



Infertility in Women

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ABSTRACT:

Anovulation female infertility caused by anovulation is called "anovulator infertility" as opposed to "ovulatory infertility" in which ovulation is present. Diminished ovarian reserve is present over time, also see Poor Ovarian Reserve Premature menopause. menopause Luteal dysfunction Problems with ovulation are the most common reasons A common cause for infertility in women. age hormonal imbalance, weight, exposure to chemicals or radiation & cigarette smoking all have an impact on fertility. Fertility problems originate Around 30% of Fertility in the common. Female fertility problems include irregular ovulation, blockages the fallopian tubes & abnormalities of the uterus endometriosis. such as fibroids and endometriosis. Treatment options include Clomiphene treatment & IVF (in-vitro fertilisation) hormone treatment and IVF (in-vitro-fertilisation)

Introduction: [6] [13]

- **Introduction of Female Infertility**

Infertility means not being able to get pregnant after at least one year of trying (or 6 months if the woman is over age 35). If a woman keeps having miscarriages, it is also called infertility. Female infertility can result from age, physical problems, hormone problems, and lifestyle or environmental factors.

- **Infertility**

In general, infertility is defined as not being able to get pregnant (conceive) after one year (or longer) of unprotected sex. Because fertility in women is known to decline steadily with age, some providers evaluate and treat women aged 35 years or older after 6 months of unprotected sex.

- **There Are 2 Types of Infertility:**

Primary infertility refers to couples who have not become pregnant after at least 1 year having sex without using birth control methods. Secondary infertility refers to couples who have been able to get pregnant at least once, but now are unable to do.

- **Types of Infertility**

There are 2 types of infertility:

1. **Primary Infertility** - where someone who's never conceived a child in the past has difficulty conceiving.
2. **Secondary Infertility** - where someone has had 1 or more pregnancies in the past, but is having difficulty conceiving again. Scarring from surgery. Pelvic surgery can damage and scar the fallopian tubes, which link the ovaries to the womb....

- Cervical mucus problems....
- Fibroids....
- Endometriosis. ...
- Pelvic inflammatory disease. ...
- Sterilisation....
- Medicines and drugs.

- **EXAMPLE OF FEMALE INFERTILITY**

Female fertility problems include irregular ovulation, blockages in the fallopian tubes, and abnormalities of the uterus such as fibroids and endometriosis. Treatment options include surgery, hormone treatment and IVF (in-vitro fertilisation).

- **female infertility treatment**

Fertility drugs are the main treatment for women who are infertile due to ovulation disorders. Fertility drugs generally work like natural hormones - follicle-stimulating hormone (FSH) and luteinizing hormone (LH) — to trigger ovulation.

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- **Normal Female Fertility**

A woman in her early to mid-20s has a 25-30% chance of getting pregnant every month. Fertility generally starts to reduce when a woman is in her early 30s, and more so after the age of 35. By age 40, the chance of getting pregnant in any monthly cycle is around 5%.

- **Effects Of Infertility**

If conception does not occur, it can lead to stress and possibly depression. Some physical effects may also result from treatment for infertility. For example, a female could get ovarian hyperstimulation syndrome (OHSS) from taking medications to stimulate the ovaries. Another complication can be an ectopic pregnancy.

- **Affects Female Fertility**

A number of lifestyle factors affect fertility in women, in men, or in both. These include but are not limited to nutrition, weight, and exercise; physical and psychological stress; environmental and occupational exposures; substance and drug use and abuse; and medications.

- **How many infertility are there**

Around 17.5% of the adult population - roughly 1 in 6 worldwide - experience infertility, showing the urgent need to increase access to affordable, high-quality fertility care for those in need.

- **Woman Fertility Rate By Age**

Of all live births in the United States during 2018-2020 (average), 4.6% were to women under the age of 20, 47.5% were to women ages 20-29, 44.4% were to women ages 30-39, and 3.5% were to women ages 40 and older.

- **Level Of Fertility**

Age-specific fertility rate: Annual number of births per woman in a particular age group expressed per 1000 women in that age group. children per woman. Replacement-level fertility:

High fertility: Total fertility levels above 5 Total fertility levels of about 2.1 children per woman.

