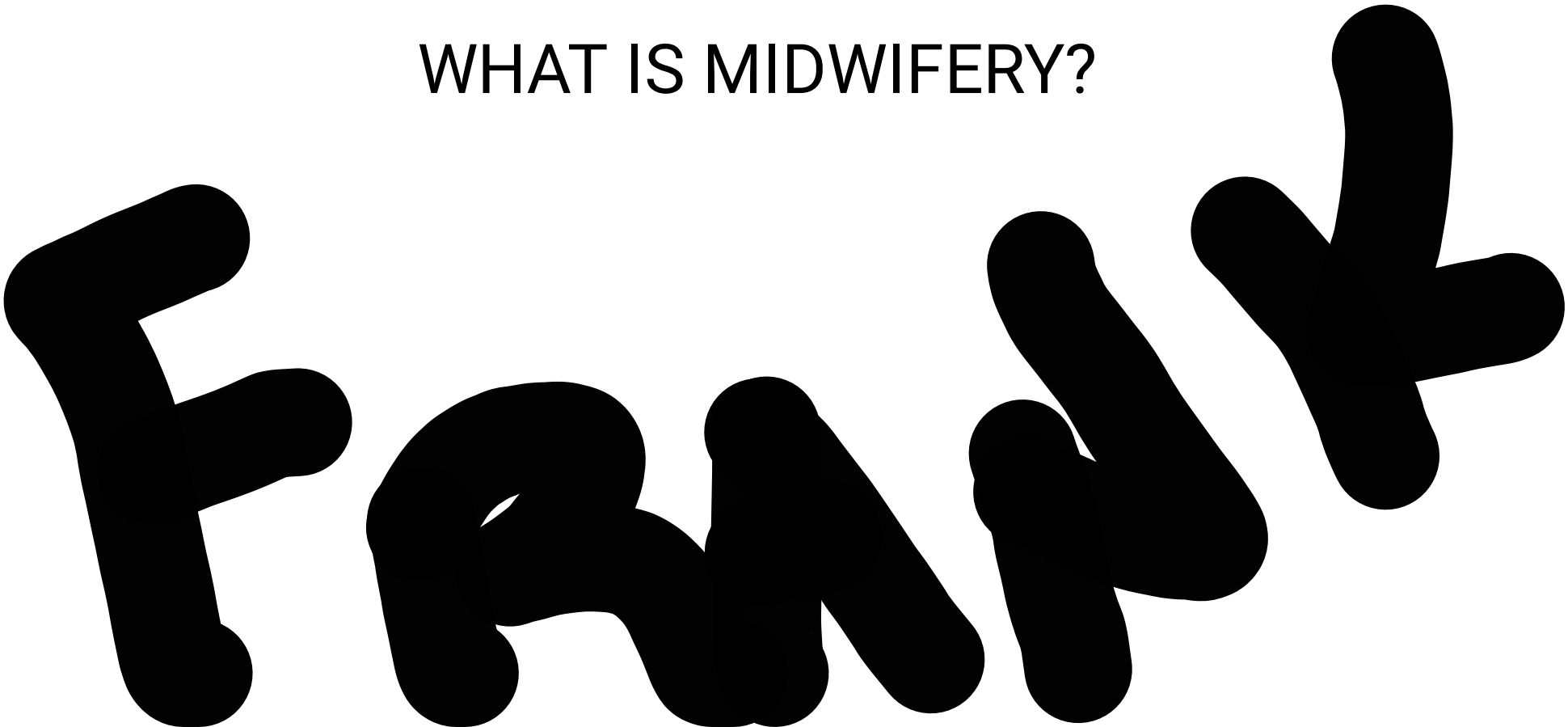
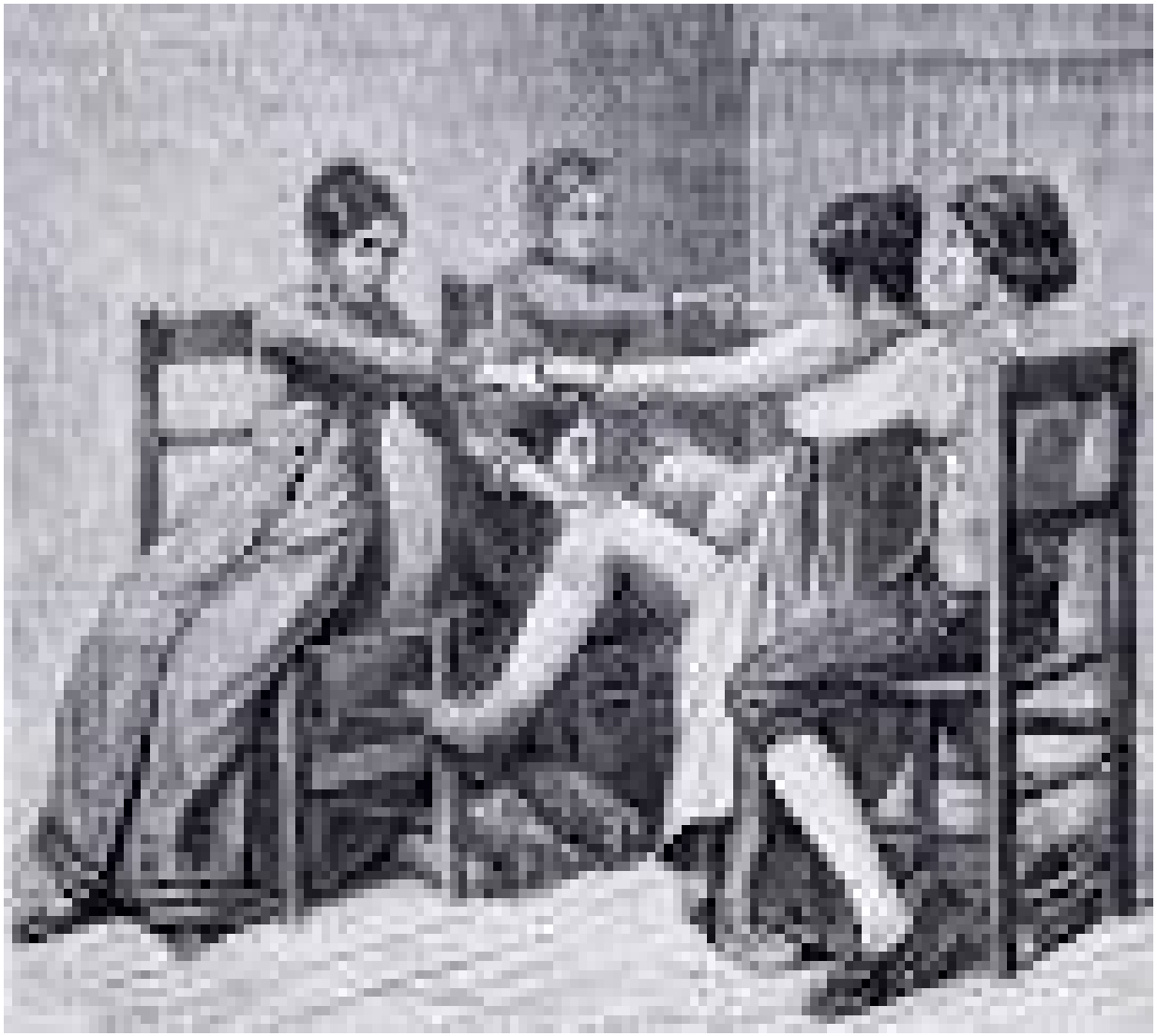
NORMAL MIDWIFERY

MIDWIFERY

WHAT IS MIDWIFERY?





Midwifery definitions

- Obstetrics

This is a branch of medicine that deals with pregnancy, labour and care after birth.

- Midwifery

It’s a course that deals with care of a woman during the events which concern childbearing. i.e. the care of a woman before she conceives, during pregnancy and in the period of adjustments after birth.

Definitions cont……

- Midwife

It's a person (male or female) who has been regularly admitted to a midwifery education programme that is fully recognised in that country in which it is located. Has successfully completed the prescribed course of studies and acquired the required qualification to be registered (enrolled) and licenced legally to practice midwifery.

Responsibilities of a midwife

- To observe,examine and teach a woman during pregnancy, labour and puerperium.
- To care for the mother and the baby after delivery
- To act promptly and appropriately to save the life of the woman or the baby

Aims of a midwife

1. To promote and maintain the physical and psychological health of the pregnant woman in order to ensure birth of a normal healthy baby without any complications to either the mother or the baby
2. To ensure a live healthy baby through fetal supervision
3. To prepare the mother through health messages for, lactation and subsequent care of the baby.

Aims ct...

4. to detect early and correct or treat appropriately and promptly any risk conditions(medical or obstetrical) that might interfere or endanger the health of the mother or fetus.

5. To involve the husband and other members of the family in the care of the pregnant woman and that of the baby after birth.

Code of ethics- moral principles

- This should govern the midwife behavior with women and partners or relatives
  - Respect for life
  - Be respectful to others and polite
  - Confidentiality- keep information given in trust by the patient secret
  - To be calm, obedient and control their tempers

Principles

- Trustful- the midwife should behave and act in a way that the client can believe in him/her all through the provision of care.
- Good communication to colleagues, team members, client and relatives.
- Punctuality- both on duty and taking actions because delays can cause irreversible damages.

Principles

- **Maintain own and others dignity through good moral behavior and respect for life.**
- **Exercise equity to all irrespective of their social background and status, religion, race or beliefs.**

Students objectives

- To describe the anatomy and physiology of female and Male reproductive system
- Develop knowledge, skills and attitude towards caring of a pregnant woman and mothers in labor.
- Acquire knowledge, skills and positive attitude towards caring of a woman after birth.

Objectives ct…

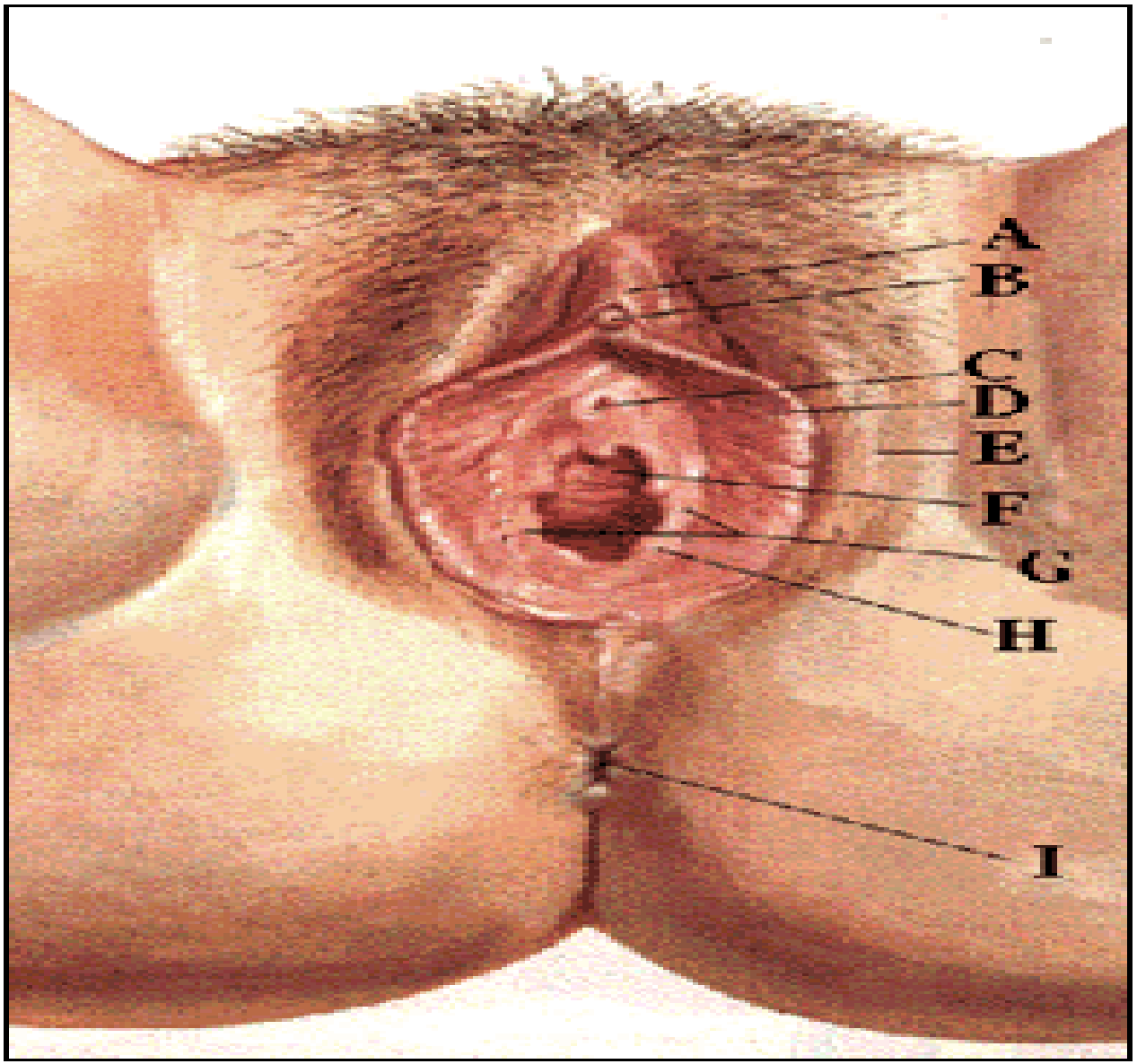
- **Acquire knowledge, skills and positive attitude towards caring of babies at risk**
- **Acquire knowledge, skills and positive attitude in management of obstetrical complications.**

ANATOMY AND PHYSIOLOGY OF FEMALE REPRODUCTIVE SYSTEM

A &P

- The female reproductive system is divided into :-
  - External organs or genitalia(vulva)
  - Internal organs or genitalia

Female external genitalia



Prepuce (Hood) of Clitoris
B: Clitoris
C: Opening of Urethra (urinary tract)
D: Labia minora
E: Labia majora
F: Opening of Vagina
G: Vestibule
H: Hyman tissue (residual)
I: Opening of Anus

The female external genetalia

- Its composed of :-
  - The mons pubis
  - The labia majora
  - The labia minora
  - The vestibule
  - The urethral opening/meatus
  - The vagina opening/meatus
  - The bartholin glands opening
  - The paraurethral opening
  - The clitoris

Female external genital organs

- ***The Mons Pubis***
- The mons pubis is a **rounded fatty elevation** located **anterior** to the **symphysis pubis** and **lower pubic region**.
- It consists mainly of a **pad** of **fatty connective tissue deep to the skin**.
- The amount of fat **increases during puberty** and **decreases after menopause**.

External genital organs ct…

- The **mons pubis** becomes covered with **coarse pubic hairs** during **puberty**, which **also decrease after menopause**.
- The **typical female distribution** of **pubic hair** has a **horizontal superior limit across the pubic region**.

External genital organs ct…

- ***The Labia Majora***
- The labia (L. large lips) are **two symmetrical folds of skin,** which **provide protection** for the urethral and vaginal orifices.
- These open into the vestibule of the vagina.
- Each labium majus, largely filled with **subcutaneous fat**, passes **posteriorly from the** mons pubis to **about 2.5 cm from the anus**.

External genital organs ct…

- They are situated on **each side of the pudendal cleft**, which is the slit between the labia majora into which the vestibule of the vagina opens.
- The labia majora **meet anteriorly** at the **anterior labial commissure**.
- They **do not join posteriorly** but a **transverse bridge of skin** called the **posterior labial commissure** passes between them.

External genital organs ct…

- *The Labia Minora*
- The labia minora (L. small lips) are thin, delicate folds of fat-free hairless skin.
- They are located between the labia majora.
- The labia minora contain a core of spongy tissue with many small blood vessels but no fat.

External genital organs ct…

- The internal surface of each labium minus consists of thin skin and has the typical pink colour of a mucous membrane.
- It contains many sensory nerve endings.
- Sebaceous and sweat glands open on both of their surfaces.
- The labia minora enclose the vestibule of the vagina and lie on each side of the orifices of the urethra and vagina.

External genital organs ct…

- They meet just superior to the clitoris to form a fold of skin called the prepuce (clitoral hood).
- Posteriorly they fuse forming the fourchete

External genital organs ct…

The Vestibule

- The vestibule is the space between the labia minora.
- The urethra, vagina, and ducts of the greater vestibular glands open into the vestibule.

External genital organs ct…

The External Urethral Orifice

- This median aperture is located 2.5cm posterior to the clitoris and immediately anterior to the vaginal orifice.
- On each side of this orifice are the openings of the ducts of the paraurethral glands (Skene's glands).

External genital organs ct…

The Vaginal Orifice

- This large opening is located inferior and posterior to the much smaller external urethral orifice.
- The size and appearance of the vaginal orifice varies with the condition of the hymen, a thin fold of mucous membrane that surrounds the vaginal orifice.

External genital organs ct…

The Greater Vestibular Glands

- These glands are about 0.5 cm in diameter.
- They are located on each side of the vestibule of the vagina, posterolateral to the vaginal orifice.
- they secrete a small amount of lubricating mucus into the vestibule of the vagina during sexual arousal.
- Bartholin's glands are homologous with the bulbourethral glands in the male

External genital organs ct…

The Clitoris

- The clitoris is 2 to 3 cm in length.
- It is homologous with the glans of penis and is an erectile organ.
- Unlike the penis, the clitoris is not traversed by the urethra; therefore it has no corpus spongiosum.

External genital organs ct…

- The clitoris is located posterior to the anterior labial commissure, where the labia majora meet.
- It is usually hidden by the labia when it is flaccid.
- The clitoris, like the penis, it will enlarge upon tactile stimulation, but it does not lengthen significantly.
- It is highly sensitive and very important in the sexual arousal of a female.

External genital organs ct…

Arterial Supply of the Female External Genitalia

- The rich arterial supply to the vulva is from two external pudendal arteries and one internal pudendal artery on each side.
- The internal pudendal artery supplies the skin, sex organs, and the perineal muscles.
- The labial arteries are branches of the internal pudendal artery, as are the dorsal and deep arteries of the clitoris.

External genital organs ct…

Venous Drainage of the Female External Genitalia

- The **labial veins** are tributaries of the **internal pudendal veins** and **venae comitantes** of the **internal pudendal artery**.

External genital organs ct…

Lymph Drainage of the Female External Genitalia

- The vulva contains a very rich network of lymphatic channels.
- Most lymph vessels pass to the superficial inguinal lymph nodes and deep inguinal nodes.

External genital organs ct…

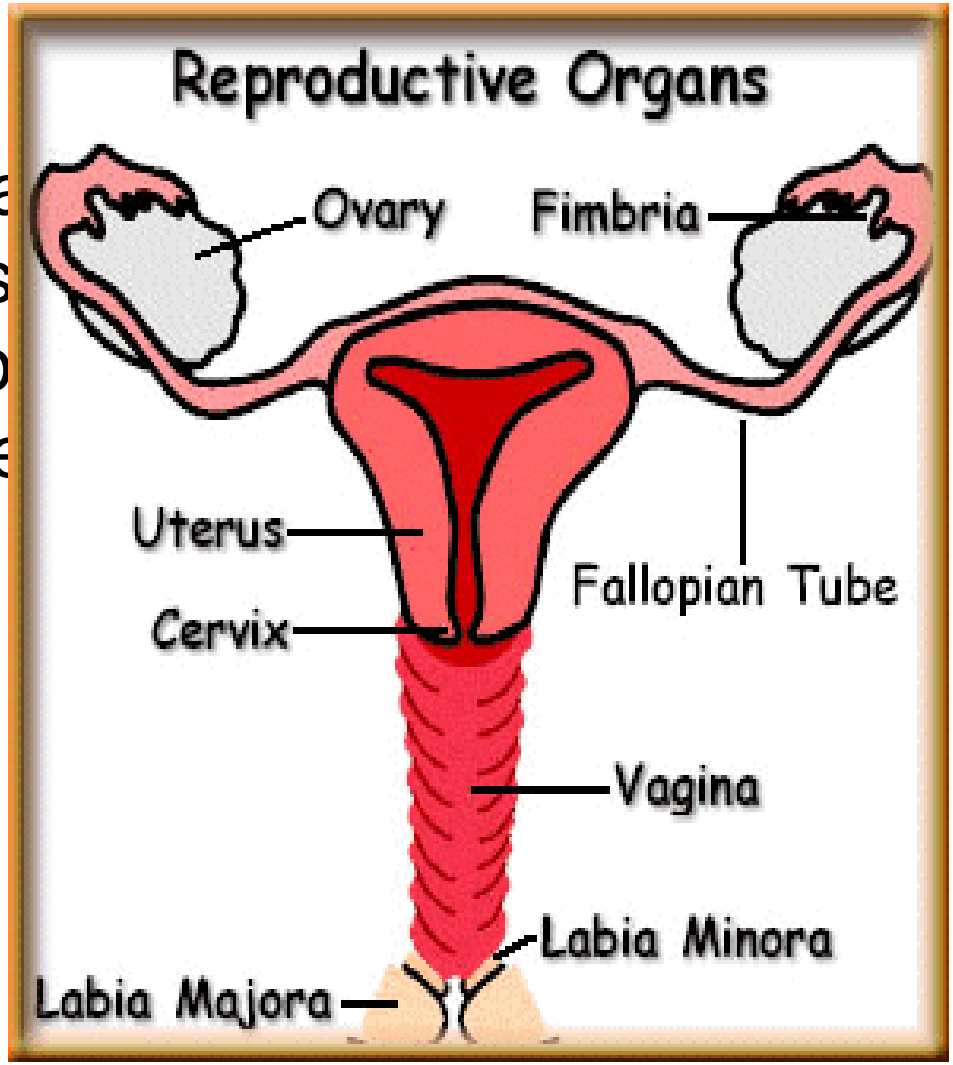
innervation of the Female External Genitalia

- The nerves to the vulva are branches of:
  - The ilioinguinal nerve;
  - The genital branch of the genitofemoral nerve;
  - The perineal branch of the femoral cutaneous nerve;
  - And the perineal nerve.

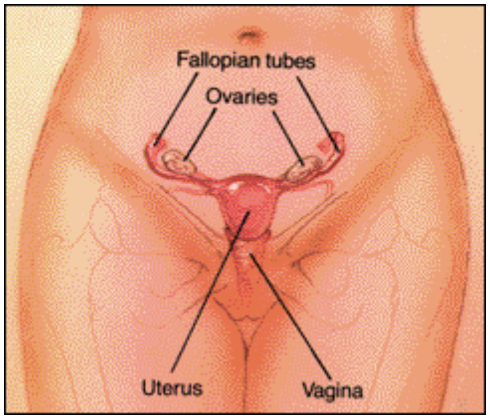
External genital organs ct…

The internal organs

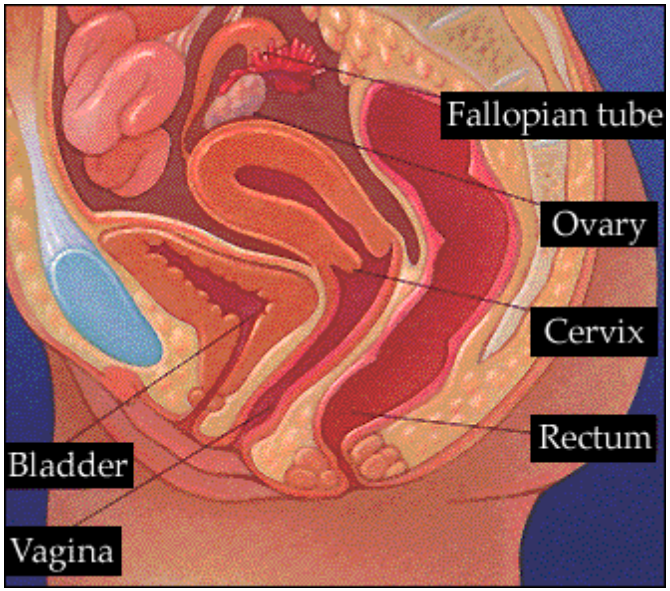
- Includes:-
  - The vagina
  - The uterus
  - Two fallop
  - Two ovarie

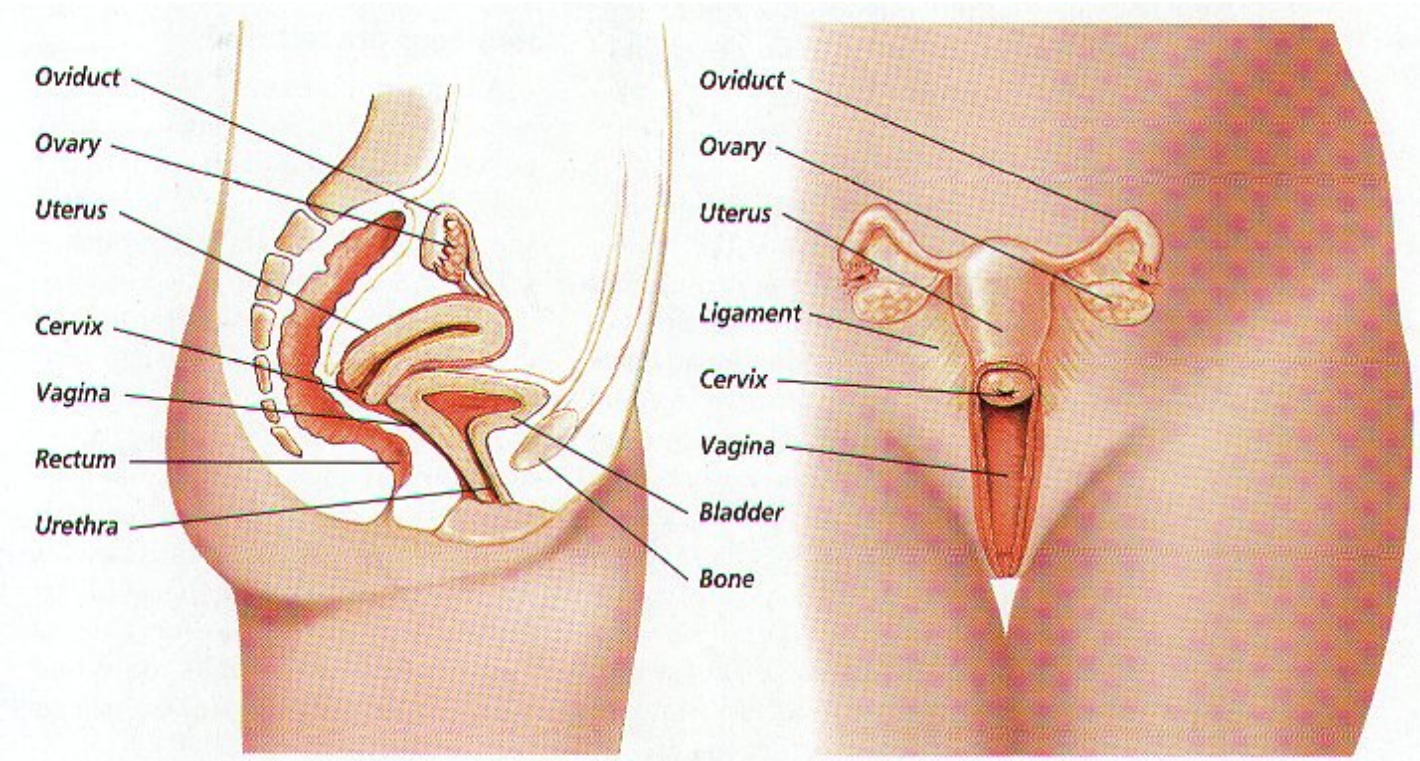


Internal female reproductive organs



Longitudinal section of female reproductive system




Oviduct
Ovary
Uterus
Cervix
Vagina
Rectum
Urethra
Oviduct
Ovary
Uterus
Ligament
Cervix
Vagina
Bladder
Bone

THE INTERNAL GENITALIA

- ***Vagina***

- This is a fibromascular tube covered with stratified squamous epithelium that connects the uterus and the vestibule.
- It is made of the following layers:-
  - Mucous coat lined with squamous epithelium
  - Submucous layer of loose areolar vascular tissue
  - Muscular layer
  - Fibrous coat

The vagina

- The inner membrane is thrown into convolutions called rugae that allows stretching
- The anterior wall is about 7.5 cm long and posterior wall 10 cm long. This is because the cervix projects into the vagina at an angle.
- It has no secretory glands but it is kept moist my cervical secretions

The vagina

- **Although the cervical mucous is alkaline, the breakdown of glycogen by Doderlin bacilli (Lactobacillus acidophilus) into lactic acid maintain the vagina PH at 4.5.**

Relations of the vagina

- Anteriorly- the urethra and urinary bladder and urethra
- Posteriorly-Pouch of Douglas,rectum & perineal body
- Laterally- upper 2/3 pelvic fascia and ureters, the lower 1/3 muscles of the pelvic floor
- Superiorly- uterus
- Inferiorly-the external genitalia

The vagina

- Arterial blood supply to the vagina is from the vaginal artery and a descending branch of uterine artery. Venous drainage is via corresponding veins.
- Lymphatic drainage is via the inguinal, internal iliac and sacral lymph nodes
- Inervation is from the Lee Frankehauser plexus

Functions of vagina

1. **Allows the escape of menstrual flow**
2. **Receives the penis and sperms during copulation**
3. **Provides a passage way for the fetus during delivery**

UTERUS

- The uterus in non-pregnant state is a hollow, muscular pear-shaped organ situated in the cavity of true pelvis
- It is about 7.5cm long and 5cm wide and 2.5cm in depth.
- It lies behind the urinary bladder and in front of the rectum.
- The uterus leans forward(anteversion) and bends on itself(anteflexion)

The uterine parts

Its divided into 3 main parts:-

- a) The body
- b) The Isthmus
- c) The cervix

BODY (Corpus)

It’s the upper part which is about 5cm in length and forms the major part of the uterus

The rounder doom shaped part above the fallopian tubes is called the fundus, while the upper outer angles where the fallopian tubes join the uterus are known as the cornua

The cavity is the triangular shaped space.

Parts of the uterus ct….

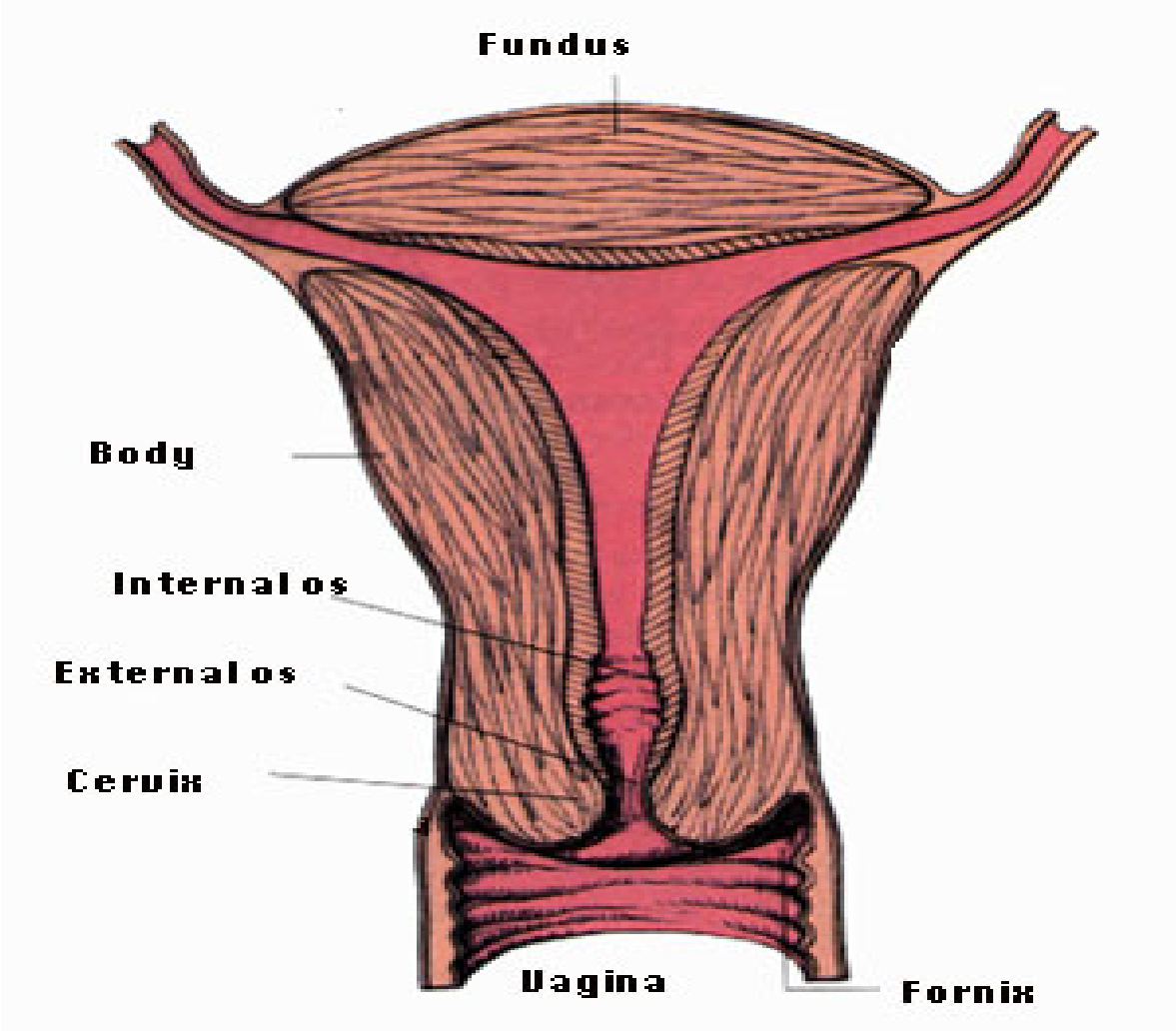
ISTHMUS

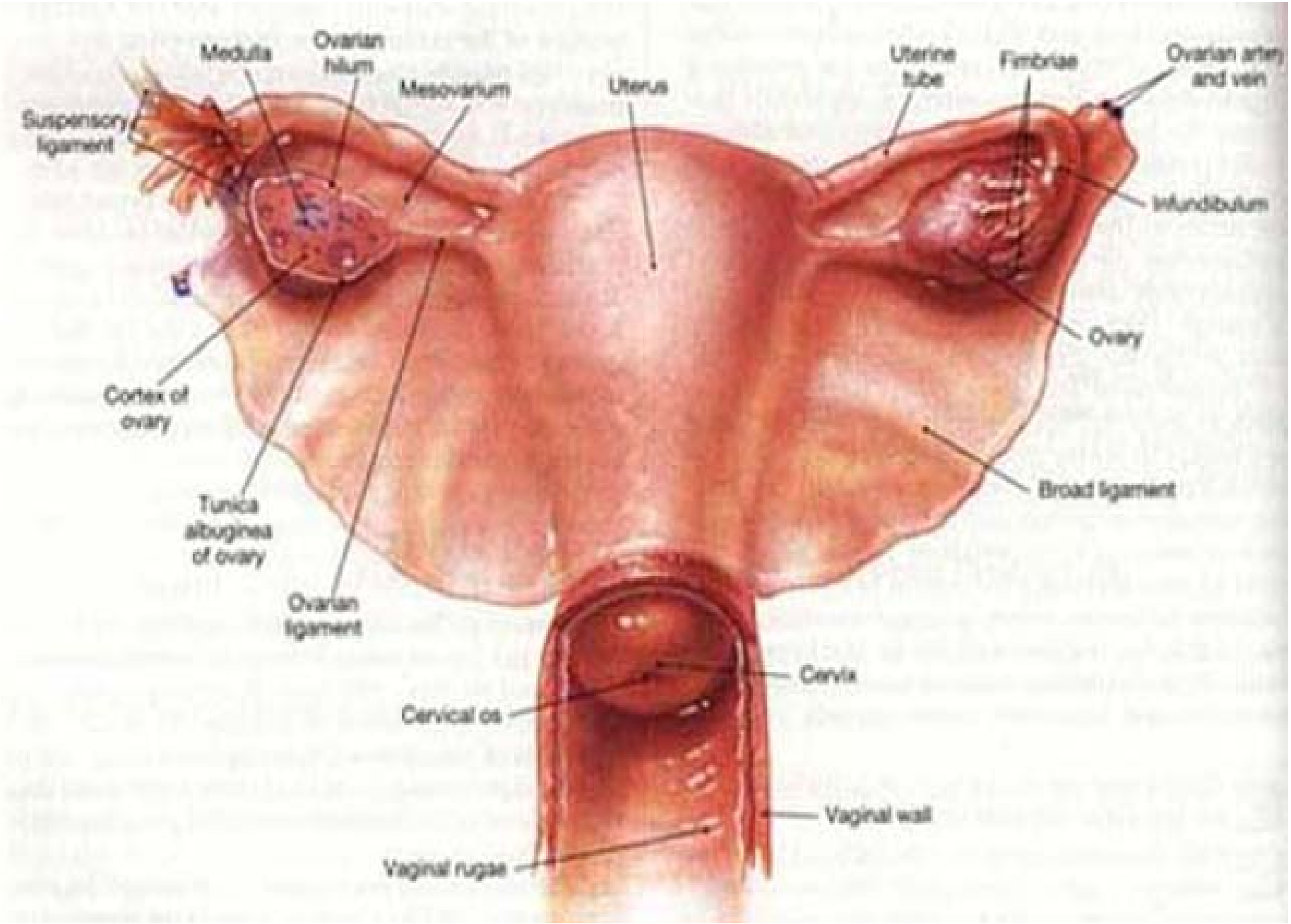
It’s the shortest segment of the uterus that lies between the body and the cervix. Its about 7mm in length.

