

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Reproduction Module

Small Group Discussion

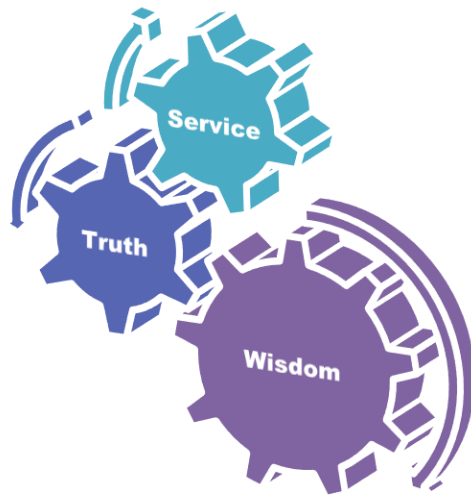
2nd Year MBBS

Infertility (Female & Male)

Dr. Ali Zain

Date:-6th June 2024

Motto



Vision; The Dream/Tomorrow

- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

CBL

- Case-based learning (CBL) is a teaching method where students learn by analyzing real-life cases and applying their knowledge to solve problems or make decisions. CBL is often used in medical education, where students analyze patient cases to develop diagnostic and treatment skills.

Conducting CBL

- Identify the learning objectives
- Choose a case: Select a real-life case that is relevant to the learning objectives you have identified
- Present the case
- Analyze the case: Have students work in groups to analyze the case
- Develop hypotheses

Conducting CBL (Cont.)

- Test hypotheses: Have students test their hypotheses by using relevant diagnostic tests or other methods.
- Discuss the results
- Discuss the results
- Evaluate learning: Evaluate student learning by assessing their ability to analyze the case, develop hypotheses, and apply their knowledge of medical physiology to diagnose and treat the patient.

LEARNING OBJECTIVES

At the end of the CBL, students will be able:



- To define infertility in male and female
- To discuss the course of female infertility and some of important factors in detail.
- To enlist different tests to investigate infertility.
- To understand the management of infertility.
- To discuss some important drugs to manage infertility.
- To discuss different causes of male infertility.
- To interpret Semen analysis.

INFERTILITY:

Definition:

- Infertility is defined as not being able to get pregnant (conceive) after one year (or longer) of unprotected sex, However, for women aged 35 and older, the inability to conceive after 6 months is generally considered infertility.

Worldwide Prevalence :-

Primary infertility is denoted for those women who have not conceived previously. In secondary infertility, there is at least one conception, but it fails to repeat. In 2002, the WHO estimated that infertility affects approximately 80 million people in all parts of the world. It affects 10%–15% of couples in their lifetime. -The prevalence of infertility is concerned, it is high (up to 21.9%): primary infertility at 3.5% and secondary infertility at 18.4%.

Causes of female infertility:-

1. Ovulation problems:

- PCOS
- Thyroid issues
- premature ovarian failure
- Hypothalamic dysfunction.
- Prolactin excess

2. Scarring from surgery

3. Uterine or cervical causes

4. Damage to fallopian tubes

5. Fibroids

6. Endometriosis

7. Pelvic inflammatory disease

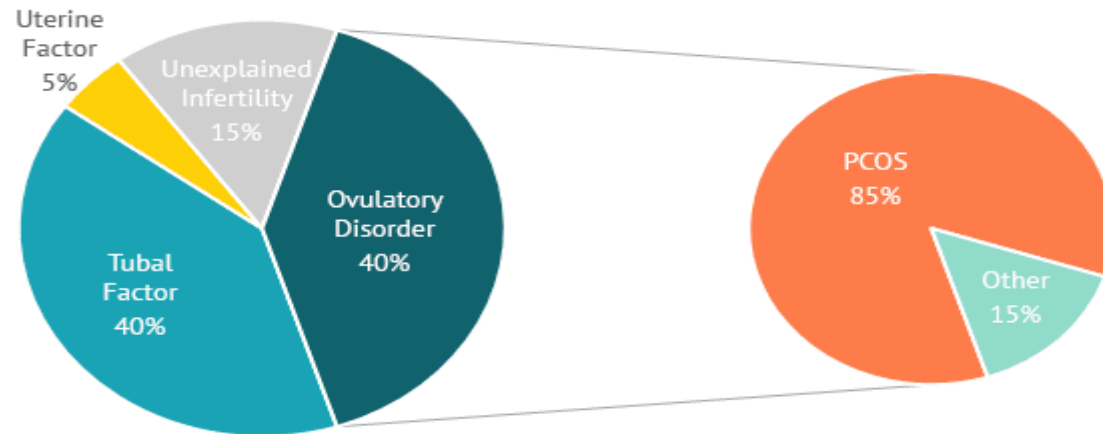
8. Sterilization

9. Medicines and drugs

10. Infections

11. Idiopathic

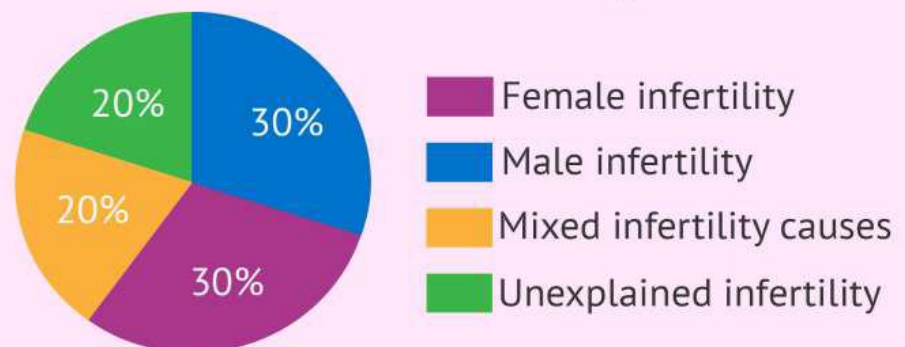
Causes of Female Infertility



Reference:- Google image topic Infertility

We are going to discuss some of the important conditions in a little bit detail.