- **Factors Associated With Increased Fertility**

1. The mother's preference of family size, which influences that of the children through early adulthood...
2. Social pressure from kin and friends to have another child.
3. Social support. ...
4. Happiness, with happier people tending to want more children.
5. A secure housing situation.

Objectives:

- To list the diagnostic criteria.
- Relevance to research in related areas such as fertility trends and reproductive health.
- To suggest policy measures to address issue related to infertility treatments.
- To examine the extent of childlessness and infertility among married women in India.
- To examine the treatment seeking behaviour among the infertile married women/couples.
- For detection and highlighting risk factors and to identify and treat women's with endometriosis earlier.
- To individualized and take into consideration the impact of the condition on quality life.
- The problem of infertility is a rising issue in India and it needs to be uncovered.

- The women who is infertile is considered as a curse to the society as well as family, to let them know the causes of infertility.
- To gain knowledge regarding the extent of infertility and the treatment seeking behaviour among married women in India.

5. **Some diseases related to infertility:**

Pathophysiology:

Endometriosis: [7]

A disorder in which tissue that normally lines the uterus grows outside the uterus. With endometriosis, the tissue can be found on ovaries, fallopian tubes or the intestines.

Ayurvedic treatment for endometriosis is the safest way to get relief from the symptoms of endometriosis is like heavy bleeding and severe pelvic pain etc.

The internal lining of the uterus is made up of cells called endometrial cells. These cells are discarded every month during menstrual. Sometimes these cells attach to the tissue, which present outside the uterus called endometrial implants. These implants leads to an unbearable condition called Endometriosis.

Endometriosis affect most of the women in their reproductive age. The cause of infertility is endometriosis in 25-35% females. About 30-45% of cases painful menses are because of endometriosis. Endometriosis is rare in post menopausal females.

A) Causes of Endometriosis: [6]

The exact cause of endometriosis is unidentified. But some theories suggest possibilities of these underlying cause-

1. Unprogressive menstruation.
2. Abnormal growth of embryonic cells.
3. Transportation of endometrial cells through blood or lymphatic.
4. Loss in immunity.
5. History of endometriosis in family.
6. Toxins in the environmental leads an imbalance in hormones.
7. Condition associated with chronic stress.

B) Root causes of endometriosis:

Although the exact cause of endometriosis is not certain but the possibilities includes:

a. Retrograde Menstruation:

In retrograde menstruation, menstrual blood containing endometrial cells flows back through the fallopian tubes and into the pelvic cavity instead of out of the body. These endometrial cells stick to the pelvic walls and surfaces of pelvic organs, where they grow and continue to thicken and bleed over the course of each menstrual cycle.

b. Transformation of peritoneal cells:

In what's known as the "induction theory," experts propose that hormones or immune factors promote transformation of peritoneal cells — cells that line the inner side of your abdomen — into endometrial- like cells.

c. EMBRYONIC CELL TRANSFORMATION: Hormones such as estrogen may transform embryonic cells — cells in the earliest stages of development — into endometrial-like cell implants during puberty.

d. Surgical scar implantation :

After a surgery, such as a hysterectomy or C-section, endometrial cells may attach to a surgical incision.

e. ENDOMETRIAL CELL TRANSPORT: The blood vessels or tissue fluid (lymphatic) system may transport endometrial cells to other parts of the body.

f. IMMUNE SYSTEM DISORDER: A problem with the immune system may make the body unable to recognize and destroy endometrial-like tissue that's growing outside the uterus.

C) Symptoms:

Some common symptoms of endometriosis are as followed:

1. Severe, debilitating abdominal cramps.
2. The tissues is not cancerous , but it can lead to scarring and adhesion.
3. It may affect a person's chances of becoming pregnant.
4. nausea and vomiting
5. Constipation
6. Increase in urinary frequency.
7. Endometriosis is first diagnosed in those seeking treatment for infertility.
8. Pain during or after sex is common with endometriosis.
9. lower back and abdominal pain
10. It may have irritable bowel syndrome.