CERVIX

It’s the lowest part of the uterus about 2.5cm long. It protrudes into the vagina with the upper ½ above the vagina being the supra-vaginal portion and the lower ½ the infra- vaginal portion. The internal OS is the narrow opening between the isthmus and the cervix and external OS is the portion that meets the vagina.

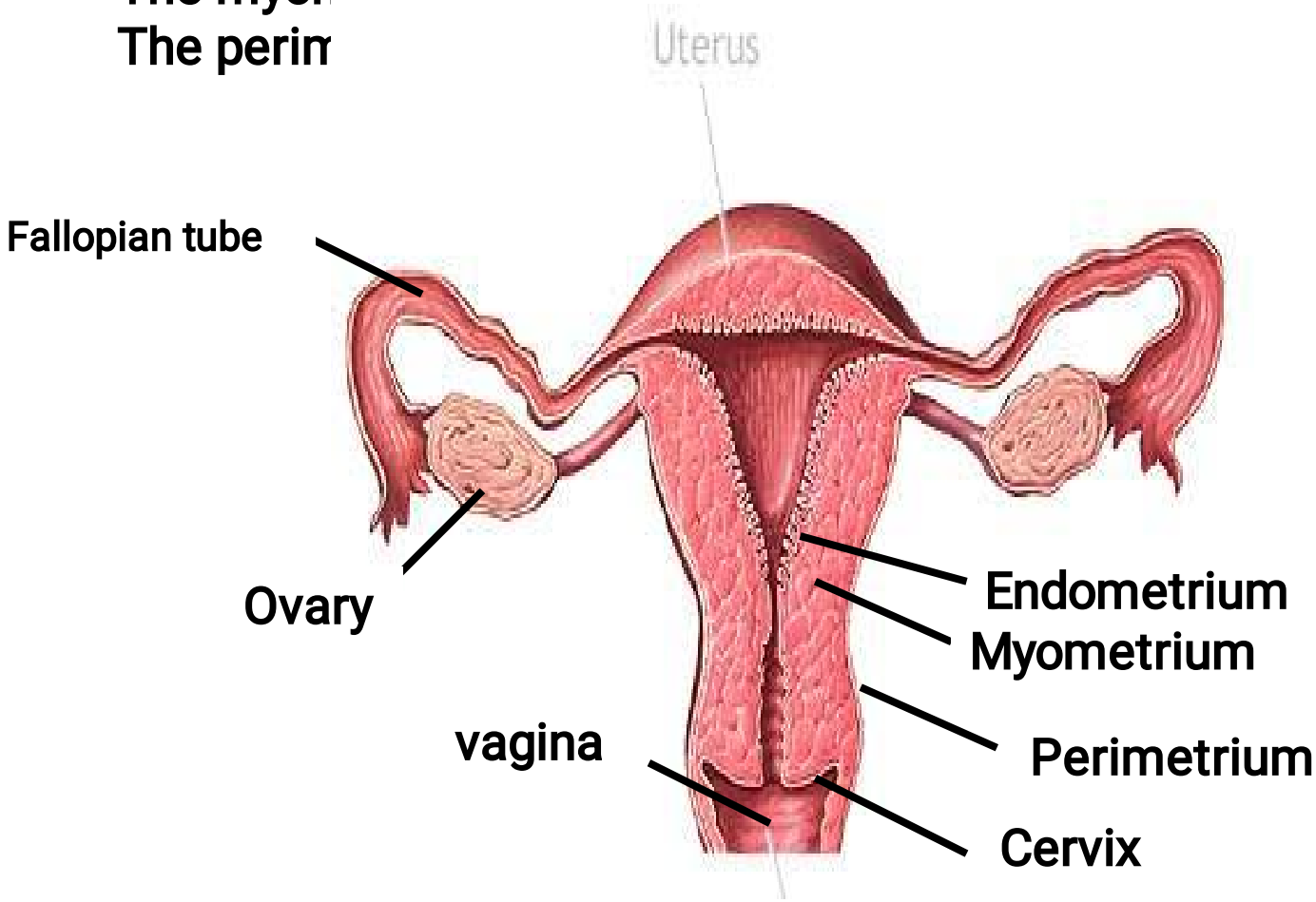
Parts of the uterus




Medulla
Ovarian hilum
Mesovarium
Uterus
Uterine tube
Fimbriae
Ovarian artery and vein
Suspensory ligament
Infundibulum
Ovary
Cortex of ovary
Tunica albuginea of ovary
Broad ligament
Ovarian ligament
Cervix
Cervical os
Vaginal wall
Vaginal rugae

Layers of the uterus

- The uterus consist of three layers:-
  - The endometrium
  - The myo
  - The perin



The endometrium

- It is the inner layer of mucus membrane formed by ciliated epithelium on a base of connective tissue.
- The epithelial cells are cubical in shape and dip down to form glands that secrete alkaline mucus
- The cervical endometrium is thinner than that of the body of uterus and is folded into a pattern known as arbor vitae(tree of life) that is thought to aid the passage of sperms

myometrium

- The middle muscular layer of uterus
- Thicker towards the fundus
- It fibers are arranged in all conceivable directions
- After delivery, these fibers act as ligatures of vessels to stop bleeding

perimetrium

- The outermost layer consisting of double serous membrane.
- Anteriorly, it covers the fundus and the body and then it is reflected over the urinary bladder to form vesico-uterine pouch
- Posteriorly, the peritoneum extends over fundus, body and cervix and then reflected to the rectum forming recto-uterine pouch
- Laterally, it only covers the fundus

Blood supply and drainage

- arterial supply- uterine arteries which are branches of internal iliac arteries
- Venous drainage is through the uterine veins that joins the internal iliac veins
- the lymph drains into the internal iliac and aortic lymph glands

Support of the uterus

- The uterus is well supported by the surrounding organs, muscles of the pelvic floor and ligaments that suspend it from the walls of the pelvis
- *Ligaments supporting the uterus*

✓ *Two broad ligaments*- they are formed by double fold of peritoneum on either side of the uterus. They hang from the fallopian tubes like curtains to attach the uterus to the side walls of the pelvis

Support of the uterus

- ✓ *Round ligament-* these are bands of fibrous tissue between the layers of broad ligament, one on each side of uterus. They pass to the sides of the pelvis then through the inguinal canal and then fuse with the labia majora.
- ✓ *Uterosacral ligaments-* they originate from the posterior wall of cervix and vagina and move backwards, one on each side of the rectum, to the sacrum

Support of the uterus

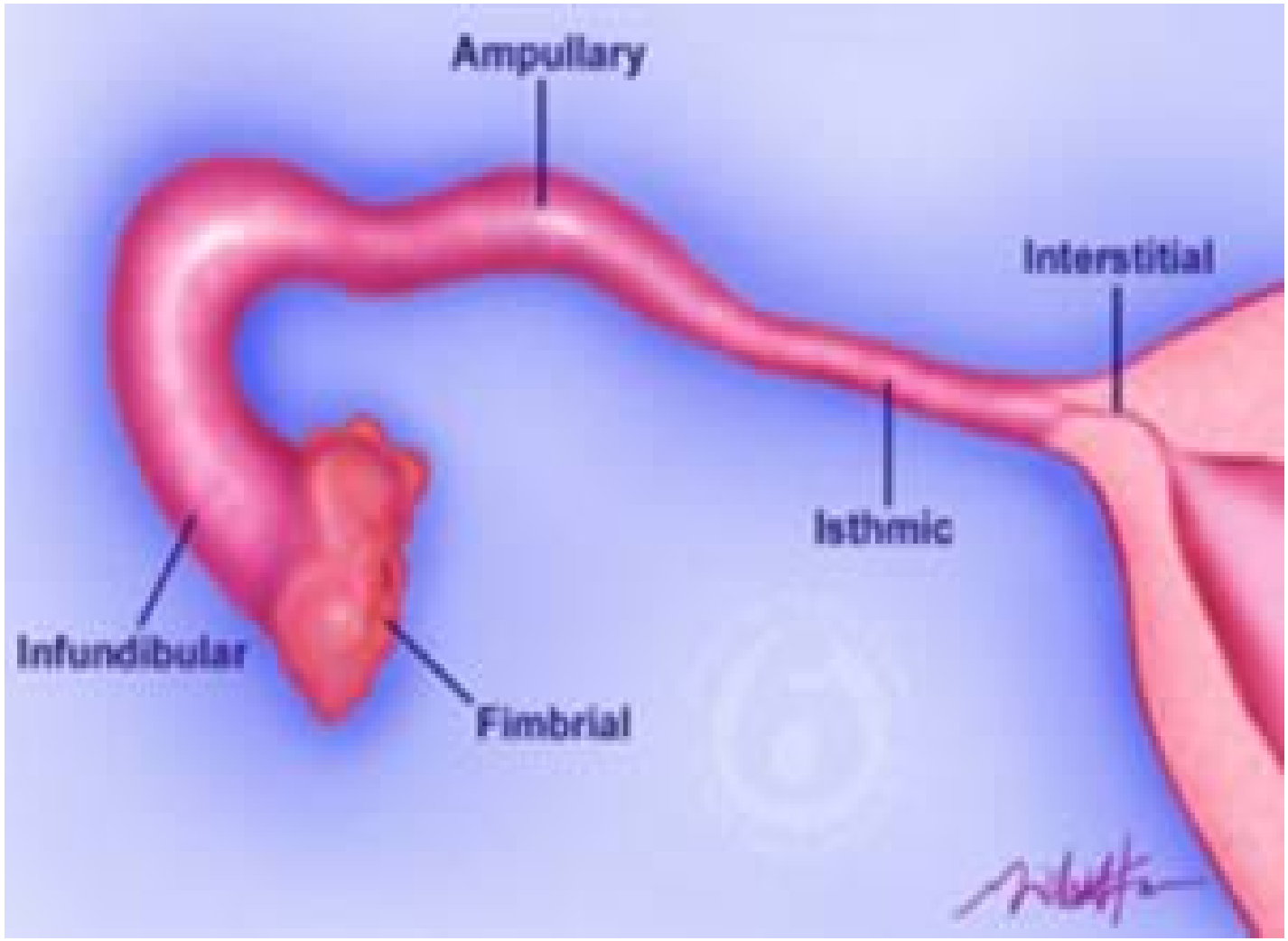
- ✓ *The pubocervical fascia* – they pass forward from the transverse cervical ligament on the side of the bladder and attaches to the posterior surface the pubic bones
- ✓ *Transverse cervical ligaments(cardinal ligaments-* extends from the sides of the cervix and vagina to the side walls of the pelvis

Functions of uterus

1. It receives a fertilized ovum from the fallopian tubes
2. It provides favorable environment for implantation and sheltering of embryo till delivery
3. It helps in expulsion of fetus, placenta and membranes during delivery
4. The cervix produces mucus which is essential and favorable for sperms survival and mobility

Fallopian tubes [uterine tubes]

- Stretch from the uterus to the ovaries and measure about 10cm in length.
- Range in width from about one inch at the end next to the ovary, to the diameter of a strand of thin spaghetti.
- The ends of the fallopian tubes lying next to the ovaries feather into ends called fimbria
- Millions of tiny hair-like cilia line the fimbria and interior of the fallopian tubes. The cilia beat in waves hundreds of times a second catching the egg at ovulation and moving it through the tube to the uterine cavity.
- Fertilization typically occurs in the fallopian tube


Ampullary
Interstitial
Isthmic
Infundibular
Fimbrial

OVARIES

- Are the female gonads, equivalent to testis in males
- They produce the ova and female hormones
- They are about 3cm long, 2cm wide and 1cm thick

Structure of the ovaries

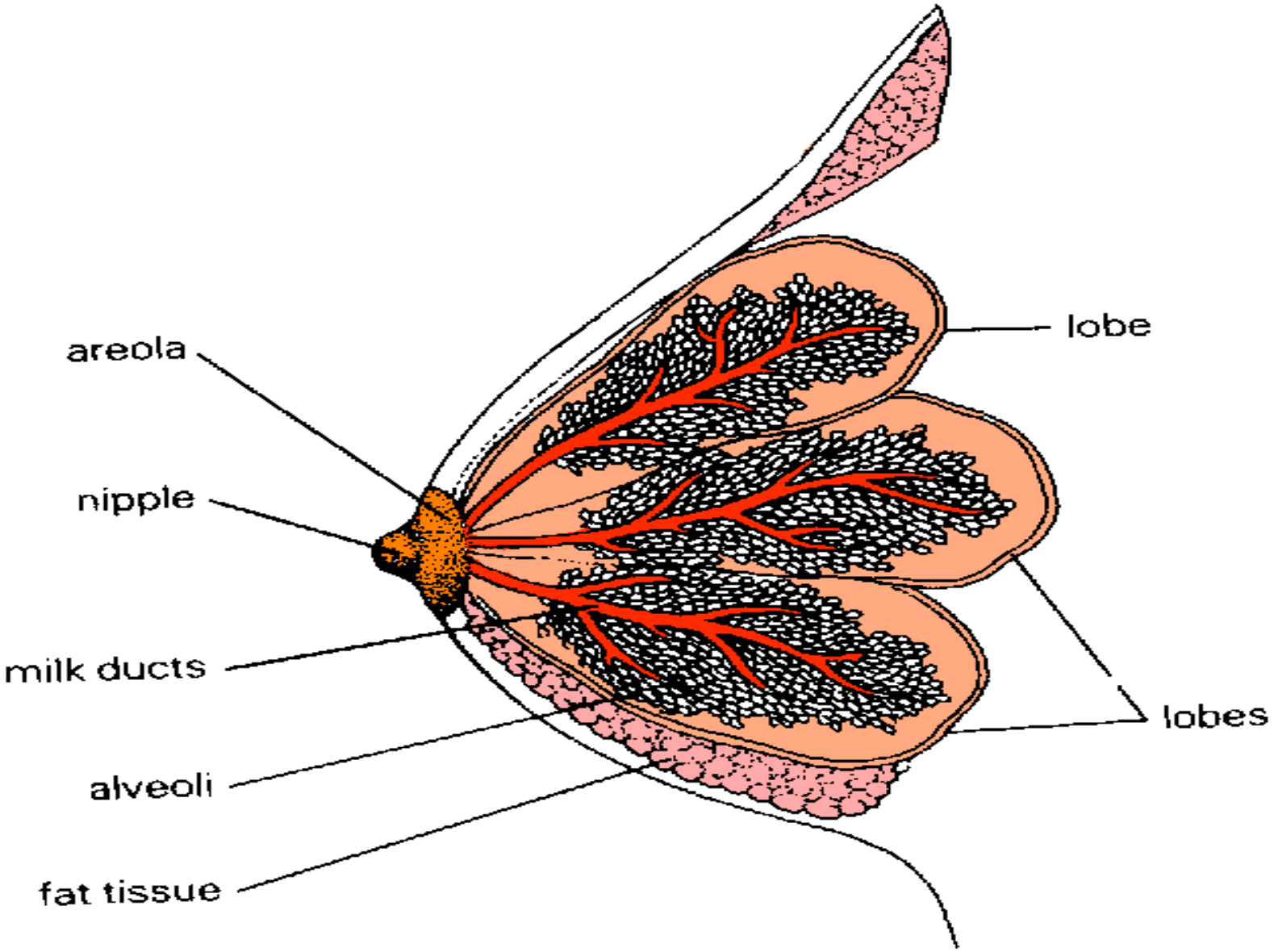
- They are made of the medulla and the cortex
- Medulla is the central part consisting of fibrous tissue, blood vessels and nerves
- *Cortex* surrounds the medulla
- It is made of a framework of connective tissue(stroma) covered by germinal epithelium which contains follicles in their various stages of development.

ovaries

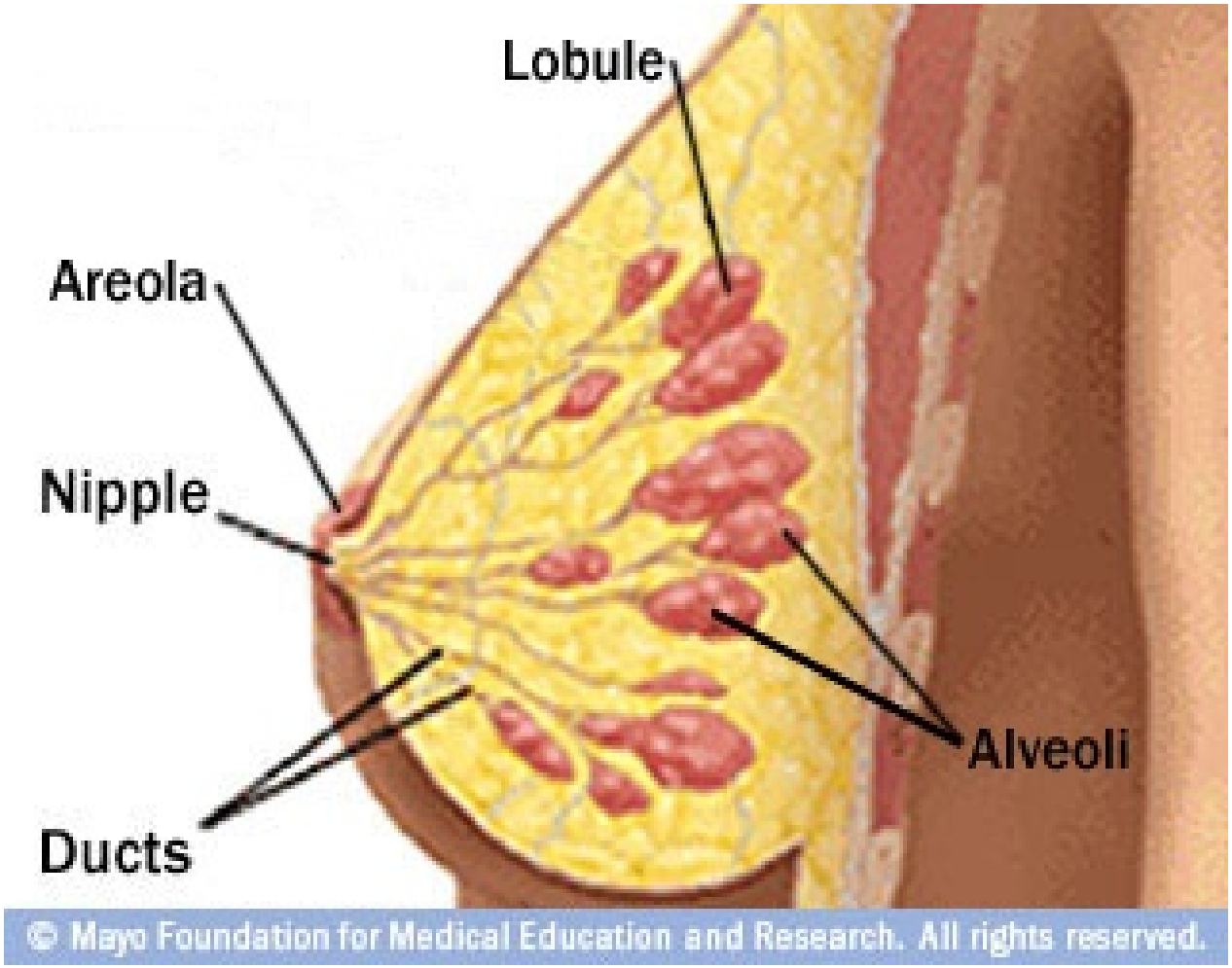
- Ovaries receive blood supply via ovarian arteries and drains into corresponding veins
- Lymphatic drainage is into the lumbar glands
- Nerve supply- parasympathetic supply comes from the sacral outflow and sympathetic nerves from lumbar outflow

FEMALE BREASTS

- Also known as the mammary glands
- They are considered accessory glands of the female reproductive system
- They are modified sweat glands.
- They influenced greatly by hormonal changes during the menstrual cycle and pregnancy.
- Before puberty, they are immature and then grows under the influence of estrogen and progesterone


areola
nipple
milk ducts
alveoli
fat tissue
lobe
lobes

Female breast



Structure of the breast

- Made of connective tissue, glandular tissue and fatty tissue.
- It has a conical central eminence called the nipple surrounded by a hyperpigmented area, the areola.
- On areola are numerous sebaceous glands called montgomery's tubercles.

Structure of the breast ct…

- Each breast is made up of about 20 lobes
- Each lobe is made of several lobules that radiate around the nipple
- Lobules consist of cluster of alveoli
- Alveoli open into small ducts which then unites to form lactiferous ducts.
- Lactiferous ducts unite to form lactiferous sinuses, the dilatations that serve as reservoir of milk is known as the ampulla.

Structure of the breast cont…

- **Narrow ducts that open on the surface of the nipple are known as lactiferous sinuses**
- **Alveoli are lined with a secretory membrane that secretes the milk**

Functions

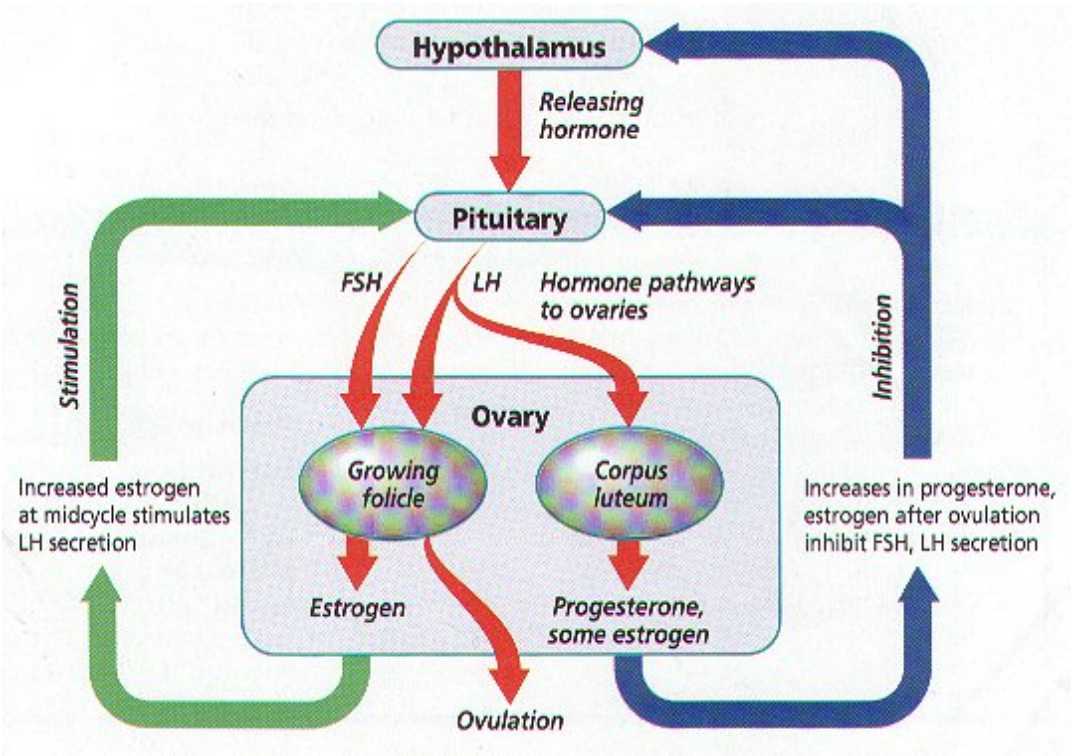
- **Production of milk for nourishing the baby**
- **Adds on female sexual stimulation**
- **For cosmetic purpose**

Blood, lymph supply to the breast

- **Arterial supply- axillary arteries, internal mammary and intercostal arteries**
- **Venous drainage- axillary and mammary veins**
- **Lymphatic drainage- superficial axillary lymph nodes and parasternal lymph nodes**

THE MENSTRUAL CYCLE

- Divided into two phases that take place concurrently in the uterus and the ovaries.
- Both phases are under the influence of hormones
  - – - The ovarian cycle
  - – - The uterine cycle


Hypothalamus
Releasing hormone
Pituitary
FSH
LH
Hormone pathways to ovaries
Stimulation
Inhibition
Ovary
Growing folicle
Corpus luteum
Increased estrogen at midcycle stimulates LH secretion
Increases in progesterone, estrogen after ovulation inhibit FSH, LH secretion
Estrogen
Progesterone, some estrogen
Ovulation

THE OVARIAN CYCLE

- The ovarian cycle starts on the first day of the menstrual cycle.
- The menstrual cycle begins on the first day of the periods - which is the first day of bleeding.
- At this time, the levels of all the hormones - estrogen, progesterone , FSH and LH - which are primarily responsible for maintaining menstruation, are at the baseline levels.

The ovarian cycle

- The low level of estrogen in the blood at this time, stimulates the pituitary gland in the brain to start producing Follicle Stimulating Hormone (FSH).
- The level of FSH rises and stimulates the Graafian follicles in the ovaries to develop. This indicates the start of the ovarian cycle in menstruation
- The ovarian cycle is divided into three phases

The follicular phase

- The hypothalamus release Gonadotropin Releasing Hormone.
- GnTRH acts on the anterior pituitary gland to release Follicle Stimulating Hormone(FSH)
- FSH stimulates growth of about 20 Graafian follicles. They enlarges rapidly and produces hormone estrogen in the blood stream

Ovulatory phase

- At around the 10th day of the follicular phase, one of the follicles becomes distinctly larger than the others.
- It continues to grow, becoming larger and larger (‘dominant follicle’) to become mature, while the growth of the others are arrested. These eventually die out.
- The estrogen released by the follicles, acts on the endometrium of the uterus and stimulates it to proliferate.

Ovulatory phase

- The dominant follicle usually ruptures when it is about 18 – 20 mm in size and releases an ovum at about the 14-16th day of the menstrual cycle.
- This process is called ‘ovulation’. The follicular phase ends at this stage and the Luteal Phase begins.

Luteal phase

- As the levels of estrogen rises, they inhibit the production of FSH by anterior pituitary gland and instead LH is produced.
- As soon as the Graafian follicle ruptures and releases the ovum (‘ovulation’) the cells of the follicle itself undergoes certain changes.
- Fat globules get deposited in them, they grow larger, and they assume a yellowish color. These cells are called luteal cells and the follicle now forms the 'corpus luteum'

Luteal phase ct...

- The cells of the corpus luteum are capable of producing the hormone ‘progesterone’ which, like estrogen, acts on the uterine endometrium.
- Hence this phase is also called the progestogenic phase. The level of progesterone reaches a peak at 22 – 26th day of the cycle.
- The changes in the uterine endometrium is dependent on the hormones secreted by the ovaries.

Ovarian cycle ct...

- If pregnancy does not take place, the corpus luteum start to decrease in size and eventually atrophies
- The level progesterone falls in tandem with the activity of corpus luteum and when a critical level is reached, the endometrium is shed off.
- This signifies a begining of a new cycle

THE UTERINE CYCLE

- Describes the cyclic changes that takes place in the female uterus every month
- It is under the influence of ovarian hormones
- Consist of three phases
    - Menstrual phase
    - Proliferative phase
    - Secretory phase

Menstrual phase

- Involves the shedding of the endometrium.
- Menses consist of blood, endometrial cells, endometrial secretions and the unfertilized ovum
- It occurs when the levels of progesterone are low because it trophic effect on the endometrium is withdrawn

Proliferative phase

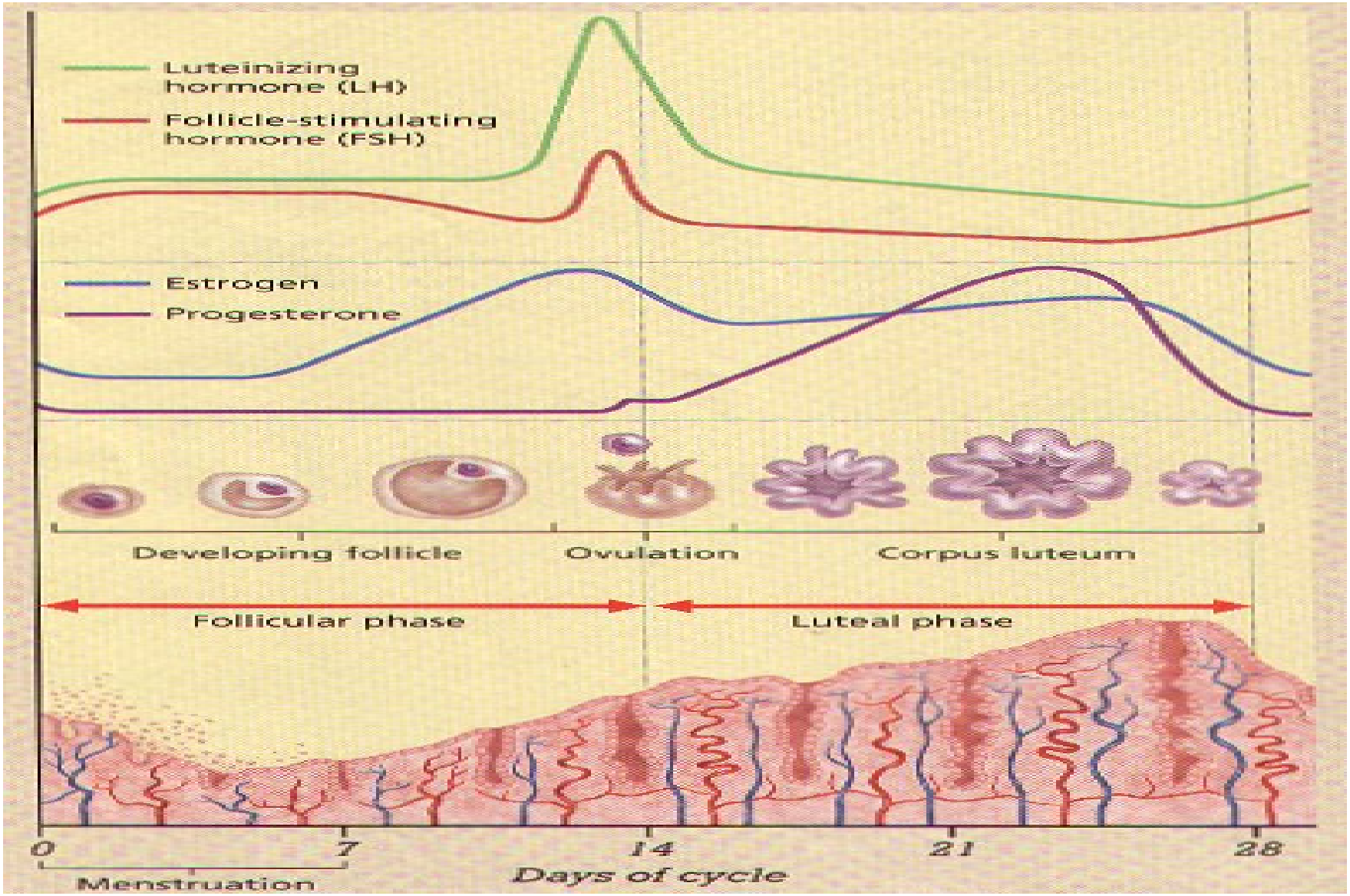
- it follows the mensturation and lasts until ovulation.
- It is under the influence of estrogen which stimulates proliferation of the endometrium
- The endometrium thickens, and become highly vascularized as the number of capillaries increase
- All this takes place to prepare the uterus for a possible implantation

- When levels of estrogen reaches the peak, ovulation occurs and this stage comes to an end.
- Increased levels of estrogen stimulates the cervix to produce lubricative mucus that becomes watery towards ovulation

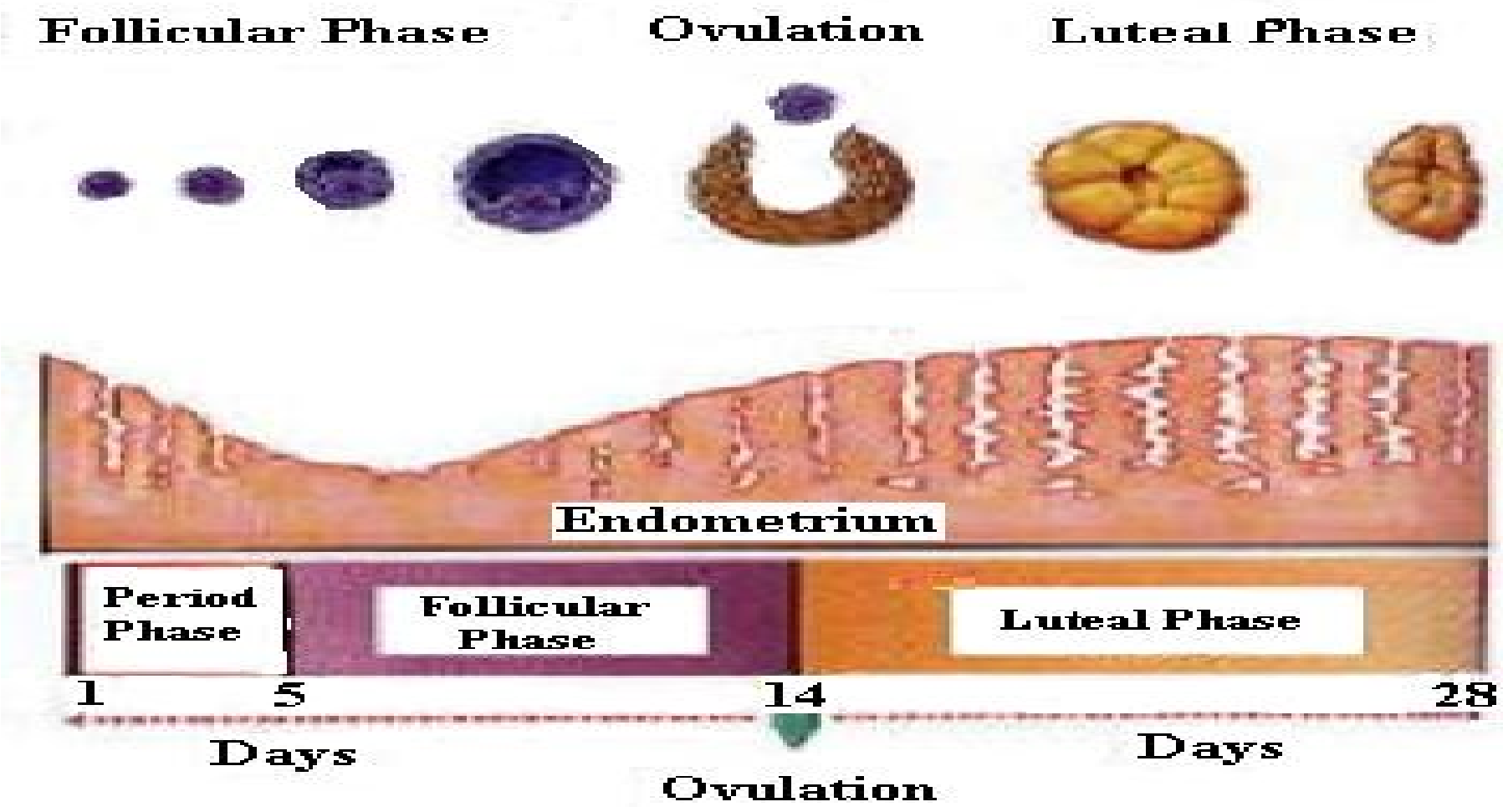
Secretory phase

- It follows ovulation and is under influence of progesterone hormone and to some extent estrogen
- Progesterone causes further thickening of the endometrium, the endometrial glands become more tortuous and endometrium becomes more vascular.

