Diameters of fetal skull

Diameters	Measurement in cm (inches)	Attitude of the head	Presentation
Sub occipito-bregmatic - extends from the nape of the neck to the center of the bregma	9.5 cm (3 ¾)	Complete flexion	Vertex
Sub occipito-frontal- extends from the nape of the neck to the anterior end of the anterior fontanelle or center of the sinciput	10cm (4 inches)	Incomplete flexion	Vertex
Occipito-frontal- extends from the occipital eminence to the root of the nose (Glabella)	11.5 cm (41 ½ inches)	Marked defluxion	Vertex
Mento-vertical- extends from the mid point of the chin to the highest point on the sagittal suture	14 cm (51 ½ inches)	Partial extension	Brow
Sub mento-vertical- extends from junction of floor of the mouth and neck to the highest point on the sagittal suture	11.5 cm (4 ½ inches)	Incomplete extension	Face
Sub mento-bregmatic - extends from junction of floor of the mouth and neck to the center of the bregma	9.5 cm (3 ¾ inches)	Complete extension	Face

Transverse diameter

1. Bimastoid diameter = 7.5 cm (3 inches)
2. Bitemporal diameter = 8cm (3 ¼ inches)
3. Super-subperietal = 8.5 cm (3 ½ inches)
4. Biparietal diameter = 9.5 cm (3 ¾ inches)

Shape of pelvis inlet

1. Gynecoid pelvis = Round
2. Android pelvis = Heart / Triangular
3. Anthropoid pelvis = Oval
4. Platypelloid pelvis Flat (kidney)

Boundaries & diameters of pelvis

	Pelvic Inlet	Pelvic Cavity	Pelvic Outlet
Shape	**Round**	**Circular**	**Diamond**
Diameter (Anterio-posteriorly)	**11**	**12**	**13**

Obliquely	**12**	**12**	**12**
Transversely	**13**	**11**	**-**

Important Points

- The shortest diameter in a foetal skull is bitemporal
- An abnormal attitude is illustrated by face presentation
- The smallest diameter of the true pelvis is interspinous diameter
- The shortest diameter of fetal head is bimastoid diameter (7.8cm) <bitemporal (8cm)
- Shortest diameter is obstetric conjugate
- Longest diameter of fetal skull is mento-vertical(14cm)>submento-vertical (11.8cm)
- Critical obstetric conjugate for trial of labour is 10cms
- Most important diameter of pelvis during labor is inter spinous diameter.
- Best method of detecting CPD is Trial of labor> pelvic assessment
- One ala of sacrum absent— NAEGELE'S PELVIS
- Both ala of sacrum absent — ROBERT PELVIS

Antenatal Study

✓ Term 37-42 weeks (Average = 280 days)
✓ Post term >42 weeks (294 days)
✓ Signs of pregnancy

✓ The mean duration is calculated from the first day of the last normalmenstrual period and is 280 days or 40 weeks 9 months and 7 days (Naegele's rule)

Signs of pregnancy in 1st trimester

Name	Gestation
Chadwick's sign	8th week
Osiander's sign	8th week
Goodell's sign	6thweek
Piskacek's sign	6-8 weeks
Hegars sign	8-10 weeks
Palmer's sign	4-8 weeks
Ladin's sign	6th week
MC Donald sign	7-8 week
Von Fernwald sign	4-5 week

Signs of pregnancy in 2nd& 3rd pregnancy

Sign	Time
Palpation of fetal part	20 weeks
Active fetal movement felt by lacing a hand on abdomen	20 weeks

External ballottement	20 weeks
Internal ballottement	16-18 weeks
FHS audible Stethoscope	18-20 weeks
Fetal movement can be detected by Doppler	10 weeks
Lightening	38 weeks

Sign	Feature	Seen at
Braxton hick contractions	Irregular, infrequent spasmodic & painless contractions without any effect on dilatation of the cervix.(Intrauterine pressure is <8 mm of Hg)	Begin in early pregnancy & continue till term
Ballottement of uterus	Ballottement of uterus on bimanual examination gives the impression of a floating object inside the uterus. It may also be seen in case of uterine fibroid, ascites or ovarian cyst	Elicited between 16 - 20 weeks of pregnancy
Palpation of fetal parts & active fetal movement	They are positive signs of pregnancy	Elicited by 20 weeks
Auscultation of fetal heart sound	Most conclusive sign of pregnancy	28-30 weeks by stethoscope

Best parameters for estimation of fetal age

- 1st trimester : Crown Rump length (CRL)
- 2nd trimester : Corrected biparietal diameter (cBPD) or head circumference trans cerebelVar diameter.
- 3rd trimester : Head circumference and femur length
- Overall :Crown rump length

Menstrual age (weeks)	Fetal Structures
4 weeks	Choriodecidual thickness, chorionic sac
5 weeks	Gestation sac, embryo yolk sac
6 weeks	Fetal pole, cardiac activity
7 weeks	Lower limb buds, midgut herniation(physiological)
8 weeks	Upper limb buds, stomach, Internal gonads formed
10-12 weeks	Swallowing starts
11 weeks	Fetal breathing movements
12 weeks	Urine formation occurs External genitalia formed

ANC Visits:

Ht. of fundus

- 12th week -Above symphysis pubis
- 16th week -Halfway between symphysis pubis &umbilicus
- 20th week - Umbilicus
- 28th week - 6 cm above umbilicus
- 36th week - Subxiphoid (2cm below xiphoid)
- 40th week - 4 cm below xiphoid (2cm below subxiphoid)

Ideally the schedule for antenatal visits should be

- Monthlyupto 28 weeks.
- Two weekly visitbetween 28 and 36 weeks.
- Weekly visit from 36 weeks onwards
- This means total 12-15 visits

WHO recommend at least 4 Visits:

- 1st at – 16 weeks
- 2nd at – 24-28 weeks
- 3rd at – 32 weeks
- 4th at – 36 weeks

At each visit do BP, urine Albumin and Sugar and weight gain assessment

As per Indian scenario – minimum 3 visits are essential

- 1st at – 20 weeks(or as soon as pregnancy is known)
- 2nd at – 32 weeks
- 3rd at – 36 weeks

The first that a woman makes to a health care facility is called the booking visit.
A booked case is that has at least 3 antenatal visits with at least two in the last trimester.

Investigation:

- Blood —HB%, or CT, BT, HCV, HIV. BG- FASTING AND POST PARANOIAC, HPLC
- Urine complete
- Double marker at 11-13+6 weeks
- Triple marker (MSAFP) at 15 — 18 weeks
- Level II scan (18-20 weeks)

Kegels exercises - Time for initiating kegels exercise:

- Pregnancy 3rdtrimester
- After vaginal delivery-after 24 hrs

- After cesarean section-after 24 hrs.

USG IN EARLY PREGNANCY

	Transvaginal sonography (TVS)	Transabdominal sonography (TAS)
Gestational sac	4 weeks 1 day – 4 weeks 3 day	5 weeks
Yolk sac	5 weeks	6-7 weeks
Embryo	6 weeks	6-7 weeks
Fetal pole	5-6 weeks	6-7 weeks
Fetal cardiac activity	6 weeks	7 weeks
Ventricles	8.5 weeks	11 weeks
Spine	7-8 weeks	12 weeks

USG in pregnancy

- Best time to assess gestational age by USG is 9 –14 weeks (by crown rump length)
- Best indicator for fetal growth, IUGH - Abdominal circumferences.
- Transcerebellardiameter (TCO) is an accurate predictor of gestational age between 14 and 28 weeks.
- Fetal anomalywhich can be earliest detected by USG- Anencephaly.
- Lemon and Banan sign are seen in Neural Tube Defects with Spinalinvolvement.
- Mean sac diameter (MSD) in mm + 30 = GA in days
- Doppler to be avoided in first trimester. It leads to thermal injury to fetus.

➢ The two best ultrasonographic markers of Down syndrome in first trimester-
  A. Absent or hypoplastic nasal bone
  B. Increased nuchal translucency more than 3.5 mm

Disease of vagina

Vaginitis

➢ Vaginitis is a term used to describe inflammation of the vagina.
➢ It can cause discomfort, itching, pain, and abnormal vaginal discharge.
➢ There are several types of vaginitis, including:

1. Bacterial Vaginosis (BV): This is the most common cause of vaginitis. It occurs when there is an imbalance of bacteria in the vagina, leading to an overgrowth of harmful bacteria.
2. Yeast Infection: Also known as vaginal candidiasis, it is caused by an overgrowth of the fungus Candida albicans. Yeast infections can result in itching, burning, and a thick, white discharge.

3. Trichomoniasis: This is a sexually transmitted infection (STI) caused by a parasite called Trichomonas vaginalis. It can cause itching, burning, redness, and a frothy, yellow-green discharge.
4. Atrophic Vaginitis: This type of vaginitis typically affects postmenopausal women due to a decrease in estrogen levels. It can cause thinning and inflammation of the vaginal walls, leading to dryness, itching, and pain during sexual intercourse.

Vaginal bleeding and its colour

1. Bacterial vaginosis – White, Yellow, Grey
2. Trichomoniasis – Yellow, Green
3. Irregular menstruation – Brown, Bloody
4. Gestational trophoblastic disease – White+Red
5. Gonorrhea – Cloudy, yellow
6. Bacterial vaginosis – Clue cells
7. Primary shyphillis – Inguinal adenitis
8. Trichomonas vaginalis – Foul smelling discharge, genital iching, painful urination, premature delivery of pregnancy, strawberry vagina.
9. Vaginal candidiasis (Fungal) – Yeast infection of vagina, tissue at opening of vagina, Inflamation, Iching, white discharge.
10. Strawberry vagina is Seen in infection with - Trichomonas vaginalis
11. FIGO staining can be done in cervical carcinoma.
12. Hela cell line – carcinoma cervix
13. Clue cells seen on a vaginal smear –Haemophillus vaginalis

Ulcers of Vagina

- Ulcers in the vagina can be a sign of an underlying condition or infection.
- Here are a few possible causes of vaginal ulcers

1. Herpes Simplex Virus (HSV): Genital herpes is a common sexually transmitted infection caused by the herpes simplex virus. It can result in painful, fluid-filled blisters or ulcers in the genital area, including the vagina.
2. Aphthous Ulcers: Aphthous ulcers, also known as canker sores, can occasionally occur in the vaginal area. These shallow, painful ulcers are usually caused by local irritation or trauma.
3. Behçet's Disease: Behçet's disease is a chronic autoimmune disorder that can cause inflammation throughout the body, including the genital area. Vaginal ulcers are one of the characteristic symptoms of this condition.
4. Trauma or Injury: Physical trauma or injury to the vaginal area, such as rough sexual intercourse or the use of irritating hygiene products, can lead to the development of ulcers.

Prolapse of vagina

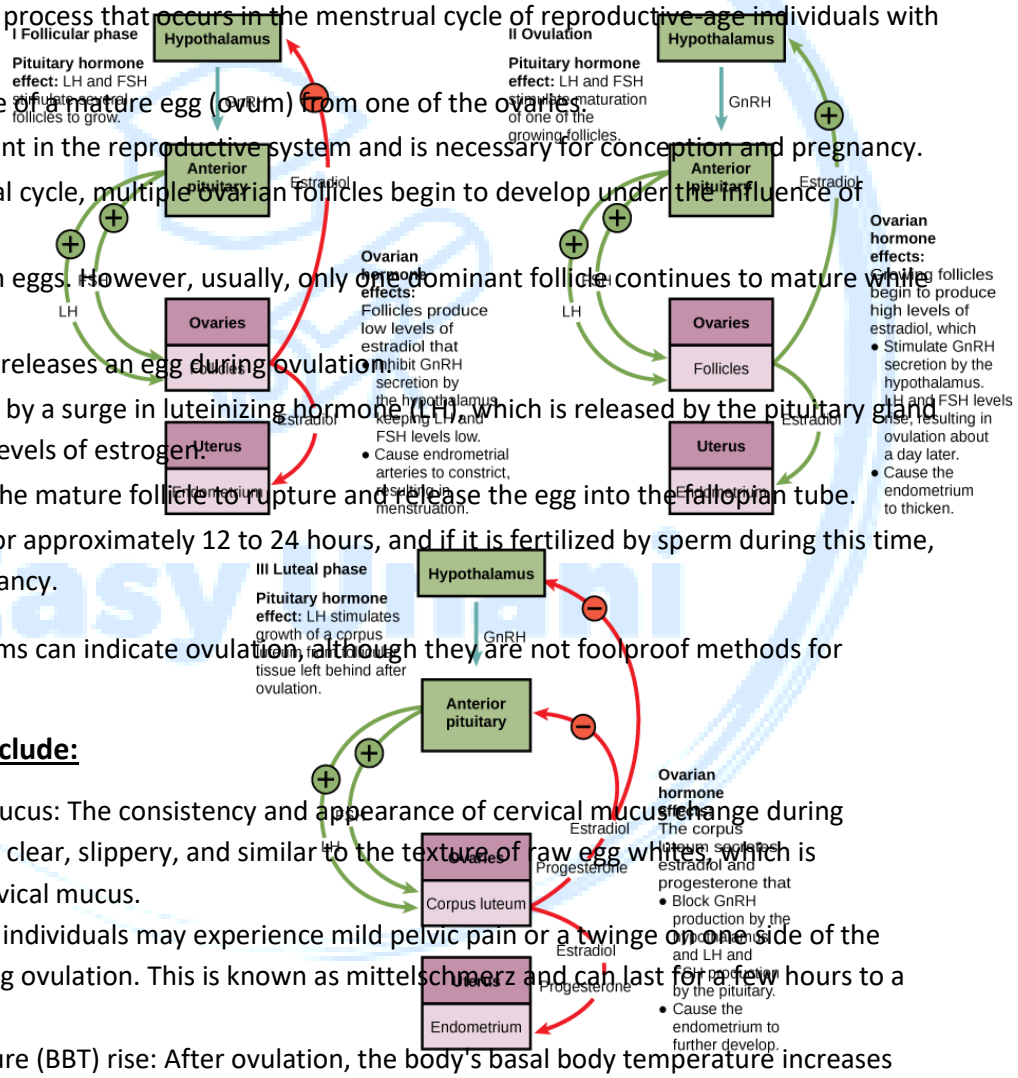
- Vaginal prolapse, also known as pelvic organ prolapse, occurs when the pelvic organs, such as the bladder, uterus, or rectum, descend and protrude into or outside of the vagina.
- This happens when the supportive tissues and muscles of the pelvic floor weaken or become damaged.

Vaginismus

- Vaginismus is a condition characterized by the involuntary contraction or tightening of the muscles around the vaginal opening, which makes penetration, including sexual intercourse, painful or impossible.
- It is considered a type of sexual pain disorder and can significantly impact a person's ability to engage in sexual activity and experience pleasure.