D) Genetic inheritenc:

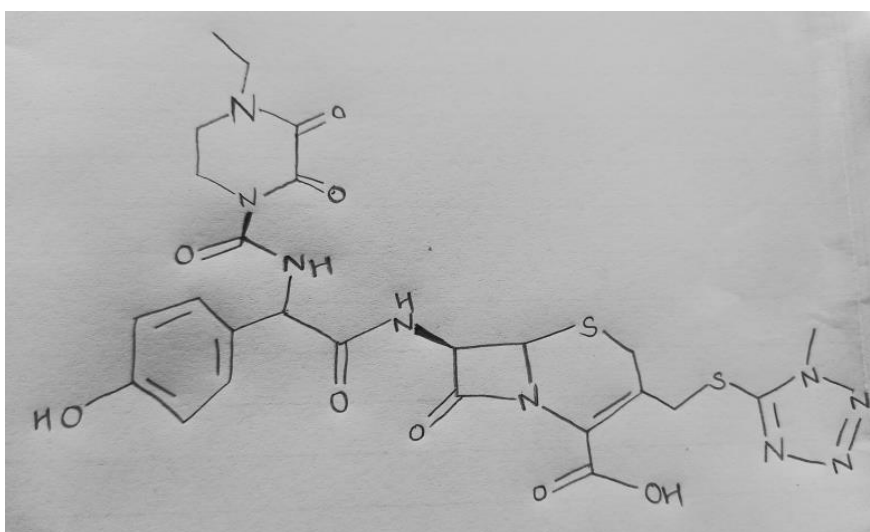
The genetic of endometriosis is complex and remains unexplained, however most investigators feel that it is inherited in a polygenic or multifactorial mode. The polygenic or multifactorial type of inheritance occurs when phenotype is determined by a combination of multiple genes and environmental effects.

E) Some common drugs used in endometriosis:

A) Cefoperazoene sodium injection:

Cefoperazone sodium injection is an Cephalosporin antibiotic prescribed for Infections such as respiratory tract infection, urinary tract infection, infection of skin, pelvic inflammatory endometritis and other infection.

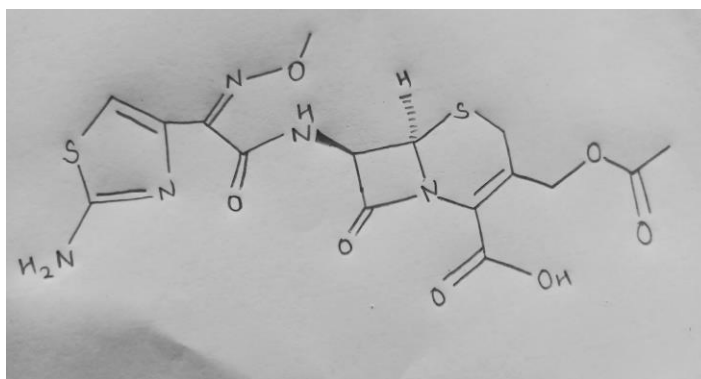
Trade name: ceprazo, novacip, myticef etc



B) Cefotaxime:

Cefotaxime is an antibiotic which is basically Known as Cephalosporin antibiotic which is prescribed for skin infection, respiratory tract infection, pelvic inflammatory diseases, endometritis etc

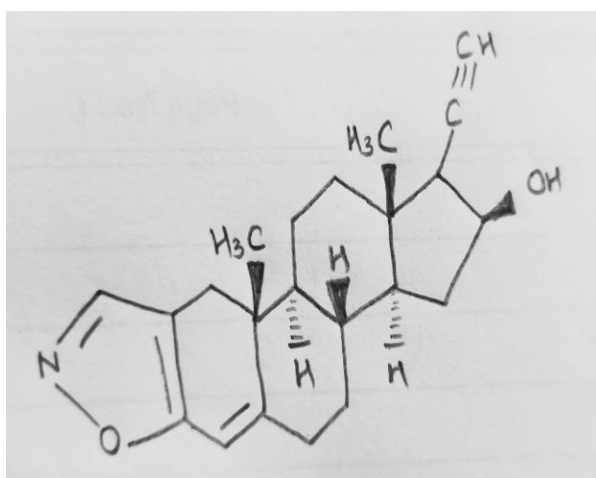
Trade name : ceftax, ominax neonatal , antax etc.



