

Human reproduction

Anne retuerma-Dioneda

Assoc. prof. v

Outline

1. Introduction of infertility
2. Definition of infertility
3. Risk factors of infertility
4. Causes of Infertility in Men and Women
5. Treatment of Infertility
6. Counseling for infertility

INTRODUCTION OF INFERTILITY

- Infertility is a significant **social and medical problem** affecting couples world wide.
- Infertility refers to **an inability to conceive** after having regular unprotected sex.
- Average incidence of infertility is about **15% globally**. (varies in different populations).
- Some causes can be detected and treated, where as others can not:
 - **Unexplained infertility** constitutes about **10 %** of all cases.

- According to [Mayoclinic](#), USA :-
 - [20%](#) cases of infertility are due to a problem in [man](#).
 - [40%](#) to [50%](#) cases are due to [women](#).
 - [30%](#) cases are due to problem in [both](#) men & women.
- In [India](#) , approximately [15% to 20%](#) of couples are [infertile](#).

Infertility in the Philippines:

- One in 10 Filipinos are infertile — survey. Despite having a booming population of more than 100 million, the Philippines still has problems when it comes to infertility: one in 10 Filipinos suffers from it. This is according to a 2013 survey by market research company Synovate, cited by Dr. Virgilio M (Sep 16, 2016)

Infertility

Overview

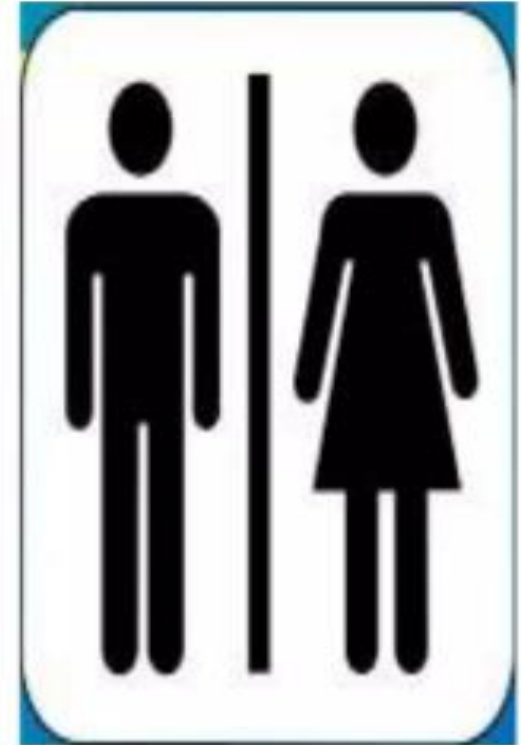
Infertility is a disease/disorder of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. Infertility may occur due to male, female or unexplained factors.

DEFINITION OF INFERTILITY

- Infertility is the failure to achieve a birth ever a 12 months period of unprotected intercourse.

OR

- Infertility is the inability of a sexually active non contraceptive couple to achieve pregnancy in one year.



What causes infertility?

Infertility may be caused by a number of different factors, in either the male or female reproductive systems. However, it is sometimes not possible to explain the causes of infertility.

Men Infertility

1. Sperm disorders
2. Undescended testicles
3. Impotence
4. Damaged sperm ducts
5. Chromosomes
6. Klinefelter syndrome
7. Testicular Trauma
8. Obesity
9. Stress
10. Testicular Cancer
11. Viral mumps orchitis
12. Genetic disorder
13. Infection
14. Drugs/Smoking

Sperm Disorder

Sperm is the most essential part of the male reproductive system. It plays the essential function of fertilizing the egg for initiating the pregnancy. However, the success rate of the pregnancy depends on the quantity and quality of the sperm.