Ovulation

- Ovulation is a natural process that occurs in the menstrual cycle of reproductive-age individuals with ovaries.
- It refers to the release of a mature egg (ovum) from one of the ovaries.
- Ovulation is a key event in the reproductive system and is necessary for conception and pregnancy.
- During each menstrual cycle, multiple ovarian follicles begin to develop under the influence of hormones.
- These follicles contain eggs. However, usually, only one dominant follicle continues to mature while the others regress.
- The dominant follicle releases an egg during ovulation.
- Ovulation is triggered by a surge in luteinizing hormone (LH), which is released by the pituitary gland in response to rising levels of estrogen.
- The LH surge causes the mature follicle to rupture and release the egg into the fallopian tube.
- The egg can survive for approximately 12 to 24 hours, and if it is fertilized by sperm during this time, it may result in pregnancy.



Several signs and symptoms can indicate ovulation, although they are not foolproof methods for predicting it.

Some common signs include:

1. Changes in cervical mucus: The consistency and appearance of cervical mucus change during ovulation. It becomes clear, slippery, and similar to the texture of raw egg whites, which is considered fertile cervical mucus.
2. Mittelschmerz: Some individuals may experience mild pelvic pain or a twinge on one side of the lower abdomen during ovulation. This is known as mittelschmerz and can last for a few hours to a few days.
3. Basal body temperature (BBT) rise: After ovulation, the body's basal body temperature increases slightly due to increased progesterone levels. Tracking your BBT over time can help identify patterns and predict ovulation.

It's important to note that these signs and methods are not 100% accurate, and individual variations can occur.

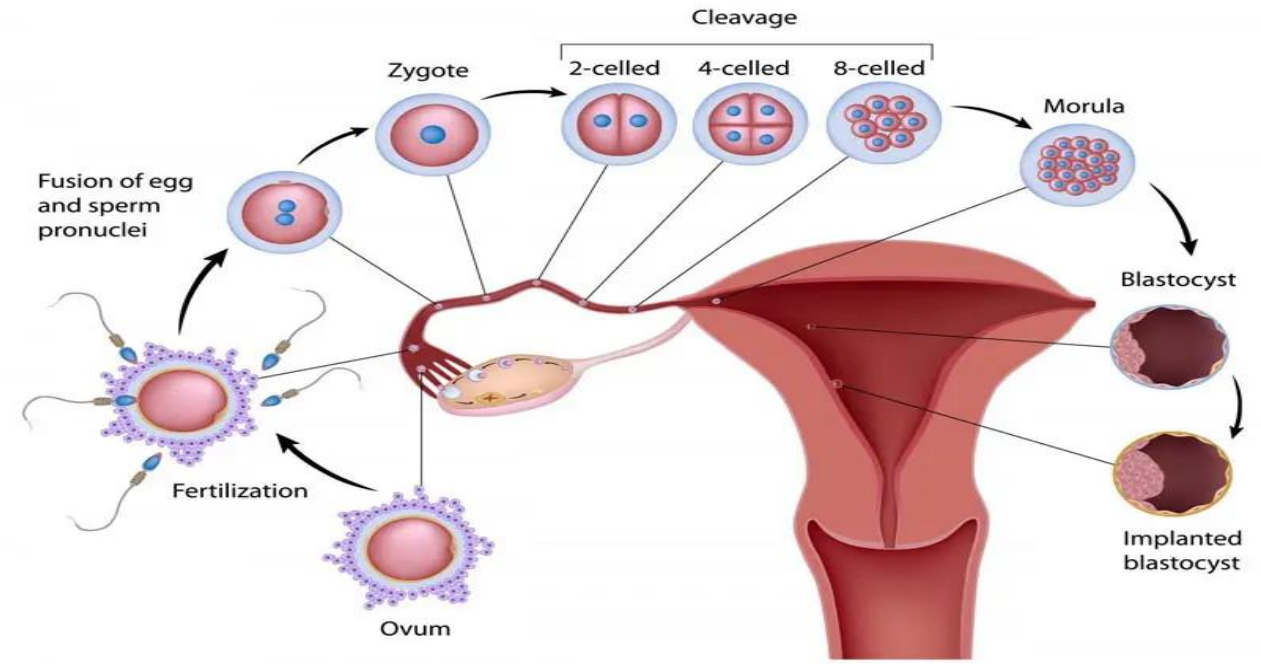
Fertilization

- Fertilization, also known as conception, is the process by which a sperm cell fuses with an egg cell to form a fertilized egg or zygote.
- Fertilization typically occurs in the fallopian tube, where the released egg awaits the arrival of sperm.

- Here are the key steps involved in fertilization:
  1. Ovulation: During ovulation, a mature egg is released from the ovary into the fallopian tube. Ovulation usually occurs in the middle of the menstrual cycle, although timing can vary.
  2. Sperm migration: Sperm cells are ejaculated into the vagina during sexual intercourse or can be introduced through assisted reproductive techniques. The sperm must travel through the cervix, into the uterus, and then into the fallopian tube to reach the awaiting egg.
  3. Sperm-egg interaction: Once in the fallopian tube, sperm cells begin their journey toward the egg. The sperm swim through the cervical mucus, the uterus, and eventually reach the fallopian tube. Only a few sperm cells out of millions will reach the vicinity of the egg.
  4. Penetration of the egg: When a sperm cell reaches the egg, it must penetrate the protective layers surrounding the egg, including the zona pellucida. The sperm releases enzymes that help it break through these layers.
  5. Fusion of sperm and egg: Once a sperm penetrates the egg, the membranes of the sperm and egg fuse, combining their genetic material. This fusion creates a fertilized egg or zygote, which contains the complete set of chromosomes required to develop into an embryo.
  6. Activation of the egg: The fusion of sperm and egg triggers various changes in the egg, preventing other sperm from entering and initiating the process of embryonic development.
  7. Embryo formation: After fertilization, the zygote begins to divide and multiply as it moves through the fallopian tube towards the uterus. It develops into a blastocyst, which is a hollow ball of cells.
  8. Implantation: The blastocyst travels to the uterus and implants into the thickened uterine lining (endometrium). Implantation is essential for pregnancy to occur, as it establishes the connection between the developing embryo and the mother's blood supply.

Following successful implantation, the embryo continues to develop, and pregnancy begins.

It is important to note that fertilization can be a complex process, and various factors can affect the chances of successful fertilization and subsequent pregnancy.



Implantation

Implantation is a critical step in the process of pregnancy, occurring after fertilization.

It refers to the embedding of the fertilized egg, known as the blastocyst, into the lining of the uterus (endometrium). Implantation typically takes place around 6 to 12 days after fertilization, although the exact timing can vary from person to person.

Here's an overview of the process of implantation:

1. Blastocyst development: After fertilization, the zygote begins to divide and develop into a hollow ball of cells called a blastocyst. The blastocyst consists of two main parts: the inner cell mass, which will become the embryo, and the outer layer of cells, known as the trophoblast.
2. Reaching the uterus: The blastocyst moves through the fallopian tube toward the uterus. This journey takes approximately 3 to 4 days after fertilization.
3. Preparation of the uterine lining: Meanwhile, in the uterus, the endometrium undergoes changes in response to hormonal signals. The thickened and enriched endometrium is prepared to receive the blastocyst.
4. Attachment and implantation: Once the blastocyst reaches the uterus, it begins to make contact with the endometrial lining. The trophoblast cells of the blastocyst attach to the receptive endometrium. They then penetrate the endometrial tissue, allowing the blastocyst to become firmly embedded within the uterus.
5. Formation of the placenta: After implantation, the trophoblast cells continue to multiply and develop. They differentiate into two layers: the cytotrophoblast and the syncytiotrophoblast. The syncytiotrophoblast establishes a connection with the maternal blood vessels, forming the

early placenta. The placenta plays a vital role in providing nourishment and oxygen to the developing embryo and fetus.

Implantation is a crucial stage for successful pregnancy. Not all blastocysts will successfully implant, and factors such as the health of the embryo, the receptivity of the endometrium, and hormonal balance can influence the implantation process. Some individuals may experience mild spotting or cramping during implantation, but these symptoms are not universally present.

Destructive operations in obstetrics

- Destructive operations, also known as destructive procedures, in obstetrics refer to surgical interventions that involve the intentional destruction or removal of fetal tissue to facilitate delivery or address specific medical conditions.
- These procedures are generally considered as a last resort and are rarely performed today due to advancements in obstetric care and the availability of alternative techniques.

- **Some examples of destructive operations that were historically performed include:**
  1. **Cranioclasia**: This procedure involved the crushing or collapsing of the fetal skull to facilitate delivery in cases where the fetal head was too large or malformed.
  2. **Embryotomy**: It involved the dismemberment or removal of the fetus to enable delivery when it was not possible through conventional means. This procedure was typically reserved for cases where the fetus had died in utero and had become too large for vaginal delivery.
  3. **Cephalic version and extraction**: This procedure was performed to reposition the fetus in cases of a breech presentation (when the baby's buttocks or feet are positioned to be delivered first instead of the head). The procedure involved external manipulation to turn the baby into a head-down position and facilitate vaginal delivery.
  4. **Symphysiotomy**: It involved the surgical division of the pubic symphysis (the joint between the two pubic bones) to widen the pelvic outlet and allow for the delivery of a large or obstructed fetus. This procedure is no longer performed in most developed countries due to associated complications and the availability of safer alternatives such as cesarean section.

PUBERTAL CHANGES AND PUBERTAL DISORDERS

Puberty refers to the stage of human development during which a child's body undergoes significant physical, hormonal, and sexual changes, transitioning them from childhood to adulthood.

In girls, it is a natural and gradual process that typically begins between the ages of 8-13 years.

Morphological changes

Order is beginning

1. Breast budding – Thelarche
2. Pubic & Axillary hair growth – Adrenarche
3. Increase in height – Growth spurt
4. Menstruation – Menarche

- **Endocrine in puberty**

- The level of gonadotropin are less until the age of 6-8 years
- Mainly it is due to negative feedback effect of hypothalamic pituitary system (Estrogen)
- As puberty approach the negative feedback effect of estrogen is gradually lost, this results in some significant changes in endocrine function of girl.

1. Hypothalamus: The hypothalamus releases gonadotropin-releasing hormone (GnRH) in pulses, which stimulates the pituitary gland to release follicle-stimulating hormone (FSH) and luteinizing hormone (LH).
2. Pituitary Gland: FSH and LH released by the pituitary gland act on the ovaries to initiate the production of sex hormones and follicle development.
3. Ovaries: The ovaries, located in the pelvis, produce two primary sex hormones: estrogen (particularly estradiol) and progesterone.
   a) Estrogen: Estrogen plays a central role in the development of secondary sexual characteristics in females. It stimulates breast development, the growth of pubic and underarm hair, and the widening of hips. Estrogen also influences bone growth and promotes the accumulation of fat in specific areas of the body.
   b) Progesterone: Progesterone, primarily produced during the menstrual cycle, prepares the uterus for possible pregnancy. It is involved in the regulation of the menstrual cycle and supports the maintenance of a potential pregnancy.
   c) Menstrual Cycle: The menstrual cycle is regulated by hormonal fluctuations. Estrogen and progesterone levels rise and fall, leading to the thickening and shedding of the uterine lining. This results in menstruation, the monthly vaginal bleeding that typically lasts for several days.
4. Thyroid Hormones: While not specific to female puberty, thyroid hormones produced by the thyroid gland also influence overall growth and development, including bone growth and metabolism.
5. Feedback Mechanisms: The endocrine system maintains a delicate balance through feedback mechanisms. Hormones released during puberty interact with the hypothalamus and pituitary gland to regulate their own production, ensuring the appropriate levels of estrogen, progesterone, FSH, and LH.

Delayed Puberty

- Delayed puberty is said in which the onset of puberty is significantly later than the typical age range.
- In girls, delayed puberty is defined as the absence of breast development (thelarche) by the age of 13, or if there is no onset of menstruation (menarche) by the age of 16.

Several factors can contribute to delayed puberty, including:

1. Constitutional Delay: This is the most common cause of delayed puberty and is often referred to as "late bloomers." It occurs when an individual's growth and development follow a slower but normal pattern, typically due to genetic or familial factors. In these cases, puberty usually occurs later, but there is eventual catch-up growth.
2. Chronic Illness or Systemic Conditions: Certain chronic illnesses, such as malnutrition, kidney disease, cystic fibrosis, or gastrointestinal disorders, can affect hormone production and delay the onset of puberty.

3. Hormonal Imbalances: Disorders affecting the endocrine system, such as hypothyroidism or pituitary gland abnormalities, can disrupt the normal hormonal signals necessary for the initiation of puberty.
4. Genetic Disorders: Some genetic conditions, like Turner syndrome, can lead to delayed or absent puberty due to abnormalities in reproductive development.
5. Excessive Exercise or Low Body Weight: Intense physical training, rigorous exercise, or extremely low body weight can impact hormonal balance and delay puberty onset.

ADOLESCENCE

✓ Adolescence is a significant period of development that encompasses the transition from childhood to adulthood.

It is a time of physical, emotional, and social changes that occur in both males and females.

Cervicitis

✓ Cervicitis refers to inflammation of the cervix, which is the lower part of the uterus that extends into the vaginal canal.

✓ It is a common condition that can affect women of all ages, including adolescents and adults.

✓ Cervicitis can be caused by various factors, including infections, chemical irritants, or physical trauma.

Cervical Erosion

✓ Cervical erosion is a condition characterized by the presence of columnar epithelium on the surface of the cervix, which is normally covered by squamous epithelium.

✓ It is a common condition that can occur in women of all ages, although it is more frequently observed in younger women and those who have given birth.

Displacement of Uterus

Displacement of the uterus refers to the abnormal positioning or movement of the uterus from its usual anatomical position within the pelvis. It can be classified into different types based on the direction and extent of displacement.

Some important types of uterine displacement.

1. Retroversion: Retroversion, also known as retroverted uterus or tipped uterus, occurs when the uterus tilts backward toward the spine instead of its normal forward position. It is a common variation of uterine position and often doesn't cause any symptoms or complications. However, in

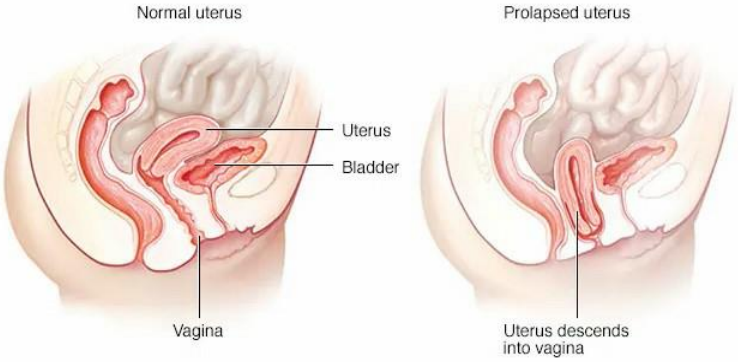
some cases, it can be associated with discomfort, pain during sexual intercourse, or difficulty with certain medical procedures.

