has difficulty in collection at the place of the IUI, may collect the sample at home following the same aseptic conditions, but the sample should reach the laboratory within 30-40 minutes of collection, under warm conditions.
8. Patients who have difficulty in collection by masturbation may be given a semen collection device (SCD) and allowed natural intercourse.

Side effects are very rarely observed after the patient undergoes IUI. The patient may have slight lower abdominal pain which is caused because of the introduction of a foreign material in the uterine cavity, thus causing a cramp like feeling. Sometimes mild spotting may occur because of the introduction of the catheter into the mouth of the uterus, which invariably gets arrested in due course without any treatment. 0.2% cases may be affected by infection.

It is preferable to have natural intercourse after IUI only to favour the follicle rupture and release of the oocyte. The prostaglandin in the seminal plasma causes uterine spasm creating a vacuum, in the uterus, in the process helping the fimbrial end of the fallopian tube to suck in the oocyte. (A hypothesis)

When the husband is totally sterile semen from a donor can be artificially inseminated. This is a highly confidential process and the required consent forms have to be signed both by the husband and wife. This is known as Artificial Insemination of Donor Sperms – AID

Various other methods of treatment of Infertility

1. Direct intra-peritoneal insemination (DIPI) – In this pre-prepared sperms are injected into the peritoneal cavity directly using a special needle.
2. Direct intra-follicular insemination (DIFI) – In this sperms are injected directly into the graffian follicle in the ovaries.
3. Gamete Intra Fallopian Tranfer (GIFT) – This is done in cases of unexplained infertility and / or severe male factor infertility. The female eggs and male sperms are placed separately in a catheter and injected directly into the woman's fallopian tubes through a laproscopic procedure.
4. Semen Intra Fallopian Transfer (SIFT) – The husband semen is placed into the fallopian tube via a laproscope.
5. Zygote Intra Fallopian Tube Transfer (ZIFT) – The placement of fertilized oocytes into the fallopian tubes using a laproscope is known as ZIFT.
6. Fallopian Tube Perfusion Technique.

* * * * *

7 | IVF - ICSI (TEST TUBE BABY)

In the last few years due to the vast development in the treatment of infertility there are several methods which involve a lot of team work and sophisticated equipments. The techniques involved in these new methods are called ASSISTED REPRODUCTIVE TECHNOLOGY. Many of these techniques are very complicated, but the most talked of now a days is the test tube baby. Hence the details of this have been mentioned below. This technique is known as Invitro Fertilization and Embryo Transfer.

What is a test tube baby?

In this female egg and the male sperms are made to unite outside the body under controlled conditions in the laboratory dish and the embryo thus developed is transferred into the uterine cavity at the end of 48-72 hours. After this the complete development occurs in the mother's uterus / womb.

Thus, a test tube baby is not a baby in the laboratory but only the fertilization is made to occur in laboratory set up. In-vitro means – laboratory setup. Fertilization is allowed and embryo is then transferred thus the name Invitro Fertilization and Embryo Transfer.

INDICATIONS OF IVF & ET:-

This technique is not possible for every infertile couple. Only indicated in the following cases:-

1. Congenital absence of fallopian tubes.
2. Failed microsurgery for tubal anastomosis, blocked tubes.
3. Diseased but patent tubes
4. Antisperm Antibodies in either of the couple
5. Pelvic Inflammatory disease (PID).
6. Failure of Artificial Intrauterine Insemination – 6-12 attempts.

7. Premature ovarian failure or resistance syndrome
8. Absent or diseased uterus.

Such a woman donates her oocytes fertilized by her husband's sperm, the embryo being harboured by a third person. A recipient who 'rents' her uterus is known as a surrogate mother.

9. Oligospermia in the husband
10. Unexplained Infertility

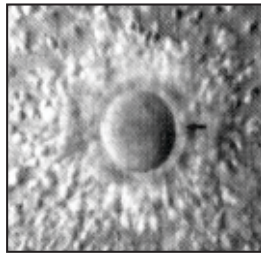
In this method, eggs and sperms are incubated in the laboratory in a culture dish, for 18 hours, at the end of which fertilization is checked for by the presence of pronuclei, after which the embryo starts multiplying into 2,4,6,8 and 16 cells in the laboratory dish in the Carbon dioxide incubator. This process takes another 36 hours from fertilization, at the end of which these multiplied embryos are transferred into the uterus without anaesthesia.

PRE-REQUISITES:

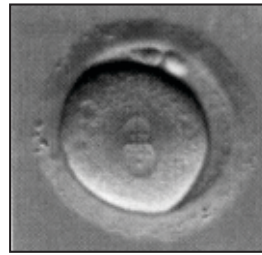
1. Age – plays an important role as far as results are concerned. Younger the couple, better are the results.
2. Levels of follicle stimulating hormone and leutinizing hormone should not be high as in the menopausal years, AMH should be above 1.5
3. There should be motile viable sperms per ml of semen
4. No other medical or surgical disorder should be present.
5. Husband should be able to produce semen as and when required.