Sperm quality

Sperm can be abnormally shaped, immature, or unable to swim. Abnormal sperm may have trouble penetrating an egg

Sperm quantity

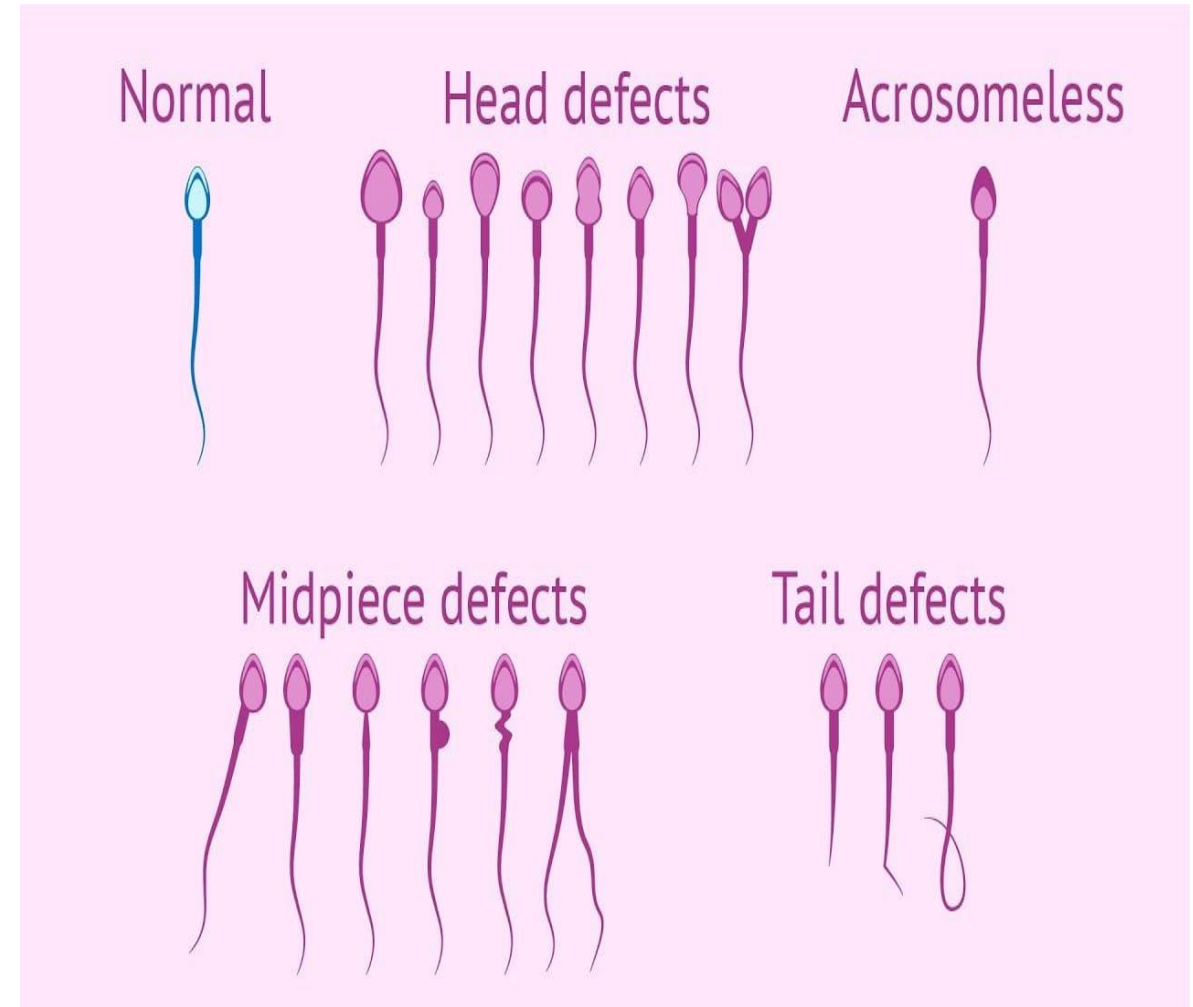
There may be too few sperm, or no sperm at all. This is called low sperm count (oligospermia) or absent sperm (azoospermia)

Semen quality

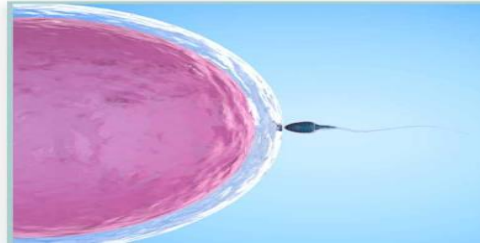
Semen can be poor quality due to a lack of sperm or sperm that aren't moving properly