2. Anteversion: Anteversion refers to the opposite condition of retroversion. In anteversion, the uterus is tilted forward toward the bladder instead of its typical position. Anteversion is the normal position of the uterus in most women.
3. Retroflexion: Retroflexion, also known as retroflexed uterus, occurs when the uterus bends backward at the cervix and body of the uterus. It is a less common form of uterine displacement and may be associated with symptoms such as pelvic pain, back pain, or painful menstrual periods.

Prolapse of Uterus

Prolapse of the uterus, also known as uterine prolapse, occurs when the uterus descends or slips out of its normal position and into the vaginal canal or even outside the vagina.

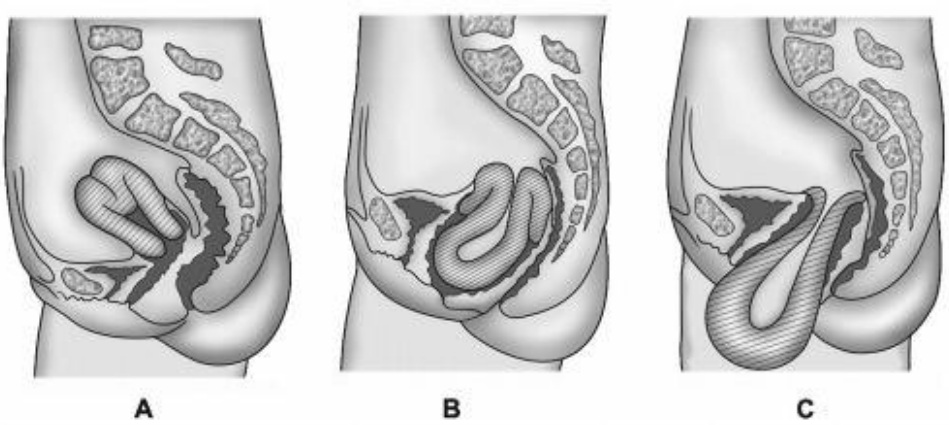
It is a condition that typically affects women, particularly those who have given birth, experienced pelvic floor muscle weakness, or gone through menopause.



Uterine prolapse can vary in severity and may involve different degrees of descent.

Causes of prolapse of uterus

1. Weakening of Pelvic Support Structures: The primary cause of uterine prolapse is the weakening or stretching of the pelvic floor muscles and ligaments that provide support to the uterus. This weakening can occur due to factors such as multiple vaginal childbirths, pregnancy, obesity, chronic constipation, chronic coughing, or repetitive heavy lifting.
2. Estrogen Deficiency: After menopause, the decline in estrogen levels can contribute to the loss of muscle tone and tissue elasticity in the pelvic region, increasing the risk of uterine prolapse.
3. Age and Hormonal Changes: As women age, the supportive tissues in the pelvic area can naturally weaken, making prolapse more likely.
4. Other Contributing Factors: Conditions that increase intra-abdominal pressure, such as chronic coughing, obesity, or straining during bowel movements, can further contribute to the development of uterine prolapse.



Inversion of Uterus

- ✓ Inversion of the uterus, also known as uterine inversion, is a rare but serious condition in which the uterus turns inside out and protrudes through the cervix into the vagina or even outside the body.
- ✓ It is considered a medical emergency that requires immediate attention and intervention.
- ✓ Uterine inversion can occur during or after childbirth, but it can also occur in non-pregnant women, usually as a result of a benign or malignant uterine tumor.

Here are some important points about uterine displacement, prolapse, inversion:

Causes:

1. Uterine Atony: It is the inability of the uterus to contract and retract after childbirth. Uterine atony can result from excessive stretching of the uterus during a difficult or prolonged labor, or the improper administration of medications used to induce or augment labor.
2. Fundal Placental Attachment: In some cases, uterine inversion can occur if the placenta remains attached to the fundus (upper part) of the uterus and exerts traction during delivery.
3. Tumors: Rarely, it can be caused by the presence of a benign or malignant tumor within the uterus, such as a large fibroid or uterine sarcoma.

Symptoms: some symptoms can be severe and include:

1. Visible Prolapse: The most apparent symptom is the protrusion of the uterus through the cervix and into the vagina or beyond.
2. Severe Pain: Women with uterine inversion often experience intense pelvic pain, which may be accompanied by abdominal pain.
3. Hemorrhage: Uterine inversion can cause profuse vaginal bleeding, which can lead to significant blood loss and potentially life-threatening hemorrhage.
4. Shock: In severe cases, excessive bleeding and trauma can result in symptoms of shock, including rapid heartbeat, low blood pressure, pale skin, and dizziness.

Diagnosis

Physical Examination: A healthcare provider will perform a thorough physical examination, including a pelvic examination, to assess the condition and position of the uterus.

Stabilization and Resuscitation: Immediate measures will be taken to stabilize the woman's condition, including addressing any hemorrhage or shock through fluid replacement and blood transfusion if necessary.

Manual Reduction: In most cases, uterine inversion can be corrected through manual manipulation. The uterus is carefully pushed back into its normal position through the cervix. This procedure is typically performed under anesthesia.

Surgical Intervention: In some instances, surgical intervention may be necessary if manual reduction is unsuccessful or if complications arise. Surgical procedures may include a laparotomy (abdominal surgery) or a laparoscopy (minimally invasive surgery) to reposition the uterus and repair any associated damage.

Inflammation of Uterus

- ✓ Inflammation of the uterus is known as endometritis. It is a condition characterized by inflammation or infection of the endometrium, which is the lining of the uterus.
- ✓ Endometritis can occur in women of reproductive age and may result from various causes.

Here are some key points about endometritis:

Causes of endometritis

1. Infection: The most common cause of endometritis is a bacterial infection. The infection can occur after childbirth (postpartum endometritis), following a miscarriage or abortion, or due to medical procedures that involve the uterus, such as dilation and curettage (D&C).
2. Sexually Transmitted Infections (STIs): Certain sexually transmitted infections, such as chlamydia or gonorrhea, can lead to endometritis.
3. Invasive Procedures: Invasive procedures that introduce bacteria into the uterus, such as intrauterine device (IUD) insertion or hysteroscopy, can occasionally result in endometritis.
4. Compromised Immune System: Women with weakened immune systems, such as those with HIV/AIDS or undergoing immunosuppressive therapy, may be more susceptible to developing endometritis.

Symptoms of endometritis

1. Abnormal Vaginal Discharge: Increased or foul-smelling vaginal discharge may be present. It may appear yellowish or greenish.
2. Pelvic Pain: Women with endometritis often experience pelvic pain or discomfort, which may be dull or cramp-like.
3. Fever: Elevated body temperature, with or without chills, is a common symptom of endometritis.

4. Abnormal Uterine Bleeding: Some women may experience abnormal uterine bleeding, such as heavy or irregular menstrual bleeding.
5. General Malaise: Fatigue, general weakness, and a feeling of being unwell (malaise) may be present.

Physiological Changes in Pregnancy

Pregnancy is a unique physiological process that involves significant changes in a woman's body to support the growth and development of the fetus.

These changes are by hormonal, cardiovascular, respiratory, metabolic, and musculoskeletal adaptations. Here are some of the key physiological changes that occur during pregnancy:

1. **Hormonal Changes:**
   a. Human Chorionic Gonadotropin (hCG): After implantation of the fertilized egg, the placenta begins to produce hCG, which supports the production of progesterone and estrogen and helps maintain the pregnancy.
   b. Estrogen and Progesterone: These hormones play crucial roles in supporting pregnancy by promoting uterine growth, increasing blood flow to the uterus, relaxing smooth muscles, and preparing the breasts for lactation.
2. **Cardiovascular Changes:**
   a. Increased Blood Volume: During pregnancy, blood volume gradually increases to support the needs of the growing fetus and placenta. This increase can range from 30% to 50% above pre-pregnancy levels.
   b. Cardiac Output: Cardiac output, the amount of blood pumped by the heart per minute, increases significantly during pregnancy to meet the increased metabolic demands. It reaches its peak around the mid-third trimester.
   c. Heart Rate: Resting heart rate typically increases during pregnancy due to the higher cardiac output and increased blood volume.
3. **Respiratory Changes:**
   a. Increased Oxygen Demand: As the fetus grows, there is an increased demand for oxygen. Maternal respiratory rate and tidal volume (amount of air inhaled and exhaled in each breath) increase to meet this demand.
   b. Oxygen Exchange: The oxygen-carrying capacity of the blood is enhanced by an increase in red blood cell production and an increase in the depth of respiration.
4. **Metabolic Changes:**
   a. Increased Energy Requirements: Pregnancy requires additional energy to support fetal growth, increased maternal metabolism, and physiological changes. This results in an increased basal metabolic rate.
   b. Insulin Resistance: To ensure a steady supply of glucose to the fetus, pregnant women develop a degree of insulin resistance, allowing more glucose to be available for fetal growth and development.
5. **Musculoskeletal Changes:**
   a. Ligament Relaxation: Hormonal changes, particularly the increased levels of relaxin, cause relaxation and stretching of ligaments, preparing the pelvic area for childbirth.

b. Postural Changes: As the pregnancy progresses, the center of gravity shifts forward, leading to an altered posture and changes in the curvature of the spine.

6. **Renal and Urinary Changes:**
   a. Increased Renal Blood Flow: Renal blood flow increases during pregnancy to support increased filtration and waste elimination.
   b. Increased Urinary Frequency: The growing uterus can exert pressure on the bladder, resulting in increased urinary frequency, particularly in the first and third trimesters.

✓ These physiological changes occur gradually over the course of pregnancy and are essential for supporting the growth and development of the fetus, ensuring adequate oxygen and nutrient supply, and preparing the body for labor and childbirth.

Sings & Symptoms of pregnancy

✓ Pregnancy is associated with various signs and symptoms that can vary from woman to woman.

✓ It's important to note that not all women will experience the same symptoms, and some women may have no symptoms at all in the early stages of pregnancy.

- **Here are some common signs and symptoms of pregnancy**:

i. **Missed Period**: One of the most common early signs of pregnancy is a missed menstrual period. However, it's important to note that there can be other reasons for a missed period, such as hormonal imbalances or certain medical conditions.

ii. **Breast Changes**: Many women experience breast changes during pregnancy. This may include breast tenderness, swelling, enlargement, and darkening of the areolas (the area around the nipples).

iii. **Nausea and Morning Sickness**: Nausea, often referred to as morning sickness, is a common symptom of pregnancy. It can occur at any time of the day and may be accompanied by vomiting. Morning sickness typically improves as the pregnancy progresses, but some women may experience it throughout the entire pregnancy.

iv. **Fatigue**: Feeling tired or experiencing fatigue is a common symptom in early pregnancy. Hormonal changes, increased blood production, and the body's energy demands for fetal development can contribute to feelings of fatigue.

v. **Increased Urination**: The growing uterus can put pressure on the bladder, leading to increased frequency of urination. This symptom may be more noticeable in the early and late stages of pregnancy.

vi. **Mood Swings**: Hormonal fluctuations during pregnancy can lead to mood swings, ranging from happiness and excitement to irritability and sadness.

vii. **Frequent Heartburn**: Hormonal changes can relax the muscles that normally prevent stomach acid from rising into the esophagus, leading to heartburn and indigestion.

viii. **Constipation**: Hormonal changes can also slow down digestion, resulting in constipation for some pregnant women.

Breast feeding

Breastfeeding is the natural and recommended method of feeding infants, providing them with optimal nutrition and numerous health benefits.

Composition of breast milk

- Breast milk is a complex and dynamic fluid that provides optimal nutrition and immune protection for infants.
- Its composition can vary depending on various factors such as the stage of lactation, the mother's diet, and the health of the mother and baby.

Composition of breast milk:

1. **Macronutrients:**
   a. Proteins: Breast milk contains various proteins, including whey proteins (e.g., lactoferrin, immunoglobulins) and casein. The proportion of whey proteins is higher in the early stages of lactation, making it easier for infants to digest.
   b. Fats: Breast milk contains a significant amount of fats, including essential fatty acids and cholesterol, which are crucial for the baby's brain and nervous system development.
   c. Carbohydrates: The primary carbohydrate in breast milk is lactose, which provides energy to the baby and supports the growth of beneficial bacteria in the gut.

2. **Micronutrients**:

Breast milk contains a wide range of vitamins and minerals, including vitamins A, C, D, E, K, B vitamins, calcium, iron, zinc, selenium, and others.

The concentration of these micronutrients can vary depending on the mother's diet and her own nutrient stores.

3. **Immunological Factors**:
   Breast milk is rich in various bioactive components that support the baby's immune system. It contains antibodies (immunoglobulins), white blood cells, enzymes, and other factors that provide protection against infections and promote immune development.
4. **Hormones and Growth Factors**:
   Breast milk contains hormones and growth factors that play a role in the baby's growth and development, including insulin, leptin, growth factors (e.g., epidermal growth factor), and others.
5. **Bioactive Molecules**:
   Breast milk also contains various bioactive molecules with important functions. These include prebiotics, probiotics, nucleotides, and other bioactive compounds that support the baby's gut health, digestion, and overall well-being.

Colostrum

Colostrum is the first milk produced by a mother's breasts during the initial few days after giving birth. It is a thick, yellowish fluid that is often referred to as "liquid gold" due to its numerous health benefits for newborns.

- ✓ It is crucial for the newborn's overall health and immune system development.
- ✓ It acts as the baby's first "vaccine" by providing essential nutrients, antibodies, and immune factors that protect against infections and promote optimal growth.
- ✓ As the days pass after birth, colostrum gradually transitions into mature breast milk, which continues to provide vital nutrition and immune support for the growing infant.

Technique of feeding

Feeding techniques can vary depending on the age of the infant and the method of feeding (breastfeeding, bottle-feeding, or a combination of both).

Breastfeeding:

1. Positioning: Position the baby in a comfortable and supported position. The mother can use pillows or a nursing pillow to bring the baby to breast level. The baby's head, neck, and body should be aligned.
2. Latching: Ensure that the baby's mouth is wide open with the lips flanged outward. Bring the baby to the breast, aiming the nipple towards the baby's upper lip. Allow the baby to take a good portion of the areola into their mouth to ensure a deep latch.
3. Suckling: The baby should use a rhythmic sucking motion, with pauses and occasional swallows. The mother can help by supporting the breast and observing the baby's feeding cues.
4. Switching Sides: Offer the other breast when the baby finishes feeding from the first breast or shows signs of hunger. This helps ensure balanced milk production and allows the baby to receive both the foremilk (initial thin milk) and hindmilk (richer, fatty milk).