Success rate of this technique is about 15-30%.

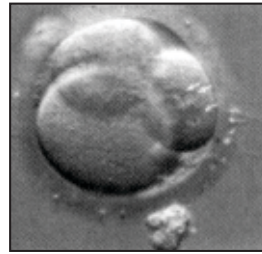
The procedure of IVF is very complicated. It is performed in the following steps:-



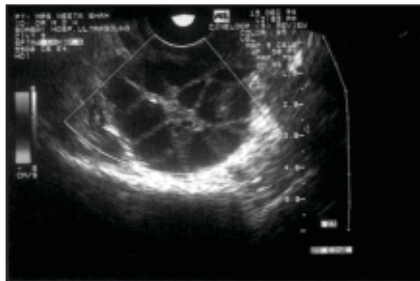
OVUM



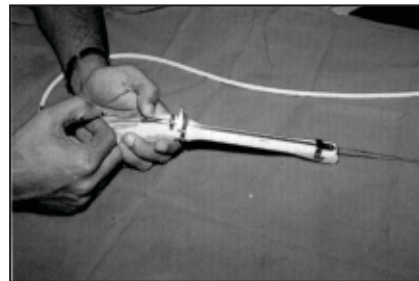
PRONUCLEI



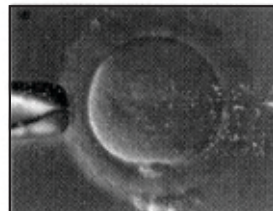
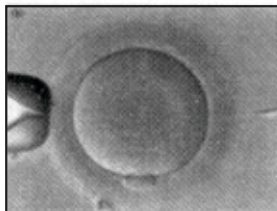
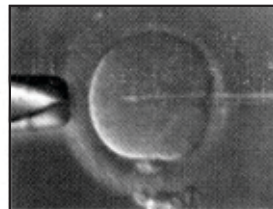
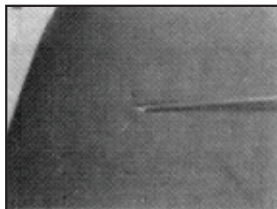
2 CELL STAGE <- EMBRYO -> 4 CELL STAGE



Ovary with Multiple Follicles

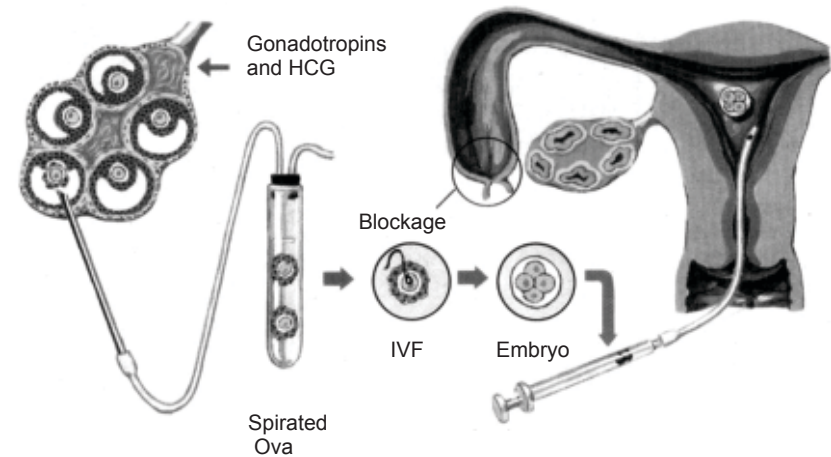
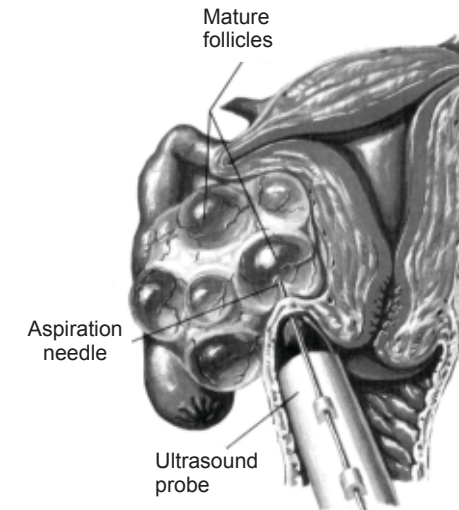