- If fertilization does not occur, the corpus luteum degenerates and the levels of progesterone goes down
- With the withdrawal of the maintenance effects of progesterone, the endometrium eventually breaks down leading to menses


Luteinizing hormone (LH)
Follicle-stimulating hormone (FSH)
Estrogen
Progesterone
Developing follicle
Ovulation
Corpus luteum
Follicular phase
Luteal phase
0
7
14
21
28
Menstruation
Days of cycle

Ovarian cycle



Functions of estrogen

- **Structural**

1. promote formation of female secondary sex characteristics
2. stimulate endometrial growth
3. increase uterine growth
4. maintenance of vessels and skin
5. reduce bone reabsorption, increase bone formation

- increase hepatic production of binding proteins
- Coagulation- increase circulating level of factors 2,7,9,10, antithrombin III, plasminogen
- increase platelet adhesiveness
- Lipid -increase HDL, triglyceride, fat depositition
- decrease LDL

Functions of progesterone

1. converts the endometrium to its secretory stage to prepare the uterus for implantation
2. During implantation and gestation, progesterone appears to decrease the maternal immune response to allow for the acceptance of the pregnancy.
3. Progesterone decreases contractility of the uterine smooth muscle

4. In addition progesterone inhibits lactation during pregnancy.

5. The fetus metabolizes placental progesterone in the production of adrenal steroids.

6. Females Breasts, it Stimulates development of alveoli for milk production.

7. Increases the body temp by 0.5°c

MALE REPRODUCTIVE SYSTEM

- Consists of:-
  - 2 testes
  - 2 epididymis
  - 2 vas deferens
  - 2 seminal vesicles
  - 1 prostate gland
  - 1 cowper’s gland
  - 1 penis

a) scrotum

- A deeply pigmented pouch made of skin that lies below the symphysis pubis and behind the penis.
- It is made of connective tissue, fibrous tissue and smooth muscles
- It is divided into two compartments, each containing a testis, epididymis and testicular end of a spermatic cord.
- It main function is to maintain testicular temperatures below the core body temperatures

b) testes

- They are the male reproductive glands, equivalent to ovaries in females
- Each is about 4 cm long, 2.5cm wide and 3 cm thick.
- They are suspended in the scrotum by the spermatic cords.
- They are surrounded by three layers of tissues:-

- Tunica vaginalis(outer)- which originates from abdominal and pelvic peritoneum
- Tunica albuginea(middle)- fibrous covering and the outer layer derived from the septum that divides the scrotum
- Tunica vasculosa(inner)- consist of connective tissues and capillary network.

Structure of the testis

- Each testis is made up of about 200-300 lobules
- Each lobule has between 1-4 convoluted loops composed of germinal epithelium, called seminiferous tubules
- Between the tubules are cells interstitial cells of Leydig which produces hormone testosterone.

- The tubules combine at the upper pole to form a single tubule, the epididymis which leaves the scrotum as the deferent duct in the spermatic cord
- Blood and lymphatic vessels pass to the testes through the spermatic cord.

Spermatic cords

- they are two, one on each side.
- They consist of one testicular artery, one testicular vein, 1 deferent duct, nerves and lymph vessels within a sheath of fibrous connective tissue and smooth muscles.
- It serves to suspended the testes
- The vas deferens passes through the inguinal canal and ascends medially towards the posterior wall of bladder.

- They join with ducts from seminal vesicles which together form the ejaculatory duct.

Seminal vesicles

- are two fibromascular pouches lined with columnar epithelium in the posterior aspect of bladder.
- Produce 60% of alkaline semen including fructose to provide energy for sperm.

Ejaculatory ducts

- Are two tubes about 2cm long formed from the union of deferent duct and seminal vesicles
- They pass through the prostate gland and join the prostatic urethra.
- It carries the spermatic fluid and spermatozoa to the urethra

Prostate gland

- Lies in the pelvic cavity in front of rectum and behind the symphysis pubis, surrounding the first part of urethra
- It consist of an outer fibrous covering, a layer of smooth muscle and glandular tissue
- Produces up to 1/3 of the semen & includes nutrients & enzymes to activate sperm.

Cowper's gland

- A small gland just below the prostate gland.
- Secretes mucous & alkaline buffers to neutralize acidic conditions of urethra.

urethra

- It is a tubular passage about 19-20 cm long
- It consist of three parts:-
  - *Prostatic urethra-* from the urethral orifice of bladder through the prostate gland.
  - *Membranous urethra-* shortest and narrowest part extending from the prostate gland to the bulb of the penis
  - *Spongiose urethra-* lies within the penis and terminates at external urethra orifice.

penis

- Formed by erectile tissue and involuntary muscles.
- The erectile tissue is supported by fibrous tissue and covered by skin. It is highly vascular
- The penis has two lateral columns of tissues made of corpora carvenosa and a medial column, the corpus spongiosum that contains the urethra
- At the tip, it is expanded into a triangular structure known as glans penis.

- Glans penis is well supplied by autonomic and somatic nerves.
- Parasympathetic stimulation leads to engorgement with blood and erection of penis

Male hormones

- Unlike in females, male reproductive hormones are not produced in cyclical fashion.
- *Follicle stimulating hormone* is produced by the anterior pituitary gland under the influence of gonadotropin releasing hormone
- It causes spermatogenesis in seminiferous tubules.

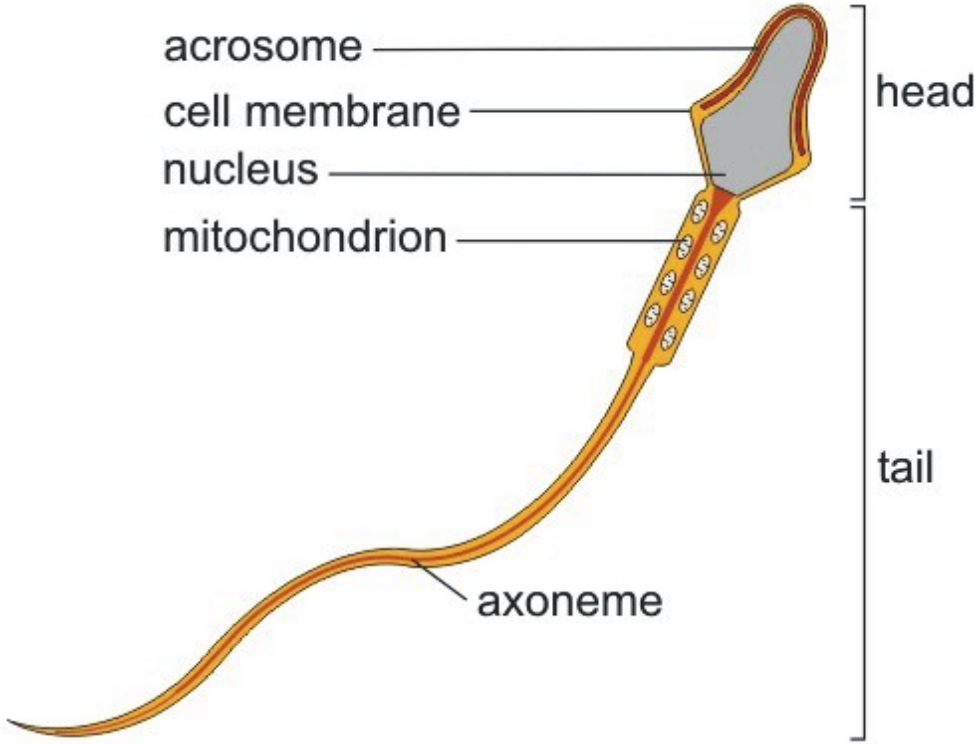
- *Luteinizing hormone* is also produced by anterior pituitary gland and is carried through blood stream to the testis.
- *It stimulates* the interstitial cells(leydig) to produce the hormone testosterone, the chief male sexual hormone

testosterone

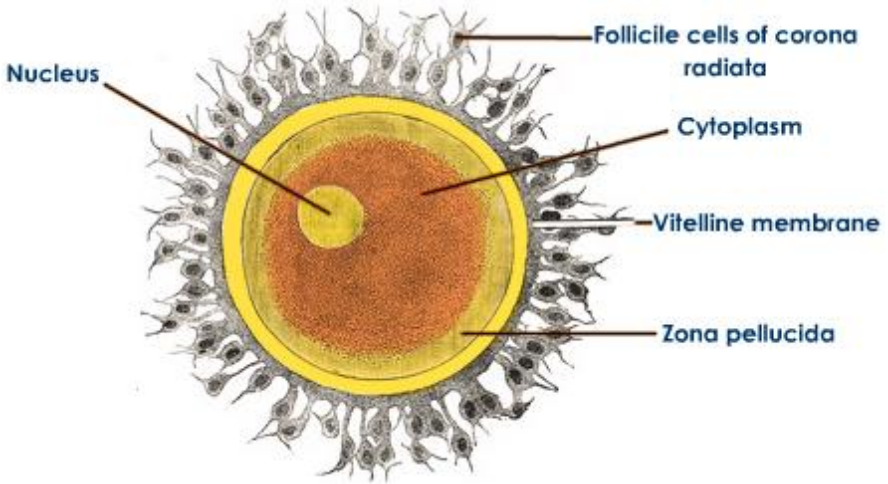
- Produced by the interstitial cells
- It Is responsible for development of male secondary characteristics.
  - Deepening of voice
  - Maturation of genitalia
  - Growth of hair on the pubis, axilla, face and chest

- Spermatogenesis begins at puberty and continues throughout adult life.
- It is stimulated by changes in pituitary gland secretion when it starts releasing follicle stimulating hormone.
- The mature sperms are stored in the epididymis and released during ejaculation.
- At each ejaculation, between 2-4mls of semen is released, each ml containing about 100million sperms

Structure of the sperm



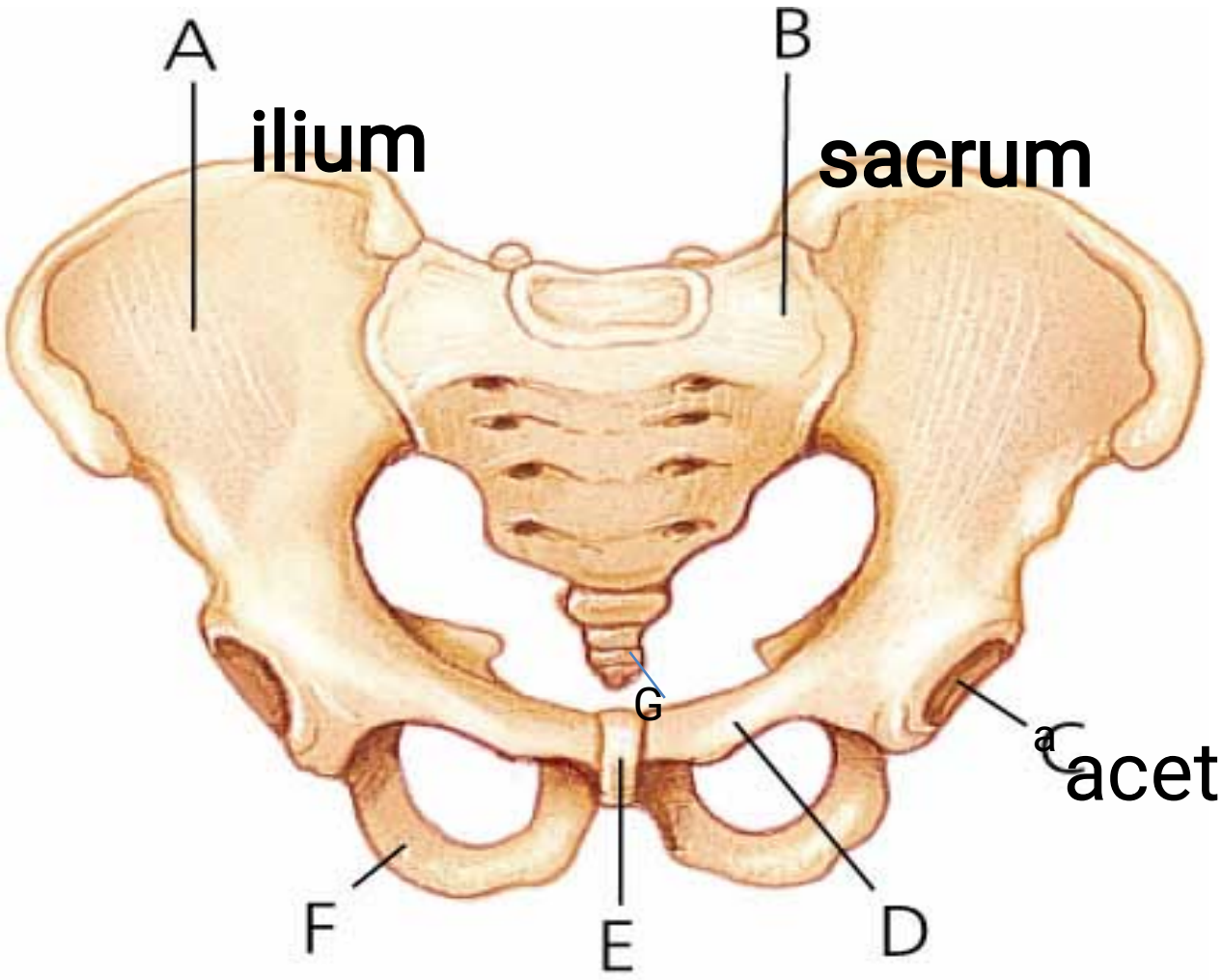
Structure of the ovum



THE PELVIS

- Acquired/deformed pelvis
- Results from intrauterine abnomalities
- Dietry deficiency,disese during chldbirth
- *rachitic_caused rickets
- *osteomalacic_caused calcium
- *asymetrial(nuegeles) _intrauterine abnormalities
- *roberts_conjenital absence or poor dvlpt of alae bilaterally leading to too small pelvis

The pelvis



types of pelvis

Gynecoid Pelvis (50%)

- **Pelvic brim is a transverse ellipse (nearly a circle)**
- **Rounded brim**
- **Generous fore-pelvis**
- **Straight side-walls**
- **Shallow cavity and round**
- **Well curved sacrum and broad**
- **Sub-pubic arch of 90**
- **Most favorable for delivery**
- Normal pelvis
- Ischial spine re blant
- Siatic notch is round or wide

Android Pelvis (Male type)

- **Pelvic brim is triangular/heart shaped**
- **Convergent Side Walls (widest posteriorly)**
- **Prominent ischial spines**
- **Narrow subpubic arch**
- **More common in white women**
- Anterior aspect is angulaed while posterior is spacious
- Cavity is funnel shaped and deep
- Sciatic notch is narrow and deep
- Sacrum isstraight

Anthropoid Pelvis

- Pelvic brim is an anteroposterior ellipse/long and oval in shape
  - Gynecoid pelvis turned 90 degrees
- Narrow ischial spines
- Sidewalls diverge as the sacrum is long ad deeply concave
- Much more common in tall women with narrow shoulders

Platypelloid Pelvis (3%)

- **Pelvic brim is transverse kidney shape**
- **Sacrum is flat**
- **Cavity is shallow**
- **Ischial spines are blunt**
- **Flattened gynaecoid shape**
- Side walls re deverged

- Labour is prolonged and is aided by instruments

THE FEMALE PELVIS

- **The bony pelvis is a basin-like structure which connects the vertebral column with the lower limbs.**

- Justo minor
- All diameters re reduced propotionaly
- Common in women less than 150cm&4cm shoes size

functions

1. Transmits the weight of the body from the spinal column to the lower limbs
2. It contains and protects the pelvic organs
3. Provides attachment for the abdominal muscles and pelvic floor muscles
4. It allows the passage of fetus during labor
5. It allows the person to sit and kneel

Structure of the pelvis

- It Is formed by four bones
  - Two innominate bones
  - One sacrum
  - One coccyx

Innominate bones

- Also referred to as hip bones
- They are two in number, each made of three fused bones.
  - The ilium
  - Ischium
  - Pubic bones
- The three bones articulate with each other at the acetabulum.

ilium

- It forms the flared out superior part of the pelvis
- The anterior surface is concave and called the iliac fossa
- The upper border is called the iliac crest
- In front of the iliac crest is a bony prominence called anterior superior iliac spine and below this, anterior inferior iliac spine.

Ilium

- On the posterior aspect are two corresponding spines, the posterior superior and posterior inferior iliac spines
- The iliac bones on each side articulate with the sacrum at a joint called sacro-iliac joint

ischium

- It is the thick, lower bone posteriorly
- It has a large prominence, the ischial tuberosity which we sit on
- Posterior inward projection above the tuberosity are known as the ischial spines

The pubic bone

- Forms the anterior part of the pelvis
- It has a body, and two projections, the superior and inferior ramus.
- The inferior rami form the pubic arch
- The space between the rami and ischium is known as the obturator foramen
- On the lower border of the innominate bone are found two curves, the greater and lesser sciatic notches

The sacrum

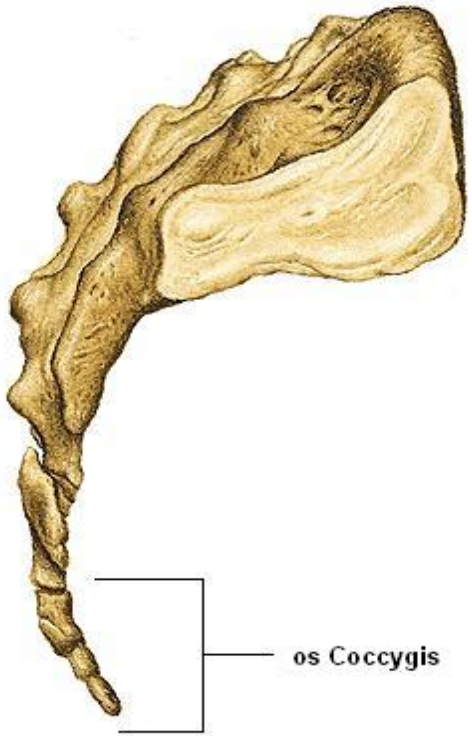
- It is a wedge shaped bone
- It is made of five fused vertebral bones
- The upper boarder of the first sacral vertebra is pushed forwards and is known as the sacral promontory
- The concave anterior surface is called the hollow of the sacrum

The sacrum

- On the sides, the sacrum extends into a wing or ala.
- Four pairs of foramina pierce the sacrum, allowing the nerves to pass through them to supply the pelvic organs

coccyx

- It is a triangular bone formed by four fused coccyg



Pelvic joints

✓ *Two sacro-iliac joints-* the strongest joints in the body, where the sacrum articulate with the ilium. Strain due to pregnancy on the ligaments of these joints lead to back pains

✓ *Symphysis pubis joint-* this is the joint between the pubic bones. It widens in late pregnancy causing pain while walking. In severe case, it can cause pelvic dysfunction

Pelvic joints

✓ *Sacro-coccygeal joint-* found where the sacrum articulates with the coccyx. It allows for the coccyx to be displaced posteriorly during labor.

- Each pelvic joint is held together by ligaments that strengthen it.

Pelvic ligaments

1. Inter pubic ligaments found at the symphysis pubis
2. Sacro-iliac ligaments attach the sacrum and the ilium
3. Sacrococcygeal ligaments are found at the sacro-coccygeal joint
4. Sacro tuberous ligaments attach the sacrum and ischial tuberosities
5. Sacrospinous ligaments connect the sacrum and the posterior ischial spines

Pelvic ligaments

- *Nb: the sacrotuberous and Sacrospinous ligaments form the posterior wall of pelvic outlet*

PARTS OF THE PELVIS

- The bony pelvis is divided into two parts:
  - False pelvis
  - True pelvis

False pelvis

- It is the part above the brim formed by the flared out part of iliac bones. it is bordered by the iliac crest and the 5^{th} lumbar vertebra. It is of little obstetrical significance

True pelvis

- It is the curved bony canal that the fetus pass through during labor
- It is divided into:-
  - The brim
  - The cavity
  - The outlet
- True pelvis is of obstetrical importance

The brim

- In females, it is rounded except where the sacral promontory projects in it
- It borders are:-
- Posteriorly, sacral promontory and the wings of sacrum
- Laterally- iliac bones
- Anteriorly- pubic bones
-

Landmarks of pelvic brim

The brim has important fixed points known as the landmarks of the brim

- Sacral promontory
- Sacral ala or wings
- Sacro-iliac joint
- Iliopectineal line
- Iliopectineal eminence
- Superior ramus of the pubic bone
- Upper inner boarder of the body of pubic bone
- Upper inner boarder of the symphysis

The pelvic cavity

- Extends from the pelvic brim above to the outlet below
- Its anterior wall is formed by symphysis pubis and is about 4cm long.
- The posterior wall is formed by the curve of sacrum and is about 12cm long.
- The lateral border is formed by the wall of the pelvis which is covered by obturator internus muscle.

The outlet

- It is diamond shaped.
- Borders
- Anteriorly- pubic arch
- Laterally- ischial tuberosities
- Posteriorly- coccyx and sacral tuberous ligaments

DIAMETERS OF THE TRUE PELVIS a) the inlet

Antero -posterior diameters:

- Anatomical antero-posterior diameter (true conjugate) = 12cm
  - from the tip of the sacral promontory to the upper border of the symphysis pubis.
- Obstetric conjugate = 11 cm
  - from the tip of the sacral promontory to the most bulging point on the back of symphysis pubis which is about 1 cm below its upper border. It is the shortest antero-posterior diameter.

Brim

- Diagonal conjugate = 12.5 cm
  - i.e. 1.5 cm longer than the true conjugate. From the tip of sacral promontory to the lower border of symphysis pubis.

Brim

- Transverse diameters:
- Anatomical transverse diameter =13cm
  - between the farthest two points on the iliopectineal lines.
  - It lies 4 cm anterior to the promontory and 7 cm behind the symphysis.
  - It is the largest diameter in the pelvis.

Oblique diameters of the brim:

- Right oblique diameter =12 cm
  - from the right sacroiliac joint to the left iliopectineal eminence.
- Left oblique diameter = 12 cm
  - from the left sacroiliac joint to the right iliopectineal eminence.

Brim

- **Obstetric transverse diameter:**
  - **It bisects the true conjugate and is slightly shorter than the anatomical transverse diameter**

Diameters of the cavity

- It is circular and all diameters are estimated to be 12cm
- They cannot be measured exactly

Diameters of the outlet

- Anteroposterior diameter- measured from the lower boarder of the symphysis pubis to sacrococcygeal joint. It is approximately 13 cm.
- Oblique diameter- estimated between obturator foramen and sacrospinous ligaments. Estimated to be 12 cm
- Transverse diameter- measured between the ischial spines and is about 11 cm(10-11cm)

Diameters

Diameters	anteroposterior	oblique	transverse
Brim	11cm	12cm	13cm
Cavity	12cm	12cm	12cm
outlet	13cm	12cm	11cm

The Ideal Obstetric Pelvis

Brim	Round or Oval transversely No undue projection of sacral promontory. AP diameter: 12 cm. Transverse diameter: 13 cm The plane of pelvic inlet not more than 55°.
Cavity	Shallow with straight side-walls. No great projections of ischial spines. Smooth sacral curve
Outlet	Pubic arch rounded Subpubic angle >90°. Intertuberous diameter of at least 10 cm.

Pelvic floor

- It is formed by soft tissues which fill the outlet of the pelvis
- It is made up of:-
  - Skin and subcutaneous fat
  - Superficial muscles
  - Deep pelvic muscles
  - Pelvic ligaments and peritoneum

Muscle layer of the pelvic floor

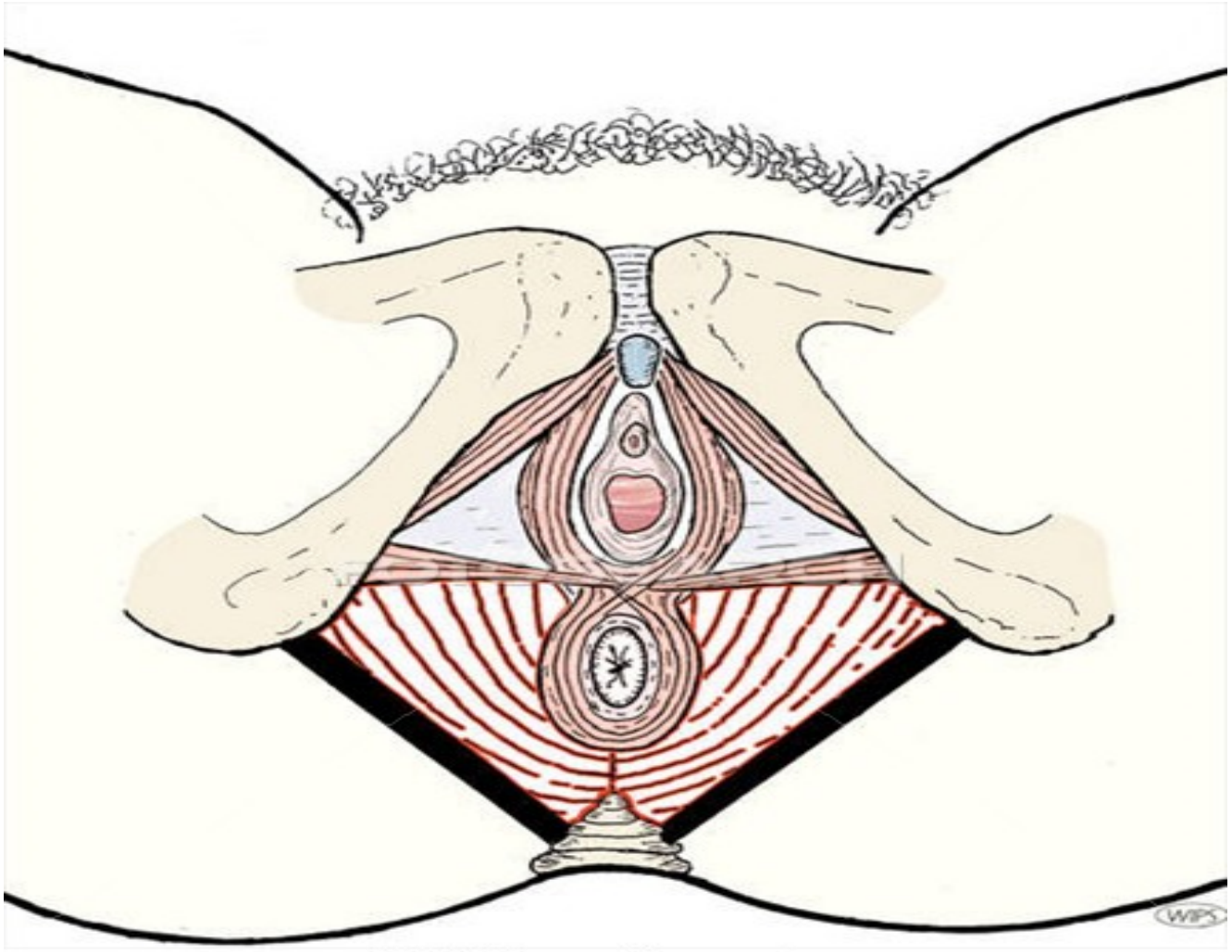
Superficial layer

- The external anal sphincter- surrounds the anus and is attached to the coccyx
- The transverse perineal muscles passes from the ischial tuberosities to the centre of the perineum.
- The bulbo-carvenosus muscle passes from the perineum, surrounds the vagina and is inserted to the corpora carvenosa of the clitoris

Superficial layer

- the ischial-carvenosus muscles pass from the ischial tuberosities to the corpora carvenosa
- Membranous sphincter of the urethra- muscle fibers pass above and below the urethra to attach to the pubic bones

Superficial layer



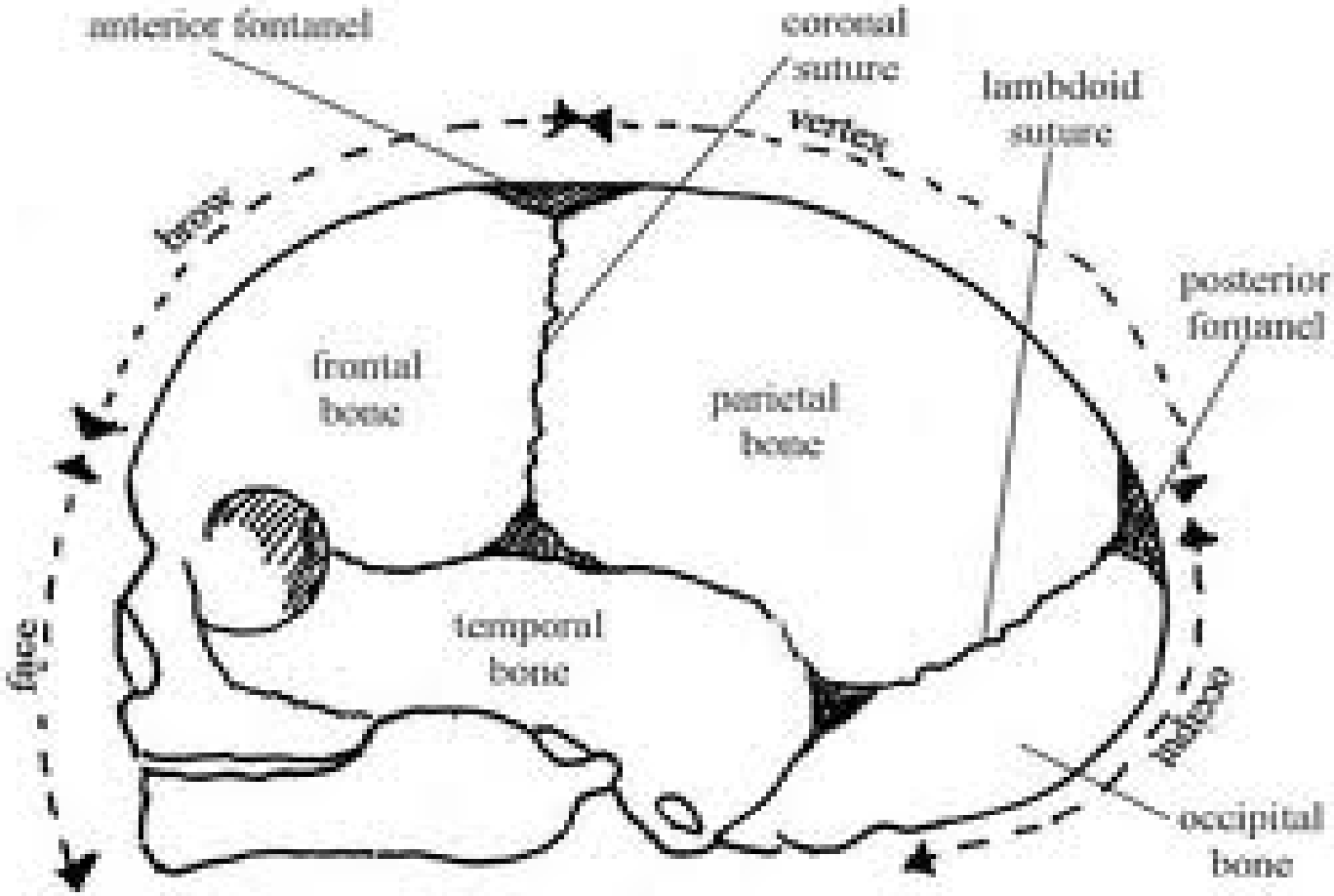
The deep layers

- **Composed of three layers of muscles which are collectively known as levator ani muscles.**
- **Pubococcygeus muscle passes from the pubis to the coccyx**
- **Iliococcygeus muscle passes from the fascia covering the obturator internus muscle to the coccyx.**
- **Ischio-coccygeus muscle passes from the ischial spines to the coccyx.**

The perineal body

- This is a pyramidal fibromascular structure which lies between the vagina and the anal canal.
- It gives attachment to perineal muscles.
- During the second stage of labor, the perineal body is flattened by the descending head and perineum elongates becoming more liable to tear.

