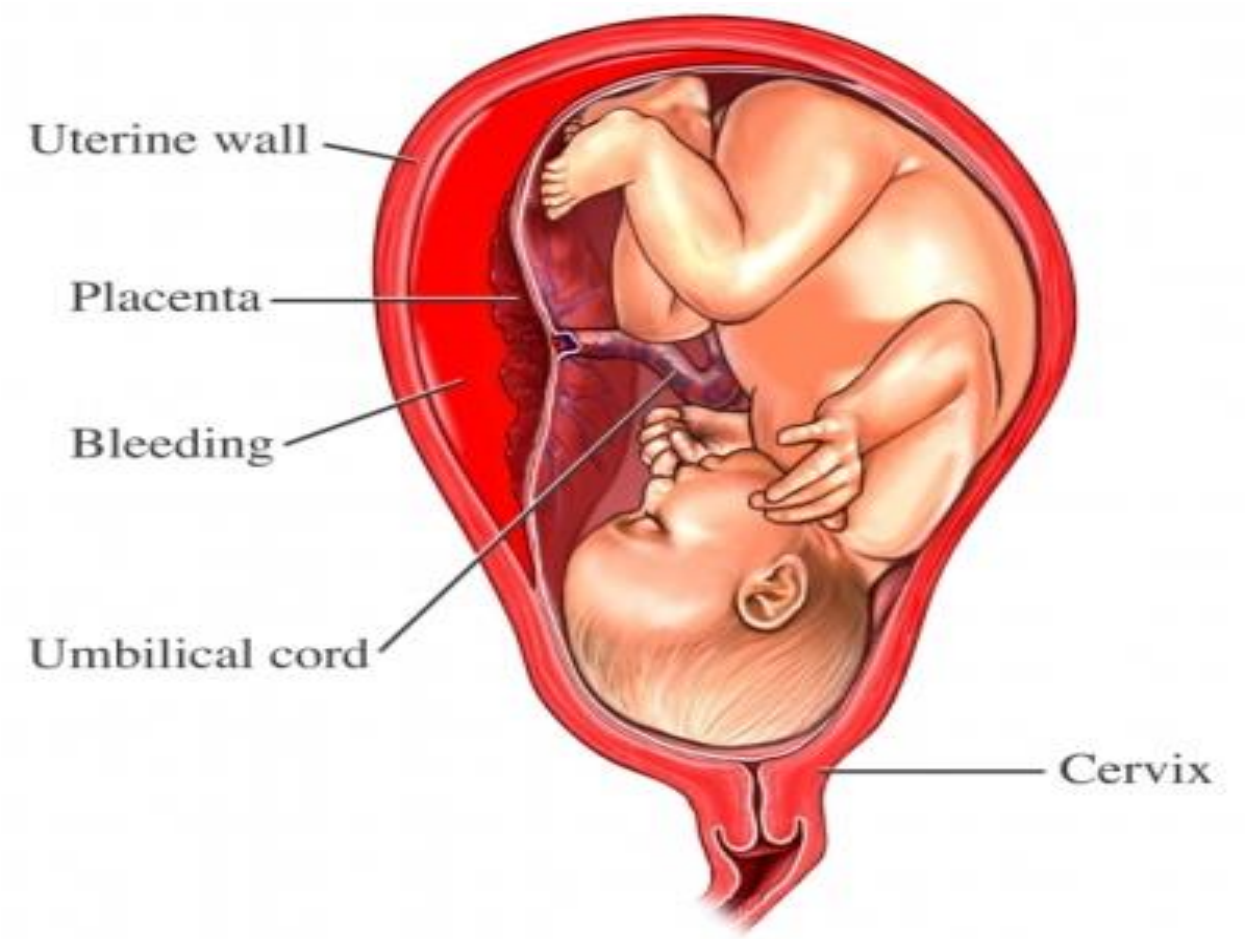
Maternal and Child Health Nursing Care
Part one (I)



Part one (I) Pregnancy, Labor

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Introduction

Effective education offers a balance of theoretical and practical experiences that allows students to develop the competencies necessary to enter a health care profession and to continue their professional development throughout their careers. The essential knowledge and practical skills required of students are outlined in this core curriculum. This document also provides guidance to faculties, departments, and faculty members implementing this curriculum.

The curriculum of each department outlines the knowledge that students will acquire and the practical skills that students will develop during their undergraduate education and internship. This core curriculum comprises approximately 80 percent of the department's entire curriculum. The remaining 20 percent is designed and implemented by the departments themselves, including the allocation of more time to specific topics and/or the addition of new topics to the curriculum.

This core curriculum is intended as a guide. Using it and adding to it, departments develop their complete curriculum to meet their departmental, faculty, local, and/or regional needs.

Maternal and gynecological care are two of the main strategic elements in addressing both the population problem and the maternal and perinatal mortality and morbidity problems. The contribution of nursing in these areas is indispensable on the primary, secondary, and tertiary levels. Maternity nurses' work encompasses the provision of care to women in a variety of settings, including antenatal, postnatal, gynecology, and family planning (FP) clinics, as well as in the intrapartum setting. Consequently, high-quality maternity and gynecologic care is mandatory to achieve improvements in the health of women and their newborns.

The goal of the maternity and gynecologic nursing curriculum is to equip the student nurse with the knowledge, skills, and attitudes necessary to provide care to the woman throughout her childbearing cycle

Curriculum Content

Core Competencies

- Anatomy and physiology of female & male reproductive system
- Assess the couple's RH during the pre-conceptual period
- Provide pre-conceptual care to couples
- Provide antenatal care to women during normal and abnormal pregnancy
- Provide care to women during normal and abnormal labor and childbirth
- Provide immediate care to the newborn
- Provide puerperal care to women during normal and abnormal puerperal period
- Provide FP care
- Provide gynecologic care

Perform the following obstetric and gynecologic technical skills:

- Perform antenatal patient history and examination
- Perform examination during labor
- Monitor labor using the partograph
- Perform postpartum examination/assessment
- Perform routine neonatal examination/assessment
- Prepare woman for various gynecologic examination and investigations

Topic Outline

	TOPICS	KNOWLEDGE	PRACTICE
1.	Anatomy and physiology of female & male reproductive system	3	5
2	Assess the couple's RH during the pre-conceptual period Pre-Conceptual Care	2	10*
3.	Care of the Woman during Pregnancy	18	70
4.	Care of the Woman during Labor and Childbirth	18	70
5.	Care of the Neonate	2	30**
6.	Care of the Woman during the Puerperium	10	70
7.	Family Planning	2	20
8.	Gynecologic Care of the Woman	5	25
	Total Hours	**60**	**300**

These topics are supported by medical courses in obstetrics and gynecology presented by the medical faculty.

- Practical training is not available at all sites; therefore, students will learn and practice skills in the skills practice lab when clinical practice with clients is not possible.
- The clinical setting for neonatal care will be the labor unit and the postnatal ward.
- Note that this topic outline constitutes the minimum requirements and represents 80 percent of the time allocated for the core curriculum. The remaining 20 percent of the time is left to each individual department to determine.

Implementation and evaluation methods

Implementing this curriculum within courses and clinical and field practice experiences at the department level will require careful planning. Most courses have both knowledge and practical components that work together to develop students' knowledge, skills, and attitudes. Most courses begin in the classroom with theoretical background and the introduction, demonstration, and practice of related concepts and skills. They may continue in a simulated environment, such as a skills practice lab, where students continue to develop knowledge, skills, and attitudes. Finally, courses provide opportunities to practice key skills and demonstrate key attitudes in a supervised clinical or field setting.

The faculty can implement this curriculum by developing a course syllabus, teaching the topics using a variety of interactive teaching methods, providing opportunities for students to practice skills in simulated and real settings, and evaluating student performance as well as the curriculum itself.

Syllabus

A course consists of a series of sessions focusing on a series of related topics within the curriculum. A syllabus serves as the design document for a course, providing all of the basic information about the course. The syllabi for this curriculum are developed in each faculty at the department level, and the information in each syllabus is typically given to students on the first day of class. Information usually found in a course syllabus includes:

- Course title and description
- Course and supporting objectives
- Course prerequisites
- Course logistics: location, length, and dates of the course
- Description of teaching methods

- Description of learning materials
- Description of assignments
- Description of student assessment methods
- Attendance criteria
- Course schedule

Classroom Teaching

The schedule, which is a part of the course syllabus, indicates a specific number of classroom sessions. Teaching during these classroom sessions should be interactive, participatory, and use a variety of teaching methods. In addition to attending classroom sessions, students typically have assignments to complete during and outside of class as well as readings in the library. Students should receive feedback on their classroom assignments. Frequently used teaching methods include:

- Interactive presentations (lectures with discussion)
- Brainstorming
- Discussions
- Case studies
- Clinical simulations
- Demonstrations
- Games
- Guest speakers
- Panel discussions
- Role plays

Clinical Or Field Practice

After learning a new topic or skill during classroom teaching, students need opportunities to apply their new knowledge or practice new skills in a simulated or safe environment whenever possible. Simulated environments are places where students can work together in small groups, observe or participate in role plays, perform clinical simulations, watch videos, practice skills with anatomic models, or, if available, work on computers. Once students have practiced new skills in a simulated environment, they can then practice their skills in a supervised clinical or field practice site. Clinical practice sites may include health centers, outpatient clinics, hospitals, and other health care sites. Field practice sites might include nurseries, child care centers, faculties, workplaces, homes, or other settings within the community.

Student Evaluation

The main purpose of student evaluation or assessment is to improve student learning. This is more likely to happen if assessment is closely integrated with teaching as described in the departmental course syllabus. Evaluation of students' knowledge and skills helps teachers decide if students should progress to the next stage of study, motivates students by providing feedback on their progress, determines if the course is meeting its objectives, ensures that important subjects are given priority within the course, and offers evidence to national authorities that standards are being met.

Evaluation methods should be objective; this means that the personal opinion of the faculty member evaluating the student has no effect on the student's score. The student should be evaluated during the course (formative assessment) as well as at the end of the course (summative assessment). Common objective knowledge assessment methods include:

- practice tests

- Written exercises
- Case studies, clinical scenarios, and patient management problems
- Project reports
- Objective written examinations
- Structured practical examinations
- Clinical rounds

Common skill assessment methods include:

- Direct observation with checklists
- Structured feedback reports
- Logbooks (casebooks), learning journals, and care plans
- Structured practical examinations

Monitoring Teaching

Monitoring is a continual, cyclical process of teaching, collecting information about teaching, and reviewing the information to identify needed changes. For monitoring to be effective, there should be an open organizational culture that encourages a commitment to students' learning, self-awareness, constructive feedback, reflection, and professional development. In addition, monitoring requires a clear understanding of the course goals and objectives, and the responsibilities of different teachers and administrators. It also requires resources both to conduct monitoring activities and to implement necessary changes in teaching.

The most common methods for collecting information about teaching are self-assessment, feedback from students, peer review, and review of examination results. These methods often use tools such as questionnaires, guidelines for interviews, and observation checklists. A

number of different methods can be applied to help identify strengths and areas for improvement to guide planning for future courses.

Curriculum Evaluation

This curriculum is a dynamic document and will be regularly revised and updated. Monitoring information submitted by departments (e.g., results of student evaluations, feedback from faculty members) coupled with developments in research and technology, changing needs of the country, and the evolving professional environment, will provide the information needed to update it periodically to meet the needs of the faculties, departments, and students.

Curriculum outline

Pre-conceptual care

Rationale

Prior to childbearing, couples need to understand basic RH, the conditions and process of conception, and the anatomy and physiology of reproduction.

Goal

Equip the nurse graduate with the knowledge, skills, and attitudes needed to provide pre-conceptual nursing care

Learning Objectives

- By the end of this course, the student will be able to:
- Describe the anatomy and physiology of the reproductive system
- Assess the couple's RH during the pre-conceptual period
- Provide care for the couple during the pre-conceptual period
- Demonstrate interpersonal communication skills and ethics in caring for the couple with normal and abnormal health during the pre-conceptual period

Content

- Anatomy and physiology of the female and male reproductive systems
- Assessment of the couple's RH during the pre-conceptual period
- Care of couples during the pre-conceptual period, including counseling on RH
- Interpersonal communication skills and ethics specific to pre-conceptual care

Anatomy and Physiology
Of
Female Reproductive System

Learning Objectives

- By the end of this course, the student will be able to:
- Describe the anatomy and physiology of female reproductive system

Female Reproductive System consists of two parts:

- ***Bony pelvis***
- ***Soft tissue***

Soft tissue:

External Parts: (Vulva): It consists of:

1. Mons pubis: adipose tissue over the symphysis pubis covered by curly hair or pubic hair. It serves to protect the junction of the pubic bone from trauma.

2. Labia majora – two rounded folds of adipose tissue with overlying skin; they extend from the mons pubis downward and backward to encircle the vestibule. The outer surface are covered with hair, whereas the inner surface contain sebaceous follicles which are smooth and moist. Their purpose is mainly to protect the inner delicate parts of the vulva.

3. Labia minora - two thin, flat, reddish folds of tissue lying between the inner surfaces of the labia majora. Each labium minus consists of a thin fold of connective tissue which when protected, presents a moist, reddish appearance, similar to that of mucous membrane. The structure is covered by stratified squamous epithelium. It doesn't contain hair follicle but it contains many sebaceous follicles and occasionally a few sweat glands. Posteriorly, the labia minora fuse to form fourchette.

4. Clitoris - a small, cylindrical highly sensitive erectile organ corresponding to the male penis. It has very rich blood and nerve supplies.

5. Vestibule – Urethral **meatus** an almond – shaped area that is enclosed by the labia minora laterally and extends from the clitoris to the fourchette antero-posteriorly.

The vagina varies in length. The anterior and posterior vaginal walls commonly measure 6 – 8 cm. and 7 – 10 cm. in length, respectively. The areas around the cervix at the upper end of the vagina are called **fornicles**, right and left, anterior and posterior. The walls are lined with mucous membrane, which falls into folds, or corrugated formation called **rugae**. These are referred to the inner wall of vagina. It is smooth during labor and parturition. It is not present before menarche and gradually become obliterated after repeated childbirth and menopause. A healthy vagina has pH of 4.0 – 6.0.

Functions:

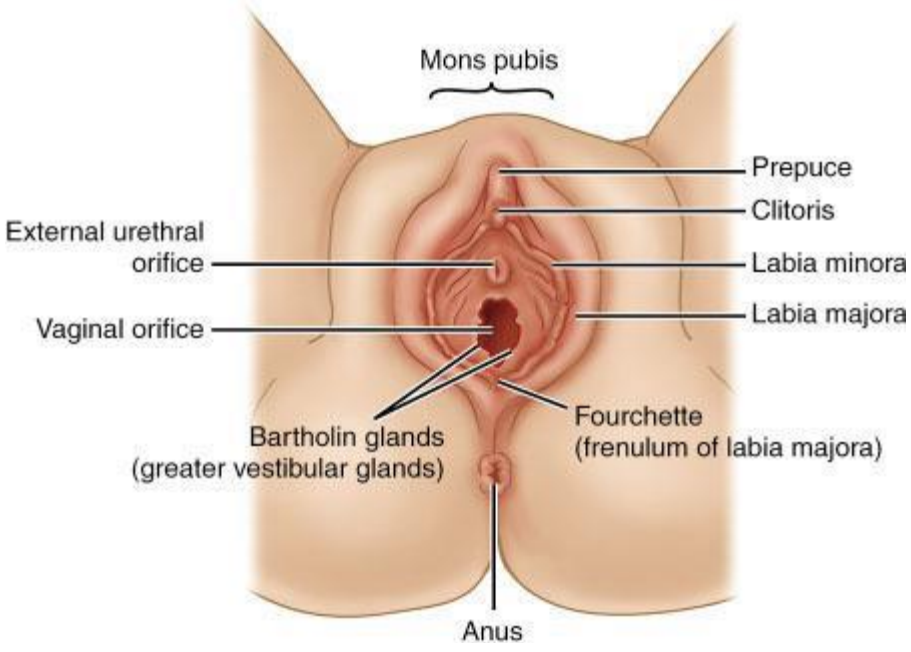
1. serves as excretory duct of the uterus
2. female organ for copulation
3. part of birth canal

6. Hymen comprised mainly of connective tissue both elastic and collagen. Both surfaces are covered by stratified squamous epithelium. The hymen can be broken through strenuous physical activities or masturbation. After childbirth, especially in multipara

7. Perineum – the area extending from the fourchette to the anus. The pelvic and urogenital diaphragm provides most of the support of the perineum.

8. Pelvic diaphragm – consists of the levator and muscles which is the principal muscle that is close to vagina and the coccyges muscle posteriorly.

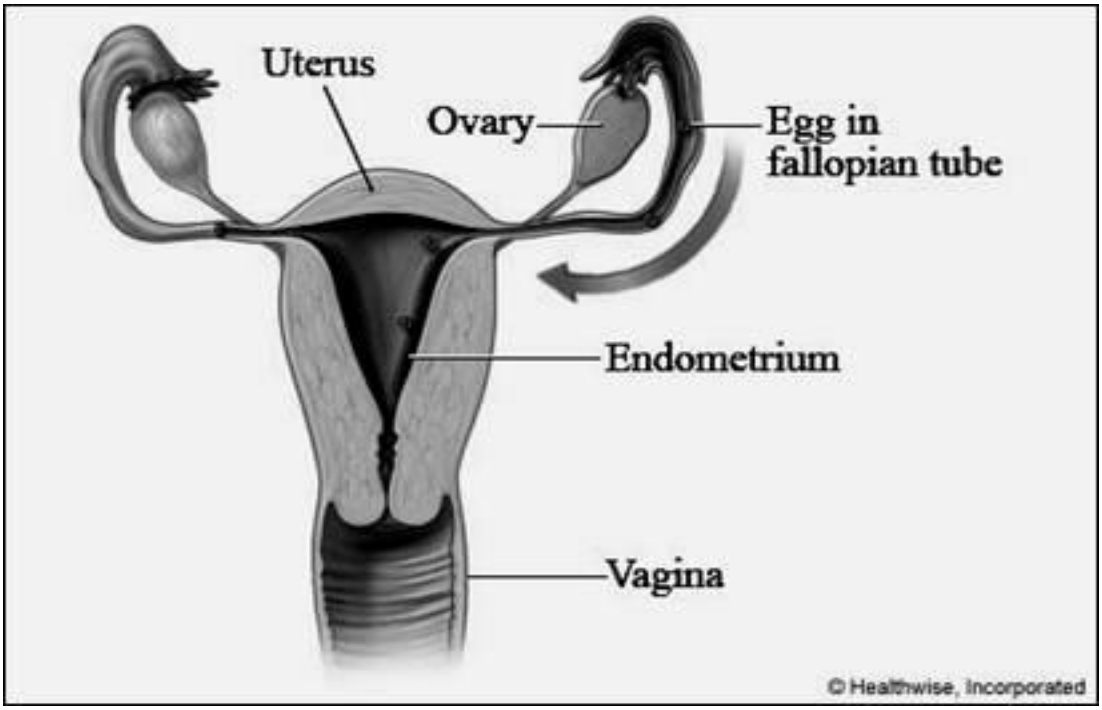
9. The levator and muscles form a broad muscular sling that originates from the posterior surface of the superior rami of the pubis, from the inner surface of the ischial spine and between the 2 sites from the obturator rami.



The external genital organs

II .Internal Organ:

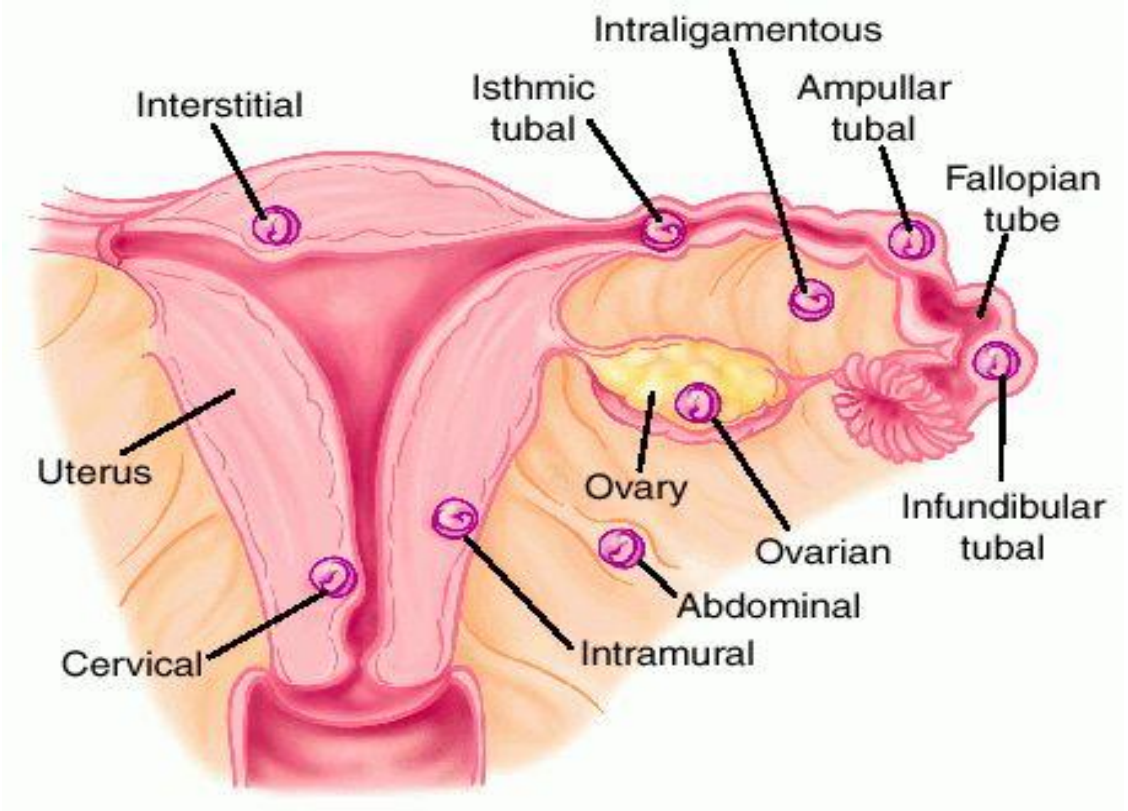
1. Uterus – a hollow pear – shaped organ partialy covered by peritoneum or serosa.. The cavity of the uterus is lined by the endometrium. During pregnancy, the uterus serves for reception, implantation, retention and nutrition of the conceptus which then expels during labor. Its size increases from 60 g. to about 1,100 g. at term . A non – pregnant uterus has an approximately measurement of 7.5 cm. long x 5 cm. wide x 2.5 cm thick, and during pregnancy, it is approximately measures 30 cm. x 30 cm. x 20 cm.



Two Major but unequal parts :

1.body or the corpus – upper triangular portion which constitute the greater part.

- Fundus – the upper, rounded prominence above the insertion of the fallopian tube.
- Corpus - main portion encircling the intrauterine cavity.
- Isthmus - known as the lower uterine segment during pregnancy. It is slightly constricted portion that joins the corpus to the cervix.



2. Cervix – the lowermost portion of the uterus. It is divided by the attachment of the vagina into vaginal and supravaginal portion. The supravaginal segment on its posterior surface is covered by peritoneum, laterally, it is attached to the cardinal ligament and anterior, it is separated from the overlying bladder by loose connective tissue.

The cavity of the cervix is a narrow tube called cervical canal.

1. Internal Os – the narrowed opening between the uterine cavity and the endocervical canal.
2. External Os – small round opening at the lower end of the cavity and endocervical canal.

The corpus of the uterus is made up of 3 layers:

1. Serosal layer or **perimetrium** – the outermost layer which is composed of peritoneum.
2. Muscular uterine layer or **myometrium** – the middle layer. This is continuous with the muscle layer of the fallopian tube and with that of the vagina. This helps the organ present a unified reaction to various stimuli – ovulation and orgasm.
3. **The endometrium** undergoes monthly degeneration and renewal in the absence of pregnancy. During menstruation and following delivery, the compact surface and middle spongy layers slough off. Just after the menstrual flow ends, the endometrium is 0.5 mm thick; near the end of the endometrial cycle, just before menstruation begins again, it is about 5 mm thick. When pregnancy occurs, the endometrium undergoes changes and become **decidua**.

Position of uterus

-The normal position of the uterus is ante flexion (uterus is bent forward on its self the bend is at the level of internal cervical os.) ante version (axis of the cervix is inclined forwards at an angle of about **90** to the axis of the vagina)

The uterus is supported in its position by muscles of the pelvic floor & ligaments. There are four pairs of ligaments, broad, round, Uterosacral & Cardinal (transverse) and pouch of Douglas.

Blood supply is derived from :

Uterine artery – which arise from the anterior branch of hypogastric artery passing towards the uterus through the parametrium. The hypogastric artery provides most of the blood supply to the pelvic viscera and the pelvic musculature.

Ovarian artery – a direct branch of the aorta enters the broad ligament through the infundibulopelvic ligament.

Nerve Supply:

The nerve supply is derived principally from the sympathetic nervous system but partly from the cerebrospinal and parasympathetic system.

Functions of uterus:

- organ for menstruation b. organ for gestation

3. Fallopian tube – or oviduct, are 2 trumphet shaped about 8 – 14 cm. in length, 3 – 8 mm in diameter covered by peritoneum and their lumen lined by mucous membrane.

Parts :

- *Interstitial* – the narrow portion contained in the muscular wall of the uterus approximately 1 cm. in length.
- *Isthmus* – proximal to the ampulla. It is the narrow portion of the tube adjoining the uterus approximately 2 cm. in length.
- *Ampulla* – the outer 3rd portion where fertilization occurs and considered as longest portion with approximately 5 cm. in length.
- *Infundibulum* – distal third. Its funnel shaped opening encircles with fimbrae approximately 2 cm. long. This fimbrae become swollen, almost erectile at ovulation.

Any malformation or malfunction of the tubes could result in infertility, ectopic pregnancy or even sterility. Each fallopian tube is richly supplied with blood by the uterine and ovarian arteries.

Functions:

1. site of fertilization
2. provide transport for the ovum from the ovary to the uterus
3. serve as a warm, moist, nourishing environment for the ovum or zygote
4. **Ovaries** – 2 almond shaped organ situated in the upper part of the pelvic cavity. The size varies among women and according to the stage of the menstrual cycle. Each ovary weighs 6 – 10 g with 1.5 – 3 cm wide, 2 – 5 cm long and 1 – 1.5 cm thick. After menopause, ovarian size diminishes remarkably. The ovary is attached to the broad ligament by the mesovarium. They also changed in appearance from smooth –surfaced, dull white organs to pitted gray organ. Scarring due to ovulation causes this pitting. There is no peritoneal covering for the ovaries. Although this lack of covering assists the mature ovum to erupt, it also allows easier spread of malignant cells from cancer of the ovaries. A single layer of cuboidal epithelial cells, called the germinal epithelium covers the ovaries.

Layers of ovaries:

1. *Tunica albuginea* - dense and dull white and serves as protective layer.
2. *Cortex* – main functional part because it contains ova, graafian follicles, corpora lutea, degenerated corpora lutea (corpora albicantia).
3. *Medulla* – or central portion of the ovary is composed of loose connective tissue.

Functions :

1. Ovulation 2. hormone production

<u>Bony Pelvis</u>

Pelvis is a bony ring interposed between the trunk and the thigh. It serves to both support and protect the reproductive and other pelvic organs.

] Bony pelvis: The pelvis is composed of four bones:

1- two hip bones or innominate bone, each bone consist of ileum,pubis and ischium) ,
2- sacrum and
***3*-** coccyx.

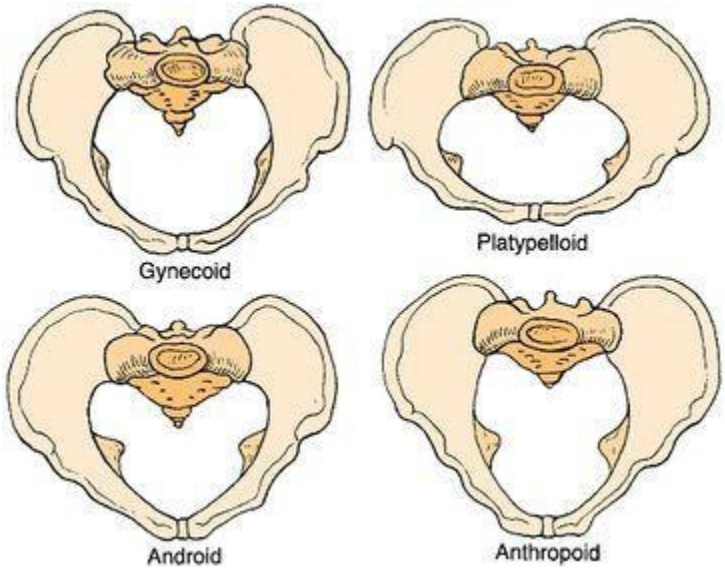
Shape & Types of pelvis:-

1-Gynacoid: Is the (typical female pelvic) slightly transverse, kidney or oval shape.

2-Anthropoid: Resembles the pelvis of the ape (monkey).

3-Android: Resembles the male pelvis.

4-Platypelloid: Simple flat pelvis resembles to cats, and dogs pelvis.



Four types of bony pelvis

Content of pelvis:-

1-The true pelvis:-below the pelvic brim composed of pelvic brim or inlet, cavity and outlet

2-False pelvis :above the pelvic brim

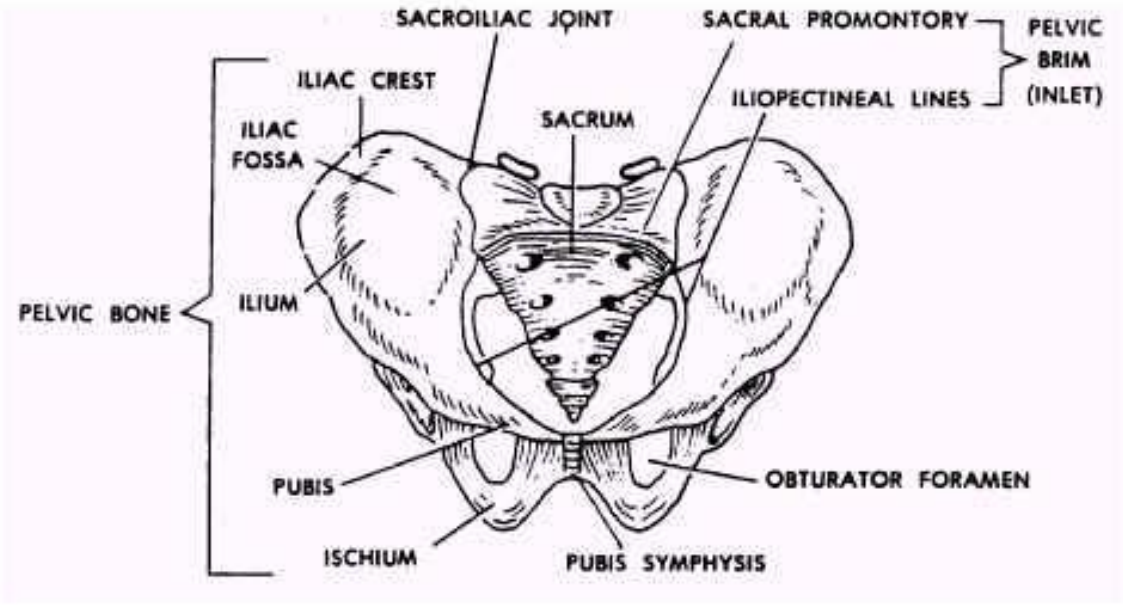


Figure 4-11. The bony pelvis (two pelvic bones and sacrum).

True pelvis consist of inlet, cavity and outlet

inlet (brim): is slightly transverse kidney, oval shape.

1- Boundaries of inlet are promontory of the sacrum, alae of the sacrum, sacro-iliac joint, iliopectineal imminence, upper border of the pubis

Diameters of pelvic inlet:

1- Antero-posterior diameter:

a- anatomical (true conjugate):it extend from the middle of the sacral promontory to the middle of the upper border of the symphysis pubis about 11cm.

B- obstetrical diameter (conjugate): it extend from the middle of the sacral promontory to the most bulging point on the posterior surface of the symphysis pubis about 10.5 cm.

C- diagonal or oblique conjugate: from the middle of sacral promontory to the lower border of the syphysis pubis about

2- Transverse diameter:

a- anatomical transverse):it is the distance between the two furthest points on the iliopectineal lines , about 13 cm

3- the oblique diameter:

about 12 cm , extends from the sacroiliac joint on one side to the iliopectineal eminence on the other side.

2- **Diameters of Pelvic cavity**: lies between the symphysis pubis and sacrum.

3- Diameters of pelvic outlet:

1- Antero-posterior diameter:

a- **anatomical** : it extend from the lower margin of the symphysis pubis to the tip of coccyx about 11cm.

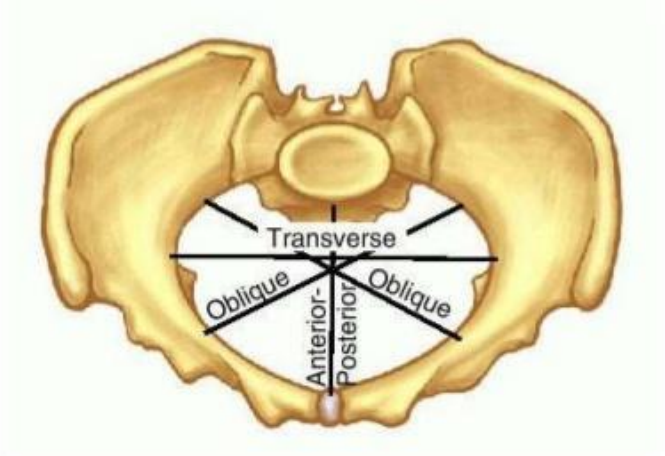
B- **obstetrical** : it extend from the lower margin of the symphysis pubis to the tip of sacrum about 13 cm.

2- Transverse diameter:

a- **anatomical(intertuberous):** it is the distance between the inner surface of the ischial tuberosities , about 11cm.

B- **the obstetrical(interspinous) :** it is the distance between the tips of the ischial spines about 10.5 cm

Pelvis	Diameter (cm)		
	Anteroposterior	Transverse	Oblique
Pelvic Inlet	11	13	12
Pelvic Cavity	12	12	12
Pelvic Outlet	13	11	-



Menstruation

Introduction:-

Physiology of menstruation

Introduction

Typically, a woman of childbearing age should menstruate every 28 days or so unless she's pregnant or moving into menopause. But numerous things can wrong with the normal menstrual cycle.

Definition: Menstruation means cyclic uterine bleeding caused by shedding of endometrium it occurs between menarche and menopause.

Characteristics of normal menstruation:

1. Menarche: 10-16 yrs average 13 years.

2. Duration: regular menstruation that lasts for a few days (usually 3 to 5 days, but anywhere from 2 to 7 days is considered normal). (http://www.4woman.gov/faq/menstru.htm#4. 2005)

3. Amount: The average blood loss during menstruation is 35 milliliters with 10-80 mL considered normal. (David, 2004)

4. Flow: The normal menstrual flow follows a "crescendo-decrescendo" pattern; that is, it starts at a moderate level, increases somewhat and then slowly decrease. Sudden heavy flows or amounts in excess of 80 mL (hypermenorrhea or menorrhagia) may stem from hormonal disturbance, uterine abnormalities, including uterine leiomyoma or cancer, and other causes. The opposite phenomenon of bleeding very little is called hypomenorrhea.

5. Normally menstrual blood doesn't coagulate by fibrinolysin enzyme (plasmin) secreted by the endometrium.

6. Menstrual molimina refers to mild symptoms of 7-10 days before menstruation relieved once menstruation occurs exaggerated condition called (premenstrual syndrome).

Physiology of menstruation

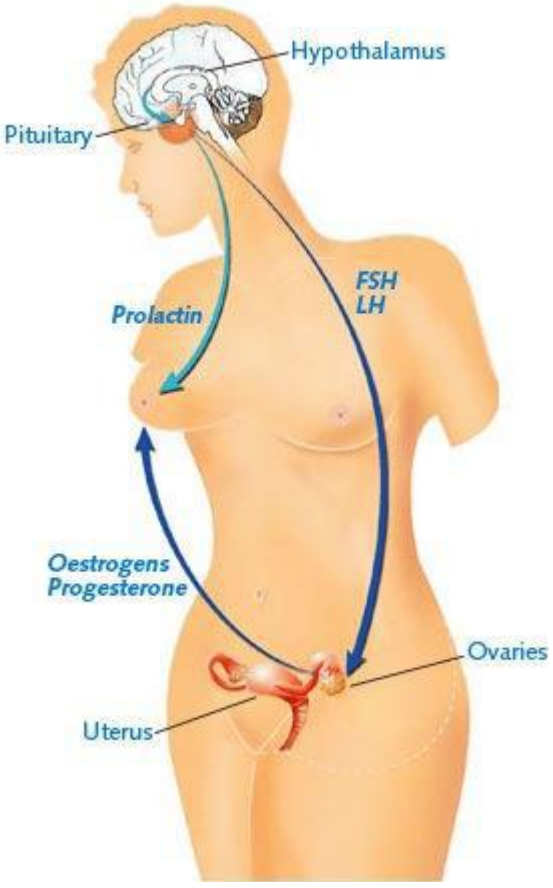
Hypothalamic-Pituitary-Ovarian Axis

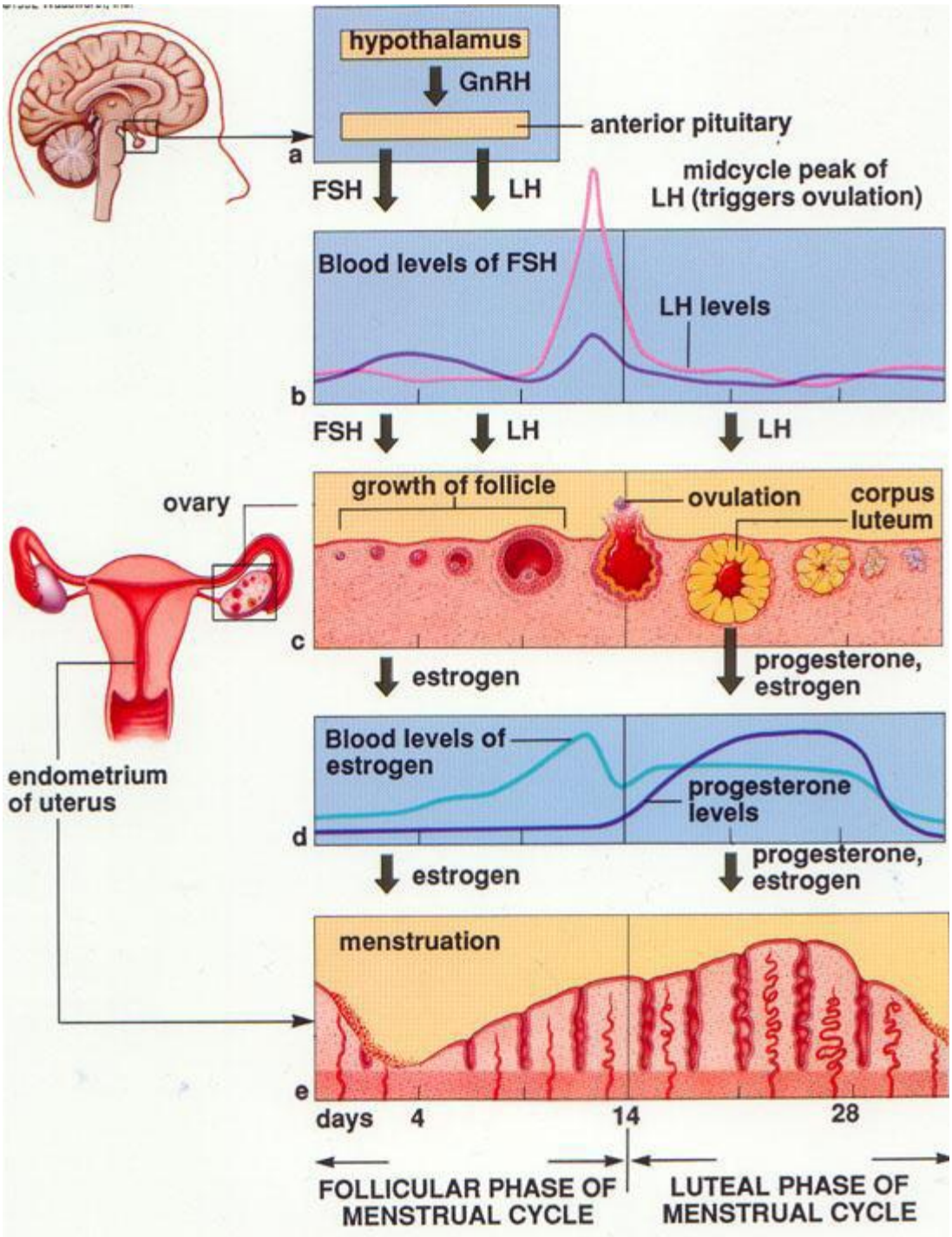
Under influence of the hypothalamus, which produces GnRH, anterior pituitary gland secretes two gonadotrophins: FSH and LH. The FSH causes several Graafian follicles to develop and enlarge; one of them is more in size than all others. The FSH stimulates the granulosa cells and theca to secrete estrogen. The level of FSH rises during the first half of cycle, and when the estrogen level reaches a certain point, its production

stops. Then, the LH is first produced few days after the anterior pituitary starts producing the FSH. Rising estrogen causes a surge in both LH and FSH levels. The ripened follicle ruptures, and ovulation occurs. Then, the levels of both gonadotrophins fall rapidly, and progesterone inhibits a new rise in LH. If no pregnancy occurs, the corpus luteum degenerates after 14 days. The negative feedback effect of progesterone ceases and FSH and LH levels rise again to begin a new cycle (Cunningham et al., 2001).

The hypothalamic-pituitary-ovarian axis:

There are two main changes that control the menstrual cycle **first** the ovaries in response to pituitary hormones (the ovarian cycle) **second** the uterus (the uterine cycle), both cycles work together.





Changing hormone levels during the menstrual cycle.

1-Ovarian Cycle:

Cyclical changes in the ovaries occur in response to two anterior pituitary hormones:

Follicle-stimulating hormone (FSH) and Luteinizing hormone (LH).

The following are two phases of the ovarian cycle

a- Follicular Phase:

The follicular phase is controlled by FSH, encompasses days 1 to 14 of a 28-day cycle.

At the beginning of each menstrual cycle, the hypothalamus secretes Gonadotrophic releasing hormone (GnRh) in a pulsatile manner to stimulate anterior Pitutary gland to secrete FSH & LH. FSH is responsible for the growth of several primary follicles. Only one follicle on one ovary reaches maturity (Graafian follicle) which secretes oestrogen. The oestrogen peak stimulates secretion of LH. The LH peak leads to the mature follicle to burst open (rupture), releasing the mature ovum into the abdominal cavity this process called (ovulation) and corpous luteum formation from remnants of the follicle of the ovulation. Ovulation occurs on day 14 of a 28-day cycle. High estrogen also suppresses FSH secretion so no further follicles grow. As the ovum floats along the surface of the ovary, the gentle beating of the fimbria draws it toward the fallopian tube.

b- Luteal phase:

After ovulation, LH levels remain elevated and cause the remnants of the follicle to develop into a yellow body called the corpus luteum. In addition to producing oestrogen, the corpus luteum secretes a hormone called progesterone. When progesterone reaches a high level it inhibits the secretion of LH leads degeneration of the corpous luteum (If fertilization does not take place), and so oestrogen and progesterone drop & separation of the endometrium (menstruation) & stimulates the hypothalamus to secrete more GnRH, a new cycle is started.

2-Uterine Cycle:

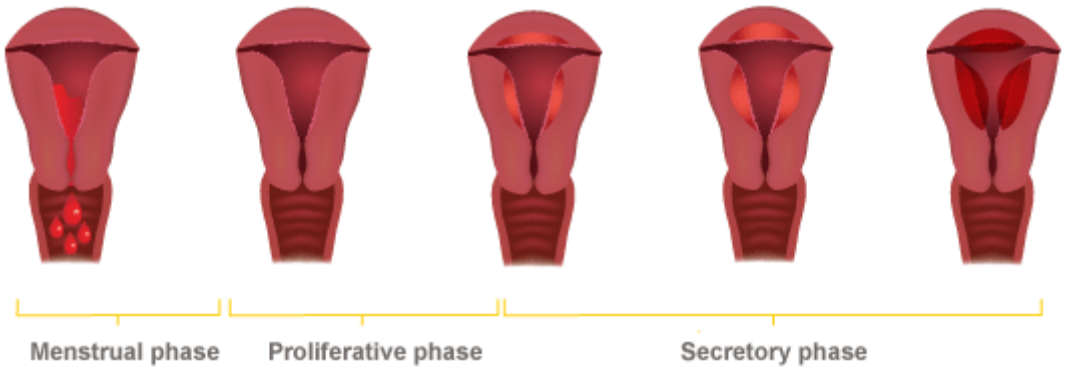
The uterine cycle refers to the changes that are found in the uterine lining of the uterus. These changes come about in response to the ovarian hormones estrogen and progesterone. There are four phases to this cycle: Menstrual, proliferative, secretory and ischemic.

a- Menstrual Phase. Day 1 of the menstrual cycle is marked by the onset of menstruation. During the menstrual phase of the uterine cycle, the uterine lining is shed because of low levels of progesterone & estrogen. The menstrual phase ends when the menstrual period stops on approximately day 5.

b- Proliferative Phase. When estrogen levels are high enough, the endometrium begins to regenerate. Estrogen stimulates blood vessels to develop. The blood vessels in turn bring nutrients and oxygen to the uterine lining and it begins to grow and become thicker. The proliferative phase ends with ovulation on day 14.