Trans Vaginal Probe with Aspiration needle



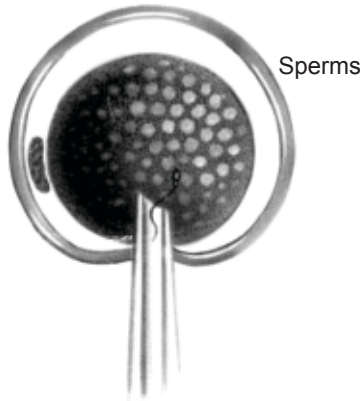
ICSI

IVF-ET



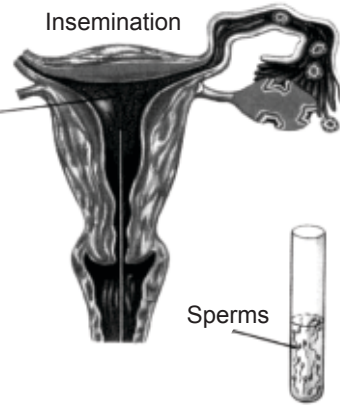
ICSI

Intracytoplasmic
Sperm Injection

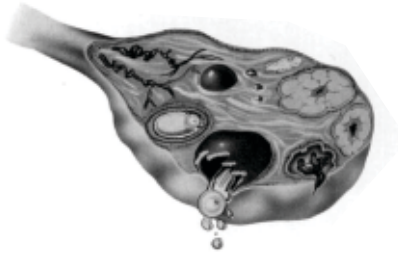


IUI

Intrauterine
Insemination

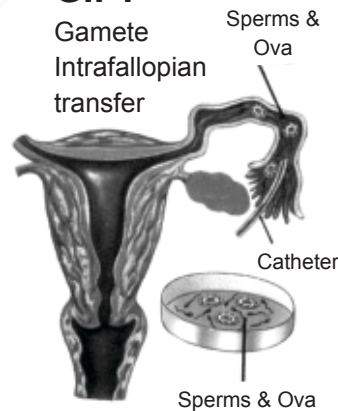


Ovulation



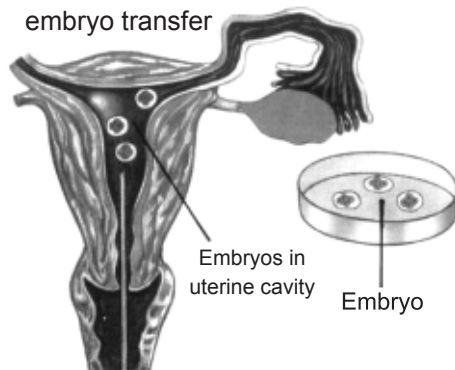
GIFT

Gamete
Intrafallopian
transfer



IVF-ET

In vitro fertilisation
embryo transfer



1. Down Regulation:

In this injection Busereline / Luperolide is started 7 days prior to the onset of menses and continued for 12-13 days after menses. These injections are given subcutaneously and contain Gonadotrophin releasing hormone analogue. These injections regulate the levels of FSH and LH hormones produced by the pituitary gland in the females, which further helps in the process of invitro fertilization. Blood FSH and estrogen levels are checked for on day 2 or 3 of the menses. The FSH levels should be 3 – 5 units / ml and Estrogen levels 50 picograms/ml or less.

Antagonist Cycle:

In certain group of patients, like those with age >35 years, with previous failed IVF cycles, with endometriosis, PCO this protocol chosen. Here the treatment start on the 1st or 2nd day of menses, if the TVS scan shows thin endometrium with no residual ovarian cysts, stimulator with HMG/FSH inj. started and on day 5th/6th GmRh antagonist-oxurelix 25 is given subcutaneously daily till the follicles reach size of 18-20mm.

2. Ovulation Induction:

Normally in every cycle a woman produces only one egg. But for IVF more than one eggs are required. Hormonal stimulation for the same is started from day 2 or 3 of the cycle in the form of Human Menopausal Gonadotrophin (HMG) and / or Follicle Stimulating Hormone (FSH) 3-4 ampoules per day which are continued for 12 to 13 days.

3. Follicular Monitoring

Done by serial transvaginal sonography. It is started on day 8 or 9 of menses till the follicle size reaches 18mm.

4. Ovum Pickup

When the follicles reach the optimum size, injection HCG (Human Chorionic Gonadotrophin) 5000 / 10000 units is given; approximately 34 hours after this injection, using TV ultrasound, the eggs are recovered by a long thin sharp needle (ovum pickup needle) under general anaesthesia. The recovered eggs are examined and graded according to maturity.

5. Fertilization

The eggs are placed in culture medium in CO₂ incubator at 37°C at 5% CO₂ atmosphere. Then husband is asked to give the semen sample which is then processed. About 1,00,000 sperms which are actively motile are added to each egg for 6 hours. The mixture is then placed in the incubator. Fertilization is confirmed 18 hours later by seeing two pronuclei. The media is changed and fertilized eggs are allowed to cleave-divide for 36 hours till it reaches 8-16 cells stage. Then they are transferred into the uterus.