THE FETAL SKULL.



- The fetal head consist of:
  - The scalp-: which is the soft outer part made of skin and muscles.
  - The periosteum-: which covers the bone
  - The skull-:the bony structure that contains the brain.
- The skull is larger in comparison with the space of the pelvis. Therefore, some modifications must occur between the two delivery to take place.

Development of fetal skull

- The fetal skull has both membranous and cartilaginous origin.
- The bones of the face develops from a cartilage while those of the vault are laid down in a membranous frame work.
- The original centres of ossification of the skull bones are known as eminences of the skull. The one behind is the occipital protuberance. Laterally the parietal eminences and frontal eminences on frontal bones

Bones of the vault

- Formed by 5 bones:
  - The occipital bone
  - Two parietal bones
  - Two frontal bones
- The occipital bone-: it lies at the back of the head and forms the region of the occiput. At its centre is the occipital protuberance.

Bones of the vault ct….

- Parietal bones lie on either side of the skull. The ossification centre of each is called parietal eminence.
- The frontal bones forms the forehead or the sinciput. At the centre of ossification is the frontal eminence or frontal boss. These bones fuse into a single bone by the 8th year.
- The upper part or temporal bone contributes to the vault.

sutures

- Sutures are cranial joints.
- They are formed where two bones meet.
- Sutures are important landmarks used to determine positions and presentations on vaginal examination.
- They also allow moulding to take place during labor.
- There are four sutures of obstetrical importance.

Sutures ct….

1. Saggital suture:- is between the two parietal bones, and joins the anterior and posterior fontanels.
2. Coronal suture:- it runs transversely between the parietal and frontal bones. Passing from one temple to another.
3. Frontal suture:- separates the two frontal bones and extends from the roof of the nose to the anterior fontanel.
4. Lambdoidal suture:- separates the occipital and parietal bones and is shaped like the Greek letter lambda (λ).

FONTANELS

- These are membranous spaces where two or more sutures meet.
- There are two fontanels of obstetrical importance:-
    1. The anterior fontanel (bregma)
    2. Posterior fontanel (lambda)

1. bregma

- Found at the junction of saggital, coronal and frontal sutures.
- It is diamond shaped and measures 3-4 cm long and 1.5-2 cm wide.
- It is recognizable per vagina because a suture leaves from each of the four corners.
- Pulsation of cerebral vessels can be felt and seen through it. It closes by the time the child reaches 18 months age.

b)lambda

- Found at the junction of lambdoidal and saggital sutures.
- It is small and triangular in shape.
- It is recognizable per vaginal as a suture leaves from each of the three angles.
- It normally closes at the age of 6 weeks.

Regions of the fetal skull

- The skull is the bony part of the head and consists of the following regions.
  - Vault
  - Base
  - Face
- The base consists of sphenoid, ethmoid and temporal bones fused together to protect the medulla.

Face and vault

- The face consist of 14 small firmly united bones. It extends from the orbital ridges and the root of the nose to the junction of the chin and neck. The point between the eyes is called glabella. The chin is called the mentum and is an important landmark.
- The vault is the large, dome shaped part at the top of the skull. its bones are relatively thin and pliable at birth.

The vault

- This allows slight alteration in shape of the skull at birth. It is made by the occiput, two parietal and two frontal bones. It extends from the bridge of the nose to the nape of the neck. It has three significant landmarks which are:-
  - Occiput
  - Sinciput
  - vertex

The vault

- The occiput:- lies between the foramen magnum and the posterior fontanel. The part below the occipital protuberance is called the suboccipital region.
- The vertex:- it is bordered by the posterior fontanel, the two parietal eminences and the anterior fontanel. 95% of the babies born head first present by vertex.
- Sinciput/brow:- extends from the anterior fontanel and coronal suture to the orbital ridges.

Landmarks of the fetal skull

- These are important in determining the position on vaginal examination.
- Four suture.
- Two fontanels
- The sinciput
- The occiput.
- The mentum (chin)

Diameters of the fetal skull

- Knowledge of these diameters enables us to determine the relationship with the pelvis
- There are six longitudinal diameters and two transverse diameters
- The transverse diameters
  - The bi-temporal diameter – 8.2cm
  - The bi-parietal diameter – 9.5cm

Diameters of the skull

- The longitudinal diameters
  - ❑ The sub-occipital bregmatic (SOB) – 9.5cm
  - ❑ The sub-occipital frontal (SOF) – 10cm
  - ❑ The occipital frontal (OF) – 11.5cm
  - ❑ The mento vertical (MV) – 13.5cm
  - ❑ The sub – mento vertical (SMV) - 11.5cm
  - ❑ The sub – mento bregmatic (SMB) – 9.5cm

fertilization

Fertilization ct.

SPERM

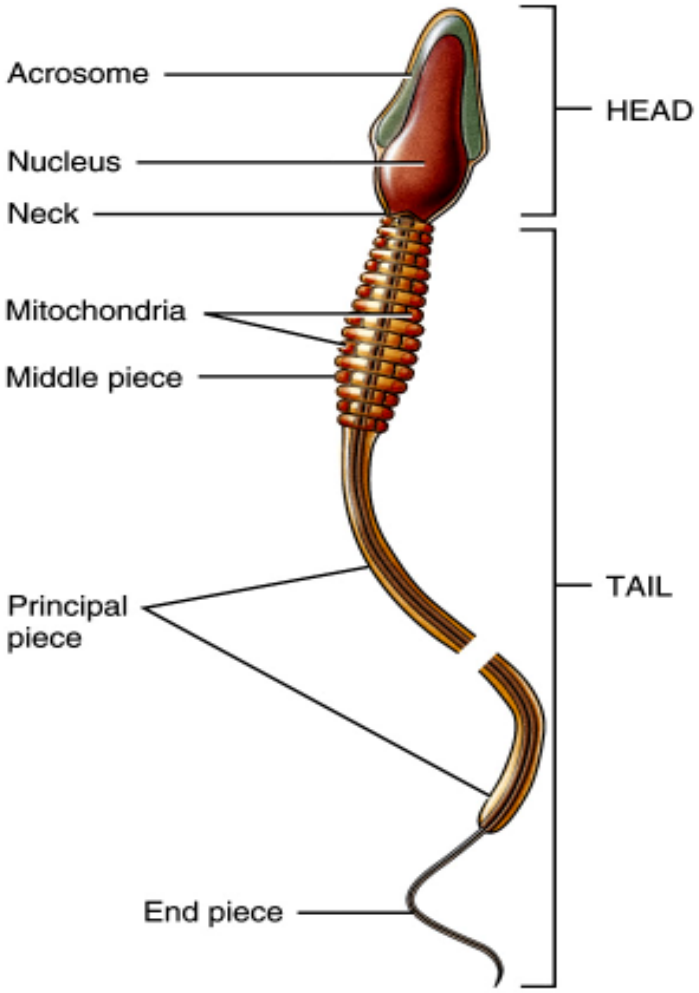
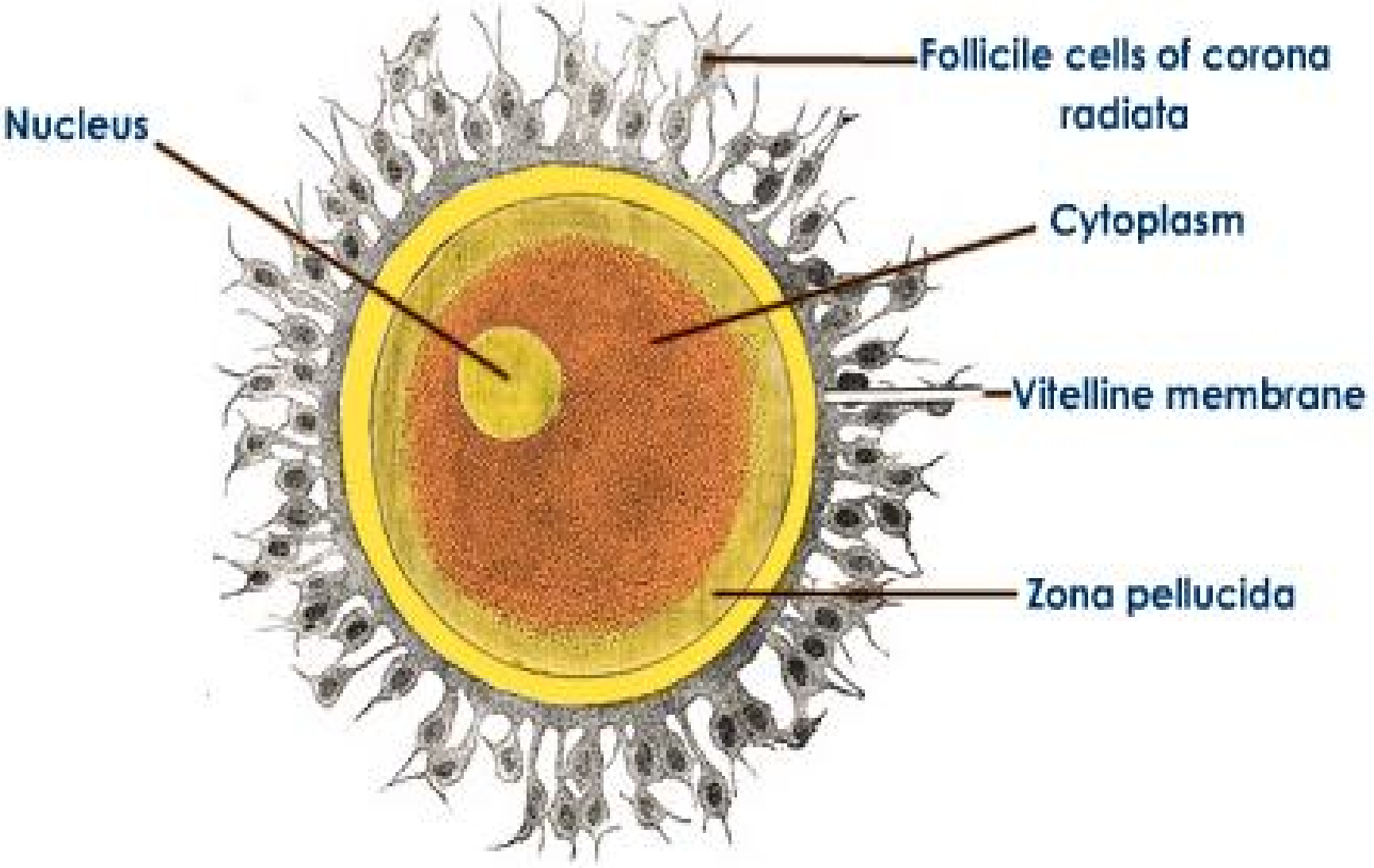


Figure 28.06 Tortora - PAP 12/e

- Each day about 300 million sperm complete spermatogenesis
- Head
  - Nucleus with 23 chromosomes (haploid or n)
  - Acrosome – vesicle filled with oocyte penetrating enzymes
- Tail
  - Neck – contains centrioles forming microtubules that comprise remainder of tail
  - Middle piece – contains mitochondria
  - Principal piece – longest portion of tail
  - End piece – terminal, tapering portion of tail
- Once ejaculated, sperm do not survive more than 48 hours in female reproductive tract

THE OVUM


Follicile cells of corona radiata
Nucleus
Cytoplasm
Vitelline membrane
Zona pellucida

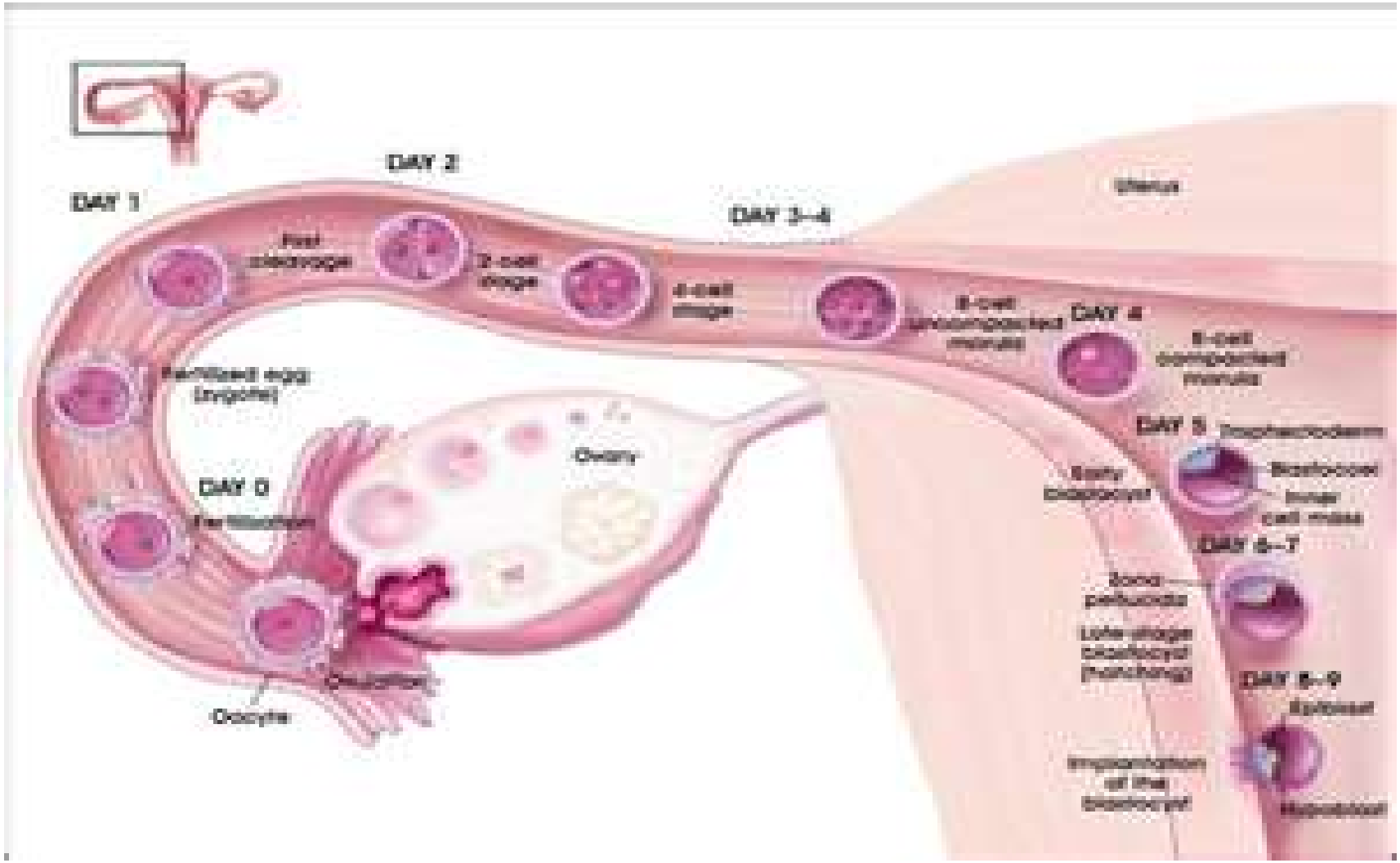
fertilization

- The process by which the sperm fuses with an ovum to form a new diploid cell called a zygote
- The oocyte reaches the peritoneal cavity after it is released.
- Fimbria ovarica together with infundibulo-pelvic ligament of the ovary draws the tube over the ovary by their contraction.

Fertilization ct.

- The oocyte is then directed into the tube and transported by the cilliary movement and peristaltic contractions.
- The oocyte reaches the upper third of ovarian tube where fertilization usually takes place within 24 hours

Fertilization ct.



Fertilization ct.....

- After fertile coitus, the sperms reaches the uterine tubes after approximately one hour.
- The viability of ovum after ovulation is about 12-14 hrs, while the sperms is about 3-4 days. This is the period which fertilization can take place.

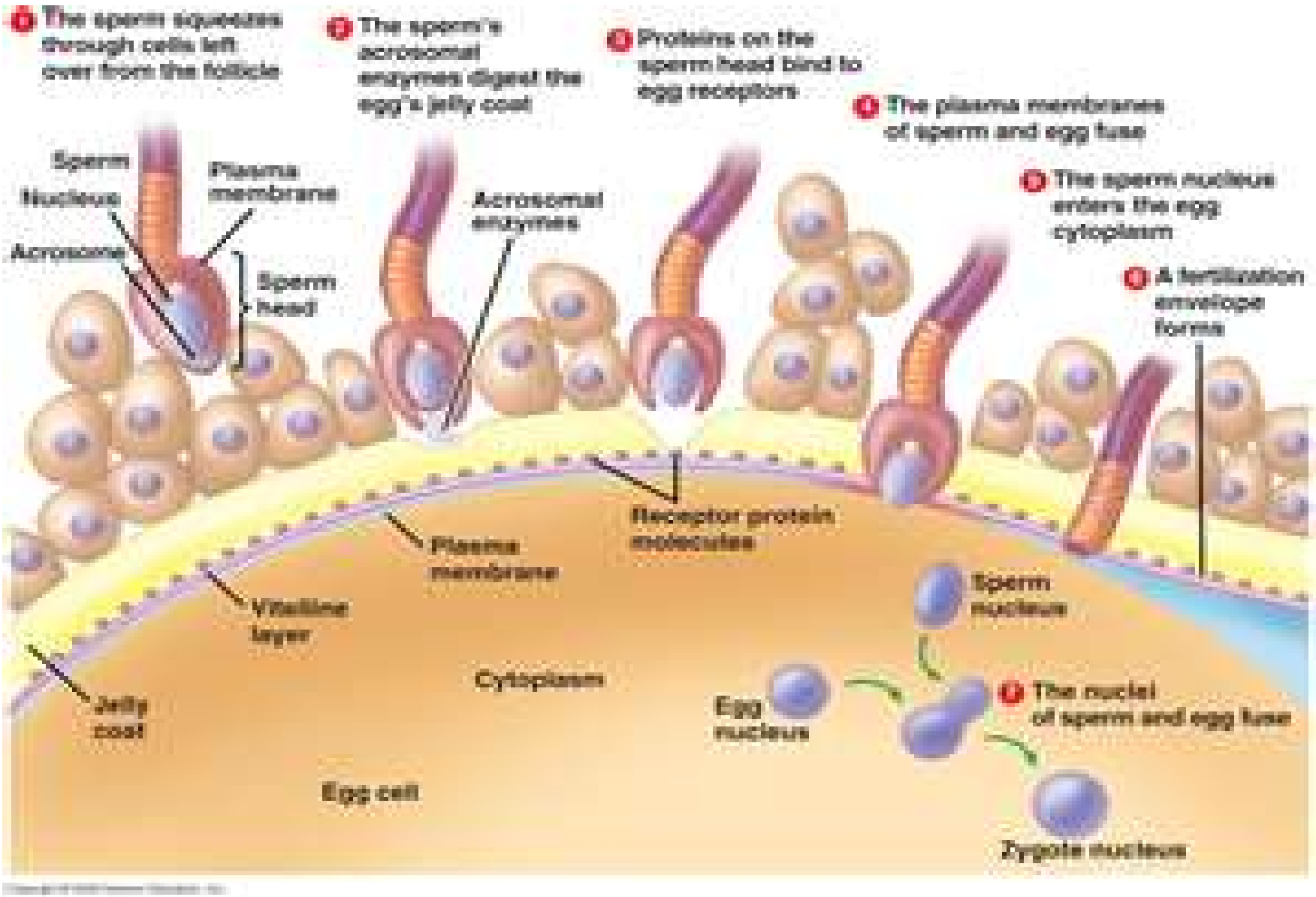
Fertilization ct.....

- On reaching the ovum, the sperms releases hyaluronic acid which digests the corona radiata enabling the sperm to penetrate the ovum
- Only one sperm can penetrate the ovum
- After penetration, the head of the sperm becomes the male nucleus and the tail degenerates

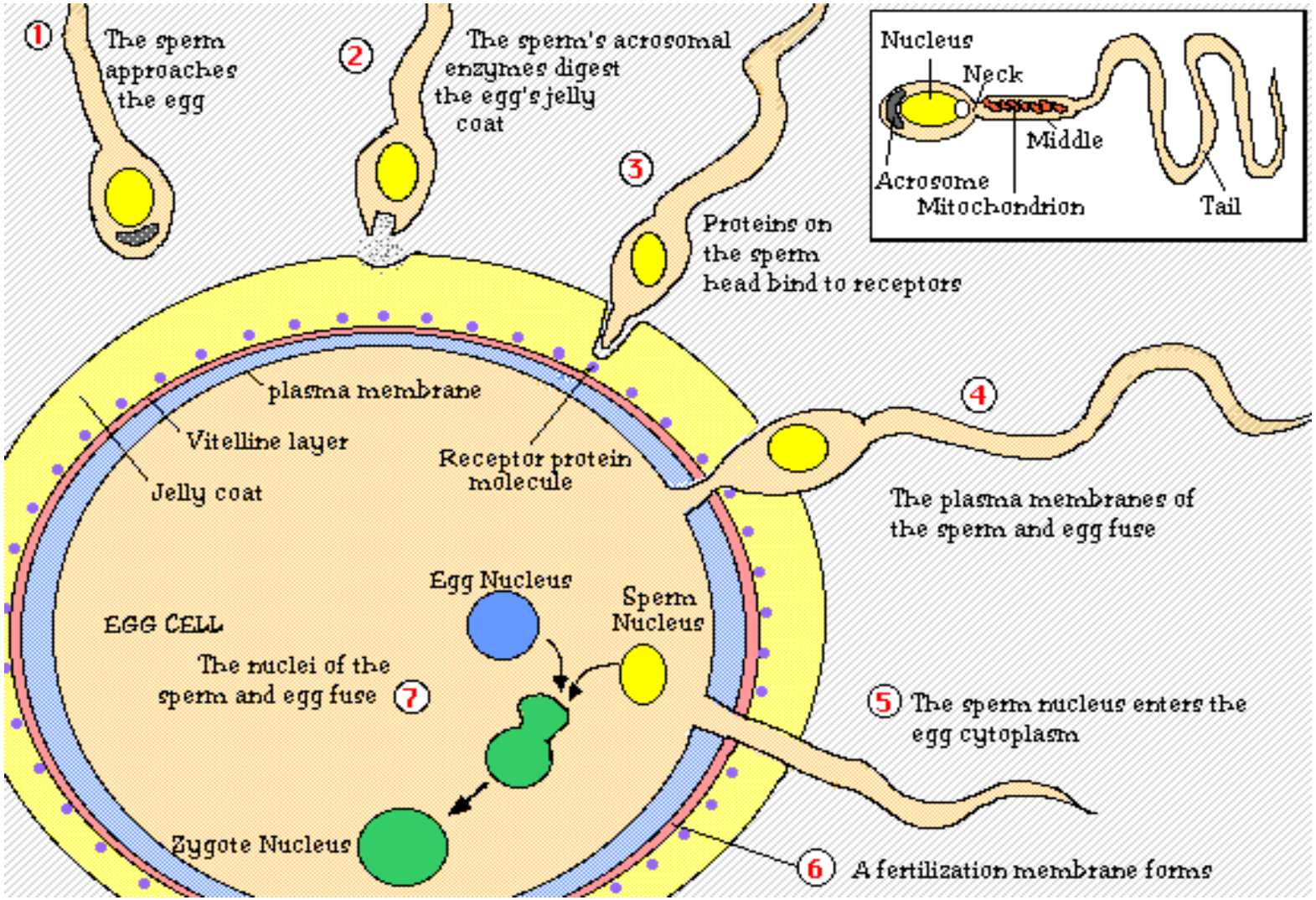
Fertilization ct.....

- **The oocyte then completes the second meiotic division**
- **The two nucleus approach and fuse resulting to formation of a diploid cell, the zygote(23+23)**

Fertilization ct.....



FERTILIZATION



Effects of fertilization

Effects of fertilization

1. **Restoration of the full number of diploid chromosomes**
2. **Determination of the sex of the new individual**
3. **Initiation of cleavage phase or segmentation**

Development of the zygote

- After fertilization, the zygote moves towards the uterus and reaches there within 3-4 days
- During this time, the zygote enters a period of rapid mitotic division, dividing into 2, 4, 8 and so on until a cluster of cells called morula forms

Development of the zygote

- As the morula enters the uterus, it becomes more infiltrated with fluid and a cavity called blastocele forms.
- The zona pellucida disappears and the cells surrounding the cavity rapidly differentiate into an outer layer, the trophoblast, and an inner cell mass or embryoblast

Development of the zygote

- **The inner cell mass located at the embryonic pole, forms the body of the embryo and contributes to the formation of the amnion and the yolk sac.**
- **The trophoblast later develops into placenta and chorion**

Implantation or nidation

- **The blastocyst attach to the endometrium for nourishment**
- **The trophoblastic cells divides rapidly and differentiate into two layers.**
- **The inner layer is termed cytotrophoblast and the outer syncytiotrophoblast**
- **The syncytiotroblasts are highly invasive and expands within the endometrium**

implantation

- At this stage, the uterine mucosa is called the decidua.
- The layer of the decidua that covers the blastocyst is called decidua capsularis, where the blastocyst rests decidua basalis and the rest is decidua parietalis

Embryo development

- 10-14 days post conception, the inner cell mass continues to proliferate and segregates into three primitive germ layers. All the organs and body tissues develop from these layers
  - ectoderm- forms the epidermis, nails, lens of the eye, central and peripheral nervous system, sensory epithelium, mammary glands etc

- Mesoderm- forms the dermis, digestive tract walls, kidneys, reproductive glands, skeleton, connective tissues and muscles
- Endoderm- forms the respiratory tract, urinary tract system, digestive tract lining etc.

Development of the placenta

- The trophoblast develops into the placenta from about three weeks after fertilization
- The chorionic villi forms and proliferate mostly at the area where blood supply is high, ie, basal decidua
- They form the chorionic frodosum that later forms the placenta
- The villi erode the walls of maternal vessels as they penetrate the decidua forming the pool of blood inn which they float

Chorionic villus

- Is a branching structure arising from one stem with a centre consisting of mesoderm and blood vessels that are branches of umbilical arteries and vein.
- The villus divides and subdivides until it ends as fine filaments that are embedded in the decidua basalis.
- By their selective action, they absorb substances for the developing embryo from the maternal blood

Embryonic membranes/ fetal sac

- Consist of two membranes:
  - Chorion
  - Amnion
- They begin to form at the time of implantation

chorion

- It is the outer membrane and encloses the amnion, embryo and the yoke sac
- Has the following features
  - It is opaque
  - It is thick
  - It is friable (easy to tear)
  - Found on the maternal side of the placenta
  - Can be peeled to the margin of placenta

amnion

- It originates from the ecto derm and it contains the amniotic fluid.
- Has the following characteristics
  - It is smooth and tough to tear
  - It is translucent
  - Peels up to the insertion of the cord
  - And found on the fetal side of the placenta

Amniotic fluid

- Also known as bag of waters or the liquor amnii
- It is the fluid found in the fetal sac that protects the floating embryo
- It is clear, pale, straw colored fluid secreted by the amnion
- Some fluid also exudes from the fetal and maternal blood, and after 10 weeks, fetal urine contributes to the volume
- Normal amount ranges from 500-1500mls

Constituents of the amniotic fluid

- It is slightly alkaline and contains:
  - 99% water
  - 1% is composed of
    - Albumin
    - Uric acid
    - Creatinin
    - Lecithin
    - Sphingomyelin
    - Vernix
    - Lanugo
    - Epithelial cells
    - enzymes

Functions of the amniotic fluid

1. Acts as a cushion to protect against mechanical injury
2. It distends the amniotic sac allowing for growth and movement of fetus
3. It controls the uterine embryo temperatures to about 37.2

Functions of amniotic fluid ct.

4. Prevents adherence of amnion and allows freedom of movement to the fetus
5. It equalizes uterine pressure during labor
6. Assists in cervical dilatation especially when the presenting part is poorly applied
7. Provides some amounts of nutrients.

The mature placenta

- The placenta at term is a flat mass about 20 cm in diameter and 2.5cm thick.
- It weighs approximately 1/6 of the baby's weight.
- The placenta has two surfaces ie;
  - Maternal surface
  - Fetal surface

Maternal surface

- It is usually dark red in color
- It is made up of chorionic villi arranged in cotyledons(lobes) which are about 20 in number
- Between the lobes are furrows called sulci.
- The lobes are further divided into lobules

The fetal surface

- It appears whitish, shinny and smooth
- It has branches of the blood vessels spreading outwards from the insertion of the cord
- The cord is inserted on this side

Functions of placenta

1. Nutrition-:all the food substances required by the fetus pass through the placenta maternal blood.
2. Respiration-:gaseous exchange of the fetus takes place through placenta by simple diffusion
3. Storage-:the placenta stores glucose inform of glycogen and reconverts it as need arises.

4. excretion-:it excretes carbon dioxide, bilirubin, urea and uric acid. These substances diffuse into the maternal blood from the placenta
5. Protection-:it provides a limited barrier by preventing the microorganism from the maternal side from reaching the fetus. A few microorganisms such as those causing TB, syphilis and all virus cross this barrier

6. Endocrine function-: the placenta synthesizes and secrets several hormones:

- Human chorionic gonadotropin
- Estrogen
- Progesterone
- Human placental lactogen

Anatomical variations of placenta

1. Succenturiate lobe-: this is an extra lobe situated in the membranes. The blood vessels run through membranes to supply it.
2. Bipartate/ tripartite placenta-: this is a placenta with two or three lobes
3. Circumvalate placenta-: this is a placenta with an opaque ring on the fetal side. This is formed by doubling of the chorion and the amnion

4. Velamentous cord insertion-: the cord is inserted in the fetal membranes and the vessels run through the membranes to reach the placenta
5. Battledore cord insertion of the cord-: the cord is inserted at the very edge of the placenta

Summary of fetal development
0-4 wks

- The embryo is curved like a bean and is the size of the pigeon's egg. There is rapid growth as the embryonic plate forms
- The primitive cns forms, the heart dvps and begins to beat, the limb bud forms and the embryo is about 1 cm long

4-8 weeks

- The embryo is the size of the chicken's egg. There is very rapid growth and head and facial features develop. All the major organs are laid down in their primitive forms. The external genitalia are present but undistinguishable. Early movements are present and fetus is visible on ultrasound. The embryo is about 3cm long, weighs 4gms and amniotic fluid is between 5-10mls

8-12 weeks

- The fetal sac is about the size of the goose egg. The eyelids fuse and kidneys begin to function and the fetus begin to pass urine at 10 wks. Fetal circulation is functional, sucking and swallowing begins and sex is apparent. Some primitive reflexes are present.
- The baby is about 10 cm long, weighs just under 60gms and moves freely although not felt by the mother

12-16 weeks

- There is rapid skeletal development and the fetus is now visible on x-ray.
Meconium is present in gut, lanugo appears and the nasal septum and palate fuse.
- The fetus is 15cm long and weighs about 170gms

16-20 weeks

- Quickening is present and fetal heart rate is heard on auscultation. Vernix caseosa appears, fingernails appear and skin cells begin to be renewed
- The fetus is about 20cm long and weighs about 400gms

20-24 weeks

- Most organs are capable of functioning and the fetus adapts periods of sleep and activity. The skin is red and wrinkled and the fetus can respond to sound.
- The fetus is 20 cm long, and weighs about 700gms

25-28 weeks

- Eyelids reopen and slight respiratory movements are present
- Survival may be possible if born
- The fetus is about 36cm long and weighs about 1kg

28-32 weeks

- The fetus begin to store fat and testis descend into the scrotum.
- Lanugo disappear from the face and the skin becomes paler and less wrinkled
- The fetus is about 40cm long and weighs about 1.5kgs

32-36 weeks

- There is increased fat deposition that makes the body appear more round. Lanugo disappear from the body and the hair lengthens. The ear cartilage is soft and the nails reach the tip of the fingers. Planter creases are visible
- The fetus is approximately 46cm long and weighs about 2.5kgs

36-40 weeks

- Term is reached and birth is due. The skull is firm, contours rounded and the body well covered with subcutaneous fat
- The fetus is approximately 50cm long and weighs between 3-3.5kgs

FETAL CIRCULATION

- In utero, the fetus derives it nutrients and oxygen from the maternal blood via the placenta. Waste products are also eliminated through the placenta.
- There are various temporary structures that enable fetal-placenta circulation to take place. These structures must cease functioning immediately at birth
- These are:

1. The umbilical vein-:it leads from the umbilical cord to the underside of the liver. It carries oxygenated blood rich in nutrients from the placenta.
2. Ductus venosus-:it connects the umbilical vein to the inferior vena-cava. Here, there is mixing of deoxygenated blood from the lower part of the body with oxygenated blood from the placenta.

3. Foramen ovale-: this is a opening between the atria which shunts most blood entering the right atrium to the left atrium.
4. Ductus arteriosus-:this leads from pulmonary artery to the aorta
5. Hypogastric arteries-:these are branches of hypogastric arteries. They become umbilical arteries when they enter the umbilical cord.

Blood flow in fetal circulation

- The umbilical vein carries highly oxygenated blood from the placenta to the underside of the liver.
- The blood is carried through the ductus venosus to the inferior vena-cava where it mixes with deoxygenated blood from the lower parts of the body.
- The blood enters the right atrium and then most of it is directed to the left atrium through foramen ovale.