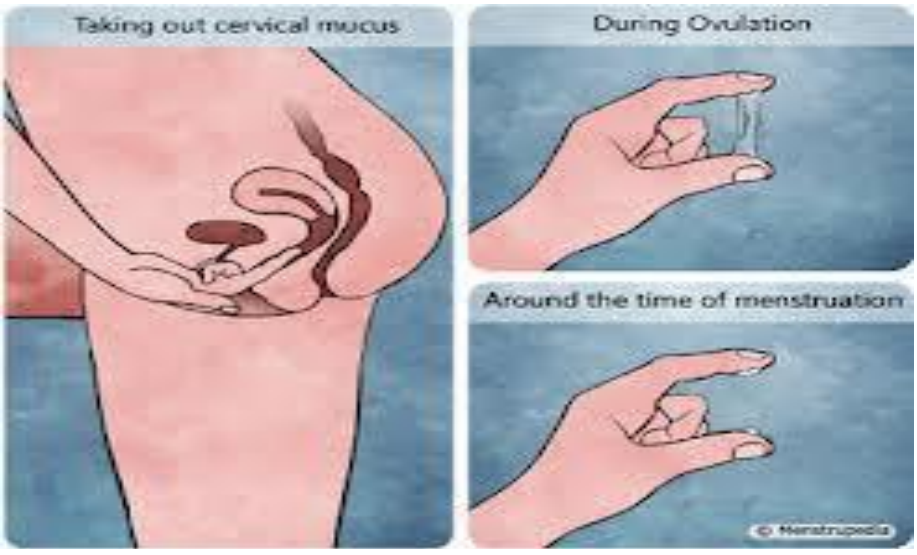
c- Secretory Phase. After ovulation, the corpus luteum begins to produce progesterone. This hormone causes the uterine lining to become rich in nutrients in preparation for pregnancy. Estrogen levels also remain high so that the lining is maintained. If pregnancy doesn't occur, the corpus luteum gradually degenerates, and the woman enters the ischemic phase of the menstrual cycle.(day 14-26 of the cycle)

d- Ischemic Phase. On days 27 and 28, estrogen and progesterone levels fall because the corpus luteum is no longer producing them. Without these hormones to maintain the blood vessel network, the uterine lining becomes ischemic. When the lining start slough, the woman has come full cycle and is once again at day 1 of the menstrual cycle.



Cervical Mucus Changes:

Changes in cervical mucus takes place over the course of the menstrual cycle. Some women use these characteristics to help determine when ovulation is likely to happen. During the menstrual phase the cervix doesn't produce mucus. As the prolipherative phase begins, the cervix begins to produce a tacky, crumbly type of mucus that is yellow or white. As the time of ovulation becomes near, the mucus becomes progressively clear, thin and lubricative, with the properties of raw egg white. At the peak of fertility (i.e., during ovulation), the mucus has a distensible, stretchable called spinbarkheit. After ovulation the mucus becomes scanty, thick, and opaque.



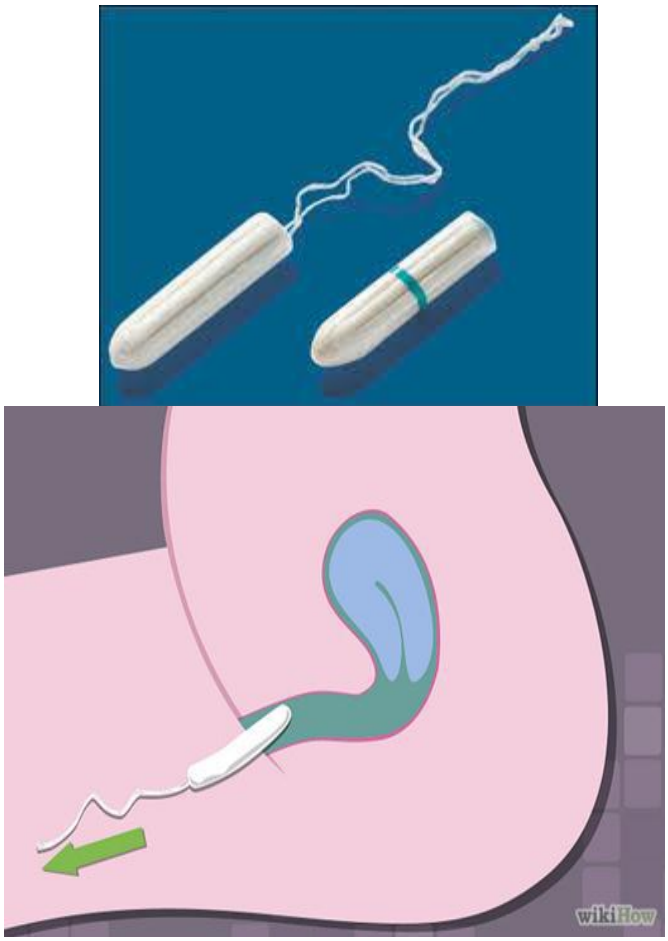
Menstrual hygiene

1- Sanitary pads and tampons:

- Wash hands before & after giving self-perineal care.
- Washing or wiping the perineium should be always done from front to back.
- Reduce use of tampons by substituting sanitary pads especially at night.
-Use tampon only for heavy menstrual flow.
- Avoid it at the end of the period when vaginal walls are dried.
- Avoid super absorbent or deodorant tampons.
- Don't use more than one at time.

If toxic shocks syndrome occurs, eliminate all use tampons, until infection relieved. - If high fever, vomiting, diarrhea, vaginitis occurs while using tampons, consult the physician.

- Apply perineal pad snugly enough so it won't slide back and forth with her movements.
- Don't touch the side of the perineal pad that will come in contact with the perineum
- If high fever, vomiting, diarrhea, vaginitis occurs while using tampons, consult the physician.
- Apply perineal pad snugly enough so it won't slide back and forth with her movements.
- Don't touch the side of the perineal pad that will come in contact with the perineum



2-Vaginal spray and douching Spray

-should be used externally only not with pads.

- Should not be applied with broken irritated or itched skin.

- Douching is unnecessary since the vagina cleans itself.

-Douching washes away the natural mucus and upsets the vaginal ecology, thus make it liable to infection.

- Flavored douches can cause allergic reaction, severe irritation or tissue damage.

-Douching is contraindicated during menstruation; it may force endometrial tissue back up into the uterine cavity lead to endometriosis

3-Measures to alleviate general discomfort and cramping:

Nutritional self-care:

-Vit. B complex neutralize the excessive amounts of estrogen produced by the ovaries, thus reduces nervousness that sometimes occur premenstrual. It is present in lean meats, whole grains, and dark green leafy vegetables.
-Vit. B6 can relieve the heavy bloated puffy feeling that is often experienced before the period.

- Vit. E is a mild prostaglandin inhibitor similar to aspirin but without the side effects. It improves circulation; reduce muscular spasm and pain.
-Iron is needed to prevent depletion of the female iron stores.
- Calcium may also provide relief from the menstrual symptoms. It presents in yogurt and cheese.

4-Exercise:

-Daily exercise can prevent cramps, relieves constipation.
- Deep breathing brings more oxygen in the blood, which relaxes the uterus.
- It also alleviates irritability and tension

Physiology of menstruation

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5-Heat and massage

-Using any form of hot application such as hot tub, heating pads may be beneficial during painful periods.
- Massage can also sooth aching back muscles, promote relaxation and blood flow.

6-Time to see a health care provider

Should consult the health care provider for the following:

-If not started menstruating by the age of 16.

-If the period has suddenly stopped.

-If she have bleeding for more days than usual

-If she is bleeding excessively.

-If you bleed between periods (more than just a few drops).

- If there is severe pain during the period.

Premenstrual syndrome (PMS)

PMS presents with a wide variety of symptoms which may be physical, behavioral or both

Signs and symptoms of premenstrual syndrome

Physical symptoms:

- Edema
- Abdominal bloating
- Constipation
- Breast swelling & pain
- Acne
- Heart palpitation
- weight gain
- Abdominal cramping
- Hot flashes
- Headache , migraine
- Rhinitis
- Joint swelling and pain

- Sore throat
- Asthma
- Fainting
- Urinary difficulties
- Back pain
- Nausea

Behavioral symptoms:

- Aggressive behavior
- Confusion
- Increased appetite
- Fatigue & lethargy
- Sex drive changes
- Withdrawal from others
- Emotional liability
- Depression
- Food cravings (salt, sweet..)
- Poor concentration
- Suicidal thoughts
- Anxiety, insomnia

Family teaching tips-Relief measures for PMS Diet

- Reduce or eliminate caffeine intake (coffee, tea, colas and chocolate)
- Avoid simple sugars as in candy, cakes, cookies
- Reduce salt intake (pickles, fast foods, chips
- Drinks 2 quarts of non-caffeinated fluid, preferably water, each day
- Eat six small meals (to stabilize blood glucose)

Exercise

Do aerobic exercise, such as walking, or jogging several times each week.

Stress management

- Note your pattern of PMS and alter your schedule to minimize stressors when symptoms are most severe
- Utilize interventions such as relaxation techniques, massage, and warm baths

Sleep and rest

- Maintain regular sleep schedule
- Drink a glass of milk before bedtime

- Schedule exercise for early morning or early afternoon
- Give yourself a quiet time to relax just before going to bed

Fertilization and Implantation

Introduction:-

Every human cell contains 23 pairs of chromosome (homologous) except ovum & sperm, which contain 22 pairs of somatic chromosome and one pair of sex chromosome.

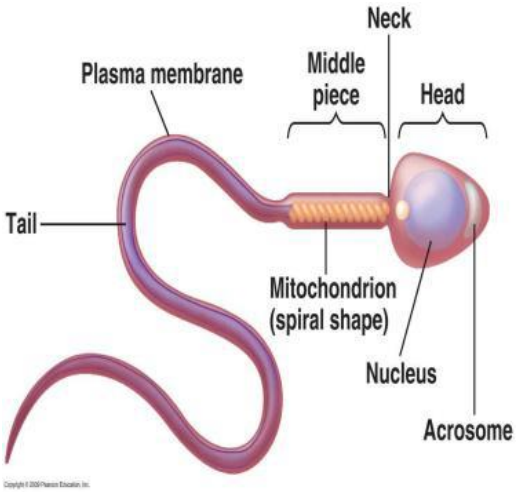
In the female the sex chromosome are the same XX and in the male it different, the sperm may carry x or y.

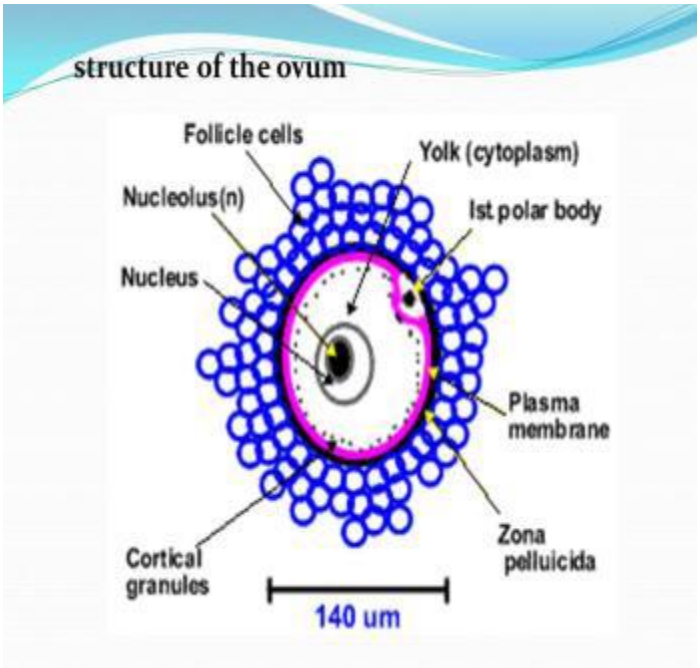
Ovum:

Each month one ovum matures, at the time of ovulation & considering fertile for about 24 hours after ovulation & remains viable for about 48 hours.

Sperm:

Each ejaculation propels 200-500 million sperm .the sperm swim with the flagellar movement of their tails. Some can reach to the ovum within 5 minutes but the average transit time is 4-6 hours Sperm remain viable for about 2-3 days.





Fertilization

Human fertilization is the union of a human egg and sperm, usually occurring in the ampulla of the fallopian tube. The result of this union is the production of a zygote cell, or fertilized egg.

Capacitation: is a functional maturation of the spermatozoon.

Site: in the ampulla of the fallopian tube.

• **Time**: 24 hrs. after ovulation

Requirements for fertilization:

1. Patent fallopian tube or vas tubes in male.
2. High level of estrogen during ovulation.
3. Normal amount of spermatozoa and should be healthy and motile.
4. The cervical mucous should be more abundant and less in viscosity for allow to the sperm to enter the uterine cavity.

NB: The media of vaginal discharge is acidic.

Characteristics of mature ovum (secondary oocyte):

1. The number of immature ovum in the ovarian cortex is about 300.000 at birth, one of them become mature and ruptured from grafin follicle every month.
2. Normal diameter of mature ovum is 0.15mm.
3. Life span of mature ovum is 24-48hrs.
4. The first meiotic division occurred at ovulation, the second meiotic division occurred at fertilization.
5. Consists of 2 layers (corona radiate, zona bellocida) and (perivitilline space) and nucleus (44xx) and cytoplasm inside it.

Characteristics of mature sperm (spermatozoa) (secondary spermatocyte):

1. The sperm live and nourished from semen. Semen is a suspension of spermatozoa in seminal plasma which consist of the secretion of epidedimis in the testes, seminal vesicle and prostate gland, the semen is alkaline in media.

2. Life span of mature ovum is 12-48 hrs while the male sperm is 48-72 hrs.

3. The normal amount of sperms is about 40-80 millions in one ml, the amount of semen is about 3-5ml in the coitus or ejaculation, 90 % of them remain motile after 2hrs and about 20% of them have malformation in normal

4.The velocity is 6m/hr, arrived to fallopian tube in 30-40 min after deposited in posterior surface of vagina.

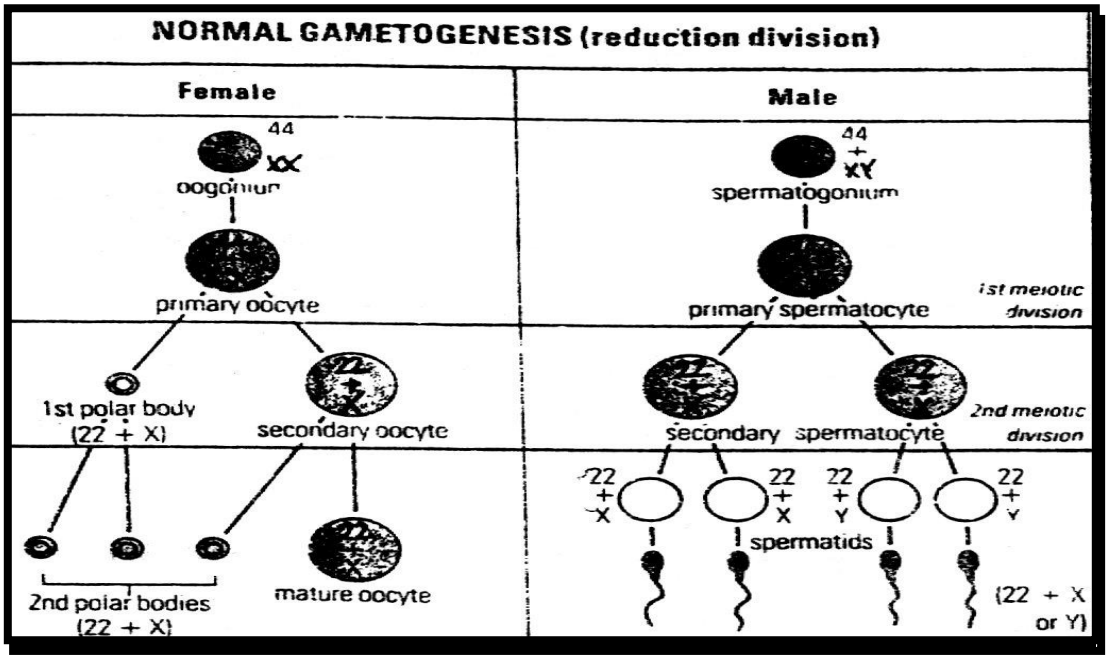
5. Consist of head, body and tail, the head contain nucleus (22xy), cytoplasm, enzyme (hyaluronidase).

6. The first meiotic division occurred when the sperm leaves the testes, the second meiotic division occurred immediately before ejaculation .

*** Before fertilization can occur, the ovum and sperm must mature**:

- First meiotic division occurs at ovulation. Second meiotic division occurs immediately after fertilization.
- Oogenesis results in one functional gamete (22 autosomes + x) and smaller non-functional polar bodies.
- Spermatogenesis results in four potentially functional gametes (22 autosomes + x or y) (Fig. 1).

FIGURE (1)



* The sex of the embryo is determined by the sperm that fertilizes the ovum. If the ovum is fertilized by the sperm with the x chromosome, a female fetus would result (xx).

* But if the ovum is fertilized by y chromosome, a male fetus would develops (xy).

* After release from the ovary, the secondary oocyte is carried by ciliary action and peristalsis to the ampullary part of the tube, where it is deposited (Fig. 2).

* If intercourse occurs at this time in the menstrual cycle the sperm travels up from the vagina and surrounds the oocyte but only one will penetrate it by its head while the tail is separated and absorbed Once this has occurred, rapid degranulation of surface viscles inhibits penetration by more sperm.

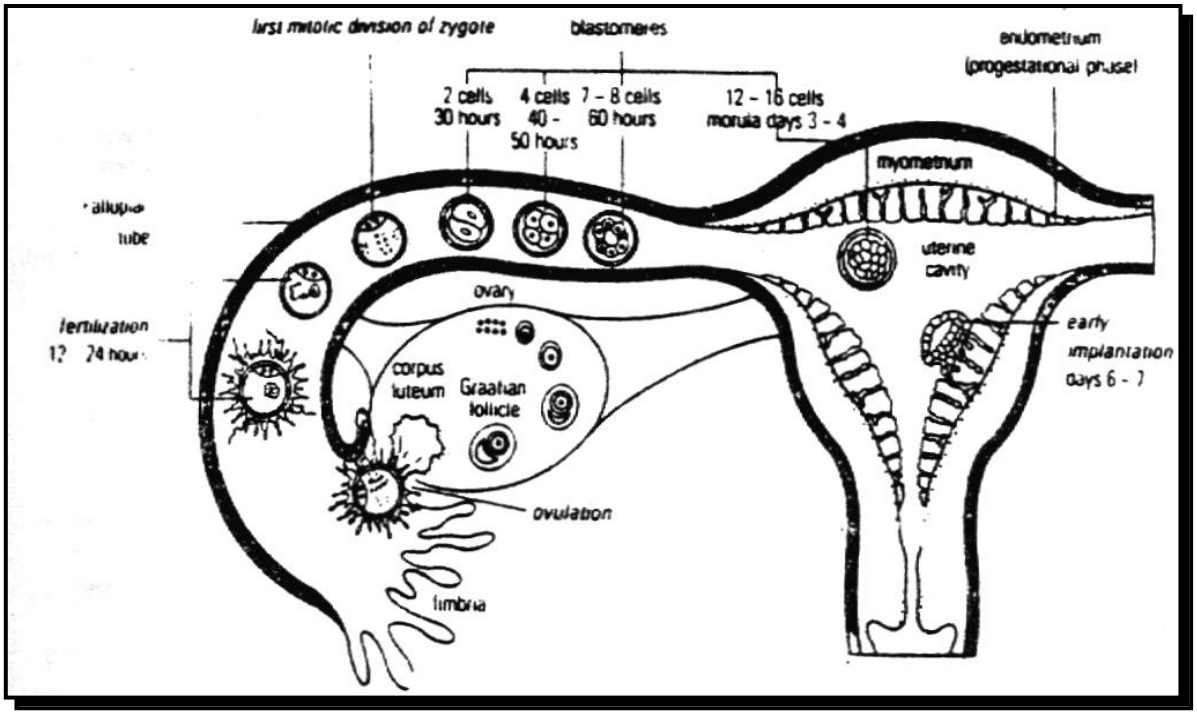
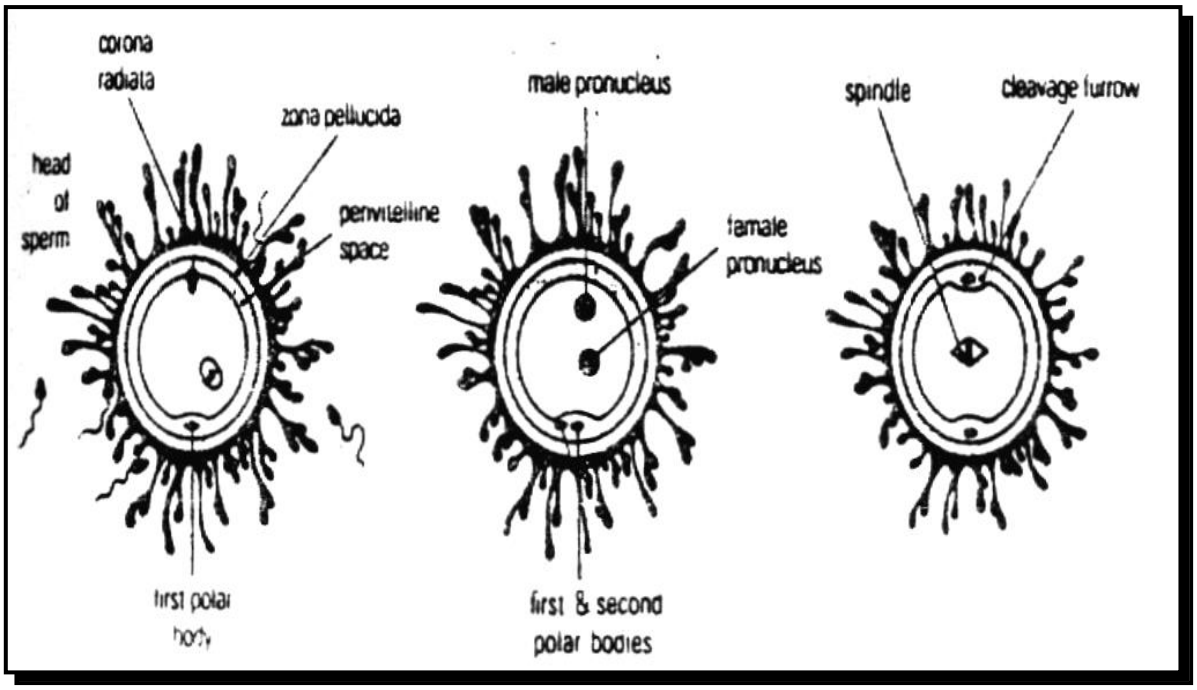


FIGURE (2)

* The female pronucleus approaches the male pronucleus and they fuse. Then the chromosome arrange themselves on the spindle and a cleavage furrow circumscribes the ovum on the line of two polar bodies (Fig. 3).

FIGURE (3)



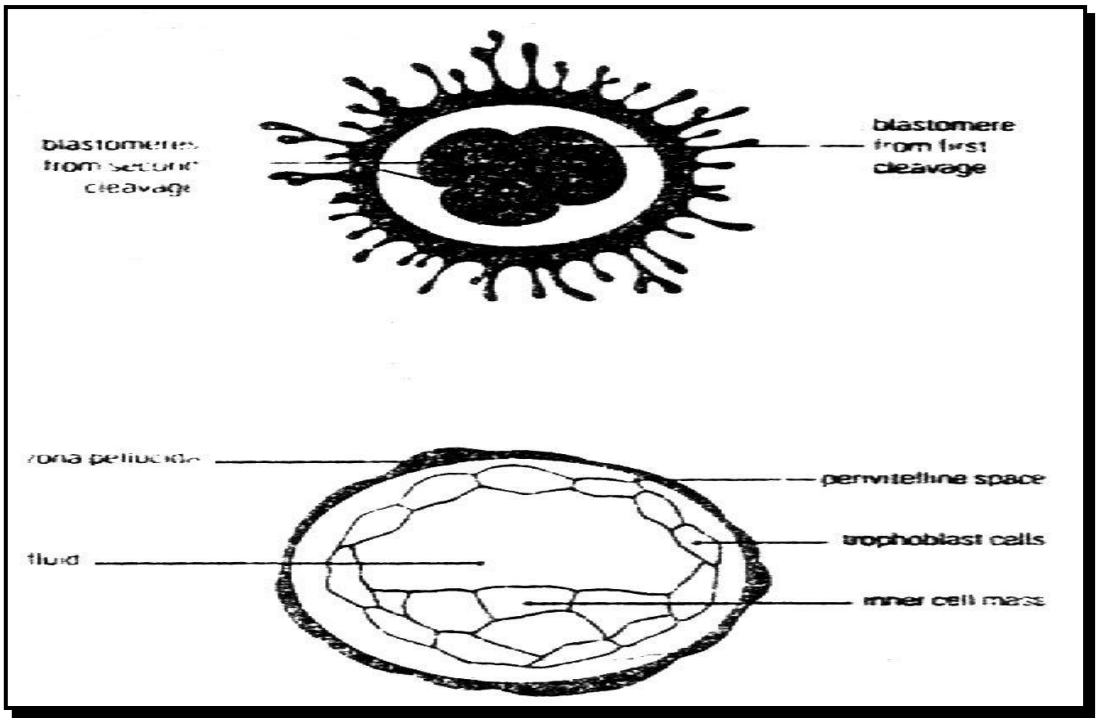
Cleavage (Fig. 4)

* Cell cleavage commences a few hours later in the zygot and produces daughter cells or blastomeres. After further division Morula (16 cell) is formed.

* Fluid then accumulates inside the morula which becomes a hollow blastocyst.

* This arrived the endometrial cavity by the 6th day and an inner cell mass, the embryonic pole, develops in one region of the blastocyst.

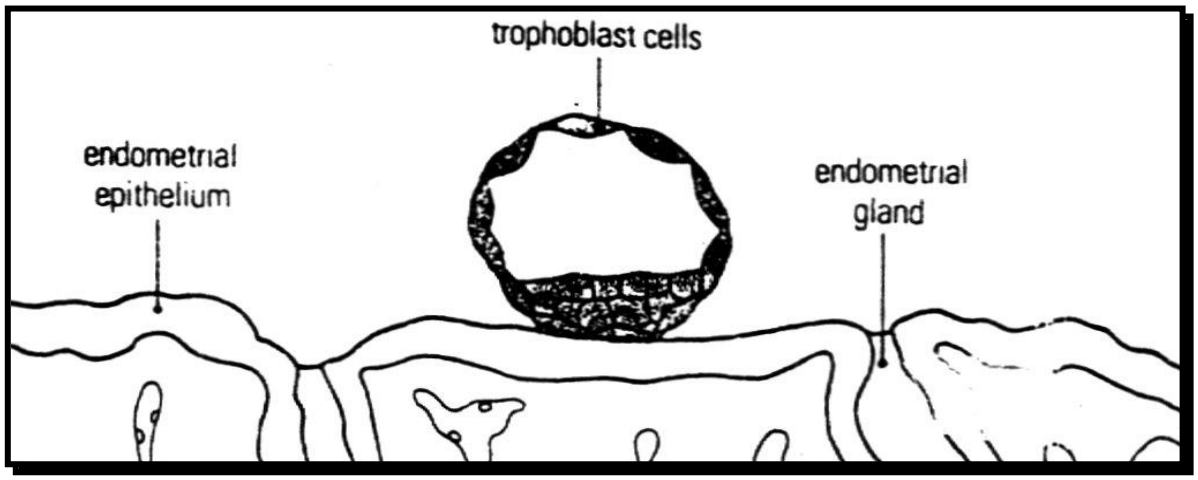
FIGURE (4)

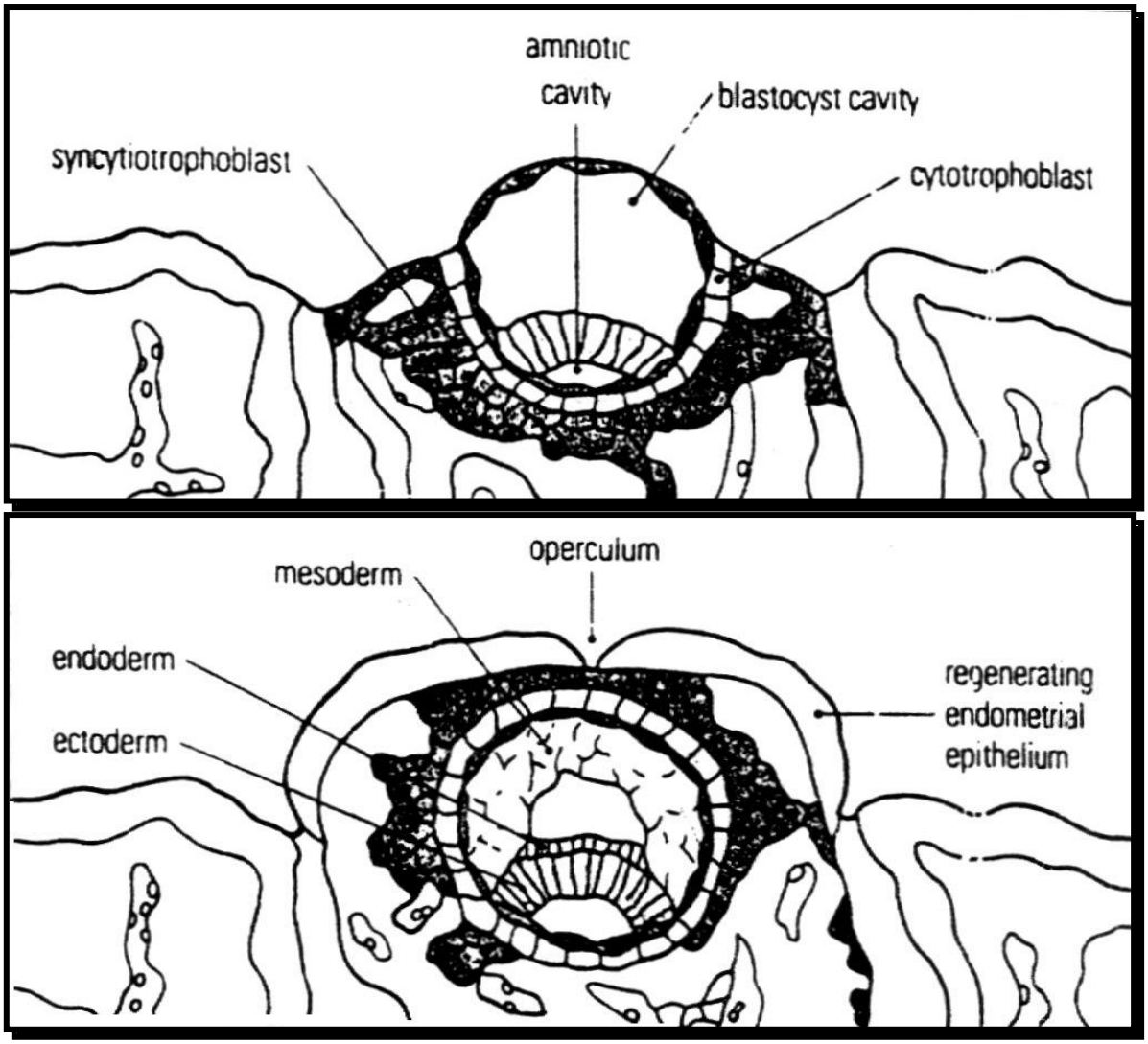


Implantation and early development (Fig. 5)

* The blastocyst sinks into the endometrium and settles between the endometnal glands. The implantation process is completed by the 14th day after ovulation.

FIGURE (5)

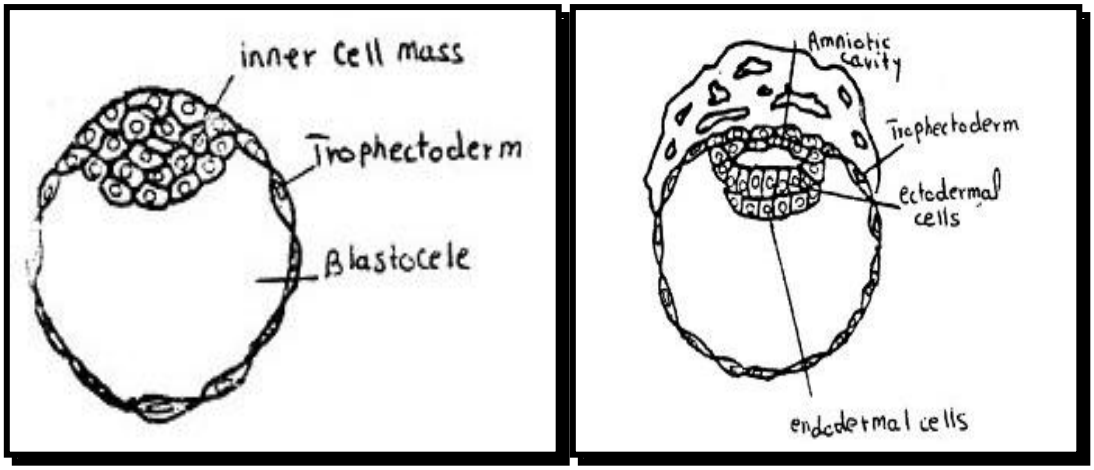




The blastocyst consists of (See Fig. 6)

- Trophoblast: the outer layer of the blastocyst.
- Inner cell mass: from which the embryo will develop.

FIGURE (6)

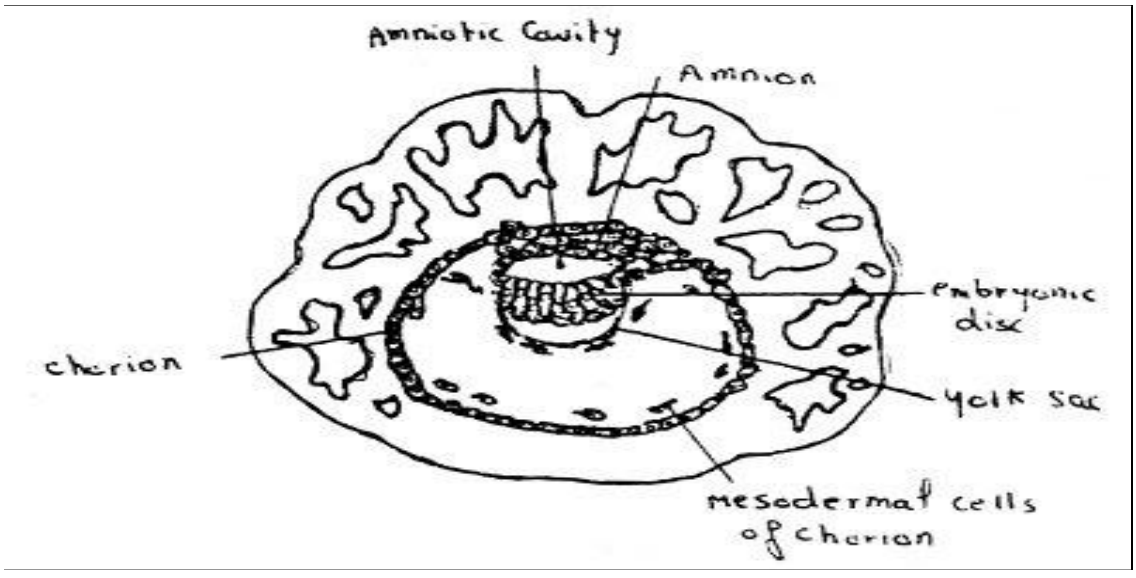


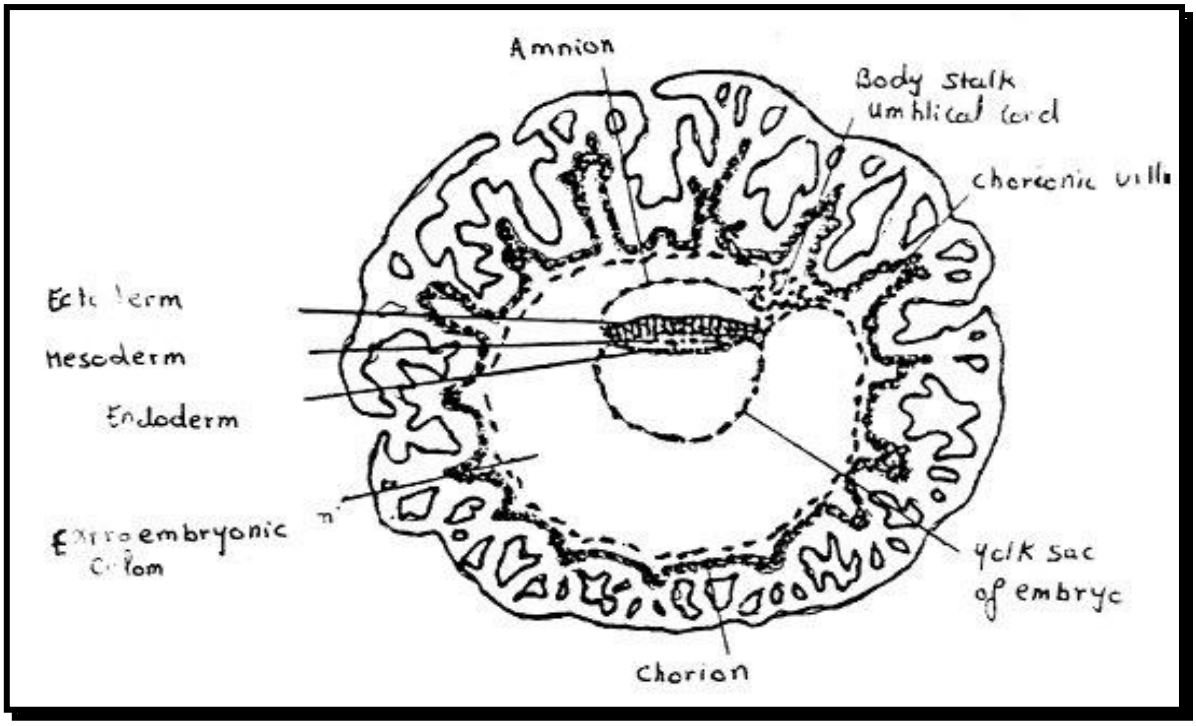
The inner cell mass differentiates into 3 layers:

* Ectoderm, endoderm and then mesoderm, each is responsible for the development of certain structure of the body.

* Two cavities appear in the cells of the inner cell mass from which the amniotc and yolk sac develop.

* The yolk sac decrease in size. while the amniotic cavity expands, surrounds and envelops the embryo which remains attached to the trophoblast by body stalk (primitive umblical cord).





The trophoblast soon becomes defferentiated into 2 layers.

a- An inner layer; the cytotrophoblast.

b- An outer layer; the synctiotrophoblast.

*The outer layer has the power to invade the maternal tissues and to erode the small vessels to derive the nutrition for the growing embryo from the combined layer of the trophoblast and underlying mesoderm, the chorionic villi start to develop, first as primary, secondary then tertiary where blood vessels appear in its centre.

*At first the chononic villi surround the developing ovum. Then the villi in contact with the decidua capsularis is obliterated and known as chorion leave while the villi incontact with the dscidua basalis branches freely and rapidly forming Chorion frondosum which will give rise to the future discoid placenta (Fig. 7).

* Once conception has occurred the endometrium is called the decidua. Changes occur in the decidua at the site of implantation. The ovum split the decidua into two (Fig. 8,9).

Three layers are found.

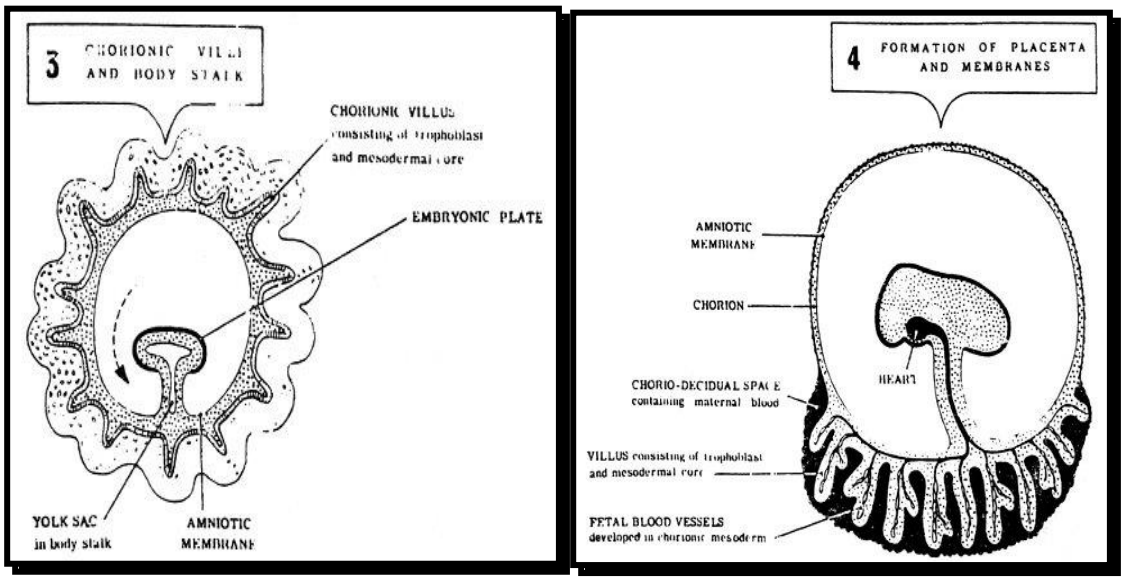
1- Decidua basalis or basal layer:

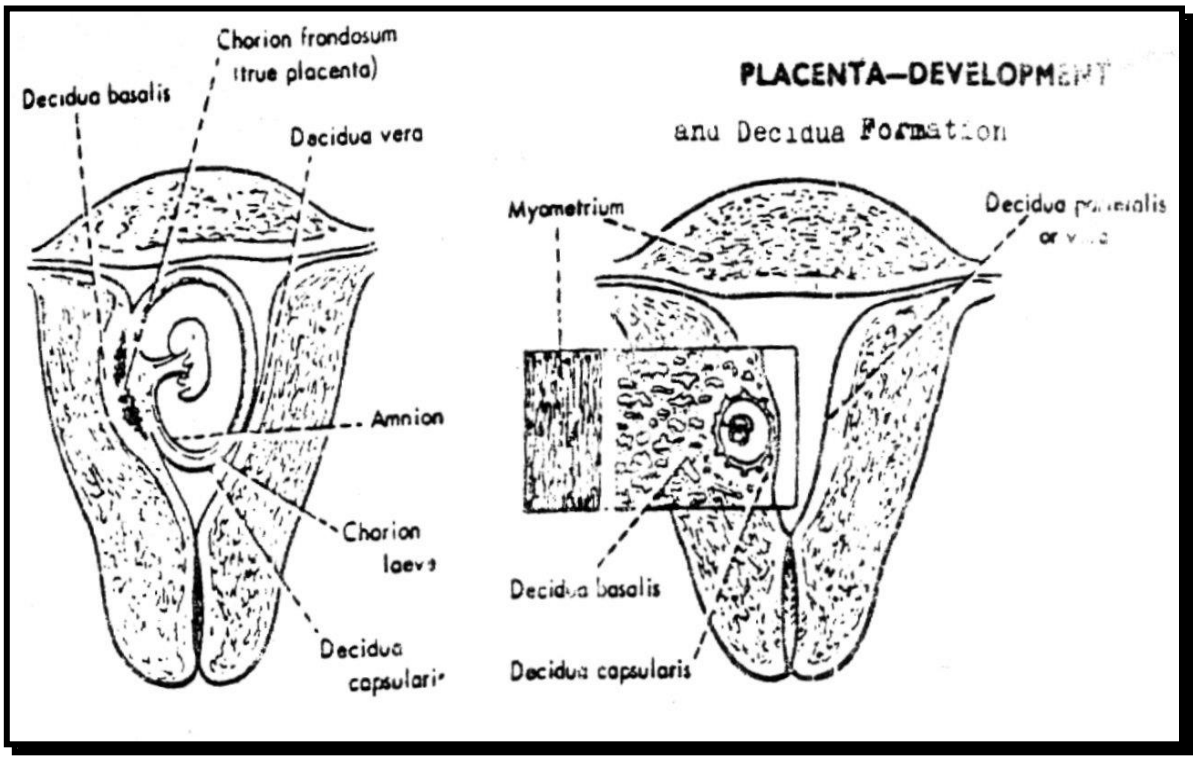
Or the part of the endometrium lying directly under the embryo (the embedded ovum)

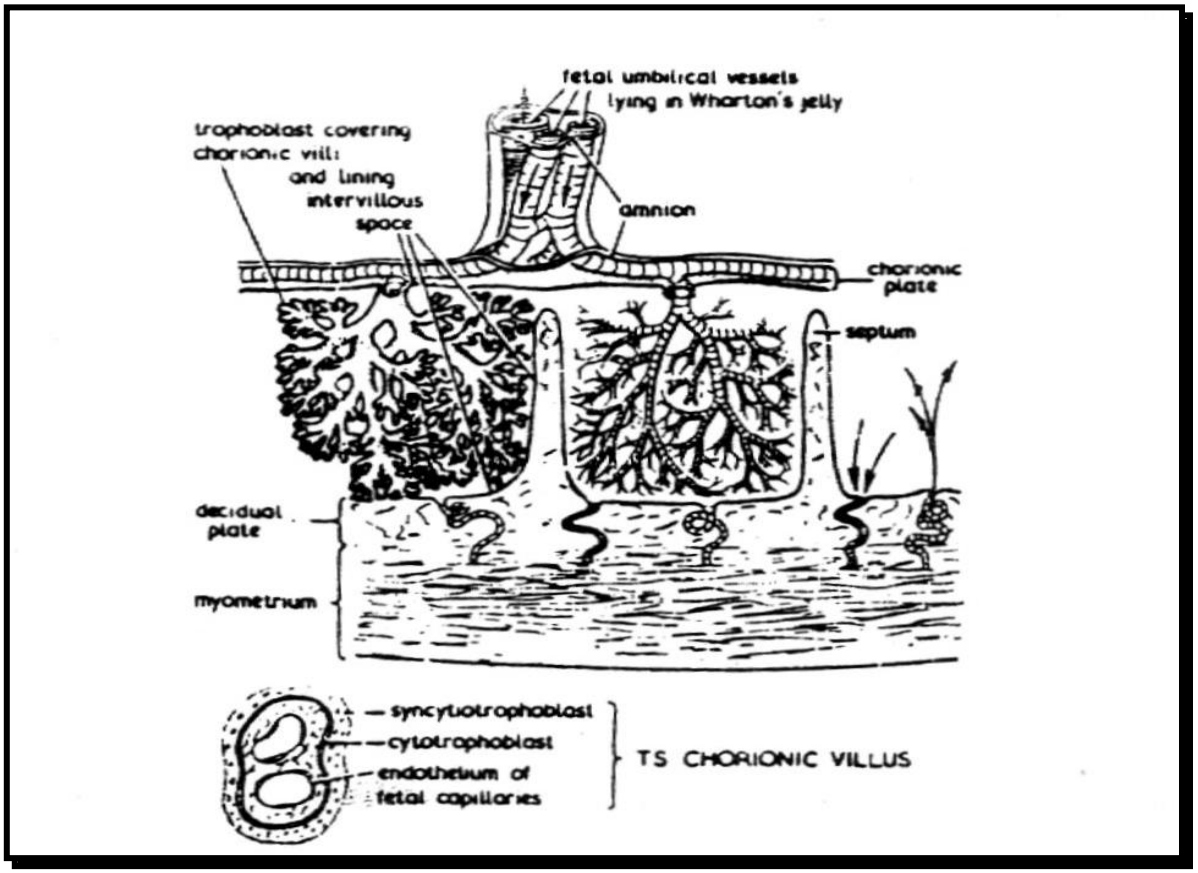
2-Decidua capsularis or functional layer covering (over) the ovum.