6. Embryo Transfer

The embryos are graded and good quality of embryos about 3-4 in number are transferred in the uterine cavity with the help of a special embryo transfer cannula under total aseptic conditions. Of these only 1 or 2 embryos get implanted on the uterine wall while others degenerate.

Patient can go home after 1 hour of the procedure. Anaesthesia is not required for this procedure.

7. Progesterone Support

Progesterone is required for proper implantation of embryo and for maintenance of the growth of the same. Progesterone pessaries – vaginal pessaries 300 to 400 mg twice a day along with progesterone inj. given daily.

Pregnancy is confirmed on day 14 of implantation by examining blood for Beta-Human Chorionic Gonadotrophin.

Pregnancy rate by this method is 15 – 30% and take home baby rate is 10% to 25%.

CONDITIONS WHEN TREATMENT HAS TO BE STOPPED

- ❖ If the Blood FSH and Estrogen levels are not in the required range on day 2 or 3rd of menses.
- ❖ If after giving inj. HMG, on the 6th or 7th day of menses the follicle development is not as per required.
- ❖ If on day 12 / 13 the number of follicles are too many or the blood estrogen levels are 2000-2500, when chances of OHSS syndrome is increased, which is a serious complication.
- ❖ If the number of eggs are less, eggs are not formed, or if embryo quality is poor the treatment has to be stopped.

COMPLICATIONS IN CASES OF IVF:

1. Side effects of drugs or injections used for the treatment.
2. Complications of anaesthesia.
3. Chances of multiple pregnancy are more.
4. In this ovaries are stimulated by drugs or injections. Sometimes the ovaries get hyperstimulated and increase in size upto 5 – 10 cms, water collection occurs in the abdomen / chest. This is a serious complication and is known as ovarian hyper stimulation syndrome. The patient may require to be admitted in intensive care unit.
5. Chances of injury to the viscera while using the ovum pick up needle.

MICRO MANIPULATION:

When there is problem in the male gametes, that is inability of sperms to penetrate oocytes in vitro, in conditions like low count and motility, non-motile and abnormal forms, Micromanipulation

procedure is carried out.

This procedure involves injections of sperms directly into the cytoplasm (interior part of oocytes). It is known as Intra Cytoplasmic Sperm Injection – ICSI. This is a very complicated and costly procedure. Success rate is 20 – 30%.

BLASTOCYST CULTURE:

This is the newer method used during IVF / ICSI – where embryos are allowed to cleave in a specialised media till the blastocyst level and then transferred into the uterus – on 5th day Blastocyst Hatching can be done using micromanipulation technique using Laser – which increases chance of Pregnancy in certain cases.

OOCYTE – DONATION:

This technique is similar to artificial insemination in males. This can be used in females who have attained menopause. Egg is taken from a donor woman and sperm is taken from the husband of the couple desiring pregnancy. Fertilization is allowed between both and the fertilized egg is transferred into the uterus of the woman desiring pregnancy after making it suitable for implantation by giving injections / medicines.

EMBRYO – DONATION:

This is similar to oocyte donation but in this the sperms are also not of the husband but of the donor. Fertilization is allowed between both and the fertilized egg is transferred into the uterus of the woman desiring pregnancy.

SURROGATE MOTHERHOOD:

This is a method used in a woman who either has a diseased uterus or with an absent uterus. In this the woman's eggs & the husband's sperms are allowed fertilization in the laboratory setup and the fertilized egg is transferred into the uterus of another woman. The recipient who rents her uterus is known as surrogate mother. Thus for 9 months the woman nurtures the baby and after

delivery the baby is handed over to the Biological parents.

ADOPTION

In spite of the above methods if the couple does not succeed in achieving a pregnancy, then adoption is an excellent choice. By this method an orphan gets the love & care by parents & the couple's desire is fulfilled. If the couple is willing emotionally and socially for adoption then counselling is required regarding adoption.

CRYOPRESERVATION

Sperm and embryo can preserve at -170 C in liquid nitrogen Canister.

Sperm :

- 1) It is advisable to store sperms before IVF / ICSI so that at the time of pickup if semen cannot be collected due to some reasons , cryopreserved sperm can be used.
- 2) Husband staying out of station
- 3) Husband undergoing chemotherapy / radiotherapy for cancer – the sperms can be cryopreserved.

Egg :

Cryopreservation of egg does not have good reproducible results.

Embryo :

Cryopreserved embryos have good results as far as pregnancy is concerned . In a regular IVF cycle when good quality surplus embryos are available after transfer , these remaining embryos can be cryopreserved with vitrification procedure and can be used in subsequent non- stimulation cycle. Thus reducing the cost and increasing the results.