- The blood then follows it normal route. It is enters the left ventricle and then pumped through aorta. The heart, the brain and upper limbs receives well oxygenated blood since the arteries that supply them are early branches of aorta.
- The blood from the upper part of the body returns to the right atrium through the superior vena cava.

- This blood crosses the stream from the inferior vena cava and enters the right ventricle. There is mixing of about 25% of the blood.
- The blood is then pumped to the pulmonary artery. Ductus arteriosus shunts most of this blood to the aorta for distribution to the rest of the body. This is because lungs require only little of this blood for their development

- The blood continues circulation through the abdominal aorta and into the internal iliac arteries. This leads into the hypogastric arteries which return the blood to the placenta as umbilical arteries

Points on fetal circulation

– Umbilical arteries carry deoxygenated blood from the fetus to the placenta
– Umbilical vein carries oxygenated blood from the placenta to the fetus.
– Umbilical vein is the only vessel in the fetus that carry purely oxygenated blood.
– At birth, the upper limbs are more developed than the lower limbs because they receive more oxygenated blood than the lower limbs.

CHANGE AND ADAPTATION IN PREGNANCY

Anatomical and physiological adaptations occuring throughout pregnancy.

PHYSIOLOGICAL CHANGES IN PREGNANCY

- **Skin**

- deep pigmentation of the skin occurs.
- Patchy pigmentation of the face gives it mask-like appearance known as chloasma
- A pigmented line that usually runs from the symphysis pubis to the umbilicus extends further towards the sternum
- Striae gravidarum appears on the abdomen
- There is increased sweating and feeling hot because basal body temperature rises by about 0.5 degrees Celsius

Changes in the GI system

- Gums becomes edematous, spongy and soft. This can lead to bleeding
- Ptyalism, pica, nausea and vomiting occurs
- Later in pregnancy, the stomach and intestines are displaced upwards leading to heartburn.
- Intestinal motility is reduced and this predisposes mothers to constipation.

Urinary system

- Frequency of micturation increases during the first and last trimesters
- There is a net increase in glomerular filtration rate and lowered renal glucose threshold leading to glucosuria
- The ureters becomes kinked causing urine stasis. This predisposes mothers to phylonephritis.
- There is relaxation of urinary sphincters

Changes in the breast

- Montgomery tubercles becomes more prominent on areola
- There is darkening of areola
- There is tingling and prickling sensation due to increased blood supply
- Breast enlarges, become tense and painful
- Colostrum can be expressed after 16 weeks
- (Check chronological order of change)

Changes in weight

- During pregnancy, the weight changes as follows in a primigravida:-
  - **2-4 kg in the first 20 wks**
  - **0.4-0.5kgs per week until term**
  - **Weight increases by appproximately 12- 12.5 kgs in pregnancy**

Weight is distributed as follows
Breast 0.4-0.5kgs
Fat 3.5kgs
Placenta 0.6 kgs

• Fetus	3.4-3.5kgs
• Amniotic fluid	0.6 kgs
• Uterus increase	0.9-1kg
• Blood increase	1.5 kgs
• Extracellular fluid	1.5 kgs

Changes in cardiovascular system

- Total blood volume is increased by 20-100%.
- Red blood cells increases as a result of accelerated production in response to increased oxygen demand.
- The plasma volume increases as water is retained in the body leading to hemodilution and physiological anemia despite high levels of red blood cells

Cvs changes ct....

- The white blood cells only increases slightly.
- Platelets and clotting factors increases resulting in increased rate of thrombosis and embolism.
- Increased blood volume increases cardiac workload. This causes slight hypertrophy of the heart.

Cvs changes ct....

- Cardiac output increases by about 40-50% from the sixteenth week and remain elevated through out the pregnancy.
- The heart rate goes up by about 10-15 beats per minute.
- Blood pressure remains the same or falls slightly.
- Blood vessels relax due to effects of progesterone on the smooth muscles on their walls. This predisposes

Cvs changes ct....

pregnant women to varicose veins.

- Blood flow increases towards the uterus, breasts, kidneys and skin but there is no increase in blood flow to the brain and the liver.

Changes in the respiratory system

- This system is not much stressed.
- The mucosa of the system becomes hyperemic and edematous with hypersecretion of mucus which can lead to stuffiness and epistaxis. It can also cause progressive running nose with blocked nostrils that disappears after delivery.
- The shape of the chest changes and circumference increases

- The diaphragm is elevated and rib cage displaced upwards.
- Respiratory rate remains the same but breathing becomes more diaphragmatic and deeper.
- Tidal volume increases by 40%

Changes in the skeletal system

- there is relaxation of joint ligaments by progesterone resulting to
  - Back pain
  - Symphysis pubis dysfunction
  - Backward curvature.

Changes in the endocrine system

- High levels of estrogen and progesterone produced by the placenta inhibits production of LH and FSH.
- There is increased production of prolactin secretion but the effects of the hormone are inhibited by estrogen.
- There is increased secretion of oxytocin but it’s effects are not felt until the onset of labor

Endocrine system ct.

- There is increased production of adrenal corticosteroids
- Basal metabolic rate increases due to increased oxygen consumption and production of thyroid hormones.
- Human placental lactogen causes maternal tissue resistance to hormone insulin leading to elevated levels of glucose. This can cause pregnancy induced DM.

CHANGES IN THE REPRODUCTIVE SYSTEM

- The endometrium becomes more thicker and vascular in the upper segment which is mostly often the site of implantation.
- In preparation for labor, the myometrium develops to a remarkable degree. Each muscle fiber increases 10 times in length and 5 times in thickness. New muscle fibers are also formed.

Reproductive system ct.

- The uterus increase in size from 7.5×5cm×2.5cm to 30cm×23cm×20cm. Its weight increases from 60gms to 900gms.
- The uterus changes in position from being a pelvic organ to an abdominal organ.
- It also changes from the state of anteversion and anteflexion to straightening up and leaning to the right

Reproductive system ct.

- From about the 8th week, despite the fact that the uterus is relaxed by effects of progesterone, small waves of painless contractions called Braxton-Hicks contractions begin to be generated. These lasts throughout the pregnancy.
- There is regular growth in uterine size leading to changes in fundal height. This allows for its estimation of period of gestation (refer to text books for discussion)

Reproductive system ct.

- The cervix becomes softer and its racemose glands produces tenacious mucus that forms a pug known as the operculum which occludes the cervical canal and prevent ascending infections
- Towards the end of pregnancy, effacement takes place and the cervix becomes part of the lower uterine segment. The cervix is said to be ripe when it is soft, shortened and admits a tip of a finger

Reproductive system ct.

- The muscle coat of the vagina hypertrophies in readiness for distention during the second stage of labor.
- The vagina also becomes bluish-purple in color with pulsation in the fornices due to increased blood supply.
- A whitish vaginal discharge known as leucorrhea is common. It results from the effects of estrogen on squamous epithelium tissues

Reproductive system ct.

- The vagina also becomes more acidic due to action of Doderlin's bacillus on increased glycogen in the epithelial cells.

DIAGNOSIS OF PREGNANCY

How do you diagnose a pregnancy?

Signs and symptoms of pregnancy

1. **Presumptive signs/subjective**

These are the symptoms that the woman experiences and reports. They can not be considered as proof of pregnancy

Ammenorhea- absence or missing of more than one menstrual period especially in a woman whose cycle is regular.

Presumptive signs cont’

- **Nausea and Vomiting (Morning Sickness)**.

(1) Usually occurs in early morning during the first weeks of pregnancy.

(2) Usually spontaneous and subsides in 6 to 8 weeks or by the twelfth to sixteenth week of pregnancy.

(3) Hyperemesis gravidarum. This is referred to as nausea and vomiting that is severe and lasts beyond the fourth month of pregnancy. It causes weight loss and upsets fluid and electrolyte balance of the patient.

Presumptive signs cont’

- **Frequent Urination.**

(1) Frequent urination is caused by pressure of the expanding uterus on the bladder.

(2) It subsides as pregnancy progresses and the uterus rises out of the pelvic cavity.

(3) The uterus returns during the last weeks of pregnancy as the head of the fetus presses against the bladder.

(4) Frequent urination is not a definite sign since other factors can be apparent (such as tension, diabetes, urinary tract infection, or tumors).

Presumptive signs cont’

- Breast Changes.
- (1) In early pregnancy, changes start with a slight, temporary enlargement of the breasts, causing a sensation of weight, fullness, and mild tingling.
- Development of montgomery’s tubercle
- Darkening of ariola

Presumptive signs cont’

Quickening (Feeling of Life).

(1) This is the first perception of fetal movement within the uterus. It usually occurs toward the end of the fifth month because of spasmodic flutter.

(a) A multigravida can feel quickening as early as 16 weeks.

(b) A primigravida usually cannot feel quickening until after 18 weeks.

Objective/probable signs of pregnancy

(1) **Chadwick's sign. The vaginal walls have taken on a deeper color caused by the increased vascularity because of increased hormones. It is noted at the sixth week when associated with pregnancy.**

(2) Leukorrhea. increase in the white or slightly gray mucoid discharge that has a faint musty odor. It is due to hyperplasia of vaginal epithelial cells of the cervix because of increased hormone level from the pregnancy. Leukorrhea is also present in vaginal infections.

Objective/probable signs

3. Hegar's sign- softening of the cervix.
4. McDonald's sign-increased ease of flexing the body of the uterus against the cervix.
5. Progressive increase in fundal height
6. Braxton-Hicks contractions can be palpated.
7. Positive immunological pregnancy test in early morning specimen from the 14^{th} day after fertilization.

Positive(diagnostic) changes

- Fetal heart is heard and is regular on auscultation
- Fetal movements are reported by the mother or seen through the abdomen.
- Ultrasound and x-ray-the baby is seen as early as 6 weeks.
- Palpable fetal parts.

Minor disorders of pregnancy

pica

- It is a desire to eat certain foods or non-food substances such as soil, charcoal, clay, chalk, glue, etc
- It may be due to hormonal changes or lack of enough minerals such as iron and calcium.

Advice

- The mother should ensure the substances craved for are not harmful. She should try take food rich in calcium and iron

constipation

- This is delayed passage of food through the bowel.
- It is characterized by infrequent bowel action and passage of hard stool.
- It occurs due to relaxing effects of progesterone on smooth muscles of intestinal wall, or due to pressure on the intestines from the growing uterus.

Advice

Take more fluids, increase intake of fruits and vegetables, carryout antenatal exercises and if persistent, prescribe some laxatives

Back pain

- This is more common in multiparous women
- It is mostly due to relaxation of pelvic joints and an attempt by the woman to adopt a more comfortable posture to balance the weight.

Advice

Try and walk upright, have adequate rest, wear flat shoes, sleep on a firm bed. Also exclude other causes of back pain such as labor.

cramps

- These are painful spasmodic muscular contractions in the legs that are more common during pregnancy. They may be due to ischemia or deficiency of vitamins B, C and calcium.

Advice

- The mother to do more exercises and elevate the foot of the bed at night.
- Provide more vitamins and calcium, advise on foods rich in these substances.

Increased frequency of micturation

- **Increased frequency of urination occurring in the first and last trimester due to uterine pressure on the urinary bladder.**
- **It should not be associated with pain or dysuria**

Advice

- **Reassure the mother that this is normal and will pass with time.**

fainting

- Can occur due to several reasons
  - Anemia
  - Cardiac conditions
  - Change in position
  - Ruptured ectopic pregnancy
  - Supine hypotension
  - Fasting
  - Standing for long especially in overcrowded places

Advice

- Avoid standing for long periods
- Avoid stuffy rooms.
- Have regular meals
- Avoid sudden change of posture
- In late pregnancy, avoid lying flat on the back.
- Use pillows and feeling like fainting, to lie on lateral position.

Varicose veins

- These are engorged superficial veins of the legs, vulva and anus.
- They are due to effects of progesterone on the wall of the vessels.
- The valves become inefficient and allows backflow of blood. This results to distended painful veins.

Advice

- Avoid standing for long periods.
- Rest the legs raised on a chair to relieve pain.

- Wear elastic stockings during the day to provide support.
- Placing a pillow under the legs at night relieves the pain and symptoms.
- Explain the condition increases the risk of thrombosis, and any dull ache on the legs should be reported immediately.
- Use pad to support varicose veins of the vulva.
- The mother should deliver in hospital because the affected vessels may rupture during delivery

Pruritis vulvae

- **It is the itching of the vulva**
- **It may be due to poor hygiene or infections such as candidiasis or trichomoniasis.**
- **Advise the mother based on the cause.**

insomnia

- It is the in ability to sleep.
- It is common early and late in pregnancy .
- It may be due to anxiety, nightmares, and increased frequency of micturation or discomfort from fetal movement.

Advice

- Allay anxiety and reassure the woman.
- NB: the woman should be advised to report the following to the hospital immediately:

Vaginal bleeding, frontal or severe headache, PRM, reduced fetal movements, edema or sudden swelling, premature labor.

What is the meaning of above terms?

Antenatal, antepartum or perinatal care

Focused antenatal care (FANC)

- Refers to the care given to a pregnant woman from the time she realizes she is pregnant until the birth of the baby.
- FANC is aimed at ensuring that the mother and fetus are in good health and that any problem during pregnancy is recognized, treated and referred promptly.

Focused Antenatal Care

An approach to ANC that emphasizes:

- Evidence-based, goal-directed actions
- Individualized, woman-centered care
- Quality vs. quantity of visits
- Care by skilled providers

Focused Antenatal Care Services

Evidence-based, goal-directed actions:

- Address most prevalent health issues affecting women and newborns
- Adjusted for specific populations/ regions
- Appropriate to gestational age
- Based on firm rationale

Focused Antenatal Care Services (cont'd.)

Individualized, woman-centered care

based on each woman's:

- Specific needs and concerns
- Circumstances
- History, physical examination, testing
- Available resources

Focused Antenatal Care Services (cont'd.)

Quality vs. quantity of ANC visits:

- WHO multi-center study
  - Number of visits reduced without affecting outcome for mother or baby
- Recommendations
  - Content and quality vs. number of visits
  - Goal-oriented care
  - Minimum of four visits

Focused Antenatal Care Services (cont'd.)

Care by a skilled provider who:

- Has formal training and experience
- Has knowledge, skills, and qualifications to deliver safe, effective maternal and newborn healthcare
- Practices in home, hospital, health center
- May be a midwife, nurse, doctor, clinical officer, etc.

Elements or Aims of FANC

1. **to promote and maintain good physical, mental and social health during pregnancy. This is done by education on:-**

- **How to recognize danger signs,**
- **what to do, and where to get help**
- **Good nutrition and the importance of rest**
- **Hygiene and infection prevention practices**
- **Risks of using tobacco, alcohol, local drugs, and traditional remedies**
- **Breastfeeding**
- **Postpartum family planning and birth spacing.**

FANC . . .

2. *To detect early and treat any arising complications during pregnancy (medical, surgical or obstetrical)*

- This is done through good history taking, observations, investigations, examination and follow-up care.

3. *To promote safe delivery of a healthy baby with minimal stress and injury to the mother and the baby.*

This is possible through monitoring, encouraging pregnant women in ANC,

FANC . . .

monitoring fetal growth and well being during pregnancy, advising mothers to avoid harmful substances and promoting rest.

4. *To prepare mothers for labor, lactation and normal puerperium*- teach the woman about labor, child care and events that follows child birth

5. *To ensure that the pregnant woman makes an individual birth plan*-counsel and educate the woman on delivery, need to plan for delivery ie emergency preparedness, where she plans to deliver, mode of transport, financial arrangement, etc

Birth Preparedness and Complication Readiness: Objectives

- Develop birth plan—exact plan for normal birth and possible complications:
  - Arrangements made in advance by woman and family (with help of skilled provider)
  - Usually not a written document
  - Reviewed/revised at every visit
- Minimize disorganization at time of birth or in an emergency
- Ensure timely and appropriate care

Essential Elements of a Birth Plan

- **Facility or Place of Birth**: Home or health facility for birth, appropriate facility for emergencies
- **Skilled Provider**: To attend birth
- **Provider/Facility Contact Information**
- **Transportation**: Reliable, accessible, especially for odd hours
- **Funds**: Personal savings, emergency funds
- **Decision-Making**: Who will make decisions, especially in an emergency

Essential Elements of a Birth Plan (cont'd.)

- **Family and Community Support**: Care for family in woman's absence and birth companion during labor
- **Blood Donor**: In case of emergency
- **Needed Items**: For clean and safe birth and for newborn care
- **Danger Signs/Signs of Advanced Labor**

Danger Signs of Pregnancy

- Vaginal bleeding
- Difficulty breathing
- Fever
- Severe abdominal pain
- Severe headache/blurred vision
- Convulsions/loss of consciousness
- Labor pains before 37 weeks

FANC. . . .

- FANC emphasizes that a woman should have at least four visits to the clinic during pregnancy.
- FANC is therefore:-
  1. Care that is timely, friendly, simple, beneficial and safe to pregnant women.
  2. It is care provided to pregnant women which emphasizes on the woman's overall health, her preparedness for child birth and readiness for complications(emergency care)

Booking visit

- **This is the first visit a pregnant woman makes to the antenatal clinic.**

Objectives of the visit

1. ***to assess the level of health by taking a detailed history and employing screening tests or appropriate tests that are necessary.***
2. ***to make baseline recordings of weight, height, blood pressure and hb levels in order to assess normality. These values are used for comparison in subsequent visits***

Objectives . …

3. *To indentify risk factors by taking accurate details of past and present obstetric and medical history.*
4. *To provide an opportunity for the woman and her family to express any concerns they might have regarding the pregnancy and previous obstetrical experience.*
5. *To give advice on general health matters and those pertaining to pregnancy in order to maintain the health of the mother and development of the fetus.*

Steps in ANC

6. ***To begin building a trusting relationship in which realistic plans of care are discussed.***

Steps in antenatal care.

Also referred to as antenatal profile. It is carried out in the following steps.

- ✓ ***History taking***
- ✓ ***Observations***
- ✓ ***Investigations***
- ✓ ***General physical examination(head to toe)***

History taking

- **Welcome the woman, create good rapport and then take history in a quite, private way.**
- **Several forms of history are taken:-**
  1. ***Personal and social history-*** **name, age, address, religion, educational background, occupation, marital status, spouses name and address, tribe, chief or sub-chief, hobbies and habits such as smoking.**
  2. ***Family history-*** **history of illness(s) running in the family such as epilepsy, psychiatric disorders, hypertension, DM, asthma, multiple pregnancies, etc**

History ct. . .

3. ***Past medical/ surgical history-*** **any past serious illness warranting medical attention or admission in an hospital such as poliomyelitis, cardiac conditions, UTI, STI, Anemia, hypertension, DM, asthma, blood transfusion, and any kind operations involving pelvic organs or accidents involving the pelvic region**
4. ***Past obstetrical/ gynecological history-*** **ask her parity- the number of times she has delivered, gravida-the number of times she has ever been pregnant,**

History ct. . .

- Abortions- when it occurred, how many times, was it complete or incomplete? was the cause known or identified, and was action or treatment was given.
- Ask about complications of previous pregnancies, labor and purperium.
- Ask whether the labor was spontaneous or induced, duration of labor and type of deliveries.
- Ask the weight of the babies and their fate, sex and any complications of the babies.

Past obstetric history ct…..

- **Gravidity and parity:**
- Gravidity is the number of confirmed pregnancies; a pregnant woman is a gravida. Parity is the number of deliveries after 20 wk. Multifetal pregnancy is counted as one in terms of gravidity and parity. Abortus is the number of pregnancy losses (abortions) before 20 wk regardless of cause (eg, spontaneous, therapeutic, or elective abortion; ectopic pregnancy). Sum of parity and abortus equals gravidity.

History ct. . .

5. **present obstetrical history-** ask about last menstrual period (LMP) and calculate the Expected Date of Delivery (EDD) so as to compare the actual fetal size and uterine size. EDD =first day of LMP+ 7 days + 9 months or – 3 months.

note history of pregnancy related illnesses, other risks such as multiparity, age above 35 years or below 16 years and any history of harmful habits such as smoking

Calculate the maturity by date

observations

1. Take the height at first visit only and record it in the clinic card. Women of 150 cm and below, those who are limping or have abnormal gait are at risk of having contracted pelvis.
2. Weight- should be taken as early as possible in pregnancy and then compared with that of subsequent visits
3. Blood pressure- should be recorded as early as possible and then comparison done during subsequent visits.

Laboratory investigations

1. ***Urinalysis-*** **test urine for proteins, sugar, ketone bodies and ph to identify or excludes conditions such as pre-eclampsia and DM.**
2. ***Blood tests-*** **blood grouping, rhesus factor, hemoglobin level, VDRL, HIV/AIDS, and sometimes malaria.**
3. ***PMTCT counseling*** **is essential**

examination

- A general head to toe examination is carried out to:-
  1. Help detect abnormalities and take appropriate action.
  2. Help give advice, health education, psychological support and reassurance in line with the findings.
  3. To help students develop competency in the examination.

  Refer to procedure manual for general examination procedure.

Obstetric physical examination

In the initial presentation, full physical examination should be done. **Abdominal & pelvic examination** remains important exam for pregnant women because it is the easiest method of fetal monitoring.

Abdominal examination

- **Aims:**
  1. **To observe signs of pregnancy**
  2. **To assess fetal size and growth**
  3. **To diagnose the location of fetal parts**
  4. **To detect any deviation from normal**

  Preparation.

  Conduct general examination first.

Abdominal examination is done with mother lying in a supine position. She should empty the bladder first and privacy maintained

method

Inspection.

- **Inspect the abdomen for:**
- **Size-**
- **Shape**
- **Fetal movements**
- **Contour of the abdominal wall**
- **Skin changes- note any stretch marks, presence of linea nigra, fenesteal scars etc**

Method ct. . .

Palpation

- **It is done in three parts with clean and warm hands.**

Fundal palpation

- **Done to estimate fundal height and thus, gestation**
- **Place your hand below the xiphisternum, pressing gently and move down until you feel the curved upper boarder of the fundus. note the number of finger breaths that can be accommodated between the two surfaces.**

Method ct. . .

- To determine the presentation, the fundus will contain either the head or breech. The head is distinctive in shape and more firm than the breech.

Lateral palpation.

- To determine the position, the fetal back should be located and this is achieved through lateral palpation.
- The midwife places her hands at either side of uterus at the level of umbilicus

Method ct. . .

- Apply pressure with alternate hands in order to determine which side of the uterus offers greater resistance.
- The back is marked out as a smooth continuous resistant mass from the breech to the neck and the limbs as parts that slip about under the examining fingers. One hand should steady the uterus while the other palpates

Method ct. . .

Pelvic palpation.

- This is to ascertain presentation, engagement and attitude.
- Ask the woman to relax and slightly bend her knees, and steadily breath through open mouth.
- Grasp the sides of uterus just below the umbilicus between the palms of the hand with fingers held close together pointing downwards and inwards.
- The head is felt as a hard mass with a distinctive round smooth surface.

Method ct. . .

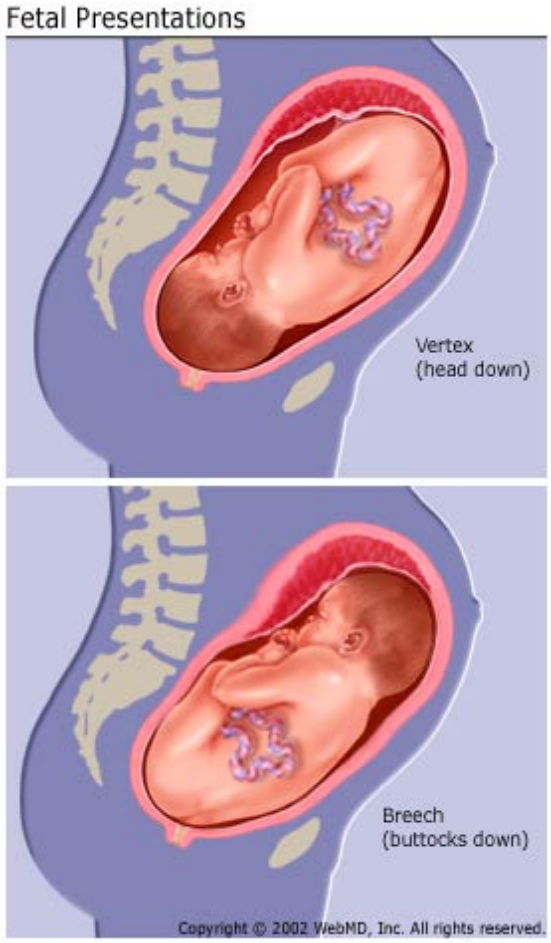
- To estimate the engagement, feel how much of the head is palpable above the pelvic brim. Alternatively, Pawliks maneuver is used- grasp the head between the fingers and the thumb and find if it is movable.
- (Which palpation begins?)
  Auscultation.
- Used to assess fetal well-being.
- Done using Pinard's fetal scope.
- Move the fetal scope around until the point of maximum intensity is determined.

Method ct. . .

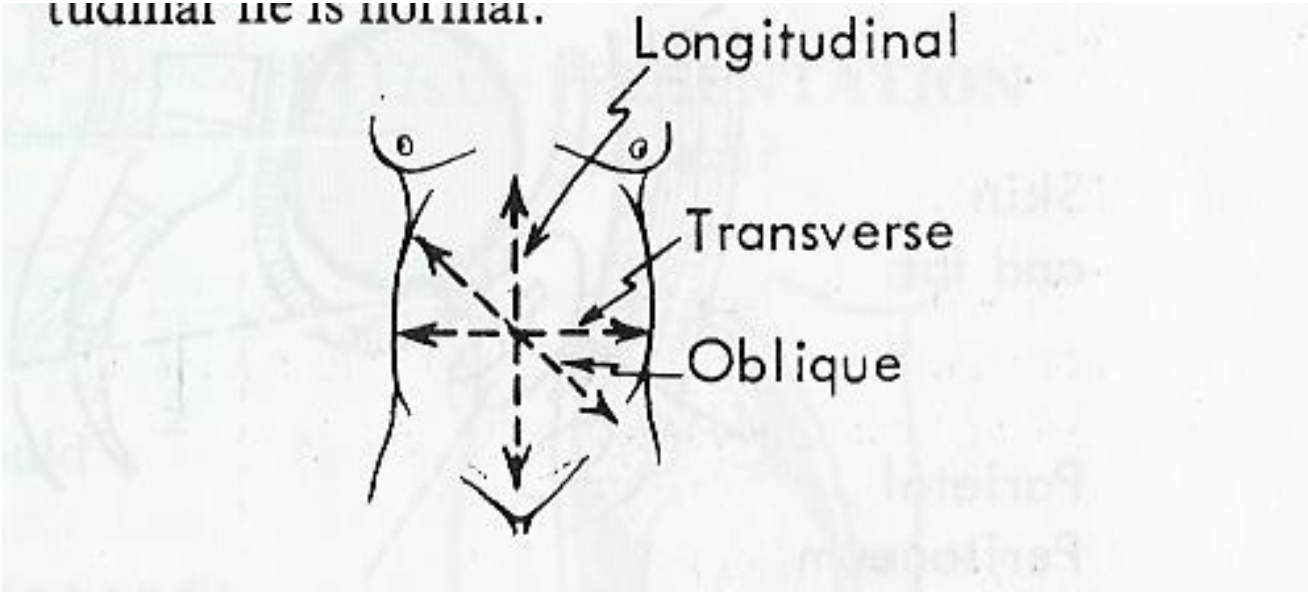
- **The fetal heart beats are more rapid than the mother's.**
- **Ask the mother about fetal movements. Cover the mother and explain the findings to her.**

Essential definitions that you should know to understand the physical examination findings:

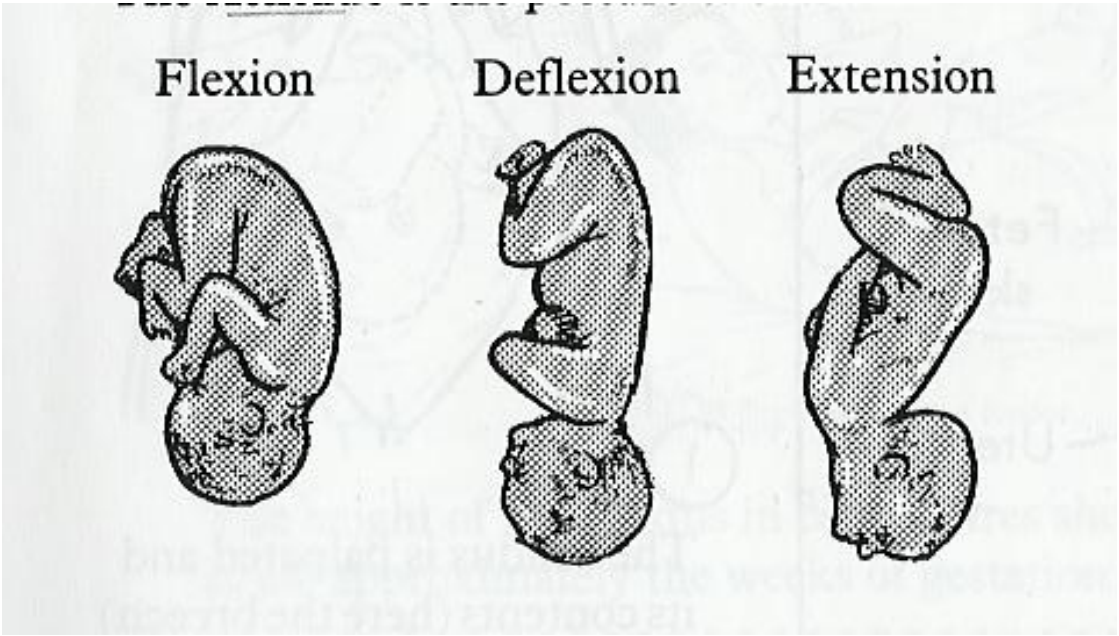
- ***The presentation:*** is the part of the fetus in the lower pole of the uterus overlying the pelvic brim (cephalic, breech)



- ***The lie of the fetus***: is the relation of the long axis of the fetus to the uterus (could be longitudinal, oblique or transverse. only longitudinal lie is normal)



- ***The attitude***: is the posture of the fetus (flexion, deflexion, extension)



- ***The position***: of the baby in relation to the presenting part of the mother's pelvis. It is expressed according to the denominator which is :
- occiput in vertex presentation
- sacrum in breech presentation
- mentum in face presentation

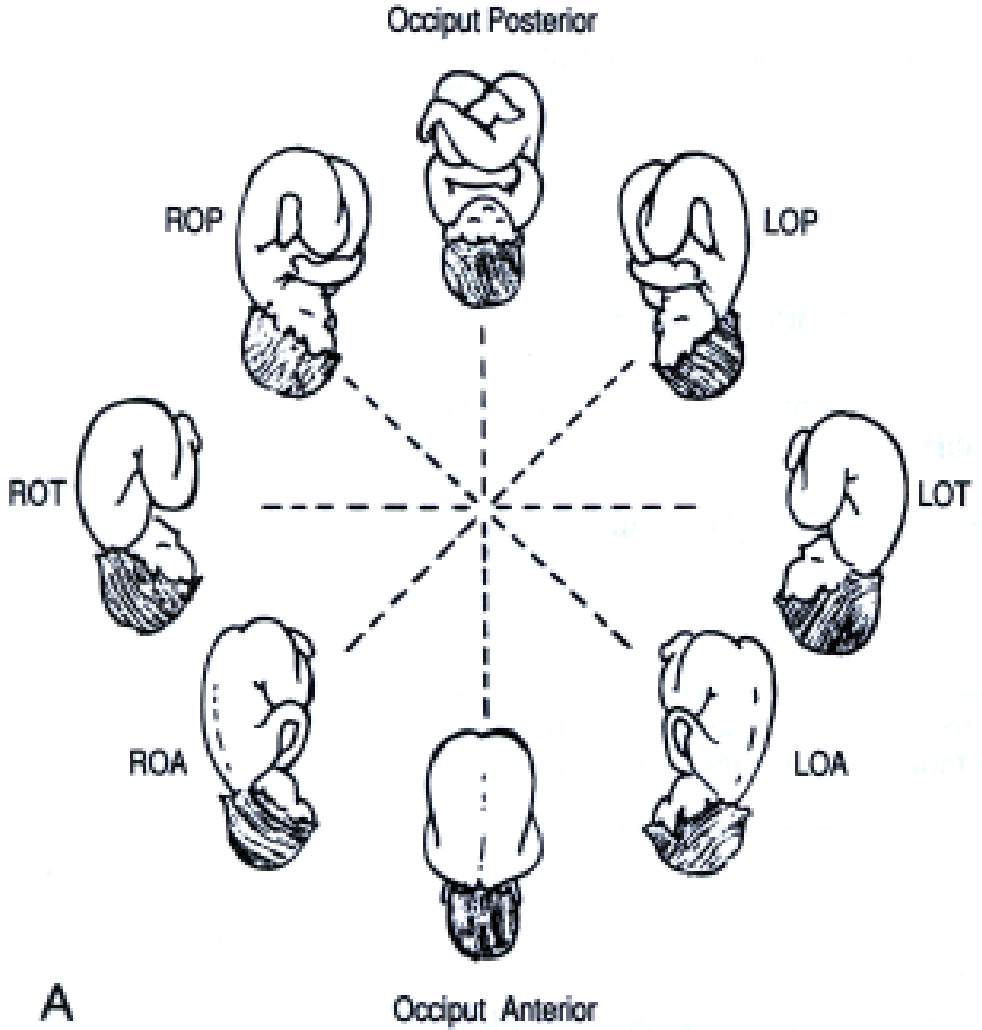


Figure 2.27A. Variety of fetal positions with vertex presentations. (Adapted with permission from Oxorn, H. (1986). *Oxorn-Foote Human Labor & Birth* (5th ed.) (p. 59) New York: Appleton-Century-Crofts.)

Station & engagement

Station: is the relation of the presenting part to the ischial spine. If the presenting part is at the level of ischial spine, station =0

Engagement: the descent of the biparietal diameter through pelvic brim. If the head is at the level of ischial spine the head must be engaged.