Types of Abnormalities in Sperm Morphology

- Head Defects**- The genetic material is contained by the head of the sperm. Some of the common head abnormalities include multiple, large, small, tapered, or thin heads.
- Tail Defects**- The defects in the tail can create difficulty for the sperm to swim to the egg. Stump, duplicate, coiled, and multiple tails are some of the tail defects. Sometimes the sperm can also be tailless or with irregular tail thickness.
- Mid-piece Defects**- Energy production and maintaining sperm motility are the main functions of the mid-piece of the sperm. The bent, thin, or irregular shape of the neck and asymmetrical placement of the head are some of the mid-piece defects.



Common Causes of **Abnormal Sperm** Morphology and Treatments



1. **Varicoceles**- an enlargement of the veins within the loose bag of skin that holds the testicles (scrotum). These veins transport oxygen-depleted blood from the testicles. A varicocele occurs when blood pools in the veins rather than circulating efficiently out of the scrotum.
2. **Infections**- When certain urogenital tract, testicular or semen infections are left untreated then it can also contribute to sperm defects.

3. **Lifestyle factors**- If you are suffering from obesity or have a history of smoking, alcohol, and drug use then the risk of developing abnormal sperm morphology also increases.
4. **Hormonal imbalances**- The alterations in the hormones produced by the testicles, hypothalamus, and pituitary not only causes low sperm count but also impair sperm production and creates abnormalities in the shape.
5. **Genetics**- Some of the genetic disorders or traits such as Klinefelter syndrome and cystic fibrosis can influence abnormal sperm morphology.

Undescended testicles- undescended testicles, also known as cryptorchidism, can increase the risk of infertility.

A testicle that does not move down into its proper place in the scrotum before birth is called an undescended testicle.

- One undescended testicle**

- Men with one undescended testicle can still have children, but their fertility is about half of normal. If surgery is performed, especially when the patient is younger, fertility can be close to normal.

- Two undescended testicles**

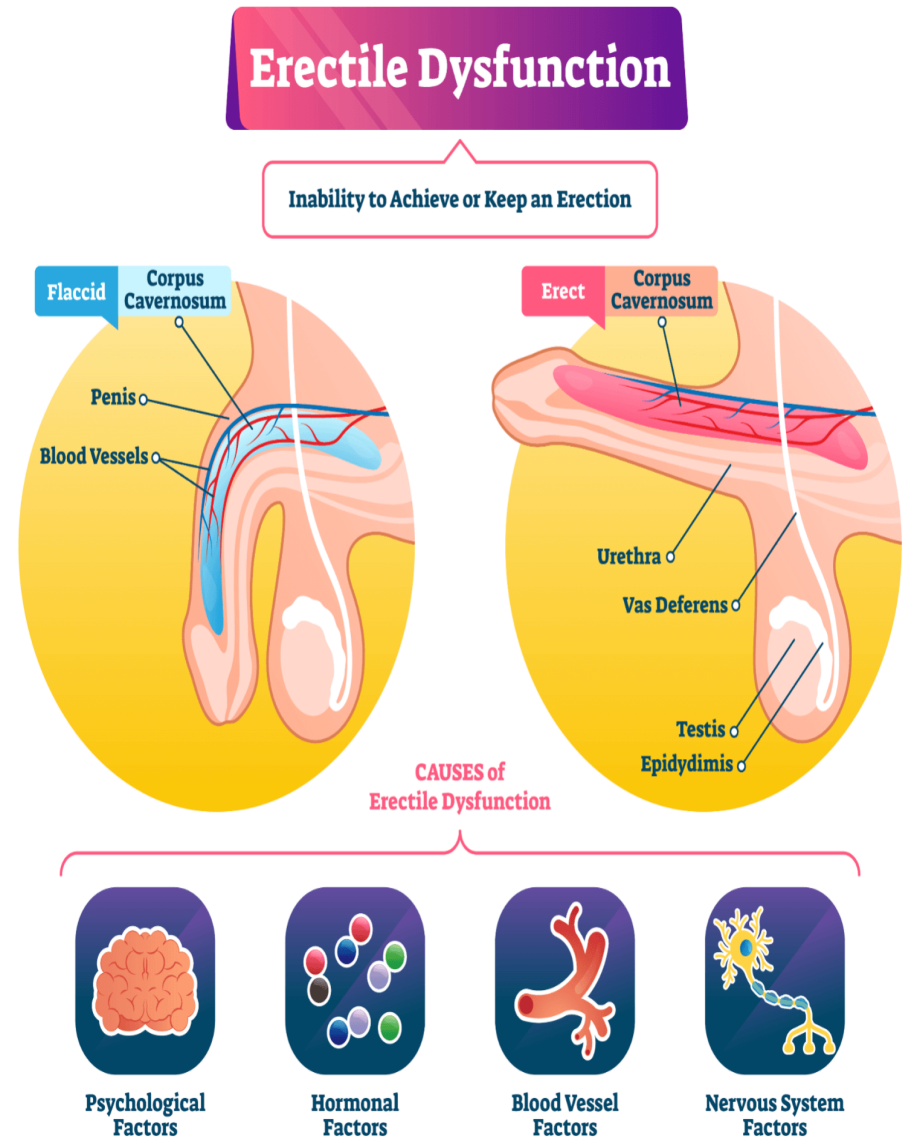
- Men with two undescended testicles are unlikely to be able to have children without treatment. Surgery to move both testicles down can improve fertility, but it won't be normal.