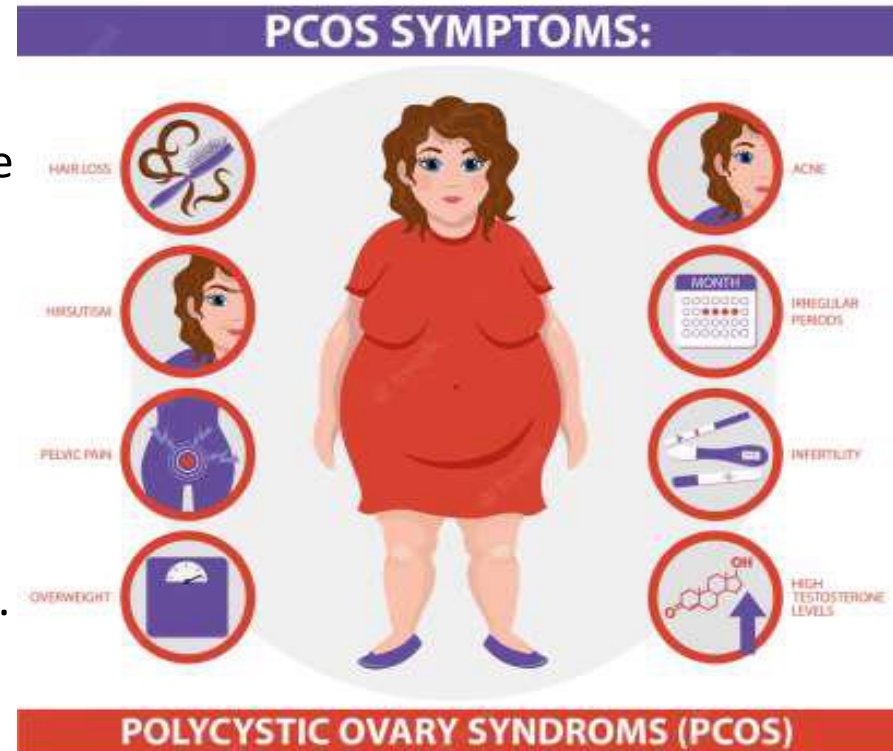
Causes of infertility



Ovulation problems:

1. Polycystic ovarian syndrome PCOS:-

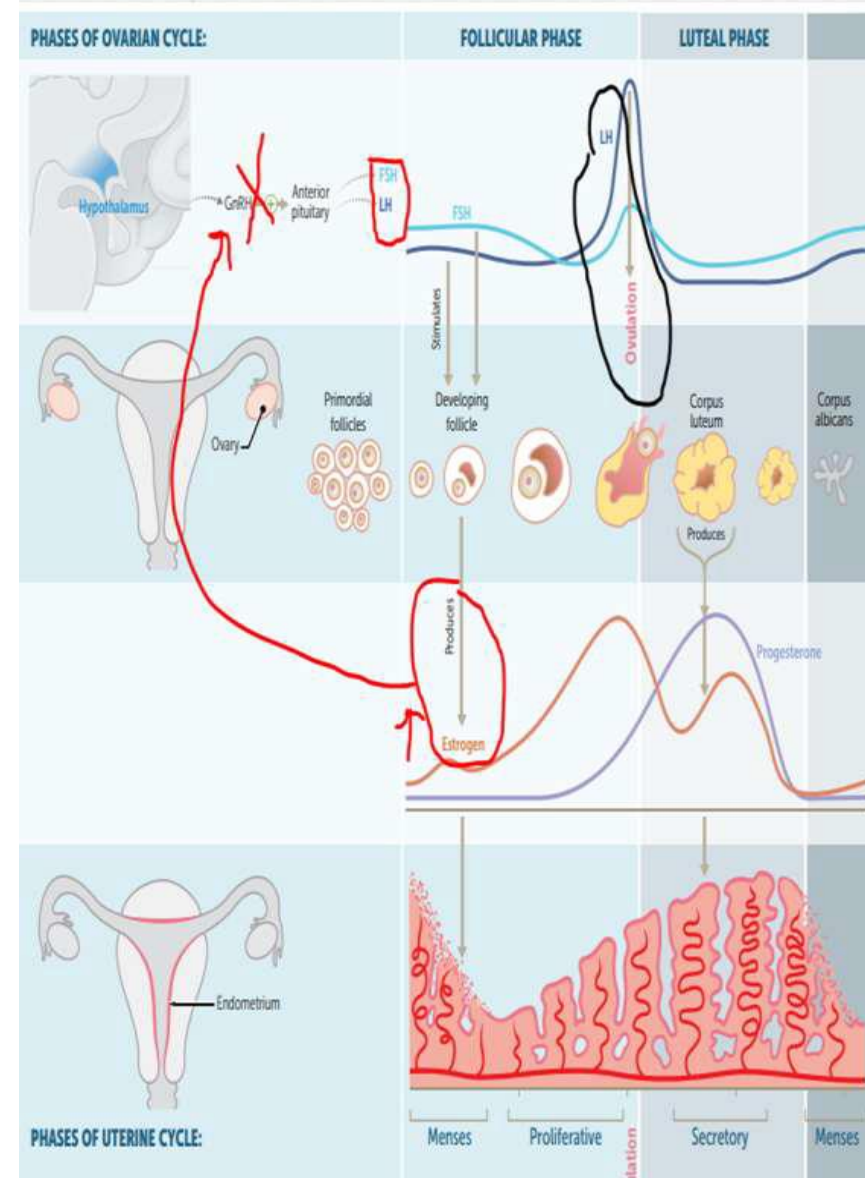
- A condition in which the ovaries produce an abnormal amount of androgens, male sex hormones that are usually present in women in small amounts.
- The follicles are underdeveloped sacs in which eggs develop, these sacs are often unable to release an egg, which means ovulation does not take place.
- The exact cause of PCOS is unknown, but it often runs in families.
- Women with PCOS are three times more likely to have a miscarriage, as compared to women who don't have PCOS.
- They are also more likely to develop preeclampsia, gestational diabetes and have a larger baby and premature delivery. This could lead to difficulty during delivery or cesarean delivery.