* * * * *

Normally a female ovary contains many follicles at various stages of maturity but they contain only one maturing egg (3-8 mm). When multiple eggs try to mature at the same time, cysts are formed.

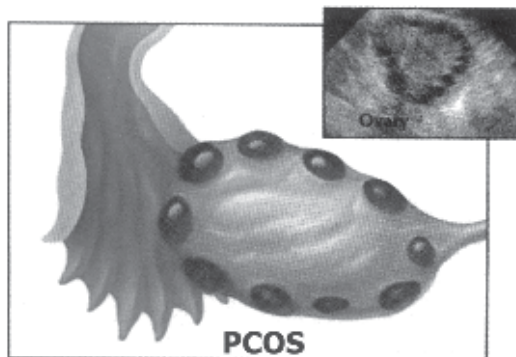
Ovarian function is under the control of the pituitary gland which secretes the hormones FSH and LH. An imbalance between these two hormones causes ovarian malfunction leading to PCOD – Polycystic Ovarian disease.

SIGNS AND COMPLICATIONS OF PCOD:

1. Menstrual problems – irregular / scanty menses or even amenorrhoea.
2. Infertility
3. Obesity
4. Acanthosis Nigricans (black patches over face & neck) and pimples
5. Hirsutism – excessive hair growth
6. Effects of PCOD on health
Obesity, diabetes, hypertension, arthritis, malignancy of genital tract.

DIAGNOSIS:

- Transvaginal Sonography (TVS) - to know number, size,



morphology of follicles.

- Laparoscopy

TREATMENT:

- Metformin – usually used in treatment of diabetes, it also helps in maturation of egg.
- 10% weight reduction causes 10% increase in chances of conception.
- PCO Drilling – Laparoscopic drilling of ovarian surface with thermal current – definitive in treatment of infertility associated with PCO
- Ovulation induction –
 - o Tablet- Letrozole
 - o Injections

Under careful supervision, 2 – 3 eggs can mature with the help of injections, but overdose can cause Ovarian Hypersensit. Syndrome.

Techniques of Weight Reduction:-

1. Walk for 5 km / day.
2. Pranayam for 5 min / day.
3. Avoid 5 things – oil, ghee, sweets, icecream, dairy products.
4. Aim at reducing 5 kg / month (even 3 kg / month is satisfactory).
5. Avoid - Fasting/ ½ Fasting
 - Having large meal (Have only half of your regular intake. Never eat to maximum capacity.)
 - Do not sleep immediately after meals.
 - Avoid laziness.
 - Say no to Food when not hungry.

Endometriosis is one of the most difficult diseases to treat with a high chance of recurrence. In this condition the endometrium is present at sites other than the uterine cavity and it flourishes there.

Incidence:

5 – 10 % in 15 – 45 years females and
25 – 35% in infertile women.

SIGNS:

1. Pain in lower abdomen – increasing during menstruation.
2. Sudden onset of severe dysmenorrhoea after many years of relatively painless periods.
3. Dyspareunia (Painful intercourse).

CAUSES OF INFERTILITY:

1. Blockage of tubes, tubal dysfunction, peritubal adhesions.
2. Dyspareunia
3. Chocolate cysts in ovaries – Anovulation.
4. Peritoneal implants.
5. Immunological dysfunction.
6. Corpus luteum, which helps maintain initial days of pregnancy is disturbed due to endometriosis.
7. Leutinized unruptured follicular syndrome – anovulation.

TREATMENT:

1. Operative Laproscopy
 - a. Tubal adhesions / dysfunction .
 - b. Chocolate cysts > 2cm.
 - c. Extensive spread intra- abdominally.
2. Medical
 - a. Injection Lupride depot.
 - b. Danazol.
 - c. Progesterone.

Endometriosis and IUI

In case of chocolate cysts associated with patent and functional tubes, IUI can be attempted after Laproscopy (Although chances of success are less than that with non endometriotic IUI patients).

Endometriosis and IVF:

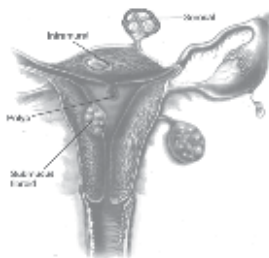
If after 3 – 4 cycles of IUI post laproscopy, conception fails to occur, IVF is indicated.

As already mentioned, endometriosis is difficult to treat so best results are obtained if treatment is started early.

Fibroids are more common in infertile women. Fibroids could range from 5 mm to 20 – 25 cm in size & 1 to 20 in number.

3 types of Fibroids are seen:

1. Intramural – within the wall of the uterus.
2. Subserous – outside the uterus.
3. Submucous – within the cavity.



SYMPTOMS

1. Pain during menstruation – dysmenorrhoea.
2. Increase in frequency / duration / amount of menstruation.
3. Infertility
4. Cervical polyp – excessive white PV discharge.
5. Torsion of subserous pedunculated fibroid.