C) Danzol:

Danzol is a synthetic steroid, prescribed for endometriosis and hereditary angioedema.

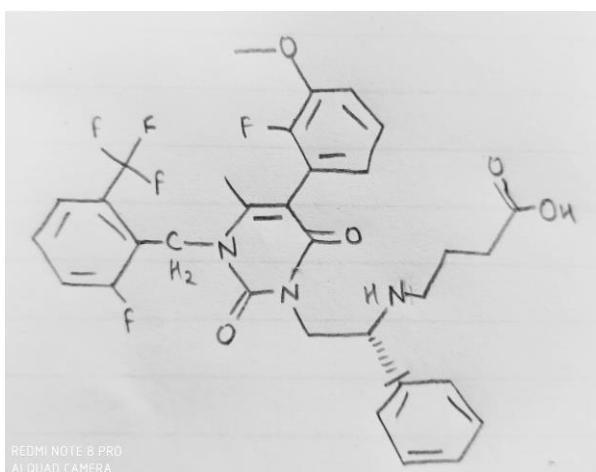
Trade name : Endozol(100mg), Benzol (100mg), Gynazol(100mg). etc



D) Elagolix:

Elagolix tablets are prescribed to manage moderate to severe pain associated with endometriosis in premenopausal women. Elagolix helps to reduce the symptoms of menstrual and non menstrual pelvic pain, and pain that occurs during sexual intercourse.

Elagolix belongs to a class of drug that reduces the female sex hormones called progesterone and estrogen. It is medically a gonadotropin-releasing hormone antagonist that works by blocking the signals of gonadotropin-releasing hormone resulting in suppression of follicle stimulating hormone (FSH) and luteinizing hormone (LH) and thereby reducing blood levels ovarian sex hormones, progesterone and estradiol.



F) Surgical treatment for Endometriosis:

In severe cases of endometriosis most can be treated with laproscopic surgery. In laproscopic surgery, a surgeon insert a slender viewing instrument (laproscope) through small incision near your navel and inserts instruments to remove endometrial tissue through another small incision.

a) Hysterectomy:

This is a surgical process for the removal of endometrial tissue and uterus, with or without the ovaries. A treatment is controversial. A hysterectomy is a major type of surgery with permanent effects, and it's not always a cure, the condition and the related pain may return.

Types of Hysterectomy:

A hysterectomy may be done abdominally, laproscopically or vaginally. There are three types of this technique which are as followed;

Partial hysterectomy. In this procedure, also known as a supracervical hysterectomy, the uterus is removed but not the cervix.

Total hysterectomy. The entire uterus, including the cervix, is removed.

Hysterectomy and salpingo-oophorectomy. The uterus and one or both ovaries and fallopian tubes are removed.

b) Ablation technique:

Endometrial ablation is a procedure in which the lining of the uterus (endometrium) is surgically destroyed (ablated). The goal of endometrial ablation is to reduce menstrual flow. In some women, menstrual flow may stop completely. No incisions are needed for endometrial ablation.

. Polycystic ovarian syndrom (PCOS) :[9]

These is also kind of disorder in which women get many pregnancy complications, and even infertility. Polycystic ovarian syndrom is a hormonal disorder in which the ovaries are enlarged in size and their are small cyst on the outer edges. Women's with PCOS may have infrequent or prolonged menstrual periods or excess of male hormones (androgen) levels. The ovaries may develop numerous small collection of fluids (follicles)and fail to regularly release eggs. PCOS is one of the most common but treatable type of infertility. The problems of ovulation are usually the primary cause on infertility in women with PCOS . Due to more production of testosterone and ovulation may not occur , because follicles on the ovaries do not mature.