Reference:- Wikipedia Article on PCOS

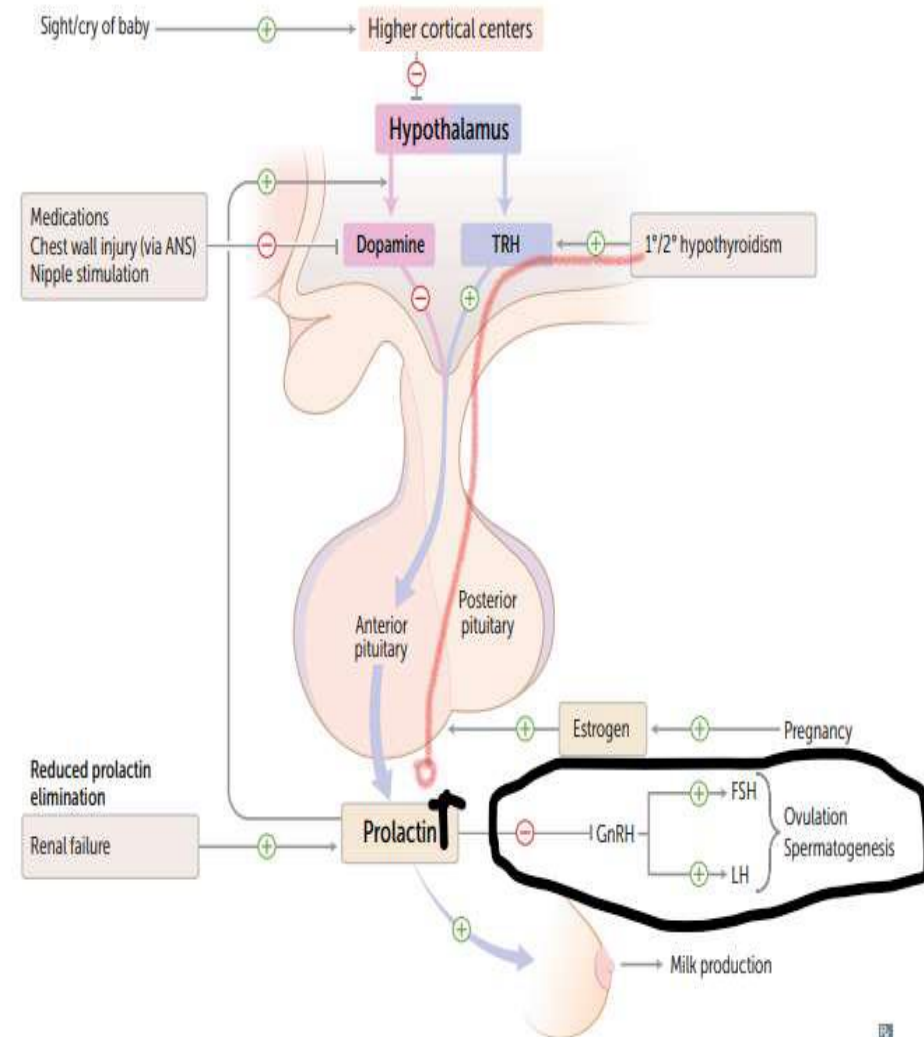
Treatment:-

1. Clomiphene may be the first treatment recommended for women with PCOS who are trying to get pregnant. Clomiphene encourages the monthly release of an egg from the ovaries (ovulation).
2. If clomiphene is unsuccessful in encouraging ovulation, another medicine called metformin may be recommended, encouraging regular monthly periods and lowering the risk of miscarriage, metformin can also have other longterm health benefits, such as lowering high cholesterol levels and reducing the risk of heart disease.