Impotence – is a sexual dysfunction that makes it difficult to get or maintain an erection.

Having erection trouble from time to time is not necessarily a cause for concern.

- If erectile dysfunction is an ongoing issue, however, it can cause stress, affect your self-confidence and contribute to relationship problems.
- Problems getting or keeping an erection can also be a sign of an underlying health condition that needs treatment and a risk factor for heart disease.



Causes

Male sexual arousal is a complex process that involves the brain, hormones, emotions, nerves, muscles and blood vessels. Erectile dysfunction can result from a problem with any of these. Likewise, stress and mental health concerns can cause or worsen erectile dysfunction.

Sometimes a combination of physical and psychological issues causes erectile dysfunction. For instance, a minor physical condition that slows your sexual response might cause anxiety about maintaining an erection. The resulting anxiety can lead to or worsen erectile dysfunction.

Psychological causes of erectile dysfunction

The brain plays a key role in triggering the series of physical events that cause an erection, starting with feelings of sexual excitement. A number of things can interfere with sexual feelings and cause or worsen erectile dysfunction. These include:

- Depression, anxiety or other mental health conditions
- Stress
- Relationship problems due to stress, poor communication or other concerns

Epididymitis

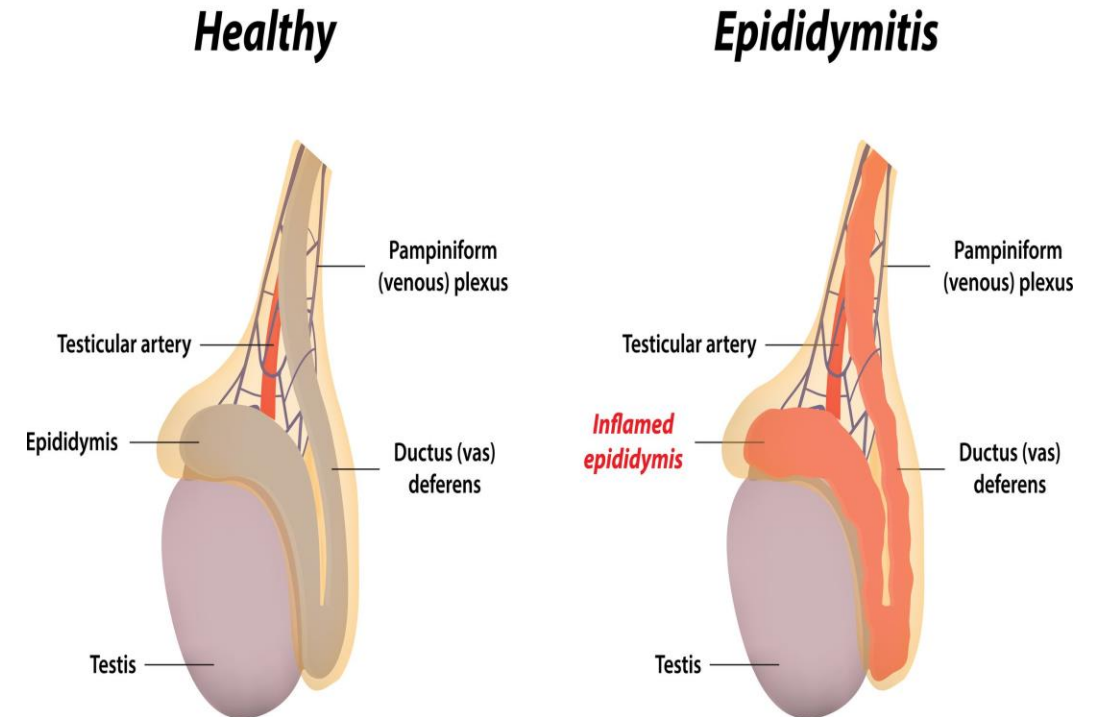
Damage to the sperm ducts can cause male infertility:

- Infections**

- Infections in the seminal ducts can cause direct damage, inflammation, and obstructions. Infections can also lead to the formation of antibodies against sperm.

- Blockages**

- Blockages in the tubes that carry semen can prevent sperm from being ejected. Blockages can be caused by injuries, infections, or birth defects