A) Pregnancy complications in women with PCOS: [16]

Many studies has been performed comparing pregnancy outcomes in women with PCOS versus controls;

1. Miscarriage (Early loss of pregnancy) :

women with PCOS are three times as likely to miscarry in early month of pregnancy as women without PCOS. Some research shows that metformin may reduce the risk of miscarriage in pregnant women with PCOS.

2. Gestational Diabetes mellitus:

Women who do not get pregnant with the condition, however has the higher risk of gestational diabetes. This is because this condition is associated high blood sugar and insulin resistance. Women with PCOS are often insulin resistance their body can make insulin but can't use it effectively , increasing their risk of type 2 diabetes at the age till 40. Lifestyle can have a big impact on insulin resistance , especially if a women is overweight because of an unhealthy diet, and lack of physical activity.

3. Pregnancy induced hypertension and preeclampsia:

preeclampsia is a sudden increase in blood pressure after 20th week of pregnancy, can effect the mother kidney , liver, and brain. If left untreated preeclampsia can turn into eclampsia . Eclampsia can change cause organ damage , seizures and even death. Hypertension condition is due to increase in blood pressure that may occur in second half of the pregnancy. This type of high blood pressure can also effect delivery of the baby.

4. Offsprings Health:

Children born to the mother with PCOS are considered to be at increased risk of developing endocrine and cardiovascular dysfunction. Born to a mother who has suffered pregnancy complication may increase, the risk of metabolic abnormalities such as obesity and early IR, in PCOS offspring. Women with PCOS are considered to have a reduced breastfeeding rate that resulted significantly related to mid pregnancy androgen level.

B) Root causes of pcos: [9]

The exact cause of pcos is not known still . The factors that may play role include :

a) Excess insulin:

Insulin is the hormone produced in the pancreas that allows cells to use sugar, your body's primary energy supply. If your cells become resistant to the action of insulin, then your blood sugar levels can rise and your body might produce more insulin. Excess insulin might increase androgen production, causing difficulty with ovulation.

b) Low grade inflammation:

This term is used to describe white blood cells' production of substances to fight infection. Research has shown that women with PCOS have a type of low-grade inflammation that stimulates polycystic ovaries to produce androgens, which can lead to heart and blood vessel problems.

c) Excess Androgen:

The ovaries produce abnormally high levels of androgen, resulting in hirsutism and acne.

d) Genetic inheritance:

Polycystic ovary syndrome does not have clear pattern inheritance, although affected individuals may have close family members with the same condition. It is seen that 20 to 40 percent of women with polycystic ovary syndrome have an affected mother and sister. The condition of PCOS can be passed from mother side and father side or from both.

C) Causes of polycystic ovarian syndrome(PCOS) :[6]

The exact cause of PCOS is unknown. Early diagnosis and treatment along with weight loss may reduce the risk of long term complications such as type 2 diabetes, and heart disease.

Gene insulin resistance and inflammation have all been linked to excess androgen production.

Obesity is the major cause of insulin resistance. Both obesity and insulin production can increase the risk of type 2 diabetes.

D) Symptoms of PCOS:

Some women start seeing the symptoms around the time of their first period. The other women only illustrate that they have PCOS after they have gained weight and they are facing problems to get pregnant.

The most common PCOS symptoms are:

a) Irregular periods:

If a woman is facing the problem of PCOS, there is a lack of ovulation which prevents the uterine lining from shedding every month. Some women with PCOS get fewer than eight periods a year or none at all.

b) Heavy Bleeding :

The uterine lining builds up to a longer period of time, so that the period that a woman may get can be heavier than normal.

c) Hair growth:

More than 70% of women facing the problem with the condition of hair growth on their face and body, including their chest and belly, back. Excess hair growth is called as hirsutism.

d) Acne:

Male hormones make the skin oilier than usual and causes breakout on areas like face, chest and upper back.

e) Weight gain:

Up to 80% of women with PCOS are overweight or have obesity.

f) Darkening the skin :

Dark patches of skin can form in body creases like those on the neck in the groin and under the breast.

E) Diagnostic criteria for PCOS: [16]

Doctors typically diagnose PCOS in women who have at least two of these three symptoms:

- a) High androgen
- b) Irregular menstrual cycles
- c) Cysts in ovaries.