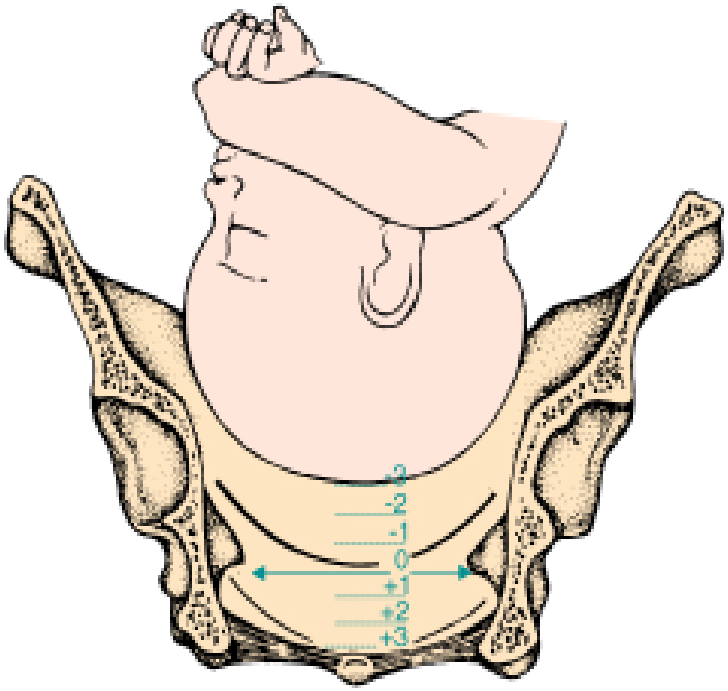


Figure 1-6 Stations of the presenting part.

Method of abdominal exam

- **Inspection**:
  - **Size of the uterus**: assess
    - If the length & breadth are both increased
    multiple pregnancies, polyhydramnios
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Method of abdominal exam

- **Palpation: by Leopold maneuver-4 maneuvers**
  - Palpate the fundus (to determine if it contains breech, head)
    - By gentle pressure:
      - if soft consistency/ indefinite outline breech
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Method of abdominal exam

- **Lateral palpation:** (determine the position of the fetal back and small parts)
- Hands are placed on each side of the umbilicus. The fetal spine will palpate as firm, flat and linear. The fetal extremities are palpable by their varying contour and movements. The purpose of this maneuver is to determine whether the fetal back is left or right.

Method of abdominal exam

- **Pelvic palpation: 2 maneuvers**
- Grasp the lower poles of the uterus between fingers and thumbs and comment of the size, flexion and mobility of the head.
- To determine the position of the vertex presentation: try to palpate the prominences (occiput @ the same side of the back & sincipital @ the opposite side of the back)
  - If the sinciput is higher the occiput well flexed
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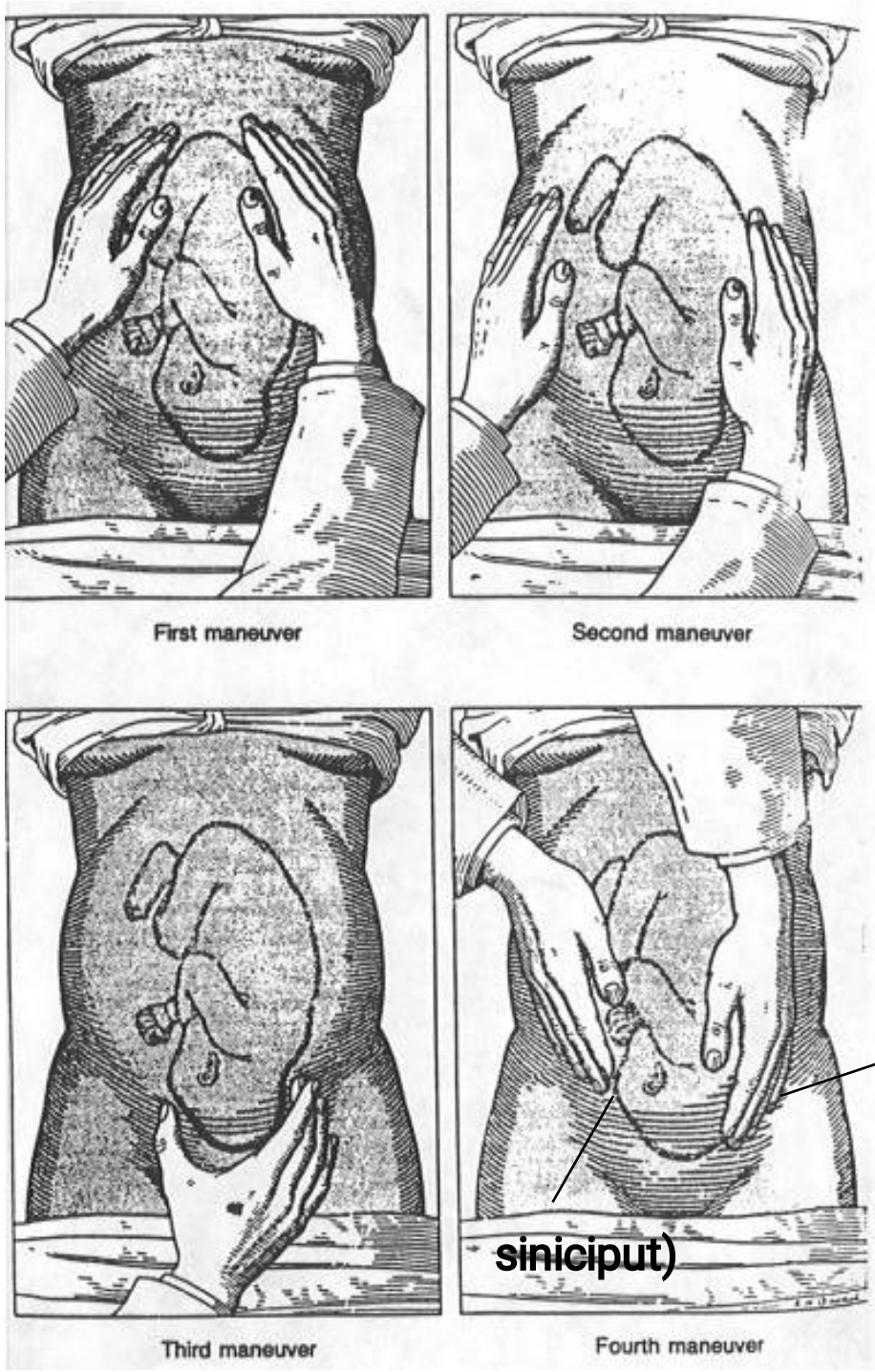
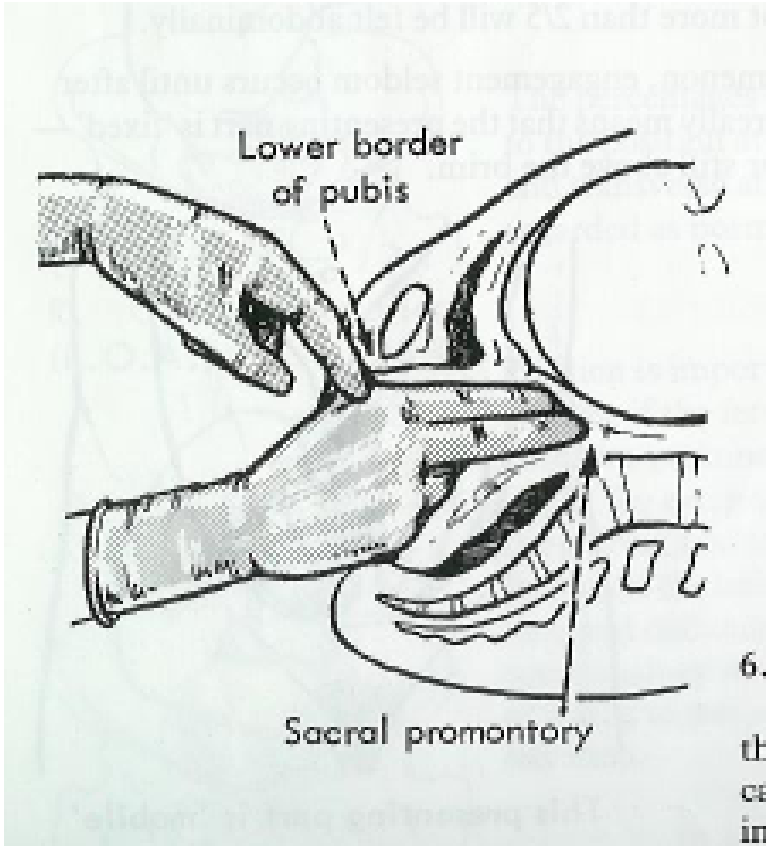

First maneuver
Second maneuver
Third maneuver
Fourth maneuver
occiput
siniciput)

Method of abdominal exam

- **Auscultation**: help assess fetal well being

  Auscult the whole abdomen trying to locate the point of maximum intensity
- Don’t forget to perform a **pelvic exam** (details of pelvic exam will be discussed in gynecological exam) but important landmarks to notice during pelvic exam are
  - **Pubis symphasis**
  - **Ischial spine**



After you examine a pregnant women you should answer the following questions

1. What is the fundal height?

It is estimated by centimeters from upper border of the fundus to the pubis symphasis by taping measure. The height of the fundus correlates well with the gestational age especially during the weeks of pregnancy.

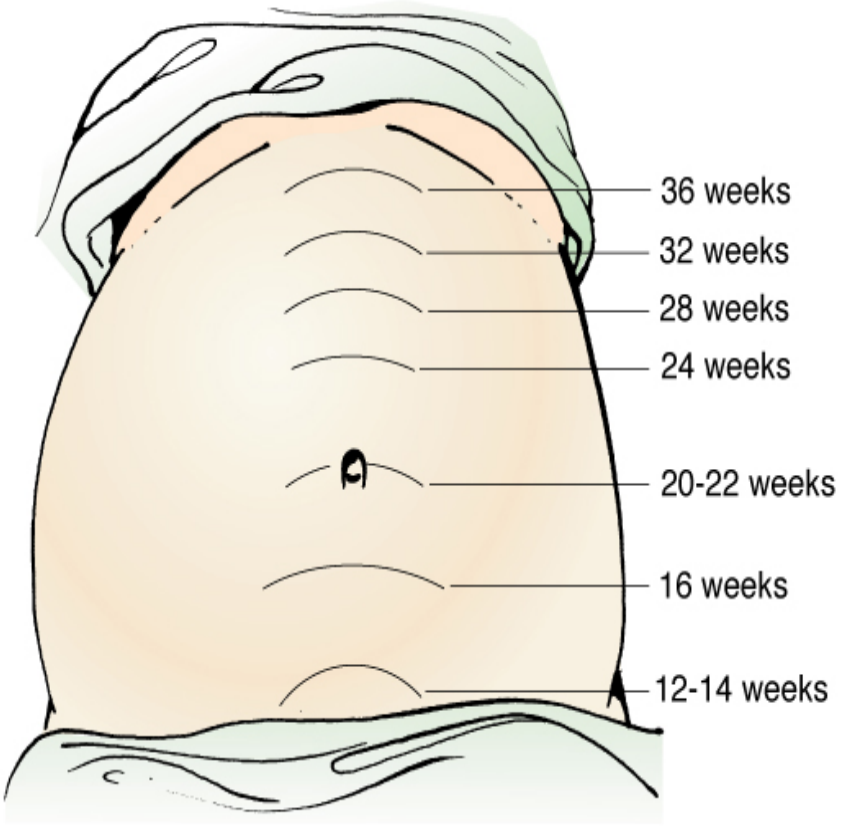


Figure 1-4 Fundal height.

After you examine a pregnant women you should answer the following questions

2. **Lie of the fetus**: only longitudinal lie is normal
3. **Attitude**: normally it is full flexion and every fetal joint is flexed.
4. **Presentation**: normally cephalic
5. **Position**: according to the dominator
6. Is the vertex **engaged**?

Recording the findings (documentation)

- **Recording should be done on ANC card and clinic book.**
- **The mother should carry the card home and instructed to always carry it to the clinic.**
- **Gestation age- predicted gestational age should correspond to the fundal height. In singleton pregnancy, the uterus reaches the level of umbilicus at 22-24 weeks and sternum at 36 weeks. multiple pregnancy should be diagnosed by 24th week**

DOCUMENTATION ct. . .

Lie

- It is the relationship between the long axis of the fetus and the long axis of the uterus.
- The lie may be:-
- Longitudinal-the fetus lies along the uterine long axis. occurs in 99.5%
- Oblique- the fetus lies diagonally across the long axis of the uterus
- Transverse- the fetus lies at right angles to the long axis of the uterus

DOCUMENTATION ct. .

Attitude

- **This is the relationship of the fetal head and limbs to its trunk.**
- **the attitude can be that of flexion or extension.**

DOCUMENTATION ct. .

Presentation

- **Refers to the part of the fetus that lies at the pelvic brim or in the lower uterine pole**
- **Presentation can be:-**
  - **Vertex- 96.8%**
  - **Breech- 2.5%**
  - **Shoulder-0.4%**
  - **Face-0.2%**
  - **Brow- 0.1%**
- **Brow, face and vertex are all cephalic presentations.**

Documentation ct…

Denominator

- It is the name given to the part of the presentation which is used when referring to the fetal position. Each presentation has a different denominator.

Presentation	denominator
Vertex	occiput
Breech	sacrum
Face	mentum
Shoulder	acromion/dorsum

DOCUMENTATION ct....

Position

- **It is the relationship between the denominator and the fixed six positions (land marks) of the pelvic brim eg in the left occipital anterior (LOA), the occiput points to the left iliopectineal eminence and the saggital suture lies in the oblique diameter of the pelvis**
- ***Assignment- read and make notes on other positions ie, ROA, ROP, ROL, LOP, ROL***

DOCUMENTATION

PRESENTING PART

- **The part that lies over the cervical os during labor**
- **Engagement**
- **Said to occur when the largest diameter has passed the pelvic brim. It can be assessed as descent abdominally or in relation to the ischial spines.**

DOCUMENTATION

- All the findings are recorded and appropriate action taken according to the findings.
- The woman also receives the following in the process of profiling
  - Malaria prophylaxis
  - Hematinics, iron and folate supplements
  - Tetanus toxoid according to the schedule
  - Date of the next visit is written down and well communicated.
  - Health education and relevant advice.

PHYSIOLOGY OF LABOUR

LABOUR

Normal labour

- LABOUR
- It’s the process by which the fetus, placenta and membranes (Conceptus) are expelled through the birth canal
- NORMAL LABOUR
- Is the process by which the conceptus are expelled spontaneously at term (38-40weeks) with the fetus presenting by vertex and the process being accomplished within 18hours from onset of true labour, without any complications to the woman or the baby.

CAUSES OF NORMAL LABOUR

- The cause of labour is unknown but there are important aspects attributed to the occurrence. They include:
- Overstretching and over-distension of the uterus
- Placental sufficiency is diminished towards term
- Uterine contractibility increases towards term (refer to myles textbook on oxytocin)
- Cervical nerves are irritated by pressure from the presenting part, stimulating cervical dilatation
- Stressful situations such as fever or emotional uproar

CLINICAL PRESENTATION OF LABOUR

- HOW DO YOU THINK LABOUR PRESENTS?

Premonitory signs of labour

There are changes that occur in last few weeks of pregnancy (pre-labour period). They occur all or just a few and include:

- Mood swings
- Energy surge
- Difficult in walking (symphyisis pubis dysfunction)
- Cervix softens and has the ability to dilate
- Increased lekorrhoea

Premonitory signs ct.....

- Lightening
- Braxton hicks contractions
- Frequency of micturation
- Cervical changes
- Late pregnancy feelings

Assignment:

Differentiate TRUE and FALSE labour

STAGES OF LABOUR

These are theoritical representations of the process of labour which are developed to subdivide the continuous process into phases.

First stage – stage of cervical dilation

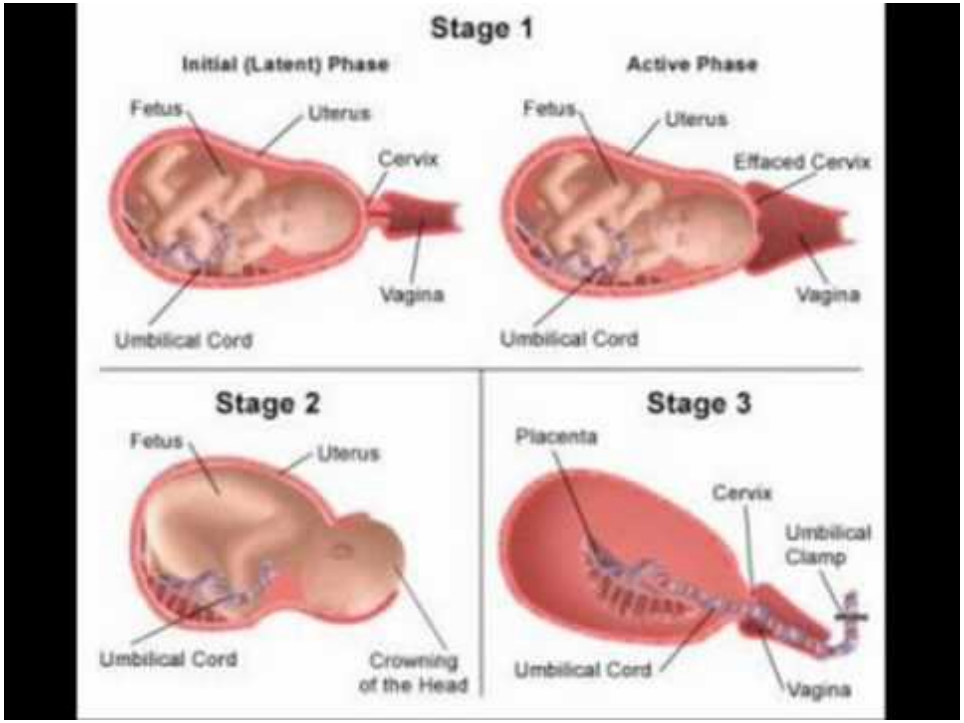
- Its dividend into latent and active phases

Second stage – stage of fetal expulsion, begins from full cervical dilatation and ends when the baby is born.

Third stage – stage of separation and expulsion of the placenta

Fouth stage – stage of observation following birth, lasts 1-2 hours.

STAGES OF LABOUR



PHYSIOLOGY OF LABOUR

- Physiological changes that occur during labor are divided into three stages
- The duration of first stage of labor determines the duration of labor because it takes the most time. The duration of labor is determined by:
  - Parity
  - Birth interval
  - Psychological state of the mother

Labour ct. .

- **Presentation and position of the fetus**
- **Pelvic shape and size**
- **Character of uterine contractions**

Physiology of first stage

- Physiology of first stage is divided into two categories.
  - » Uterine action
  - » Mechanical factors

1. Uterine action

1. Fundal dominance

- Contractions begins at the fundus and spread downwards lasting at the fundus where it is most intense but the peak is reached simultaneously over the whole uterus and fades from all parts together. This permits cervical dilatation and allows strongly contracting fundus to expel the fetus.

Uterine action ct. . .

b) Polarity

- The term used to describe the neuromuscular harmony that exist between the upper and lower uterine segments
- The upper uterine segment contracts strongly and retracts to expel the fetus while lower segment contracts slightly and dilates to allow expulsion of the fetus

Uterine action ct. . .

3. **Contraction and retraction**

- **The uterus contracts and retracts in labor. The contractions do not fade completely but muscle fibers retain some of the shortening of contraction and therefore do not relax completely. This is known as *retraction*.**
- **During contractions, the upper segment becomes thicker and shorter; the cavity diminishes gradually while the lower segment becomes thinner.**

Uterine action ct. . .

4. **Formation of the upper and lower uterine segment**

- **This is a functional division that occurs ton the uterus at term. The uterus is divided into the upper and lower segment.**
- **The upper segment is thick and muscular concerned with contraction when the lower segment is thin prepared for distention and dilatation.**

Uterine action ct. . .

5. **Development of the retraction ring.**

- **The upper segment is functionally separated from the lower segment by a ridge known as retraction ring. it rises with the increase in contractions until full cervical dilatation is achieved**
- **It is not seen abdominally but if it does, it known as Bandl's ring and denotes obstructed labor.**

Uterine action ct. . .

6. **Cervical effacement**

- **It denotes the “taking up” or shortening of the cervix that takes place during the last few days of pregnancy.**
- **The muscle fibers surrounding the internal os are drawn upwards by the retracting upper segment thus allowing the cervix to become shorter as it gets absorbed into the lower uterine segment**

Uterine action ct. . .

7. **Cervical dilatation**

- **This is brought about by the upward traction exerted by the retracted muscle fibers of the upper segment. It is also aided by the pressure from a well-fitting presenting part**

Uterine action ct. . .

8. **Show**

- **This is the blood stained mucous discharge that is seen within few hours after the labor starts.**
- **This is the mucous that was forming the cervical plug.**
- **The blood is from the ruptured capillaries as the chorion detaches from the decidua**

B) Mechanical factors

1. Formation of the fore waters.

- Increased intrauterine pressure causes the detached part of chorion to bulge into the dilating os. Well-fitting presenting part fits into the cervix and cuts off the fluid in front of the head from the reminder of the amniotic fluid. This fluid in front is called the fore waters and the reminder is hind waters. This is the nature's way of keeping the membranes intact since the pressure is only applied to the hind waters.

Mechanical factors

2. **Rupture of membranes**

- **Membranes may rupture at any stage in labor.**
- **Towards the end of first stage the membranes ruptures due to extensive cervical dilatation. In poorly fitting presenting part the waters are not cut off effectively and is subjected to intense pressure leading to early rupture of membranes.**

Mechanical factors

3. **General fluid pressure**

- **When the membranes are intact, the pressure from uterine contractions is exerted on the fluid. Since the fluid is incompressive, the pressure is equalized throughout the uterus and over the fetal body. This is known as general fluid pressure**
- **After membranes rupture, the pressure is felt between the uterus and the fetus, with placenta compressed between them. This causes diminished oxygen supply to the fetus**

Mechanical factors

d) Fetal axis pressure.

During labor, the force of contraction is transmitted to the upper pole of the fetus down the long axis and is applied by the presenting part to the cervix. This pressure is more significant after the rupture of membranes.

PHYSIOLOGICAL CHANGES IN THE SECOND STAGE

1. Contractions

- The strength of contractions increases once the cervix is fully dilated.
- They are more stronger and frequent due to irritation of the uterus.
- As the vagina is being stretched by the fetus, the reflex stimulates the uterus causing more labor pains

2nd stage physiology

- Membranes often rupture spontaneously towards the end of 1st stage, the drainage of liquor allows the hard, round fetal head to be directly applied to the vaginal tissues. This pressure aids in distension.
- Increased flexion of the head results in smaller presenting diameters. The physiological stages are:-

a) Contractions become expulsive as the fetus descends further into the vagina. Pressure from presenting part stimulates nerve receptors (Ferguson reflex) and the woman experiences the urge to push.

2nd stage physiology

2. **Abdominal and diaphragmatic muscles (secondary powers)**

- **These muscles becomes more active and expulsive in action. This is known as pushing or bearing down.**
- **The expulsion becomes involuntary when the presenting part reaches the pelvic floor and distends it.**

2nd stage physiology

c) Displacement of the pelvic floor

- **The pelvic floor organs are displaced to allow the fetus to pass through:**
  - **The bladder is drawn up into the abdomen.**
  - **The vagina dilates**
  - **The posterior part of the pelvic floor is pushed downwards in front of presenting part. If there is any fecal matter in the rectum it is expelled**

2nd stage physiology

- The anus gapes until the anal opening is about 2.5 cm in diameter.
- The triangular perineal body is flattened . It becomes thin, almost transparent and lengthens the vaginal canal.

• At this point, the presenting part is seen at the vulva advancing with each contraction and receding between contractions until crowning takes place. The presenting part is born by extension as the shoulders and body follow

MECHANISM OF NORMAL LABOR

- This describes a series of movements done by the fetus as it moves through the birth canal during delivery.
- Knowledge and recognition of the normal mechanisms enables the midwife anticipate the next step in the process of descent, which in turn will dictate her response to the birth as it progresses. This ensures that normal progress is recognized, and abnormalities are detected and dealt with appropriately early.

Principles of mechanism

- The principles common to all mechanisms are:-
  - Descent takes place
  - Whichever part leads and meet the resistance of the pelvic floor will rotate forwards until it comes under the symphysis pubis.
  - Whatever emerges from the pelvis will pivot around the pubic bone.

Mechanism ct. . .

- During the mechanism of normal labor, the fetus turns slightly to take advantage of the widest available space in each plane of the pelvis. The widest diameter of the pelvic brim is the transverse, and the outlet greatest diameter is the antero-posterior.
- In normal vertex presentation, the fetus is situated as follows:

Mechanism ct. . .

- The lie is longitudinal.
- The presentation is cephalic
- Position is right or left occipitoanterior.
- The attitude is one of good flexion.
- The denominator is the occiput
- The presenting part is the posterior part of the anterior parietal bone.

Main movements

- ***Descent:-*** this takes place throughout labor.
- Flexion:- it increases throughout labor. It ensures that a small diameter, suboccitobrematic, is presenting.
- ***Internal rotation of the head:-*** the leading part(occiput) meets the pelvic floor and rotates anteriorly through 1/8th of a circle. This causes a slight twist in the neck of the fetus and head is no longer in direct alignment with the shoulders.

Main movements

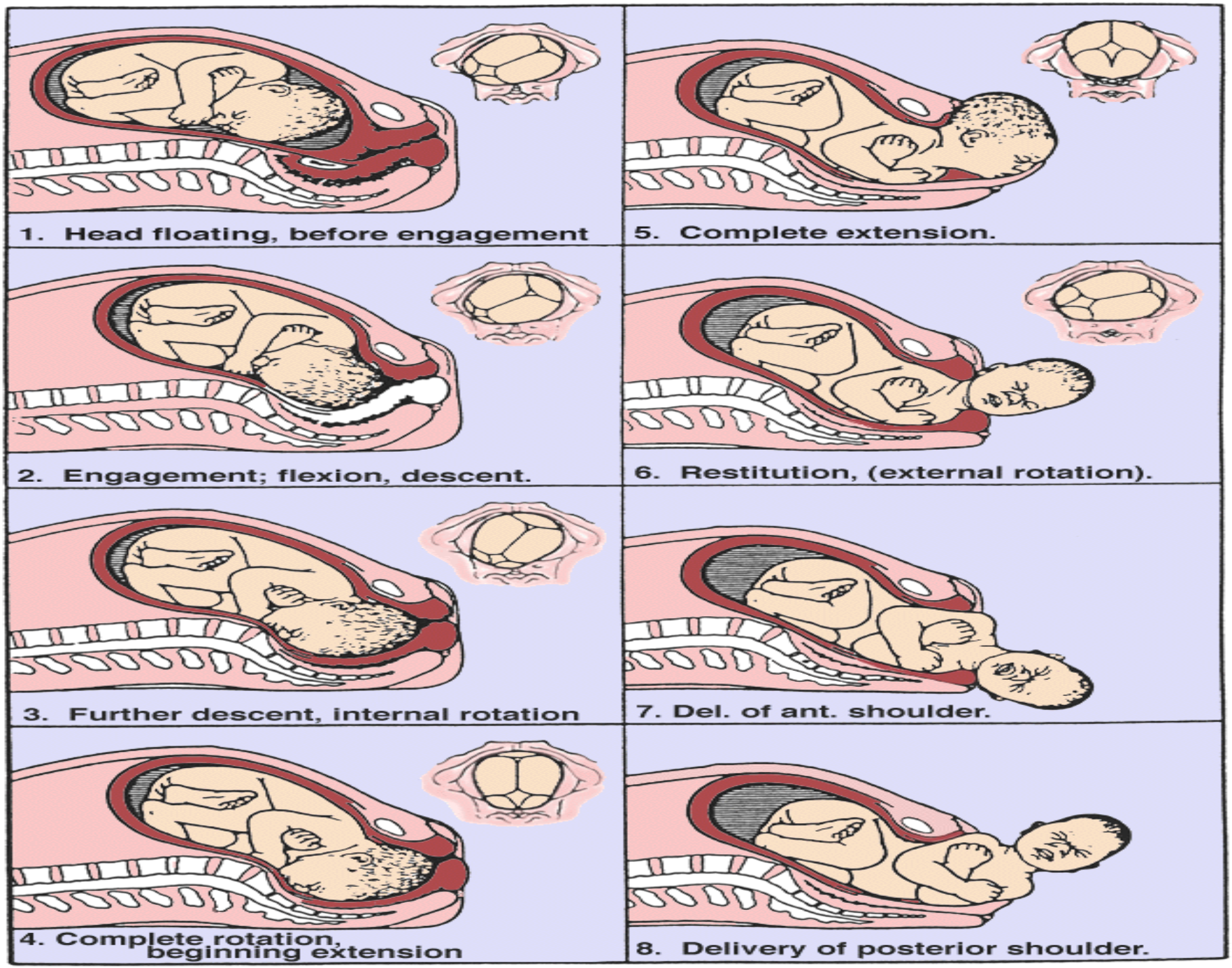
- The anteroposterior diameter of the head now lies in the widest outlet diameter, the anteroposterior diameter.
- Crowning then occurs when the occiput slips beneath the subpubic arch.
- ***Extension of the head:-*** after crowning the fetal head extends pivoting on the subpubic arch. This releases the sinciput, face and chin which sweeps the perineum and are born by a movement of extension

Main movements

- ***Restitution:-*** the twist in the neck of the fetus resulting from the internal rotation of the head is corrected by a slight untwisting movement. The occiput moves 1/8th of a circle towards the side from which it started.
- ***Internal rotation of the shoulders:-*** the anterior shoulder reaches the pelvic floor and rotates anteriorly to lie under the symphysis pubis. It occurs in the same direction as restitution, and the occiput now lies laterally.

Main movements

- ***Lateral flexion:-*** the anterior shoulder escapes beneath the subpubic arch and the posterior shoulder sweeps the perineum. The reminder of the body is born by lateral flexion as the spine bends sideways through the curved birth canal.


1. Head floating, before engagement
2. Engagement; flexion, descent.
3. Further descent, internal rotation
4. Complete rotation, beginning extension
5. Complete extension.
6. Restitution, (external rotation).
7. Del. of ant. shoulder.
8. Delivery of posterior shoulder.

Management of labour

- Is the care given through out the stages of labour

A. Admission procedure

- ❖ Well coming the mother and her partner
- ❖ On Arrival
- ❖ Greet the mother
- ❖ Introduce your self
- ❖ Inform relative to wait

Management cont.....

- B. Admission criteria

Check - show

- rupture of membrane
- regular uterine contraction with progressive cervical dilatation

VE – it may be done first or last depending on how the woman presents herself.

Management cont…..

- History
  past, present, med/surg and all other relevant history
  - Information from the mother
  - Ask the mother on set of contraction
  - Rupture of membranes / passage of liquor
  - Show or any other bright red bleeding

Physical examination

  - The general condition
  - Exhausted, anemic, pain, dehydrated general edema
  - Vital sign: Blood Pressure, Temperature, pulse, respiration

Care in first stage cont……

- Abdominal examination
  1. Inspection
  2. Palpation lie, presentation, attitude engagement, Fundal height
  3. Auscultation fetal heart rate & rhythm

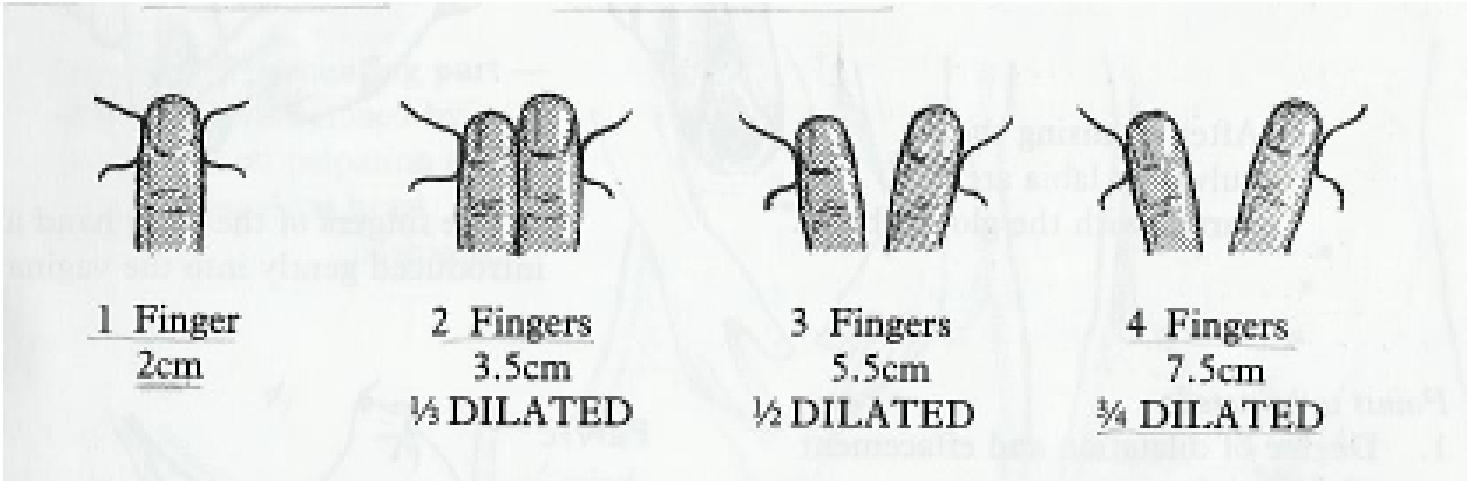
- Vaginal examination

  To cheek if the mother is in true labour
  - Cervical dilatation
  - Membrane intact or not

  To assess progress of labour
  - Station, Position
  - presenting part; moulding, caput and station

Examination during labor

1. Palpate uterine contractions
2. Assessment of the **cervix dilatation**
   - 1 finger ⍰ 1-2 cm dilated
   - 🗎 ♐♓■♑♏❒♦ → 🗏📁🗐 ♍♋♦ ♎♓●♋♦♏♎
   - 🗏 ♐♓■♑♏❒♦ → 🗄📁⌛ ♍♋♦ ♎♓●♋♦♏♎



3. **Effacement of the cervix**: thinning of the cervix (%) or length (cm). The cervix is normally 3-5 cms. If cervix is about 2 cm from external to internal os 50% effaced

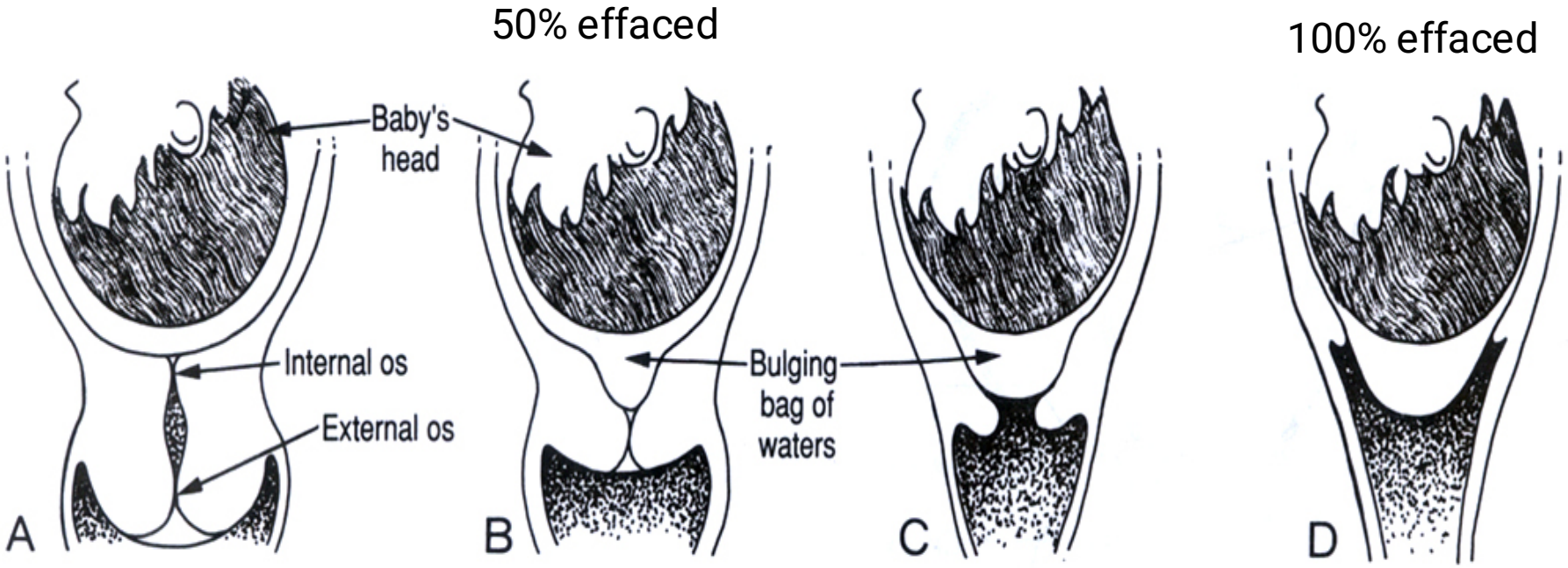


Figure 1.3. **A,** Cervix before effacement begins. **B,** Effacement in its early phase. **C,** Effacement with some dilatation. **D,** Complete effacement and dilatation.