3- Decidua Vera or parietalis: lining the rest of uterine cavity or the remaining portion of the uterine liningAs the ovum grows it pushed the capsularis in contact with the vera opposite it thus the cavity of the uterus is obliterated by the end of the 3ed month.

FIGURE (7,8,9)




Chorion frondosum
(true placenta)
Decidua basalis
Decidua vera
Amnion
Chorion
laeve
Decidua
capsularis
PLACENTA—DEVELOPMENT
and Decidua Formation
Myometrium
Decidua basalis
Decidua capsularis


fetal umbilical vessels
lying in Wharton's jelly
trophoblast covering
chorionic villi
and lining
intervillous
space
amnion
chorionic
plate
septum
decidual
plate
myometrium
syncytiotrophoblast
cytotrophoblast
endothelium of
fetal capillaries
TS CHORIONIC VILLUS

Development of the Fetus

Embryonic and fetal development

Week3

Beginning development of brain, spinal cord and heart beginning development of the gastrointestinal tract natural tube forms, which later becomes the spinal cord leg and arm buds appear and grow out from body.

Week 4

Brain differentiates limb buds grow and develop more

Week 5

Heart now beats at a regular rhythm beginning structures of eyes and ears some cranial nerves are visible muscles innervated.

Week 6

Beginning formation of lungs fetal circulation established liver produces RBCs

Further development of the brain primitive skeleton forms central nervous system forms brain waves detectable.

Week 7

Straightening of trunk, nipples and hair follicles form elbows and toes visible arms and legs move ,diaphragm formed , mouth with lips and early tooth bunds.

Week 8

Rotation of intestines facial features continue to develop heart development complete resembles a human being.

Weeks 9-12

Sexual differentiation continues bunds for all 20 temporary teeth laid down digestive system shows activity. Head comprises nearly half the fetus size face and neck are well formed urogenital tract completes development red blood cells are produced in the liver urine begins to be produced and

excreted fetal gender can be determined by week 12 limbs are long and thin digits are well formed.

Weeks 13-16

Fine hair develops on the head called lanugo fetal skin is almost transparent, bones become harder, fetus makes active movement sucking motions are made with the mouth amniotic fluid is swallowed ,fingernails and toenails present weight quadruples .Fetal movement (also know as quickening) detected by mother.

Weeks 17-20

Rapid brain growth occurs fetal heart tones can be heard tones can be heard with stethoscope kidneys continue to secret urine into a amniotic fluid vernix caseosa,a white greasy film , covers the fetus eyebrows and head hair a appear, brown fat deposited to help maintain temperature nails are present on both fingers and toes muscles are well developed.

Weeks 21-24

Eyebrows and eyelashes are well formed fetus has a hand grasp and startle reflex alveoli forming in lungs skin is translucent and red lungs begin to produce surfactant

Weeks 25- 28

Fetus reaches a length of 15 inches rapid brain development ,eyelids open and close ,nervous system controls some functions fingerprints are set , blood formation shifts from spleen to bone marrow fetus usually assumes head down position.

Weeks 29-32

Rapid increase in the amount of body fat increased central nervous system control over body functions. Rhythmic breathing movements occur lungs are not fully mature, fetus stores iron ,calcium and phosphorus.

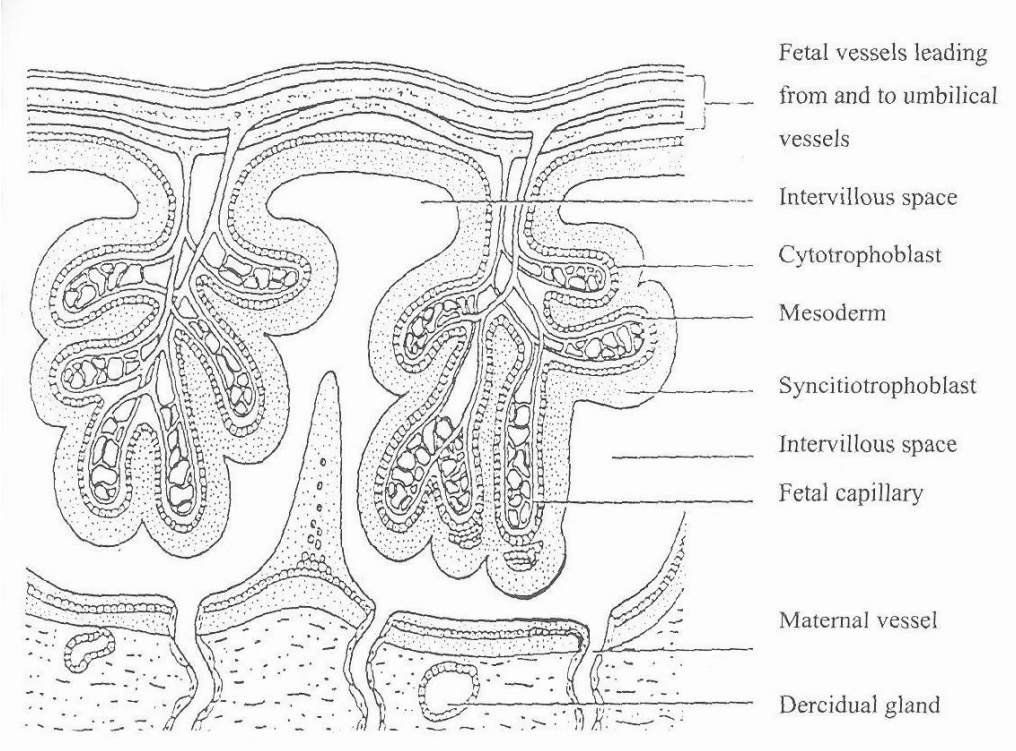
Weeks 33-38

Testes are in scrotum of male fetus languo begins to disappear increase in body fat .Fingernails reach the end of fingertips .Small breast bunds are present on both sexes .Mother supplies fetus with antibodies against disease fetus is considered full term at 38 weeks fetus fills uterus .

Development of Placenta, Membranes, Amniotic Fluid and Umbilical Cord :-

Development of the Placenta and Membranes

- Three weeks after fertilization projections. from the trophoblastic layer proliferate and branch forming the chorionic villi. The villi become most profuse in the basal decidua where the blood supply is richest. This part is known as chorionic frondosum and will develop into the placenta.
- The villi under the capsular decidua gradually degenerate and form the chorionic laeve which is the origin of the chorionic membrane
- The villi penetrate the decidua and erode the walls of maternal blood vessels to form a lake of maternal blood known as sinuses.
- The maternal blood surrounding the villi, circulates slowly to enable the nutritive villi to absorb food and oxygen and excrete waste.
- The placenta is completely formed and functioning from 10-12 weeks after fertilization. (see figure below)


Fetal vessels leading from and to umbilical vessels
Intervillous space
Cytotrophoblast
Mesoderm
Syncitiotrophoblast
Intervillous space
Fetal capillary
Maternal vessel
Dercidual gland

Functions of the Mature Placenta

- Respiration: The fetus obtains oxygen and excretes carbon dioxide through the placenta. Oxygen from the mother's hemoglobin passes into the fetal blood and carbon dioxide from fetal blood passes into the maternal blood by simple diffusion.
- Nutrition: food for the fetus comes from the mother's diet which has been broken down into simpler forms. Protein is transferred across the placenta as amino acids. Protein is transferred across the placenta as amino acids, carbohydrates as glucose and fats as fatty acids. Water, vitamins and minerals also pass to the fetus. The placenta can break down complex nutrients into compounds that can be used by the fetus.
- Storage: the placenta metabolizes glucose that is stored in the form of glycogen and reconverted to glucose as required. It also stores iron and fat and soluble vitamins.
- Excretion: carbon dioxide is the main substance excreted from the fetus. Bilirubin and very small amounts of urea and uric acid are also excreted
- Protection: the placenta provides a limited barrier to infection. Some bacteria, for example treponema pallidum of syphilis and the tubercle bacilli, can cross the placenta. Rubella virus and some drugs can also cross to the fetus. Antibodies are transferred to the fetus from the mother and give immunity to the infant for the first 3 months after birth
- Endocrine:
    - Human chorionic gonadotrophin (HCG) forms the basis of pregnancy tests as it is excreted in the mother's urine. Its function is to stimulate the growth and activity of the corpus luteum.

- Estrogens are produced by the placenta. The amount of estrogen produced is an index of fetoplacental wellbeing.
- Progesterone is secreted by the placenta in large amounts until it falls before the onset of labor.
- Human placental lactogen (HPL) has a role in glucose metabolism in pregnancy and the activity of human growth hormone.

The Placenta at Term

The placenta is a round flat mass, about 20cm in diameter and 2.5cm thick at its center. It weighs one-sixth of the infant's weight at term.

The Maternal Surface

This surface is dark red in color. The chorionic villi are arranged in about 20 lobules known as cotyledons that are separated by sulci, each cotyledon containing a single villus with its branches.

The Fetal Surface

The amnion covering the fetal surface gives it a white, shiny appearance. Branches of the umbilical vein and arteries are visible, spreading out from the insertion of umbilical cord (normally the center).

The Fetal Sac

The fetal sac protects the fetus against ascending bacterial infection. It consists of a double membrane:

- Chorion. The outer membrane that lies under the capsular decidua and adheres to the uterine wall is a thick, opaque, friable membrane derived from the trophoblast.
- Amnion. The inner membrane which contains the amniotic fluid is a smooth, tough, translucent membrane derived from the inner cell mass.

Functions

- The fluid allows for the growth and free movement of the fetus.
- It equalizes pressure and protects the fetus from injury.
- The fluid maintains a constant temperature to the fetus.
- It provides small amounts of nutrients.
- In labor, the fluid protects the placenta and umbilical cord from the pressure of uterine contractions.
- It aids effacement and dilatation of the cervix.

Origin

- Fetal: Amniotic fluid is secreted by the amnion that covers the placenta and umbilical cord, and fluid exuded from fetal vessels in the placenta. Fetal urine also contributes to the volume from the io" week of pregnancy.
- Maternal: fluid exudate from maternal vessels in the decidua.

Volume

Throughout pregnancy, the amniotic fluid increases and the normal volume is 500-1500 m!.

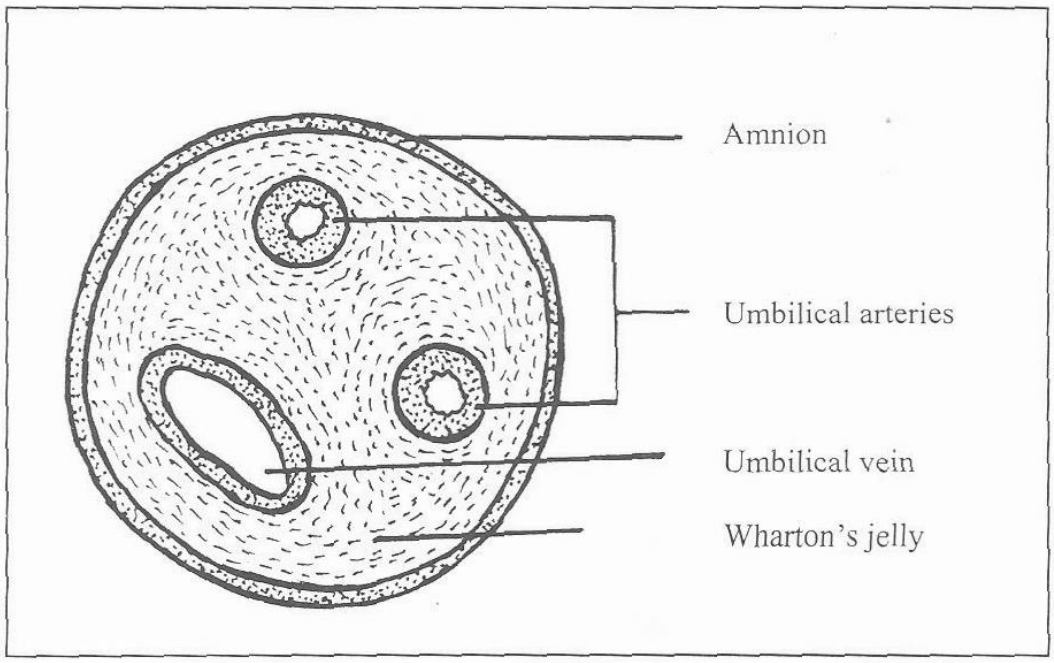
- Polyhydramnios: amniotic fluid more than 1500m!.
- Oligohydramnios: amniotic fluid less than 500m!.

Constituents

- Amniotic fluid or liquor is a clear pale straw-colored fluid consisting of 99% water.
- The remaining 1% is dissolved solid matter including food substances, waste products, dead skin cells, vernix caseosa and lanugo.

The Umbilical Cord

The umbilical cord extends from the fetus to the placenta and transmits two umbilical arteries and one vein. These are enclosed and protected by Wharton's jelly a gelatinous substance formed from mesoderm. The whole cord is covered by amnion. The length of the cord is about 50cm.



Physiological adaptation during pregnancy

Adaptation of Reproductive Systems	*Adaptation of Other Body Systems*
• Uterus • Cervix • Ovaries and fallopian tubes • Vagina • Vulva • Breast	• Cardiovascular • Respiratory • Urinary • Gastrointestinal • Musculoskeletal • Integumentary • Metabolic changes • Endocrine • Immunological

Uterus

Size: increases from 7.5cm in length in non -pregnant state to 35cm (increases to 20 times of its non-pregnant size due to hyperplasia and hypertrophy.

2. Weight: increases in weight from 50/60gm. to 900/1000gm at term due to:

- ***Hypertrophy and hyperplasia under effect of estrogen & progesterone hormones.***
- ***Stretching muscle fibers by the growing fetus.***

3. Shape: pyriform in the non-pregnant state, becomes globular at 12 weeks, then pyriform/ oval by 28 weeks to spherical beyond 36th wks.

4. Position: The position is dextrorotated (the uterus is tilted &twisted to the right)

5. Consistency: becomes progressively softer due to:

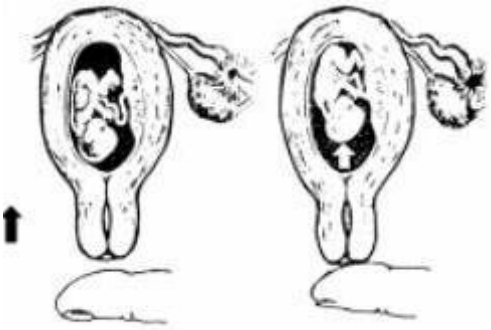
- ***Increased vascularity.***
- ***Presence of amniotic fluids.***

6. Contractility: irregular, infrequent, spasmodic and painless contractions (Braxton Hicks Contractions). Without any effect on cervical dilatation, promote placental circulation. May cause some discomfort late in pregnancy.

7. Lower uterine segment:

- ***It is formed from isthmus .***
- ***It starts to be formed from the 4th month to reach 10 cm at full term.***

  - **Ballottement:**
  - Is a passive fetal movement elicited by pushing up against the cervix with two fingers. This pushes the fetal body up and down as it falls back, the examiner feels a rebound.



- BALLOTTEMENT AFTER 18 WEEKS

Cervix

Goodell's sign: softening of the cervix, formation of operculum (mucous plug).

Ovaries and Fallopian Tubes

Involution due to suppression of follicle stimulating hormone (FSH).

Vagina

- Chadwick's sign: bluish coloration of vagina.
- Hypertrophy and hyperplasia.
- Leukorrhea, acid pH 3.5 to 6.

Vulva

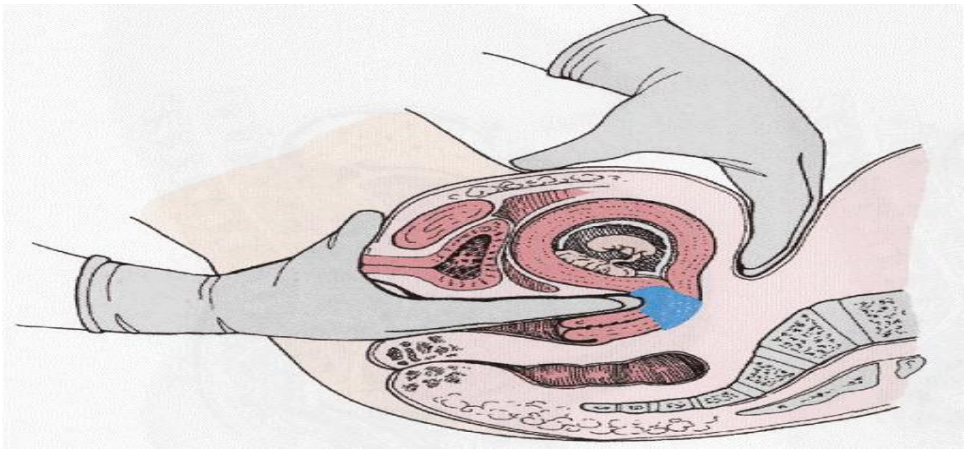
- Increased vascularity.
- Fat deposition causes labia majora to close and partially cover introitus.

<u>Changes in the pelvic organs:</u>

These changes caused by increased vascularity and congestion during the first three months of pregnancy.

1. Hegar's sign:

It is the softening of the isthmus of the uterus, the area between the cervix and body of the uterus, which occur at 6 to 8 weeks of pregnancy. This area may become so soft that on bimanual examination the anterior fornix fingers and abdominally fingers meet each other.



2. Chadwick's sign:

Is the deep red to purple or bluish coloration of the mucous membranes of the cervix, vagina and vulva due to vasocongestion of the pelvic vessels.

3. McDonald's:

It is an ease in flexing the body of the uterus against the cervix.

4. Osiander's sign:

It is increase pulsation in lateral fornix due to increase vascularity resulted in pelvic congestion.

Breasts

- 3-4 weeks: prickling, tingling sensation.
- 6 weeks: developing ducts and glands.
- 8 weeks: bluish surface veins are visible.
- 8-12 weeks: Montgomery's glands become more prominent, primary areola become darker.
- 16-18 weeks: colostrum expresses. Secondary areola appears.

Adaptation of Other Body Systems

Cardiovascular System

- Slight enlargement of myocardium.
- Shift in chest contents: Heart is displaced upwards and to the left.
- Heart rate increases by 10 to 15 beats/minute.
- Blood volume increases 40-50% physiological anemia.
- Increase in clotting factors.
- Hemoglobin and hematocrit decrease in relation to increased plasma volume.
- Cardiac output increases by 30% during the first and second trimesters.

Respiratory System

- Estrogen causes edema of mucous membranes of upper respiratory tract → epistaxis.
- Enlarged uterus prevent the lungs from expanding → shortness of breath.
- Basal metabolic rate increases and oxygen requirement increases by 30 to 40 ml/min.

Urinary System

- Frequency of maturation due to pressure of the growing uterus.
- Decreased bladder capacity and bladder tone.

Renal Function Changes

- Changes occur to accommodate an increased workload while maintaining stable electrolyte balance.
- Increased glomerular filtration rate.
- Glucosuria may occur (may not be abnormal, warrants further evaluation).

Gastrointestinal System

- Mouth and Teeth
    - Gums become hyperemic and have a tendency to bleed.
    - Ptyalism is seen in some women.
- Gastrointestinal Tract
    - Smooth muscle relaxation occurs related to increased progesterone production. This can cause:
- Decreased peristalsis and constipation.
- Heartburn, slowed gastric emptying and esophageal regurgitation.
- Hemorrhoids from the pressure of the gravid uterus.
    - Appetite usually increases, after a temporary decrease due to nausea and vomiting.

Musculoskeletal System

- Alteration in posture can result in lordosis (waddling gait occurs due to increased level of progesterone and relaxation hormone),
- Diastasis recti is associated with the enlarging uterus in some women.
- Relaxation and increased mobility of joints occur because of the relaxing hormone and steroid sex hormones.

Integumentary System (Cutaneous Changes)

- Chloasma is the brownish" mask of pregnancy".
- Linea nigra (abdomen).
- Nipples, areolae, axillae, vulva and perineum all darken.
- Striae gravidarum (stretch marks) appear on the breasts and abdomen. This is caused by increased fragility of the connective tissue.

Metabolic Changes

- Increase metabolic rate.
- Increase the demands for carbohydrate, protein, and minerals.
- Weight gain of 9-1 I kg.
- Water requirement is increased to supply fetus, placenta and amniotic fluid.

Endocrine System

- FSH and LH production is suppressed.
- Human placental lactogen production is suppressed.
- Thyroid gland enlarges, resulting in increased iodine metabolism.
- Pancreas: Insulin production is increased throughout pregnancy to compensate for placental hormone insulin antagonism.
- Ovaries produce:
    - Estrogen.
    - Progesterone.
    - Relaxing hormone.

Immunological System

- Resistance to infection is decreased.
- Maternal IgG levels are decreased.
- Maternal IgM levels remain unchanged.

Pregnancy Signs and Symptoms

Presumptive Evidence

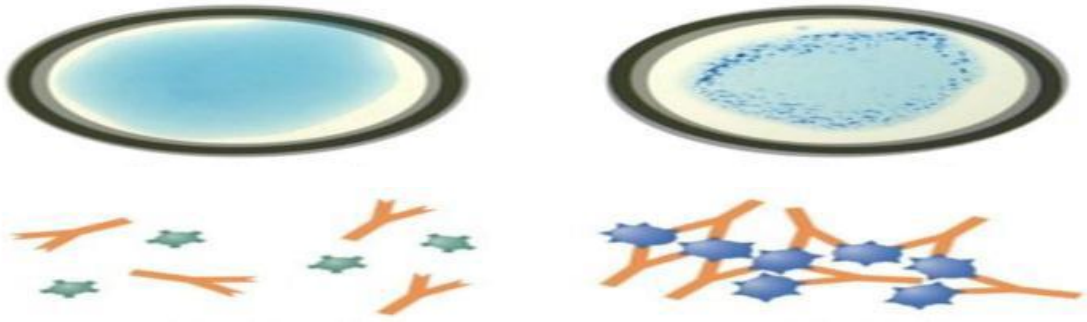
- Signs:
    - Amenorrhea.
    - Breast changes.
    - Chadwick's sign.
    - Chloasma and linea nigra.
    - Abdominal enlargement and striae.
- Symptoms:
    - Nausea and vomiting.
    - Urinary frequency.
    - Weight gain.
    - Constipation.
    - Fatigue.
    - Quickening.
    - Breast tenderness, tingling, and heaviness.

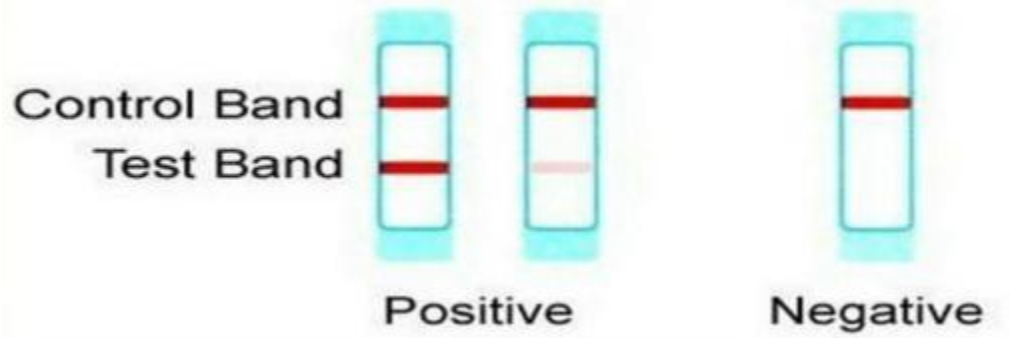
Probable Evidence

- Hegar's sign.
- Goodell's sign.
- Positive pregnancy test.

1. Pregnancy test:

Are based on analysis of maternal blood or urine for the detection of human chorionic gonadotrophins (HCG).





Positive Evidence

- Hearing of fetal heart rate.
- Feeling of fetal movement.
- Fetal parts felt by examiner.
- Ultrasonography to confirm fetal outline.

Antenatal Care

Introduction

Antenatal care is important because it helps to maintain the mother in good health during pregnancy, informs the parents about pregnancy, labor and child care and, in particular, it provides a means of detecting problems with the pregnancy at an early stage when the problems are treatable.

Definition of antenatal care

Antenatal care is the name of the particular form of medical supervision given to a pregnant woman and her baby starting from the time of conception up to the delivery of the baby. It includes regular monitoring of the woman and her baby throughout pregnancy by various means including a variety of routine regular examinations and a number of simple tests of various kinds.

Goals of antenatal care :

The major goals are.

1. To define the health status of the mother and fetus.
2. To estimate the gestational age of the fetus.
3. To initiate a plan for continuing obstetrical care

Objective of antenatal care :

Best possible health status for mother and fetus.

- Early detection and management of high-risk pregnancy.
- Education of the mother about:
    - Physiology of pregnancy,
    - Nutrition.

- Alarming signs and symptoms.
- Infant care.
- Breast-feeding.
- Child spacing.

- Reduction of maternal and perinatal mortality and morbidity rates.

Schedule of antenatal care

Month	Number of visits	
	Low risk	High risk
1-6	Once monthly	Twice monthly
7-8	Twice monthly	weekly
9	weekly	Then hospitalization according to situation

- ***Frequency of antenatal visits***
- - During the first 6 months every month.
- - During the 7th and 8th months every 2 weeks.
- - During the last month every week.

The Initial Visit

The first antenatal visit should take place as early as possible during the 1s' trimester.

Taking History :

Personal history:

- Name.
- Age.
- Address.
- Occupation (both partners).
- Consanguinity.
- Potentially harmful habits (i.e., smoking).

Menstrual history:

- 1st day of the last normal menstrual period (LNMP).
- Calculation of gestational age, and expected date of delivery (EDD).

Calculation of the gestational age and expected date of delivery (EDD):
Expected date of delivery (EDD) = 1st day of the last menstrual period (LMP) + 7 days + 9 calendar months, or1st day of LMP + 7 days - 3 calendar months + one year .
Labor may occur 2 weeks before or after the calculated EDD)±15 day)

Obstetric history:

- Complication of previous pregnancies.
- Mode of delivery
- Number/sex of living children.
- Birth weights.
- Mode of infant feeding.
- Date of last labor and last abortion (LL and LA).

Present obstetric history:

- Symptoms of pregnancy.
- Symptoms of pre-eclampsia.
- Symptoms of disease in other organ systems.
- Fetal movements.

Family history:

- Diabetes mellitus.
- Multiple pregnancy.
- Hypertension

- Congenital anomalies.

Medical history:

- Diseases:
  - Diabetes mellitus.
  - Heart diseases.
  - Hypertension.
  - Viral infection.
  - Urinary tract.
  - Drugs/allergies.
  - Blood transfusion.
  - Rh incompatibility.
  - X-ray exposure.

Surgical history:

- Previous operations:
  - Dilation and curettage.
  - Cesarean section.

Family planning history.

- Immunization history
- Breast feeding history.

Examination: Minimal Physical Parameters to be Evaluated

General (Systemic):

- Physical signs (vital signs, weight, height, pallor, and jaundice).
- Chest examination.
- Breast examination.
- Skeletal or neurological abnormalities.

Local (Obstetric):

- **Inspection:**
  - Contour and size of abdomen.
  - Scars of previous operations.

- Signs of pregnancy.
- Fetal movements.
- Varicose veins.
- Edema.

- **Palpation:**
  - Fundal level (FL).
  - Fundal grip.
  - Umbilical grip.
  - 1st and 2nd pelvic grips.
- **Auscultation**
  - Fetal Heart Sounds (FHS):
    - FHS is heard by sonicaid as early as 10th week of pregnancy.
    - FHS is heard by pinard (fetal stethoscope) after the 20th week of pregnancy.

Laboratory Investigations:

- **Blood analysis:**
  - Complete blood count.
  - ABO grouping and Rh typing.
  - Hepatitis B antigen.
  - Rubella antibody.
  - Toxoplasmosis: IgM and IgG if patient has not previously tested positive.

Periodic Visits

Examination

- **At each visit:**
  - **General:**
    - Weight.
    - Blood pressure.

- Edema of lower limbs.

- **Local:**
  - Fundal level (F.L.).
  - Fetal lie.
  - Fetal presentation.
  - FHS.

Assessing Fetal Well-being

- Maternal weight
- Fetal size
- Fetal movements: at least 10 movements/12 hours.
- Fetal heart sounds.
- Ultrasound.

At 37 Weeks

- Assessment of fetal size, lie, presentation.
- Assessment of pelvic capacity.

Health Education for Pregnant Women

Adequate Nutrition

- Calories (2500/day):
  - Excess calories lead to fat deposition and obesity.
  - The caloric requirement is the same as in the non-pregnant state.
  - During pregnancy increased metabolism is compensated for by activity.
- Protein (85 gm/day):
  - Animal sources: meat, fish, cheese, milk, eggs.
  - Plant sources: peas, beans, lentils.
  - Insufficient protein in diet leads to:
    - Fetal prematurity and IUGR.
    - Maternal anemia and edema.

- Calcium (1.5 gm/day):
  - Sources: milk, cheese, yogurt. calcium carbonate.
  - Insufficient calcium in the diet may lead to:
    - Rickets in infants.
    - Osteomalacia in mothers.
- Iron (30 mg/day):
  - Animal sources: liver, red meat.
  - Plant source: green vegetables.
  - Drug sources: ferrous gluconate, ferrous fumarate, ferrous sulphate.
  - Insufficient iron in the diet leads to maternal iron deficiency anemia.
- Fats:
  - If 2/3 of proteins are taken correctly from animal sources, the intake of fats be adequate.
- Carbohydrates:
  - Carbohydrates can be slightly reduced to compensate for the increased calorie value of the proteins and more severely restricted if weight reduction is necessary.
- Folic acid (1 mg tablet/day):
  - Megaloblastic anemia from deficiency of folic acid may occur during pregnancy. To prevent megaloblastic anemia, it is recommended that women take 0.4mg of folic acid a day.
  - It is recommended that women at high risk for neural tube defects take 4-5 mg of folic acid supplement daily prior to conception and for the first 12 weeks of pregnancy.

Clothing

- Should be loose, light, and hanging from shoulders.
- Avoid high heels, shoes with thin soles, belts, or corset.

Dental Care

- Have teeth examined twice during pregnancy.
- Brush teeth after meals.
- Tooth extraction is allowed even for pregnant women with rheumatic heart disease if prophylactic antibiotics are given.

Breast Care

- Daily washes to reduce cracking.
- Massage:
  - Express breast secretion.
  - Open lacteal ducts and sinuses.
- Nipples:
  - If there is dry secretion, treat with a mixture of glycerin and alcohol.
  - If retracted, treat by pulling out.
- Brassiere to support heavy breasts (light and not tight).

Sexual Activity

- Allowed in moderation.
- To be avoided in pregnant women with threatened abortion, preterm labor, or antepartum hemorrhage (APH).

Traveling

- Allowed when comfortable.
- To be avoided in last month due to tendency to induce (APH) or premature labor.

Weight Gain (10-12 kg)

- 1st trimester 1-2 kg
- 2nd trimester 6-7 kg
- 3rd trimester 3-4 kg

Baths

- Showers are preferable over tub baths.

- No vaginal douches are allowed.

Exercise

- Should be mild, preferably walking.
- Housework, if not overtiring, is allowed.

Rest and Sleep

- Rest 8 hours at night and 2 hours in the afternoon.
- Increase towards term.

Drugs

- Avoid all unnecessary drugs during pregnancy.
- Minor complaints should be managed without the use of drugs whenever possible.

Smoking

Leads to spasm of placental blood vessels which can lead to:

- Fetal anoxia, LBW, IUGR.
- Prematurity, PROM.
- Placental abruption.

Immunization

- Live attenuated vaccines are contraindicated.
- Any pregnant woman who comes in contact with rubella should be tested for rubella antibodies.
- Tetanus toxoid to prevent tetanus.

TT1	At first contact, or as possible during pregnancy
TT2	At least four weeks after TT1
TT3	At least 6 months after TT2 or during subsequent pregnancy
TT4	At least 6 months after TT3 or during subsequent pregnancy
TT5	Minimum 1 year after TT4 or during subsequent pregnancy

Table Tetanus toxoid

- Rh-prophylaxis in Rh-negative women who did not produce anti Rh-D antibodies during pregnancy and who have given birth to a Rh-positive infant: such women should receive anti Rh-D 200 meg within 24 hours or at the latest 72 hours postpartum. This prevents Rh-sensitization of the mother.

10-Vaccination (immunization) during pregnancy:

Name of vaccine	Indicated during pregnancy	Contraindicated during pregnancy
Human papilloma virus	☒	✓
Influenza(inactivated)	✓	☒
Influenza(LAIV)	☒	✓
MMR	☒	✓
TT	✓	☒
Varicella	☒	✓

Irradiation

- Avoid exposure to irradiation for its teratogenic effect on fetus.

Common Complaints of Pregnancy

- Nausea and vomiting.
- Heartburn and hyperacidity.
- Ptyalism.
- Constipation .
- Hemorrhoids and varicose veins.
- Edema.
- Leg cramps.
- Leukorrhea.
- Backache.

Alarming Signs and Symptoms

Pregnant women should be advised to seek immediate medical care if they experience any of the following signs or symptoms.

- Vaginal bleeding
- Decrease or cessation of fetal movements
- Severe edema
- Escape of fluid from vagina
- Severe headache
- Epigastria pain
- Abnormal gain or loss of weight
- Blurred vision

Managing the Minor Disorders of Pregnancy

Minor disorders of pregnancy arc not life threatening if treated promptly. They are caused by hormonal, metabolic and postural changes as the body accommodates to pregnancy.

1- Morning sickness:

Nausea and vomiting in early pregnancy affect about 50% of pregnancies especially primigravida and disappears on the 12th week.

Causes: 1- Hormonal changes in the first 12 weeks of pregnancy 2- Pregnant women may be more at risk of morning sickness in the following conditions : a. Multiple pregnancy (twins or more) b. Previous history of morning sickness. c. previous history of migraine headaches d. History of sick when taking contraceptives containing estrogen e. Primigravida. f. Experiencing stress

Treatment*:* Reassurance, Light diet, frequent small meals and vitamin B6.

2- Backache:

More common at third trimester and worse at night

Etiology:

- Relaxation of the back and pelvic joints (progesterone effect).
- Muscle spasm& Lumbar lordosis.
- In third trimester caused by the gravid uterus.

Management:

- Frequent bed rest to minimize lordosis.
- Avoid wearing high- heals &Sedatives.
- Local heat (relaxation of muscles).
- Use good body mechanics
- Calcium as prescribed or from natural sources.
- Reassurance by explanation the cause of discomfort.
- Avoid long standing.
- Use abed step of each leg alternately during standing

3- Constipation:

Etiology:

- Reduced intestinal motility (progesterone effect).
- Pressure by the gravid uterus on the intestine &colon.

Management:

- Increase fluid intake.
- Simple exercise as walking
- Regulation of bowel habit.
- Diet rich in fresh vegetables and milk.
- Mild laxatives.

4- Dyspnea:

Etiology:

In the first half of pregnancy: progesterone induced hyperventilation. In the second half of pregnancy: pressure on the diaphragm by the gravid uterus.

Management:

Reassurance (anemia should be excluded).

Avoid full stomach and use extra bellows and ask women to take semi-setting position

5- Ptyalism (sialorrhoea):

Etiology:

Increased salivation occurs early in pregnancy in some women due to estrogen secretion & subsides later on. It is due to failure of the patient to swallow the saliva than increase in its amount.

Management:

- Reassurance
- Chew gums
- Anticholinergic drugs as belladonna which induce dryness of the mouth may be tried.

6- Hemorrhoids Piles: swollen veins inside the rectum or outside the anus.

Etiology:

- Laxity of the rectal veins by progesterone effect.
- Congenital weakness of the wall of the veins.
- Pressure by the gravid uterus.
- Tendency to constipation and straining.

Management:

- Avoid spicy food
- Avoid constipation.
- Kegal exercise.
- Local anesthetic ointment as lignocaine.

7- Leucorrhoea: excessive normal vaginal discharge .

Etiology: Increased vaginal discharge is common due to excess estrogen production.

Management:

No treatment is needed except if there is associated infection as trichomoniasis or moniliasis, maintain personal &feminine hygiene &maintain cotton under wearing with frequently changing and maintain dryness for genital area.

8- Acroparaesthesia: Numbness and tingling sensation of the fingers.

Etiology:

- Edema of the carpal tunnel which may be relieved by diuretics.
- Brachial plexus traction syndrome due to drooping of the shoulders during pregnancy.

Management:

- Minimize salt intake.
- Vitamin B12-range of motion exercise.

9- Round ligament syndrome; a deep, sharp, stabbing or stretching sensation that begins and worsen with movement

Etiology:

- Sharp tearing pain either unilateral or bilateral in the lower abdominal quadrant, more commonly on the left side due to dextro-rotation. It usually starts about the 20th week of gestation.
- Aggravated by sudden movement.

Management:

- Local heat, rest, reassurance.
- It usually resolves spontaneously as pregnancy progresses.

10- Palpitation and headache:

Etiology:

- Increased blood volume leads to overload on the heart and C.N.S.
- Errors of refraction.
- Nasal congestion or chronic sinusitis.

 Emotional tension.

 If severe & persistent-headache occurs in the 3rd trimester, preeclampsia should be excluded.

Management:

 Reassurance

 Decongestant drops.

 Exclusion of eye or nasal causes.

 Mild analgesics as paracetamol.

11- Leg cramps:

Sustained involuntary painful contractions, usually affecting the calf and peroneal muscles, may occur in the second half pregnancy particularly at night.

Etiology:

Unknown; it may be due to:

 Deficiency of vitamin B1

 Reduced serum calcium or elevated serum phosphorus.

 Local vascular insufficiency.

Management:

 Elastic stocking.

 Local heat (gentle leg movements in a warm bath).

 Calcium & vitamin b complex supplements.

 Magnesium.

 Aluminum hydroxide gel orally twice daily before meals adsorbs phosphate and may increase Ca absorption.

 Sleep with the foot end of the bed elevated.

12- Varicose veins: May occur in the vulva and or lower limbs.

Etiology:

 Congenital weakness which is exaggerated by progesterone relaxing effect

 Pressure on the pelvic veins by the gravid uterus

 Obesity

 Vasodilatation caused by steroid hormones

 Increased venous pressure

Management:

 Elevation of the legs in higher levels than the body during sitting, and sleeping

 Avoid long standing and sitting and tight clothes..

 Control of weight gain and active muscle exercise.

 Elastic cotton stockings are worn while the patient is lying down and the veins are empty. N.B: Surgical and injection treatment should be avoided during pregnancy.

13- Heart burn:

Etiology:

 Relaxation of cardiac sphincter, caused by upward displacement and compression of the stomach by the pregnant uterus. This leads to regurgitation of acidic stomach contents and juice which in turn leads to reflux esophagitis.

Management:

 Frequent small meals.

 Avoid spices, smoking and alcohol

 Antacids containing aluminum hydroxide gel, as they buffer the gastric contents, do not cause an acid rebound.

 Allowing 2 hours between meals and sleep.

14-Ankle edema: (pitting, bilateral): common in late pregnancy

Etiology:

* **Physiological:** due to:

 Decreased colloidal osmotic pressure.

 Increased capillary permeability.

 Increased tissue interstitial pressure (Na retention).

Increased venous pressure of lower limbs

 (Pressure on the pelvic veins).

Minor discomfort during pregnancy

76

 Salt and water retention (estrogen effect).

****Pathological**: refer to differential diagnosis of preeclampsia.

Management:

According to the cause:

 Sitting with elevated foot, and avoid tight clothing and tight stockings.

 Rest and reassurance.

 Reduction of salt intake.

15-Urinary complaints:

Frequency, urgency and stress incontinence are quite common late pregnancy.

Etiology:

 Pressure of gravid uterus on the bladder.

 Bladder congestion.

 Pressure of fetal head on the bladder decreasing its capacity.

 Increased intra-abdominal pressure.

 Decreased intraurethral pressure.

Management: reassurance, after excluding urinary tract infection.

High risk pregnancy

Introduction

The high-risk patient comes to the obstetrician & obstetric nurse with a poor obstetrical history or with a well-recognized medical complication. High-risk pregnancies require management by a specialist to help ensure the best outcome for the mother and baby.

Definitions:

 A high-risk pregnancy defined as: -

Any condition put the mother or fetus or both in jeopardized. For the mother the high-risk status extends through the puerperium, (40 days after birth).

Physical Characteristics:-

- Girls aged 15years and younger are at increased risk of preeclampsia, having underweight (small- for-gestational-age) or undernourished babies.
- Women aged 35years and older are at increased risk of problems such as high blood pressure, gestational diabetes and complications during labor.

High-Risk Pregnancy

Various complications can develop during the course of a pregnancy and can affect the health and wellbeing of the mother and fetus as well as the outcome of the pregnancy.

Hemorrhage is the first of the ten leading causes of maternal mortality in Egypt. It represents 31.9% of all maternal deaths. Abortion accounts for 4.5% of all maternal deaths, and 6.4% of direct obstetric deaths.