DIAGNOSIS

Transabdominal / Transvaginal sonography for estimating size, site and number.

TREATMENT

Laparoscopic or transabdominal removal of fibroid (myomectomy). Medically – Injection Lupride Depot.

Is Fibroid Recurrent?

Once removed, it does not recur but fibroids can occur at other sites.

Is it possible to conceive after myomectomy?

If fibroid was cause of infertility, myomectomy can help conception.

In a case infertility, husband's semen analysis is an important investigation. It is necessary to evaluate the sperm count, motility & Power; hence Sperm Qualitative Analysis (SQA) is required.

ROLE OF MALE PARTNER

During sexual intercourse, there is engorgement of blood vessels of the penis in male causing it to be elongated and erect. Erection lasts for 20 – 25 min, during which the penis enters the vagina and at the peak of orgasm, semen is released.

In many males, inspite of willingness for intercourse, erection fails to occur (Impotency) or Premature ejaculation occurs. These need to be investigated. If there is an orgasmic problem, then those need to be evaluated and treated accordingly.

SPERM TRANSPORT

From the time of formation upto release a sperm takes 72 days. After formation in the testes, the sperm reaches epididymis, then to the vas=>ejaculatory ducts=> urethra=>deposition in vagina. The seminal vesicles and paraurethral glands add to the quantity of semen by secreting fluid.

A sperm can last in the female genital tract for only 24 hours during which it can fertilize the egg.

INVESTIGATIONS:

1. Semen – Routine.
 2. Semen – SQA.
 3. Semen culture in case of Pus cells.
- If the sperm count is $<10 \times 10^6$ / ml then the following investigations are needed:
- S. FSH
 - S. TSH / S. Prolactin
 - Colour Doppler sonography of scrotum to evaluate Testes size (volume), epididymis, varicocele, etc.
 - After evaluating the cause, treatment in the form of oral tablets / injections or surgery is advised.
- If sperm count is $<20 \times 10^6$ => IUI is advised.
 $<10 \times 10^6$ => IVF is best.

Q-1 What is the best time for intercourse for conceiving?

Ans. If cycles are regular (28days), best time is between 11 – 17 days that is 3 days before and after ovulation.

Q-2 Why seminal fluid comes out of after sexual intercourse?

Ans. As vagina is a potential space, after penis is withdrawn, the space closes down and therefore the seminal fluid that is in excess comes out.

Q-3 Should pillows be kept below buttocks after intercourse?

Ans. As far as conception is concerned, keeping pillow does not cause any significant difference.

Q-4 Does increasing the frequency of sexual intercourse increase the chances of pregnancy?

Ans. 2 – 3 times in a week is the optimum frequency required.

Q-5 What is the minimal amount of semen required for pregnancy?

Ans. 1.5 – 2 ml of semen is the optimum amount required.

Q-6 Does masturbation have any effect on conception?

Ans. No, masturbation does not have any effect on conception, the quality of sperms is also not affected.

Q-7 When should vaginal tablets be inserted when prescribed?

Ans. Always after having intercourse.

Q-8 What should be done, when a successful timed intercourse is not possible?

Ans. The couple mainly requires to be in a relaxed mood, for which they need to prevent over exertion on that particular day. If this does not work, psychotherapy can be tried in the subsequent cycles.

Q-9 Does stress have any role on ovulation?

Ans. Ovulation does get hampered because of stress.

Q-10 Do tension, stress or negative thinking affect treatment?

Ans. Yes, tension, stress or negative thinking affect both the partners' treatment eg. After IVF baby, sometimes natural conception has occurred. This is due to decrease in stress, tension caused by infertility. So positive thinking, meditation, pranayam, yoga will definitely help treatment.

Q-11 What is effect of thyroid disorders on ovulation?

Ans. In case of hypothyroidism, anovulation occurs because of the menstrual disturbances. Treatment is by tablet thyroxine. Hyperthyroidism causes menorrhagia and anovulation. Subclinical hypothyroidism also has to be treated as it also causes anovulation.

Q-12 What is the effect of hyperprolactinaemia on ovulation?

Ans. It causes disturbances in the ovulation, which has to be treated with tablet cabergoline which can be taken orally.

Q-13 How are obesity and infertility related?

Ans. Obesity is usually associated with polycystic ovarian syndrome and thus anovulation. Obesity leads to increased levels of estrogen in peripheral tissue and thus causes anovulation. Obesity is also associated with insulin resistance, diabetes, hypertension and thus the pregnancy outcome is also affected.

Q-14 Do regular periods mean that ovulation is always occurring?

Ans. No, this does not mean that ovulation always occurs.