2. Hypo/Hyper Thyroidism:-

Both hypothyroidism and hyperthyroidism can cause infertility by affecting ovulation. Women with these conditions may not release an egg once a month during menstruation; in fact, they may not release an egg at all. This makes it difficult to conceive.



Reference:- Wikipedia Article on THYROID DISEASES.

Uterine Causes of infertility:-

- Uterine polyps
- Uterine fibroids
- Asherman's Syndrome
- bicornuate uterus *
- Luteal phase defect
- Thin endometrial lining
- absolute uterine factor infertility

1. Uterine polyps:-

Uterine polyps most commonly occur in women who are going through or have completed menopause, although younger women can get them, too. Uterine polyps are estrogen-sensitive

Signs and symptoms of uterine polyps include:

- Irregular menstrual bleeding
- Bleeding between menstrual periods
- Excessively heavy menstrual periods
- Vaginal bleeding after menopause
- Infertility

risk of developing uterine polyps is higher in:

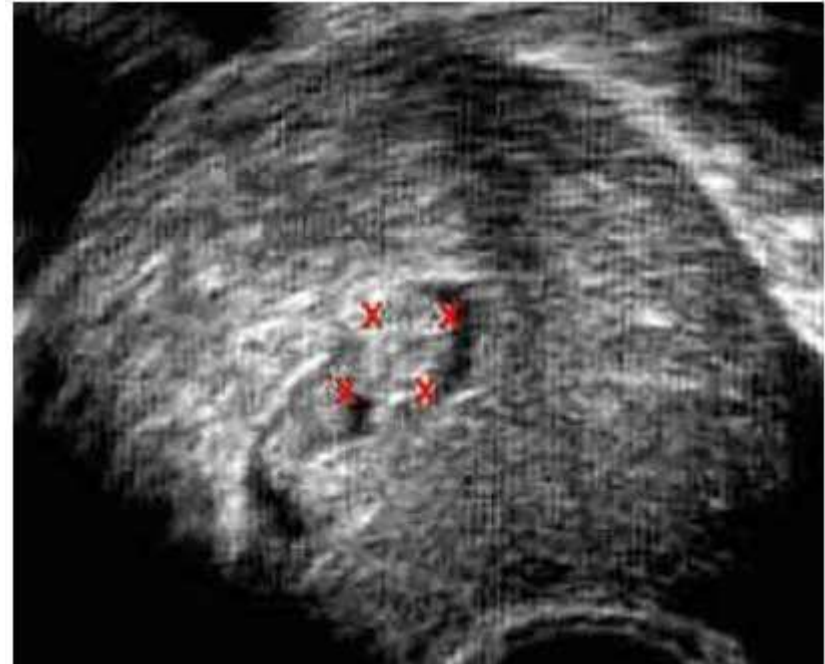
1. Overweight patient
2. Approaching the age of menopause or are experiencing menopause
3. Suffering from hypertension
4. Receiving treatment for breast cancer
5. Taking medication that blocks estrogen

polyps may contribute to infertility because:

They make it more difficult for a fertilized egg to attach to the uterine walls

They block sperm from joining with an egg

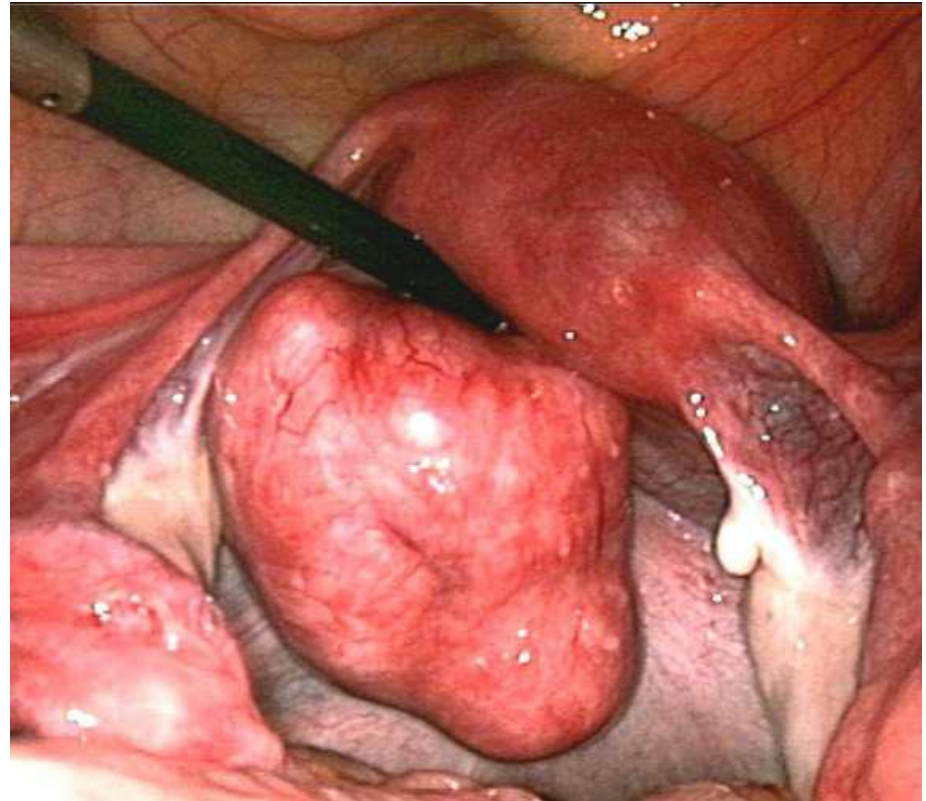
They block sperm from entering the uterus