Bottle-Feeding:

1. Preparation: Sterilize bottles, nipples, and other feeding equipment before use. Prepare the formula as per the manufacturer's instructions or warm previously refrigerated breast milk by placing the bottle in warm water.
2. Positioning: Hold the baby in an upright or semi-upright position, supporting their head and neck. Tilt the bottle so that the nipple is always filled with milk, preventing the baby from swallowing air.
3. Nipple Selection: Choose a nipple with a flow rate appropriate for the baby's age. Slow-flow nipples are usually recommended for newborns to mimic the pace of breastfeeding.
4. Feeding Pace: Allow the baby to control the pace of feeding. Pause periodically during the feeding to burp the baby and check for signs of fullness or hunger.
5. Burping: After feeding, hold the baby upright or place them on your shoulder and gently pat or rub their back to help release any trapped air.
6. Combination Feeding: Some parents choose to combine breastfeeding and bottle-feeding with expressed breast milk or formula. In this case, it's important to follow the techniques mentioned above for each respective feeding method.

- Feeding Low Birth Weight (LBW) babies requires special attention and care due to their unique nutritional needs and potential challenges.

Weaning foods

Weaning foods, also known as complementary foods, are introduced to infants when they begin transitioning from exclusive breastfeeding or formula feeding to a more varied diet that includes solid foods.

Some recommendations for weaning foods:

1. **Timing:**
   - The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of a baby's life.
   - After six months, complementary foods should be introduced while continuing breastfeeding or formula feeding until at least two years of age.
2. **Introduction of Solid Foods:**
   - Start with smooth, runny purees or mashed foods to help the baby adjust to the new textures.
   - Begin with small amounts of a single food item and gradually introduce new foods one at a time, allowing several days in between to watch for any signs of allergies or intolerances.
3. **Nutrient-Rich Foods:**
   - Offer a variety of nutrient-dense foods to meet the baby's nutritional needs.
   - Examples include cooked and mashed fruits, vegetables, grains (such as rice or oats), and well-cooked and finely minced or mashed proteins (such as meats, fish, poultry, or legumes).
   - Include iron-rich foods like fortified cereals, meat, poultry, fish, and cooked legumes (beans, lentils) to support the baby's iron requirements.
4. **Texture Progression:**
   - As the baby gets used to purees, gradually increase the texture and consistency of foods. Offer mashed or finely chopped foods to encourage chewing and promote oral motor development.
   - By around 8-10 months, introduce finger foods that are soft and easily manageable for the baby to self-feed, such as small pieces of well-cooked vegetables, soft fruits, or small chunks of soft cheese.
5. **Allergenic Foods:**
   - Introduce potentially allergenic foods one at a time to watch for any adverse reactions. Examples include eggs, peanuts, tree nuts, wheat, soy, fish, and shellfish.
   - Consult with a healthcare professional for guidance, especially if there is a family history of food allergies.
6. **Safe Food Preparation:**
   - Practice good hygiene when preparing and handling food.
   - Ensure that all utensils and surfaces are clean to minimize the risk of contamination.
   - Avoid adding salt, sugar, or other seasonings to the baby's food, as their kidneys and taste preferences are still developing.

7. **Responsive Feeding:**
   - ❖ Follow the baby's cues of hunger and fullness.
   - ❖ Offer foods in a relaxed and positive environment, allowing the baby to self-regulate their intake.
   - ❖ Offer water in a cup alongside meals to encourage drinking from a cup and support hydration.

Remember, every baby is different, and the progression of weaning foods may vary.

It's important to introduce foods at the appropriate developmental stage and monitor the baby's response to ensure their nutritional needs are met.

Acute and Chronic Pelvic Pain

Acute and chronic pelvic pain are two types of pain experienced in the lower abdominal area and pelvis. They can have various causes and durations, and it's important to differentiate between them for proper diagnosis and treatment.

1. **Acute Pelvic Pain:** Acute pelvic pain refers to sudden and severe pain that develops rapidly and lasts for a relatively short duration.
   It may be a symptom of a serious medical condition or an acute problem in the pelvic region.
   Common cause of acute pelvic pain

- ➢ Pelvic inflammatory disease (PID)
- ➢ Ovarian cysts or ruptured ovarian cysts
- ➢ Ectopic pregnancy (a pregnancy that implants outside the uterus)
- ➢ Appendicitis
- ➢ Urinary tract infections or kidney stones
- ➢ Ovarian torsion (twisting of the ovary)
- ➢ Gastrointestinal issues like diverticulitis or bowel obstruction

The treatment for acute pelvic pain depends on the underlying cause.

It may involve medications, antibiotics, surgery, or other interventions, depending on the specific condition.

2. **Chronic Pelvic Pain:** Chronic pelvic pain refers to persistent or recurrent pain in the pelvic area that lasts for at least six months or longer.
   It may be constant or intermittent and significantly impacts a person's quality of life. Causes of chronic pelvic pain can be complex and multifactorial.
   Common cause of chronic pelvic pain

- ➢ Endometriosis (a condition where the tissue lining the uterus grows outside the uterus)
- ➢ Adenomyosis (the presence of endometrial tissue within the muscle wall of the uterus)
- ➢ Pelvic adhesions or scar tissue
- ➢ Chronic pelvic inflammatory disease
- ➢ Interstitial cystitis (a chronic bladder condition)
- ➢ Pelvic floor muscle dysfunction

- Irritable bowel syndrome (IBS) or other gastrointestinal disorders
- Chronic pain conditions like fibromyalgia or neuropathic pain syndromes

The treatment for chronic pelvic pain depends on the underlying cause.

It often involves a multidisciplinary approach, which may include medications, physical therapy, hormone therapy, lifestyle changes, and in some cases, surgery.

Pelvic inflammatory disorders:

Pelvic inflammatory disease (PID) is a term that encompasses a group of infections in the female reproductive organs, including the uterus, fallopian tubes, ovaries, and surrounding tissues. It occurs when bacteria from the vagina or cervix spread upward into the upper reproductive tract, causing inflammation and infection.

PID is typically caused by sexually transmitted infections (STIs), with the most common culprits being chlamydia and gonorrhea. However, other bacteria that are normally found in the vagina can also cause PID.

Most common symptoms of PID includes:

- Lower abdominal pain: This is the most common symptom and is often described as dull, constant, or cramp-like.
- Abnormal vaginal discharge: It may be yellow or green, with an unusual odor.
- Painful or frequent urination: Some women may experience discomfort or a burning sensation when urinating.
- Irregular menstrual bleeding: This can include heavier or longer periods, spotting between periods, or changes in the menstrual cycle.
- Pain during sexual intercourse: Many women with PID experience pain or discomfort during intercourse, known as dyspareunia.
- Fever and general malaise: Some women may develop a fever, feel tired, or have other flu-like symptoms.

Complication of PID includes

- Tubo-ovarian abscess: This is a collection of pus in the fallopian tubes and ovaries.
- Infertility: The scarring and damage caused by PID can block the fallopian tubes or lead to pelvic adhesions, increasing the risk of infertility.
- Ectopic pregnancy: Scarring and blockage of the fallopian tubes can make it difficult for a fertilized egg to travel to the uterus, resulting in an ectopic pregnancy (a pregnancy that implants outside the uterus).
- Chronic pelvic pain: PID can cause ongoing pelvic pain that persists even after treatment.

Salpingitis

- Salpingitis is a medical term that refers to inflammation of the fallopian tubes.

- The fallopian tubes are a pair of thin, muscular tubes that connect the ovaries to the uterus.
- They play a crucial role in transporting eggs from the ovaries to the uterus and are also the site where fertilization occurs.
- Salpingitis is typically caused by a bacterial infection, most commonly due to sexually transmitted infections (STIs) such as chlamydia and gonorrhea.
- The most common symptoms of salpingitis include pelvic pain, particularly during menstruation or sexual intercourse, abnormal vaginal discharge, fever, and general discomfort.
- In some cases, salpingitis may cause no noticeable symptoms, making it important to seek medical attention if you suspect you may have an infection.
- If left untreated, salpingitis can lead to serious complications, including the formation of scar tissue and adhesions in the fallopian tubes, which can cause infertility or increase the risk of ectopic pregnancy (a pregnancy that implants outside the uterus).
- Treatment for salpingitis typically involves antibiotics to clear the infection.
- If you suspect you have salpingitis or are experiencing any symptoms related to your reproductive health, it's important to consult a healthcare professional for an accurate diagnosis and appropriate treatment.

Oophoritis

- Oophoritis is a medical term that refers to inflammation of one or both ovaries.
- The ovaries are the female reproductive organs responsible for producing eggs and releasing hormones such as estrogen and progesterone.
- Oophoritis is commonly caused by an infection, often resulting from a bacterial or viral infection.
- It can occur as a complication of an ascending infection from the lower genital tract, such as from untreated sexually transmitted infections (STIs) like chlamydia or gonorrhea.
- It can also be caused by other types of infections, such as pelvic inflammatory disease (PID), postpartum infections, or infections related to surgery.
- Common symptoms include pelvic pain or discomfort, tenderness in the lower abdomen, fever, abnormal vaginal discharge, irregular menstrual bleeding, pain during sexual intercourse, and general feelings of illness or fatigue.
- Complication includes ovarian abscesses, scarring, and adhesions within the ovaries.
- These complications can potentially affect fertility and increase the risk of ectopic pregnancy.
- To diagnose oophoritis, a healthcare provider may perform a physical examination, review symptoms and medical history, and order additional tests such as blood tests, ultrasound imaging, or laparoscopy (a surgical procedure to visualize the pelvic organs).
- The treatment for oophoritis typically involves addressing the underlying infection. Antibiotics are commonly prescribed to treat bacterial infections.

FEOTUS IN UTERO & FEOTO PELVIC RELATIONSHIP

- ❖ During pregnancy, the fetus develops and grows within the uterus, specifically within the amniotic sac.
- ❖ The relationship between the fetus and the pelvis is important for the development, positioning, and eventual delivery of the baby.
- ❖ Overview of the fetus in utero and the fetal-pelvic relationship during pregnancy

1. Fetal Development: The fetus develops from the fertilized egg, or zygote, and undergoes various stages of development during pregnancy. The fetus is surrounded by amniotic fluid, which provides protection and cushioning.
2. Positioning of the Fetus: Throughout pregnancy, the fetus can assume different positions within the uterus. The most common and ideal position for delivery is with the fetus head down, facing the mother's back. This position is called cephalic presentation, specifically the vertex presentation when the baby's head is fully flexed.
3. Engagement and Station: As the pregnancy nears term, the fetus typically engages in the pelvis, meaning that the baby's head enters the maternal pelvis and settles into the lower part of the pelvis. This is known as engagement. The level of the baby's head in relation to the ischial spines of the mother's pelvis is measured and referred to as the station. A station of 0 means the baby's head is at the level of the ischial spines, while a negative station indicates that the head is higher in the pelvis and a positive station means the head is lower.
4. Engagement and Labor: Engagement of the fetus in the pelvis is an important milestone in preparation for labor and delivery. Once the baby's head is engaged, it exerts pressure on the cervix, which can initiate the process of labor. As labor progresses, the baby descends further into the pelvis, and the cervix dilates and effaces, leading to eventual delivery.
5. Fetal-Pelvic Relationship and Delivery: The size and shape of the maternal pelvis, as well as the position and size of the fetus, can impact the delivery process. An appropriately sized and shaped pelvis, along with an optimally positioned and appropriately sized fetus, is ideal for a smooth vaginal delivery. However, certain factors such as a narrow pelvis, abnormal fetal position or size, or other complications may necessitate alternative delivery methods, such as a cesarean section.

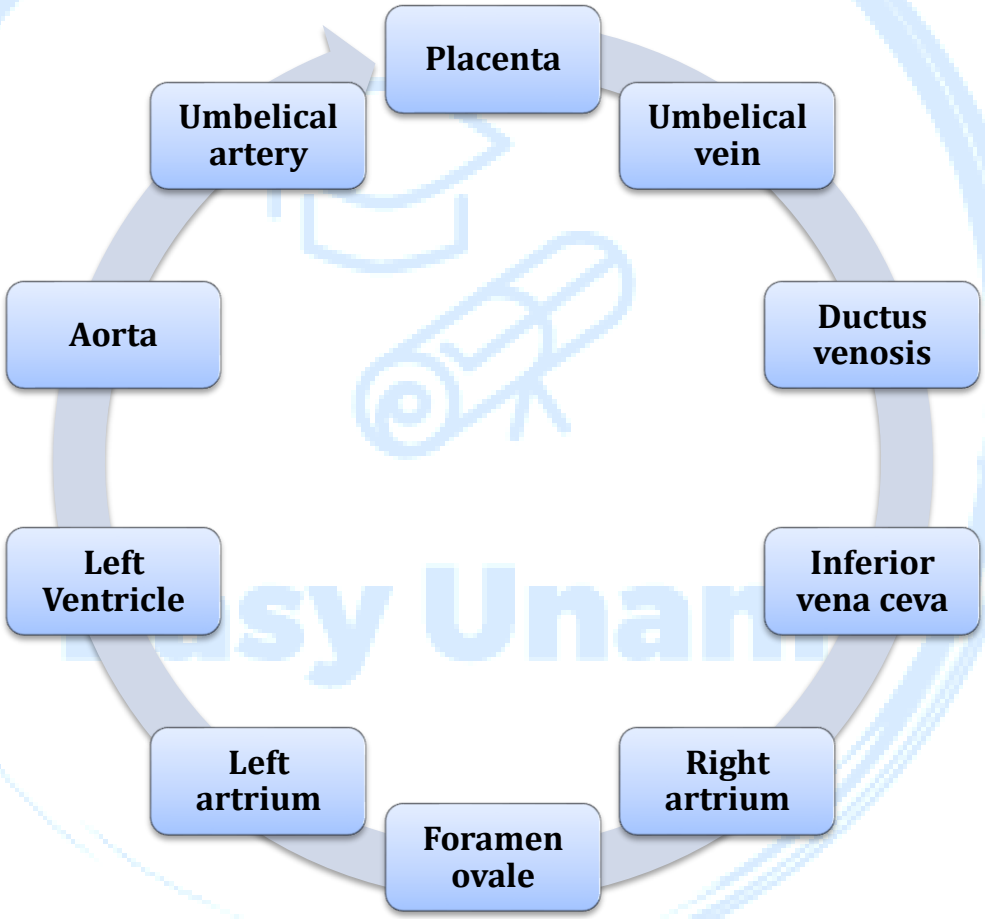
FOETAL CIRCULATION

- Fetal circulation refers to the circulatory system of a developing fetus inside the mother's womb.
- The fetal circulatory system is unique and undergoes specific adaptations to support the needs of the growing fetus.
- These adaptations ensure that oxygen and nutrients are delivered to the developing organs and tissues while waste products are efficiently removed.

1. Placenta: The placenta is an organ that develops during pregnancy and acts as a bridge between the mother and fetus. It provides oxygen and nutrients to the fetus while removing waste products.
2. Umbilical Cord: The umbilical cord connects the fetus to the placenta. It contains two arteries and one vein.
   The umbilical arteries carry deoxygenated blood from the fetus to the placenta, while the umbilical vein carries oxygenated blood from the placenta to the fetus.