Q-15 I get scanty periods and am putting on weight – is that the reason of my not conceiving?

Ans. The amount of bleeding depends on the quality and thickness of the endometrium. Obesity (overweight) is usually associated with hypothyroidism and PCOD which causes anovulation.

Q-16 What is polycystic ovarian syndrome?

Ans. Polycystic ovaries contain many small follicular cysts. The cysts are quite small about 8 mm. Ultrasound allows an accurate diagnosis – presence of necklace like pattern of follicular cysts in ovaries.

Causes of PCO is believed to be an inability of ovaries to produce hormones in correct proportion, in response to which abnormal amounts of LH and FSH are released, which lead to persistent anovulation.

Symptoms

1. Menstrual bleeding problems – irregular periods usually after long gaps or amenorrhoea.
2. Infertility.
3. Obesity.
4. Skin problems – acne on face and back, or unwanted hair on face, chest, arms, legs (hirsutism).

Treatment is by induction of ovulation.

Q-17 What is endometriosis?

Ans. In this ectopic endometrial tissues grows outside the uterus and is a progressive disease.

It is seen in 5 – 10% of women in the reproductive age group and 25 – 35% of infertile women have endometriosis.

Symptoms

- 1) Pain in the lower abdomen – increases around menstruation
- 2) Dysmenorrhoea especially which begins after years of relatively pain free menses.
- 3) Dyspareunia.
- 4) Menstrual irregularity.
- 5) Infertility -
Mechanism :
 - Tubal dysfunction, tubal occlusion, peritubal adhesions.
 - Dyspareunia

- Excessive destruction of ovarian tissues or replacement by endometrial cysts interfere with the ovulation.
- Intraperitoneal inflammation
- Alterations in immune system
- Luteal phase defect
- Luteinized unruptured follicle syndrome.

Surgical treatment

- to restore normal anatomy and fulgurate as much of the endometriosis as possible.

Indicated in

- Adhesive disease
- Large endometriomas (>2cms)
- Involvement of other organs.

Medical treatment is with Luperide depot followed by induction of ovulation.

Q-18 What are the common causes of tubal block – pelvic inflammatory disease?

Ans. <u>Organisms</u>	<u>Causes</u>
Neisseria gonorrhoea	unprotected intercourse
Chlamydia trachomatis	poor hygiene of pvt. Parts
Mycobacterium tuberculosis	poor toilet habits
Mycoplasma hominis	multiple sexual partners
Bacteriodes fragilis	illegal abortions, septic
B-hemolytic streptococcus	abortions, etc.

Q-19 What is Asherman syndrome?

Ans. This condition usually is the result of curettage following pregnancy resulting in intrauterine scarification. These patients can present with amenorrhoea, hypomenorrhoea, dysmenorrhoea, abortions. The adhesions may be partial or complete and can occur following curettage, uterine surgery.

Q-20 How does a foreign body in uterus prevent

pregnancy?

Ans. The foreign body often found are the remaining bones of the fetus from a previous abortion or forgotten IUD, or stick used for illicit abortion – which acts as an intrauterine device and prevent implantation. Sometimes these may block the cornual end and thus cause tubal blockage.

Q-21 What is the role of D & C in infertility management?

Ans. With the advent of ultrasonography, endometrial study is possible and D & C is no longer required for the same and per se D & C does not help in conception.

Q-22 Role of diagnostic laparoscopy in infertility?

Ans. With other diagnostic methods such as sonography, sonosalpingography, Hysterosalpingography, diagnostic laparoscopy has a very limited role, and whenever done it should be along with operative video-laparo-hysteroscopy.

Q-23 On HSG the diagnosis was that the tubes are blocked but on laparoscopy they were found to be patent. Can that be possible?

Ans. Yes, it is possible because of tubal spasm which is known to occur during HSG.

Q-24 Does HSG help in conception?

Ans. No, it is mainly a diagnostic procedure but in some cases it acts as a mechanical lavage for the tubes, dislodging the mucus plug and thus allows a conception.

Q-25 Some say that because of lot of heat within my body, I do not conceive – is it so?

Ans. No, its basically the hormonal imbalance which requires to be investigated and treated.

Q-26 I had used O.C. Pills for the initial one year after marriage. Everyone in my family say that due to that i am not conceiving – is it so?

Ans. No, it is proved now that fertility rate is normal following discontinuance of O.C. pills. The patient needs to be

investigated if she remains amenorrhoeic 6 months after discontinuing O.C. pills which is known as Post Pill amenorrhoea.

Q-27 How does clomiphene citrate act?

Ans. CC causes an initial rise in FSH which is critical for initiation of folliculogenesis. Once follicular development is initiated it may continue as it does in a spontaneous ovulatory cycle despite declining FSH levels. The resultant increase in plasma estrogen levels triggers the LH surge and ovulation.