Bleeding in Early pregnancy (Before 20 weeks Gestation)

Causes of bleeding in early pregnancy:

- Abortion

- Vesicular mole
- Ectopic pregnancy
- Local lesions - cervical polyps -cervical cancer

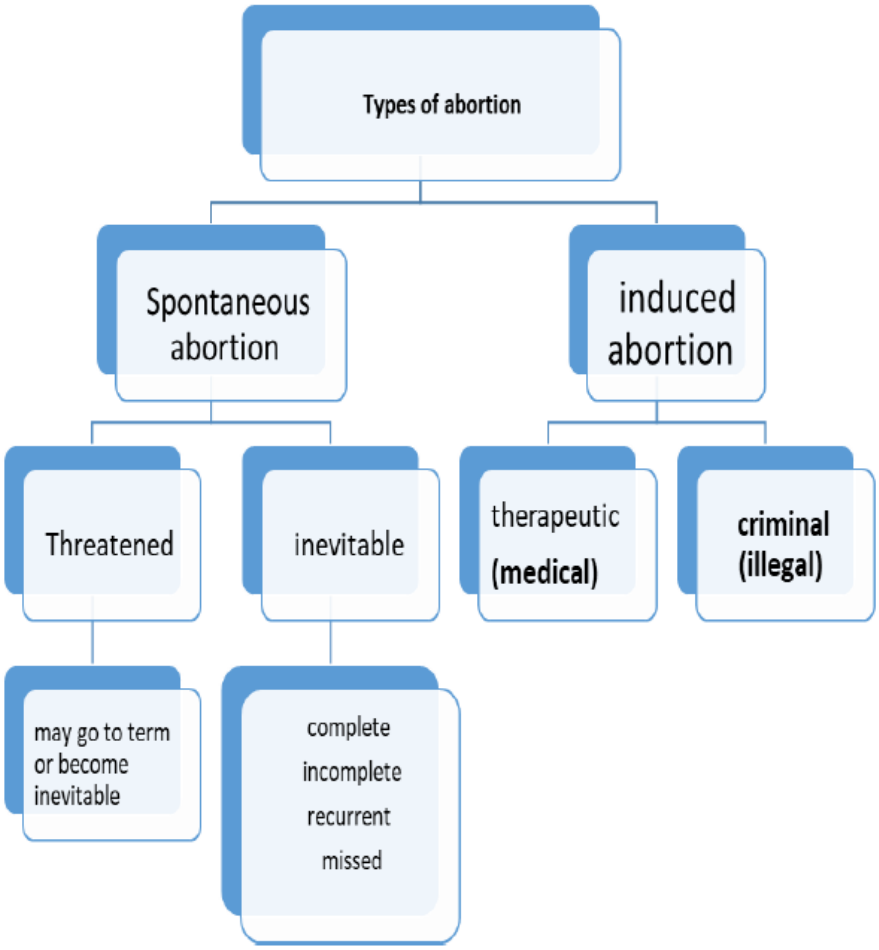
Abortion

Definition:

It is the termination of pregnancy before 24 weeks, or products of conception weighing below 500 grams.

Causes

Maternal	Fetal
a-General conditions: • Infections acute febrile conditions e.g. influenza, malaria. • Disease such as chronic nephritis. • Drug intake during pregnancy. • Rh and ABO incompatibility. **b-Local conditions:** • Conditions that interfere with embedding, development and nutrition of the ovum. • Implantation of the ovum in the lower uterine segment. • Incompetent cervix. • Uterine malformation. • Trauma- criminal interference, accidents, violent exercises, uterine stimulation. • Endocrine dysfunction.	• Chromosomal anomalies. • Diseases of the fertilized ovum. • Hypoxia



Types of Abortion

I-Spontaneous abortion

It means termination of pregnancy through natural causes which may be threatened or inevitable.

1-Threatened abortion

It is one of the subdivisions of spontaneous abortion. It may go to term, or it may become inevitable.

Signs and symptoms of Threatened abortion:

1. Cervical Os is closed

2. Membranes are intact.

3. Pain and backache may or may not be present.

Treatment of Threatened abortion:

1- Rest is the important part of treatment both physical and mental rest

a. Physical rest through:

i. Complete bed rest for at least 2 wks after bleeding stops

ii. Avoiding heavy activities and sexual intercourse for at least 2 wks after bleeding stops

iii. Avoiding constipation and diarrhea

b. Mental rest through sedatives

2- Oral or IM progesterone when there is progesterone deficiency

Role of nurse:-

1- All vaginal pads and stained linen should be kept for estimating the amount of blood loss and good personal hygienic cares.

2- Checking of TPR and BP according to maternal condition. And avoid enema and purgatives

3- Rich protein diet with iron and vitamin C should be provided.

4- Administration of prescribed drugs.

5- Accurate observation of blood loss, color, odor, amount and content.

2-Inevitable abortion:

Persistent bleeding and cramps with dilation of the cervix; which may be complete, incomplete, missed or recurrent.

Signs & symptoms of inevitable abortion:

1. Bleeding is excessive.
2. Blood is red in color with clots.
3. Severe colicky lower abdominal pain.
4. Cervical Os is dilated and rupture of membranes has occurred.
5. Uterus will be firm.
6. There is severe blood loss and the woman becomes shocked.

Treatment of Inevitable abortion:

Evacuation of uterine contents

1- Before 12 wks through either :

a. D&C

b. Suction evacuation (preferable method)

2- After 12 wks:

a. Induction of expulsion products of conception through oral or vaginal misoprostol followed by IV drip of oxytocin(10 U/500ml)

3-Incomplete abortion:

Some parts of the products of conception have been expelled, while others (placenta and membranes) remain within the uterus.

Signs and symptoms of incomplete abortion:

1. Parts of the products of conception are still inside uterus
2. Severe bleeding
3. Cervical Os partly closed.
4. No uterine involution.
5. Pain may or may not be present.
6. Uterus is soft and smaller than the expected period of pregnancy.

Treatment of incomplete abortion as the inevitable abortion

4-Complete abortion:

Signs & Symptoms of Complete abortion:

1-All contents of the uterus are expelled spontaneously without assistance.

2-There is minimal bleeding.

3-Pain stops.

4-Uterus is hard and much smaller corresponding to the period of gestation.

5-The cervix is closed.

Treatment of complete abortion:

- The most important part follow up with U.S to ensure an empty uterine cavity with no remnants

5-**Missed abortion**:

Occurs when the fetus dies and is not expelled but it is retained in utero for two months or longer.

Signs & Symptoms of Missed abortion:

1. Some signs of pregnancy disappear.

2. Pregnancy test will be negative.

3. Fundal height does not increase in size.

4. The breasts may secrete milk due to hormonal changes (prolactin).

6- FHR is absent. 7- No fetal movement.

8- An ultrasound test confirms fetal death.

9- Some brownish vaginal discharge.

10- Cervical Os is closed.

Treatment of Missed abortion:

1- expectant management:

a. Waiting 2 weeks hoping for spontaneous expulsion

b. -Follow-up by coagulation profile to guard against the occurrence of DIC (Disseminated Intravascular Coagulation).

2- Active management: if spontaneous expulsion is delayed or DIC occur then pregnancy should be immediately terminated through evacuation as previous.

6- Recurrent (Habitual) abortion:

Recurrent abortion (more than 2 consecutive spontaneous abortions)

Signs & Symptoms of Recurrent (Habitual) abortion:

Pain and bleeding are usually absent or minimal.

Treatment of Recurrent (Habitual) abortion:

-Treatment of the cause such as cervical cerclage for cervical incompetence or treatment of causative diseases as syphilis, DM, etc.

II-Induced abortion

Artificial termination of pregnancy which may be:

1-**Therapeutic abortion (medical)**:

It means artificial legal termination of pregnancy by a physician due to medical indication.

2- Criminal abortion (illegal):

The illegal termination of pregnancy: There are no medical or obstetrical indications.

Septic Abortion:

Any type of abortion complicated by infection especially incomplete & criminal abortion become Septic Abortion

Signs & symptoms of Septic abortion:

1- Tender and painful uterus.

2- Offensive vaginal bleeding.

3- High temperature. 4- Rapid pulse. 5- Chills.

6- Shock. 7- Unstable blood pressure.

Treatment of Septic abortion:

1- Isolation.

2-treatment : antibiotics IV broad spectrum antibiotics as cephalosporins

3- immediate complete evacuation of uterine contents surgically via suction

Role of nurse:

1- Accurate observation of renal functions.

2- Intake and output chart.

3- General hygienic care.

4- The soiled pads should be properly collected and burned, observation of TPR and BP.

5- Understanding and supporting.

Hydatidi form Mole (Vesicular Mole)

Definition:

Hydatidiform mole is abnormal development of the the chorionic villi in which the chorinic villi proliferate and resulting in formation of cluster of small cysts of varing sizes which look like a bunch of grapes.

Causes:

- The exact cause is unknown.
- Risk factors are:
  - Maternal age above 40 years or below 19 years.
  - Malnutrition (deficiency of proteins).

Signs and Symptoms:

- Signs and symptoms of early pregnancy are present.
- Excessive frequent vomiting
- Over distension of the uterus and larger than expected for weeks of gestation.
- Some vaginal bleeding may occur plus vesicles.
- No fetal movements are reported by the mother.
- No fetal parts can be palpated and no fetal heartbeats can be detected.
- On palpation the uterus may have an elastic consistency or it may be doughy.
- There is an increased incidence of pre-eclampsia.
- Positive pregnancy test results in highly diluted urine 1:500

. ***Investigations***

- Pregnancy test of HGC level in urine.
- Ultrasound scanning.

Complications

- Hemorrhage.
- Uterine sepsis.
- Choriocarinoma.

Management

- Admit the woman into hospital .
- prepare the woman for evacuation of the uterus under general anesthesia.
- HCG levels should be checked periodically.
- Health education on the following:
    - need for monitoring HCG levels for two years monthly for the first 3 months, then every three Months for one year).
    - Birth spacing methods to prevent pregnancy for tow years.
    - If HCG levels remain more than five international units per liter eight weeks postpartum, prophylactic chemotherapy is indicated

Ectopic pregnancy

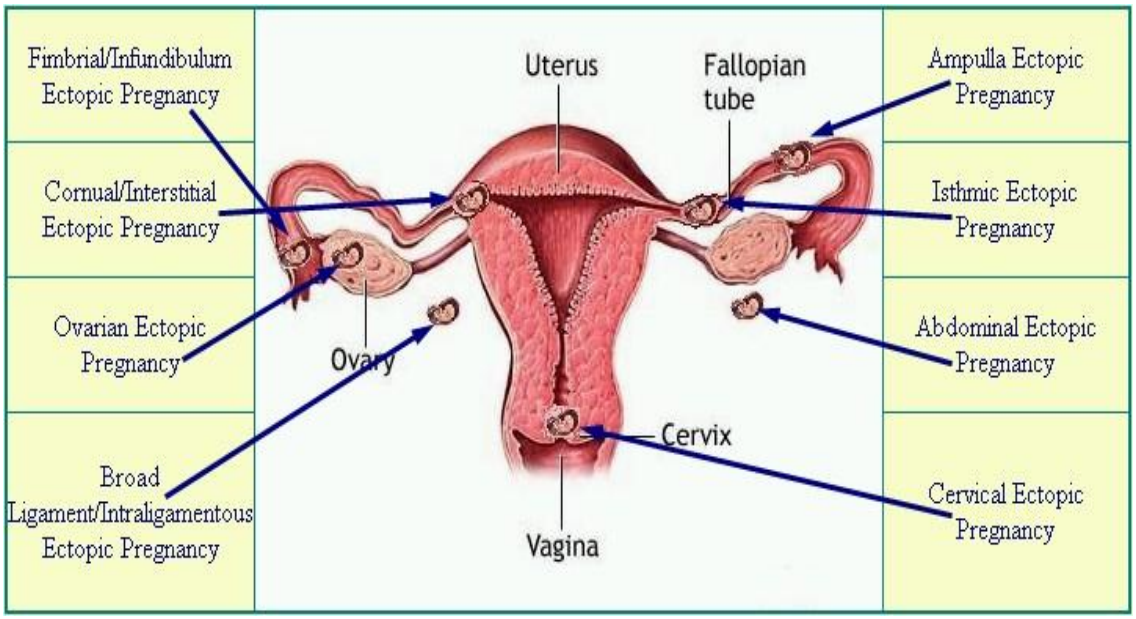
Definition

- Ectopic pregnancy is defined as pregnancy occurring outside the normal uterine cavity.
- It is an abnormal implantation of the fertilized ovum. It can be intrauterine, or extrautine; in the abdominal cavity, fallopian tube.

Tubal pregnancy

Definition

Tubal pregnancy is pregnancy occurring in the fallopian tube. It is the most common ectopic.

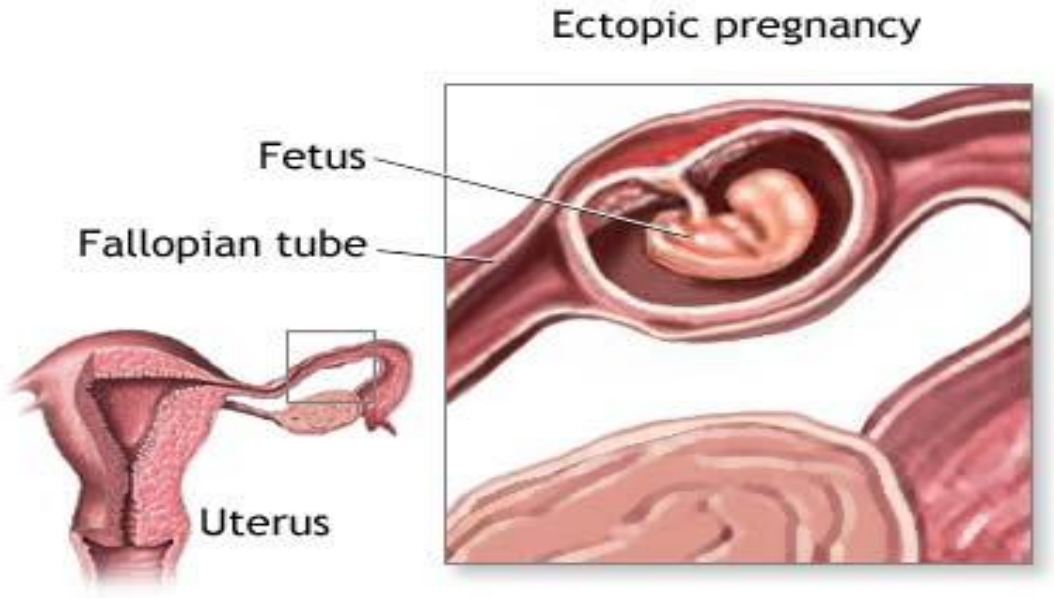


Causes

- Occlusion of the fallopian tube.
- Impaired tubal ciliary action.
- Impaired tubal contractility.
- Decreased sperm mobility.
- The use of intrauterine contraceptive device.

Risk factors

- Pelvic inflammatory disease.
- History of previous pelvic operations such as D and C.
- Severe anemia.



Signs and symptoms

- Short periods of amenorrhea
- History of infertility, tubal surgery , induced abortion.
- Sudden / recurrent severe, colicky abdominal pain in one iliac fossa or entire lower abdomen
- Blood stained vaginal discharge
- Signs of shock

Management *:*

- Once the diagnoses of ectopic pregnancy has been made, the pregnancy should be evacuated immediately .
- Salpingectomy is performed.
- Provide emotional support to the patient.
- Prepare for emergency surgery .
- Monitor the patient for shock.
- Follow-up is needed .
- Family planning should be discussed.

- **Role of nurse:**
- 1. Provide emotional support to the patient.
- 2. Prepare for emergency surgery.
- 3. Monitor the patient for shock.
- 4. Follow-up is needed.
- 5. Discuss Family planning options.
- ***Prevention of Bleeding in Early Pregnancy:***
- Preventive measures should be taken to avoid risk of a spontaneous abortion.
- **Before pregnancy**, includes healthful habits such as:
- 1-A nutritional diet
- 2- Avoiding smoking or drinking.
- 3- Receiving available immunizations against infectious disease.
- 4- Treatment of vaginal or pelvic infections.
- **After pregnancy is diagnosed**, instructions to minimize risk of bleeding include:
- 1- Participating in a prenatal care program.
- 2- Eating a nutritional diet.
- 3- Avoiding undue fatigue.
- 4- Preparing meat properly, by cooking it well.
- 5- Screen all patients for bleeding each prenatal visit.
- 6- Teach the client the importance and benefits of bed rest.
- 7- Discuss the allowed activities.
- 8- Teach the client the **warning signs and symptoms** which indicative of a problem, when to report them to the health care provider, and action to be taken with the appearance of any alarming signs.

Bleeding in late pregnancy: Ante partum Hemorrhage (after 20 week gestation)

Definition:

Ante partum hemorrhage is defined as bleeding occurring from the genital tract after the 24th week of pregnancy, and before the birth of the infant .

Causes of ante partum Hemorrhage :

- Placenta previa
- Abruptio placenta (Accidental Hemorrhage)

**** Placenta previa***

Definition:

This is a condition in which the placenta is partially or totally implanted over the lower uterine segment.

Causes

- Persistence of the chorionic villi over the decidua capsularis.
- Implantation of the zygote low down in the uterine cavity.
- In case of deficient blood supply of the decidua the placenta acquired a wider area of attachment.
- Placenta of large size. Incidence
- Occurs in 5% of all pregnancy

Degrees:

Placenta Previa Lateralis: [type I]

The lower part of the placenta is implanted over the lower uterine segment, but does not reach the internal os.

Placenta previa marginalis: [type II]

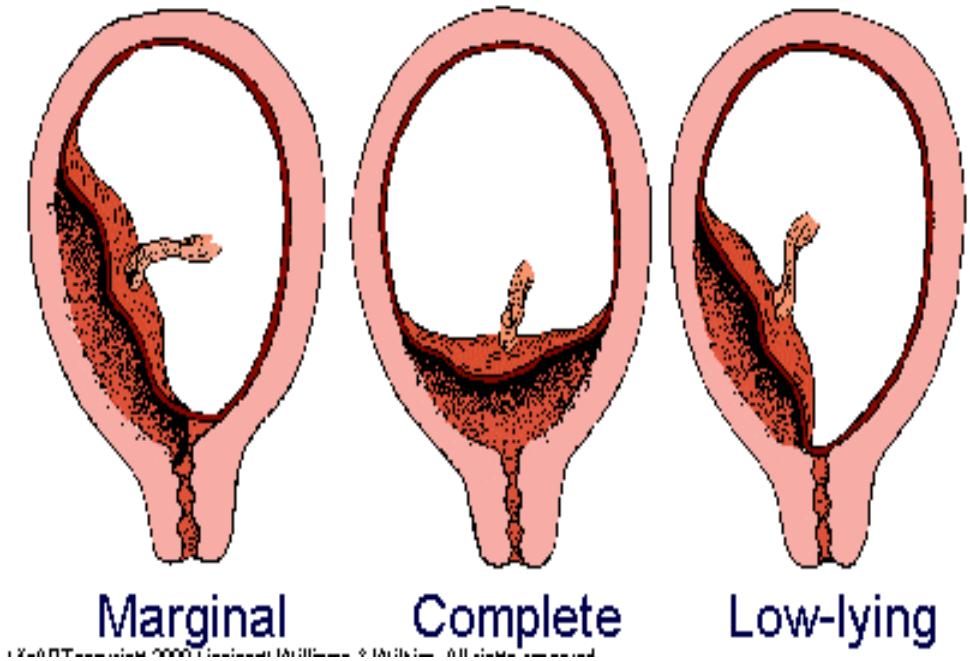
part of the placenta is implanted over the lower uterine segment and its margin reaches the internal os, but does not cover it completely.

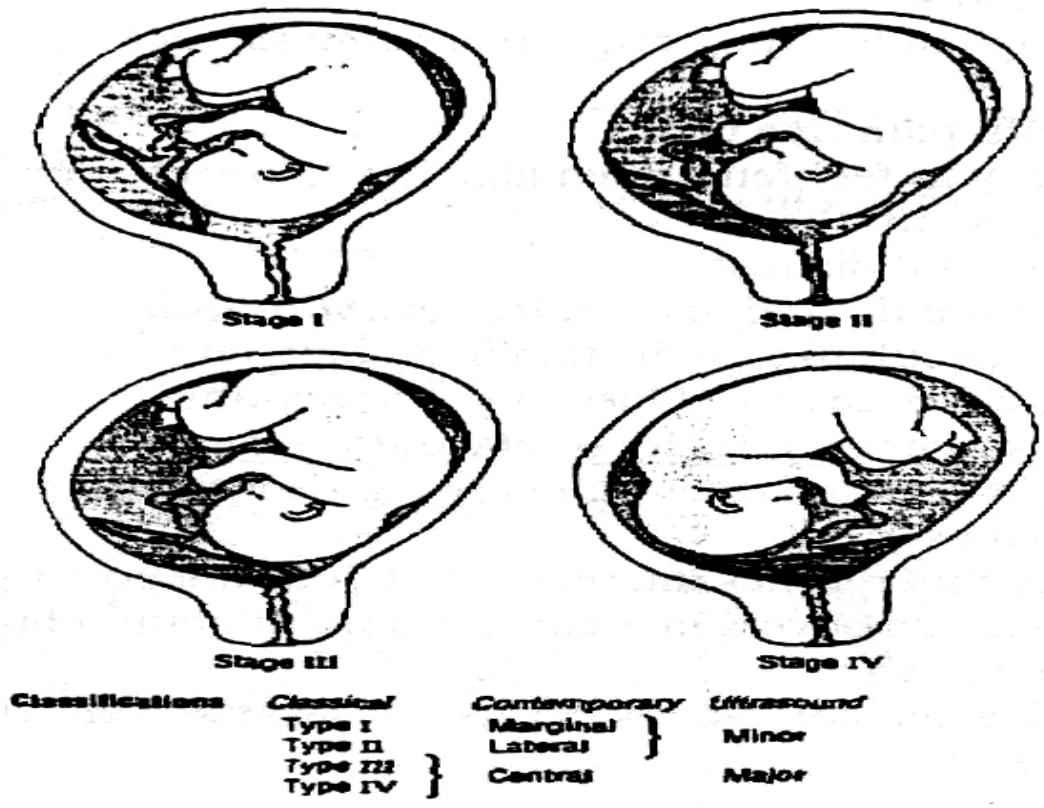
Incomplete central placenta previa: [type III]

The placenta covers the closed or incompletely dilated internal os eccentrically, but with further dilatation. The placenta does not cover it completely when it is closed, but covers it incompletely when the os is dilated.

Complete central placenta previa : [type IV]

The whole placenta is implanted over the lower uterine segment, with the internal os located at the center of the placenta. Thus, the placenta covers the internal os completely even when it is fully dilated.





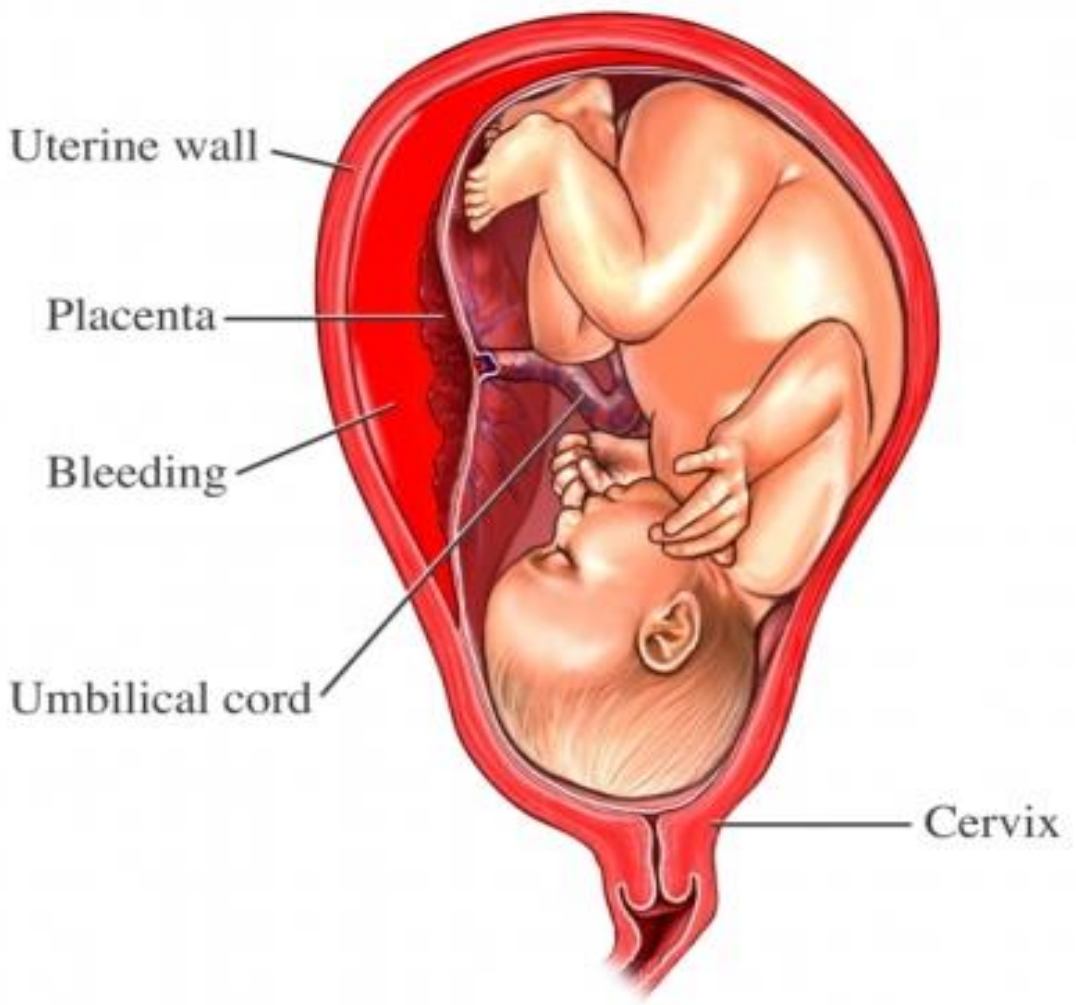
Signs and symptoms

Symptoms

- ***Vaginal bleeding***
  - Painless: except during labor.
  - Causeless: not associated with toxemia or trauma.
  - Recurrent: in severe degree, i.e., the third and fourth degrees.
  - May be moderate, mild, or severe.
  - Bright red in color, i.e., fresh blood.

- ***Symptoms attributed to blood loss, such as:***
  - Easy fatigability.
  - Palpitation.

If bleeding is severe it leads to Hemorrhagic shock Signs



Signs :

- ***General signs:***
  - These depend on the amount of blood loss: patient is pale, anemic, with air hunger, cold sweat,) excitement or drowsiness, tachycardia, subnormal temperature and lowered blood pressure.

- ***Local abdominal signs:***
  - The uterus is lax and not tender.
  - Malpresentation is common.
  - Presenting part is not engaged.

Vaginal signs:

- vaginal examination should never be done at home. It should be done at the hospital.

Diagnosis :

Localization of the placenta:

- Using ultrasonic scanning will confirm the existence of placenta previa and establish its degree.

Differential diagnoses:

- Accidental hemorrhage.
- Incidental hemorrhage.
- Spontaneous rupture of the uterus during pregnancy.
- Bleeding piles or urethral polyp mistaken for hemorrhage from the genital tract.

Effects of placenta previa on pregnancy and labor

- It lowers the general resistance of the patient.
- Abnormal presentation and position.
- Premature labor.
- Prolonged labor More chance of surgical intervention. Increased risk of lacerations.
- Placenta may be morbidly adherent
- Postpartum hemorrhage.
- Fetal malformation.
- High incidence of fetal hypoxia and mortality
- Maternal shock.
- Maternal death.

Assessing the mother's condition

- Hemorrhage may be mild, moderate or severe
- Color of blood is bright red (fresh bleeding).
- By General Examination:
  - If hemorrhage is slight, blood pressure , pulse and respiration may be normal.
  - If hemorrhage is severe, signs of shock may present.(low blood pressure, increase pulse respiration and air hunger)
  - Color of mother will be pale.
  - Skin is cold and moist.
  - Usually temperature is normal if not associate with infection.
- By abdominal examination**:**
  - Lie of the fetus is oblique or transverse.
  - Fetal head may be high in a primigavida near term
  - The uterine constancy is normal. No pain experienced by the mother.
  - Vaginal examination may precipitate hemorrhage.

Assessing the fetal condition:

- Diminution or cessation of fetal movements.
- In some instances, excessive fetal movements, which is another indication of sever fetal hypoxia.
- Electronic fetal monitor, as a sonicaid machine, can be used to assess the fetal condition.
- Fetal oxygenation depends upon the proportion of the placental remaining attached.

Prognosis:

- The maternal mortality is increased.
- The prenatal and fetal mortality are high.

Management at Home:

- Morphine sulfates 15-20 mg. IM.
- Sterile vulval pad, and patient is transferred to hospital.

Management in hospital:

- ***Conservative treatment:***
  - If bleeding is slight, observe carefully and correct anemia.
  - If bleeding is moderate or sever, blood transfusion.
- **Active treatment :**
  - ***Artificial rupture of membrane is indicated when :***
    - Bleeding is slight
    - The placenta is of the first or second degree
    - The fetus lies longitudinally
    - The patient is in labor, with good uterine contraction.
  - ***Cesarean section is indicated if :***
    - The patient has lost alarge amount of blood
    - Placenta of third and fourth degrees
    - Old primigravida or multipara
    - Posterior placenta previa
    - If the os does not admit one finger with moderate or severe bleeding.

Role of the nurse:

- Immediate referral of any pregnant woman who bleeds during the third trimester , regardless of the amount of blood loss
- Help in the diagnoses by history taking and assistance in any abdominal, pelvic or ultrasonic examinations
- Bed rest and restriction of physical activity for at lest 27 hours after admission
- Avoid constipation , enemas and vaginal and rectal examinations (if

necessary, they must be done in the operating room) .

- Follow strict aseptic technique to avoid infection
- Continuous observation of bleeding and signs of shock
- Continuous assessment of fetal condition through listening to FHR every 4 hours.
- Initiation and continuous observation of IV hydration according to obstetrician orders
- Maintain an accurate recording of intake and output
- Continuous observation of blood pressure and vital signs
- Observation of signs of premature labor
- Continuous observation natally and post natally because she is more liable to get postpartum hemorrhage and infection .

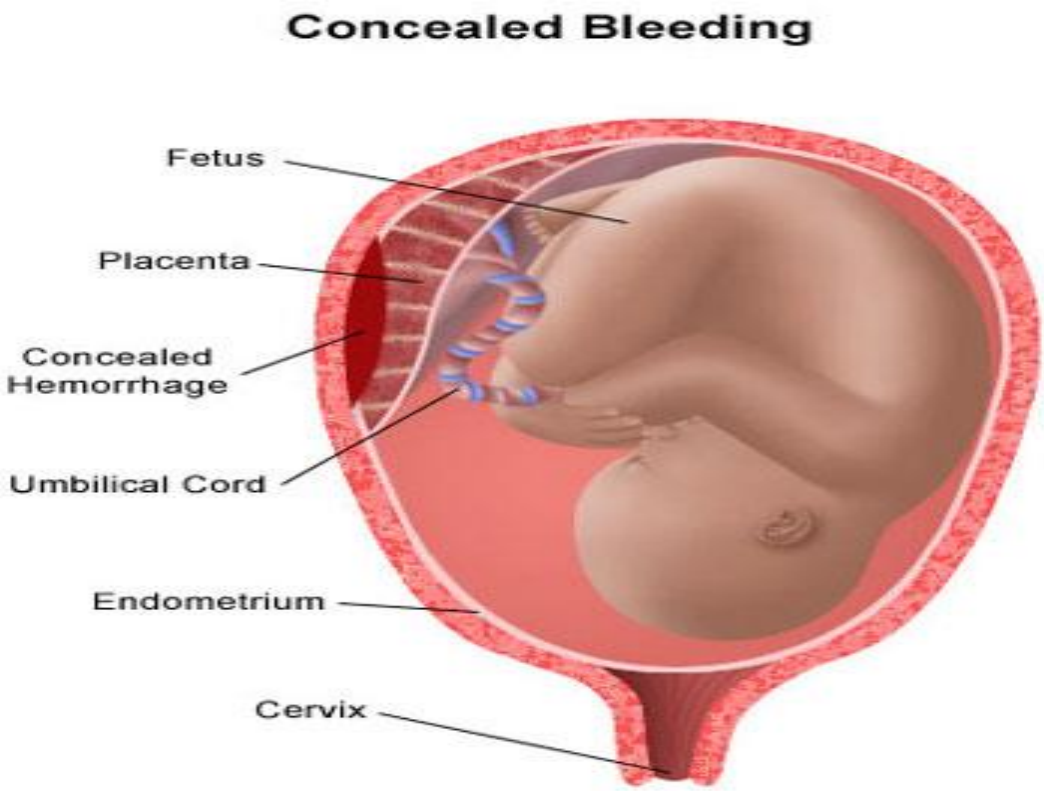
Continuous observation natally and post-natally because she is more liable to get postpartum hemorrhage and infection.

Causes:

- The most important cause is hypertension due to toxemia of pregnancy.
- The second most common cause is trauma.
- Some deficiencies in vitamins C and K.
- Torsion of the pregnant uterus.
- Traction on a short umbilical cord.

Types:

- ***Revealed***: almost all the blood expelled through the cervix
- ***Concealed***: almost all the blood is retained inside the uterus.
- ***Combined***: some is retained inside the uterus and some is expelled through the cervix.



Signs and Symptoms:

These depend on the type of hemorrhage present.

1. Revealed accidental hemorrhage : .

- Vaginal bleeding**.**
- Signs of blood loss are present (pale, irritable, air hunger, increased pulse). Blood pressure is usually not affected.
- If there is shock and painful contractions are present.
- Laxed uterus between contractions.
- Fetal parts are easily felt.
- Fetal head may be fixed or engaged in the pelvis.
- FHS are heard if less than half of the placenta is separated.

2. Concealed accidental hemorrhage:

- Sudden, sever abdominal pain followed by fainting and vomiting. Shock is always present.
- Patient becomes pale and irritable.

- Systolic pressure decreases while diastolic remain increased. The abdomen is very tender and rigid.
- The uterus is very hard and larger than expected.
- If severe shock, no uterine contractions are felt.
- Some scanty dark bleeding. Edema of lower limbs. Heavy albuminuria.

3. Combined accidental hemorrhage

- The blood is partially revealed and partly concealed.
- Signs and symptoms depend on the amount of blood loss and whether it is more revealed or concealed.

Complications

- Hemorrhage.
- Acute renal failure.
- Postpartum hemorrhage.
- Pituitary necrosis.

Prognosis

A mild case has a good prognosis, while a severe case has serious consequences for the mother and fetus.

Management

Principles:

- Correct general condition.
- Empty the uterus.
- Prevent or treat postpartum hemorrhage.

General treatment:

- Treatment of toxemia.
- Replacement of blood loss.
- Treatment for shock.

Obstetric treatment:

- In the presence of painful uterine contractions: artificial rupture of membranes.
- In the absence of labor pain: IV syntocinon drip.
- When labor pains are established: the treatment is continued as above.
- When the drip is a failure, a cesarean section must be done.

Role of the Nurse

- Immediate referral of patient to hospital on appearance of any signs or symptoms of abruptio placenta.
- Continuous observation of patient's general condition blood pressure, vital signs, bleeding and signs of shock.
- Continuous observation of fetal condition.
- Initiation and continuous observation of IV transfusion.
- Give medications accurately, especially for hypertension and shock if present.
- Regular urine analysis for protienuria.
- Regular weighing for discovery of generalized edema.
- Assessment and recording of intake and output.
- Assist in vaginal delivery, together with continuous observation of fetal and maternal conditions.
- Provide pre-operative care if there is need for cesarean section
    - Provide post-operative care.
    - Prevent postpartum hemorrhage through continuous observation of bleeding, lochia and uterine] contractility.
- Advise the patient to follow up any treatment of hypertension, anemia or any other disorder.
-

Gestational hypertensive disorders

(PIH)

Overview:

Pregnancy induced hypertension (PIH) affect about 5-8% of all pregnant women around the world, which cause maternal and fetal morbidity and mortality.

Definition of hypertension:

It is sustained (for at least 6 hours) blood pressure reading greater than 140/90 mmHg.

1- Pregnancy induced hypertension classified to :-

a)Preeclampsia It is a condition peculiar to human pregnancy characterized by hypertension (greater than 140/90mmHg), proteinuria and edema after 20th week of gestation and if untreated it will ended by Eclampsia.

b) Eclampsia (hypertension/ proteinuria unique to pregnancy with or without edema) associated with convulsive fit.

c) Gestational hypertention without proteinuria: The first onset during pregnancy (after 20 weeks of gestation)

Risk factors of PIH:

 Preconceptional risk factors:

1- Primigravidity and primipaty:

Primigravida from the first exposure to trophoblastic tissues; Primipaternity, mothers with new partner: exposure to new genetic materials.

2- Age beyond 35 years.

3- Family history.

4- History of previous pre-eclampsia.

5- Chronic hypertension.

6- Obesity.

7- Diabetes Mellitus.

 Pregnancy related risk factors:

1- Multifetal pregnancy.

2- Hydramnios (usually polyhydramnios).

3- Vesicular Mole.

4- Congenital anomalies and chromosomal anomalies.

Pathophysiology:

Pathophysiology of preeclampsia: Every organ is affected.

 CVS – hypertension

 Renal – raised uric acid, proteinuria

 Hepatic – raised liver enzymes

 CNS – cerebral edema

 Respiratory – pulmonary edema

 Hematological – low platelets

 Placental – impaired fetal growth.

HELLP Syndrome:

Is a form of severe preeclampsia /eclampsia which considered as acronym from Haemolysis, Elevated Liver enzyme and Low Platelets

Signs and symptoms of HELLP Syndrome: ranged from malaise, epigastric pain, nausea and vomiting.

Complications may be acute renal failure, disseminated intravascular coagulation (DIC), hepatic rupture and subscapular hemorrhage leading to intraperitoneal bleeding.

Management is to stabilize coagulation (fresh frozen plasma), assess fetal well-being and consider the need of delivery. It is generally considered that, delivery is appropriate for moderate to severe cases.

Diagnostic criteria of preeclampsia:

1- Hypertension: it is diagnosed when there is a rise of 140/90 mmHg in two occasions 6 hrs apart.

2- Proteinuria:

Proteinuria >300 mg in 24hrs urine collection,>+1 in at least 2 random urine samples and presence of of ≥ 300 mg of protein in 24hrs urine collection.

3-Edema:

 occult edema rapid weight gain more than 0.5kg/week or >2kg/month,

 overt edema (manifest) sudden and severe edema of lower parts of the body as ankles and feet.

Classification of preeclampsia

 Mild preeclampsia

 Hypertension, but not reaching 160/110 mm Hg.

 Proteinuria 1+ dipsticks (300 mg / 24 hrs).

 Severe preeclampsia

 Bp ≥ 160 / 110 mmHg (or one of them), plus one or more of the following criteria.

 Proteinuria ≥ +2 dipstick (500 mg / 24 hrs).

 Serum creatinine ≥ 1.2 mg / dl unless known to be previously elevated.

 Presence of symptoms as Persistent headache, visual disturbance and persistent epigastria pain.

 Presence of complications as HELLP ,DIC, pulmonary edema, HF,IUGR.

Management of mild preeclampsia:

a) Management of mild preeclampsia at home

b) Management of mild preeclampsia at hospitalization

a) Management of mild preeclampsia at home:-

1-Assessed two to three times per week.

2- Learn the mother about her condition.

3- Teach the mother to notice and report immediately any warning S&S.

4- Teach the importance of bed rest which increase perfusion, homodynamic, blood supply to kidney and brain and correct blood pressure.

5- Left lateral position correct utero-placental circulation.

6- Increase Fluid intake and add roughage to avoid constipation.

7- Encourage gentle exercises as circling hands and feet to improve circulation, muscles tone and senses of wellbeing.

8- Encourage family participation in care .

9- For assessment of weight gain use the same scale, wearing the same clothes, at the same time each day after voiding and before breakfast.

10- Report any frequency or burning in voiding.

11- Daily assess to fetal activity, up–to–ten count movements may be helpful.

12- Sodium restriction is not recommended, only avoid salty food, salt is needed for, maintenance of blood volume & placental perfusion.

13- Well balanced diet with increase protein.

14- Learning relaxation can help to decrease stresses.

<u>b) Management of mild preeclampsia at hospital</u>

for those with mild preeclampsia when bed rest cannot ensured at home hospitalization is preferred.

plus the points of home care the following measures will be taken:

1. Blood pressure every 6 hrs .
2. Urine analysis for proteins at admission and daily.
3. Serum creatinine, hematocrit, platelets, liver function twice weekly measurements or more frequently
4. Non stress test (NST) twice weekly according to severity of the condition and In case of abnormal NST make:

- Biophysical profile
- contraction stress test (CST)

Management of severe preeclampsia:

If the mother has severe preeclampsia, the managements will be consisting of:-

- Prevention of eclampsia.
- Termination of pregnancy.
- Temporization (postpone/ conservative) in the hope of having a more viable fetus is however sometimes (exceptionally) considered.

Hospitalization:

I) General Measures:

1. Quiet non-stimulating environment.
2. Seizure precautions suction equipment e.g. padded side rails UP, suction equipment tested & ready to use, oxygen administration equipments.
3. Emergency medication tray, immediately accessible e.g. hydrolyzing, magnesium sulfate calcium gluconate available & well labeled syringe.
4. Emergency birth pack accessible
5. Informing woman about her condition.
6. Emotional support is essential to help woman & her family cope.
7. Daily weighing, bed rest in left lateral position.
8. indwelling urinary catheter facilitate monitoring of renal function.
9. Frequency of measuring BP., laboratory test.
10. 24 hours urine collection for protein & volume.
11. No visitors in severe cases.
12. Do not disturb mother by unnecessary procedure e.g. bath, enema.
13. Close comprehensive observation for maternal and fetal condition with complete record & immediate report.
14. Ask about subjective symptoms.
15. Daily fundo-scopic examination.
16. Prepare mother for delivery.

II) Prophylactic magnesium sulfate.

This care can be carried out in special high – risk pregnancy unit.

 Dosage of magnesium sulfate (mg so4):

 A loading dose of 4–to 6gm diluted in 100 ml of 5% glucose and injected I.V. over 15-20 minutes.

 Maintenance dosage:

 Infusion of 2 gm/hour as a continuous infusion (diluted in glucose 5 %) this is achieved by adding 10 gm of mag. Sulfate to 500 ml / of 5% glucose and giving I.V. at the rate of 100 ml/hour, through an automatic infusion pump. The maintenance dose is begun after the end of the loading infusion.

Nursing management of a patient under MgSo4 therapy:

 Measure serum Mg So4 level every 4-6 hrs. If measurements of serum Mag. is not available the dose is adjusted according to signs of MgSo4 toxicity.

Signs of MgSo4 Toxicity are:

- (1) Loss of patellar reflex (knee-jerk-reflex).

 (2) Respiratory rate less than 14cycle / min and / or

 (3) urine output < 30 ml/hr.

Management of MgSo4 Toxicity are:

Magnesium sulfate is discontinued or stopped.

 The anti-dote of magnesium is calcium which is given as "calcium gluconate" (1 gm).

III) Antihypertensive drug therapy:

Must be given by parenteral routeas hydralazine-labetalol for gaining few more weeks of intrauterine fetal life.

IV) Glucorticoid

To enhance lung maturity in preterm termination as dexamethasone.

V) Termination of pregnancy:

(Delivery is a cure for preeclampsia).

1. With pregnancy less than 36 weeks, conservative management is the choice in the hope to improve neonatal survival.

2. Vaginal delivery is possible when oxytocin induction is frequently successful even when the Bishop score (which includes cervical dilatation, effacement, position of the cervix, station and cervical consistency) is low.

3. Failure of induction is indicated C.S.

VI) Intra partum nursing management:

1. Mgso4 is continued with antihypertensive therapy (not stop).

2. Continuous electronic fetal monitoring.

3. Monitor blood pressure / hourly.

4. Asked mother frequently about subjective symptoms at least hourly.

5. Remain in bed rest with Lt. Lateral position.

6. Maintain peaceful quiet environment with emotional support.

7. Equipment & personnel should be prepared for emergency C.S.

VII) Postpartum nursing management:

A. Be ready for P.P. Hemorrhage.

B. Assessment for uterine tone.

C. Do not. Give ergot preparation which increase BP.

D. Mgso4 continues for 12-24 hrs. P.P. then gradual decreases 2-3hrs.

E. Close observation since convulsion may occur for the first time up to 8 hrs after delivery.

F. Continue antihypertensive therapy.

G. Monitor Bp/ 4 hours.

H. C.N.S. stability assessed.

I.

Eclampsia

Eclampsia is the most serious sequence of preclampsia and has a high maternal and perinatal mortality rate.

Definition

Eclampsia is apre-eclampsia complicated by convulsive fits.

Phases of convulsions:

1) Prodromal stage: of about 15 seconds, in which there are facial muscle twitching or eye rolling.

2) Tonic phase: Lasting for 15 to 20 seconds in which the entire body becomes rigid in a generalized contraction.

3) Clonic phase: This begins by sudden violent, opening and closing of the jaws and eye lids. The other facial muscles and then all bodily muscle alternately contract and relax rapidly.