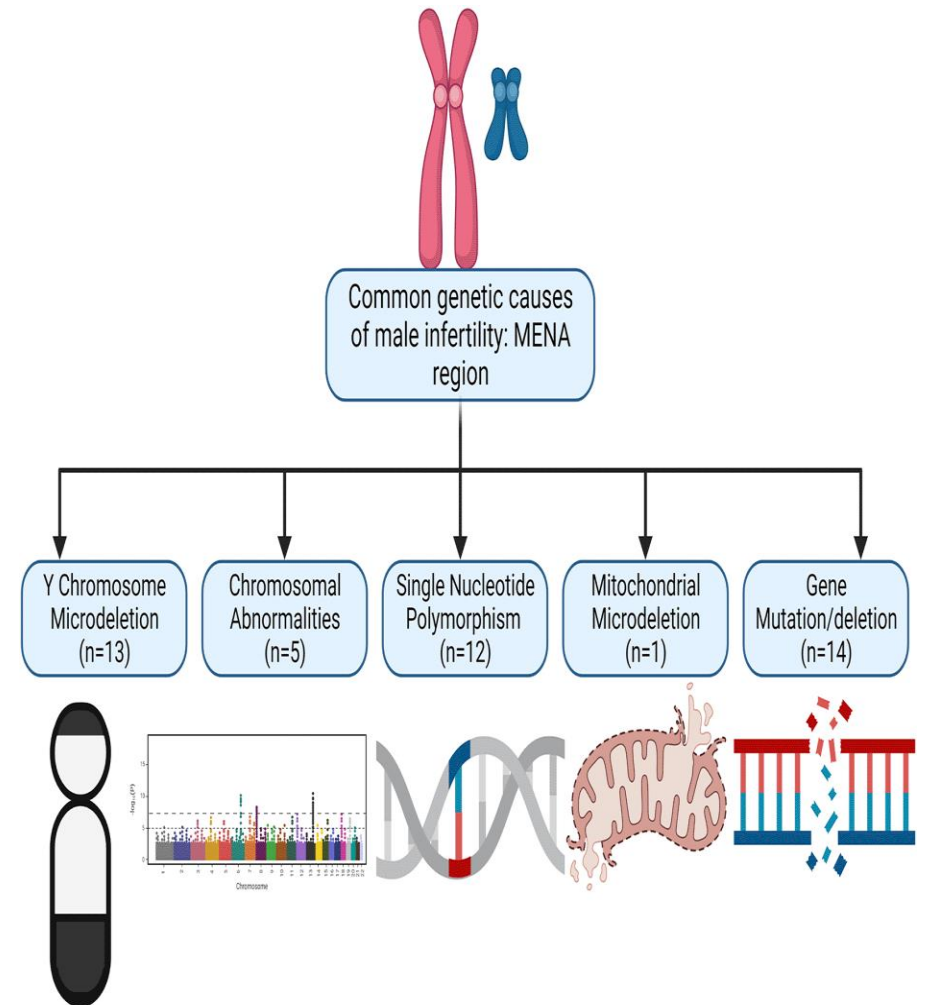
Chromosomes

•Men

•Y chromosome microdeletions, which are when part of the Y chromosome is missing, can cause male infertility. This can lead to azoospermia, which is when there are no mature sperm cells, or oligospermia, which is when there are fewer than the normal number of sperm cells.

•Women

•Chromosomal abnormalities can cause female infertility by impairing ovarian function. This can be due to numerical X chromosome abnormalities, such as Turner syndrome or triple X karyotype, or balanced structural chromosomal rearrangements