2.Uterine Fibroids:-

- sometimes known as uterine myomas or leiomyomas.
- Fibroids usually develop during a woman's reproductive years (from around the age of 16
- to 50) when oestrogen levels are at their highest.
- Many women are asymptomatic.
- Women who do have symptoms (around 1 in 3) may experience:
 1. Heavy periods or painful periods
 2. tummy (abdominal) pain
 3. Back pain
 4. a frequent need to urinate
 6. pain or discomfort during sex

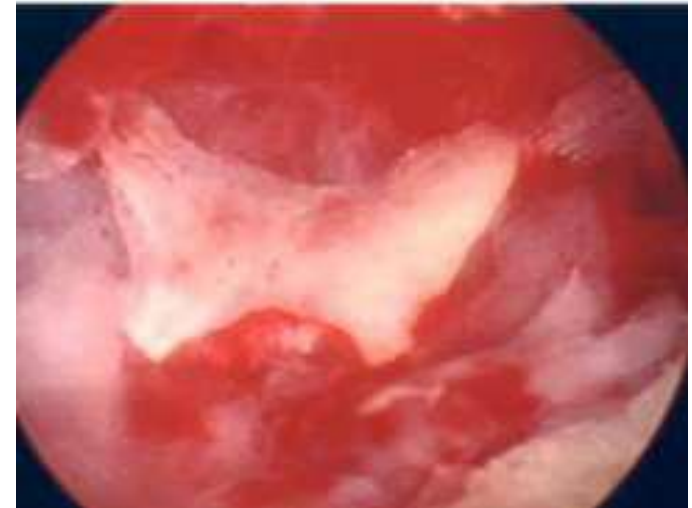
Most women with fibroids will not be infertile. Women with fibroids and their partners should be thoroughly evaluated to find other problems with fertility before fibroids are treated. A fertility specialist can help assess if fibroids might be hampering conception.



2. Asherman Syndrome:-

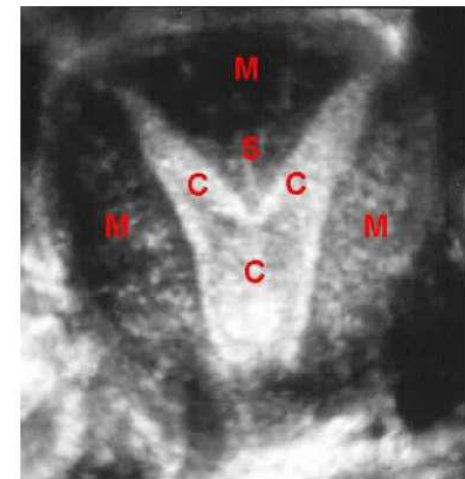
The condition of scarring within the endometrial cavity of the uterus is often referred to as Asherman's Syndrome.

A normal uterine cavity and endometrial lining is necessary in order to conceive and maintain a pregnancy. Scar tissue within the uterine cavity can partially or completely obliterate the normal cavity and can interfere with conception, or increase the risk for miscarriage or other complications later in the pregnancy.



3. Bicornuate Uterus:-

- A bicornuate uterus results from failure of the Müllerian ducts to completely fuse.
- A heart-shaped uterus probably won't affect your fertility. In fact, studies have shown that having a bicornuate uterus doesn't lessen the chances of a woman's becoming pregnant.
- But, some older researches suggests that this abnormality is more common in women who are infertile.



A uterine septum on a coronal plane from 3D ultrasound

Endometrial lining and uterine cavity = C

Muscle part of uterus = M

Septum "pushing down" into cavity = S

Luteal Phase Defects:-

- A luteal phase defect inhibits uterine lining growth, which is required for egg implantation and fetal development.
- The luteal phase is the period of time between ovulation and menstruation. The duration of the luteal phase is typically 12 to 16 days. During this time, progesterone levels increase and the uterine lining thickens to create a healthy environment for potential egg implantation.
- Most women with luteal phase defect do not realize they have the condition until they try to conceive and find it challenging.

common symptoms of luteal phase defect, including:

Spotting between periods

Early menstrual cycles

Difficulty becoming pregnant

Miscarriage

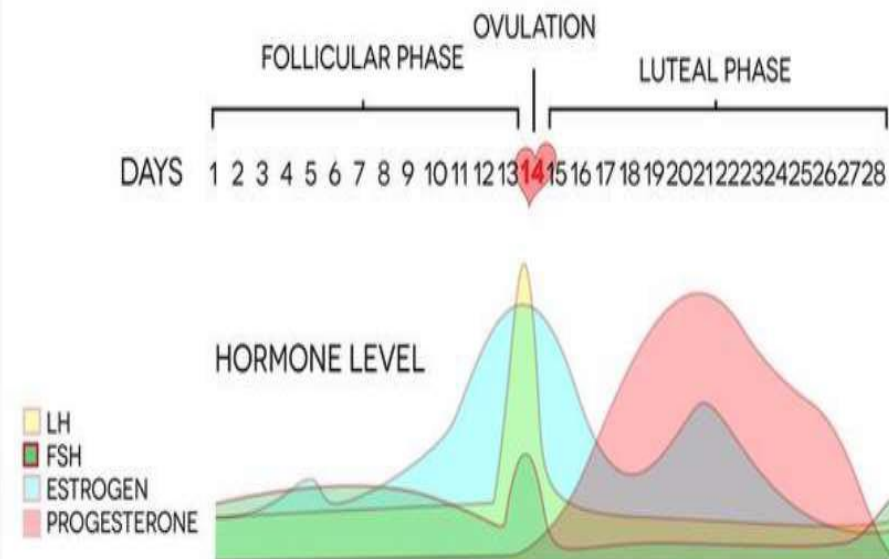
Certain health conditions can put woman a higher risk for a short luteal phase

INCLUDING

Stress, Underactive or overactive thyroid,

Endometriosis, PCOS, Excessive exercise,

Anorexia, Obesity, Age

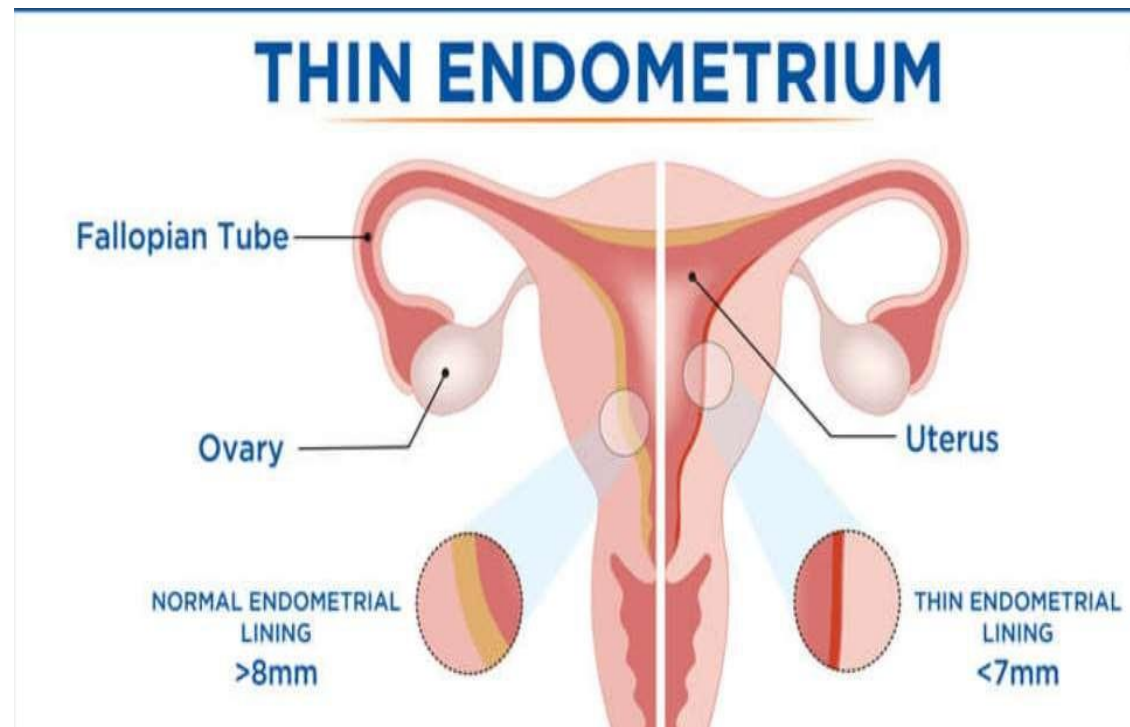


Thin Endometrial Lining:-

- For an Embryo to go be implanted in the endometrium, it should be in optimal condition, that is, and it should be thick and trilaminar with a good blood supply.
- As the pregnancy progresses, all the nourishment that is required for the growth of a baby is supplied by the glands present in the uterine lining. And in the absence of a proper thick endometrial lining, it would be difficult to hold a pregnancy.

Causes:

1. Low estrogen
2. C&D
3. Poor blood flow
4. Infection & PID
5. Birth control pills
6. clomid



Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome:

- Absolute uterine factor infertility is a condition where a woman cannot get pregnant because she either doesn't have a uterus or her uterus is no longer functioning correctly.
- Acquired absolute factor infertility is caused when the uterus is surgically removed.
- Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome: is a rare disorder that affects women. It is characterized by **the failure of the uterus and the vagina to develop properly in women who have normal ovarian function** and normal external genitalia. Women with this disorder develop normal secondary sexual characteristics during puberty, but do not have a menstrual cycle (primary amenorrhea). Often, the failure to begin the menstrual cycle is the initial clinical sign of MRKH syndrome.

Tubular Factors Of Infertility:-

Tubal factor infertility is often caused by pelvic infection, such as **pelvic inflammatory disease (PID)**, or **endometriosis**, or scar tissue that forms after pelvic surgery.