4) Coma: the depth and duration of which varies with the severity of eclampsia. In severe cases, the pt remains completely unconscious between convulsive fits. In milder cases the pt. may recover between fits. The eclamptic fits are repetitive and usually precipitated by external stimulation like noise, light and manipulation.

 Eclampsia has a high death rate resulting from:

1. Respiratory distress syndrome
2. Heart failure.
3. Hypovolemic shock.
4. Cerebral hemorrhage.
5. Acute renal failure.
6. HELLP syndrome.
7. Fetal hypoxia.

 Management of Eclampsia:

- First aid and nursing care of a patient with seizers:

If eclampsia occurs at home, urgent steps for immediate transfer to hospital should be taken.

 During the fit padded tongue depression or a mouth gag should be used to separate the patient's jaws and prevent her from biting her tongue.

 The convulsions should not be resisted by force.

 The patient is turned to her side and head is lowered to the side of bed to allow drainage of blood and mucous filling mouth and pharynx and prevent their aspiration in the lung

 The patient should be sedated by giving her 5 mg of diazepam valium, (slowly). In addition; 0.2 to 0.4 gm. of morphine is injected intravenously.

 Place patient in aspecial quiet room.

 Suction the mucous and blood immediately after the seizure.

 Oxygen should be given by the face mask after the fit and until cyanosis disappears.

 If she starts to show premonitory signs of a fit, a mouth gag and / or airway should be inserted to prevent biting and back – falling off the tongue.

 The patient should be protected from falling off the edge of the bed and minimally handled until fully sedated.

 When she can be examined, a Folley's catheter can be inserted to monitor the urinary output.

 Noise, bright light or rough handling can precipitants a new fit.

 Continuous hourly monitoring of patient's plus, temperature ,B.p, respiration rate and fluid intake and output.

 The level of coma should be observed.

 The patient may develop hyperthermia, and this is a serious sign of cerebral hge.

 Obstetrician can cooperate with intensive care personal in the care of the eclamptic patient .

2) Magnesium sulfate treatment

3) Parenteral anti-hypertensive drugs.

They are indicated if diastolic Bp. remains above 110 mmHg. and when Mag. sulfate is not effective in controlling the hypertension.

4) Delivery:

Eclampsia frequently precipitates preterm labor.

 If the pt in not in labor within few hours (3-4) after the last seizure, labor should be induced by pitocin drip.

 Cesarean delivery should be done if the pt. has a low Bishop scores after 24 hrs from admission or has any other obstetric abnormality; C.S. should not be a routine for all eclamptic patients.

5) Treatment of complications of eclampsia

Complication of Pregnancy Induced Hypertension

 Maternal:

 Eclampsia

 HELLP syndrome.

 Placental abruption.

 Pulmonary edema

 Hepatic rupture.

 Electrolyte imbalance.

 Acute renal failure.

 Cerebral hemorhage

 Visual disturbances.

 Late consequences: recurrence in subsequent pregnancy. Developing permanent hypertension.

 Fetal:

 Preterm labor.

 IUGR.

 Fetal asphyxia.

 Increase perinatal mortality.

Cardiac disease in pregnancy

Introduction

The incidence of heart disease with pregnancy world is between 0.2 and 3.7 % Rheumatic heart disease accounts for about half of the cases while congenital heart defects are responsible for most of the remaining half.

1. Definition:

Heart disease is one of the most serious diseases that may associated with pregnancy.

2. Classification of heart diseases: According to the New York Heart Association (NYHA):

Class1: No limitation of physical activity, Asymptomatic with usual activity.

Class2: Slight limitation of physical activity and Asymptomatic at rest, symptomatic with heavy physical activity.

Class3: Considerable limitation of physical activity and Asymptomatic at rest, symptomatic with minimal physical activity.

Class 4: Severe limitation of physical activity, symptomatic with any physical activity and may be symptomatic at rest.

3. Signs and symptoms of heart disease:

-Dyspnea.

-Orthopnea.

-Nocturnal cough.

-Dizziness.

- Fainting.

-Chest pain.

Maternal mortality in pregnant cardiac patients is 10% world wide and 12.8 % in Egypt.

Homodynamic changes during pregnancy:

1. Cardiac output increase by as much as 40%.
2. Blood volume increase by as much as 50%.
3. Heart work increase by about 30 to 40
4. Peripheral resistance decrease.
5. Blood pressure decrease in the first half of pregnancy followed by arise to pregnant state or higher.

4-Effect of pregnancy on heart disease:

1. Congestive heart failure.
2. -Reactivation of rheumatic condition.
3. Increase cardiac work.
4. -Pulmonary edema.
5. Bacterial endocarditis.

Effects of heart disease on pregnancy women:

Fetal problems are mainly due to a restriction of maternal cardiac output and placental perfusion resulting in:

1. -Fetal growth retardation (IUGR).

2. -Abortion.

3. -Intrauterine fetal death (IUFD).

4. -Preterm labor.

5. Low birth weight.

6. Hydroiminos.

Nursing management :

1- Preconception counseling about

-Control obesity and smoking.

-Instructed to prevent anemia and correct anemia if present.

2-During pregnancy(Antenatal care):

1- Visits need to be more frequent, often weekly to assess cardiac patientat the first visit, comprehensive history and examination must be done.

3- Careful attention for any pregnancy complications.

4- If there is any signs of heart failure the woman should be admitted to the hospital.

5-Bed rest is advised to reduce the load on the heart.

5- Diuretics should be used to treat heart failure as doctor
6- - Fetal assessment should be done as: ultrasound to asses fetal growth.

7- Promote healthy nutrition to avoid excess weight gain, also iron supplementation must be given to correct anemia.

8- Medication education about digitalis to be continued throughout pregnancy, also penicillin is taken prophylactically.

9- Psychological support to avoid stress.

3. Intrapartum care

1. Labor and delivery must be in lateral recumbent position to minimize aorta coeval pressure by the gravid uterus.

2. Pulse oximetry should be used to assess the condition continuously.

3. Oxygen mask and resuscitation equipment should be available and functioning.

4. Adequate pain relieve: Morphia (2-4mg) I.v may be used and epidural anesthesia to reduce the stress of pain.

5. Restrict I.V. fluids to not more than 75ml/hr.to avoid pulmonary edema.

6. Prophylactic antibiotic to prevent infection such as sub-acutebacterial endocarditis if the woman has artificial valve.

7. Avoid oxytocin and ergot drugs in pt.with cardiac diseases.

8. Observation of pulse and respiratory rate should be made every 15 minutes.(if pulse rate exceed 110b/min, rapid digitalization should be given by IV digoxin 0.5 mg)

9. Second stage should be short so any tendency to delay in second stage is curtailed by forceps.

4. Postnatal care

1. Prevention of thrombus formation as: early short ambulation, low dose heparin and supine position after delivery to increase the blood flow to the extremities.

2. Pulse & respiration are monitored hourly for at least 72 hours.

3. Prevention of post-partumpulmonary edema.

4. Family planning as progesterone-only pills and barrier methods with spermicidal to prevent unplanned and unwanted pregnancy.

5. Follow up after delivery to check the heart state, if heart failure developed, pregnancy should not allowed again.

6. Breast feeding should be encouraged unless the woman of has heart failure.

Diabetes mellitus

Introduction:

Diabetes mellitus is a chronic disease in which glucose metabolism is impaired by lack of insulin in the body or by ineffective insulin utilization.

Definition:

Gestational diabetes mellitus (GDM) has defined as carbohydrate intolerance of variable severity with onset or first detection during the present pregnancy.

Incidence:

The incidence is roughly about 1-2% of all pregnancies and is 10 times more common than pregestational diabetes (which has been diagnosed before the pregnancy).

Pathogenesis:

GDM is associated with increased insulin resistance and relatively reduce insulin secretion. Insulin resistant can be caused by:

 The progressive increasing production of human placental lactogen (HPL)

Elevated estrogen, progesterone, and prolactin concentration increase insulin resistance or insulin destruction.

Diagnosis of diabetes mellitus during pregnancy:

1. Symptoms, suggesting DM as loss of weight, polyuria, 2 recurrent pruritis vulvae.

2. Non challenge blood glucose tests at 1st antenatal visit.

a. Random plasma glucose more than 200mg/dl.

b. Fasting plasma glucose more than 126mg/dl

3. Screening test(glucose challenge test between 24-28 wks gestation 50 gm oral glucose is given followed by a1 hr estimation of blood glucose level more than 140mg % is considered abnormal and 100 gm GTT is indicated)

4. Diagnostic test (100 gm OGTT) is done in case of a positive screening test

-Gestational DM is diagnosed if at least 2 glucose values exceed the following:

-Fasting blood glucose level 95mg

- oral glucose tolerance test :after 1hr 180mg ,after 2hrs 155mg, after 3hrs 140mg

Risk factors requiring diabetes screening during pregnancy:

1- Age> 30 years.

2- Obesity.

3- Previous history of GDM, recurrence rate is 20 to 50%.

4- Polycystic ovary syndrome.

5- History of large- for- gestational age infant in previous pregnancies.

6- History of fetal congenital anomalies.

7- History of stillbirth or neonatal death.

8- History of recurrent abortion.

9- Family history of type 2 diabetes mellitus.

10- Recurrent vaginal moniliasis.

Effects of diabetes on pregnancy:

1- Early pregnancy abortion.

2- Fetal congenital anomalies, such as cardiac defects, neural tube defects, GIT atresia and urinary defects.

3- Fetal macrosomia: excessive production of insulin by fetal tissues in response to hyperglycemia acts as a growth hormone which results in huge size fetus as 7 kg or above.

4- Hydramnios.

5- Late intra uterine fetal death (IUFD), due to placental insufficiency.

6- Hypertensive disorders of pregnancy: PIH

7- preterm labour

8- Neonatal morbidity and mortality rate is increased.

Effects of pregnancy on diabetes;

1-impaired carbohydrate metabolism

2-renal glucoseuria

3-activation of medical complications during pregnancy

As aresult of the following neonatal complications

- Polyglycemia
- Respiratory distress syndrome (RDS)
- Cardiomyopathy
- Polycythemia
- jundice.

Neonatal hypoglycemia;

Neonatal hypoglycemia reaching down to plasma glucose of less than 40mg/dl occurs in 1/4 of infants of diabetic mothers.it occurs due to the higher levels of giucose in the fetal blood during intrauterine life . when the maternal supply of glucose is cut at birth , the hyperinsulinemia results in drop of blood glycose. Hypogiycemia of the neonate occurs one to two hours after birth and manifests itself by lethargy , failure to feed ,and if sever results in convulsions.

Management of pregestational diabetes mellitus in preparation for pregnancy:

Pre-conceptional counseling of a diabetic patient should emphasize the need for pre-conceptional control of her diabetes and should motivate the patient to give her the pest cooperation to ensure strict glycaemia control. This is usually achieved by diet, exercises and if needed insulin is appropriate. Glycemic control of diabetes during pregnancy effectively lower the rate of all complications of diabetes.

i. Ante natal management:-

1- Clinic visits should be scheduled every 1 to 2 weeks to ensure glycemic control and early detection of complications.

2- Diet: proper diet should supply 30-35 kcal/kg,50% of which carbohydrates.

3- Exercises: Physical activity improves insulin sensitivity and glucose disposal.

4- Glucose monitoring through repeated blood sugars estimation to control glucose level.

5- Insulin: therapy is indicated when diet alone is not reassuring in control of DM.

6- Follow up using:

1. U.S for diagnosis of neural tube defect, congenital anomalies, and macrosomia.

2. Alpha feto-protein for detection of neural tube defects

3. Fetal wellbeing assessment from 28 wks. through

 daily fetal movements counting

 NST,BPP, and CST.

ii. Intra-partum Management of gestational diabetes mellitus:

 The patient is advised to have her usual evening meal and insulin dose in the night before induction of labor or C.S.

 Monitor fetal heart rate.

 To control glucose level during labour

o Initiating IV drip of one liter of 5% dexstrose with 10 units of insulin.

o Hourly estimation of blood glucose level and insulin dose is adjusted according 1g.

iii. Postpartum management of GDM:

 -Patients with preexisting diabetes mellitus will continue to need insulin but in reduced doses.

 Patients with gestational diabetes should be kept off insulin unless glucose levels rise again.

 Breast feeding is usually allowed, but it can make glycemic control difficult. This should be achieved

through insulin administration; oral agents are not suitable because of possible secretion in breast milk.

Contraception in diabetic women:

Counseling is very important to help the woman to choose a suitable method. Contraceptive methods options for postpartum diabetic woman are as the following:

1- Female or male sterilization: is a valid option, if the family size has been achieved.

2- The copper 380 IUD is a valid option for most patients. If strict asepsis is observed there is no real risk of PID

3- Barrier method is a good option if used correctly by the couple.

4- Low dose COCs can be used by diabetics if other options are not valid.

5- Progesterone-only-contraceptives like the minipills, injectable and Norplant.

Educate the patient regarding self care measures:

- **activity and exercise**:
  - The women blood glucose should be well controlled before she begins any exercise.
  - Exercise should not be attempted if blood glucose is in excess of 250 of mg/dl.
  - Avoid exercise after meals and when blood sugar may be low.
  - Carry simple sugar carbohydrate when exercising.
  - Carry an identification card that indicate the mother condition.
  - Eat after 15 minutes of prolonged exercise.
  - Monitor blood glucose to determine its variation.

- ***Smoking:***
  - Smoking is contraindicated because it has harmful effect on the mother and fetus.

Traveling:

- Patients can use a small travel-kit of insulin.
- Diabetic person should were an identification bracelet stating that she is diabetic.

Anemia during Pregnancy

Introduction

WHO estimate that more than half of all pregnant women in the world have hemoglobin indicative of anemia, Anemia directly or indirectly contributes to significant proportion of maternal death in the developing world.

Definition of anemia:

a) Anemia

Anemia is a reduction in the oxygen-carrying capacity of the blood which may be due to:

-A reduced number of red blood cells . -

-A low concentration of hemoglobin or

-A combination of both.

b) The WHO definition of anemia during pregnancy is hemoglobin concentration less than 11g/dl

Normal range of hemoglobin concentration 12-14 g/l in female

1. Classification of anemia

1- Physiological anemia

2- Pathological anemia

a- Nutritional (deficiency anemia)

 Iron deficiency anemia.

 Folic acid deficiency anemia.

 Vitamin B12 deficiency anemia.

b- Hemolytic anemia.

- Congenital haemoglobinopathies, which include sickle cell disease and thalassaemia.

 Acquired in some patients with severe preeclampsia

c- Hemorrhagic anemia due to sever blood loss as in postpartum hemorrhage.

d- Aplastic anemia due to bone marrow insufficiency

Iron deficiency anemia

This is the commonest cause of anemia in pregnancy.

1. Increased demands for iron (fetal demands for iron)

2. Decreased intake of iron either due to

- Iron deficiency in diet
- Vomiting with pregnancy

3. Excess demands as in multiple pregnancy, women with rapidly recurring pregnancy.

4. Prepregnent health status: state of stored iron before pregnancy.

5. Disturbed metabolism pregnancy depresses erthropoietic function of the bone marrow .

Symptoms of Anemia

Anemia is suspected when hemoglobin is less than 11 gm. /dl

***Mild to moderate anemia**

(7.0-11.0gm/dl)

Signs and symptoms:

1. Pallor mucous membrane
2. Breathlessness.
3. Dizziness.
4. Tiredness

***Severe anemia**

(4.0-6.0gm/dl):

1. Pallor
2. Palpitation and Tachycardia.
3. Extreme fatigue and Weakness
4. Dyspnea on making any effort.

5. Drowsiness and fainting attacks
6. Headache and nausea.
7. Brittle finger nails.
8. Disturbance in tasting food
9. Angular stomatitis, glossitis, dysphagia.
10. Trouble concentrating
11. Renal hypoxia causing sodium retention and edema.
12. Myocardial hypoxia leading to heart failure

Possible Complications:

Maternal complications:

1. Abortion
2. Preterm labour
3. Antepartum hemorrhage
4. Uterine a tony during labour
5. Retained placenta
6. Postpartum hemorrhage
7. Puerperal sepsis
8. Sub involution of uterus
9. Defective lactation

Effects of anemia on the fetus:

1. Increase the risk for intrauterine hypoxia and growth retardation.
2. Sudden infant death.
3. A low-birth weight baby,
4. Increase the risk for anemia later in infancy.
5. Perinatal mortality.

Diagnosis of Anemia:

1. Complete blood count (CBC), including hemoglobin value (11g/dl) & hematocrit value (33%).
2. Serum iron (30mg/l).

Nursing management during pregnancy

1. During pregnancy

A)Prevention through

-Proper antenatal care

-Proper diet rich iron and vitamin C .

-Iron supplementation using ferrous sulfate

B) Treatment either through

-Oral iron therapy (ferrous sulfate)

-Parenteral iron therapy (iron dextran) for women with severe anemia in late 3rd trimester or those with poor compliance with oral iron

2. During labour

A- First stage

- Oxygen should be ready if dyspnea developed

- Strict sepsis is maintained

-Antibiotic prophylaxis

B-Second stage is shortened with forceps to avoid maternal exhaustion

C-Third stage active management is considered except in very severe anemia for fear of heart failure

3. During puerperium

-Check hemoglobin 48 hours after delivery

-Adequate iron therapy for at least 3 months

-Family planning counseling

Prognosis: Usually curable with iron and folic acid supplements by mouth or injection.

Care of the woman during labor and childbirth

Rationale

Childbirth is a normal yet critical event. The nurse has the responsibility of providing the care and support needed by the woman to promote a positive labor experience. Certain conditions increase the risk of morbidity and mortality for the woman and her fetus. Early recognition of these conditions and proper nursing management can reduce the likelihood of a poor outcome and can help ensure a safe and healthy birth for the mother and baby.

Goal

Equip the nurse graduate with the knowledge, skills, and attitudes needed to provide nursing care to women with normal or abnormal labor and childbirth

Learning Objectives

By the end of this course, the student will be able to:

- Describe the anatomy and physiology of labor and the clinical features of each stage of labor
- Assess the condition of the woman and her fetus during labor
- Monitor the progress of labor and the maternal and fetal condition using the partograph
- Provide care during the four stages of labor
- Assess the condition of the newborn at birth
- Provide immediate care of the newborn
- Provide care to the woman who has complications during labor
- Demonstrate interpersonal communication skills and ethics while providing care during labor and childbirth

Content

- Physiology of each stage of labor
- The clinical features of the stages of labor
- Assessment of the woman and her fetus during labor
- Partograph role in monitoring the maternal and fetal condition and the progress of labor
- Care provided during the four stages of labor
- Care provided to the woman who has complications during labor
- Interpersonal communication skills and ethics specific to care during labor and childbirth

Normal Labour

Outlines

- Objectives.
- Introduction.
- Definitions of normal labor.
- Factors affecting normal labor
- Factors which cause the onset of labor.
- Premonitory signs of labor.
- Sure signs of labor.
- Stages of normal labor.
- Physiology of first stage of labor.
- Mechanism of normal labor.
- Physiology of third stage of labor.
- Fourth stage of labor.

Objectives:

General objective:

By the end of this lecture each student should be able to obtain comprehensive knowledge about normal labor.

- To ensure safe delivery of the mother and fetus.
- Promotion of emotional fulfillment for the parents.

Specific objectives:

At the end of this lecture the student should be able to:

- Define criteria of normal labor correctly.
- Mention factors affecting normal labor completely.
- Clarify causes of onset of labor.
- Describe premonitory signs of labor.
- Differentiate between the true & false labor pain.
- Identify the stages of labor & duration of each stage of labor.

- Describe the structure & Diameters of fetal head & Distinguish between the anterior & posterior fontanels.
- Describe fetal dispositions.
- Describe the structure & diameters of bony pelvis.
- Mention mechanism of normal labor accurately.
- Explain mechanism of third stage of labor.

Normal Labour

Introduction

The labor process is an exciting and anxious time for the woman and her family. For most women, labor begins with the first uterine contraction, continues with hours of hard work during dilatation and birth, and end as the woman and her family begins the attachment process with the neonate.

Types of child birth:

- ***Spontaneous vaginal birth***: the baby is born through the vagina, usually with only guidance and assistance by the doctor or midwife.
- ***Vacuum-assisted vaginal birth***: a suction (vacuum) device is placed on the baby's head to help the baby's body transit the birth canal.
- ***Forceps-assisted vaginal birth***: instruments called forceps are placed around the presenting part (usually the baby's head), allowing the doctor to complete a difficult delivery.
- ***Cesarean birth (abdominal delivery)***: a major surgical procedure requiring anesthesia and a recovery period. About 20% of births in the United States are accomplished using cesarean birth. The cesarean rate in other parts of the world varies greatly.

Definitions:

Labor: Is the process where by the products of conception (fetus, placenta & membranes) are expelled from the uterus as the result of regular, progressive frequent & strong uterine contractions.

It is a series of rhythmic, progressive contractions of the uterus that gradually move the fetus through the lower part of the uterus (cervix) and birth canal (vagina) to the outside world.

It Labor is defined as the gradual effacement and dilatation of the uterine cervix as a result of rhythmic uterine contractions leading to the expulsion of the products of conception (i.e., delivery of the fetus, membranes, umbilical cord, and placenta).

It Labor: It is expulsion of mature viable fetus, presenting by vertex through the birth canal, spontaneously within reasonable time (24 hours) without interference & without fetal or maternal complications.

Criteria of normal labor:

- Mature viable fetus.
- Vertex presentation.
- Through birth canal.
- Spontaneously.
- Within reasonable time.
- Without interference except episiotomy.
- Without complications for mother & fetus.

Premonitory signs of labor (prodromal or pre-labor) stage:-

During the last few weeks of pregnancy, numbers of changes indicate that the time of labor is approaching which are:-

1-Engagement of the fetal head: entrance of the presenting part into the true pelvis which leads to pelvic pressure symptoms as:- Frequency of micturition & difficulty in walking.

2- Lightening: it is the descent of the mother's abdomen due to the engagement of the fetal presenting part which leads to the relief of the upper abdominal pressure symptoms as dyspnea & palpitation.

3- Shelfing: It is falling forwards of the uterine fundus making the upper abdomen to look like a shelf during**.**

standing position. This is due to engagement of the head.

4- Increase vaginal discharge: due to pelvic congestion.

4- False labor pains

Differentiation between true & false labor pain False labour pain

True Labor contractions	*Braxton-Hicks contraction*
Regular	**Irregular**
Increase in frequency	**Does not increase in frequency**
Not relieved by analgesic	**Relieved by analgesic**
Increased in frequency by enema	**Not**
Associated with stretching & dilatation of cervix	**Not productive**
Associated with bulge of fore water	**Not associated with bulge of for water**

Show: as a result of the separation of operculum or cervical plug which close the cervix during pregnancy and with the beginning of the cervical dilatation some small blood vessels are ruptured which makes the mucous stained with blood and begins to be pass through the vagina

Factors affecting the process of labor:-

In every labor, five essential factors affect the process which are (5Ps):

1- Passenger:

Fetus, Placenta membranes, blood, fluids, size of fetal head, fetal lie, fetal attitude, fetal presentation & fetal position (engagement station)

2- Passages:

Pelvis, Pelvic floor, uterus, cervix, vagina, & vulva

3- Powers:

a- Primary powers = uterine contraction & retraction (involuntary).

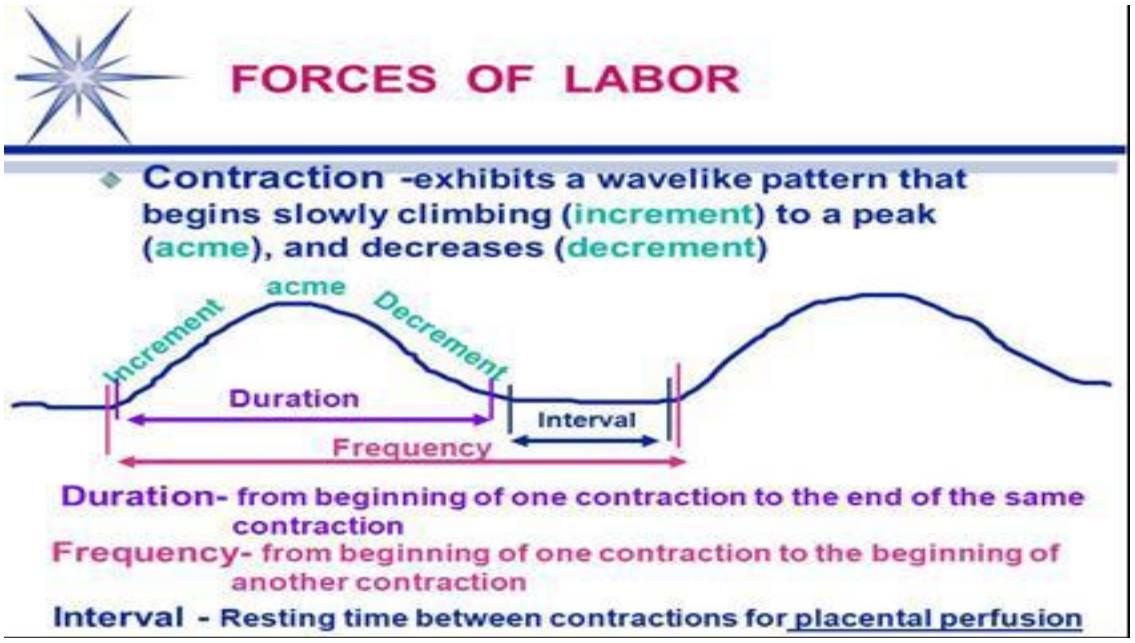
Characteristics of normal uterine contraction : -

- Duration is the period between the start of one contraction and its end.
- Interval is the period between the start of one contraction to the start of the next.
-Intensity or amplitude is the power or strength of the contraction.

-Frequency is the number of contraction in a certain period of time.

Each contraction presents three phases:-

- A period of increment during which the contraction begins slowly.
- A period of acme during which the contraction reaches a peak.
- A period of decrement during which the contraction diminishes.



b- Secondary powers = abdominal muscles & diaphragm in the form of bearing down efforts which is partly voluntary & partly involuntary or reflex.

4- Personality: Maternal psychological status has direct effects on the progress of labor. Stress & anxiety stimulate the release of stress hormones called catecholamine, which are known to inhibit uterine activity.

***5*- Positions of the mother:**

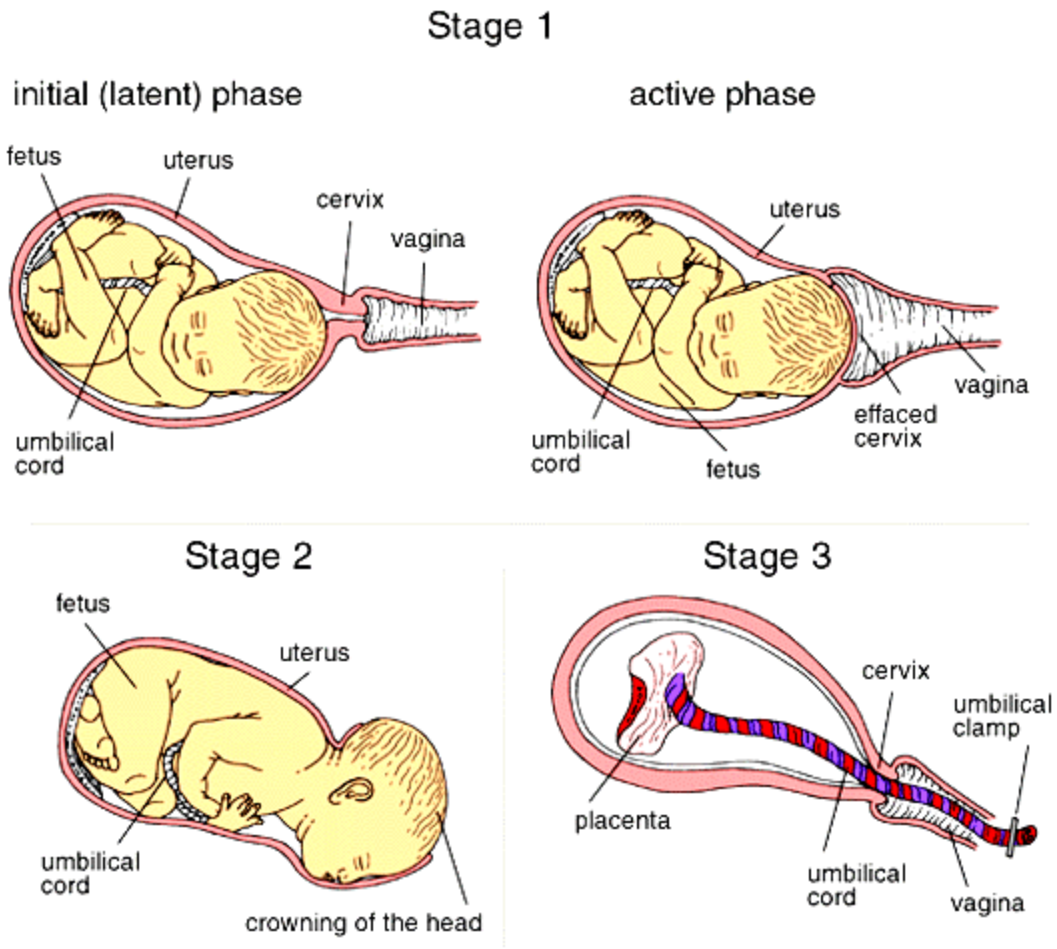
Changing positions and moving around during labour can influence pelvic size and contours. It affects the pelvic joints and may facilitate fetal descent and rotation.

Note: some references consider the placenta as a separate factor.

Stages of labor

The process of labor is divided into four stages.

The first, second, third and fourth stage



First stage: (Dilating stage) begins with the first true labor contractions & ends with the complete dilatation of the cervix.

Duration of 1st stage of labor:

- Primigravida takes 10-16 hours.

- Multigravida takes 6-8 hours.

Physiological changes during 1st stage of labor:-

1- Contraction & retraction of the uterine muscles:-

Each contraction starts stronger & longer at the fundal region & become weak in lower segment. Upper uterine segment become thicker & lower uterine segment become shorter

2- Cervical ripening:

Cervical edema & decrease collagen: changes in the cervix during pregnancy (glandular hypertrophy, edema & vascularity) cervix become ready to dilate.

3- Mechanical Pressure of bag of fore-waters & the presenting part on cervix:

Push the bag of forewater before rupture of membrane or the presenting part after rupture of membrane through the cervix helping in its dilatation.

4- Polarity: -

Neuromuscular harmony between upper & lower uterine segment during labor. Upper segment is active, contractile, thick & muscular to expel the fetus.

lower segment contract less, thin & dilate to allow expulsion.

5- Development of retraction ring:-

Imaginary line between upper & lower uterine segment called physiological ring in cases of obstructed labor the retraction ring is visible as a line across the abdomen, transversely above the symphysis pubis & called pathological ring.

6- Effacement:-

Taking up or shortening & incorporation of the cervical canal into lower uterine segment. In primigravida occurs first followed by dilatation & in multigravida effacement and dilatation occur simultaneously.

7- Dilatation of cervical os:

Phases of the cervical dilatation

I- Latent phase / initial slow phase: 0-3 cm cervical dilation in 8 hrs. & short contraction.

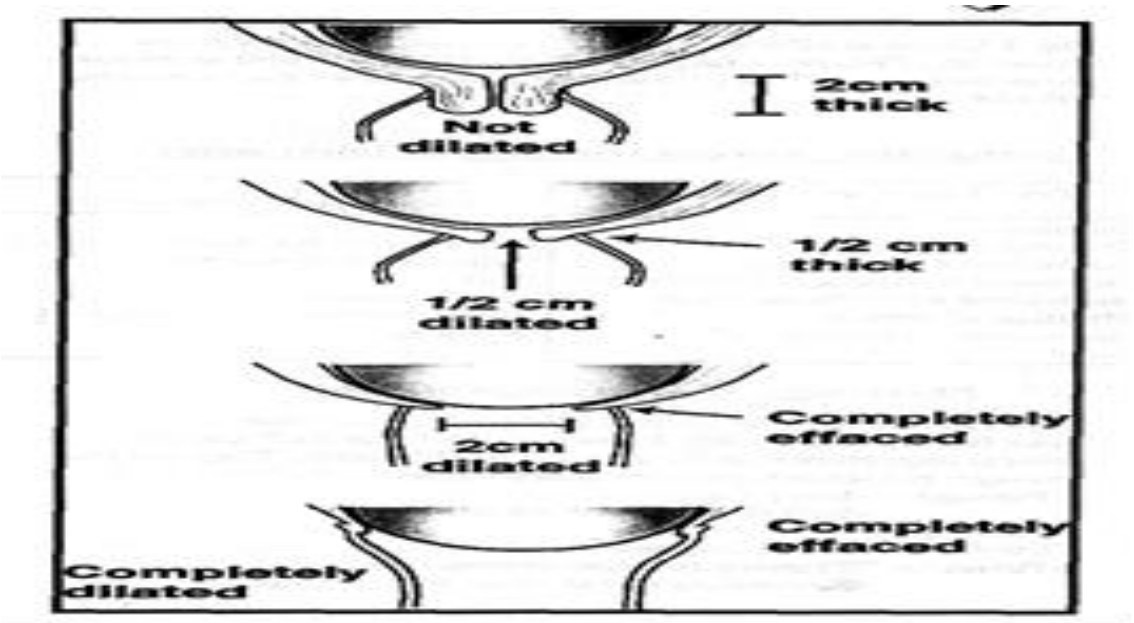
II- A active phase/ mid phase: from 3 - 8 cm. cervical dilation, moderate to short contraction, membranes may rupture & breathing technique may help in relax.

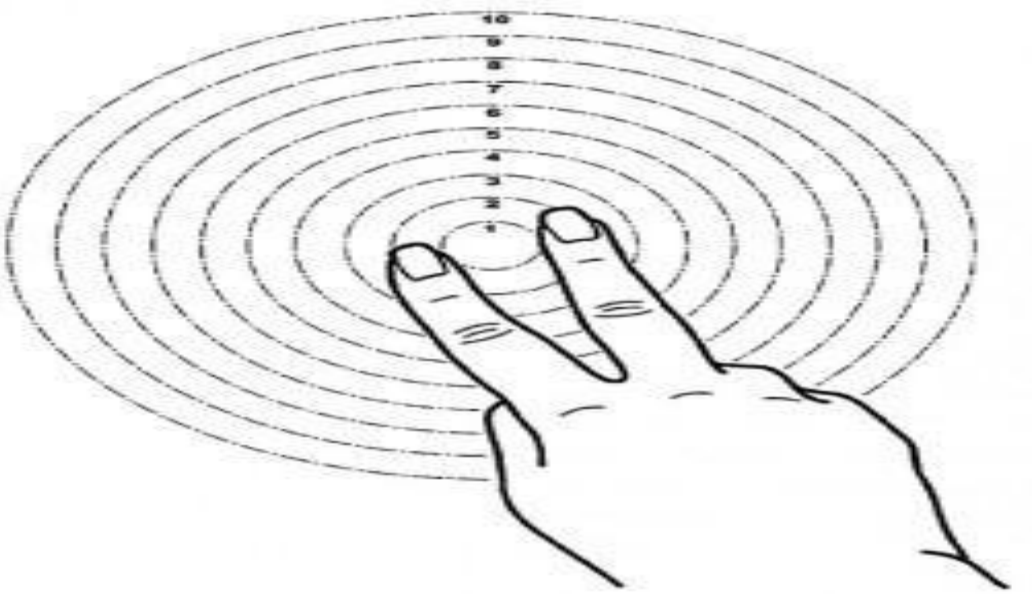
III- Transitional phase/ Late: 8-10 cm. cervical dilation, increase amount of bloody show, strong

contraction, partial amnesia, mother become irritable & restlessness, perspiration in the forehead, flushed face & engorged neck vein, desire to defecate & involuntary bearin***g down.***

8-Formation of bag of water

If the membranes were intact the pressure of uterine contraction is exerted on the fluid this is known as general fluid pressure but the pressure of uterine contraction is exerted on the fetus & called fetal axis pressure





Stages of cervical dilatation

Second stage of labor:

Definition: ►Second stage: (Expulsive stage)

It starts from fully cervical dilatation to the actual delivery of the fetus.

Duration of the second stage:

The duration of the second stage is difficult to predict with any degree of certainty. In multigravida it may last as 5 minutes; in primigravida the process may take 2 hours.

Physiological changes during 2nd stage:

- Contraction stronger (increased intensity) more frequent, duration prolonged & short interval.
- Abdominal muscles & diaphragm are active in a form of bearing down.
- Displacement of the pelvic floor & bulging of the perineum.

Signs and symptoms of second stage:

- Expulsive uterine contractions.
- Rupture of the forewaters (may occur at any time during labor).
- Dilatation and gaping of the anus.
- Involuntary bearing down

- If not prepared well the first stage of labour (enema/ empty rectum) passage of stool may occur.

- **Crowning**: is the permanent distension of the vulval ring by the fetal head like a crown on the head. If the head is allowed to extend before crowning, the vagina will be distended by the occipito-frontal diameter 11.5 cm increasing the incidence of perineal laceration.

- Appearance of the presenting part.

- Congestion of the vulva.

-Women start involuntary bearing down. Increase apprehension, woman is irritable and unwilling to be touched, may cry if disturbed.

- The mother feels the desire to defecate.

- She is frustrated, unable to mange labor alone.

- The mother may be easer to put to sleep.

- Perineum starts to bulge out, primigravida transfer to delivery room when the cervix is fully dilated and the presenting part is seen. But in multi gravida when it 7-8cm (4 fingers) cervical dilatation.

Mechanisms of normal labor:

1- Engagement:

The head normally engages in the oblique or transverse diameter of the inlet (passage of the biparital diameter) through the pelvic brim.

2- Descent of head:

It is a continuous movement throughout labor due to:

a- Uterine contraction & retraction

b- The auxiliary forces in 2nd stage of labor

3- Increased flexion of the head (chin to chest): - The vertex meets resistance of pelvic floor: The sinciput ascends and occiput descends resulting in increased flexion.

Increased flexion results in the head is flexed with the chin to the chest.

-The smallest longitudinal diameter (suboccipito bregmatic 9.5 cm) passes through the birth canal. If the head is incompletely flexed, its longitudinal diameter that passes through the birth canal is the suboccipito frontal diameter (10 cm).

-The part of the head applied on the maternal passages is like a ball with equal longitudinal and transverse diameters (suboccipito bregmatic = biparital = 9.5 cm.) and the circumference of such ball is about 30 cm.

4- Internal rotation:-

- When the occiput meets the pelvic floor first (after increased flexion), it undergoes internal rotation 1/8 of circle so that it becomes opposite the symphysis as it moves in the direction of the pelvic floor.

5- Extension of the head:-

The suboccipital region hinges under the symphysis and then by a movement of extension of the head, the vertex, forehead and face come out successively.

6- Restitution of the head:-

After the birth of the head is remaining in the anteroposterior shortly it will return to the one side to its previous position in relation to shoulder

7- Internal rotation of the shoulders:-

Shoulders entered the pelvis in the transverse position when it reaches the pelvic out let it undergoes internal rotation to the anteroposterior position.

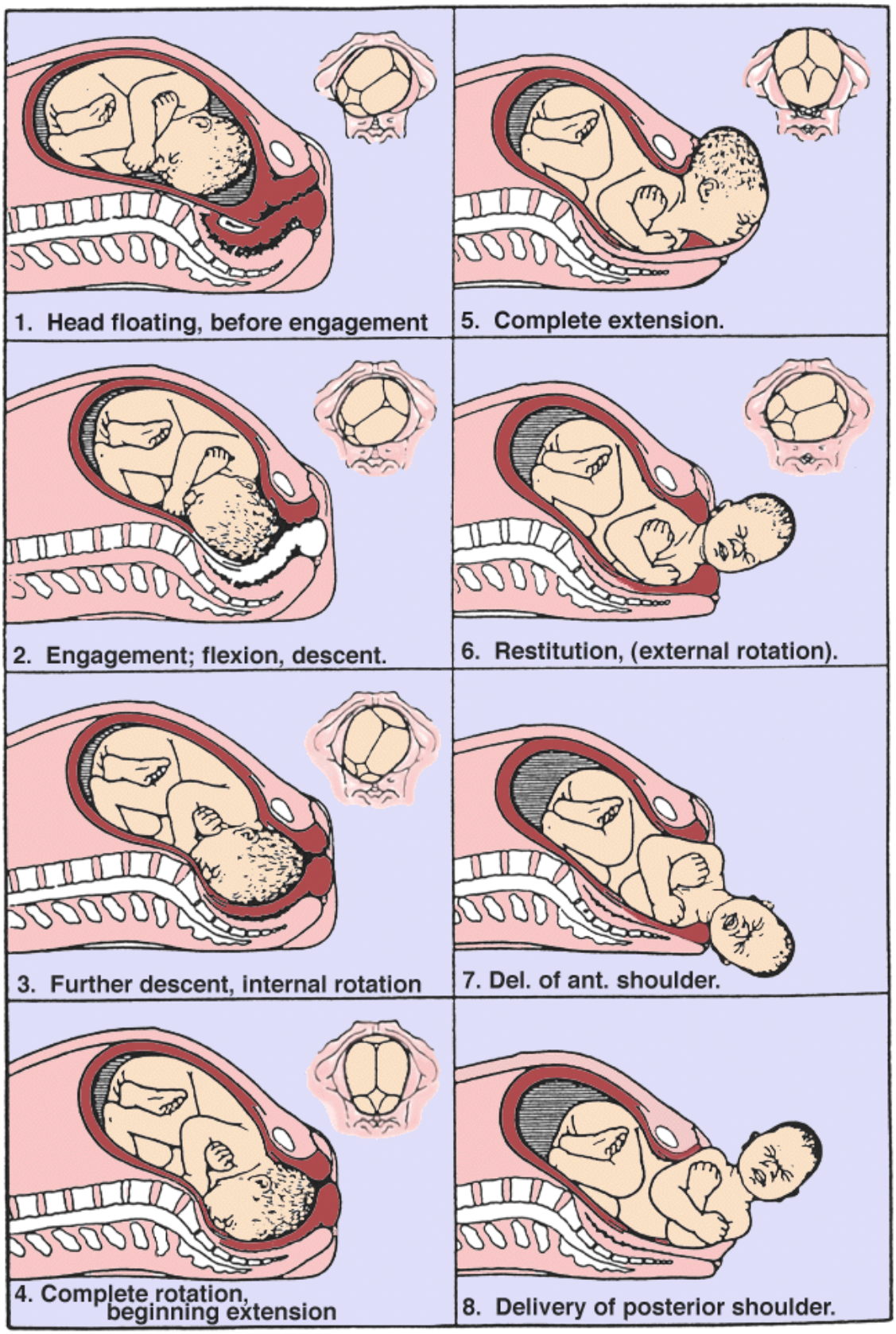
8- External rotation of the head:-

When the anterior shoulder meets the pelvic floor, it rotates forwards 1/8 of circle (in the opposite direction of internal rotation and in the same direction of restitution) and this movement is transmitted to the head.

9- Delivery of the shoulders and the body:-

The anterior shoulder escapes under the symphysis & post-shoulder passes over the perineum and delivered first by lateral flexion of the spine followed by the anterior shoulder then the body is delivered.

10- Expulsion (shoulders and torso of the baby are delivered.)



Note: moulding; is the overlapping of fetal skull bones; which help in the descent of the head during delivery.

Third stage of labor

Definition:- ►Third stage: - (placental stage) involves two phases; the separation and the expulsion of the placenta. It begins with the delivery of the baby to the delivery of the placenta.

1- Placental separation: as the uterus resumes contractions; there is such a disproportion between the placenta itself and its attachment site. The signs of placental separation indicate that the placenta has loosened and is ready to deliver.

Signs of placental separation:

1- Uterus becomes smaller, globular, harder, higher and more mobile.

2- Supra-pubic bulge is noticed due to the presence of placenta in the lower uterine segment.

3- Gush of blood from the vagina.

4- Lengthening of the umbilical cord outside the vulva.

5- Loss of pulsation of the cord.

6- Failure of coming and resending of the cord.