What causes infertility in Female?

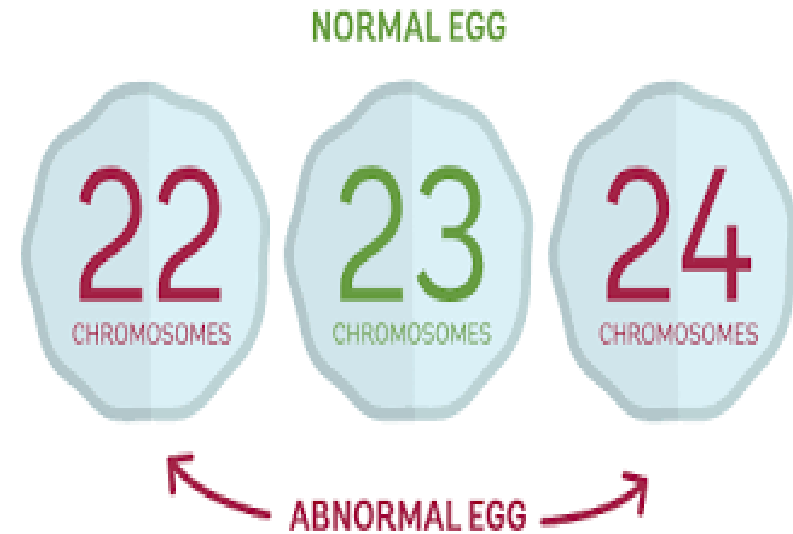
Infertility may be caused by a number of different factors, in either the female reproductive systems. However, it is sometimes not possible to explain the causes of infertility.

Female Infertility

1. Poor quality of eggs
2. Fibroids
3. Endometriosis
4. Polycystic ovary syndrome
5. Abnormal menstrual cycle
6. Thyroid disease
7. Autoimmune disorder
8. Cervical problems
9. Primary ovarian insufficiency
10. Obesity
11. Sexually transmitted disease
12. Ovulation problems
13. Tubal issues
14. Age