Pelvic Inflammatory Disease PID:-

- Untreated STD can cause pelvic inflammatory disease (PID), a serious condition, in women.
- 1 in 8 women with a history of PID experience difficulties getting pregnant.

GETTING PID VIA THOSE MEANS:

1. Have an STD and do not get treated;
2. Have more than one sex partner;
3. Have a sex partner who has sex partners other than you;
4. Have had PID before;
5. Are sexually active and are age 25 or younger;
6. Douche
7. Use an intrauterine device (IUD) for birth control.



Pelvic Inflammatory Disease PID:-

Some women with pelvic inflammatory disease don't have symptoms. For the women who do have symptoms, these can include:

- Lower abdominal pain (the most common symptom)
- Upper abdominal pain
- Fever
- Painful sex
- Painful urination
- Irregular bleeding
- increased or foul-smelling vaginal discharge
- tiredness

PID if diagnosed early, can be treated. However, treatment won't undo any damage that has already happened to the reproductive system. The longer you wait to get treated, the more likely the complications from PID. While taking antibiotics, symptoms may go away before the infection is cured.

Endometriosis:-

- Patients with endometriosis have endometrial-type tissue outside of the uterus
- Women with endometriosis are more likely to have infertility
- It most often occurs on or around reproductive organs in the pelvis or abdomen, including:
 1. Fallopian tubes
 2. Ligaments uterosacral
 3. Lining of the pelvic cavity
 4. Ovaries
 5. Outside surface of the uterus
 6. Space between the uterus and the rectum or bladder
- More rarely, it can also grow on and around the:
 1. Bladder
 2. Cervix
 3. Intestines
 4. Rectum
 5. Stomach (abdomen)
 6. Vagina or vulva

Endometriosis:-

Common signs and symptoms of endometriosis include:

1. Painful periods (dysmenorrhea).
2. Pain with intercourse.
3. Pain with bowel movements or urination.
4. Excessive bleeding.
5. Infertility:- Sometimes, endometriosis is first diagnosed in those seeking treatment for infertility.

Other signs and symptoms. fatigue, diarrhea, constipation, bloating especially during menstrual periods.



MALE INFERTILITY:-



INABILITY OF A SEXUALLY MATURE MAN TO ACHIEVE CONCEPTION IN A FERTILE WOMAN AFTER 12 MONTHS OF FREQUENT UNPROTECTED COITUS

HISTORY WHICH MIGHT GIVE A CLUE REGARDING MALE INFERTILITY

MEDICAL HISTORY

PROLONGED
INFECTIONS WITH
PYREXIA
DIABETES MELLITUS
CANCER
CYSTIC FIBROSIS
KLINEFELTER
SYNDROME

FERTILITY HISTORY

DURATION OF
INFERTILITY
PREVIOUS
TREATMENTS FOR
INFERTILITY

SURGICAL HISTORY

ORCHIDOPEXY
CRYPTORCHIDISM
HERNIORRHAPHY
TRAUMA
TORSION TESTES
PELVIC/BLADDER OR
RETROPERITONEAL
SURGERIES
TRANSURETHRAL
RESECTION FOR
PROSTATISM

FAMILY HISTORY

CRYPTORCHIDISM
KARTAGENER SYNDROME
HYPOSPADIAS
PRUNE BELLY (RARE
DIAGNOSIS)