3. Ductus Venosus: The ductus venosus is a blood vessel that allows oxygenated blood from the placenta to bypass the liver and flow directly into the inferior vena cava, a large vein that carries blood back to the heart.
4. Foramen Ovale: The foramen ovale is an opening between the right and left atria (upper chambers) of the fetal heart.
   It allows oxygenated blood from the right atrium to flow directly into the left atrium, bypassing the fetal lungs.
5. Ductus Arteriosus: The ductus arteriosus is a blood vessel that connects the pulmonary artery (carrying deoxygenated blood from the right ventricle) to the aorta (the main artery of the body). It diverts a portion of the blood away from the lungs and into the systemic circulation.

Route of Fetal Circulation



Infertility

- Infertility is a medical condition characterized by the inability to conceive a child or carry a pregnancy to full term after a year or more of regular, unprotected sexual intercourse.
- Both men and women can experience infertility
- In fully lactating women, Pregnancy in unlikely up to 10 weeks postpartum.

- Fecundity = Probability of achieving a live birth within a single cycle
- Fecundability = Probability of achieving pregnancy within a single menstrual cycle.

It can be of 2 types

1. Male Infertility
2. Female Infertility

Male infertility refers to the inability of a man to impregnate a fertile female partner.

Causes

Pre testicular

1. Endocrine
   Gonadotropin deficiency
   Obesity
   Thyroid dysfunction
2. Psychosexual
   Erectile dysfunction
   Impotency
3. Drugs
   Antihypertensive
4. Genetic
   47 XXY
   Y chromosome deletion

Testicular

1. Immotile cilia
2. Cryptorchirdism
3. Infection
4. Toxins
5. Varicocele

Post testicular

1. Obstruction of efferent duct
2. Ejaculatory failure
3. Retrograde ejaculation
4. Hypospasdias
5. Bladder neck surgery

Investigation for male infertility

- **Semen analysis**: A semen analysis is the primary diagnostic test for male infertility. It involves collecting a semen sample and examining it in a laboratory. The analysis assesses various

parameters such as sperm count, sperm motility (movement), sperm morphology (shape), and other characteristics of the semen.

- **Hormone testing**: Blood tests may be performed to measure hormone levels, including testosterone, luteinizing hormone (LH), follicle-stimulating hormone (FSH), and prolactin. These tests can help evaluate hormonal imbalances that may affect sperm production and function.
- **Genetic testing**: Genetic tests, such as karyotype analysis, can identify chromosomal abnormalities or genetic mutations that may impact fertility.
- **Ultrasound imaging**: Scrotal ultrasound may be conducted to examine the testicles and identify any abnormalities, such as varicoceles or blockages in the reproductive tract.
- **Post-ejaculation urinalysis**: This test helps determine if sperm are flowing backward into the bladder during ejaculation, a condition known as retrograde ejaculation.
- **Transrectal ultrasound**: In some cases, a transrectal ultrasound may be performed to evaluate the prostate and seminal vesicles for any abnormalities.
- **Anti-sperm antibody testing**: This test checks for the presence of antibodies that may be attacking sperm and impairing their function.
- **Physical examination and medical history**: A thorough physical examination and discussion of the medical history can help identify potential factors contributing to infertility, such as infections, surgeries, or lifestyle habits.

Female factors

1. Ovarian – 30-40% - PCOD and endometriosis.
2. Tubal & Peritoneal: 30-40 % - Infection
3. Unexplained: 10-15%

1. Ovarian factor

- Anovulation
- Luteinizing unruptured follicular syndrome

2. Luteal phase defect

- Hypothyroidism
- Drug induced ovulation

3. Tubal factor

- Defective pick up
- Defective tubal motility
- Loss of cilia
- Obstruction
- Infection

4. Peritoneal factor

- Endometriosis
- Uterine factor
- Hypoplasia
- Fibroid uterus
- Endometritis

5. **Cervical factor**
    - Anatomical defects
    - Cervicitis
6. **Vaginal factors**
    - Atresia
    - Septum
    - Vaginitis

Investigation for male infertility

- **Ovulation Assessment**: Evaluating ovulation is a crucial step in investigating female infertility. Methods used to assess ovulation include tracking menstrual cycles, monitoring basal body temperature, using ovulation predictor kits, or conducting hormonal tests to measure hormone levels during different phases of the menstrual cycle.
- **Hormonal Testing**: Blood tests may be conducted to measure hormone levels, such as follicle-stimulating hormone (FSH), luteinizing hormone (LH), estradiol, progesterone, and thyroid-stimulating hormone (TSH). These tests help assess hormonal imbalances that may affect ovulation and overall fertility.
- **Ovarian Reserve Testing**: Ovarian reserve testing helps determine the quantity and quality of a woman's remaining eggs. Common tests for ovarian reserve include measuring anti-Müllerian hormone (AMH) levels, follicle-stimulating hormone (FSH) levels, and conducting antral follicle counts through ultrasound imaging.
- **Hysterosalpingography (HSG):** HSG is a radiologic procedure where a contrast dye is injected into the uterus, and X-rays are taken to assess the shape and condition of the uterine cavity and fallopian tubes. It helps identify any abnormalities, such as uterine fibroids, polyps, or blockages in the fallopian tubes.
- **Pelvic Ultrasound**: A pelvic ultrasound uses sound waves to visualize the reproductive organs, including the uterus, ovaries, and fallopian tubes. It can identify structural abnormalities, ovarian cysts, or any other issues that may impact fertility.
- **Laparoscopy**: In certain cases, a laparoscopy procedure may be performed. It involves inserting a thin, lighted instrument through a small incision in the abdomen to examine the reproductive organs directly. Laparoscopy helps detect conditions like endometriosis, pelvic adhesions, or ovarian cysts.
- **Genetic Testing**: Genetic testing may be recommended to identify specific genetic abnormalities that can affect fertility, such as chromosomal abnormalities or genetic disorders.
- **Infectious Disease Testing:** Tests for sexually transmitted infections (STIs) or other infectious diseases may be conducted as these can impact fertility.
- **Endometrial Biopsy:** An endometrial biopsy involves taking a small sample of tissue from the lining of the uterus (endometrium) to assess its receptivity and determine if any abnormalities are present.

Injuries of genital tract

Injuries to the genital tract can occur due to various reasons, including accidents, trauma, surgical procedures, or childbirth.

Some common injuries to genital tract are

- **Perineal Tears**: During childbirth, women may experience tears or lacerations in the perineum, which is the area between the vagina and anus. The severity of perineal tears can range from minor to more extensive tears that require surgical repair.
- **Vaginal Tears**: Trauma or injury to the vaginal walls can occur due to sexual intercourse, accidents, or medical procedures. Vaginal tears may cause pain, bleeding, and discomfort.
- **Cervical Tears**: The cervix, which is the lower part of the uterus, can occasionally sustain tears during childbirth or medical procedures. Cervical tears may lead to bleeding and require medical attention.
- **Urethral Injuries**: The urethra, which is the tube that carries urine from the bladder out of the body, can be injured due to trauma, accidents, or surgical procedures. Urethral injuries can cause pain, difficulty urinating, blood in the urine, and require medical intervention.
- **Testicular Trauma**: In males, trauma to the testicles can occur due to accidents, sports injuries, or direct blows to the genital area. Testicular trauma can cause pain, swelling, bruising, and may require medical evaluation and treatment.
- **Penile Injuries**: Trauma to the penis can result from accidents, sexual activities, or medical procedures. Penile injuries may include fractures (rupture of the penile tissue), penile trauma, or injury to the urethra. Immediate medical attention is necessary for severe penile injuries.
- **Pelvic Fractures**: Severe trauma or accidents can cause fractures to the pelvic bones, which may involve the genital organs and lead to significant complications. Pelvic fractures often require immediate medical attention and may involve multiple medical specialists.

Female Genital Tract Fistula

- **Vesicovaginal Fistula (VVF):** A vesicovaginal fistula is an abnormal connection between the bladder and the vagina. It leads to continuous leakage of urine from the vagina, resulting in urinary incontinence. VVF commonly occurs due to prolonged or obstructed labor, traumatic delivery, gynecological surgeries, or radiation therapy.
- **Rectovaginal Fistula (RVF):** A rectovaginal fistula is an abnormal connection between the rectum and the vagina. It causes the passage of stool or gas from the rectum into the vagina, leading to fecal incontinence. RVF can result from obstetric injuries, surgical complications, inflammatory bowel disease, or trauma.
- **Urethrovaginal Fistula:** Urethrovaginal fistula refers to an abnormal connection between the urethra and the vagina. It can cause urinary leakage or recurrent urinary tract infections. Urethrovaginal fistulas can occur due to obstetric injuries, surgical complications, or trauma.
- **Vesicouterine Fistula:** A vesicouterine fistula is a rare type of fistula that occurs between the bladder and the uterus. It can cause urinary leakage and menstrual abnormalities. Vesicouterine fistulas may develop as a result of uterine surgeries, such as cesarean sections or hysterectomies.

Cesarian Section

Most often the incision is made in lower uterine segment transversely as described by Kerr.

Occasionally, a low segment vertical incision, as describe by low vertical, may be used

Classical incision is a vertical incision into the body of uterus above the lower uterine segment and reaching the uterine fundus, & it is seldom used today..

Indication for Caesarian section

- **Previous C-section:** If a woman has had a previous C-section, the decision for subsequent deliveries depends on factors such as the type of uterine incision from the previous C-section, the reason for the previous C-section, and the potential risks associated with a vaginal birth after C-section (VBAC).
- **Labor Dystocia:** Labor dystocia refers to a condition where labor is prolonged or not progressing adequately. It can occur due to various reasons, such as ineffective contractions, failure of the cervix to dilate, or the baby's head not descending into the birth canal. If these issues persist despite appropriate interventions, a C-section may be recommended.
- **Fetal Distress:** If there are signs that the baby is experiencing distress during labor, such as abnormal heart rate patterns or insufficient oxygen supply, a C-section may be necessary for prompt delivery.
- **Abnormal Presentation:** If the baby is not positioned headfirst (cephalic presentation), certain types of abnormal presentations may require a C-section. These include breech presentation (feet or buttocks first), transverse lie (sideways), or shoulder presentation.
- **Placenta Previa:** Placenta previa occurs when the placenta is covering the cervix, either partially or completely. It can lead to significant bleeding during labor, making a C-section the preferred mode of delivery to avoid complications.
- **Placental Abnormalities:** Other placental abnormalities, such as placental abruption (the separation of the placenta from the uterus before delivery) or a low-lying placenta, may necessitate a C-section to ensure the well-being of the mother and baby.
- **Maternal Health Conditions:** Certain maternal health conditions may increase the risk of complications during vaginal delivery, making a C-section a safer option. Examples include active genital herpes infection, severe preeclampsia (high blood pressure during pregnancy), heart disease, or previous uterine surgery.
- **Multiple Pregnancy:** In cases of twins, triplets, or higher-order multiples, a C-section may be recommended due to factors like the position of the babies or concerns about the birth process.

Contraindication of Cesarian section

- **Emergent Vaginal Delivery:** In situations where an urgent or emergent vaginal delivery is necessary, such as severe fetal distress or maternal life-threatening conditions, a C-section may not be the preferred or feasible option due to the time required for preparation and surgery.

- **Maternal Hemodynamic Instability:** If a woman has unstable vital signs, such as severe hemorrhagic shock or cardiovascular collapse, the immediate stabilization of the mother's condition may take precedence over performing a C-section.
- **Absolute Fetal Demise:** In cases where the fetus has already died in utero, a vaginal delivery may be preferred over a C-section, especially if there are no other complications that necessitate surgical intervention.
- **Maternal Coagulation Disorders:** If a woman has a severe bleeding disorder or an uncontrolled coagulopathy, performing a surgical procedure like a C-section carries an increased risk of bleeding complications. In such cases, efforts may be made to correct the coagulation disorder before considering a C-section.
- **Maternal Refusal:** If a woman strongly prefers a vaginal delivery and there are no absolute indications for a C-section, healthcare providers typically respect the woman's autonomous decision. However, it's important to ensure that the decision is made with a thorough understanding of the risks and benefits for both the mother and baby.

Types of Cesarian section

- **Classical or Vertical Incision:** This type of C-section involves a vertical incision made in the midline of the abdomen and uterus. It is usually reserved for specific situations, such as cases of fetal distress or when there are difficulties accessing the baby. The classical incision is rarely performed today due to a higher risk of uterine rupture in future pregnancies.
- **Low Transverse or Bikini Incision:** This is the most common type of C-section incision. It is a horizontal incision made just above the pubic hairline, typically in the lower segment of the uterus. The low transverse incision is preferred due to its lower risk of complications and better healing compared to vertical incisions.
- **Modified or J-Incision:** In certain situations, such as when there are adhesions or fibroids that interfere with a low transverse incision, a modified or J-incision may be performed. This incision combines a transverse incision with a vertical extension at one or both ends, resembling the shape of the letter "J."
- **T-Incision or Inverted T-Incision:** This type of incision involves making a transverse incision along the lower abdomen, similar to a low transverse incision, but with an additional vertical extension in the midline (upward or downward), creating a "T" or inverted "T" shape. It may be used in cases where there are difficulties accessing the baby or specific surgical considerations.

➢ The choice of C-section type depends on several factors, including the reason for the C-section, the baby's position, the mother's anatomy, and any previous surgical history.

➢ The goal is to select the incision that provides the best access to safely deliver the baby and minimize risks to the mother and baby during the procedure.

Sexually Transmitted Diseases

Chancroid

1. Chancroid is a sexually transmitted infection (STI) caused by the bacterium Haemophilus ducreyi.
2. It is characterized by the development of painful genital ulcers, which can be accompanied by swollen lymph nodes in the groin area.
3. Chancroid is primarily transmitted through sexual contact, including vaginal, anal, or oral sex, with an infected individual.
4. Symptoms of chancroid usually appear within one week to several weeks after exposure.
5. The initial symptom is the formation of a small, red bump on the genitals or in the pubic area.
6. This bump quickly turns into a painful ulcer, which is typically soft, irregularly shaped, and covered with a gray or yellowish-gray material.
7. The ulcers are usually more painful compared to other STIs, such as genital herpes or syphilis.
8. In addition to the genital ulcers, chancroid can cause swelling and tenderness of the lymph nodes in the groin area.
9. These swollen lymph nodes may form abscesses, which can be very painful and may rupture, resulting in draining sores. In some cases, chancroid can also cause fever, fatigue, and body aches.
10. Diagnosis is usually made based on a physical examination, evaluation of symptoms, and laboratory tests, such as a culture or polymerase chain reaction (PCR) test.