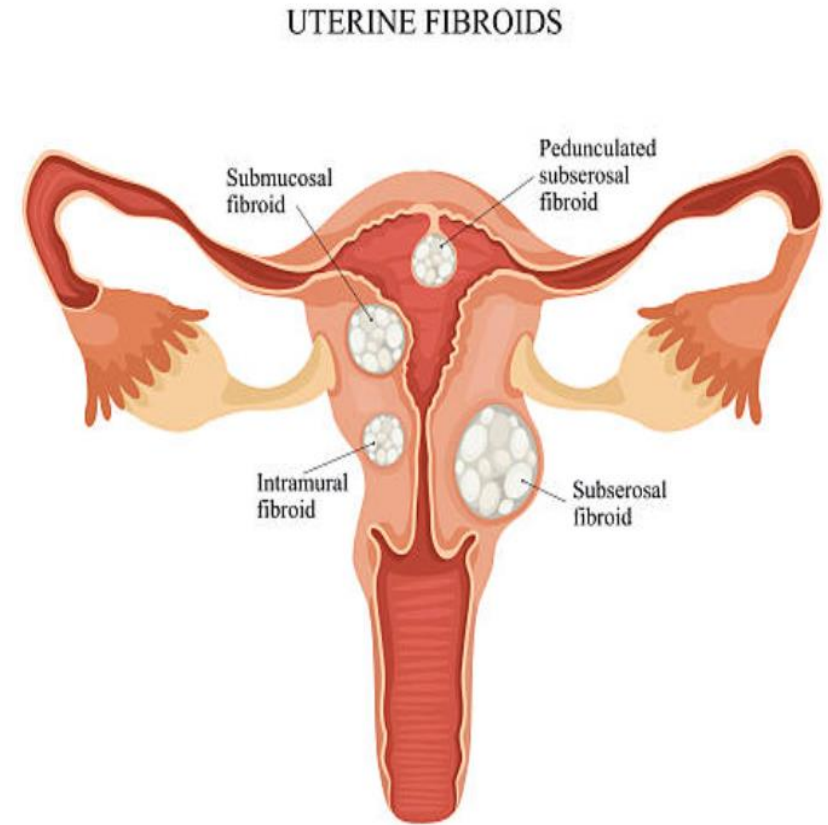
Every woman once in a while dreams of becoming a mother and starting the beautiful journey of parenthood at the earliest. Still, the bitter truth is that not everyone gets the opportunity to conceive naturally due to **poor egg quality**. In women, their age is vital in determining egg quality.

The main cause of **poor egg quality** is age, but it is not the only one; there can be other reasons too, including but not limited to pelvic radiation, ovarian surgery, any reproductive illness, genetic abnormalities, chemotherapy, excess consumption of tobacco, alcohol, and some unknown factors.



Uterine fibroids can be a cause of infertility in women:

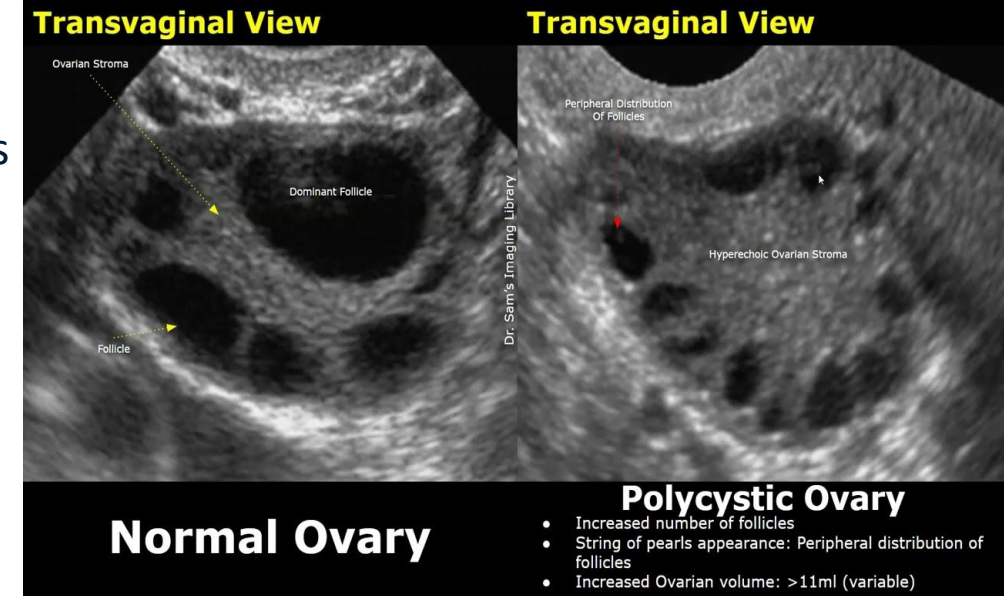
- Blocking fallopian tubes:** Fibroids can block the path for a fertilized egg to reach the uterus.
- Altering the uterus:** Fibroids can change the shape of the uterus, making it harder for sperm to travel.
- Reducing blood flow:** Fibroids can reduce or block blood flow to the uterus.
- Preventing implantation:** Fibroids can prevent an embryo from implanting in the uterus.
- Causing placental abruption:** Fibroids can block the placenta from the uterine wall, which can lead to placental abruption, preterm birth, or miscarriage.
- Preventing a fetus from growing fully:** Large fibroids can prevent a fetus from growing fully due to decreased space in the uterus