Doctors also check whether the woman has acne, facial and body hair growth and weight gain. Blood tests check for higher than normal levels of male hormones. The doctor may also have a blood test to check the cholesterol, insulin and triglyceride level to evaluate the risk-related conditions like heart disease and diabetes. The ultrasound uses sound waves to look for abnormal follicles and other problems with the ovaries and uterus.

F) Surgical methods for diagnosis of PCOS: [16]

Surgery can be the other option for the treatment of PCOS or to improve infertility if other treatments don't work. Ovarian drilling is a procedure that makes tiny holes in the ovary with a laser or thin heated needles to restore the normal ovulation. The other technique is Laparoscopy. In this technique, a 3 cm incision is made on the abdomen. The laparoscope (type of rod-like device, which is thin in size) is used to insert into the abdomen to see the cyst on the ovaries. It breaks the cyst into small pieces.

G) Drugs Or medicaments used in the treatment of pcos: [18]

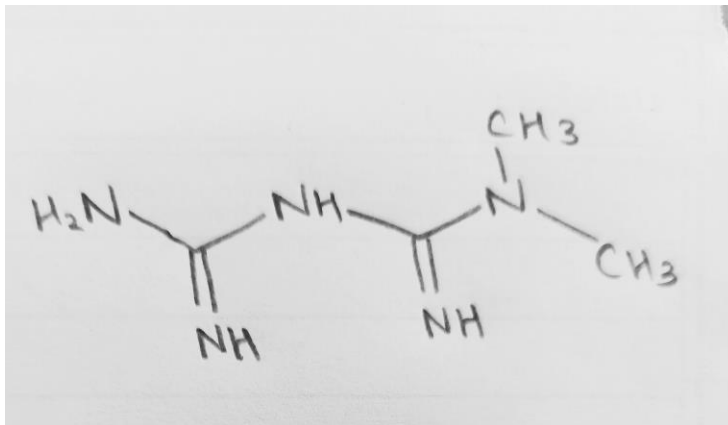
Birth control pills and other medicaments can help to regulate the menstrual cycle and treat the pcos symptoms like acne, and hair growth.

a) Birth control pills:

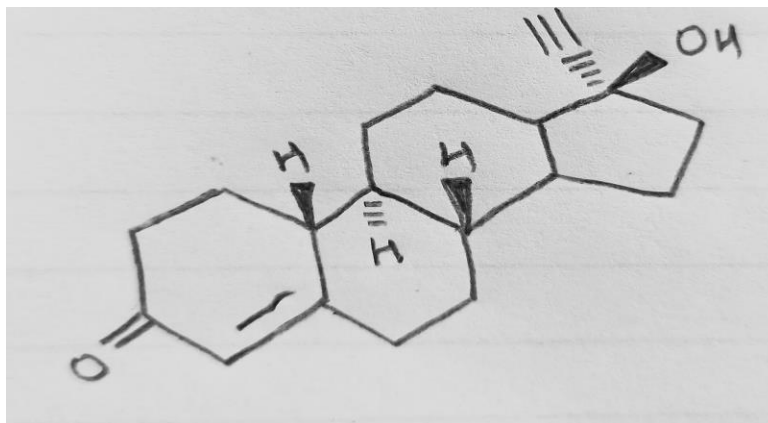
Taking progestin daily can restore a normal hormone balance . It can also regulate ovulation. It can also relieve the symptoms like excess hair growth. The main function of birth control pills is it protects against endometrial cancer. These hormone comes in pills, patches or vaginal ring.

b) Metformin: N- nitrosodimethylamine(NDMA)