Q-28 What is the role of anti-oxidants in cases of oligoasthenozoospermia?

Ans. Antioxidants are a non specific therapy, when added in culture media have shown to improve the quality and motility of sperms.

Q-29 What is the role of antisperm antibodies?

Ans. With the advent of ICSI, steroids, condoms and abstinence are no longer recommended for treatment of antisperm antibodies.

Q-30 What is the place of Testicular biopsy in male infertility?

Ans. Testicular biopsy should not be a routine investigation. It is indicated in the following cases – FSH is normal, Testicular volume is moderate to good, when some block is suspected and corrective measures are to be opted for.

Q-31 Do gonadotrophins have a role in oligozoospermia?

Ans. Yes, when the cause is hypogonadotrophic hypogonadism.

Q-32 Does the age in male have an effect on fertility rates?

Ans. No it does not have an effect.

Q-33 What is the role of colour Doppler sonography in male infertility?

Ans. 1. Scrotal US for assessing the testes, epididymis.

2. Diagnosis and grading of varicocele.
3. Doppler assessment of varicocele.
4. Colour Doppler study of Penile vessels for evaluation of Impotence.

Q-34 What are the results with a varicocele operation?

Ans. 50 – 60% of the varicocele patients show a dramatic response after surgery, but not all. Best results of the surgery are seen in patients whose FSH levels are normal and testicular size is normal.

Q-35 Why is transvaginal sonography preferred over abdominal sonography in ovulation study?

Ans. TVS vs TAS in ovulation monitoring:

1. Visualisation of an ovary that may be partially obscured in the pelvis. The TV probe is closer to the ovary providing higher resolution imaging of the follicles and follicular contents allowing for more accurate assessment of follicular maturation.
2. Scheduling not a problem as full bladder not required thus compliance is increased
3. Also application of the technique is best for aspiration of oocytes and follicular fluid.

Q-36 What is the effect of Heat, Radiation, Toxins, Alcohol and smoking on semen?

Ans. Heat – slight increase in scrotal temperature can adversely affect spermatogenesis, seen in truck drivers, working with boilers, etc.

Radiation & Toxins(Industrial & Environmental)

- Show lower sperm counts.

Smoking – decreases sperm motility.

Alcohol – decreases sperm count.

Q-37 How does the coital frequency affect the semen quality?

Ans. Count may be depressed to below normal by ejaculation daily or more frequently. Abstinence for more than 4 days

increases the sperm number however sperm motility decreases. Abstinence for 2 – 3 days gives optimum count and motility.

Q-38 Can my wife become pregnant with my semen count of 4 million per ml?

Ans. Yes, only 1 sperm with good motility is actually required for fertilization, so it is not that she can never become pregnant.

Q-39 Can IUI be done with unprepared semen?

Ans. No, because this can act as a source of infection and also cause reactions because of its content of proteins, prostaglandins.

Q-40 Is it that a baby conceived by IUI is not a normal, because it was not by the natural way?

Ans. No it is not so, as IUI mimicks the normal way of fertilization.

Q-41 What is the advantage of breaks in between cycles while taking treatment for infertility?

Ans. CC has a half life of 6 weeks, and thus it may act even in the next cycle. Also the stress and cost are reduced.

Q-42 Why few of patients conceive without treatment?

Ans. 8% of couples with unexplained infertility conceive within 8 years without any treatment as the anovulatory cycle may become ovulatory and the abnormal semen also gets corrected and stress is also relieved.

Q-43 I am supposed to be normal and my husband's count was around 40 million. I had undergone 4 cycles of IUI but did not conceive. I am very desperate for a child, should I go in for IVF?

Ans. Results also depend on quality of sperms and if age is not the factor you can undergo about maximum of 6 cycles of IUI with a minimum of 3-4 before opting for IVF.

Q-44 I have a child of 6 years after which I have not conceived inspite of not using any contraception. What could be the possible cause?

Ans. The possible causes could be a tubal block and secondly your cycles could be anovulatory.

Q-45 If I have to go in for IVF these days there are many IVF centres. How can I decide which centre is ideal for me and where I can get my money's worth?

Ans. 4 factors would decide this –

- a. Experience and knowledge of gynaecologist.
- b. Quality control of the centre.
- c. Experience and knowledge of embryologist.
- d. Ethical practice.

Q-46 When is ICSI indicated?

Ans. When there is repeated failure of IUI /IVF and when the count is low, less than 1 million.

Q-47 I had conceived in my first cycle of ICSI but it was an ectopic. I underwent an operative laparoscopy for it. After how much time interval, should I try again?

Ans. After a period of 4-6 months, that is idea, this will also relieve the stress factor which will affect the outcome.

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**“God cannot be everywhere
that is why he created Mother”**



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