Syphilis

1. Syphilis is a sexually transmitted infection (STI) caused by the bacterium Treponema pallidum.
2. It is a chronic infection that progresses through various stages if left untreated.
3. Syphilis is primarily transmitted through sexual contact, including vaginal, anal, or oral sex, with an infected individual. It can also be transmitted from a mother to her baby during childbirth.

Syphilis progresses through several stages, each with its own set of symptoms:

- Primary syphilis: The first sign of primary syphilis is the appearance of a painless sore called a chancre at the site of infection, usually on the genitals, anus, or mouth. The chancre typically develops within 3 weeks to 3 months after exposure. It is highly infectious and heals on its own within a few weeks.
- Secondary syphilis: If untreated, syphilis progresses to the secondary stage. This stage is characterized by a variety of symptoms, including a rash that can appear on the palms of the hands, soles of the feet, or other parts of the body. Other symptoms may include fever, fatigue, sore throat, muscle aches, swollen lymph nodes, and patchy hair loss. These symptoms may come and go for several months.
- Latent syphilis: After the secondary stage, the infection enters a latent period where there are no apparent symptoms. Latent syphilis can last for years, and the infection is still present in the body, although the person may not experience any symptoms during this stage. However, the infection can still be transmitted to others.
- Tertiary syphilis: If syphilis remains untreated for a long time, it can progress to the tertiary stage, which can occur several years after the initial infection. Tertiary syphilis can affect multiple organs, including the heart, brain, blood vessels, and bones. It can lead to serious complications, such as

cardiovascular problems, neurosyphilis (affecting the central nervous system), blindness, deafness, and organ damage. Tertiary syphilis can be life-threatening.

Gonorrhoea

- Gonorrhea, also known as "the clap," is a sexually transmitted infection (STI) caused by the bacterium Neisseria gonorrhoeae.

1. It can affect both men and women and is primarily transmitted through sexual contact, including vaginal, anal, or oral sex, with an infected individual.
2. It can also be transmitted from a mother to her baby during childbirth.
3. Gonorrhea can affect several parts of the body, including the genitals, rectum, and throat. However, it's important to note that it can also be present without causing noticeable symptoms, leading to silent transmission.

Symptoms of gonorrhea May includes

1. **Genital gonorrhea:** In men, symptoms may include a white, yellow, or green discharge from the penis, pain or burning during urination, and swelling or redness at the opening of the penis.
   In women, symptoms may include increased vaginal discharge, pain or burning during urination, and vaginal bleeding between periods.
   However, many individuals, both men and women, may not experience any noticeable symptoms.
2. **Rectal gonorrhea:** Symptoms may include anal itching, discharge, and pain or bleeding during bowel movements.
3. **Throat gonorrhea:** Infections in the throat may cause a sore throat, but symptoms are often mild or absent.

- If left untreated, gonorrhea can lead to serious complications.
- In women, it can cause pelvic inflammatory disease (PID), which can result in infertility, chronic pelvic pain, and an increased risk of ectopic pregnancy.
- In men, untreated gonorrhea can lead to epididymitis, a painful condition affecting the tubes that carry sperm.
- In both men and women, untreated gonorrhea can also spread to the bloodstream and cause disseminated gonococcal infection, which can result in joint pain, skin rashes, and, in rare cases, life-threatening complications.
- Gonorrhea is diagnosed through various methods, including urine tests, swabs from the infected site (urethra, cervix, rectum, or throat), and molecular tests that detect the presence of the bacterium. It's crucial to get tested if you suspect you have been exposed to gonorrhea or if you experience any symptoms.

Chlymidial Infection

Chlamydial infection, or chlamydia, is a common sexually transmitted infection caused by the bacterium Chlamydia trachomatis.

Symptoms includes

1. **Chlamydia in women:** Symptoms may include abnormal vaginal discharge, pain or burning during urination, lower abdominal pain, and occasionally, bleeding between periods. Chlamydia can also lead to pelvic inflammatory disease (PID), which may cause more severe symptoms such as fever, pelvic pain, and pain during sexual intercourse. PID can have serious long-term consequences, including infertility and an increased risk of ectopic pregnancy.
2. **Chlamydia in men:** Symptoms may include a white, cloudy, or watery discharge from the penis, pain or burning during urination, and pain or swelling in the testicles. In some cases, chlamydia can lead to epididymitis, an inflammation of the epididymis (the tube that carries sperm), causing pain and discomfort.

Trichomoniasis

- Trichomoniasis, often referred to as "trich," is a common sexually transmitted infection (STI) caused by a microscopic parasite called Trichomonas vaginalis.
- It primarily affects the urogenital tract, including the vagina in women and the urethra in both men and women.
- Trichomoniasis is usually transmitted through sexual contact, including vaginal intercourse.
- It can also be transmitted through sharing sex toys that have not been properly cleaned or through contact with moist, contaminated surfaces such as wet towels or bathing suits.
- It is more commonly diagnosed in women compared to men.

Some common symptoms include:

Women:

1. Vaginal discharge that is often frothy, yellowish-green, or gray in color.
2. Foul-smelling vaginal odor.
3. Vaginal itching or irritation.
4. Discomfort during sexual intercourse or urination.
5. Redness or swelling of the genitals.

Men:

1. Clear or white discharge from the penis.
2. Discomfort during urination or ejaculation.
3. Itching or irritation inside the penis.
4. Less frequently, trichomoniasis can cause inflammation of the prostate gland or the epididymis (the tube that carries sperm).

- However, it's important to note that many people infected with trichomoniasis may not experience any symptoms, which can contribute to the spread of the infection if left untreated.
- Trichomoniasis can be diagnosed through various methods, including microscopic examination of a sample taken from the infected area, such as the vaginal discharge in women or the urethral discharge in men.
- Nucleic acid amplification tests (NAATs) can also be used to detect the presence of the Trichomonas vaginalis DNA.

Herpes Simplex Virus

- Herpes simplex virus (HSV) is a common viral infection that can affect various parts of the body.
- There are two types of herpes simplex viruses: HSV-1 and HSV-2.

1. HSV-1: This type of herpes virus primarily causes oral herpes, which is commonly associated with cold sores or fever blisters around the mouth and on the lips. However, it can also cause genital herpes through oral-genital contact.
2. HSV-2: This type of herpes virus is primarily responsible for genital herpes. Genital herpes is a sexually transmitted infection characterized by the development of painful, fluid-filled blisters or sores in the genital area. However, it's important to note that HSV-1 can also cause genital herpes through oral-genital contact.

- Herpes simplex virus is highly contagious and can be transmitted through direct contact with an active outbreak or through contact with infected skin or mucous membranes even in the absence of visible sores.
- It can be transmitted through sexual contact, including vaginal, anal, or oral sex, as well as through kissing or other close contact.
- Many people infected with HSV may not experience noticeable symptoms or may have mild symptoms that go unrecognized. However, when symptoms occur, they can include:
- Painful blisters or sores in the affected area (oral or genital).
- Itching or tingling sensation before the appearance of blisters.
- Flu-like symptoms, such as fever, body aches, and swollen lymph nodes (during the initial outbreak).
- It's important to note that herpes is a lifelong infection, as the virus can remain dormant in the body even after the initial outbreak resolves.
- Periodically, the virus can reactivate, leading to recurrent outbreaks of sores or blisters.
- Recurrences are typically less severe and shorter in duration compared to the initial outbreak.

Human Papilloma Virus

- Human Papillomavirus (HPV) is a common sexually transmitted infection (STI) caused by the human papillomavirus.
- There are over 100 different types of HPV, and they can affect various parts of the body.
- HPV is primarily transmitted through sexual contact, including vaginal, anal, or oral sex.
- HPV is the most common sexually transmitted infection worldwide, and most sexually active individuals will contract at least one type of HPV at some point in their lives.
- While many HPV infections resolve on their own without causing any symptoms or health problems, some types of HPV can lead to various complications.

Types of HPV can be categorized into low-risk types and high-risk types:

1. Low-risk HPV types: These types are responsible for the development of genital warts, which are growths or bumps in the genital area. These warts are usually painless and may appear as small, flesh-colored or gray swellings. Low-risk HPV types, such as HPV 6 and HPV 11, are generally not associated with an increased risk of cancer.

2. High-risk HPV types: These types are associated with an increased risk of developing certain types of cancers, particularly cervical cancer. High-risk HPV types include HPV 16, 18, 31, 33, 45, and others. In addition to cervical cancer, high-risk HPV types can also cause other cancers, such as anal cancer, penile cancer, vaginal cancer, vulvar cancer, and some types of head and neck cancers.

It's important to note that most HPV infections do not cause symptoms, and individuals may not be aware they are infected.

Regular screening for cervical cancer, such as Pap tests or HPV DNA tests, is important for early detection of precancerous changes or cervical cancer in women.

Routine vaccination against HPV is also recommended as a preventive measure.

Granuloma inguinale

1. Granuloma inguinale, also known as Donovanosis, is a rare sexually transmitted infection (STI) caused by the bacterium Klebsiella granulomatis (formerly known as Calymmatobacterium granulomatis).
2. It primarily affects the genital and perianal regions.
3. The infection is transmitted through sexual contact, including vaginal, anal, or oral sex, with an infected individual.
4. It can also be transmitted from a mother to her baby during childbirth.
5. The typical presentation of granuloma inguinale includes painless, progressive ulcers or nodules that develop in the genital area.
6. The ulcers are typically beefy red in color, with a raised, granular appearance.
7. These ulcers can grow in size over time and can cause destruction of the surrounding tissues if left untreated.
8. The infection can also spread to the groin and cause swollen lymph nodes.
9. It's important to note that granuloma inguinale has a long incubation period, and the symptoms may take weeks or even months to appear after initial exposure.

Lymphogranuloma venerum

- Lymphogranuloma venereum (LGV) is a sexually transmitted infection (STI) caused by certain strains of the bacterium Chlamydia trachomatis.
- LGV primarily affects the lymphatic system, resulting in the formation of painful genital ulcers or sores.
- LGV is more commonly found in tropical and subtropical regions, but it can occur in other parts of the world as well.
- The infection is transmitted through sexual contact, including vaginal, anal, or oral sex, with an infected individual.
- Unprotected sex and having multiple sexual partners increase the risk of acquiring LGV.

Clinical features are described below

1. Primary stage: This stage typically begins with a painless genital ulcer or sore at the site of infection. The ulcer may go unnoticed or heal spontaneously, leading individuals to believe they are no longer infected.
2. Secondary stage: During this stage, which typically occurs 2-6 weeks after the primary stage, the infection spreads to nearby lymph nodes. This results in the formation of swollen and painful lymph nodes in the groin or pelvic region. The affected lymph nodes may enlarge and become filled with pus, forming abscesses. Other symptoms that may be present during this stage include fever, fatigue, body aches, and a general feeling of being unwell.
3. Tertiary stage: If left untreated, LGV can progress to the tertiary stage, which is characterized by chronic and destructive changes in the affected lymph nodes and surrounding tissues. In severe cases, these changes can lead to the formation of fistulas (abnormal connections between body structures) and strictures (narrowing) of the genital or rectal areas.

Mastalgia

- Mastalgia, also known as breast pain or mastodynia, refers to pain or discomfort in the breast tissue.
- It is a common symptom experienced by many women at some point in their lives.
- Mastalgia can range from mild to severe and may occur in one or both breasts.

There are two primary types of mastalgia:

1. Cyclical mastalgia: This type of breast pain is linked to hormonal changes that occur during the menstrual cycle. It typically occurs in the premenstrual phase and may subside once menstruation begins. Cyclical mastalgia is often described as a dull, heavy, or aching pain, and it may be accompanied by breast swelling or tenderness.
2. Non-cyclical mastalgia: This type of breast pain is not associated with the menstrual cycle and can occur at any time. Non-cyclical mastalgia is often described as a localized, sharp, or burning pain. It may be caused by factors such as injury or trauma to the breast, chest wall muscle strain, fibrocystic changes in the breast tissue, or certain medications.

Mastitis

- Mastitis is an infection or inflammation of the breast tissue that primarily affects breastfeeding women.
- It occurs when bacteria enter the breast tissue through a cracked or sore nipple, causing an infection.
- However, mastitis can also occur in women who are not breastfeeding, although it is less common.

OBSTETRICS

Operative Vaginal Delivery

- Operative to delivery process which is assisted by vaginal operations. Delivery by forceps, ventouse and destructive operations are generally included.
- All operative vaginal procedure should consider as a trail.

Indication of operative delivery

Maternal Cause

- Inadequate expulsive efforts
- Maternal distress
- Avoidance expulsive efforts
- Cardiac disease
- HTN
- CVA

Fetal Cause

- Fetal distress
- Breech presentation, Obstructed labor
- **Others**
- Prolonged 2nd stage
  (Nullipara >2 hrs)
  (Multipara > 1 hrs)
- Cut short 2nd stage of labor in pre-eclampsia, cardiac disease, post cesarean.

Forceps

- With the application of Forceps:- The head of the fetus is perfectly grasped only when the long axis of blades corresponding to occipitomental diameter.
- The blade which corresponds to the left of the maternal pelvis is the left blade and that to the right side is the right blade. Left blade apply first.

Term	Definition
Prophylactic forceps	Forceps delivery only to shorten the second stage (e.g., heart disease patients)
Trial forceps	It is a tentative attempt of forceps delivery in case of suspected mild CPO with a preamble declaration of abandoning it in favor of cesarean section if moderate traction fail to overcome the resistance. It is to be performed in the operation theater.
Failed forceps	If baby not delivered after 3 pulls

Causes of Failed Forceps

1. Failure Of application
2. Failure of locking
3. Failure of extraction

Differences between forceps and vacuum

Forceps	Vacuum
Cervix should be fully dilated	Minimum 6 cm dilation
Less but more maternal complications — increase perineal injuries	More fetal but less maternal complications
Preferred in fetal distress	Less preferred (as vacuum takes time-to build up)
Rotation forceps not applied now a days	Vacuum causes rotation and extraction
Can be applied on face presentation and after-coming head of breech	Cannot be applied on face presentation and after corning head of breech.
Can be applied on preterm fetus	Contraindicated on preterm fetus (increased risk of intraventricular hemorrhage)
Can be applied in cases of fetal Coagulopathy and if recent scalp blood sampling has been done.	Contraindicated in cases of fetal coagulopathy and if recent scalp blood sampling has been done

Can be applied in cases Of Intra Uterine Fetal Death	Should not be applied as chignon formation-will not occur in Intra Uterine Fetal Death

Ventouse:-

Definition: ventouse is an instrumental device designed to assist delivery by creating a vacuum between it and the fetal scalp. The pulling force is dragging the cranium while in forceps, the pulling force is directly transmitted to base of the skull.

Using rigid cups:-it is recommended that the vacuum be created gradually by increasing the suction by 0.2kg/cm2 every 2 min until a negative pressure of 0.8 kg/cm2 (600 mm Hg) is reached in 10 min.
The scale is sucked into the cup and artificial caput succedaneum (chignon)is produced which usually disappear within few hours.