4. **Consistency** of the cervix: soft vs. hard. During labor the cervix becomes soft.

5. **Position of the cervix**: posterior vs. anterior. During labor the cervix changes from posterior to anterior.

6. **Membrane is intact or ruptured:** assessed by fluid collection in the vagina

Care in 1st stage

Investigations

. Hematology
  - Hematocrit
  - Hemoglobin
  - Blood Group, Rh, cross- match

. Urine analysis
  - Protein (Albumin)
  - Sugar
  - Ketone

Write on patient chart and inform relatives. Use partograph
and record on it.

NB – if the woman is in true labour i.e 4cm dilated start a partograph and continue with care as follows.

MANAGEMENT OF THE FIRST STAGE OF LABOR

- **INFECTION PREVENTION**

- Admit the woman in a clean environment.
- Control the no number of visitors in a birthing unit.
- Clean beds and rooms thoroughly after use.
- Encourage the woman to bathe and wash as she wishes.

Management ct. . .

- Wash your hands before and after attending the client.
- Wear gloves when handling used sanitary pads, blood stained linen or body fluid.
- Invasive procedures should be kept to the minimum
- Artificial rupture of membranes should be avoided unless there is a good indication of the same.

Management ct. . .

- Observe the aseptic technique every time you are doing a sterile procedure
- Avoid unnecessary frequent vaginal examinations.

Emotional support

- Encourage the birth companion to support the woman emotionally during labor.
- Explain the process of labor to the woman and lay down expectations to relieve anxiety.
- Keep on encouraging the woman.
- Express care and dependability to the client to boost her confidence.
- As a midwife, display tolerant non-judgemental attitude in provision of care.

Observations/partographing

- Observations about the condition of the pregnant woman, her unborn baby and progress of labor should be monitored regularly.
- Partograph should only be started when the mother is in active labor, ie cervical dilatation of 4cm has been achieved.
- The following observations are done:-

Observations ct . .

- Pulse rate:-recorded every 30 minutes when the woman is in active labor. Pulse rate of above 100b/m are indicative of anxiety, infections, ketosis or hemorrhage.
- Temperatures:- should be recorded every 4 hours. Pyrexia is indicative of infections or hypoglycemia.
- Blood pressure:- measured every four hours, unless it is abnormal. Hypotension may be due to supine position, shock or epidural anaesthesia.

Observations ct. .

- Blood pressures may be further aggravated by labor on women who had hypertensive disorders in pregnancy.
- Urinalysis:- urine is tested for glucose, ketones and proteins. The volume of the urine is also measured.
- Contractions:- assessed ½ hrly
- Descent of the presenting part:- assessed 4 hourly
- Cervical dilatation:- assessed 4 hourly

Observations ct. .

- Fetal heart rate:- to assess fetal well being its assessed ½ hourly
- Amniotic fluid:- It also determines the fetal reaction to labour and its assessed ½ hourly
- Observe the maternal general status and her fortitude.

Care of the bladder

- Encourage the woman to empty her bladder every 1-2 hours.
- If the woman is not able to visit the toilet, offer privacy and provide with a bed pan.
- A catheter is passed if the woman is unable to empty the bladder completely.

nutrition

- Offer the woman light foods rich in carbohydrates to provide energy during labor eg. Biscuits, toast, yoghurt, breakfast cereal, fruit juice, tea etc.
- Fluids intake will reduce the risk of dehydration during labor.

Relieving pain and comfort

- Rub the woman's back during contractions to increase sensory input and thus reduce sensation of pain.
- Ensure the woman assumes a comfortable position.
- Encourage the woman to walk around to aid in descent and shorten labor.
- Encourage the woman to anticipate positively the birth of her child.

VAGINAL EXAMINATION IN LABOUR

When Doing Vaginal Examination Always Remember:-

1. The vaginal is not a sterile cavity, - the Uterus is. Every vaginal examination increases the danger of intrauterine infection, if carelessly performed.
2. A vaginal examination is uncomfortable and embarrassing for the patient.
3. Careful abdominal examination gives a lot of information.

Do it always before vaginal examination.

4. When doing a vaginal examination, find out all the information you can, this may save it having to be repeat

INDICATIONS FOR VE

1. When in doubt about the presentation, dilatation, or position and to assess progress.
2. To assess the shape and size of the pelvis.
3. To know the cause in fetal or maternal distress.
4. When the membranes rupture and the head is high or there is Malpresentation, to make sure there is not prolapsed cord

VE cont……

Information: To be got on Vaginal Examination

1. Presenting Part
   - Presentation
   - Level of presenting Part
   - Caput
   - Sutures and Fontanelles.
   - Overlapping or moulding
2. Membranes
   - Intact - Bulging or flat?
   - Ruptured - Color of liquor

VE cont....

3. Cervix:

- RIPE - firm or soft
- EFFACEMENT - long or short - taken up.
- OEDEMATOUS- thick or thin
- APPLIED to the presenting part- Loose or well applied.
- DILATION- Measure in cm.

4. Vagina:

Lax or tight, Warm or hot, Moist or Dray

VE cont…

5. Pelvis:

1. Cavity, sacral promontory
2. Curve of the sacrum, ischeal spine
3. Lateral pelvic side walls- parallel or convergent

Now Co-relate your findings, after recording them and determine the stage of labour.

THE SECOND STAGE OF LABOUR

- Definition:
  It is the stage from full dilatation of the cervix (i.e no cervix felt on V.E) until the Baby is born:-

- Duration:
  Primigravida 45 min – 1 hour, as long as 2 hrs
  Multigravida 1/2 hour can be as little as 5 minutes.

- N.B. there should always be advance or descent in this stage

Signs of second stage

- Presumptive signs
- Dilatation and Gaping of the anus
- Expulsive uterine contractions
- Rupture of the forewaters
- Show, appearance of the presenting part

Confirmatory signs

- 1. No cervix felt on Vaginal examination

MANAGEMENT OF SECOND STAGE

- Once the patient is in the second stage the nurse must not LEAVE HER, and a constant and careful supervision must be kept on her:
- 1. General condition, pulse, uterine contractions & Vulva
- 2. Bladder should be empty
- 3. Fetal heart more frequently (after every contraction)
- 4. Descent of the presenting part and progress.
- 5. Membrane should be ruptured
- NB – see procedure manual for further care.

Birth

Birth

- Perineal management (keep your hands off

  Mirror

- Ask mother to feel the baby's head

- Stay focused on woman, not tasks

EPISIOTOMY

- Definition: The making of an incision into the perinium to enlarge the vaginal orifice.

Indications for Episiotomy

- 1. Delay due to rigid perineum, disproportion between fetus and vaginal orifice.
- 2. Fetal distress due to prolapsed cord in second stage.
- 3. To facilitate vaginal or intra uterine manipulation
- Eg. Forceps, breach delivery
- 4. Preterm baby in order to avoid intracranial damage
- 5. Previous 3rd degree repair of the perineum.

EPISIOTOMY

Advantages of episiotomy

- 1. Fetal acidosis and hypoxia are reduced
- 2. Over stretching of the pelvic floor is lessened
- 3. Bruising of the urethra is avoided.
- 4. In sever pre - eclampsia or cardiac disease to reduce the effort bearing down.
- 5. A previous third degree tear which may occur again because of the scar tissue which does not stretch well is prevented.

EPISIOTOMY

Types of Episiotomy

- 1. Medio- lateral
- 2. Median
- 3. J- shaped
- 4. Lateral

EPISIOTOMY

- **1. Medio – Lateral**
- The incision is begun in the center of the fourchette and directed posterio laterally, usually to the woman's right. Not more than 3cm long & directed diagonally in straight line which runs 2.5cm distance from the anus.
- Advantages –
  - Barthlion glands are not affected
  - Anal sphincters are not injured

EPISIOTOMY

- **2. Median**:
- The incision begun in the center of the fourchette and directed posteriorly for approximately 2.5cm in the midline of the perineum.
- Advantage:
  - Less bleeding
  - More easily and successfully repaired
  - Greater subsequent comfort for the women

EPISIOTOMY

3. J – Shaped :

The incision is began in the center or the fourchette and directed posteriorly in the midline for about 2cm and then directed towards 7 on the clock to avoid the anus.

- Disadvantage
  - The suturing is difficult
  - Shearing of the tissue occurs
  - The repaired wound tends to be pucked.

EPISIOTOMY

- **4. Lateral**:
- The incision is begun one or more cm in distant from the anus.
- Disadvantages
  - Bartholins duct may be saved
  - The levator-ani muscle is weakened
  - Bleeding is more profuse
  - Suturing is more difficult
  - The woman experiences subsequent discomfort

EPISIOTOMY

Timing the incision

1. The head should be well down on the perineum, low enough to keep it stretched and thinned
2. In breech presentation the posterior buttock would be distending the perineum
3. It must be made neither too soon nor too late

EPISIOTOMY

- **REMEMBER:**
  1. Do not tie the sutures too tightly
  2. The last stitches are important for they prevent excessive
     Scar formation
  3. Press firmly on suture line with a pad to see if bleeding
     has stopped.
  4. Remove perineal pad or suture pack from vagina. Rub up
     fundus put clean pad on perineum
  5. Put gloved finger in to the rectum – to make suture that no
     stitch has gone through the rectum
  6. Make the women comfortable, clean and dry.

EPISIOTOMY

After care of episiotomy

- 1. Hot bath, cleanliness and wound care
- 2. If pus or foul smelling discharge develop report to health personnel
- 3. Advise not to strain and avoid constipation

THIRD STAGE OF LABOUR

The Third Stage of Labour

- It begins immediately after the baby is born, until the placenta is delivered. The third stage lasts between 5-15 minutes but any period up to 1 hour is normal. If it lasts more than 1 hr it is considered as retained placenta.

- Physiology of the third stage of labour
  1. Separation of the placenta
  2. Descent of the placenta
  3. Expulsion of the placenta
  4. Control of bleeding

PHYSIOLOGY OF 3RD STAGE

- 1. Separation of the placenta

  Mechanism of placental separation

  It is brought by the contraction and retraction of the uterine muscles. Separation usually begins in the center of the placenta. At the area of the separation the blood sinuses are torn across. 30to 60ml of blood is connected between maternal surface of the placenta and the decidual basalis.

  The uterine contractions detaches the placenta from the uterus and the placenta forced out of the upper uterine segment into the lower uterine segment.

PHYSIOLOGY OF 3RD STAGE

Signs for placental separation

- 1. Gush of blood
- 2. The fundus rises at the level of umbilicus
- 3. Uterus becomes globular
- 4. Cord lengthens and does not recend on supra-pubic pressure
- The uterus contracts during & after the birth of the baby. This causes the uterus to become smaller, the placenta remains the same size & is pushed off the uterine wall.

PHYSIOLOGY OF 3RD STAGE

2. Descent of the placenta

- When the placenta has completely separated, the
- contracting uterus pushes it down into the lower uterine segment and into the vagina. The weight of the placenta itself pulls the chorion off the uterine wall.

Sign of placental descent

- 1. The uterus becomes hard, round and movable.
- 2. The fundus rises to the level of the umbilicus.
- 3. The cord seems to lengthen.
- 4. There is a gush of blood
- 5. When you apply suprapubic pressure the cord will not
- reced back
- 6. Placenta can be felt on vaginal examination.

PHYSIOLOGY OF 3RD STAGE

3. Expulsion of the placenta

Method of placental expulsion

- a). Using the fundus as a piston
- The contracted fundus is used as apposition to push the placenta out.
- b). Controlled cord traction with out oxytocin drugs (Brandit Andrews method)
- c). Fundal pressure
- d). Traditional method/Bearing down by the woman

METHODS OF PLACENTA EXPLUSION

1. ACTIVE MANAGEMENT OF LABOUR

- An oxytocic drug is given, if pregnancy is not multiple as soon as anterior shoulder is delivered.
- The cord is clamped and cut, wait for contraction.
- Do not wait for the sign of placental separation and descent
- As soon as the uterus contracts the left hand is placed above the symphysis pubis push and the uterus upwards towards the umbilicus. At the same time the right hand grasps the umbilical cord and apply traction in “a down ward direction” out ward when the placenta is visible traction is exerted in an upward direction following the curves of then birth canal and then deliver the placenta.

AMTL

- If the membranes are not complete twisting the placenta to form the membranes into a rope or grasping the membranes with artery forceps and moving gently up and down to remove it.
- It is done for high risk mothers.
- Recommendations – When active management of the third stage is used clamp the cord.

METHODS OF PLACENTA EXPLUSION Cont…

- 2. Controlled cord traction with out oxytocic drugs / Brandit Andrews method/ passive management of third stage of labour
- Signs of placental separation and descent are awaited. The left hand is placed above the symphysis pubis push the uterus upwards towards the umbilicus. At the same time the right hand grasps the umbilical cord and apply traction in “a down ward direction” out ward when the placenta is visible traction is exerted in an upward direction following the curves of the birth canal then deliver the placenta.
- Cord traction should not be applied when the fetus is macerated or if the baby is preterm.
- Danger: Breaking of the cord. If the cord is snap manual removal is indicated.

METHODS OF PLACENTA EXPLUSION Cont

- Advantage: It allows the placenta to separate and descend with out interference
- Danger: The third stage may be longer Haemorrhage and infection may happen.

3. Maternal effort: When the uterus is well contracted ask the mother to push as she did during the birth of the baby. If she is not successful, the midwife or nurse may put a hand flat on the abdomen while the mother pushes, thus provides counter pressure to compensate the poor abdominal muscle tone.

METHODS OF PLACENTA EXPLUSION Cont…

- 4. Fundal pressure: The midwife or nurse puts her left hand on the fundus of the well contracted uterus and pushes down wards and back wards. The uterus is pushed against theplacenta and the placenta emerges from the vagina, receive the placenta, massage the uterus to make it contract, and give Ergometrine.
- Indication:- Preterm labour, still birth
- Danger- Pain

- N.B
- Fundal pressure and cord traction must never be combined because of the risk of inversion of the uterus.

METHODS OF PLACENTA EXPLUSION Cont…

- 5. Traditional method
- Up right kneeling/ squatting positions should be recommended when the third stage is passively managed.
- Gravity and intra abdominal pressure aid & speed the process
  Advantage – Blood loss can be easily observed
- About 500-.800ml blood flows through the placental site each minute. Following delivery of the placenta the oblique muscle fibers of the myometrium contract very strongly to compress the blood vessels.
- All average blood loss after the delivery of the placenta is 150ml.
- Blood loss should never be more than 500ml. All blood should be measured including clots from the placental surface.

PHYSIOLOGY OF 3RD STAGE ct….

- 4. Control of bleeding
  Methods:-
- - Contraction & relaxation of uterine muscles
- - The actions of living ligatures
- - Extra clotting power in the blood

The third stage is the shortest and easiest but the most dangerous stage. Bleeding after third stage of labour stops spontaneously, because of:

- 1. “Living ligatures” The oblique muscles fibers of the uterus run in and out between the blood vessels when the uterus is contracted they clump the blood vessels very securely and the bleeding stops.
- 2. Extra clotting power: The mother has extra clothing power in her blood at this time the clotting mechanism is very powerful.

3rd stage ct…..

- At the end of the third stage
  1. The uterus should be hard, round and movable
  2. The uterus should be mid way between the umbilicus and symphysis pubis
  3. There should be no excessive bleeding
  4. The bladder should be empty

THE OXYTOCIC DRUGS

- These drugs stimulate the uterus to contract. It is used before, during & after the third stage of labour.
- Advantages:
  1. It speeds up the delivery of the placenta
  2. Lessen the blood loss
  3. Contract the uterus
- The oxytocic drugs are:-
  1. Syntocinon, orastinon, pitocin, oxytocin - one ampule contains 5 or 10 units
  2. Ergometrine ampules – 0.5 mg or 0.25mg, Ergometrine 0.25 or 0.5mg tablet form
  3. Syntometrine - 1ml contains 0.5mg Ergometrine and 5 unites of oxytocin.

4th STAGE OF LABOUR

- Immediate Care of Mother and Baby

The mother and the baby has to remain in the delivery room for an hour after delivery.

- Immediate care of mother:

Give oxytocin 5-10 iu, massage the uterus and expel the clots.

The vulva is swabbed and a sterile pad placed in position

Buttocks should be dry and any wet sheet is removed the

sterile towel is removed over the lower abdomen and thighs and cover with warm blanket.

4th STAGE OF LABOUR

- Careful observation
- Check the maternal pulse (60-70)minute is the normal range
- Take body temperature – subnormal due to loss of body heat, as high as 37.2°c due to reactions of prolonged labour.
- Encourage her to pass urine
- Blood pressure is taken ½ hourly.
- Give her a hot drink and place the baby on the breast

4th STAGE CARE

- Immediate care of baby
- Observe:
  The general well being of the baby
  Check the security of the cord clamp
  Check APGAR score
  Promote bonding and breast feeding
  Put on ID (identification) band
  Check weight, height, head circumference and any drug (s)
  given to the baby
-

RECORD KEEPING

- Record your observations during labour
- Method of delivery- spontaneous or accelerated, forceps, cesarean section or vacuum.
- Anaesthetic – General, epidural, local
- Blood loss- amount
- Placenta and membranes- complete, incomplete
- Perineum- laceration, episotomy
- Drugs given for the mother
- Baby – Sex, weight, APGAR score, alive or stillbirth. Date and time of delivery
- **N.B .The chart should present a clear, concise, reliable record.**
- **The legal aspect of record keeping is also important during**
- **labour**.

Postpartum Physiology

Objectives

1-To describe the anatomic and physiologic changes that occur during the postpartum period

2-To identify characteristics of uterine involution and lochial flow.

3-To compare expected values for vital signs and blood pressure.

4-To identify the priorities of maternal care during the first stage of labor.

5-To identify common selection criteria for safe early postpartum discharge

Postpartum period

Is the interval between the birth of the placenta and the return of the reproductive organs to their normal nonpregnant state

It lasts for 6 weeks, with some variation among women.

Anatomic and physiologic changes

Reproductive system:-

Uterus

Involution:-is the return of the uterus to a nonpregnant state after childbirth

Involution process begins immediately after expulsion of the placenta with contraction of uterine smooth muscles

Cont….

At the end of third stage of labor, the uterus is in the midline, about 2cm below the level of the umbilicus and weighs 1000g

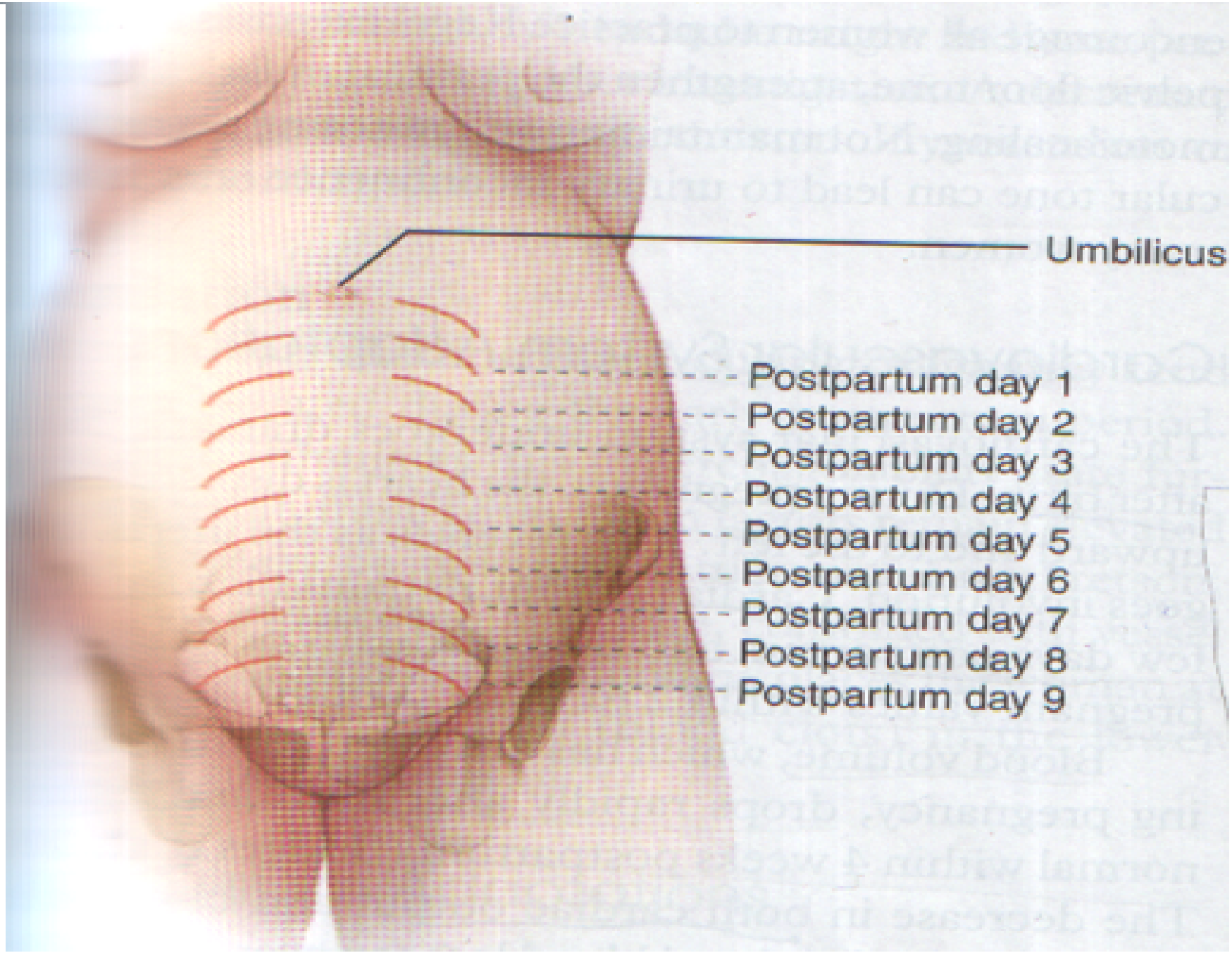
By 24 hours postpartum the uterus is about the same size it was at 20 gestational weeks

Cont…

-The fundus descends about 1 to 2cm every 24 hours, and by the sixth postpartum day it is located halfway between the symphysis pubis and the umbilicus.

-The uterus lies in the true pelvis within 2 weeks after childbirth.

-It involutes to about 500g by 1 week after birth, 350g by 2 weeks, and at 6 weeks it has returned to its nonpregnant size 50-60g


Umbilicus
Postpartum day 1
Postpartum day 2
Postpartum day 3
Postpartum day 4
Postpartum day 5
Postpartum day 6
Postpartum day 7
Postpartum day 8
Postpartum day 9

Cont…

-Autolysis:-it is a self destruction of excess hypertrophied tissue.

-Subinvolution:-is the failure of the uterus to return to a nonpregnant state.

-The most common causes of subinvolution are retained placenta fragments and infection

Cont…

Contraction

The hormone oxytocin strengths and coordinates uterine contraction, which compress blood vessels and promotes homeostasis

During the first 1 to 2 postpartum hours, uterine contractions may decrease in intensity and become uncoordinated

Cont…

Exogenous oxytocin is usually administered immediately after expulsion of the placenta to maintain the uterus firm and contracted.

Mothers are encouraged to put the baby to breast immediately after birth to stimulate the release of oxytocin.

Cont…

Afterpains

-Are uncomfortable cramping that persist throughout the early puerperium

-Afterpains are more noticeable after births in which the uterus was greatly distended (e.g., large baby, multifetal gestation)

-Breastfeeding and exogenous oxytocin cause these afterpains to intensify.

Cont…

Placental site

-Immediately after the expulsion of the placenta and membranes, vascular constriction and thrombosis cause the placental site to be reduced to an irregular nodular and elevated area.

cont…

Upward growth of endometrium causes the sloughing of necrotic tissues and prevents scar formation.

Endometrial regeneration is completed by postpartum day 16, except the placental site is not completely healed until 6 weeks after birth.

Cont…

Lochia

-It is the uterine discharge that occurs after birth.

Lochia is initially bright red changing later to a pinkish red or reddish brown

-For the first 2 hours after birth the amount of lochia should be about that of a heavy menstrual period, after that time the lochial flow should steadily decrease.

Cont…

Lochia passes through 3 stages:-

1-lochia rubra:-it consists of blood, decidual and trophoplastic debris

It lasts 3-4 days after childbirth

.

2-lochia serosa:-it consists of old blood, serum, leukocytes, and tissue debris. the flow becomes pink or brown.

It is expelled day 4-9 postpartum

Cont...

3-lochia alba:-it consists of leukocytes, decidua, epithelial cells, mucus, and bacteria. it is yellow to white in color.

Lochia alba may continue to drain for up to and beyond 6 weeks after childbirth.

The amount of lochia usually increases with emptying the bladder, ambulation and breastfeeding.

Cont…

Persistence of lochia rubra early in the postpartum period suggests continued bleeding as a result of retained fragments of the placenta or membranes.

The other common source of vaginal bleeding is vaginal or cervical laceration.

Cont…

Nonlochial bleeding	Lochial bleeding
Bloody discharge spurts from the vagina The amount of bleeding continues to be excessive and bright red	Lochia usually trickles from the vaginal opening, the steady flow is greater as the uterus contracts A gush of lochia may result as the uterus is massaged

Cont…

Cervix

-It is soft immediately after birth

-The cervix up to the lower uterine segment remains edematous, and thin for several days after birth.

The cervical os which is dilated to 10cm during labor closes gradually, it may still possible to introduce 2 fingers into cervical os for the first 4-6 postpartum days.

Cont…

The external cervical os never regains its prepregnancy appearance, it is no longer shaped like a fish mouth.

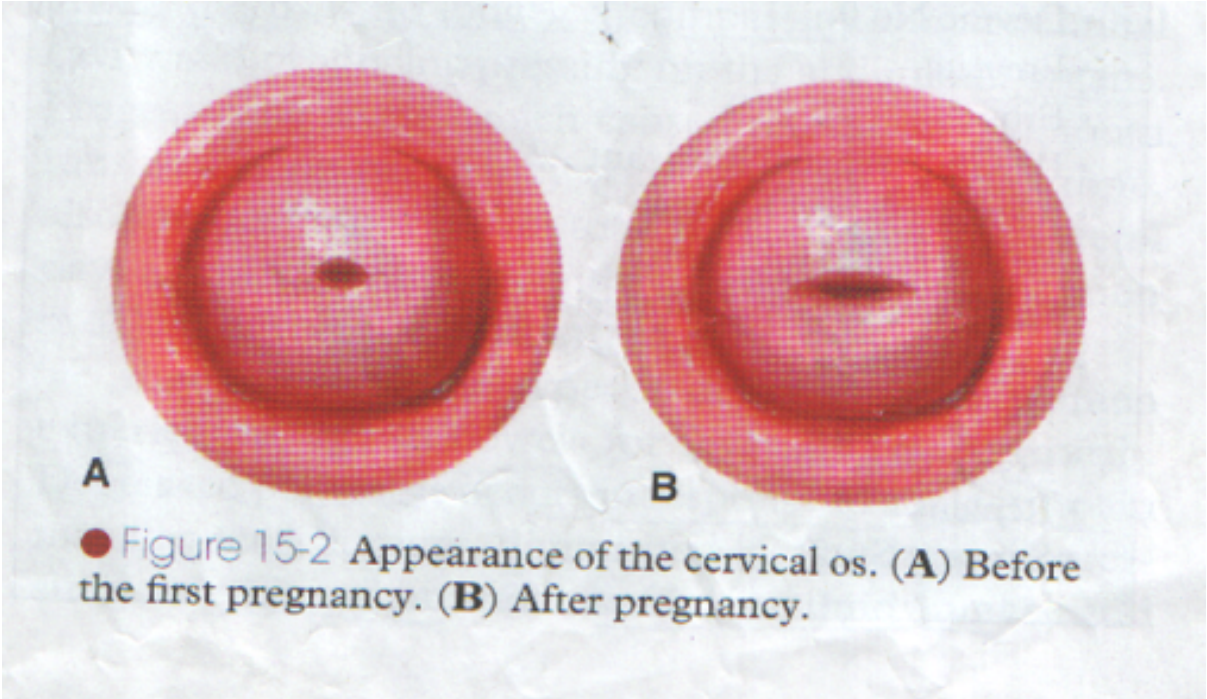


Figure 15-2 Appearance of the cervical os. (**A**) Before the first pregnancy. (**B**) After pregnancy.

Cont…

Vagina and perineum

-The greatly distended, smooth walled vagina gradually returns to its prepregnancy size by 6-10 weeks after childbirth.

-The mucosa remains atrophic in lactating woman at least until menstruation begins again.

-Thickening of vaginal mucosa occurs with the return of ovarian function.

Cont…

-The reduced estrogen levels also responsible for causing a decreased amount of vaginal lubrication, so localized dryness and dyspareunia may persist until ovarian function returns and menstruation
resumes.

-Initially the introitus is erythematous and edematous especially in the area of the episiotomy or laceration repair.

Cont…

- If episiotomy and laceration have been carefully repaired, hematomas are prevented or treated early.
- usually healing should occur within 2-3 weeks

- Hemorrhoids usually decrease in size within 6 weeks of childbirth.

Cont…

Pelvic muscular support

The supporting structure of the uterus and vagina may be injured during childbirth.

The supportive tissues of the pelvic floor that are torn or stretched during childbirth may require up to 6 months to regain tone

Women are encouraged to do kigel exercises after birth to strengthen perineal muscles and promote healing

Endocrine system

Placental hormones

Expulsion of the placenta results in dramatic decreases of hormones produced by placenta.

The placental enzyme insulinaze causes the diabetogenic effects of pregnancy to be reversed, resulting in significantly lower blood sugar levels in the immediate postpartum period

Cont…

- Estrogen and progesterone levels decrease markedly after expulsion of the placenta, reaching their lowest levels 1 week into the postpartum period.

2- Decreased estrogen level associated with; breast engorgement, and diuresis of excess extracellular fluid that has accumulated during pregnancy.

Cont…

-The estrogen levels in nonlactating women begin to increase by 2 weeks after birth, and higher by postpartum day 17.

Pituitary hormones and ovarian function:-

-Lactating and nonlactating women differ in the time of the first ovulation.

-The persistence of elevated serum prolactin levels in breast feeding women appears to the responsible for suppressing ovulation

Cont…

-In women who breast feed, prolactin levels remain elevated into the sixth week after birth.

Serum prolactin levels are influenced by the frequency of breastfeeding, the duration of each feeding, and the degree to which supplementary feedings are used.

Prolactin levels decline in nonlactating women, reaching the prepregnant range by third week

About 70% of nonlactating women resume menstruation by 3 months after birth.

Cont…

-The mean time to ovulation in women breast feed is about 6 months.

-The resumption of ovulation and the return of menses in lactating women are determined by breastfeeding patterns.

-The first menstrual flow after childbirth is usually heavier than normal, within 3-4 cycles, the amount of menstrual flow returned to woman’s prepregnant volume

abdomen

-Abdominal muscles protrude during the first days after birth.

-During the first 2 weeks after birth the abdominal wall is relaxed and it takes approximately 6 weeks to return almost to its nonpregnant state

-The skin regains most of its previous elasticity, but some striae may present

-The return of muscle tone depends on previous tone, proper exercise, and the amount of adipose tissue.

Urinary system

The diminishing steroids levels after birth may explain the reduced renal function that occurs during the pueperium.

Urine components

BUN level increases during pueperium as autolysis of the involuting uterus occurs. This breakdown of excess protein in the uterine muscle cells results in a mild (+1)proteinurea for 1-2 days after childbirth

Cont…

Postpartal diuresis

-Within 12 hours of birth, women begin to lose the excess tissue fluid that has accumulated during pregnancy.

-One mechanism responsible for reducing these retained fluids is the profuse diaphoresis that often occurs for the first 2-3 days after childbirth

-The fluid loss through increased urinary output accounts for weight loss of approximately 2.25kg during the puerperium

Cont…

Urethra and bladder

If trauma to the urethra and bladder occur during the birth process, the bladder wall becomes hyperemic and edematous, often with small areas of hemorrhage.