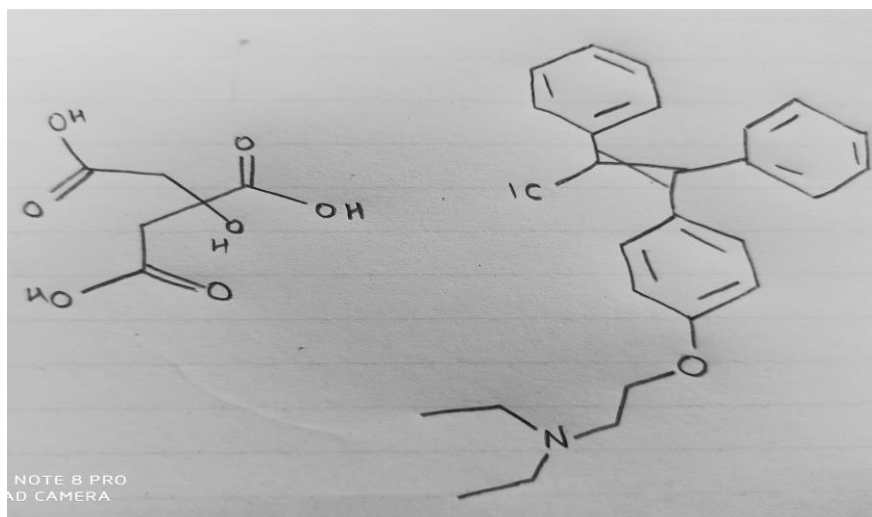
Metformin is a drug used to treat type 2 diabetes . It also treats pcos by improving insuline levels. It is also used to treat pcos.

**c) TAB GYNASET: Norethisterone**

Gynaset is used to restore the hormone levels in body and regulates the growth and shedding of womb lining and helps to treat menstrual problems or disorder.

**d) TAB CLOMIPHEHE: Clomiphene citrate**

Its works by stimulating the release of eggs from ovary . Clomid is used for some type of infertility, in women who are not ovulating properly.



IVF (In-vitro fertilization) :[17]

In vitro fertilization is a complex series of procedures used to help with fertility or to prevent genetic problems and assist with the conception of a child. IVF is the most trust worthy form of assisted reproductive technology. The procedure of IVF can be done using the persons own sperm and a egg. During IVF the mature eggs are collected from ovaries and they are fertilized by the sperm in a lab. After this the fertilized egg or an embryos are trasferred to the uterus . One full cycle of IVF time period is about 3 weeks. The chances of having health baby using IVF depends upon many factors such as the age of both mother and father, and other is the cause of infertility in that women. IVF can be time consuming, expensive, and invasive . If more than one embryo is transferred to the uterus, IVF can be resulted into multiple pregnancy.

A) Why the procedure of IVF is carried out:

IVF is offered as a primary treatment for infertility women over the age of 40. IVF can also be done if the person has certain health issues:

a) Fallopian tube damage or Blockage :

Fallopian tube damage or blockage can make the egg to fertilize or to travell the embryo from ovaries to uterus.

b) Ovulation Disorder:

If the ovulation is absent or infrequent , the fewer eggs are available for fertilization.

c) **Endometriosis** : Endometriosis can occur when the tissue lining of uterus implants and grows outside of the uterus often affecting the function ovaries uterus and fallopian tube.

d) **Uteriene Fibroids**:Fibroids are tumors uterus. Fibroids can interfere with implantation of the fertilized egg.

e) Previous tubul sterilization or removal:

Tubul ligation is a type of sterilization process in which the fallopian tubes are cut or blocked to permanentaly prevent pregnancy. If a couple wish to concieve after tubul ligation , IVF may be the alternative to reverse the tubul surgery.

f) A Genetic disorder:

If a couple is risk of passing on a genetic disorder to their child , may be candidates for preimplantation genetic testing. After the eggs are collected and fertilized, they are checked with some genetic problem, although not all genetic problems are found . Embryos that don't contain identified problems can be transferred to uterus .

B) Risk of IVF :

- a) Multiple pregnancy
- b) Premature delivery and low birth weight.
- c) Ovarian hyperhyperstimulation syndrome Miscarriage
- d) Egg retrival procedure complication
- e) Ectopic pregnancy

- f) Birth defect cancer
- g) Stress

Conclusion:

Infertility is a health problem of considerable socio cultural and economic impact . It should be alleviated by several measures including health education, prevention, early diagnosis etc. History and physical examination and other specific diagnostic test will help to identify the cause of infertility .

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