Mechanisms of placental separation:

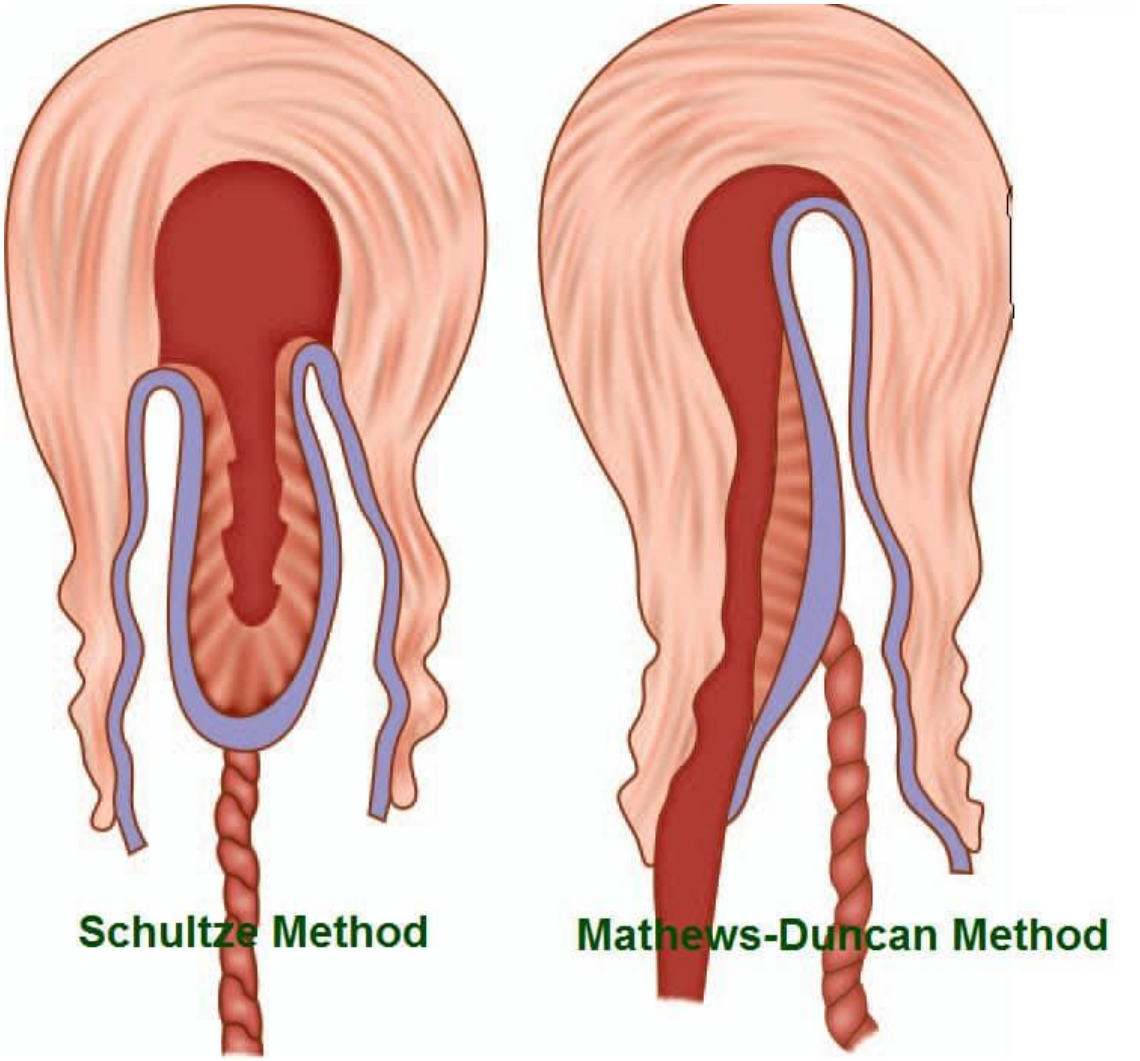
(1) Schultze's placental separation:

The placenta separates first at its center and last at its edges. Approximately 80% of placentas separate in this way.

(2) Duncan's placental separation:

The placenta separates first at its edges. Approximately 20% of placental separation occurs in this way.

Mechanisms of placental separations



(2) Placental Expulsion

- The placenta is delivered either by passive method or Active method.
- If the placenta does not deliver spontaneously, it can be removed manually.

Fourth stage of labour (recovery stage):

Is the first 2 hours after delivery of the placenta.

Management of normal Labor

Management of 1st stage of Labor

[1] Management at admission: -

1-Admission & orientation:

The nurse should welcome & great the mother in a kind way, show the mother the labor room & help her to be undressed & get into bed.

2-Taking history (short quick history):

Ask the woman about the following:

The uterine contraction: The woman is asked about true contraction begins, show, the membranes (gush of fluid & the time of rupture is recorded).

3- Examination of the woman in labor:-

A-General examination:-

-Pulse, respiration, temperature and blood pressure. It should be taken in between contraction.

-Build and stature, limb or deformity.

-Appearance, pallor means infection & dehydration.

-Inspect any edema.

-Urine analysis for protein and sugar, it should be done after cutting of hair and before enema.

B- Local examination:-

Include abdominal, vulval, vaginal and rectal examination.

1-Abdominal examination:-

-Inspection for contour of abdomen.

-Palpation for duration of pregnancy, lie, position, attitude, presentation, presenting part and denominator.

-Auscultation for fetal heart sound for full minute, normal range 120-160 b/m.

2-Vulva examination:-

-Inspected for any gaping of introitus.

-Color and odor of liquor amni, offensive odor means infection, and assess for presence of meconium or blood.

-Edema of vulva means pre-eclampsia.

3-Vaginal examination:-

Is done for:-

1. Determine degree of dilatation of os, extent of effacement of cervix, consistency, position of the cervix & degree of descent of the head (Bishop Score).

2. Condition of membranes, bag of water, rupture or not.

3. Fetal position and presentation.

4. Degree of descent of head in pelvis in relation to Ischial spine (station).

5. Presence of caput succedaneum, molding and any abnormalities.

6. Presence of umbilical cord beside the head (cord prolapse).

7. Evaluate pelvic capacity.

[II] Management of first stage of labor:

1-Evacuation of the rectum by enema to:

- Avoid reflex uterine enertia.

- Help the descent of the presenting part by providing a rooming to the presenting part.

-Avoid contamination by faeces during delivery.

2- Evacuation of the bladder: It prevents uterine inertia & helps descent of the presenting part by providing a rooming to the presenting part.

Ask the patient to micturate 2-3 hours, if she cannot, use a catheter under aseptic precautions.

3- Preparation of the vulva: Cut or trim the vulval hair. Clean it with soap and warm water from above downwards, swab it with antiseptic lotion and apply a sterile pad.

4- Diet of woman in labor:-

Diet should be nutritious, easily digestible, small in amount and adequate to keep fluid balance. The gastric emptying time is prolonged during labor, if anaesthesia is required, vomiting and aspiration of the vomitus may occur, so:

- Early in labor (latent phase): Sugary fluids may be given.
- Advanced labour (Active phase): Nothing by mouth, IV glucose or glucose-saline is given.

5- Comfort and assistance:-

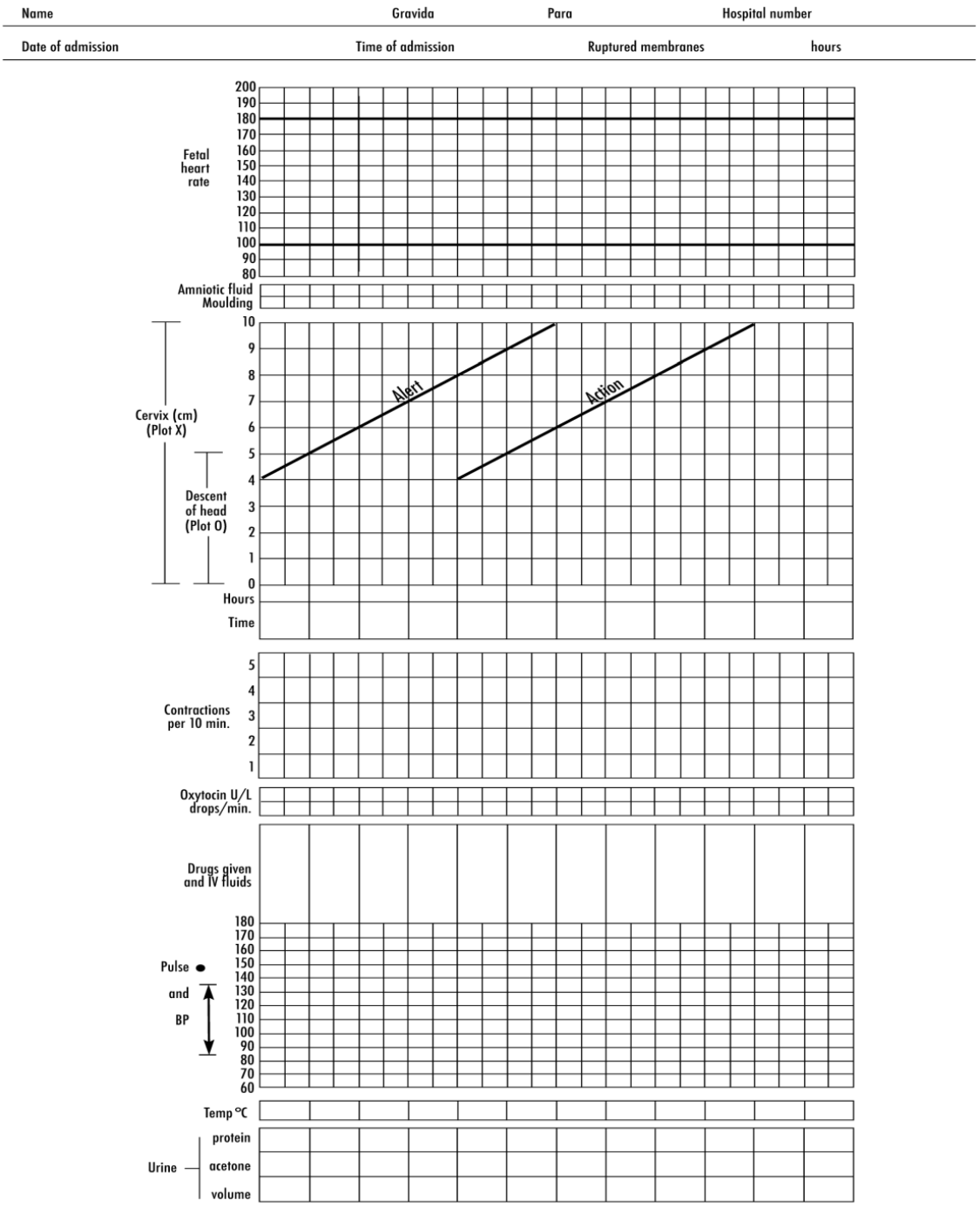
Relief pains by providing back rub during and between the uterine contractions.

6- Posture of woman in labor:-

Mother encouraged to walk in the room if she is not in active labor, toward the end of first stage and through second stage she must lie down in bed.

7- Observation of the mother and fetus through the partograph.

8- Teach woman about breathing techniques during second stage of labour



Consequences of not evacuating the bladder(neglected full bladder):-

- Increase pain and unnecessary discomfort.

- May prevent head engagement.

- Cause poor uterine contraction or postpartum hemorrhage.

- Cause Vesico- vaginal fistula, as bladder is nipped between bones of fetal head and bones of maternal pelvis.

Causes of retention of urine:-

- Bladder lacks its tone (inertia).
- Bedpan is used uncomfortably.
- Pressure on urethra by presenting part.
- Elongation of the urethra inhibits reflection of the urethral sphincter.

Signs of fetal distress:

1- Excessive fetal movement.

2- Passage of meconium in cephalic presentation.

3- molding of high head (overlapping of the skull bones).

4- Excessive formation of caput succedaneum (edema of skin, the subcutaneous tissue of the presenting part).

5- Irregular fetal heart sound, rapid <160 or slows > 100, irregular, weak or intermittent.

Signs of maternal distress:

1- High pulse rates over 100 B/M.

2- Elevated temperature more than 38.5C.

3- Restlessness and irritability.

4- Decreased blood pressure.

5- Excessive sweating and pale face.

6- Ketone bodies in urine.

7- Acetone odor at mouth

8- Dehydration

9- Dark vomiting

10- Anxious expression.

Management of the second stage:-

- In the delivery room.
- Lithotomy position.
- Scrub hands and arms with soft brush (5 minutes), swabbing done with swabbed hands before the sterile gloves.

- The lower abdomen, upper parts of the thighs, vulva & perineum are swabbed with antiseptic lotion.
- Bladder emptied
- Sterile leggings and towels are applied.
- Ask the patient to bear down during contractions and relax in between.
- Delivery of the head.
- ***The main aim during delivery of the head is to prevent perineal lacerations through the following instructions:***

1- Ironing the perineum.

2- Support of the perineum during uterine contraction until crowning occurs. Pressure is applied on the perineum using a sterile dressing, this pressure is transmitted to the head and maintain the head flexed which then comes out with the shortest possible antero-posterior diameter (suboccipito-frontal = 10cm)

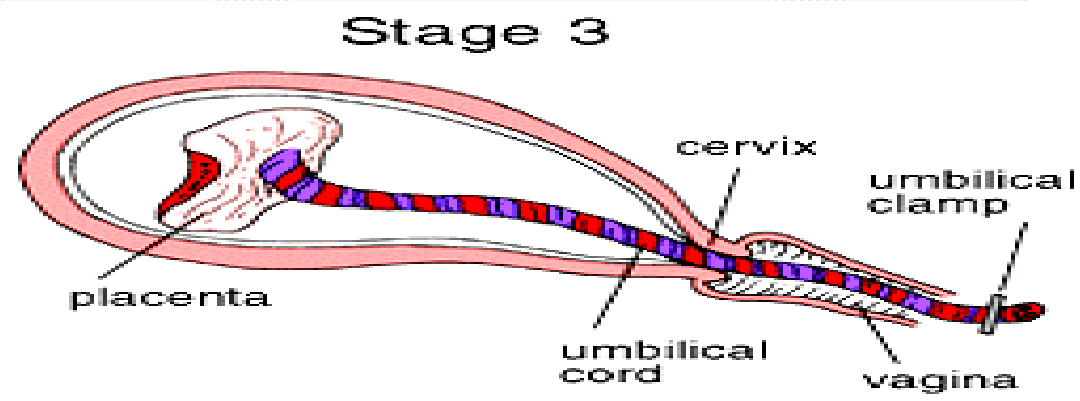
3- Supporting of the perineum during crowning.

4- Pressing the occiput backward to prevent rupture of the anterior angle of vulval ring

5- Episiotomy

6- Immediate care of the newborn:

Management of the third stage of labor:



[I] Conservative method (passive method):

1- Exclude any bleeding inside the uterus.

2- Wait for signs of separation of the placenta to appear.

3- Delivery of the separated placenta.

- Massage the uterus to help contraction & prevent bleeding. And avoid vigorous uterine massage because it may lead to irregular contractions, and cause retained placental parts or membranes.

- Expulsion of the placenta by either asking the woman to bear down/ cough or by applying pressure on the contracted fundus. Pressure on the fundus or traction on the cord before firm contraction may lead inversion of the uterus or avulsion of the cord.

- Once the lower margin of the placenta appears, catch the placenta, hold the placenta between 2 hands and roll it so as to make rope of membranes in order not to miss a part of membranes.

4- Examine both surfaces of the placenta. If any part of the membranes is retained inside, catch it with an artery forceps and twist it.

5- Ecbolic drugs: Give ergometrine 0.5 mg or oxytocin 10 units IV drip after delivery of the placenta to help uterine contraction & minimize blood loss.

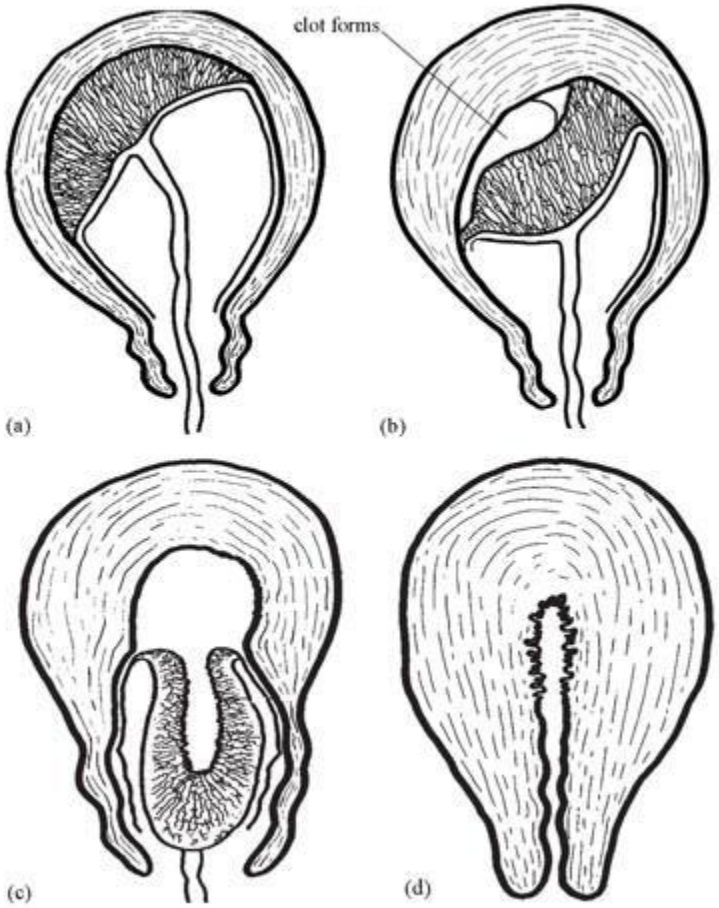
6- Carefully inspect vagina, perineum, and labia for laceration and tears.

[II] The active method:

 With the delivery of the anterior shoulder, ergometrine 1/2 mg is given I.V. (acts within one minute) OR a combination of 1/2 mg ergometrine and 5 units' syntocinon is given I.V.

 When the uterus contract, the placenta is delivered by Brandt-Andrews method (controlled cord traction): Put the left hand on the suprapubic region and push the uterus upwards, and by the other hand do gentle downwards controlled cord traction (CCT) (cord traction must never be applied in the absence of contraction).

 When the placenta appears at the vulva, it is held by the 2 hands, rolled and inspected after delivery (as in conservative method).



Routine examination:

- Examination of the placenta and& membrane to exclude any possibility of a missing lobe or membranes.
- Explore the genital tract for any lacerations that should be immediately repaired if exceeds 1 cm or if there is active bleeding.

Fourth stage of labor

Definition:

►***Fourth*** stage: - Is the first 2 hours following delivery

Management of fourth stage of labor:-

The nurse will do the following steps:

 Following delivery of the placenta, palpate the abdomen to assess and monitor uterine tone and size. At this point, uterine massage is reasonable, especially if concern exists regarding uterine tone.

 If intravenous access is in place, a continuous infusion of oxytocin for a period following delivery is reasonable.

 Assess for any bleeding by assessing the fundus for contraction, encourage empty of the bladder and encourage early breast feeding to ***prevent Postpartum hemorrhage (PPH).***

 Encourage early Ambulation

 Encourage drinking of hot fluids

 Vital signs checked every 15-20 minutes or as necessary.

 Encourage rest and sleep

Abnormal labor

***Introduction*:**

While many risk factors may appear in the prenatal period, others will only become evident in admission in the birthing unit or develop 'during birth and labor. The nurse plays a central role in promptly recognizing suspected and obvious abnormalities. When life-threatening condition arises rapid appraisal is necessary.

According to the national maternal mortality survey, obstructed and prolonged labor accounted for 8% of deaths from direct obstetrical causes (64.5%). And about 60% of maternal deaths occur in medical facilities.

Related definitions

Immature labor : Termination of pregnancy between 20 -28 weeks (fetal weight 500 - 1000 gm).

Premature labor : termination of pregnancy between 28 -38 weeks (fetal weight 1000 - 2500 gm).

Postmature labor : Prolongation of pregnancy 2 weeks or more beyond the calculated date of delivery.

Prolonged labor: The labor last for more than 24 hour in PG& 16 hour in MG.

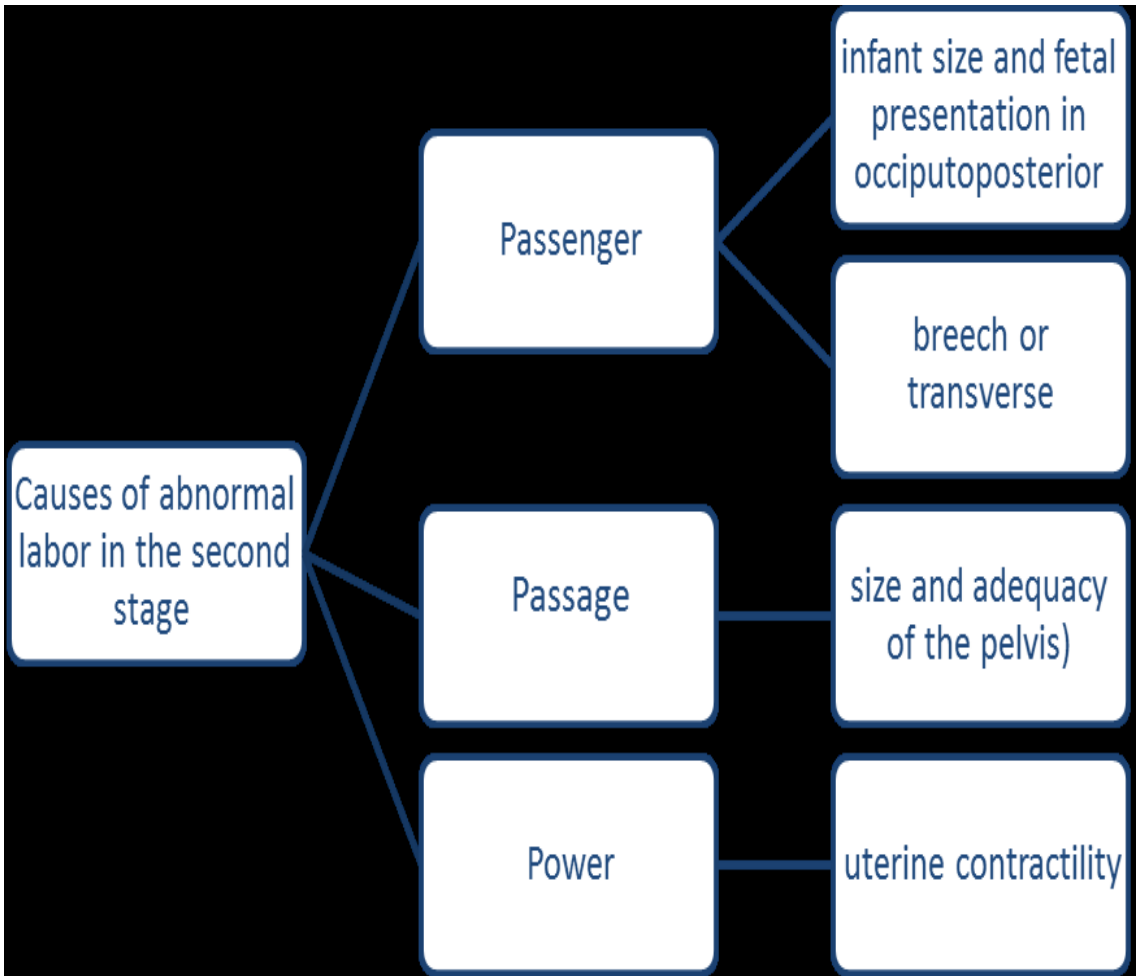
Precipitated labor: The labor last for about 1-3 hours.

Dystocia: Prolonged, painful, or difficult delivery results from deviation from normal interrelationships between five essential factors of labor (power, passage, passenger, placenta & psychological status).

Dystocia is an abnormal or difficult childbirth or labor.

Etiology:

Abnormal labor of the second stage often is a result of problems with one of the 3 P's.



Cephalo-pelvic disproportion

It is disparity in the relation between the head and pelvis this may be due to an average size baby with a small pelvis or due to a big baby with normal size pelvis or due to a combination of both factors.

Risk factors for dystocia

- Diabetes mellitus
- Fetal macrosomia
- Maternal obesity
- Induction of labor
- Prolonged labor
- Oxytocin - too much can lead to hyperstimulation of the uterus

Classification:

1) Over-efficient uterine action

A. In absence of obstruction result in precipitate labour.

B. prolonged labour

C. Precipitate labor: in absence of obstruction

2) Inefficient uterine action

o Hypotonic inertia

3) In coordinate uterine action

o Hypertonic inertia (Colicky uterus- Hyperactive lower uterine segment)

A-Obstructed labor

It is arrest of vaginal delivery of the fetus due to mechanical obstruction.

Etiology

Maternal causes

 Bony obstruction: e.g. contracted pelvis or tumors of pelvic bones.

 Soft tissue obstruction: (Uterine fibroid, constriction ring opposite the neck of the fetus- cervical dystocia-vaginal septa, stenosis, tumors).

Fetal causes

 Malpresentation and malpositions: e.g., occipito-posterior and deep transverse arrest, face presentation, brow, shoulder, impacted frank breech.

 Large sized fetus (macrosomia).

 Congenital anomalies: e.g. hydrocephalus, fetal ascites, fetal tumors, locked and conjoined twins.

Diagnosis:

Through history taking, general and local examination

History

 prolonged labor inspite of presence strong frequent uterine contraction and ROM.

General examination

It shows signs of maternal distress

Abdominal examination

Uterus:

 is hard and tender.

 Frequent strong uterine contractions with no relaxation in between.

 Rising retraction ring.

Fetus:

 Fetal parts cannot be felt easily.

 FHS are absent or show fetal distress

Vaginal examination

 Vulva: is edematous.

 Vagina: is dry and hot.

 Cervix: is fully or partially dilated, edematous.

 The membranes: are ruptured.

 The presenting part: is high and not engaged or impacted in the pelvis. If it is the head it shows excessive molding and large caput.

Complications

Maternal:

 Maternal distress and ketoacidosis.

 Rupture uterus.

 Necrotic vesico-vaginal fistula.

 Infections as chorioamnionitis and puerperal sepsis.

 Postpartum hemorrhages due to injuries or uterine atone.

Fetal:

 Asphyxia.

 Intracranial hemorrhage from excessive moulding.

 Birth injuries.

 Infections.

Management

 Preventive measures:

 Careful observation, proper assessment, early detection and management of the causes of obstruction.

Curative measures:

 Caesarean section is the safest method even if the baby is dead as labor must be immediately terminated and any manipulations may lead to rupture uterus.

B-Prolonged Labour:

Labor for more than 24 hours

Causes

 Abnormal uterine action.

 Excessive analgesia.

 Disproportion.

 Malpresentations and malpositions.

Diagnosis:

1) If the first stage of labor lasting more than the normal duration or if the cervical dilatation arrested for more than 2 h.

2) When the mother in the latent phase complaining from irregular uterine contraction, discomfort and pain.

3) Rate of cervical dilatation less than 1cm in primipara and 1.5 cm in multipara /h.

Management

 Reassessment of the condition.

 Pain relief: Pethidine or epidural analgesia.

 Amniotomy: if membranes still intact.

 Oxytocin: if amniotomy does not bring good uterine contractions and there is no contraindication for it.

 Caesarean section is indicated in:

 Failure of the above measures.

 Disproportion.

 Malpresentations not amenable for vaginal delivery.

 Contraindications to oxytocin.

 Fetal distress.

C-Precipitate labor:

labour lasting less than 3 hours, It is more common in multiparas women.

Complications

Maternal:

 Lacerations of the cervix, vagina and perineum.

 Shock.

 Inversion of the uterus.

 Postpartum hemorrhage:

 Sepsis due to, lacerations, inappropriate surrounding condition during labor..

Fetal:

 Intracranial hemorrhage due to sudden compression and decompression of the head.

 Fetal asphyxia due to:

 strong frequent uterine contractions reducing placental perfusion,

 Lack of immediate resuscitation.

 Avulsion of the umbilical cord.

 Fetal injury due to falling down.

Management:

Before delivery

Patient who had previous precipitate labor should be hospitalized before expected date of delivery.

During delivery

 Inhalation anesthesia: as nitrous oxide and oxygen is given to slow the course of labor.

 Tocolytic agents: as ritodrine may be effective.

 Episiotomy: to avoid perineal lacerations and intracranial hemorrhage.

After delivery

- Examine the mother and fetus for injuries.
- Check premium for laceration
- Immediate fetal resuscitation
- Immediate repair of laceration

2-Hypotonic uterine inertia:

The uterine contractions are infrequent, weak and of short duration.

Etiology:

Unknown but the following factors may be incriminated:

General factors as elderly primigravida, anemia and malnutrition, grand multipara

Local factors as:

- Over distension of the uterus.
- Developmental anomalies of the uterus e.g. hypoplasia.
- Myomas of the uterus interfering mechanically with contractions.
- Malpresentations, malpositions and cephalopelvic disproportion.
- Nervous factors
- Full bladder and rectum.
- Anxiety fear

Types:

- Primary inertia: weak uterine contractions from the start.
- Secondary inertia: inertia developed after a period of good uterine contractions.

Clinical Picture

- Labor is prolonged.
- Uterine contractions are infrequent, weak and of short duration.
- Slow cervical dilatation.
- Membranes are usually intact.

Management:

General measures:

 Examination to detect disproportion, malpresentation or malposition and manage according to the case.

 Proper management of the first stage.

 Prophylactic antibiotics in prolonged labor particularly if the membranes are ruptured.

 Induction of labor through amniotomy, oxytocin,

 Operative delivery:

 Vaginal delivery: by forceps, vacuum or breech extraction according to the presenting part and its level providing that, cervix is fully dilated, vaginal delivery is amenable.

 Caesarean section is indicated in a case of failure of the previous methods or fetal distress before full cervical dilatation.

3-Hypertonic uterine inertia (uncoordinated uterine action):

Types

 Colicky uterus: incoordination of the different parts of the uterus in contractions.

 Hyperactive lower uterine segment

Clinical Picture:

 Labor is prolonged.

 Uterine contractions are irregular and more painful. The pain is felt before and throughout the contractions with marked low backache.

 High resting intrauterine pressure in between uterine contractions detected by tocography (normal value is 5-10 mmHg).

 Slow cervical dilatation.

 Premature rupture of membranes.

 Fetal and maternal distress.

Management:

 Analgesic and antispasmodic as pethidine.

 Epidural analgesia may be of good benefit.

- Caesarean section is indicated in:
- Failure of the previous methods (cervix fails to dilate for 2 hours).
- Disproportion.
- Fetal distress before full cervical dilatation.

Pathological Retraction Ring	Constriction Ring
Occurs in prolonged 2nd stage.	Occurs in the 1st, 2nd or 3rd stage.
Always between upper and lower uterine segments.	At any level of the uterus.
Rises up.	Does not change its position.
Felt and seen abdominally.	Felt only vaginally.
The uterus is tonically retracted, tender and the fetal parts cannot be felt.	The uterus is not tonically retracted and the fetal parts can be felt.
Maternal distress and fetal distress or death.	Maternal and fetal distress may not be present.
Relieved only by delivery of the fetus.	May be relieved by anesthetics or antispasmodics.

Management:

Management:

- Exclude mal-presentations, malposition and disproportion.
- In the 1st stage: Pethidine may be of benefit.

 In the 2nd stage: Deep general anesthesia and amyl nitrite inhalation are given to relax the constriction ring:

o If the ring is relaxed, the fetus is delivered immediately by forceps.

o If the ring does not relax, caesarean section is carried out with lower segment vertical incision to divide the ring.

 In the 3rd stage: Deep general anesthesia given followed by manual removal of the placenta.

Malposition and malpresentation

Left and right occipito-anterior are the only normal presentations and positions.

 Malposition: occipito-posterior.

 Malpresentations: anything except vertex as face, brow, breech, shoulder, cord and complex presentations.

I-Occipito-posterior position:

It is a vertex presentation with fetal back directed posteriorly.

Affects 10% at onset of labor; Right occipito-posterior (ROP) is more common than left occipito-posterior (LOP) because.

Prognosis:

 Normal mechanism (90%), deflexion is corrected and complete rotation occurs.

 Abnormal mechanism (10%), deep transverse arrest (1%), persistent occipito-posterior (3%).

Left occipito posterior (LOP)

Left occipito transverse (LOT)

II-Breech Presentations:

Breech presentation is the commonest malpresentation, with the majority discovered before labor

Types:

1. Frank breech with extended legs - 85% cases
2. Complete breech with fully flexed legs
3. Footling (incomplete) with one or both thighs extended.

Footling breach position

Management:

The main decision is whether to attempt vaginal delivery or plan an elective Caesarian section.

Shoulder dystocia:

Definition: it is difficulty in the delivery of the shoulders

Risk factors:

- Maternal diabetes mellitus
- Macrosomic baby over 4kg
- Maternal obesity
- Maternal age over 35 years
- High parity

Warning signs and diagnosis:

- Once the head is delivered it may look as if it is trying to return to the vagina called turtle sign .
- Shoulder dystocia is diagnosed when the normally used maneuvers fails to accomplish delivery of shoulder.

Management:

HELPER

H Help (Call for help)

E Evaluate for episiotomy

L Legs of hyperflexion (Mc Robers Maneuver) 1 st line maneuvers.

P Suprapubic pressure □1 st line maneuvers.

E Enter the vagina: rotational maneuvers□2 nd line maneuvers. As Rubin maneuver

R Remove the posterior arm □2 nd line maneuvers.

R Roll the patient to her hands knees (all four – position)

III-Cord presentation and cord prolapse:

Definition:

a- Cord presentation: the cord lies in front of the presenting part before rupture of membrane.

b- Cord prolapse: the cord lies in front of the presenting part following rupture of membrane**.**

Etiology: the presenting part is not fitting well in lower uterine segment due to.

1- Fetal causes: as mal presentation, prematurity, multiple pregnancy.

2- Maternal causes: as contracted pelvis, pelvic tumors.

Management:

a-Cord presentation: cesarean section for contracted pelvis and in other conditions treatment depends upon degree of cervical dilatation.

□ In case of partially dilated cervix prevent ROM as long as possible by putting patient Trendelenburg position avoiding high enema and repeated vaginal examination when cervix is fully dilated manage as mentioned later.

□ In case of fully dilated the fetus should be delivered immediately , ROM and forceps delivery in engaged vertex presentation, ROM and breech extraction in breech presentation, cesarean section for non-engaged vertex presentation

b-Cord prolapse:

Its management depends upon fetal state:

Living fetus:

In case of partially dilated cervix

 Immediate C.S is done and during preparing patient for operation minimizing cord compression through

 Putting patient in Trendelenburg position

 Manual displacement of placenta previa

In case of fully dilated cervix the fetus should be delivered immediately as in cord presentation

Premature rupture of the membranes:

PROM is ROM any time beyond 28 weeks of pregnancy before the onset of labour. PROM before 37 weeks gestation is referred to as preterm premature rupture of membranes (PPROM).

Complications:

 Significant neonatal morbidity and mortality associated with prematurity

 Complications during labor and delivery that increase the risk for neonatal resuscitation

 Infection

Management:

1- If pregnancy more than 34 wks. labour is induced with oxytocin in fusion

2- If pregnancy less than 34 wks. expectant management including bed rest, prophylactic antibiotics, corticosteroids and observation.

Preterm Labor:

Labor that begins prior to 37 weeks. There must be both painful and regular contractions, and a change in the cervix.

Risks for preterm labor include:

 Multiple pregnancy

 Sexually transmitted diseases

 Placenta previa and abruption

 Structural defects in the uterus or incompetent cervix

- Severe infections during pregnancy such as pyelonephritis
- Medical complications of pregnancy
- Many women with preterm labor have no risk factors.
- The mother has high blood pressure

Management:

- Hospitalization
- Bed rest and IV fluids
- Medications: these drugs promote uterine muscles relaxation and inhibit the preterm labour in 80% of women; as magnesium sulfate given intravenously & Terbutaline.
- The woman may also be given a corticosteroid to stimulate fetal lung maturity and reduce the risk of neonatal respiratory distress syndrome.

Post-term Pregnancy:

WHO defined prolonged pregnancy as 42 completed weeks or more. It is thus a pregnancy lasting more than 2 weeks beyond the confirmed expected date of delivery. Prolonged pregnancy has been associated with an increased risk of intra-partum, neonatal death and early neonatal seizures.

Management:

- The fetus is then monitored for well being and signs of fetal distress.
- Close surveillance may reduce the risk of perinatal death.
- However, if the evaluation detects post maturity, labor is induced and the baby is delivered

The Normal Perperium

Definition

It is the period following labor during which the maternal body in general, and the genital organs, in particular, return to the pre-pregnant condition.

Duration of the postpartum period is 40 days or 6-8 weeks (maximum involution). Another 4 to 6 weeks is needed for complete involution. The puerperal period is much shorter after abortion. The first ten days are called the early postpartum, and the days after are called the late postpartum.

Specific Anatomical Changes

uterine involution ○

It is the process whereby the pelvic reproductive organs return ○ to their prep regnant size and position and the placental site of endometrium heals

site of endometrium heals.

****Weight**

After delivery	900-1000gm
After 1 wk	450-500gm
After 2 wk	200-250gm
At the end of 6 wks	60 gm

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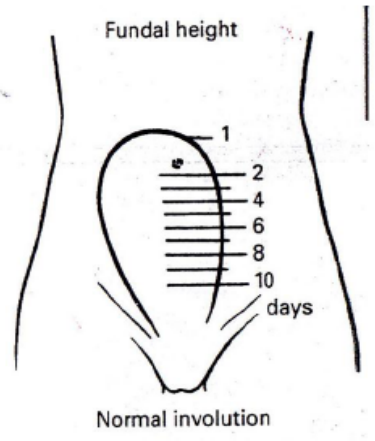
Normal involution of the uterus



Level of fundus:

After delivery	At umbilicus
After 1 wk	Midway between umbilicus and symphysis pubis
After 2wk	At symphysis pubis level

- **Sub involution:** Incomplete or delayed return of the

Sub involution: Incomplete or delayed return of the uterus to its pre- gravid size during the puerperium. Usually due to retained products of conception and infection.

- Hyper involution: It is the process by which the general organs return back to normal within short time.

Factors that enhance involution include:

- Uncomplicated labor and birth.
- Breast – feeding.
- Early, frequent ambulation.

Factors that slow uterine involution include:

- Prolonged labor.
- Incomplete separation and expulsion of placenta.
- Previous labors.

- Distended (full) bladder.
- Anesthesia.

b- Lochia:

Definition:- it is a uterine discharge coming through the vagina during the first 3-4 wks postpartum

Duration: 3-6 wks

Contents: Alkaline in reaction and contain decidual fragments, blood, cervical mucus, vaginal and epithelial cells, bacteria

Types

- **Lochia rubra** (1-3 days) red in colour, consists mainly of blood and decidua and last for 5 days
- **Lochia serosa** (4-9 days)pale in colour, consists mainly of leucocytes lasts for 5days
- **Lochia alba** (10-15 days) white in color, consists mainly of leucocytes and mucus and lasts for 5 days.

Clinical significance

- Offensive lochia means infection
- Persistence of red lochia means sub involution

c. The cervix: Closed at 2-3wks after delivery

d. Menses: Onset of 1st menstrual period following delivery is very variable and depends on lactation

It starts within 6-8wks.afterdelivery if the mother is not lactating and in lactating mother it reappears not earlier than 3-4months and it may be suspended until the baby stops

2-Breast changes

- Colostrum is secreted in 1st 3days
- Milk secretion starting at the 3-4th day, the breasts becomes engorged ,larger, painful, tender

 Suckling stimulates prolactin secretion which causes milk production and oxytocin release which stimulate s milk ejection

3-General changes

a- Temperature: normal but a reactionary rise may occur but it doesn't exceed 38 o c and drops within 24hrs. A slight transient rise may occur at the 3rd day due to engorgement of the breasts.

b- Pulse: normal but rise if there is hemorrhage or infection in early puerperium increasing with suckling due to oxytocin release.

c- After pains: It is a spasmodic colicky pain in the lower abdomen (like miniature labor pains that come and go) during the early postpartum days due to the vigorous contractions of the uterus. Increasing with suckling due to oxytocin release. The multiparous women experience after pains more than primiparous women due to laxity of their uterine and abdominal muscles (over distended abdomen/ uterus)

d- Urine: diuresis occurs to excrete the retained water in the body and lasting for 3-4 days

e- Bowel: there is tendency for constipation

f- Loss of weight due to

 Evacuation of the uterine contents

 Fluid loss in urine and sweat

g- Blood:

 Increased coagulability of the blood :continues during the 1st two weeks to protect against bleeding

 Hemoglobin concentration: tends to fall in the 1st 2-3 days.

Body Weight: Loss of weight is observed during the first 10 days particularly in the non-lactating mothers. There is about a 4-5 kg. loss of

body weight (sometimes 8 kg) due to evacuation of uterine contents and diuresis.

B) Psychological changes during postpartum

Emotional changes in the mother during the postpartum period through three phases.

1- Taking –in phase.

2- Taking – hold phase.

3- Letting – go phase.

1- Taking – in phase (turning in):

It takes 2-3 days, during which time the mother's first concern is with her own needs (sleep and food). The woman reacts passively, mostly dependent on others to meet her needs. She initiates little activity on her own. She is quite talkative during this phase about every detail of her labor and delivery experience.

2- Taking – Hold phase (Taking responsibility as a mother):

It starts the 3 rd day postpartum. She becomes impatient and driven to organize herself and her life and accepted her role as a mother; she is able to extend her energies to her mate and other children.

3- Letting – go phase:

This generally occurs when the mother returns home. In this phase there are two separations that the mother must accomplish. One is to realize and accept physical separation from the infant. The other is to relinquish her former role as a childless person and accept the enormous implications and responsibilities of her new situation. She must adjust her life to the relative dependency and helplessness of her child

Management of normal puerperium:

Immediate attention

- Minimizing risk of infection, hemorrhage, and pain:

 The woman is typically observed for at least one hour after the third stage of labor.

 The uterus is massaged periodically to ensure that it contracts and remains contracted, preventing excessive bleeding.

 Make sure that the bladder is empty if the uterus does not remain contracted with massage alone, oxytocine (Syntocinon) 10 units IM or a dilute oxytocin IV infusion (10 or 20 units /1000 ml of IV fluid) at 125 to 200 ml is given immediately after delivery of placenta.

 The drug is continued until the uterus is firm; then it is decreased or stopped.

 Oxytocin should be given as an IV bolus very cautiously because severe hypotension may occur, subsequently increasing cardiac output.

2-Vital signs should be assessed every 4hours for the first 24 hours, including measurement of urine output.

3-The abdomen should be examined for distension and the presence of bowel sounds, especially in patients who had cesarean deliveries.

4-Following cesarean section, oral intake may resume immediately as tolerated

5-The perineum should be inspected for hematoma formation, signs of infection

- Minimizing the risk of thromboembolism: -

 Women should be encouraged to mobilize as soon as appropriate following the birth.

 Women with unilateral calf pain, redness, or swelling should be evaluated for deep venous thrombosis.

 Women experiencing shortness of breath or chest pain should be evaluated for pulmonary thromboembolism.

 Routine use of Human's sign also called dorsiflexion sign test: is a physical examination procedure that is used to test for thromboembolism.

 Obese women are at higher risk of thromboembolism and should receive individualized care.

 A regular diet should be offered as soon as the woman requests food.

 Full ambulation is encouraged as soon as possible.

- Initiation of breastfeeding:

 Immediate initiation of breast feeding no later than on hour of normal delivery and within 2-3 hours of cesarean section helps in mother-child bonding and allows for better breast milk production and reduced breast engorgement.

 Women should be educated about exclusive breast feeding.

- Hygienic care:

-If delivery was uncomplicated, showering and bathing are allowed. - Perineal care

- Women with Rh –negative blood:

Who have an infant with Rh-positive blood and are not sensitized, should be given Rho (D) immune globulin 300 µg IM, as soon as possible within 72 hrs of delivery.

Instructions before discharge:

1-counseling for contraception:

 Women should be informed about optimal birth spacing duration of two years, and its positive impact on maternal and child survival and health. Women who get pregnant within two years of a previous delivery have a higher risk of preterm birth, prenatal mortality, infant mortality and maternal mortality.

 Women should understand that their ovulation may resume as soon as 4 weeks after delivery.

 Women should be offered adequate information about contraceptive choices suitable for their condition.

 All women should have a clear documented plan for initiation and follow –up of contraception before discharge from hospital.

 Women who prefer to initiate contraception after discharge from hospital should be advised to refer to family planning or primary health care unit.

 Woman should be offered to initiate contraceptives before discharge from hospital, methods as LAM or PPIUD can be initiated before discharge.

2-Analgesics: May be offered as necessary, paracetamole are allowed up to 1000 mg per day higher doses and other drugs should be limited in breastfeeding women, as drugs are secreted in breast milk.

3- Normal activities: May be resumed as soon as the woman feels ready.

4-Intercourse: May be resumed after cessation of bleeding and discharge, and as soon as desired and comfortable to the woman. However, a delay in sexual activity should be considered for those who need to heal a laceration or episiotomy repair.

5-Women should be informed that back to Hospital if they feel any symptoms that worry them.

Postpartum Visits: The First Visit

This visit is carried out 3-4 weeks after labor in order to assess the degree of involution of the body in general, and of the genital tract in particular. General and local examinations are performed. The client's

condition is evaluated through various medical and nursing activities that include:

- Measuring and recording of blood pressure.
- Estimation of the hemoglobin percentage, and aggressive treatment of anemia, if present.
- Urine analysis for sugar and albumen,
- Thorough examination of the breasts and nipples for early detection and treatment of abnormalities.
- Examination of abdominal muscles, perineum, perinea I wounds and nature of lochia to asses the degree of involution of these parts, and to exclude the presence of infection.
- Careful and thorough examination of' size of the uterus, its position, adnexal masses, tenderness, the condition of the cervix (such a.s lacerations or erosions) as well as (he condition of the pelvic floor. Management of any lesion should be readily started.