Birth-induced trauma increased bladder capacity and the effects of conduction anesthesia combine to cause a decrease in the urge to void. In addition to pelvic soreness from the forces of labor, vaginal laceration, or an episiotomy which may reduce the voiding reflex.

Cont…

-Decreased voiding, along with postpartal diuresis may result in bladder distention.

-Distended bladder pushes the uterus up and to the side and this prevents the uterus from firmly contracting which may cause excessive bleeding.

-Bladder tone is usually restored 5-7days after childbirth .

Gastrointestinal system

Appetite

The mother is usually hungry shortly after giving birth.

Bowel evacuation

A spontaneous bowel evacuation may be delayed until 2-3 days after childbirth. This can be explained by decreased muscle tone of the intestines during labor and the immediate puerperium, prelabor diarrhea, lack of food, or dehydration

GI/hepatic function

-GI tone and motility decreases in the early postpartum period, commonly causing constipation.

-Normal bowel function returns approximately 2 to 3 days postpartum.

-Liver function returns to normal approximately 10 to 14 days postpartum.

-Gall bladder contractility increases to normal, allowing for expulsion of small gallstones

Breasts

Breastfeeding mothers

Before lactation begins the breast feel soft and yellowish fluid (colostrums) can be expressed from the nipple .

After lactation the breast feel warm and firm. Tenderness may persist for about 48 hours after the start of lactation.

The nipples are examined for erectility and signs of irritation such as cracks, blisters.

Cont...

Nonbreastfeeding mothers

-Prolactin levels decline rapidly, colostrum is expressed for the first few days after childbirth.

-On the third or fourth postpartum day engorgement may occur; the breasts become distended, firm, tender, and warm to touch.

-Engorgement resolves spontaneously, and discomfort usually decreases within 24 to 36 hours

-A tight bra, icepacks, or mild analgesics may be used to relieve discomfort

Cardiovascular function

Most dramatic changes occur in this system

Cardiac output decreases rapidly and returns to normal by 2 to 3 weeks postpartum

Hematocrit increases and increased red blood cell (RBC) production stops

Leukocytosis with increased white blood cells (WBCs) common during the first postpartum week.

Cardiovascular system

Blood volume

The blood volume which increase during pregnancy is eliminated within the first 2 weeks after birth, with return to nonpregnant values by 6 weeks postpartum.

Cont…

Cardiac output

Immediately after the birth, the pulse rate, stroke volume and cardiac output remain elevated or increase for 30 to 60 minutes as the blood that shunted through uteroplacental circuit suddenly returns to the maternal systemic venous circulation

Cont…

Vital signs

-Temperature, may increase to 38c during first 24 hours as a result of dehydration.

After 24 hours the woman should be afebrile

-Respiratory function returns to nonpregnant state by 6-8 weeks after birth.

-A small transient increase in both systolic and diastolic blood pressure lasting about 4 days after birth

Cont…

-Pulse, it returns to nonpregnant rate by 8-10 weeks after childbirth.

-Hematocrit and hemoglobin, they increased in level by the seventh day afterbirth.

-WBCs, they increased in values of between 20.000 and 25.000/mm,during the first 10-12 days after childbirth

Blood and fluid changes

- Marked leukocytosis and thrombocytosis occur during and after labor.
- The leukocyte count sometimes reaches 30,000L, with the increase.
- There is also a relative lymphoctytopenia and an absolute eosinopenia.
- Normally, during the first few postpartum days, hemoglobin concentration and hematocrit fluctuate moderately.
- If they fall much below the levels present just prior to labor, a considerable amount of blood has been lost.
- By 1 week after delivery, the blood volume has returned nearly to its non-pregnant level.

Respiratory Function

-Returns to normal by approximately 6 to 8 weeks postpartum

-Basal metabolic rate increases for 7 to 14 days postpartum, secondary to mild anemia, lactation, and psychological changes

Neurological Function

Discomfort and fatigue are common.

After-pains and discomfort from the delivery, lacerations, episiotomy, and muscle aches are common

Frontal and bilateral headaches are common and are caused by fluid shifts in the first week postpartum

Neurological system

The elimination of physiologic edema through the diuresis that occurs after childbirth relieves carpal tunnel syndrome by easing the compression of the median nerve.

Musculoskeletal function

-Generalized fatigue and weakness is common

-Decreased abdominal tone is common

-Diastasis recti abdominis heals and resolves by the 4th to 6th week postpartum.

-Until healing is complete, abdominal exercises are contraindicated

Integumentary system

Chloasma of pregnancy usually disappears at the end of pregnancy.

- Hyperpigmentation of the darken of the areola and linea nigra may not regress completely after childbirth, and it may be permanent in some women.

Cont…

- Stretch marks on breasts, abdomen, hips, and thighs may fade but usually do not disappear
- Hair growth slows during postpartum period, and some women may actually experience hair loss.

Integumentary System: Stretch marks

[striae gravidarum] appear reddened on

abdomen. Fade by 3-6 months;

Pearly white marks may remain in lighter

skinned women & darker marks in darker skinned pts.

- Modified sit-ups strengthen abdomen

Immune system

No significant changes occur during pp

Weight Loss:

- Average wt. loss 5.5kgs. [infant & placenta]
- 2.5kgs- diuresis & diaphoresis in wk. that follows.
- Lochial flow - 900-1300g.
- Total = approx. 8.5-10kgs. {depends on total wt. gain}
- At 6 wks. weight may still be above pre-preg. weight.

Return of Menses: > delivery FSH levels rise causing ovulation

- No Breastfeeding.- menses resumes ~ 6 wks.
- Lactation delays menses for several months (6 months)

PSYCHOLOGICAL CHANGES OF POST PARTUM PERIOD: ADJUSTMENTS

Taking-In Phase:

- time of reflection for client regarding new role
- may be passive or excited
- talks at length about birth experience
- on phone with family/friends recounting birth experience.
- Usually lasts 1-2 days.
- Delayed d/t pain r/t vaginal or C/S.

Taking-Hold Phase:

- woman makes own decisions regarding self & infant care.
- Usually day 2 - 3. Occur on day 1 esp. if woman is multip.
- Can occur later, depends on recovery process or cultural beliefs.

Letting Go Phase:

- Woman gives up fantasy image of baby and accepts real child.
- Occurs within few weeks of getting home
- Needs time to adjust to new experience.

Bonding:

- Expressing maternal love & attachment toward new baby. Develops gradually.
- **Enface position**: close eye contact with infant.
- Healthy bonding - kissing, touching, counting fingers & toes, etc.

- Factors Interfering with Bonding: difficult labor, separation @ birth (NICU)

Other Maternal Feelings of Post Partum Period

- Abandonment: feelings that occur following birth of child; woman no longer center of attention.
- Disappointment: infant does not meet expectations of mother/father. Eg. eye color; sex .
- Post Partum Blues: due to normal hormonal changes; Drop in estrogen/ progesterone; lasts 1st few days of Post Partum period. Occurs in 50% of women

Development of Parental Love & Positive Family Relationships:

- Rooming In: most hospitals offer this; infant stays in room with mom 24hrs. (partial or complete)
- Sibling Visitation: encourage siblings to visit to promote family togetherness

LACTATION & BREAST FEEDING

- Lactation starts regardless if the mother is breastfeeding or not. This is entirely up to mother and she must feel comfortable doing so.

Advantages to Breast Feeding:

- Promotes bonding between mother & baby.
- High nutritional value for infant.
- Promotes uterine involution thru release of oxytocin from posterior pituitary.
- Reduces cost of feeding & preparation time.

Contraindications to Breast Feeding:

- Mom receiving meds not appropriate for Breast feeding. E.g. Lithium
- Exposure to radioactive compounds e.g. thyroid testing; pump & dump breast milk x 48 hrs. Flush in toilet.
- Breast Cancer; HIV

Physiology of Lactation

Body prepares for lactation during pregnancy; stores fat & nutrients; provide energy, vitamins, minerals in breast milk.

- Early pregnancy, estrogen (placenta) stimulates growth of milk glands & size of breasts.
- Colostrum: middle of pregnancy & day 1-3 Postpartum period Thin, watery pre-lactation secretion. Rich in antibodies; passes to baby in 1-3 days.
- Breasts begin to get tender; fill up with milk.

Breast milk by 3rd to 4th day in response to:

- falling levels of estrogen & progesterone > delivery of placenta.
- increased production of prolactin by anterior pituitary
- Milk ducts become distended & fluid turns bluish-white

Physiology cont.

- **Infant suckling** on breast produces more prolactin, which in turn stimulates more milk production.
- Finally, **oxytocin** released > delivery of placenta causing mammary glands to send milk to nipples [let down reflex].
- Progesterone levels drop after delivery which leads to ↑ milk production.

Anatomy of Lactation

C**olostrum contains:** protein, sugar, fat, water, minerals, vitamins, maternal antibodies.

- Provides total nutrition for infant
- Transitional breast milk by 3 – 4th day.
- Mature breast milk by 10th day.
- Each breast - 15-20 lobes of glandular tissue -alveoli.
- Acinar or alveolar cells of glands form milk.
- Each alveolus ends in a ductule.
- Each alveoli produces milk, ejects it into ductules i.e let down reflex; milk transported to lactiferous sinus and ejected into infant’s mouth.

F**oremilk:** constantly accumulating.

“Let-down reflex” –lets foremilk be available right away.

- Triggered by sound of baby crying

Hind milk: forms after let-down reflex. Has most calories;

Feed until breast empty.

Breast Milk: Provides complete nutrition for 1st 6 mos of life.

- > 6 months, iron-fortified cereal.
- Breast milk easier to digest than formula.
- Iron in breast milk absorbed better than iron in formula.

Supply & Demand Response - Every time woman breast feeds, more prolactin produced which thenincreases the milk production.

Time Interval to increase milk volume. It takes approx. 30-60 min. to fill up breast after nursing.

Breast complications

Engorgement : this is congestion in the breast on 3rd - 4th day after establishment of lactation. The breasts are hard, painful to touch.

Management –warm compression, advice the mother to BF frequently, or express the milk manually. Use the nursing bra to relieve pain and give analgesics where necessary.

Sore/Cracked/Bleeding Nipples

- Common - from improper attachment and positioning of the baby during breast feeding.

Management

- Rest the nipple; apply lanolin ointment prn.
- Apply tea bag [tanic acid] natural healing property.
- Proper positioning and attachment of the infant to the breast.

Sings a of good positioning of the baby on the breast

- infant head and body straight
- Infant facing the mother with nose opposite the nipple
- Infant body close to the mothers body
- Mother supporting infants whole body an neck and shoulder.

Attachment of the baby on the breast

- Touch the babies upper lip with your nipple
- Wait until the babies mouth is open wide
- Move the baby quickly into your breast, aiming the babies lower lip well below the nipple.

Sings of effective suckling

- Slow deep sucks,sometimes pausing
- Chicks round when suckling
- Baby release breast when milk is finished or satisfied
- Mother feels relaxed

Mastitis –

- “inflammation”; milk duct/gland becomes infected. Poss. antibiotic therapy. Manual expression, continue to breast feed, frequent warm compresses.
- Infective type
- Predsposing factors to infective mastitis

Caused by micro organisms

Infected baby eyes,mouth,

Cracked nipples

Mestastasise of micro organism in milk, inadequet empting of the breast

cont

- Sick baby not able to empty the breast
- Breast engogement

Sings and symptoms

- Raise in body temp to 40oc
- Rapid pulse rate
- Thrombing breast pain
- Breast tenderness
- On exam breast appears welged shaped indurated reddened.
- Sever rigous and shivering.

Management of acute infective type

- If no pus give anagesics
- Express gently to reduce engogement
- Use firm bra
- Put on atibiotics ie amoxyl,ergometrine, or augumentine tabs
- Psychotherapy.

If the treatment fails it can lead to breast abscess.

Breast abscess

It is pus formation on the breast

The abscess is painful,redi n colour,tender axillary glands enlarged.

Mnx

Put the patient on atibiotics and strong analgesics

If the abscess is ripe do insincion and drainage/I$C

Emphasis on personal and the environmental hygiene.

H/educate on complete emptying of the breast.

Midwife care of the postpartum woman

It is the first 1-2 hours after birth is a crucial time for the mother and newborn.

Both not only are recovery from physical process of birth, but also are becoming acquainted with each other and with additional family members

Objectives of immediate postpartum care

The goal of immediate care is to arest any problem of the mother and prevent complication by dealing with the problem early.

- To provide individual care according to the individual need and not routeen.
- To provide for adeqaut rest which is stress free
- To indentify potential problem ie emotional, physical and give appropreat care.
- To have good communication amongest the family members concerning the care of the baby and the mother.
- To have good time for learning and have time for discussion with the mother.

Immediate care

- Check the uterine contractions .if the uterus is hard it means that the uterus is well contracted.
- If the uterus is boggy spongy fundus deviated to one side, a special care is to be given to this mother.
- Expel the blood clots for the uterus to contract well
- Ask the mother to breast feed the baby immediatly to assist in the uterine contraction.
- Assess the lochia to ensure that the mother has the correct blood lose.
- Advice her to pass urine .
- Check the birth canal and the cx for any tear, if any tear parck awaiting for suturing.

observations

- Take the vital signs of the mother ie TPR/BP if the BP is low with weak thready pulse rate these as sign of blood lose and know that the mother is going into shock.if low give the mother the intravenous fluids.
- Check the general codantion of the mother, if the mother is weak feed her with plenty of oral fluids eg porradge made with mixed things such as wimbi,sorgam, wheat groundnuts etc
- Advice the mother to take a balanced diet to facilatate recovery from the pregnancy state.

hygiene

- Hygiene is very important
- Wipe the vulva area before putting a pad .advice the mother on sitz bath in case of perineal tear or sutured episiotomy.
- Advice on the cleaning of the hards after visiting the toilet and changing the pad and before feeding the baby.
- Advice the mother to report any problem that may occur immediatery.
- Check the condition of the mother every four hours if the condition is poor check every 15 minutes
- Record the summary of 1st 2rd 3rd and the fourth stage.

Care in the postnatal ward

- Do daily Prn examination.
- Take TPR/BP , check general condition of the mother,breast,c/s scar involution of the uterus, condition of the episiotomy,lochia, haemoglobine and give folic acid if anemic.

Care on discharge

- Register the birth before discharge and give the mother birth notification form.
- Explain the mother the use and importance of birth notification card.
- Give the mother a discharge note writen what has been done to her.
- Immunize the baby with the BCG and the birth OPV
- Advice the mother to come back to the hospital for the postnatal clinic at 6 weeks and for the baby immunization and growth monitoring clinic.

cont

- Teach the mother about infection prenvetion
- Check if she has varicos vain,calf muscles or DVT
- Advice the mother on excersise to increase lochia drainage.
- Teach the mother on breast care proper attachment and positioning of the baby on breast.
- Remid her on the use of the balanced diet and use of food rich in iron
- Discharge home with a return date after 6wks

Minor complaints during puerperium and there management

minor complications

- **Perineum sore** –The **Mnxt** is to maintain hygiene of the perineum by cleaning with zitsh bath avoid dirt contamination of the perineum and if tear is not sutured you suture and give mild analgesics.
- **Stress incontinence** - This is where the mother is not able to control bladder due to lose of bladder muscle tone as a result of birth trauma.**Mnxt** - encourage the mother to pass urine frequently and take a lot of fluids . You can put the mother catheter till she is recovered.
- **Haemorrhoids** – dilated veins as a result of constipation (passage of hard stool)

Mnxt – advice the mother to take a plenty of fluids if they do not clear the mother is taken for haemorrhoidectomy.

Minor complications

Backache:

- This may persist after the birth and affects approx. a quarter of women
- Pain may be considerable and last for several months.

Third day blues': on days 3-5, a large proportion of women become temporarily sad and emotional;

- approximately 10% of women suffer from **postnatal depression** which may present at any time during the first year after delivery.
- The precise cause of this is unknown and may involve hormonal changes, and doubts by the mother about her ability to care for the child.
- Management consists of talking to the mother and explaining what is happening.

Post-Natal care

Aims of Postnatal care:

Postnatal care visit:

- *The immediate postpartum care* during the first 6-24 hours after delivery needs to be viewed as part of care during delivery.
- The recommended visits at the 2nd, 4th, 6th, 14th, 21st, and 40th day after delivery.
- The least number of visits is **3 visits** at: 6hours, 6days and 6 weeks to meet the needs of the mother and newborn.

Components of post-natal care

1- History:

a) Any complications during pregnancy or labour.

b) Any abnormal symptoms or signs of complications,(hemorrhage, infections and eclampsia):

- Vaginal bleeding, normally it is blood in the few days after delivery, later it becomes brownish then pink, and it becomes colorless only by 24th day.
- Bad smelling vaginal discharge.
- Pain or tenderness in the abdomen or breast.
- Fever.

c) Diet: What she is eating.

2- physical examination:

The Mother

- Measuring temperature, blood pressure…
- **Abdomen** for swelling, distended bladder, for cesarean incision and for determining the size and firmness (involution) of the uterus.
- **Perineum** for swelling, discharge, tears & episiotomies.

NB No vaginal examination should be performed early in puerperium except when it is absolutely indicated.

- **breast** for cracked nipples, engorgement or abscess.
- **Leg** for thrombosis.
- Checking for signs of anemia.

The newborn for vital signs, umbilical stump, suckling power, respiratory distress (cyanosis), tremors, convulsion and jaundice. Ask about vomiting, constipation or anuria.

3- Give the proper treatment if needed, give 200 000 IU of vitamin A orally & iron

4- Refer the post-partum cases requiring special treatment.

5- Record the finding on the maternal card.

6- Health education.

- The key messages that should be covered are the followings:

1- Avoid puerperal infection:

Personal hygiene particularly that after urination and defecation

No person with any upper respiratory tract infection or hand infection should be attending during exposure of the genitalia.

2- Care for the episiotomy or first degree perineal tear:

The woman has to be trained to clean the wound daily in the morning and each time after she passes any urine or stools using warm water and soap.

3- Sleep and rest:

The mother should have periods of rest

Gradual return to household duties is advisable starting by the end of the fist week. She should avoid any strenuous activity for about 4 weeks.

4- Diet

She should be aware that all her nutritional needs are increased during the first six months of lactation together with fluid intake &iron supplementation.

5- Advice and counseling on breastfeeding:

The woman should be instructed about:

1. Advantages of breast feeding
2. Importance of early initiation of breast feeding (within ½ -1 hr)
3. Encourage breast feeding on demands.
4. Personal hygiene after feeding. Only water is recommended for washing nipples and allowed to dry in air after feeding and then covered with clean pads. Drying agents as boric acid & alcohol must be avoided.

6- Psychological changes:

The postpartum woman may show normally minor psychological instability as mood swing, and body image changes. It is important for the woman and her husband to understand these changes

7- Postnatal exercises:

These exercises should be continued for a minimum of six weeks to help normal involution of muscles, organs and sphincters. These include respiratory exercises, ankle muscle exercises, pelvic muscle strengthening and squatting

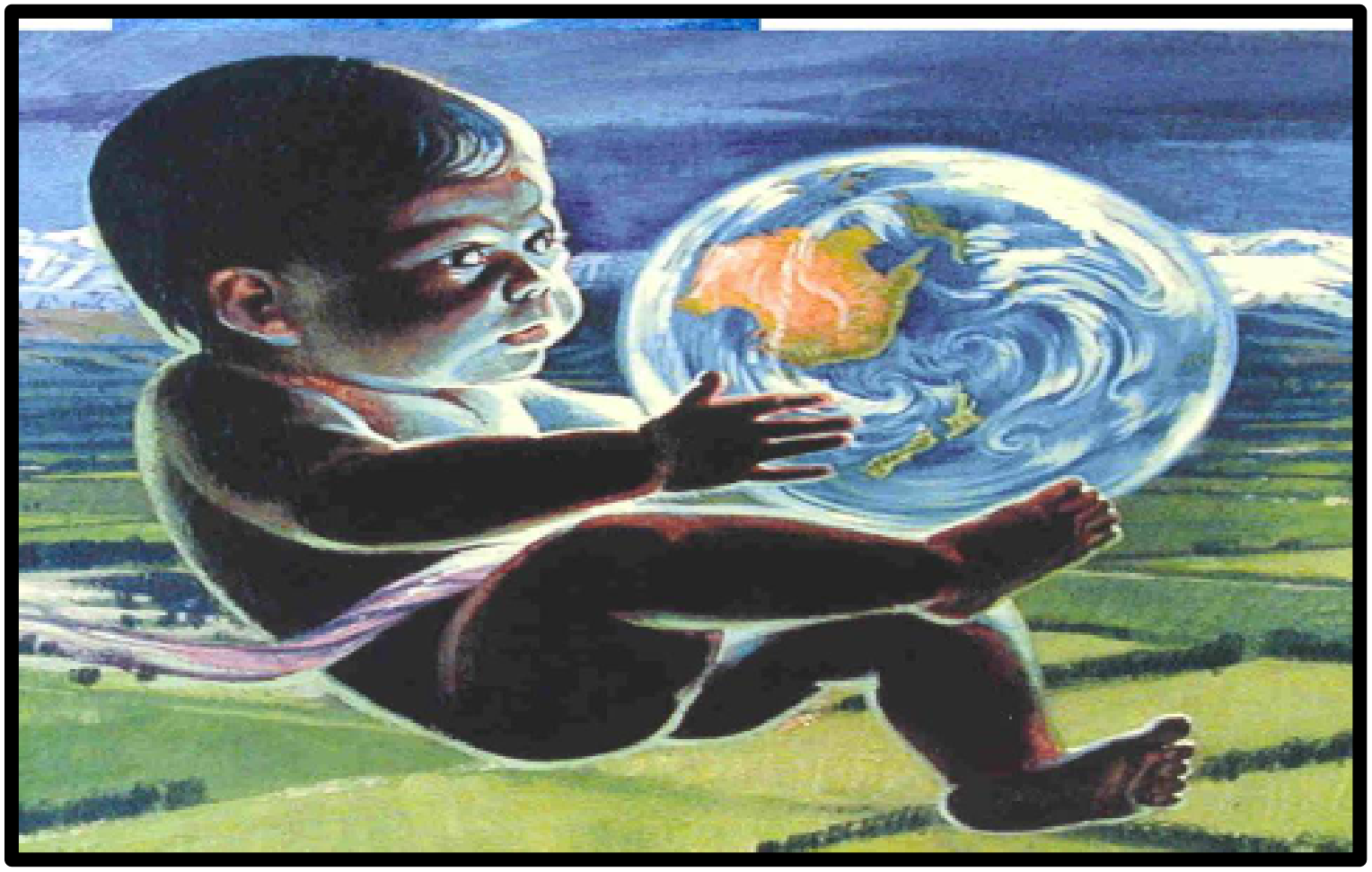
summary

-Postpartum physiologic changes allow the woman to tolerate considerable blood loss at birth

-The uterus involutes rapidly after birth returning to true pelvis within 2 weeks

-The rapid decrease in estrogen and progesterone levels after the expulsion of the placenta is responsible for triggering many of anatomic and physiologic changes in postpartum

THE NEONATE



Physiology of the Newborn

- Knowledge on the physiology of a newborn is necessary to ensure appropriate care of the neonate
- Immediately at birth, there are three main adjustments that take place involving the lungs, the cardiovascular system and the temperature regulating centre to allow for the independent existence of the newborn baby.

1. Changes in the Lungs

- The onset of respiration in a newborn confirms life. The start of pulmonary respiration is due to physiological and mechanical reasons. Lack of oxygen and high levels of carbon dioxide in the circulation occur when placental circulation ceases. This stimulates the respiratory centre in the medulla to initiate normal respiration.

- Mechanically, respiration is stimulated when the chest wall, which was compressed during the passage of the baby in the birth canal, allows the fluid to drain from the lungs. Consequently, the cool air on the baby's face and handling during birth will stimulate the baby to cry as soon as they are born. After the baby takes in their first breath, the blood vessels in the lungs expand to initiate respiration.
- At first the baby's breathing may be rapid and irregular. It is mainly abnormal at a rate of 40 - 50 respirations per minute.

2. Circulatory Changes

- Foetal type of circulation ceases as the respiration commences
- Normal circulation starts when the temporary structures stop functioning
- As the placental circulation ceases soon after birth when the umbilical cord is ligated, the blood flow to the right side of the heart decreases and the blood on the left side increases causing the foreman ovale to close.
- With the establishment of pulmonary respiration, the ductus arteries close. Complete closure happens within eight to ten hours of birth.
- The cessation of placental circulation will result in the collapse and subsequently drying of the umbilical veins, the ductus venosus and the hypogastric arteries.

3. Thermo (Heat) Regulation

- The neonate leaves a thermo constant environment of 37.1 degrees Celsius, where they have survived for nine months and enters a much cooler atmosphere at delivery. This affects the neonate in various ways.
- Firstly, heat regulation in the neonate is poor because of their inefficient heat regulating centre. The subcutaneous fat layer of the neonate is thin and provides poor insulation, allowing the transfer of core heat to the environment and also cooling of the baby's blood

- In addition to evaporation, further heat will be lost by conduction when the baby is in contact with cold surfaces, by radiation to cold objects in the environment and by convection caused by currents of cool air passing over the surface of their body.
- Incidences of the latter may be substantially increased by air conditioning systems in some of our modern delivery rooms. Since the neonate’s temperature regulating centres are not very efficient, there is a risk of either overheating or chilling.

Other Physiological Changes In a Newborn

4. Liver Function

- Physiological jaundice is usually seen in 50% of normal neonates from the third to the sixth day of life. This is due to excessive break down of red blood cells resulting from a high haemoglobin level (Hb of 14 - 18mgs/100mls).
- The process of breaking down red blood cells leads to formation of bilirubin. The liver is not able to conjugate the excess bilirubin to enable its secretion through the kidneys. This leads to jaundice. You will see more details on conjugation later in this section.

5. Digestion

- The neonate is capable of passing the first stool, known as meconium, within the first two to three days of life. This is because the foetus swallows liquor amnii in utero. Thus, their sucking and swallowing reflexes are usually present at birth.
- The colour of the meconium is dark greenish and later changes to a mustard (yellowish) colour. The bowels may be opened three to five times daily.

6. Weight

- The average normal birth weight ranges from 2.5 - 3.5 kilograms. During the first three days of life, the baby loses approximately 10 - 20% of their birth weight but regains it again within one to two weeks.

possible reasons for weight loss in a newborn

- Due to tissue fluid loss during the heat loss when the baby is born
- When the baby opens their bowels, the meconium which was present in the gut is lost, leading to weight reduction
- Poor sucking on the breast due to tiredness incurred during the baby's passage through the birth canal during labour will affect the baby's weight since they are not getting enough fluid intake

7. Skin

- The skin of a newborn is covered with vernix caseosa in utero to protect and help retain heat and also act as a lubricant during delivery.
- The sebaceous glands cease to produce vernix after birth, which may lead to dryness of the skin. The vernix caseosa will peel off within three days of delivery if left alone. There is also plenty of fine hair (lanugo) on the skin which falls off in the first month of life.

The neonate

Care of a Newborn

- Neonatal care is designed to provide an environment conducive to the well being of the baby and to prevent complications.
- As a midwife, you should realise that the neonatal period is a very hazardous period. Statistics show that two thirds of infantile deaths occur in the neonatal period. More than half of these deaths occur in the first 48 hours and three quarters in the first week of life.
- Therefore, the midwife's responsibility is to minimise these deaths through efficient management of the infant.

Immediate Care of a Newborn

Clearing the airway

- During the delivery of the baby's head, excess mucus may be wiped gently from the mouth.
- Immediately the baby is born, they should be held slanting with the head at a lower angle for a short period to allow drainage of mucus and liquor amnii, which may have been swallowed.
- The baby is stimulated to cry in order to take its first breath.

Immediate care ct...d

Clamping and cutting of the cord

- The baby is laid across the mother's abdomen as the cord is clamped, ligated and cut. The timing of the clamping of the cord is not crucial unless asphyxia, prematurity, HIV or rhesus incompatibility is present.

Provision of warmth

- Wrap the baby with a towel and place them in a warm cot with their head to one side. All doors and windows should be closed and all equipment should be warmed

Immediate care cont…d

identification

- Ensure that the baby has an identification wristlet, which should be put on before the baby leaves the delivery couch/bed.

Weighing and 1st examination

- It can be done immediately or be delayed depending on the hospital policy. Sometimes let the infant rest then weigh and examine the baby after one hour

Immediate care cont…d

Assessment of the newborn

- Assessment of the newborn is done by scoring at one minute after birth. Repeat at five minutes and then ten minutes. This is known as the APGAR score
- Five vital signs are observed and recorded they are: heart rate, respiratory effort, muscle tone, reflex response, and colour. Each is given a score of 0, 1 or 2 points.
- Each vital sign is represented by a letter, forming the word APGAR that is:
- A = Appearance A = Activity P = Pulse or apex beat R = Respiration G = Grimace

Apgar score table

Sign	Score 0	Score 1	Score 2
Appearance	Blue, pale	Body pink, extremities bluish	Pink all over
Pulse/heart rate	Absent	< 100/min	> 100/min
Grimace	None	Grimace	Cry
Activity	Limb	Some flexion	Spontaneous movements
Respiration	Absent	Hypoventilation/gasping	Vigorous crying

Apgar score……..

- A normal baby has an APGAR score of ten at one minute and ten at five minutes. A score between seven and ten is considered to be normal. Approximately 70% of newborns score seven or better.
- ***Remember: A score at five minutes gives a more accurate prediction regarding survival. A low score at five minutes is, therefore, more serious than a low score at one minute after birth. Notify paediatrician if score is six or below at five minutes***

Subsequent Care

Subsequent Care

The principles of management of the neonate include:

- Maintenance of the established respiration
- Provision of nutrition
- Prevention from infection
- Provision of warmth
- Protection from injury
- Assessment of the progress of the baby
- Education of the mother as to the further care and management of the baby

Subsequent care ……

1. **Maintenance of the Established Respiration**
   - A normal baby should continue to breathe and maintain a good skin colour without medical intervention.
   - A baby who tends to produce a lot of mucus should be closely watched and the airway cleared frequently, because this may tend to interfere with breathing by blocking the airway. The head of the cot should also be lowered in such circumstances. Measures should be taken to avoid suffocation from the pillow, clothes covering the baby or mother lying over the baby.
   -

2. Provision of Nutrition

- Breast feeding is an accepted and ideal means of providing nutrition to a neonate. The neonate should be put on the breast immediately, as long as their condition allows this. Demand feeding (baby led breast feeding) is ideal and should be advocated. Encourage the mother to breast feed exclusively in order to avoid the need for the addition of other fluids. The mother's milk has adequate water to meet the needs of the infant. Therefore, there is no need to give the baby additional fluids (contrary to the belief of some mothers that babies require water).
- To ensure that the baby gets both fore and hind milk, the mother needs to breast feed the baby on one breast until completely empty.

3. Provision of Warmth

- The baby should be kept at a comfortable temperature. Care should be taken not to overheat the baby, as is sometimes the habit of mothers.
- Mothers in the tropics, for instance, often tend to overdress the neonates. Mothers should be taught about appropriate clothing for varied climates. They should dress the baby according to the change of environmental temperature.
- Baby wraps should be loose enough to allow for free movement of the legs and arms.
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4.Protection from Injury and Infection

- Injuries may be inflicted by the long nails of the mother, midwife, the baby itself, or sharp instruments, for example, the safety pin used to secure nappies. Injuries from falls, scalding and burns are not unusual.
- The midwife should instruct the mother on how to handle her baby, and teach her how to wrap napkins without using safety pins. She should also be instructed to keep her nails short.

5. Prevention from Infection

- Infection, especially cross infection, can be minimised by encouraging mothers to handle their own babies. Anybody in contact with the child should be encouraged to wash their hands before handling the baby.
- Visitors should be controlled, especially in a lying in ward. This helps control infection. Midwives or other attendants with a cold or infections foci, should not work with babies. Immunisation should be administered to protect the neonate from certain preventable diseases. BCG and oral polio should be given within the first 24hrs after delivery

Infection prevention …….

- The cord should then be observed more closely.
- The cord is best left exposed and mothers should be advised not to use any remedies on the cord since it predisposes to infection. The midwife should discourage mothers from touching the cord.
- When the dry cord breaks off, it may leave a raw area. This should be cleaned with spirit and dressed with 1% Gentian violet. Use spirit because it leaves the site dry. Other antiseptics leave the place damp, making it ideal for the multiplication of micro-organisms.
- ***Remember: If the cord fails to drop off by the sixth day, it may mean that there is an infection.***

6. Skin Care

- The neonate’s skin is fragile and easily bruised. Therefore, irritants such as antiseptics, fabric softeners and starch are discouraged.
- Creased hard fabrics, stool and urine may interfere with the skin integrity. To prevent damage to the baby’s skin, liquid paraffin preparations may be used because they serve as good cleansers.
- ***Remember: You should report any abnormalities observed on the umbilical stump such as redness, unpleasant odour or bleeding because these are signs of infection.***

7. Assessment of Baby's Growth

- The midwife should be able to determine that the baby is healthy and thriving. A baby who is healthy and is growing is active, feeds well, is free from infection and gains weight steadily. In order to observe these, it is necessary to examine the baby thoroughly at least once a day during bath time.

The following daily observations should be recorded in order to determine the baby's health status:

- General appearance and activity
- Exclude any discharge from the eyes and ears which may be an indicator of infection
- The skin should be checked to detect the presence of jaundice, pallor or cyanosis, septic spots or sore buttocks
- Check the mouth to exclude oral thrush

Observations …..

- The umbilical cord should be examined to ensure that it is drying up and is not septic
- Weigh the baby to determine weight gain
- Other general care measures include:
- Observations, especially on respiration
- Feeding patterns
- Crying
- Urinary output
- Character of stool

Depending on what is observed, document and report to the doctor if necessary. In this way, abnormalities will be detected and corrective measures taken early enough.

8. Education of the Mother

Emphasis should be laid on the following:

- Personal hygiene and general cleanliness
- How to care for the baby (especially for the primigravidae)
- Exclusive breast feeding
- Attendance of post-natal clinic, family planning and infant welfare clinics
- Any other talk as necessary

Questions

Thank you!

- Baada ya dhiki faraja
- Baniani mbaya kiatu chake dawa
- Hapana marefu yasio na mwisho
- Kuagiza kufyekeza
- Kujikwa si kuanguka bali ni kwenda mbele
- Kula ujana uone tabu kumeza uzee

Thank you