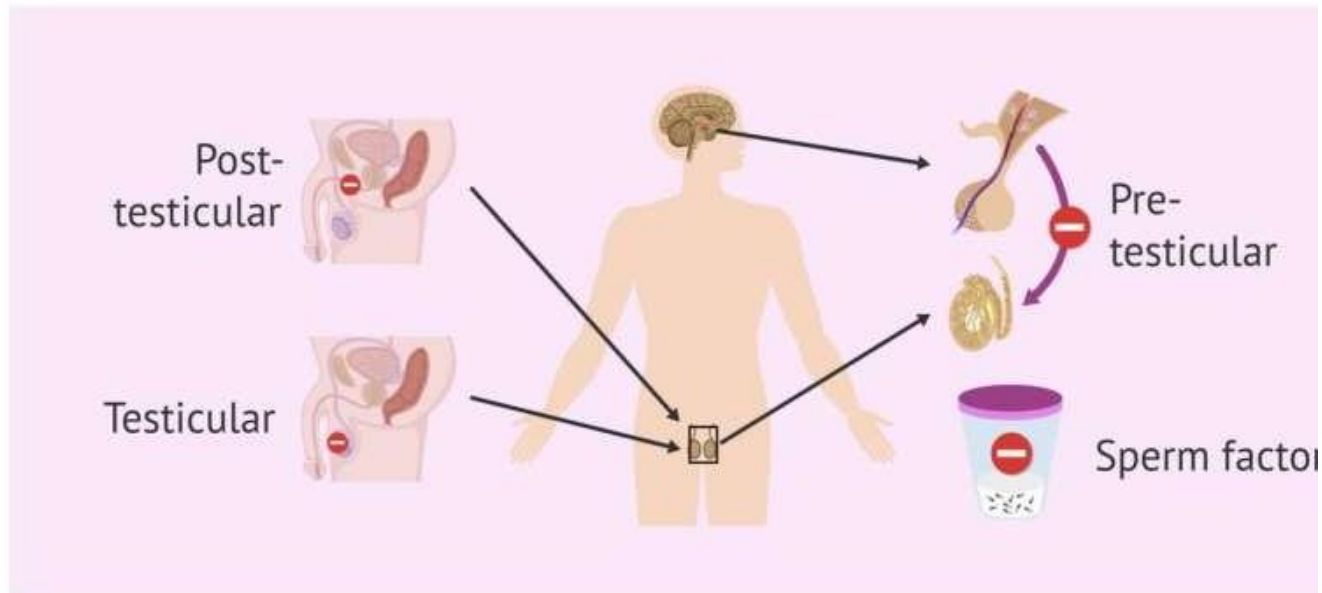
MEDICATION HISTORY

NITROFURANTOIN
CIMETIDINE
SULFASALAZINE
SPIRONOLACTONE
ALPHA BLOCKERS

SOCIAL HISTORY

ETHANOL
SMOKING/T
OBACCO
COCAINE
ANABOLIC
STEROIDS

Male sterility origin



PRETESTICULAR FACTORS:-

DISORDERS OF LH FSH AND ANDROGEN FUNCTION DISORDERS
OF GONADOTROPIN PRODUCTION ACQUIRED AND GENETIC
ENDOCRINOPATHIES

TESTICULAR FACTORS:-

VARICOCELE
GENETICS
CRYPTORCHIDISM
EXPOSURE TO GONADO TOXINS

POST TESTICULAR:-

OBSTRUCTION IMMUNOLOGIC INFERTILITY DISORDERS OF
EJACULATION ERECTILE DYSFUNCTION

SEMEN ANALYSIS DEPICTING ABNORMALITIES

ASPERMIA : ABSENCE OF SEMEN

AZOOSPERMIA : ABSENCE OF
SPERM IN THE SEMEN

HYOSPERMIA : LOW SEMEN

VOLUME HYPERSPERMIA : HIGH
SEMEN VOLUME

OLIGOZOOSPERMIA: VERY LOW
SPERM COUNT

ASTHENOZOOSPERMIA: POOR
SPERM MOTILITY

TERATOZOOSPERMIA : SPERM WITH
MORPHOLOGICAL DEFECTS
NECROZOOSPERMIA :
SPERM IN THE EJACULATE ARE DEAD

LEUCOSPERMIA : WHITE BLOOD CELLS IN THE
SEMEN
HEMATOSPERMIA : RED BLOOD CELLS IN
THE EJACULATE

DR. PAMELA TAN
MEDICAL CLINIC

INFERTILITY TREATMENT



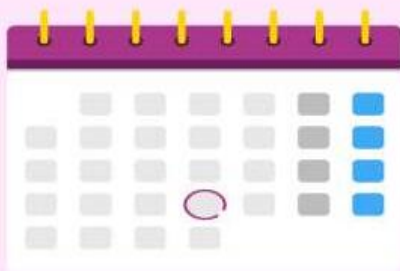
Medications

Surgery

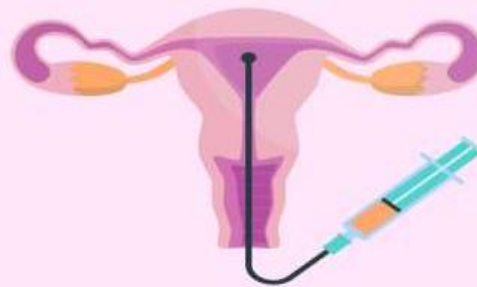
Female Infertility Treatment

Fertility drugs change hormone levels to stimulate ovulation.

Surgery can open blocked fallopian tubes and remove uterine fibroids and polyps. Surgical treatment of endometriosis doubles a woman's chances of pregnancy



Programmed
intercourse




Artificial
insemination



In vitro
fertilization

Suggested research article

<https://bmjopen.bmj.com/content/12/3/e057132>

Worldwide prevalence, risk factors and psychological impact of infertility among women: a systematic review and meta-analysis 

Nik Hussain Nik Hazlina ¹,  Mohd Noor Norhayati ², Ismail Shaiful Bahari ², Nik Ahmad Nik Muhammad Arif ¹

Correspondence to Associate Professor Mohd Noor Norhayati; hayatikkk@usm.my

Abstract

Objectives To assess the prevalence, risk factors and psychological impact of infertility among females. This review available evidence, effect estimates and strength of statistical associations between infertility and its risk factors.

Study design Systematic review and meta-analysis.

Data sources MEDLINE, CINAHL and ScienceDirect were searched through 23 January 2022.

Eligibility criteria The inclusion criteria involved studies that reported the psychological impact of infertility among included cross-sectional, case–control and cohort designs, published in the English language, conducted in the country performed at health institution levels on prevalence, risk factors and psychological impact of infertility in women.

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6. Journals and Researches will appear
7. You can find a Journal by clicking on JOURNALS AND DATABASE and enter a keyword to search for your desired journal.

REFERENCE BOOKS:

Guyton And Hall textbook of Medical Physiology 14th Edition.

Gynaecology By Ten Teachers 20th Edition

Oxford Handbook of obstetrics & Gynaecology

Google Images and Wikipedia Images for concepts.

Thank You!