The Second Visit

This visit is done at the end of the 6^{th} postpartum week. It is carried out along the same lines as the first postnatal visit with the institution of more active treatment for certain lesions:

- If retroversion flexion (RVF) is still present a pessary must be inserted.
- Cervical erosion may call for cauterization.
- Subinvolution calls for more energetic treatment.
- Health teaching items at this time include advice in relation to:
    - Sexual intercourse, which should be prohibited during the first six postpartum weeks, and allowed after that, provided that the woman is in good health, with a perfectly healed genital tract.

- Spacing of pregnancies and counseling about the appropriate contraceptive method, which should be prescribed and may be started at once.

- If prolapse of the genital tract is present, it should be treated by pelvic floor muscle exercises and/or the insertion of a ring pessary. The patient should be advised to abstain from bearing down. Chronic cough and constipation should be treated for this purpose. However, operative treatment is not considered before the lapse of six months when total involution of the genital tract is established.
- Health education to puerperal women at this time should also include instructions related to the possibility of encountering menstrual irregularities during the following months. These irregularities range from complete amenorrhea to oligomenorrhea, hypomenorrhae or polymenorrhea. Bleeding is expected at the end of the 6 puerperal week in the majority of patients. In non-lactating mothers, however, menstruation usually appears after 6-8 weeks. On the other hand, lactating women may have great variations in this respect: about 1/3 of them will start menstruation 3 months postpartum, and by the 6n month more than half of them will menstruate.

The Third Visit

This is performed at the end of 3 months (2 weeks) by which time complete involution of the genital tract has occurred. General and local examinations are carried out, and any discovered lesion should be dealt with:

- Cervical erosions must be cauterized.
- Persistent RVF and/or prolapse should be managed properly.
- If lactational amenorrhea is present, the client should be instructed that this is not a bar against another pregnancy, and suitable contraceptive measures should be instituted.

Abnormal Puerperium

Objectives

By the end of this lecturer the student will able to:-

1-Define Postpartum hemorrhage

2- Identify the types of post partum hemorrhage

3- Definitions of puerperal sepsis

4-Understand the causes, management and complication of puerperal sepsis

Introduction

The postpartum period is a time of increased physiological stress and major psychological transition, Energy depletion and fatigue of late pregnancy and labor, Soft-tissue trauma from delivery and blood loss increase the woman's vulnerability to complications.

Most women recover from the stresses of pregnancy and childbirth without significant complications. However, postpartum complications can occur. The potential seriousness of many postpartum complications cannot be underestimated.

Postpartum hemorrhage

Introduction

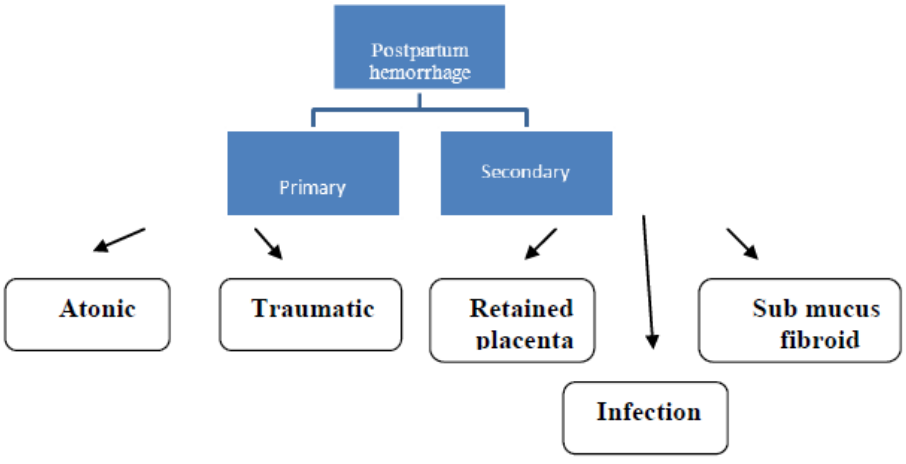
In Egypt, postpartum hemorrhage is the attributed cause for 32% of all maternal deaths, and 46% of all direct maternal death. Ninety nine percent of all postpartum hemorrhage deaths were avoidable.

Definition:

Postpartum hemorrhage (PPH) is excessive blood loss at delivery affecting the general condition of the mother, arising pulse rate, falling blood pressure and poor peripheral perfusion. Definition based on the amount of hemorrhage (blood loss of 500 ml or more from or within the reproductive tract after birth) .

Postpartum hemorrhage

Types:-



Types

1- Primary postpartum hemorrhage is described as that occurring within the first 24 hours after delivery.

2-Secondary postpartum hemorrhage may be delayed, occurring more than 24 hours after delivery. Most frequently occurs 1-2 weeks after delivery but may occur up to 6 weeks postpartum.

Risk Factors can cause postpartum hemorrhage

Prior history	Related to present pregnancy and Labor
1-High parity (grand multipara)	1-Over distension of the uterus (multiple pregnancy, Polyhydramnios, macrocosmic newborn)
2-Prior postpartum hemorrhage	2-Bleeding problems (placenta previa, abruption-placenta).
3-Uterine fibroids	3-Labor or delivery trauma (forceps, cesarean delivery, intra uterine manipulation).
4-Systemic diseases (Leukemia, idiopathic thrombocytopenia, coagulation defects)	4-Hypertonic- contractions (precipitate, dysfunctional, prolonged labor). Deep anesthesia Pregnancy induced hypertension / sub involution of the uterus chorioamnionitis Chronic hypertension

Major Causes:

Primary Postpartum Hemorrhage

1- Atonic Uterus:

Atonic uterus is the commonest cause of postpartum hemorrhage with separation of the placenta; the uterine sinuses that are torn cannot be compressed effectively.

Factors affecting efficient uterine contraction and retraction:

1. Placental causes:
2. Incomplete separation of placenta.
3. Retained cotyledon, Placental fragment or membranes.
4. Placenta previa.

5. Prolonged labor
6. Multiple pregnancy or polyhydramnios.
7. General anesthetics.
8. A Full bladder.

2-Manipulation of the uterus during third stage .

3-Traumatic:

1. Hemorrhage occurs due to trauma of the uterus, cervix, vagina following spontaneous or operative delivery.
2. Delay during episiotomy, laceration.

4- Mixed: Combination of atonic and traumatic causes.

5- Blood Coagulation Disorders: Acquired or congenital blood coagulation disorders are the factors sometimes causing postpartum hemorrhage.

Secondary Postpartum Hemorrhage

Commonly occurs between 10 to 14 days after delivery.

Common causes:

1. Retained bits of cotyledon or membranes.
2. Separation of a slough exposing a bleeding vessel.
3. Sub involution at the placental site due to infection.

Clinical Manifestations of the Secondary Postpartum Hemorrhage

1. Sudden episodes of bleeding with bright red blood of varying amounts.
2. Sub involution of uterus.
3. Sepsis.
4. Anemia.

Clinical Manifestations of Postpartum Hemorrhage

Signs and Symptoms	***Blood Volume Loss***
Mild postpartum hemorrhage. 1-Uterus boggy. 2-Blood pressure normal or slightly decreased. 3-Pulse rate normal or slightly elevated. 4-Mild vasoconstriction (cool hands, feet). 5-Normal urinary output. 6-Aware, alert, oriented, may have anxiety.	15%-20% reduction (750-1,250ml).
Moderate postpartum hemorrhage. 1-Atonic uterus. 2-Systolic blood pressure <90 to 100 mm/hg. 3-Moderate tachycardia 100 to 120 beats/min. 4-Moderate vasoconstriction (skin pallor, cold, moist extremities). 5-Decreased urinary output` (oliguria). 6-Increased restlessness may become disoriented.	25%-35% reduction (1,250-1,750ml).
Severe postpartum hemorrhage. 1-Atonic uterus. 2-Systolic blood pressure <60mmhg.. May be unobtainable by cuff. 3-Severe tachycardia>120 beats/min. 4-Pronounced vasoconstriction (extreme pallor, cold, clammy, cyanotic lips and fingers). 5-Urinary output ceases (anuria) . 6-Mental stupor, lethargy. Semi-comatose.	35%-50% reduction (1,800-2,500ml).

Differences between Atonic and Traumatic postpartum Hemorrhage

Character	***Atonic***	***Traumatic***
1-Uterus: Size	Large.	Small.
2-Consistency	Flabby	Firm.
3-Contractions	Deficient	Well contracted
4-Squeezing	Gushes of clots coming down.	No effect on the flow.
5-Bleeding : Nature	Gushes of dark or clotted blood	Continuous flow.
6-Color	Dark	Fresh
7-Site	Coming down through the cervical canal.	From laceration

Prevention

Antepartum:

1. Complete history should be taken to identify high-risk patients who are likely to develop PPH.
2. Improvement of health status specially to raise the hemoglobin level.
3. Hospital delivery of high-risk patients who are likely to develop PPH. e.g. polyhydramnios, multiple pregnancy, grand multipara, APH and severe anemia.
4. Routine blood grouping and typing for immediate management during emergency.

Intrapartum:

- Careful administration of sedatives and analgesic drugs.
- Avoid hasty delivery of the infant.
- Prophylactic administration of oxytocin drugs with delivery of anterior shoulder or at the end of third stage.

- Avoid massaging before separation of the placenta.
- Examine the placenta and membranes for completeness.
- Examine the utero-vaginal canal for trauma and prompt repair if present.
- Effective management of the fourth stage.

Control Bleeding by Using the following Steps

1. Exploration of uterus under general anesthetic.
2. Bimanual compression (Uterus is firmly squeezed between 2hands)
3. Tight intrauterine packing to exert direct haemostatic pressure on the open uterine sinuses and to stimulate uterine contractions.
4. If all the above measures fail to achieve homeostasis a hysterectomy is performed.
5. In traumatic PPH. Speculum examination find out trauma and homeostasis is achieved by appropriate sutures.

Observation of the Mother

1- Record pulse and BP every 15 minutes.
2- Palpate uterus every 15 minutes to ensure that it is well contracted.
3- Cheek temperature 4 hourly.
4- Examine lochia for amount and consistency
5- Examine IV infusion
6- Hourly urine output, intake and output chart.
7- Relieve anxiety by explaining her condition and management.
8- Administer prophylactic antibiotics prescribed considering the risk for infection.

Nursing Management of Postpartum Hemorrhage

Assessment

1-Identify Risk Factors in the patient's History

2-Assess:

- Vital signs and general condition.
- State of uterus.
- Nature of bleeding.
- Signs and symptoms of blood loss.
- Amount of blood loss.

3-Compare laboratory reports.

Nursing Diagnoses

1- High risk for fluid volume deficit related to blood loss.
2- Altered maternal tissue perfusion related to hypovolemia.
3- High risk for infection related to anemia and blood loss.
4- Pain related to operative delivery or trauma.
5- Severe anxiety related to excessive blood loss and emergency interventions.
6- Knowledge deficit regarding the condition and interventions.

Expected Outcomes

1- Maintenance of blood volume and tissue perfusion as evidenced by hematocrit level, maternal vital signs and urinary output.
2- Relief pain.
3- Expresses feelings about self and seeks support.
4- Exhibits understanding of purposes of interventions and treatment.

Nursing Interventions

Primary Postpartum Hemorrhage; If a tonic uterus:

- Inform the obstetrician.
- Feel consistency of the uterus .

- Massage the uterus to express clots and make it hard as follows. The fund us is first gently felt with the finger-tips to assess its consistency. If it is soft and relaxed the fundus is massaged with a smooth circular motion , applying no undue pressure . when a contraction occurs the hand is held still.
- Assess the general physical condition of the mother. (face, skin …)
- Monitor TPR and blood pressure.
- Put the infant to the breast to suck or stimulate the nipple manually .
- Prepare instruments and equipment such as sterile gloves, cannula # 18, IV set , catheter set …. Etc .
- Administer oxytocin as ordered.
- Start IV infusion and oxytocin drop.
- Empty the bladder.
- Examine the expelled placenta and membranes for completeness.
- Administer medications as ordered.
- Reassure the mother:
- Never leave the mother alone.
- Touch the mother` s hand and talk to her.

In cases of traumatic bleeding:

- Press on the tear or laceration.
- Prepare equipment and instruments, sterile gloves, sterile needles and catgut, sterile needle holder, forceps, sterile kidney basin, scissors, sterile gauze etc.

Postpartum hemorrhage due to infection

- Follow the same steps as in the case of postpartum hemorrhage due to retained parts of placenta.

-In cases of postpartum hemorrhage due to infection the following should be done:

- Reassure the mother.
- Monitor TPR and blood pressure.
- Start IV infusion and blood transfusion according to doctor` s orders.
- Prepare sterile instruments and equipment needed for examination.
- Empty the bladder.
- Administer medications as ordered (broad spectrum antibiotic).
- Follow strict aseptic technique while providing care to the woman.
- Frequent changing of sanitary pads.

i. Puerperal sepsis

Definitions of puerperal sepsis

It is an infection of the genital tract by organisms occurring within 14 days to 21 days after delivery or abortion

Definitions of puerperal pyrexia

This is rising of temperature in Puerperium from genital tract or extra genital tract

Sources of infection:-

- Endogenous organism :- this organism present already in the genital tract
- Exogenous organism:- this organism come from source out side the body (hands- droplet infection- equipment- instrument – beds linen – over crowding – manipulation)

Causative organism:-

- Streptoccus - anaerobic streptococcal - Escherichia clostridium, - staphylococcus

Predisposing factors of puerperal sepsis and pyrexia:-

- Raw placental area
- Aneamia
- Laceration
- Oedematous
- Lack of hygiene
- Mastities
- Not using of a septic technique
- Repetaed examinations
- Instrumental delivery
- Emergancy C.S
- Retained product of conception

- Blood loss
- Exhaustion
- Intake fluid ↓
- U.T.I (urinary tract infection)

Types of infection:-

- Local infection
- general infection

Signs and symptoms:

A-Local infection

- Temperature raised gradually not more than 38.3 c
- Pulse 90 not more than 120 b/m.
- Lochia is brownish, offensive odor
- Tender uterus sub involution
- Headache, malaise
- Early detection and proper antibiotics resolve the condition within 4 to 5 days
- (Vulvitis- vaginitis- cervecites, endometritis, salpingitis, pelvic abscess

B-Generalized infection (Septicemia)

- thread pulse 120- 160 b/m
- T . 39.5-40c
- Abdominal pain – vomiting- diarrhea
- Scanty lochia
- uterus not tender and normally involutes
- Pallor due to anemia

Complications:

- Increase maternal mortality
- Chronic PID

- Breast abscess
- Infertility (bilateral block)
- Sheehan' syndrome
- Asherman syndrome
- Urinary tract infection
- Breast abscess
- Infertility
- Failure of breast feeding

Investigation:-

- Complete blood picture – culture
- urinary analysis – culture
- vaginal, cervical swab- endometrium swab
- Throat swab.

Preventive treatment of puerperal sepsis

- **Ante natal care--Natal care --Post natal care**

Antenatal care

- Good antenatal care
- Good nutrition
- Correct anemia
- Treat any infection present in tonsils and teeth
- General hygiene
- Frequent follow up
- Proper exercise

Natal care

- Following aseptic technique
- Avoid Over crowding
- Decrease Manipulation
- Repair of any laceration

- Empty of the bladder
- Check vital signs
- Avoid tear, laceration, dehydration & exhaustion

Postnatal care

- Restrict number – of visitors
- General hygienic care
- Early ambulation
- proper position
- Good nutrition
- A void anemia
- Encourage breast feeding
- Daily observation of general condition (lochia- perineum- vital signs)

Nursing care of puerperal sepsis:-

- Isolation equipment, complete physical as well as mental rest
- good diet increase vitamin and iron, protein, Calories, Fluid) must be small frequent diet
- Accurate observation of vital signs
- Accurate observation of lochia sings
- Accurate observation of uterus involution
- General hygienic care (breast- perineal area)
- Bowel and bladder care
- Observation of general condition
- Empty of the breast.
- mother sit in proper position to help draining of lochia
- A administrated prescribed drug
- Intake & out put chart.
-

Mastitis

Outlines:

- Definitions of puerperal mastitis
- Etiology of puerperal mastitis
- The diagnosis of mastitis
- Treatment &nursing care

***Definitions*:** mastitis is defined as inflammation of the mammary gland.

Etiology of puerperal mastitis

Milk stasis and cracked nipples, which contribute to the infection of skin flora, are the underlying factors associated with the development of mastitis. The most common causative organism, isolated in approximately half of all cases, is Staphylococcus aurous. Other common pathogens include Staphylococcus epidermidis, Staphylococcus, and Escherichia coli.

The diagnosis of mastitis

The diagnosis of mastitis is based on the clinical picture & History

Signs and symptoms of this disease is;

1-Fever. 2- chills.

3-myalgias. 4-warmth.

5-swelling, and breast tenderness

Physical examination

- Focus examination on vital signs.
- Review of systems, and a complete examination to look for other sources of infection.
- Typical findings include an area of the breast that is warm, red, and tender.

Intervention

- No laboratory tests are required.

- Expressed milk can be sent for analysis.

Treatment

Milk stasis sets the stage for the development of mastitis, which can be treated with

- Moist heat, massage, fluids, rest,
- Proper positioning of the infant during nursing,
- Nursing or manual expression of milk, and analgesics.
- When mastitis develops, penicillinase-resistant penicillins are the drugs of choice.
- Erythromycin may be used for patients who are resistant to penicillin.
- Resolution usually occurs 48 hours after the onset of antimicrobial therapy.

Family planning

Family planning enables individuals (women and men) to plan their families and space their children

Definition of terms:-

Family planning:

Is the conscious process by which a couple decided on the number of spacing children and the timing of birth.

Contraception:

Is the voluntary prevention of pregnancy the decision to practice contraception has individual and social implication.

2- Family planning counseling

Elements of counseling: **[GATHER]**

- **[G]** Great client
- **[A]** Ask about their needs
- **[T]**Tell clients about family planning methods
- **[H]** Help client to choose a method.
- **[E]** Explain how to use the chosen method
- **[R]** Return for follow- up visit

[3] Family planning Methods:

1- Hormonal methods

Types of hormonal methods

1. Oral contraceptive pills

- Progestin- only pills.(POPs)
- Combined oral contraceptive pills.(COCs)

2. Injectable Contraceptives

3. Sub dermal implants

4. Contraceptive vaginal rings(Nova ring)

5. Emergency contraceptives

Mechanism of action of hormonal contraceptives

1- Suppression of follicle- stimulating hormone (FSH) and Lutinizing hormone (LH) responsible for follicle development and ovulation.

2- Thickening of cervical mucus, making it difficult for sperm to enter the uterine cavity.

Advantages of hormonal contraceptives

1-Safe and effective when used correctly and consistently .pregnancy prevention rate is greater than 99%

2- Reversible, rapid, return to fertility

3- No action needed at the time of sexual intercourse

4- Use is controlled by the woman

5- Long acting in Implanon& Norplant

Disadvantages of hormonal contraceptives

1- Incorrect use is common; not as effective in typical use.

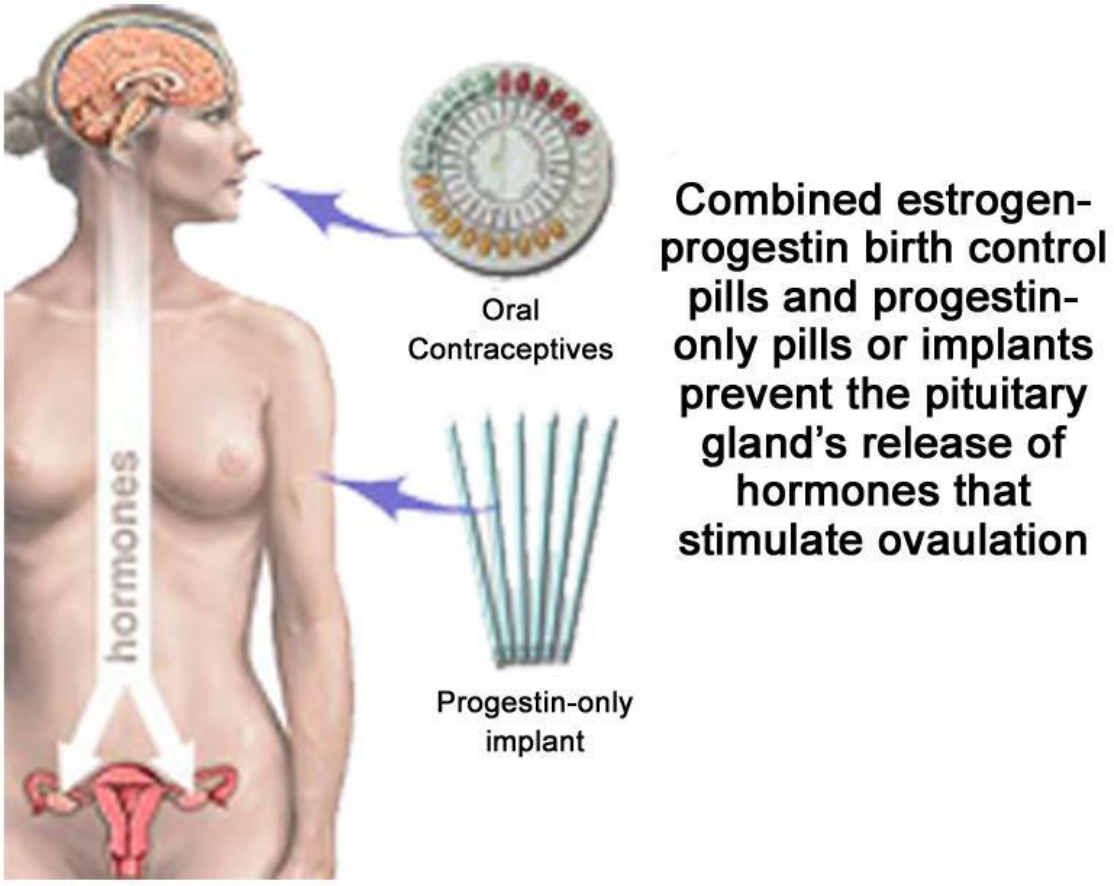
2- Require daily use

3- Side effects are common

4- No protection against sexually transmitted infection (STIs), including HIV.

5- Menstrual changes in injection

[A] Oral contraceptive pills:



- **Types:-**

A- Combined oral contraceptive pills. (**COCs**)

B- Progestin- only pills. (**POPs**)

Combined oral contraceptive pills (COCs)

- Most widely used
- Contain both estrogen & progestin

Progestin- only pills (POPs)

- Contain no estrogen
- The amount of progestin is less than in COCs
- Suitable for breast feeding women

Side effects of oral contraceptives:

Nausea, Dizziness, Breast tenderness, Headaches, Mood changes, Weight gain, Irregular bleeding, Amenorrhea

Non contraceptive health benefits of oral contraceptives

1- Reduced risk of ovarian & endometrial cancer.

2- Reduce risk of benign breast disease.

3- Reduce risk of ectopic pregnancy

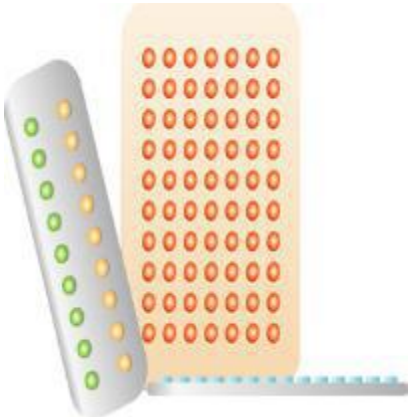
4- Reduced risk of anemia

5- Reduced menstrual irregularities

6- Reduced symptoms of painful menses, dysmenorrheal, endometriosis, premenstrual syndrome pelvic inflammatory disease.

How to take COCs &POPs

Initiating: During the first 7-9 days of menstrual cycle,



preferably on the first day or Postpartum

breastfeeding women-delay 6 weeks for

POPs and 6 months for COCs

- Anytime if sure the women is not pregnant
- For non- breast feeding women postpartum-

delay until 3 weeks after childbirth

Schedule:

- Take 1 pill every day until all pills in the pack are finished
- 7- days break between packs for 21- pill COCs.
- No break between packs for POPs packs & (28- pill COCs).

Missed pill regimen of COCs:

<table>
<tr><th colspan="1">Missed 1 pill</th><th colspan="2">Missed 2 or more pills</th></tr>
<tr><td rowspan="2">• Take missed pill as soon as remembered
• Keep taking remaining pills on schedule
• No back up method needed</td><td>If 7 or more pills left in the pack</td><td>If less than 7 pills left in the pack</td></tr>
<tr><td>• Take 1 pill now
• Take all rest as usual
• Back up method (condom or spermicide) for 7 days
• Take 7- days break as usual.</td><td>• Take 1 pill now
• Take rest as usual
• Use backup Method (condom or spermicide) for 7 days.
• No break between packs</td></tr>
</table>

Indications to stop the pill:

1- Appearance of warning signs (ACHES):

A: Abdominal pain (Gall bladder or hepatic adenoma)

C: Chest pain (Pulmonary edema& myocardial infarction)

H: Headache -------< stroke

E: Epilepsy

S: Severe leg pain or swelling -------< DVT

2- Appearance of any contraindications

3- Appearance of any side effects

4- Pregnancy is desired

Injectable Contraceptives

Injectable Contraceptives

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Types of Injectable contraceptives

Types of Injectable contraceptives

	Product	Duration of protection from pregnancy
Progestin only injectables	**Depo-provera** 150mg Depot-Medrxy progesterone acetate (DMPA)	3 months
	Norstrat 200 mg Norethisterone enanthate(NET-EN)	2 months
Combined injectables	**Mesygyna** 50 mg NET-EN+5mg Estradiol valerate **Cyclofem** 25 mg DMPA+5 mg estradiol cypionate	1 month

How to administer injectable contraceptives:

- Within the first 7 days of menstrual cycle
- For breast feeding start immediately or within first 6 weeks after child birth

Schedule:

DMPA: injection once every 3 months

3-Sub dermal implants

Sub dermal Implants:-

Sub dermal implants are capsules placed under the skin of a woman's arm that slowly release a progestin into the bloodstream

Norplant

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The most widely studied and used sub dermal implant is Norplant. With this method 6 match sized capsules are implanted and continuously deliver low doses of progestin to the bloodstream for 5 years. After 5 years Norplant's effectiveness decreases. The capsules should be removed and if the woman wants to continue using Norplant, another set of capsules inserted

Implanon

- Aprogestagen only subdermal implant
- Consist of a single non-biodegradable rod measuring 40 mm in length & 2 mm in diameter release 40 microetonogestrel per day
- As Norplant it is inserted by a special applicator under the skin of inner side of the upper arm through a small incision &provides highly reliable protection, nearly 100% for 3 years.
- Insertion & removal is easier than norplant

NB. Should be removed 3 years after insertion or at any time the women request removal. Fertility returns soon after removal of the implant within the first month after removal

4-Contraceptive vaginal rings (Nova ring)

Contraceptive vaginal ring

 The contraceptive vaginal ring is a flexible, soft, transparent ring with an outer diameter of 54 mm and a cross section of 4 mm.

 It release 120 microgram of progestagen etenogestrel and 15 microgram of ethinyl estradiol per day that are absorbed from the vaginal mucous membrane

 The ring can be easily inserted in the vagina & removed by the women herself

 The ring can left in the vagina for 3 weeks and then removed

Mechanism of action:

 This method prevent pregnancy mainly by inhibition of ovulation that achieved by a lower dose of ethinyl estradiol than the oral pills

 It is highly effective, well tolerated and induces good cycle control

NB: Most common causes for discontinuation are a foreign body sensation, coital problems and expulsion of the device.

Emergency contraception

Emergency contraception is the use of certain methods after unprotected intercourse to prevent pregnancy.

Including:

 rape

 Method did not function properly, such as broken condom or Method used incorrectly, such as missed pills.

 Must be within 72 hours.

Possible mechanism of action

Depending on the time of administration during the menstrual cycle the pills may:

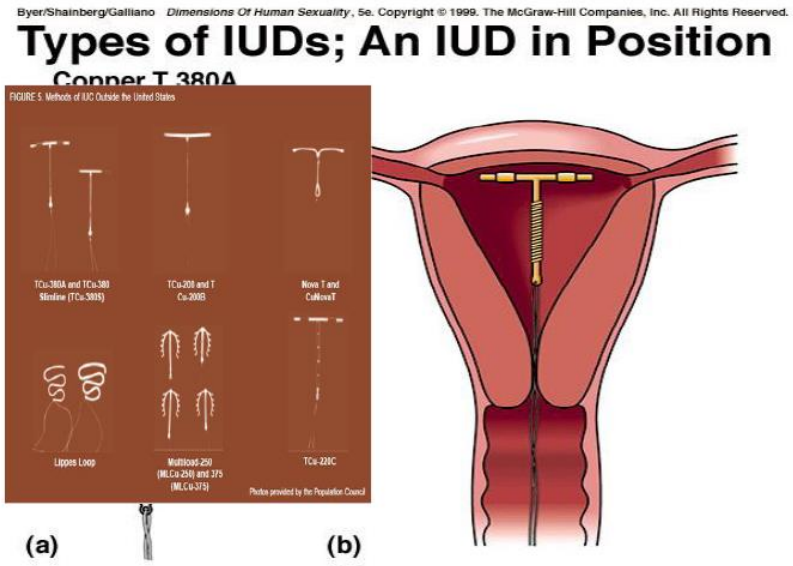
- Inhibit or delay ovulation
- Have other contraceptive effects after ovulation

Possible Side Effects of ECPs

- Most common: nausea and vomiting
- Less common: headaches, dizziness, fatigue, breast tenderness, irregular bleeding and spotting.
- Side effects are more common for COCs regimen than for POPs regime

Intrauterine Devices (IUD)

Intrauterine Devices (IUD)



- The IUD is a small polyethylene or plastic device that is placed in the uterus through the cervical canal.

Mechanism of action:-

- Prevent fertilization by causing local foreign body reaction hostile to sperms and possibly to the ovum & Stimulate uterine contraction.

 Increase tubal motility and spasm.

 Produce sterile inflammatory reaction leading to death of the sperms or the blastocyst making the endometrium unsuitable for implantation.

 Increase the local production of prostaglandin.

 Acidify the cervical mucus by the presence of nylon threads leading to death the spermatozoa.

Types:-

1. Inert devices made only of polyethylene and are called non medicated devices (no longer recommended).

2. Medicated devices:

 Copper devices which release copper as Copper T 380 A & Copper T 220

 Hormone-releasing devices which release progestogen (Progestasert) & levonorgestrol (Mirena)

Advantages of copper IUD:-

 Very safe and highly effective (more than 99%).

 Easy to use, requiring no action at the time of intercourse or at any other time

 Long acting (10 years for copper type) but easily reversible, with return to fertility typically occurring very soon after removal

 No systemic side effects

 Can be used safely by breastfeeding women

Side effects of IUDs:

 Menorrhagia or bleeding between menstrual periods

 Dysmenorrhea or lower abdominal colic

 Inability to feel the nylon threads

Disadvantages of the IUD

 Can cause side effects.

 Trained health care provider is needed to insert and remove the device.

 Is not recommended for women at risk of STIs.

 Offers no protection against STIs, including HIV

Complications:

 PID: (pelvic inflammatory diseases): due to the introduction of bacteria from the lower genital tract into the uterus.

 Perforation

 Ectopic pregnancy

 Expulsion

Contraindications:

 Pregnancy**,** PID, Fibroid

Abnormal uterine bleeding – Uterine malformations

 Recent uterine scar.

 Vulvular heart disease, to avoid bacterial endocarditis.

 Nullipara.

Timing of IUD insertion

Interval insertion:

 During menstruation

 Anytime during menstrual cycle if reasonably sure that the woman is not pregnant.

Postpartum insertion:

 Immediately after delivery if no infection or hemorrhage or during C.S

 Within the first 48 hours or after 4 weeks.

Insertion after abortion:

 Immediately if no infection

Warning Signs related to IUDs (PAINS):

P- Period late, abnormal spotting or bleeding

A- Abdominal pain, pain with coitus

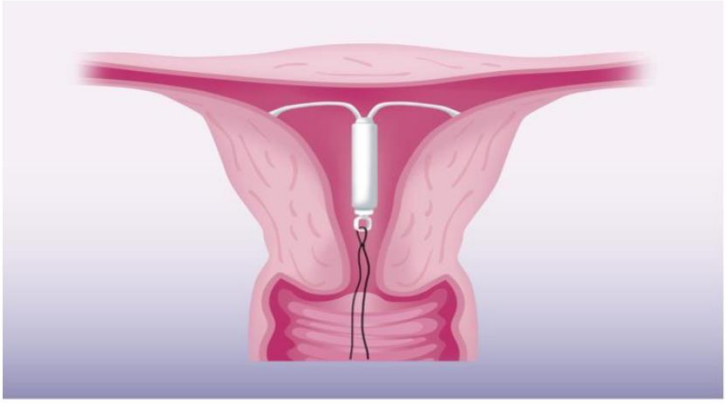
I- Infection exposure, abnormal vaginal discharge

N- Not feeling well, fever, or chills.

S- String missing.

The Hormone-releasing intrauterine system (IUS)

The Hormone-releasing intrauterine system (IUS)



Mechanisms of Action of Hormone- Releasing IUS

 Thickening of cervical mucus prevents sperm from entering the uterine cavity.

 Suppression of ovulation

Advantages of IUS

 Safe and highly effective. Easy to use;

 Long-acting (5 years)

 Reducing the duration and quantity of menstrual bleeding and pain.

Disadvantages of IUS

 Side effects, such as irregular bleeding and spotting, are common.

 Provides no protection from STIs, including HIV.

 Expensive.

 Not yet available in many countries.

Copper IUD for Emergency Contraception

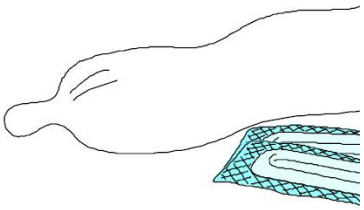
 Inserted within 5 days after unprotected intercourse.

- Highly effective (0.1% pregnancy rate).
- Side effects include cramping, heavy menstrual bleeding and spotting.
- After insertion can be used as ongoing contraception.

Barrier methods

Characteristics of barrier methods

Male latex condom



- Effective in preventing pregnancy if used

Barrier methods of contraception include the following:

- Male condom, female condom
- Diaphragm
- Spermicides(cream–jell–vaginal contraceptive film VCF)

All barrier methods are client dependent to be effective they need to be used correctly and consistently with every act of sexual intercourse.

Mechanism of action:

These methods work by physically or chemically blocking the passage of sperm. In some cases they can also prevent transmission of STIs between partners

Advantages of barrier methods:

- Effective in preventing pregnancy if used consistently and correctly
- Preventing STIs, including HIV
- Safe
- No systematic side effects

 Easy to initiate and discontinue

 Immediate return to fertility after stopping method

 Barrier methods do not require a clinic visit except for the diaghram (to determine the size, how to use and perceived)

Disadvantages of barrier methods

 Not as effective as other modern methods

 Some people find them difficult to use

 Some method require partners participation

 Coitus related and may interrupt sexual activity

 Need proper storage in order to maintain the quality of the products

 Need resupply

Characteristics of barrier methods

Male latex condom

 Effective in preventing pregnancy if used consistently and correctly (failure rate 3%)

 Widely available

 protect against STIs including HIV

 requires male partner cooperation

Female condom

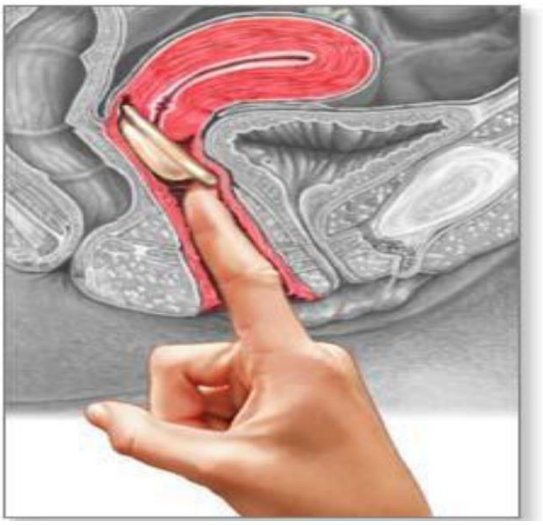
 Internal ring inserted deeply in the vagina, external wide ring protects vulval and perineal skin.

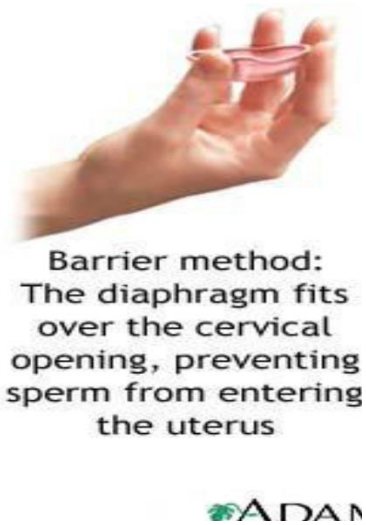
 Effect when used consistently and correctly.

 Less effective as commonly used.

 Protect from bacterial and possibly viral STIs.

Diaphragm





- More effective when used with spermicides.
- First time must be fitted by trained provider.
- Reusable after cleaning.
- Can be inserted up to 6 hours before intercourse.
- Should not be removed earlier than 6 hours after intercourse, no douching after intercourse or before removal
- It may cause irritation and urinary tract infection
- May decrease the risk of some bacterial STIs when used with spermicides

Spermicides

 Active ingredient mostly Nonoxynol-9 in foaming tablets, foam or cream.

 Much less effective than other modern methods

 Work by inactivating sperm.

 Provide modest protection against bacterial STIs.

 Can increase urinary tract infection in women.

Natural methods

I. Lactational Amenorrhea (LAM)

II. Fertility awareness methods (Periodic abstinence) which include:

1. Calendar method
2. Basal body temperature method
3. Cervical mucus method
4. Sympatothermal method

III. Withdrawal method

I- Lactational Amenorrhea (LAM)

The Lactational amenorrhea method, or LAM, is a temporary contraceptive option for postpartum women. To use LAM, a woman must be:

 Within 6 months postpartum

 Amenorrhea

 Fully or nearly fully breastfeeding (at least 85% of baby feeding is breast milk)

Mechanism of Action

 The stimulation of the nipples by infant's suckling sends nerve impulses to mother's hypothalamus causing the release of prolactin and disruption in the release of gonadotrophin releasing hormone

(GnRH). This turn suppresses the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) by pituitary gland to suppress ovulation.

Advantages of LAM

- Universally available to all breastfeeding women.
- At least 98% effective.
- Protection begins immediately postpartum.
- There are proven health benefits of breastfeeding for mother and infant.

Disadvantages of LAM

- Full or nearly full breastfeeding may be difficult for some women to maintain due to social circumstances.
- No STI or HIV protection.
- Duration of method is limited.

II- Fertility awareness methods :women know her fertile time

Periodic abstinence

Periodic abstinence involves abstaining from intercourse during woman's fertile time. A woman uses various signs to identify when she is fertile and duringthis time abstains from sexual intercourse. Methods that can help the women to be sure of her fertile days:

- **The calendar or rhythm method,**

Where by a woman uses past menstrual cycles to calculate when she will be fertile

- **The basal body temperature method (BBT)**

It is recorded by the women every morning before getting up. Whereby a woman identifies when she is fertile by noting the rise in basal body temperature that occur just after ovulation

- **The cervical mucus method**

- **The cervical mucus method**

Whereby a woman identifies when she is fertile by noting changes in the a appearance and texture of the cervical mucus.

 The symptothermal method

This method typically includes monitoring cervical mucus and temperature changes and may include other signs of ovulation such as breast tenderness, back pain or abdominal discomfort.

Advantages of periodic abstinence

 User controlled

 Readily available

 Safe and free from side effects

Disadvantages of periodic Abstinence

 Require skills and motivation

 Signs of fertility may not be reliable

 Requires partners cooperation to abstain

 No STI/ HIV protection

 Relatively high failure rates

III- Withdrawal or coitus interrupts

It requires removing the penis from the vagina before ejaculation so as to prevent contact between sperm and ovum

Disadvantages of withdrawal

 Contraceptive efficiency is similar to that of barrier methods which failure rates of about 4%

for perfect use and at least 19% for typical use during the first year

 Correct and consistent use requires self-control

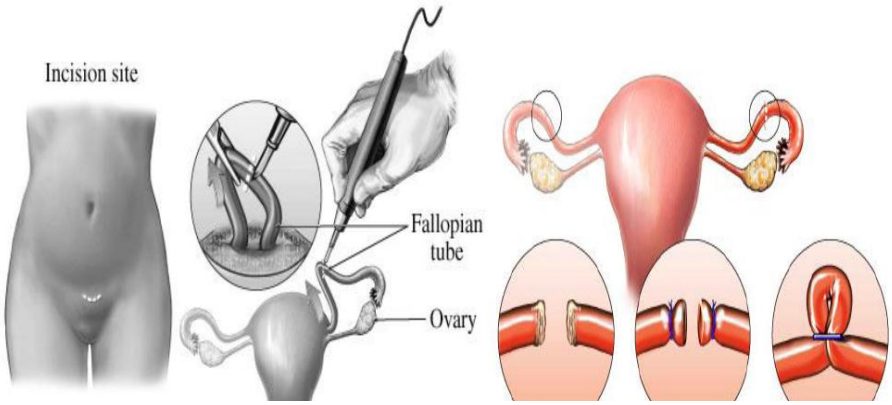
 Provides no protection from STIs/HIV

Surgical Methods(Terminal)

It is a permanent procedure destroying male or female reproductive function.

1- Female sterilization – tubal ligation

1- Female sterilization – tubal ligation



Voluntary female sterilization is the world's most widely used modern family planning method. It involves surgically closing and cutting or clipping the fallopian tubes to prevent the egg from being fertilized.

In Egypt female sterilization is provided in cases when pregnancy presents a risk to woman's health; in other

words, when medical indications exist to warrant the procedure.

Advantages of Female Sterilization

 Very safe and highly effective (99.5% in 1 year of use, 98.1 % overall for 10 years of use)

 Permanent method

Disadvantages of Female Sterilization

 No protection against STIs, including HIV.

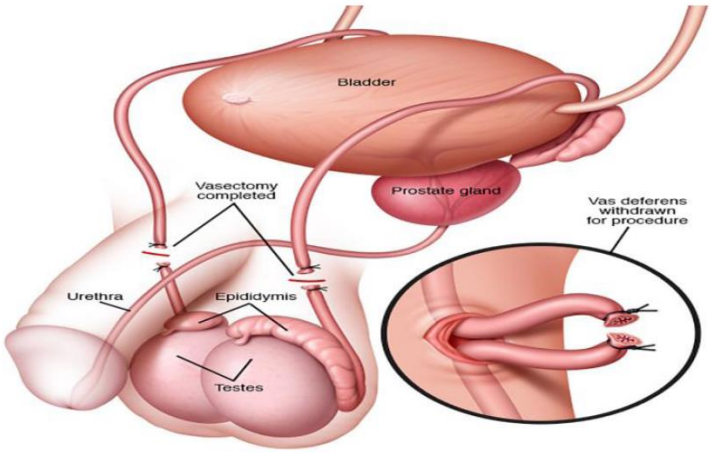
 Cannot be reversed & high initial cost.

Timing of Female Sterilization

 Immediately or within the first 7 days after a vaginal delivery (postpartum).

 During a cesarean section.

(2) Male sterilization – vasectomy



Vasectomy is a minor surgery in which the 2 vas deferens are blocked (ligation of the vasdeferens), preventing the sperm from mixing with semen. Ejaculated semen does not contain sperm cannot fertilize an ovum. The procedure is done under local anesthesia. A vasectomy is technically simpler to provide than female sterilization, however, the method is not offered in Egypt.

A vasectomy is:

 A permanent method of contraception.

 Safe and has no long-term side effect.

 Not immediately effective. A waiting period of 12 weeks or 20 ejaculations is recommended before a couple can rely on a vasectomy for contraceptive protection.

 Two negative seminal tests of sperm must be obtained after the operation.

Menstrual Disorders

Objective:

Identify types, causes, clinical picture of dysmenorrhea.

Intended learning outcomes

At the end of this lecture the student will be able to:

1- Define dysmenorrhea, its types &clinical picture

2- Differentiate between Primary and secondary dysmenorrhea

3- List causes of menstrual disorders and treatment

4- Define Mettelschmerz or Ovulatory pain and pre-menstrual syndrome

5- Define Amenorrhea & its types

6-Relate between primary amenorrhea and secondary amenorrhea

7- Identify causes of physiological, pathological amenorrhea &its treatment

8- Provide proper health education for women complains of any menstrual disorders.

More than one of the menstrual disorders can affect the woman throughout the female reproductive years.

1-Definition of dysmenorrhea:

Dysmenorrhea means pain related to menstruation.

Types:

a- Spasmodic dysmenorrhea.

b- Congestive dysmenorrhea.

A- Spasmodic dysmenorrhea.

(Primary Dysmenorrhea).

It is a common complaint in young girls (teenagers). Pain occurs in absence of organic pelvic lesion.