Device:

- Soft cups of 4 sizes (30-60 mm), vacuum generator, traction tubing.

Site of application:

- The placed against head near to the occiput including posterior fontanelle (flexion point) with the 'knob' of the cup pointing towards the occiput.
- Check is made using the fingers round the cup to ensure that no cervical or vaginal tissue is trapped inside the cup.
- Chignon: The scalp is sucked into the cup and an artificial caput succedaneum is produced. The chignon usually disappears within few hours.

Traction

a. Right angle to the cup
b. Synchronous with the uterine contractions
c. Using one hand
d. Traction force should be 10 kg.
e. Only 3 pulls are allowed for operative vaginal delivery & on no account, traction should exceed 30 minutes.

Complication:

- There are significantly more third- and fourth-degree lacerations, in the forceps-delivered group, more maternal complication.
- Conversely with vacuum, the incidence of shoulder dystocia, retinal hemorrhage and cephalohematomas are more in the vacuum group, more fetal complication.

Disorders of Menstrual Disorders

Amenorrhoea

- Amenorrhea is a medical term used to describe the absence or cessation of menstruation in women of reproductive age.

Types of Amenorrhea

1. **Primary Amenorrhea**: This refers to the condition where a girl has not started her menstrual periods by the age of 16.

It can be caused by various factors, including hormonal imbalances, structural abnormalities in the reproductive system, genetic disorders (such as Turner syndrome), or problems with the development of the reproductive organs.

2. **Secondary Amenorrhea**: This type occurs when a woman who has previously had normal menstrual periods stops menstruating for a period of three months or longer.
   Common causes of secondary amenorrhea include pregnancy, breastfeeding, hormonal imbalances (such as polycystic ovary syndrome), excessive exercise or weight loss, stress, certain medications, thyroid disorders, or problems with the reproductive organs.

- It's important to note that temporary changes in menstrual cycles can be normal, such as during pregnancy or breastfeeding.
- However, if you experience amenorrhea or have concerns about your menstrual cycle, it's recommended to consult with a healthcare professional for a proper evaluation and diagnosis.

Cryptomenorrhoea

✓ Cryptomenorrhea, also known as hidden or concealed menstruation, is a rare condition characterized by the presence of menstrual bleeding that is not visibly apparent.

✓ In other words, a woman experiences menstrual bleeding, but it does not flow out of the vagina as it normally would during a typical menstrual period.

✓ This condition can be caused by various factors, including anatomical abnormalities or obstructions in the reproductive tract, such as an imperforate hymen (a hymen that completely covers the vaginal opening) or a septate uterus (a uterine anomaly where the uterus is divided by a wall).

✓ These structural abnormalities prevent the menstrual blood from exiting the body, leading to a hidden or concealed menstruation.

✓ In some cases, cryptomenorrhea may also be associated with conditions like transverse vaginal septum (a condition where a band of tissue divides the vagina horizontally), cervical stenosis (narrowing of the cervical opening), or vaginal atresia (complete closure or absence of the vaginal canal).

✓ The primary symptom of cryptomenorrhea is the absence of visible menstrual bleeding despite the presence of menstrual cycles. Other symptoms may include cyclic abdominal pain, bloating, breast tenderness, and mood changes, similar to those experienced during a regular menstrual period.

Dysmenorrhoea

- Dysmenorrhea is a medical term used to describe painful menstrual periods.
- It is a common condition that affects many women of reproductive age.
- The pain experienced during dysmenorrhea can range from mild to severe and can interfere with a woman's daily activities.

Types of dysmenorrhea

1. **Primary Dysmenorrhea**: This type of dysmenorrhea occurs without any underlying medical condition.

It is often caused by increased levels of prostaglandins, which are hormone-like substances that promote uterine contractions.

These contractions can cause pain and cramping during menstruation. Primary dysmenorrhea typically begins within a few years of a woman's first menstrual period.

2. **Secondary Dysmenorrhea**: This type of dysmenorrhea is associated with an underlying medical condition, such as endometriosis, adenomyosis, uterine fibroids, pelvic inflammatory disease (PID), or ovarian cysts.

   Secondary dysmenorrhea usually develops later in life and may be accompanied by other symptoms, such as heavy menstrual bleeding, irregular periods, or pain during sexual intercourse.

Symptoms of dysmenorrhea

- Cramping pain in the lower abdomen that can radiate to the lower back or thighs
- Dull, throbbing, or sharp pain
- Nausea and vomiting
- Diarrhea or constipation
- Headaches
- Fatigue and weakness

Oligomenorrhoea

- Oligomenorrhea is a medical term used to describe infrequent or irregular menstrual periods.
- It is characterized by longer gaps between menstrual cycles than the normal menstrual cycle length, which is typically around 21 to 35 days.
- The exact cause of oligomenorrhea can vary and may be influenced by various factors, including hormonal imbalances, certain medical conditions, lifestyle factors, or medications.

Common causes of oligomenorrhea

1. Hormonal imbalances: Fluctuations in hormone levels, particularly those of estrogen and progesterone, can disrupt the normal menstrual cycle and lead to irregular periods. Hormonal imbalances can be caused by conditions such as polycystic ovary syndrome (PCOS), thyroid disorders, or disorders of the hypothalamus or pituitary gland.
2. Excessive exercise or low body weight: Intense physical activity, such as in athletes or individuals with eating disorders, can affect hormone production and result in irregular periods or oligomenorrhea.
3. Stress and emotional factors: High levels of stress, emotional disturbances, or significant life changes can disrupt the hormonal balance and menstrual cycle.
4. Certain medical conditions: Conditions such as ovarian cysts, uterine polyps, or endometriosis can cause irregular periods or oligomenorrhea.
5. Medications and contraceptives: Certain medications, such as hormonal contraceptives or medications that affect hormone levels, can cause changes in menstrual patterns.

Hypomenorrhoea

- Hypomenorrhea is a medical term used to describe abnormally light or scanty menstrual periods.

- It refers to periods that involve significantly reduced menstrual flow compared to what is considered normal for an individual.
- It can be characterized by a shorter duration of bleeding, a lighter flow, or both.

Common causes of hypomenorrhea

1. Hormonal imbalances: Fluctuations or imbalances in hormone levels, particularly estrogen and progesterone, can affect the thickness and shedding of the uterine lining, resulting in lighter menstrual flow.
2. Polycystic ovary syndrome (PCOS): PCOS is a hormonal disorder that can disrupt ovulation and hormonal balance, leading to irregular or light periods.
3. Thyroid disorders: An underactive or overactive thyroid gland can affect hormone levels and impact the menstrual cycle, potentially causing hypomenorrhea.
4. Excessive exercise or low body weight: Intense physical activity or being significantly underweight can disrupt hormonal balance and result in lighter periods.
5. Uterine abnormalities: Structural abnormalities of the uterus, such as an underdeveloped uterus or uterine scarring, can lead to hypomenorrhea.
6. Use of hormonal contraceptives: Some forms of hormonal contraceptives, such as certain types of birth control pills or intrauterine devices (IUDs), can cause lighter periods as a side effect.

It's important to note that occasional episodes of hypomenorrhea may occur naturally and not necessarily indicate an underlying health issue.

Polymenorrhoea

- Polymenorrhea is a medical term used to describe a menstrual cycle characterized by frequent periods occurring more frequently than the typical menstrual cycle length.
- It refers to cycles with an interval of fewer than 21 days between two consecutive menstrual periods.

Common causes of polymenorrhea

1. Hormonal imbalances: Fluctuations or imbalances in hormone levels, particularly estrogen and progesterone, can affect the regularity of the menstrual cycle and lead to more frequent periods.
2. Polycystic ovary syndrome (PCOS): PCOS is a hormonal disorder that can cause irregular periods, including shorter cycles with frequent menstruation.
3. Uterine abnormalities: Structural abnormalities of the uterus, such as uterine polyps or fibroids, can disrupt the normal hormonal signaling and result in more frequent menstrual periods.
4. Endometriosis: This condition occurs when the tissue that normally lines the uterus (endometrium) grows outside the uterus. It can lead to abnormal bleeding patterns, including more frequent periods.

5. Thyroid disorders: Both an underactive (hypothyroidism) and an overactive (hyperthyroidism) thyroid gland can impact hormone levels and affect the menstrual cycle, potentially leading to polymenorrhea.
6. Stress and emotional factors: High levels of stress, emotional disturbances, or significant life changes can disrupt the hormonal balance and menstrual cycle regularity.
7. Certain medications: Some medications, such as hormonal contraceptives or medications that affect hormone levels, can cause changes in menstrual patterns, including more frequent periods.

Menorrhagia

- Menorrhagia is a medical term used to describe abnormally heavy or prolonged menstrual bleeding.
- It refers to menstrual periods that involve excessive bleeding, leading to soaking through sanitary pads or tampons in a short period or needing to change them frequently (more than every two hours).
- Menorrhagia can be disruptive and may interfere with a woman's daily activities.

Common causes of menorrhagia

1. **Hormonal imbalances**: Fluctuations or imbalances in hormone levels, particularly estrogen and progesterone, can affect the growth and shedding of the uterine lining.
   Hormonal imbalances, such as those seen in polycystic ovary syndrome (PCOS) or hormonal disturbances related to thyroid disorders, can contribute to menorrhagia.
2. **Uterine fibroids**: These are noncancerous growths that develop in or around the uterus.
   Large fibroids or those located near the uterine lining can cause heavy menstrual bleeding.
3. **Adenomyosis**: This condition occurs when the tissue lining the uterus grows into the muscular wall of the uterus.
   It can lead to a thickening of the uterine lining and result in heavy periods.
4. **Endometrial polyps**: These are growths that attach to the inner lining of the uterus.
   They can cause excessive bleeding during menstruation.
5. **Pelvic inflammatory disease (PID):** PID is an infection of the female reproductive organs, usually caused by sexually transmitted infections (STIs).
   It can lead to inflammation and thickening of the uterine lining, resulting in heavy menstrual bleeding.
6. **Blood clotting disorders**: Conditions that affect blood clotting, such as von Willebrand disease or platelet dysfunction disorders, can contribute to menorrhagia.
7. **Certain medications or intrauterine devices (IUDs):** Some medications, such as anticoagulants or hormone medications, can cause heavy menstrual bleeding.
   Additionally, certain types of IUDs, particularly copper IUDs, may increase menstrual flow and lead to menorrhagia in some women.

Metrorrhogia

- Metrorrhagia is a medical term used to describe irregular or unpredictable uterine bleeding that occurs between menstrual periods.
- It refers to abnormal vaginal bleeding that is not associated with the normal menstrual cycle.

- It can manifest as spotting or light bleeding or, in some cases, as heavier bleeding similar to a menstrual period.

Causes of Metrorrhagia including

1. **Hormonal imbalances**: Fluctuations in hormone levels, particularly estrogen and progesterone, can disrupt the normal menstrual cycle and lead to irregular bleeding patterns.
2. **Ovulation-related bleeding**: Some women may experience light bleeding or spotting during ovulation, which can be mistaken as metrorrhagia.
3. **Uterine fibroids**: Noncancerous growths in the uterus can cause abnormal bleeding between periods.
4. **Polyps**: Uterine or cervical polyps are abnormal growths on the inner lining of the uterus or cervix, respectively, that can lead to irregular bleeding.
5. **Endometrial hyperplasia**: This condition involves the excessive growth of the uterine lining and can result in irregular bleeding.
6. **Hormonal contraception**: Some forms of hormonal birth control, such as birth control pills or hormonal intrauterine devices (IUDs), can cause irregular bleeding as a side effect.
7. **Infections or inflammation**: Infections of the reproductive organs or inflammation of the cervix or uterus can contribute to abnormal vaginal bleeding.
8. **Certain medical conditions**: Conditions such as endometriosis, pelvic inflammatory disease (PID), or uterine or cervical cancer can cause metrorrhagia.

Dysfunctional uterine Bleeding

- Dysfunctional uterine bleeding (DUB), also known as abnormal uterine bleeding, is a condition characterized by irregular or abnormal bleeding from the uterus that is not caused by identifiable structural or hormonal abnormalities.
- It typically occurs due to dysfunctional changes in the endometrium (the inner lining of the uterus) and is a diagnosis of exclusion, meaning other underlying causes must be ruled out before making a diagnosis of DUB.
- The exact cause of dysfunctional uterine bleeding is not fully understood, but it is thought to be related to hormonal imbalances and disturbances in the normal menstrual cycle.

The symptoms of dysfunctional uterine bleeding can vary but commonly include:

1. Irregular menstrual cycles, with unpredictable timing and varying amounts of bleeding
2. Heavy or prolonged bleeding during periods
3. Bleeding between periods
4. Spotting or breakthrough bleeding
5. Menstrual cycles that are shorter than 21 days or longer than 35 days
6. Anemia due to excessive blood loss

UMBILICAL CORD

1. Umbilical cord is a flexible cord-like structure that connects a developing fetus to the placenta in the womb.
2. It contains blood vessels that transport nutrients, oxygen, and waste products between the fetus and the mother.
3. During pregnancy, the umbilical cord forms from the early embryonic structure called the yolk sac.
4. It consists of two arteries and one vein encased in a jelly-like substance known as Wharton's jelly.
5. The umbilical vein carries oxygenated blood rich in nutrients from the placenta to the fetus, while the two umbilical arteries carry deoxygenated blood and waste products from the fetus back to the placenta.
6. The umbilical cord plays a vital role in the prenatal development and provides the fetus with essential nourishment and oxygen for growth and development.
7. It also serves as a conduit for the transfer of antibodies from the mother to the fetus, providing temporary immune protection to the developing baby.
8. After birth, the umbilical cord is clamped and cut, typically within minutes of the baby's delivery.

ABNORMALITIES OF UMBILICAL CORD

1. **Umbilical Cord Knots:** Occasionally, the umbilical cord may develop one or more knots.
   These knots can form when the fetus moves around in the womb and can sometimes tighten, potentially compromising blood flow through the cord.
   In most cases, the knots do not cause any problems, but if they become tight, they can restrict blood flow and lead to fetal distress.
2. **Umbilical Cord Compression:** Compression of the umbilical cord can occur if the cord becomes trapped between the fetus and the walls of the uterus or if it becomes wrapped around the baby's body parts, such as the neck (nuchal cord).
   This compression can reduce blood flow and oxygen supply to the fetus, potentially causing complications.
3. **Umbilical Cord Prolapse:** Umbilical cord prolapse happens when the cord slips through the cervix and protrudes into the birth canal ahead of the baby during labor.
   This can occur when the baby's head is not engaged in the pelvis or if the amniotic sac ruptures too early.
   Umbilical cord prolapse is a serious complication that can lead to umbilical cord compression and oxygen deprivation for the fetus, requiring immediate medical attention.
4. **Short or Long Umbilical Cord:** In some cases, the umbilical cord may be abnormally short or long.
   A short umbilical cord may limit the baby's movement and affect the positioning during labor and delivery.
   A long umbilical cord may increase the risk of cord entanglement or knot formation.
5. **Umbilical Cord Abnormal Insertion:** The normal insertion of the umbilical cord is at the center of the placenta.
   However, in some cases, the cord may attach to the edge of the placenta (marginal insertion) or at a location away from the center (velamentous insertion).
   These abnormal insertions can increase the risk of complications such as cord vessel rupture or compression.