Polycystic ovary syndrome (PCOS) is a hormonal condition that affects women of reproductive age and causes the ovaries to produce too many androgens, or male sex hormones. It's the most common endocrine disorder in women of reproductive age.

Symptoms of PCOS include:

- Irregular or missed periods
- Large ovaries or ovaries with many cysts
- Excess body hair, especially on the chest, stomach, and back
- Weight gain, especially around the belly
- Acne or oily skin
- Male-pattern baldness or thinning hair
- Infertility
- Small pieces of excess skin on the neck or armpits (skin tags)



Endometriosis is a chronic condition where tissue similar to the lining of the uterus grows outside of the uterus. This tissue is called "implants," "nodules," or "lesions". Endometriosis can cause severe pelvic pain, make it difficult to get pregnant, and lead to other complications.

Endometriosis

Symptoms

Pelvic pain, painful periods, heavy periods, infertility, pain during sex, pain when pooping or peeing, stomach problems

Complications

Can block fallopian tubes, harm sperm or egg, impact bowel and bladder, impact kidneys, impact diaphragm or lungs

Treatment

Hormone therapy, pain management, surgery

- Hypothyroidism**

- An underactive thyroid that produces too little thyroid hormone can cause infertility in women by disrupting ovulation. It can also cause infertility in men by affecting sperm morphology, erectile dysfunction, and sexual desire.

- Hyperthyroidism**

- An overactive thyroid can increase the risk of miscarriage in early pregnancy. Other complications include high blood pressure, poor fetal growth, and premature delivery.

- Thyroid autoimmunity**

- An autoimmune disorder where the immune system attacks the thyroid gland. This is more common in women who are struggling with infertility.

Treatments for infertility

1. In vitro fertilization (IVF) is a fertility treatment that involves fertilizing an egg with sperm outside of the body and then placing the resulting embryo in the uterus.

The IVF process typically involves the following steps:

1. Suppressing the menstrual cycle: A medicine is given to suppress the menstrual cycle, which can make the next steps more effective. This medicine is usually taken as a daily injection or nasal spray for about two weeks.


2. Collecting eggs: Mature eggs are collected from the ovaries.

3. Fertilizing the eggs: The eggs are combined with sperm in a laboratory, usually in a petri dish. This process is called insemination.

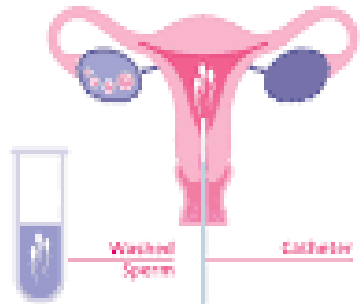
4. Transferring the embryos: One or more fertilized eggs, called embryos, are transferred to the uterus.

5. Implantation: Pregnancy occurs when the embryo attaches to the uterine lining.

Intrauterine Insemination (IUI) vs. IVF




IUI vs IVF



IUI
Intra Uterine Insemination

2300+ Babies
9 Babies Every Week
70% Success Rate
2 out of 3 Couples +ve



IVF
In Vitro Fertilisation

IUI

Intrauterine insemination (IUI)

Intrauterine insemination (IUI) is a simple procedure that puts sperm directly inside your uterus.

vs

IVF

In vitro fertilization (IVF)

During in vitro fertilization, mature eggs are collected from ovaries and fertilized by sperm in a lab.



INFERTILITY COUNSELING

- Infertility counselling deals with the psycho-social impact of infertility in terms of- intervention, treatment and after-effects of both successful and unsuccessful treatments. It also involves therapeutic work to help patient cope with the consequences of infertility and treatment.



Thank you for your participation!!