PLACENTA

- It is an essential organ that develops during pregnancy and plays a crucial role in supporting the growth and development of the fetus.
- It forms inside the uterus and connects to the baby through the umbilical cord.

Some important key points

- **Development**: The placenta starts developing soon after conception. It is derived from both the fertilized egg (zygote) and the mother's uterine lining. Cells from the zygote form the outer layer of the placenta, while the mother's cells contribute to the inner layer.
- **Structure**: The placenta is a flat, disc-shaped organ that is attached to the inner wall of the uterus. It is composed of maternal and fetal tissue. Maternal blood flows through the placenta in small, branching structures called villi, while fetal blood circulates within the umbilical cord. The exchange of nutrients, oxygen, and waste products between the mother and the fetus takes place across the walls of the villi.
- **Functions**: The placenta serves several vital functions during pregnancy:
  1. Nutrient and Oxygen Supply: The placenta facilitates the transfer of nutrients, including glucose, amino acids, and vitamins, from the mother's bloodstream to the fetus. It also allows for the exchange of oxygen from the mother's blood to the fetal blood.
  2. Waste Removal: Waste products, such as carbon dioxide and urea, are removed from the fetal blood through the placenta and transferred into the mother's bloodstream for elimination.
  3. Hormone Production: The placenta produces hormones, including human chorionic gonadotropin (hCG), progesterone, and estrogen, which are crucial for maintaining pregnancy, supporting fetal development, and preparing the mother's body for childbirth.
  4. Immune Protection: The placenta acts as a barrier, preventing most harmful substances from reaching the fetus while allowing certain protective antibodies to pass through from the mother, providing temporary immune protection to the developing baby.
  5. Endocrine Function: The placenta produces hormones that help regulate pregnancy and prepare the mother's body for breastfeeding.
  6. Afterbirth: Following the birth of the baby, the placenta is delivered as the "afterbirth." The contractions of the uterus help detach the placenta from the uterine wall, and it is then expelled through the birth canal. It is important to ensure that the entire placenta is delivered to prevent any potential complications.

ABNORMAL PLACENTA

Abnormalities of the placenta can occur during pregnancy and may have various implications for both the mother and the developing fetus.

Types of abnormal placenta:

Placenta Previa: Placenta previa is a condition where the placenta partially or completely covers the opening of the cervix. This positioning can lead to vaginal bleeding during pregnancy, particularly during

the third trimester. Placenta previa may require careful monitoring and, in some cases, a cesarean delivery to avoid complications for the mother and the baby.

Placental Abruption: Placental abruption occurs when the placenta separates from the uterine wall before delivery. This condition can cause bleeding, abdominal pain, and fetal distress.

Placental Insufficiency: Placental insufficiency refers to an impaired function of the placenta, leading to an inadequate supply of oxygen and nutrients to the fetus. It can result in slowed fetal growth, reduced amniotic fluid levels, and other complications.

Placental Infections: Infections can affect the placenta, leading to conditions such as chorioamnionitis. This infection can cause inflammation of the placenta and the membranes surrounding the fetus, potentially leading to preterm labor, fetal distress, or other complications.

Placenta Battledoor: In a battledore placenta, the umbilical cord is attached near the edge or margin of the placenta, rather than in the center.

Bilobed placenta: In a normal placenta, there is a single round or oval-shaped disc, but in a bilobed placenta, the placental tissue is divided into two lobes.

The division occurs due to incomplete fusion of the placental tissue during development, resulting in the formation of two distinct lobes connected by a bridge of placental tissue.

Each lobe typically has its own blood supply through separate umbilical arteries and veins.

Placenta velamentous: It is an abnormality of placental attachment.

In a typical pregnancy, the umbilical cord inserts into the central part of the placenta, where it is surrounded by protective placental tissue.

However, in cases of placenta velamentous, the umbilical cord inserts into the fetal membranes (chorionic plate) before reaching the placenta, resulting in a vulnerable and exposed segment of the cord.

ABNORMAL PRESENTATIONS

- Abnormal presentations during pregnancy refer to the positioning of the fetus in the womb that deviates from the typical head-down (vertex) position.
- In a normal presentation, the baby's head is positioned to enter the birth canal first, making delivery easier.
- Some types of abnormal presentations:
    1. **Breech Presentation:** Breech presentation occurs when the baby's buttocks or feet are positioned to enter the birth canal first, instead of the head. This is the most common abnormal presentation and can be further categorized into different types, including frank breech (baby's buttocks present with legs straight up), complete breech (baby's buttocks and feet present), and footling breech (one or both feet present first). Breech presentations can increase the risk of complications during delivery and may necessitate a cesarean section or specialized techniques, such as external cephalic version, to attempt to turn the baby to a head-down position.

2. **Transverse Presentation:** In a transverse presentation, the baby lies horizontally across the uterus, with its shoulder or back positioned to enter the birth canal first. This presentation can pose significant delivery challenges and generally requires a cesarean delivery to ensure the baby's safe birth.
3. **Shoulder Presentation:** Shoulder presentation occurs when the baby is positioned with one or both shoulders presenting first. This is a relatively rare presentation and can lead to difficulties during delivery. In most cases, a cesarean section is necessary to safely deliver the baby.
4. **Face Presentation:** Face presentation happens when the baby's face is positioned to enter the birth canal first, instead of the vertex (head-down) position. Although face presentations can sometimes result in vaginal deliveries, they often require medical intervention or a cesarean delivery due to potential complications.

Episiotomy

- Episiotomy is a surgical incision made in the perineum, which is the area between the vaginal opening and the anus, during childbirth.
- The purpose of an episiotomy is to create a larger opening to facilitate delivery and prevent extensive tearing of the perineal tissue.

Important points about episiotomy:

Rationale: Episiotomies were historically performed routinely during childbirth to reduce the risk of severe perineal tearing and to expedite the delivery process. However, their routine use has become less common in recent years due to evolving medical practices and evidence.

Types: There are two main types of episiotomies:

1. **Median/Midline Episiotomy:**
   - ✓ This is the most common type of episiotomy.
   - ✓ It involves making a straight incision along the midline of the perineum, extending from the vaginal opening towards the anus.
   - ✓ The midline episiotomy provides a direct line of access for the baby's head during delivery.
   - ✓ This type of episiotomy has the advantage of simplicity and ease of repair, but it may have a higher risk of extending into a severe tear involving the anal sphincter (third or fourth-degree tear).
2. **Mediolateral Episiotomy:**
   - ✓ The mediolateral episiotomy involves making an angled incision from the vaginal opening towards one side of the perineum, away from the midline.

- ✓ The angle of the incision varies depending on the healthcare provider's judgment.
- ✓ Mediolateral episiotomies are less likely to extend into severe tears compared to midline episiotomies.
- ✓ Repairing a mediolateral episiotomy may require more sutures and can be more technically challenging compared to midline episiotomy repair.

- The choice between a midline episiotomy and a mediolateral episiotomy depends on several factors, including the obstetrician's preference, the specific circumstances of the delivery, the position of the baby, and the mother's anatomy.

Indications: Episiotomies are typically reserved for specific situations where there is a perceived need for assistance during delivery, such as:

- **Fetal distress:** If the baby shows signs of distress, an episiotomy may be performed to expedite the delivery process.
- **Instrument-assisted delivery:** In cases where vacuum extraction or forceps are used to assist with the delivery, an episiotomy may be performed to create a larger opening and facilitate the use of these instruments.
- **Shoulder dystocia:** When the baby's shoulder gets stuck behind the mother's pubic bone, an episiotomy may be performed to create additional space for the delivery.

Risks and Complications: Although episiotomies were once considered routine, it is now recognized that they are associated with certain risks and complications, including:

- **Increased risk of severe perineal tears:** Contrary to the initial intention of preventing severe tears, episiotomies can sometimes result in more extensive tearing.
- **Increased pain and discomfort:** Episiotomies can lead to increased pain and discomfort during the recovery period after childbirth.
- **Delayed healing:** The incision from an episiotomy may take longer to heal compared to a natural tear.
- **Risk of infection:** Any surgical incision carries a risk of infection, and episiotomies are no exception.

SEX AND INTERSEXUALITY

Sex

- ➢ Sex refers to the biological characteristics that distinguish males from females.
- ➢ Traditionally, sex has been categorized based on external genitalia at birth, including male (typically having a penis) and female (typically having a vulva).
- ➢ However, sex is not solely determined by external genitalia. It also involves internal reproductive organs, chromosomes, and secondary sexual characteristics (such as breast development and facial hair).
- ➢ In most cases, individuals can be categorized as male or female based on these factors, which align with typical male and female characteristics.

- This binary understanding of sex has been widely accepted and applied in many societies.

Intersexuality

- Intersexuality is a term used to describe individuals who are born with sex characteristics that do not fit typical binary definitions of male or female.
- Intersex variations can involve a range of conditions where an individual may have atypical chromosomal patterns, variations in reproductive or sexual anatomy, or differences in hormone levels.
    1. Chromosomal Intersex: This type of intersex occurs when there are variations in the chromosomal patterns typically associated with male (XY) or female (XX) sex determination. Examples of chromosomal intersex: Turner syndrome (45,X), Klinefelter syndrome (47,XXY), Triple X syndrome (47,XXX),
    2. Gonadal Intersex: Gonadal intersex refers to variations in the development of gonads (ovaries or testes).
       For instance, individuals with Swyer syndrome may have XY chromosomes but develop gonads that are non-functional or resemble ovaries instead of testes.
       Examples of gonadal intersex: Androgen Insensitivity Syndrome (AIS), Swyer syndrome, Ovotesticular Disorder of Sex Development (OT-DSD).

Hormones

Hormones Release from anterior pituitary

1. Follicle Stimulating Hormones (FSH)
2. Luteinizing Hormones (LH)
3. Prolactin

Hormones Release from posterior pituitary

1. Oxytocin

Functions of FSH

1. It rescues follicles from apoptosis
2. Stimulates proliferation of granulose cells
3. Helps full maturation of the graffian follicle as it converts the the follicular microenvironment from androgen dominated to estrogen dominated.

Function of LH

1. Helps in Ovulation
2. Development and maintenance of the corpus luteum

Function of Prolactin

1. Lactation

2. Milk Production
3. Milk Secretion
4. Suppression of Ovulation
5. Regulation of Reproductive Hormones

Function of Oxytocin

1. Labor and Childbirth
2. Milk Letdown
3. Social Bonding and Attachment
4. Sexual Function
5. Stress Reduction

Function of Progesterone

1. Maintenance of Pregnancy
2. Development of Breast Tissue
3. Regulation of the Menstrual Cycle
4. Preparing the Body for Pregnancy

Important Points

1. The production of cervical mucus is stimulated by estradiol
2. Ferning of cervical mucus depends on estrogen
3. Clomiphene citrate is antiestrogen
4. Clomiphene citrate is indicated in Stein - Leventhal syndrome
5. True about clomiphene citrate is Enclomiphene has antiestrogenic affect lane
6. The most serious complication of clomiphene therapy for induction of ovulation is hyperstimulation syndrome
7. Danazol is used in the treatment of cyclical mastalgia
8. The probable source of Relaxin is ovary
9. Granulosa cells produces estrogen with the help of the enzyme aromatase
10. Most Common Androgen produced by ovary = Androstenedione
11. Most potent androgen = Dihydrotestosterone
12. Androgen produced only by adrenal = DHEA - sulfate
13. LH > FSH are > N, pregnancy is ruled out. Thus no need to do urine pregnancy test.

NORMAL LABOR AND IT'S MANAGEMENT

Normal labor, also known as physiological labor, refers to the natural process by which a baby is delivered vaginally. It involves a series of progressive physiological changes in the woman's body to bring about the safe and effective birth of the baby.

1. **Onset of Labor:**
    a. Contractions: Labor typically begins with regular, rhythmic contractions of the uterus. These contractions gradually increase in frequency, intensity, and duration.
    b. Cervical Changes: The cervix begins to soften, thin out (efface), and open (dilate) to allow the passage of the baby through the birth canal.
2. **First Stage of Labor:**
    a. Early Phase: During this phase, the cervix continues to efface and dilate. Contractions may be mild to moderate in intensity, occurring at regular intervals, and lasting around 30 to 60 seconds. This phase can last several hours or more.
    b. Active Phase: In the active phase, the cervix continues to dilate more rapidly. Contractions become stronger, lasting longer (about 60 to 90 seconds), and occurring more frequently (every 3 to 5 minutes). This phase typically lasts a few hours.
    c. Transition Phase: Transition is the final phase of the first stage of labor. During this phase, the cervix fully dilates (10 centimeters) to prepare for the baby's descent into the birth canal. Contractions may be intense, occurring every 2 to 3 minutes, and lasting 60 to 90 seconds.
3. **Second Stage of Labor:**
    a. Expulsion of the Baby: The second stage begins when the cervix is fully dilated. The woman experiences an urge to push as the baby moves through the birth canal. The baby's head crowns and then emerges, followed by the rest of the baby's body. This stage ends with the baby's complete delivery.
4. **Third Stage of Labor:**
    a. Delivery of the Placenta: After the baby is born, the uterus continues to contract, causing the placenta to separate from the uterine wall. The placenta is then expelled from the woman's body. This stage usually occurs within 10 to 30 minutes after the baby's birth.

PRETERM LABOR

1. Preterm labor, also known as premature labor, refers to the onset of regular contractions and cervical changes that lead to the delivery of a baby before 37 completed weeks of gestation.
2. Preterm labor poses risks to the health and well-being of the baby, as they may be born before their organs and systems are fully developed.

PRETERM RUPTURE OF MEMBRANE

1. Preterm rupture of membranes (PROM), also known as premature rupture of membranes, refers to the breaking of the amniotic sac and leakage of amniotic fluid before 37 completed weeks of gestation.

2. When the membranes rupture before labor begins, it can lead to complications and an increased risk of preterm birth.

POST MATURITY

1. Postmaturity, also known as post-term pregnancy, refers to a pregnancy that extends beyond the normal gestational period, which is typically around 40 weeks.
2. Postmaturity is defined as a pregnancy that continues beyond 42 completed weeks of gestation.

INTRA UTERINE FETAL DEATH

1. Postmaturity, also known as post-term pregnancy, refers to a pregnancy that extends beyond the normal gestational period, which is typically around 40 weeks.
2. Postmaturity is defined as a pregnancy that continues beyond 42 completed weeks of gestation.