Clinical picture:

 Pain starts on the first day of menstruation, reaches its maximum within 24 hours while the bleeding is light, and then improves when the flow becomes established.

 Nausea, vomiting, diarrhea, and urinary disturbances may accompany pain.

 Etiology:

(a) Abnormal anatomy:

1-Cervical obstruction: due to cervical stenosis, this cause retention of menstrual blood.

2- Uterine hypoplasia: The underdeveloped muscle is unable to expel the bloods which accumulate causing dysmenorrhea.

(b)Abnormal physiology:

1- Low pain threshold.

2- Disturbed polarity of the uterus

3-Prostaglandin effect it causes vasoconstriction and uterine ischemia which may cause the pain of dysmenorrhea.

(c) General Causes:

1- Psychological disturbances. Pain may be an excuse to avoid school and work.

2- Smoking may release prostaglandins.

Treatment:

(1) Explanation and Reassurance of the patient.

(2) Encourage muscular exercises.

(3) Antispasmodic, Analgesics& Antiprostaglandins as Brufen

(4)Hormonal treatment)combined contraceptives(to inhibit ovulation

(5)Dilatation of the cervix: if needed

B-Congestive dysmenorrheal

(Secondary dysmenorrhea)

In this type pain is due to pelvic congestion which is caused by:

1) Chronic pelvic infection as cervicitis, endometritis or salpingitis.

2) Pelvic tumors as fibroids or ovarian cyst.

3) Abnormal position of the uterus as retroversion or prolapse.

4) Simple pelvic congestion due to chronic constipation or coitus interrupts.

5) Endometriosis leads to a specific type of dysmenorrhea.

6) Extra-genital lesions as chronic appendicitis.

Clinical pictures:

Age: It usually occurs after the age of 30.

Parity: More in multiparous women.

Type of pain:

Pain starts several days (3-5 days) before the period, increases gradually as menstruation approaches and is relieved by the onset of the flow due to diminution of pelvic congestion. In some cases the pain is felt through the whole period. The pain is a continuous dull ache felt in the lower abdomen and accompanied with backache.

Associated symptoms:

Menorrhagia, polymenorrhea and increased normal vaginal discharge (leucorrhea) may occur.

Treatment:

- Treatment of the cause.
- Analgesics.
- Measures to relieve pelvic congestion as warm douches and treatment of constipation.

2-Mettelschmerz or Ovulatory pain

It is a midcycle dull aching pain felt in one or other iliac fossa about the time of ovulation. It lasts for few hours rarely longer than 24 hours. Sometimes accompanied with nausea and vomiting.

3-Pre-menstrual syndrome

Definition:

It means cyclic recurrence of psychological, behavioral, or somatic symptoms during the lueteal phase of the menstrual cycle and in absence of organic disease. Symptoms occur only in ovulatory cycles.

4-Amenorrhea

Amenorrhea means absence of menstruation.

Types:

I-According to the onset:

There is **primary** amenorrhea and **secondary** amenorrhea.

Primary amenorrhea means failure of menstruation to occur by the age of 14 years in the absence of secondary sex characters OR by the age of 16 years in the presence of secondary sex characters. The incidence is less than 1%.

Secondary amenorrhea means cessation of menstruation for 3 months, if previous menses were regular, and for 6 months, if previous menses were irregular.

II-According to the cause:

There is **physiological** amenorrhea and **pathological** amenorrhea.

Physiological amenorrhea means absence of menstruation in the absence of any organic cause (Pathological causes).

Causes of physiological amenorrhea:

1- Before puberty

2- After menopause

3- During pregnancy.

4- Lactation.

Pathological amenorrhea

False amenorrhea (Cryptomenorrhea):

Menstruation occurs but the blood is unable to escape due to the presence of obstruction in the genital tract as cervical stenosis, transverse vaginal septum, vaginal aplasia, and imperforate hymen.

Symptoms and signs:

The girl complains of one or more of the following:

1- Primary or secondary amenorrhea.

2- Lower abdominal pain recurring every month.

3- An abdominal swelling.

4- Vaginal examination shows a bulging blue closed hymen.

Treatment:

 Under general anesthesia a cruciate incision is made in the hymen in case of imperforate hymen .

 Cervical dilatation and drain the collected blood.

Description	Term
Unusually light periods	Hypomenorrhea
It is menorrhagia associated with irregular intermenstrual bleeding (It is excessive or prolonged menstruation).	Menorrhagia, or hypermenorrhea
Regular menstruation which is normal in amount but it occurs at long intervals (five weeks or more).	Oligomenorrhea
Regular menstruation which is normal in amount but it occurs at short intervals (three weeks or less).	Polymenorrhea

Menopause & post-menopausal bleeding

Objective:-

Diagnosis& provide nursing management for menopausal women

Intended learning outcomes

By the end of this lecture the student is able to:

1. Identify menopause& its types.
2. Discuss the Changes Associated with menopause.
3. Discuss the Menopausal syndrome.
4. Recognize nursing care to the woman during the menopause.
5. Provide proper care and health education for perimenopausal women

Definitions:

Menopause:

It is natural and permanent cessation of menstruation due to failure of ovarian function. It is diagnosed when menstruation has ceased for at least consecutive 12 months or for 6 months with high FSH level in a woman above age of 40 yrs. In absence of any pathologic cause.

Climacteric= perimenopause (premenopause, menopause and postmenopause):

It is the phase in the aging process when a woman passes from the reproductive to the non- reproductive stage.

Stages of climacteric (menopause):

1. Pre-menopause:

It is the first stage of climactic and transition period from reproductive life to menopause during which fertility decreases (ovaries start reducing amount of estrogen they produce) and women begin to experience menopausal symptoms even though they are still menstruating and can get pregnant such as (emotional disturbance, head ache, fatigue) and this period ranges from 3-5 years.

2. Menopause:

It is the final act of menstruation**.** The period marked by the natural and permanent cessation of menstruation, occurring usually between the ages of 45 and 55 years.

3. Post menopause:

It is the period of time after the menopause. The post menopause is formally defined as the time after which a woman has experienced twelve (12) consecutive months of amenorrhea (lack of menstruation) without a period.

Types of menopause:

1- Normal or natural menopause.Occurring between the age of 40 and 55 years with an average of 50 years.

2- Premature menopause. Menstruation ceases before the age of 40. It occurs in about 1% of women below the age of 40.

3- Delayed menopause. Menstruation continues after the age of 55. The causes are: constitutional (a familial or racial tendency); (b) uterine fibroids; (c) diabetes mellitus; (d) estrogenic ovarian tumors.

4- Artificial menopause. Caused by surgical removal of both ovaries or their destruction by radiotherapy or chemotherapy.

The mode of onset of menopause

Menopause may be preceded by

(a) Hypomenorrhoea;

(b) Oligomenorrhoea;

(c) Oligo-hypomenorrhoea;

(d) A period of dysfunctional uterine bleeding or

(e) Menstruation stops suddenly and never recurs. This occurs in about 10% of women.

Menopausal syndrome (Signs and symptoms)

The menopause is associated with mild or no symptoms in about 70% of cases. The symptoms are moderate in 20% and severe in 10%. The symptoms of menopausal syndrome are:

(1) Cardiovascular;

 Palpitation and hot flushes.

The hot flush is a sensation of heat felt in the chest, neck, face, and head and may spread all over the body. It is due to attacks of subcutaneous vasodilatation and is usually accompanied with tachycardia and excessive sweating.

 Night sweats: -

It is another form of vasomotor instability experienced by many women. Sleep may be interrupted nightly, since bedclothes, and linen may be soaked, and many women complain of not being able to go back to sleep. Estrogen Replacement therapy (ERT) has been recommended to relieve these symptoms.

(2) Gastrointestinal. Appetite may be decreased or increased leading to obesity. There may be various forms of dyspepsia as flatulence and constipation.

(3) Psychological; as headaches, depression irritability, lack of concentration, poor memory and insomnia.

(4) Metabolic; as obesity, osteoporosis, joint pains and backache due to laxity of ligaments and decreased muscular strength.

(5) Sexual. The libido is unchanged in most cases, but may be increased or decreased.

(6) Genitourinary. The woman may suffer from senile endometritis, senile vaginitis, dryness of the vagina and dyspareunia. Urinary symptoms in the form of stress incontinence, and recurrent attacks of cystitis and urethritis.

(7) Estrogen is a bone protective so drop in estrogen make women liable for:

1-Osteoporosis

2-Heart disease

Management of the climacteric symptoms:

1-Hormonal replacement therapy

2-Individual treatment of specific associated symptoms.

a- Hot flushes: antihypertensive medications methyldopa and clonidine is given.

B-local conditions: local estrogen is used in cases of dyspareunia &pelvic weakness.

b- Psychological symptoms: explanation &reassurance because menopause is a change in life & no end of life, listen to women complains &give her attention.

3-Weight control

4- Kegel exercise.

5- Calcium supplementation.

Postmenopausal bleeding

Definition

It is bleeding from the women's vagina after she has undergone menopause.

Causes of postmenopausal bleeding

There are a variety of conditions that can cause postmenopausal bleeding which include:-

1-Uterine polyps

2-Endometrial hyperplasia

3-Endometrial cancer

4-Endometrial atrophy

5-Cervical cancer

6- Hormonal (estrogen) replacement therapy.

7- Infection of the cervix.

Diagnosis

By medical history, symptoms, physical examination and some tests such as:

1-Transvaginal ultrasound

2- Hysteroscopy, laparoscopy and D & C.

3- Biopsy (removal of small amount of tissue) from the vagina, cervix or uterus for lab test.

4- Blood tests to check hormonal levels.

Treatment

Treatment depends on the cause of the bleeding, on whether bleeding is heavy, and if additional symptoms are present. Treatment may include the following:

1. **Estrogen creams**: doctor may prescribe estrogen cream if your bleeding is due to thinning and atrophy of your vaginal tissues.

2. **Polyp removal**: Polyp removal is a surgical procedure.

3. **Progestin**: Progestin is a hormone replacement therapy. Doctor may recommend it if the endometrial tissue is overgrown. Progestin can decrease the overgrowth of tissue and reduce bleeding.

4. **Hysterectomy**: Bleeding that cannot be treated in less invasive ways may require a hysterectomy (surgical removal of the uterus).

role: Nursing

 Advice the women to Treat endometrial atrophy early in order to prevent it from progressing into cancer.

 Encourage regular screenings. This can help detect conditions before they become more problematic or result in postmenopausal bleeding

 Encourage women to maintain a healthy weight, following a healthy diet and exercising regularly. This alone can prevent a variety of complications and conditions throughout the entire body.

Infertility & Polycystic Ovarian Syndrome (PCOs)

Objective:

Demonstrate terms of fertility, infertility& Sterility and use critical thinking to analyze causes & ways of the treatment of infertility

Intended learning outcomes

At the end of this lecture the students will be able to

1. Define terms, fertility, infertility& Sterility
2. Identify Criteria for choosing appropriate contraceptive method.
3. Enumerate Factors which are necessary for establishment of pregnancy
4. List Type of infertility& causes of infertility
5. Definition of polycystic ovarian syndrome& its characteristics
6. Discuss Prevalence of PCOS
7. Identify Symptoms of PCOS
8. Diagnostics tests of PCOS
9. Describe treatment of PCOS& its effects
10. Higher risk of PCOS

Infertility

Fertility:- Means ability to conceive (to get pregnancy)

Infertility:- Inability to conceive after one year of frequent unprotected Intercourse (curable condition)

Subfertility:- is a delay in conceiving. The possibility of conceiving naturally exists, but takes longer than average.

Sterility: Absolute condition is an inability of a man to fertilize an egg, or reproduce.

Types of infertility:-

1-Primary:- Which mean woman who has no pregnancy

2-Secondary:- Which mean infertility occur after previous one or more pregnancy

Combined infertility:

In some cases, both the man and woman may be infertile or sub-fertile, and the couple's infertility arises from the combination of these conditions. In other cases, the cause is suspected to be immunological or genetic; it may be that each partner is independently fertile but the couple cannot conceive together without assistance.

Unexplained infertility

It is inability to conceive after one year with routine investigations of infertility showing no abnormality.

Factors which are necessary for establishment of pregnancy:-

Normal health genital tract in female

- Ovulation must take place
- Sexual intercourse at time of ovulation
- Physical & psychological fitness of both male & female

Risk factors for men regarding infertility

The following is a list of risk factors related to male infertility (also called male factor or male factor infertility):

- History of prostatitis or genital infection
- Testicular trauma or torsion
- History of precocious puberty (puberty occurring at a young age) or delayed puberty (puberty occurring at an older age)
- Exposure to toxic substances or hazards on the job.
- Heavy alcohol consumption
- Exposure of the genitals to high temperatures
- Hernia repair
- Undescended testes
- Prescription drugs for ulcers or psoriasis
- Mumps after puberty

Causes of infertility:-

Male causes: - (30-40%)

1. Pre testicular causes

a. Endocrine problems, i.e. diabetes mellitus, thyroid disorders

b. Hypothalamic disorders, i.e. Kallmann syndrome

c. Hyperprolactinemia

d. Hypogonadism due to various causes

e. Psychological factors, Drugs & alcohol

2. Testicular factors

a. Genetic defects on the Y chromosome & Abnormal set of chromosomes syndrome

b. Varicocele & Trauma

c. Hydrocele & Mumps

3. Post testicular causes

a. Vas deferens obstruction & Infection, e.g. prostatitis

b) Retrograde ejaculation &Hypospadias

Female causes: - (50%)

1. General factors

 Diabetes mellitus, thyroid disorders, adrenal disease , liver& kidney disease

 Significant Psychological factors

2. Hypothalamic-pituitary factors

3. Ovarian factors

 Polycystic ovary syndrome, An ovulation

 Premature menopause

 Ovarian disorder

4. Tubal /peritoneal factors

 Endometriosis & Pelvic adhesions

 Pelvic inflammatory disease (PID, usually due to chlamydia)

 Tubal occlusion

5. Uterine factors

- Uterine malformations
- Uterine fibroids (leiomyoma)
- Asherman's Syndrome

6. Cervical factors

- Cervical stenosis
- Antisperm antibodies
- Insufficient cervical mucus (for the travel and survival of sperm)

7. Vaginal factors

- Vaginismus
- Vaginal obstruction

8. Genetic factors

Investigations:-

I- Complete General & Local examination:-for both partners

II-For male:-

1. **Semen analysis** is done in all cases.

2. **Testicular biopsy** is done only in case of azoospermia to differentiate between obstructive and non-obstructive azoospermia.

3. **Chromosomal analysis** if Chromosomal anomalies are suspected.

4. **Hormonal assay** if hormonal imbalance is suspected including:

- Serum FSH & LH Level
- Serum Testosterone level
- Prolactin level

5. **Agglutination test** to detect presence of anti-sperm antibodies.

III- For female:-

1-Ovulation:-

- Premenstrual endometrial biopsy (absence of endometrium secretory means anovulation)
- Basal body temperature (BBT, ovulation marked by BBT for one

 Cervical mucus examination (Positive spinbarkiet) loss of stretching to > 6 Cm.

 Ultrasonic follow up of graffian follicles.

 Progesterone level in serum 5 mg/ml. Mean presence of ovulation.

2-Tubal factor:-

 Hystrosalpingoraphy (HSG) 2 films are taken to evaluate the uterine cavity, tubes & peritoneum

 Laparoscopy with methylene blue injection trough the cervix it is best for detecting minor adhesion

3-Uterine factor: - Hystrosalpingoraphy (HSG), hysteroscopy and ultrasound.

4-Cervical factors: post coital test and sperm penetration test.

5-Immunological factor: - agglutination test

Treatment:-

Treatment depends on the cause of infertility for any given couple.

I) Male treatment: -

Treatment for most male-factor conditions is available. Depending on the diagnosis, the options are:

1. General treatment: improve general health through:

 Lose weight if obese.

 Avoid smoking and alcohol consumption

 Avoid tight fitting shorts and trousers.

 Avoid medications that interfere with spermatogenesis.

 Use vitamin C, E, D, B12 & folic acid.

2. Medical treatment:

 HCG & HMG for Hypogonadism.

 Antibiotics for genital tract infection.

3. Surgical treatment: as Varicocel ligation and vasectomy reversal.

4. ART (artificial reproductive technology) as IVF & ICSI.

II)Female treatment: - according to the nature of the problem**:**

1. For ovulatory dysfunction:

 Medical induction of ovulation through clomiphene citrate.

 Surgical induction of ovulation through laparoscopic ovarian drilling in cases of PCOs.

2. **For tubal damage & blockage:** tuboplasty through microsurgical techniques to restore patency of fallopian tubes.

3. **For uterine abnormalities: some endometrial abnormalities** can be corrected as polypoectomy, myomectomy and septoplasty.

4. ART (artificial reproductive technology): including:

 Intrauterine insemination (IUI): involves injecting of male sperms into uterine cavity through cervix at the time of ovulation.

 In vitro fertilization (IVF) & Embryo transfer (ET): involves removal of oocyte from the woman and mixing them with sperms in the laboratory to achieve fertilization and then the resulting embryo are transferred to the uterus.

 Intra cytoplasmic sperm injection(ICSI): differ from IVF in that the best single sperm is

injected directly into cytoplasm of oocyte to fertilize it.

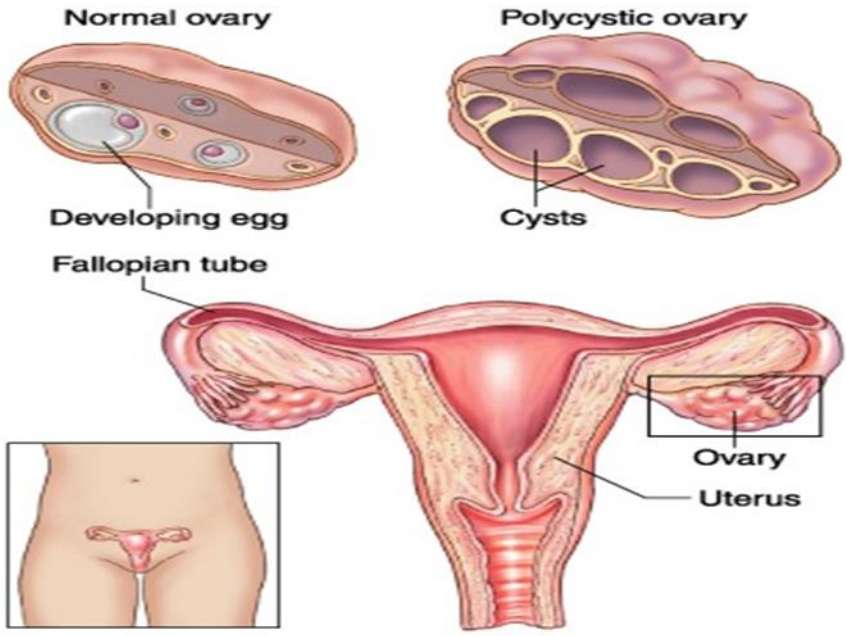
 Zygote intrafallopian transfer (ZIFT): involves placing the fertilized egg into woman's fallopian tubes instead of the uterus early.

 Gamete intrafallopian transfer (GIFT): involves placing mixture of sperms and eggs into fallopian tubes to allow fertilization occurs in right place.

Definition of PCOS:

It is an endocrine problem characterized by accumulation of numerous cysts on the ovaries and high male hormonal level (androgens) causes women to have variety of symptoms including: Irregular menstruation, Acne, Hirshtism.

Other signs and symptoms include: infertility, obesity, oily skin, dandruff, high cholesterol and elevated BP.



Prevalence of PCOS:

An estimated five to 10 percent of women of childbearing age have PCOS

Causes of PCOS

 No one knows the exact cause of PCOS

The risk factors:

1. Genetics factors (positive family history).
2. Obesity.

Diagnostics tests of PCOS

1. **Clinical signs and symptoms** : any two of the following criteria are required to diagnose PCOs:

- Polycystic ovaries
- Menstrual irregularities (oligomenorrhea- polymenorrhea).
- Signs of androgen excess as acne and Hirshtism.

2. **Laboratory investigations** including :

- High androgens level
- High LH level
- Increased LH: FSH ratio to be 2 or more.

3. **Ultrasound:** shows multiple small follicles more than 12 F in each ovary.

Treatment

Because there is no cure for PCOS, it needs to be managed to prevent problems.

Treatments are based on the symptoms each patient is having and whether she wants to conceive or needs contraception. Below are descriptions of treatments used for PCOS.

1. Birth control pills. For women who don't want to become pregnant, birth control pills can regulate menstrual cycles, reduce male hormone levels, and help to clear acne. However, the birth control pill does not cure PCOS.

2. Diabetes Medications. The medicine, **Metformin**, also called Glucophage, which is used to treat type 2 diabetes, also helps with PCOS symptoms.

3. Fertility Medications. The main fertility problem for women with PCOS is the lack of ovulation. Even so, her husband's sperm count should be checked and her tubes checked to make sure they are open before fertility medications are used. Clomiphene (pills) and Gonadotropins (shots) can be used to stimulate the ovary to ovulate.

4. Medicine for increased hair growth or extra male hormones. If a woman is not trying to get pregnant there are some other medicines that may reduce hair growth.

5. Surgery. Although it is not recommended as the first course of treatment, surgery called ovarian drilling is available to induce ovulation. The doctor makes a very small incision above or below the navel, and inserts a small instrument that acts like a telescope into the abdomen. This is called laparoscopy.

6. A healthy weight. Maintaining a healthy weight is another way women can help manage PCOS. Since obesity is common with PCOS, a healthy diet and physical activity help maintain a healthy weight, which will help the body lower glucose levels.

The effect of PCOS on pregnancy

- A higher rate of miscarriage
- Gestational diabetes
- Pregnancy-induced high blood pressure
- Premature delivery in women with PCOS.

Complications of PCOS:

- Irregular menstrual periods lead to thickness of endometrium due to absence of progesterone which increases the risk of endometrial hyperplasia or cancer.
- Women with PCOS are also at higher risk for diabetes, high cholesterol, high blood pressure, and heart disease.

Genital Prolapse

Outlines:

- Introduction
- Definition
- Types:
- Uterine prolapse
- Vaginal prolapse
- Factors which keep the uterus at its normal position
- Etiology of prolapse
- Complications of prolapse
- Diagnosis
- Treatment

Genital prolapse

Introduction

Prolapse of the uterus or vagina is usually the result of loss of pelvic support, and causes mainly non-specific symptoms. It may affect over half of women aged 50 to 59 years, but spontaneous regression may occur. Risks of genital prolapse increase with advancing parity and age, increasing weight of the largest baby delivered, and hysterectomy.

Genital prolapse (also known as pelvic organ prolapse) refers to uterine, uterovaginal, or vaginal prolapse.

Definition:

Prolapse means descent of genital organ below its normal anatomical position

Types:

1- Uterine prolapse
2- Vaginal prolapse
3- Combined vaginal and uterine prolapse
4- Prolapse of ovaries and tubes.

I-Uterine prolapse

Degrees

1- First degree

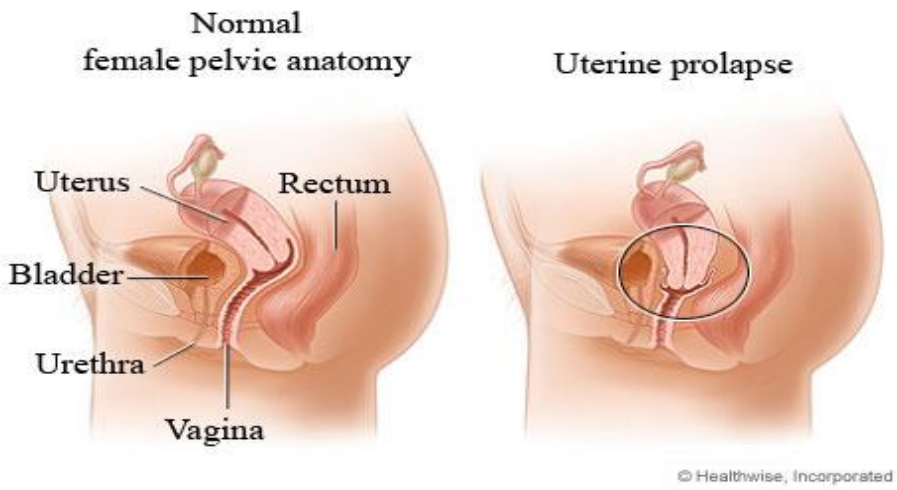
The external os of the cervix descends below the level of the ischial spines when the patient stands or strains but it does not appear from the vagina.

2- Second degree

The cervix not all the uterus appears from the vagina on standing or straining.

3- Third degree

The whole uterus prolapsed outside the vagina.



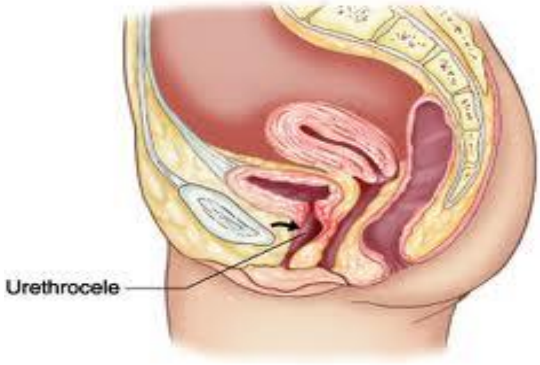
II- Types of vaginal prolapse

1- Prolapse of the anterior vaginal wall

a- **Syctocele:** Descent of the upper two-thirds with the base of the bladder.

Cystocele

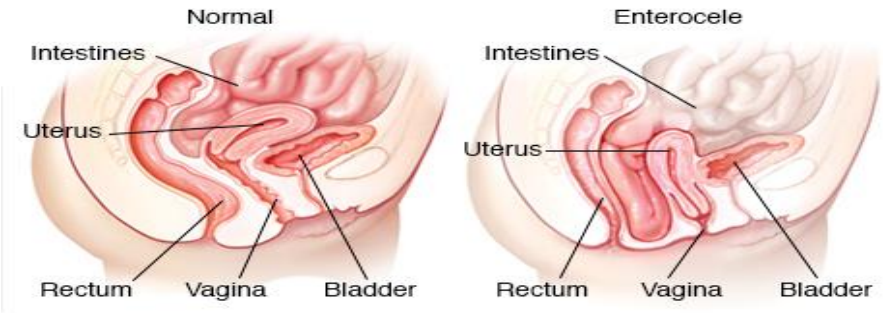
b- **Urethrocele:** Descent of the lower third with the urethra.



c- **Syctourethrocele:** Descent of the all vaginal wall.

2- Prolapse of the posterior vaginal wall:

a- **Enterocele:** Descent of the upper third with the peritoneum of Douglas pouch containing loops of intestine (hernia of Douglas pouch)



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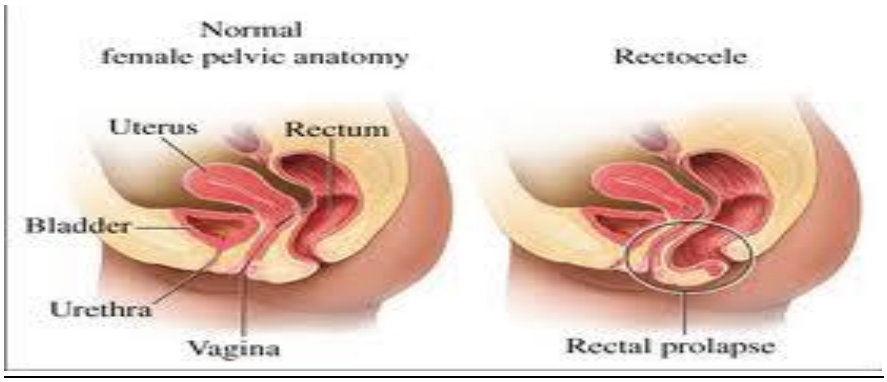
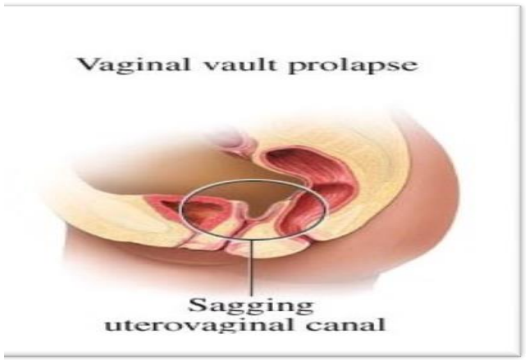
b- **Rectocele:** Descent of the middle third with the rectum

c- **Rectocele:** Descent of the middle third with the anal canal



3- Vault prolapse

It is descent of the vagina after hysterectomy.



Vaginal vault prolapse

Factors which keep the uterus at its normal position

1- The cervical ligaments
2- The pelvic floor muscles
3- The anteverted anteflexed position of the uterus

Etiology of prolapse:

a- primary (predisposing)
b- secondary causes

A- primary (predisposing) causes:

1- Weakness of the cervical ligaments

a- Congenital weakness: this leads appearance of prolapse at any early age (virginal or nulliparous prolapse).
b- Obstetric trauma: it is the commonest cause of prolapse due to delivery of large baby, perineal tears, bearing down before full dilatation of the cervix, forceps or ventouse before full dilatation of the cervix, early heavy work after birth, short intervals between deliveries
c- Surgical trauma: vaginal prolapse after abdominal or vaginal hysterectomy
d- Postmenopausal atrophy: this leads appearance of prolapse after menopause

2- Injury of the pelvic floor muscles

It is the result of child birth, badly repaired or hidden perineal tear

3- Retroversion of the uterus

Prolapse of the uterus due to increasing intra-abdominal pressure tends to push the uterus downwards when it becomes retroverted and lies along the axis of the vagina

B- **Secondary (precipitating) causes**:

These cause prolapse when a weakness is already present so they act as precipitating factors

1- Increased intra-abdominal pressure due to cough, chronic constipation, ascites, abdominal tumor and obesity
2- Increased weight of the uterus due to early pregnancy, subinvolution and the presence of small fibroids
3- Traction of the uterus by a large cervical polyp or by vaginal prolapse

Diagnosis:

A- Symptoms

Minor degree of prolapse is asymptomatic. The patient may complain of one or more of the following:

1- Sensation of heaviness in the pelvis
2- A swelling which protrudes from the vagina on standing or restraining and disappear when the patient lies down
3- Low backache
4- Pain in the groins due to traction on round ligaments
5- Symptoms of pelvic congestion as congestive dysmenorrhoea, menorrhagia, polymenorrhoea, leuchorrhoea or blood stained vaginal distcharge.
6- Urinary symptoms as dysurea, retention of urine or tress incontinence
7- Rectal symptoms occur with rectocele there is heaviness in the rectum and dyschezia
8- Dyspareunia
9- Infertility

B- Signs:

1- General examination
   - Finding the cause of increasing intra-abdominal pressure such as: chronic bronchitis
   - X- ray on lumbosacral for nulliparous women

2- Abdominal examination

- To exclude the cause of increase intra-abdominal pressure such as ascitis

3- Pelvic examination

a- Inspection. The premium is examined for lacerations and ask the patient to cough or to strain to know the type of prolapse

b- Digital palpation to confirm the nature of prolapse

c- Bimanual examination to detect uterine retroversion or pelvic mass

d- Speculum examination to exclude the lesions in the cervix

e- Rectal examination must be done to confirm the diagnosis of rectocele or entrocele

Treatment:

The treatment is prophylactic, palliative and surgical

A- Prophylactic treatment:

1- Before labor: The pelvic floor should be both strong and elastic. It is strong to help internal rotation of the fetal head in the second stage of labor and is elastic, so that the baby can pass without causing trauma to the pelvic floor.

2- During labor:

a- Avoid the factors which predispose to prolapse as straining during the first stage (before full cervical dilatation)

b- Avoid the application of forceps before full cervical dilatation

c- Episiotomy should be done when indicated to avoid lacerations

d- Avoid full bladder

e- Avoid fundal pressure to deliver the placenta.

3- After labor:

a- Any perineal or vaginal tears must be repaired immediately after delivery

b- Encourage pelvic floor exercises and other postnatal ex's

c- The patient is asked to lie on her abdomen for one hour daily

d- Prevent puerperal constipation in order to avoid bearing down efforts while the supporting ligaments of the uterus are lax

e- If prolapse is detected during the puerperium a ring pessary is applied for 3 months

f- Proper spacing of pregnancies

4- At hysterectomy

- The stump of the round, cardinal and utrosacral ligament are sutured to the vault of the vagina to prevent its prolapse

B- Palliative or pessary treatment:

It made of hard rubber or plastic device. pessary of suitable size is introduced into the vagina to support uterus, bladder and rectum.

Indication of pessary treatment:

1- Slight degrees of prolapse in young patients. Operation should be postponed until she completes her family.

2- Prolapse of the uterus in early pregnancy. The pessary is worn until the end of the fourth month until size of the uterus will be sufficient to prevent its descent.

3- Prolapse detected in the puerperium.

4- Contraindications to operations as lactation, severe cough, or patients refusing surgical repair.

5- Bad surgical risks as old patient with advanced diabetes or severe hypertension.

Precautions during wearing a pessary:

1- Daily vaginal douche using normal saline

2- Every month the pessary is removed, cleaned, the vagina examined for any signs of inflammation and the pessary then reintroduced.

3- If the pessary is made of rubber it should be changed every three months.

C- Surgical treatment:

It is the curative treatment and indicated only if symptoms are present

Preoperative preparation:

1- Prepare the woman for surgery by reinforcing the risks and benefits of the surgery
2- Complete blood picture with correction of anemia and general health
3- Urine analysis, blood urea, serum creatinine and intravenous pyelography
4- Treatment of trophic ulcers on the cervix or vagina by inserting a ring pessary to prevent infection and poor healing
5- Operation must be done in the postmenopausal week to minimize blood loss and allow healing before next menstruation

Types of operation:

1- Cystocele is treated by anterior colporrhaphy
2- Rectocele is treated by posterior colpoperineorrhaphy
3- Vaginal and uterine prolapse is treated by fothergill (Manchester) operation
4- Uterine prolapse with postmenpausal women is treated by lefort operation

Postoperative preparation:

1- The vagina should be tightly packed by gauze to prevent bleeding
2- Explain that a Foley catheter will be in place for up to one week
3- Provide home care instructions for the Foley catheter
4- Ask the woman to clean the perineal area daily with mild soap and water specially around the catheter
5- Postoperative follow up visits for 2-4 weeks

6- Pregnancy is contraindicated after prolapse operation

7- C.S should be done in women with fother gill operation

Complication of the operation:

1- The operation takes long time

2- There is excessive blood loss throughout the operation

3- Injury of urinary bladder, ureter or rectum

4- Stress incontinence

5- High amputation of the cervix may lead to abortion or recurrent preterm labor due to cervical incompetence

6- Subsequent fibrosis in the cervix may lead to infertility, dysmenorrhoea failure of the cervix to dilate during labor

7- Dyspareunia due to narrowing of the vagina or tender scar

The recovery period

1- Instruct the patient to avoid any exercise or heavy lifting

2- Refrain from intercourse for 6 weeks after her discharge from the hospital

3- Subsequent to the 6-week follow-up visit, the patient is instructed to progressively return to her usual daily activities.

4- Stress the need to avoid causes of increased intra-abdominal pressure, such as constipation, weight lifting, and cigarette smoking, for at least 3 months.

5- For postmenopausal patients, recommend continuation of estrogen therapy in order to maintain the integrity of pelvic tissues and to maximize surgical success.

6- If conservative treatment is used, depending on symptoms, instruct patients to remove and clean the pessary and/or to douche weekly with a weak vinegar solution to lessen the chances of complications

Genital Fistula

Outlines:-

1- Introduction

2- Definition

3- Incidence

4- Types

a- Vesicovaginal fistulas

b- Ureterovaginal

c- Rectovaginal

Genital Fistula

Introduction:

Maternal outcomes in most countries of the developed world are good. However, in many developing countries, every year, more than 500,000 women die in childbirth. Those who survive often suffer from severe and long-term morbidities. One of the most devastating injuries is obstetric fistula, occurring most often in south Asia and sub-Saharan Africa.

Obstetric fistula is the most common genital tract fistula worldwide. It is commonly due to childbirth injuries sustained during prolonged, obstructed and neglected labor. On average, women who develop genital tract fistulas labor for 4 days and over 90% deliver a stillborn baby.

Definition:

Genital fistula is an abnormal passage or opening between the genital tract and the urinary or gastrointestinal tract.

Incidence:

Fistulas occur in places where use and access to obstetric care is limited. While there are no sound data on the number of women living with fistula, the most commonly cited estimate is more than 2 million women living with fistula, with approximately 50,000 to 100,000 cases occurring annually, mostly in Africa, Asia, and the Arab world. Further, the unmet need for fistula repair is estimated to be as high as 99 %.

Types:

The types of genitourinary fistula (figure 1) are based upon the anatomic location of the connecting tract. They are classified according to their anatomical situation into the following types:

1- Ureteric:
   a- Uretrouterine
   b- Uretrocervical
   c- Uretrovaginal

2- vesical:
   a- vesicouterine
   b- vesicocervical
   c- vesicovaginal (figure 2).
3- Urethral which include urethrovaginal fistula
4- Gastrointestinal tract which include rectovaginal fistula (figure 3).

- The commonest type is vesicovaginal fistulas then ureterovaginal fistulas (vesicovaginal fistulas approximately three times more common than ureterovaginal fistulas).
- More than two organs may be involved e.g vesicourethrovaginal fistula.
- urethrovaginal fistula results from vaginal operations in which the urethra is damaged.

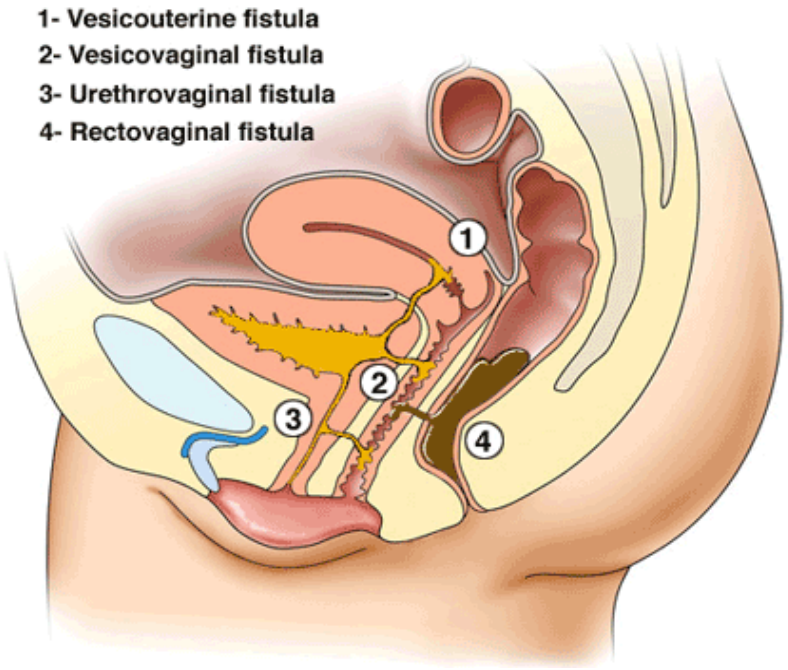
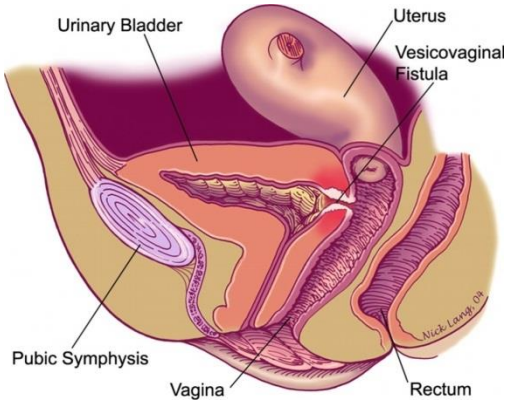


Figure (1): Urogenital fistula



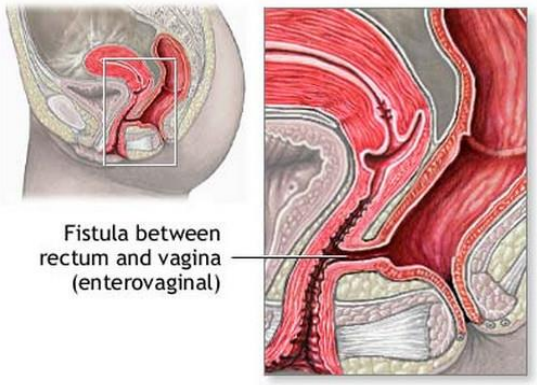


Figure (2): Vesicovaginal fistulas **Figure (3): Vesico-colonic fistulas**

I- Vesicovaginal fistula

Incidence:

The incidence of fistula varies from country to country. The same are applied to the aetiological factors. However 350 vesicovaginal fistulas are treated each year in England and wales.

Aetiology

A- Congenital: This is very rare.

B- Traumatic: Due to different types of trauma:

1-Obstetric trauma:

This is the commonest cause of vesicovaginal fistula in Egypt and other developing countries. Obstetric trauma leads to two types of fistula:

a- Necrotic obstetric fistula: Due to obstructed labor which leads to prolonged compression, ischemia and necrosis of soft tissues between the fetal head and pelvic walls occurs 5-7 days after delivery.

b- Traumatic obstetric fistula: The bladder may be directly injured during caesarean section. Forceps delivery may lead to vaginal or cervical tear

which may extend to involve the urethra, the bladder or ureter incontinence of urine occurs immediately after delivery

Figure (4): Obstetric trauma

2- Surgical trauma:

Fistula may occur after total abdominal or vaginal hysterectomy

3- Direct trauma:

As falling on sharp objects, fracture of the pelvis and defloration injuries. Neglected foreign body or vaginal pessary may lead to ulceration and fistula formation.

C- Inflammatory

As in case of syphilis, bilharziasis or tuberculosis of the bladder or vagina

D- Neoplastic

Malignant tumour of the cervix, vagina or bladder. The commonest cause of a malignant vesicovaginal fistula is advanced cervical carcinoma.

E- Postirradiation

Radium applied for the treatment of carcinoma of the cervix or vagina may cause ischemic necrosis and fistula. The fistula appears 3-9 months after irradiation.

Diagnosis:

1- **History:** History can give idea about the etiology of the fistula weather it is due to labor, surgery, irradiation, …etc. also the history

can differentiate between the different types of urinary incontinence which may be true, false, urgency or stress incontinence.

2- Symptoms:

a- Incontinence of urine: It may be total or partial

b- Soreness of the vulva and pruritus: The continuous dribbling of urine leads to vaginitis and vulvitis

c- Pain may be felt in suprapubic region

d- Psychological disturbances: As amenorrhea because incontinence of urine is very distressing

3- Signs:

a- General examination:

Patient is examined for renal failure, signs of anemia and malnutrition should be noted as these have to be corrected before surgical repair

b- Abdominal examination:

The kidneys are palpated for tenderness or enlargement

c- Vaginal examination:

1- Inspection for vaginitis, vulvitis and ulceration

2- Digital palpation

3- Speculum examination

4- Special examination:

a- methylene blue test

b- intravenous pyelography

c- cystoscopy

Treatment

1- In case of inflammatory or malignant fistula, the treatment is that of the primary cause

2- In congenital and traumatic fistula the treatment is operative closure. However if the bladder is injured during labor, it is useless to close fistula immediately because of edema and

friability of the tissue. A foley catheter is fixed in the bladder for three weeks and gives antibiotic. The fistula may heal completely or is left smaller in size

3- Vaginal operations
4- abdominal operations

Preoperative preparation:

1- complete blood count
2- Estrogen locally or by mouth for atrophic tissues in postmenopausal patients
3- Treatment of infection in the genital tract.
4- Treatment of any urinary tract infection. Urine analysis, culture and sensitivity tests
5- Kidney function test
6- Cystoscopy

Postoperative care:

1- The catheter should be left for at least 10-14 days
2- Observation of urine every two hours day and night. If there is no urine passed through the catheter, this indicates either anuria or obstruction of the catheter
3- Antibiotics to prevent infection of urine and wound
4- Large quantities of fluids, at least 3 liter per day
5- If a vaginal pack was inserted, it is removed after 24 hours
6- If non absorbable material was used to close the vagina, it is removed 21 days after operation and in the operating room and preferably under general anesthesia
7- Investigate renal function 2 days after operation and before discharge
8- Investigate urine for pus every 2 days

9- After removal of catheter the patient is asked to pass urine every 2 hours by day and every 4 hours by night to avoid over distension of the bladder

10- No sexual intercourse for 3 months

11- No pregnancy for one year

12- Subsequent deliveries are usually by C.S.

2- Uretrovaginal fistula

Etiology:

a- **Congenital:** This is very rare.

b- **Traumatic:** Due to different types of trauma:

1- Obstetric trauma is a rare cause because the ureter is displaced upwards during

2- Surgical trauma: total hysterectomy is the commonest cause of this type of fistula

3- Direct trauma: As fracture of the pelvis or vaginal rupture

c- **Postirradiation:** as application of radium for the treatment of cervical carcinoma

Diagnosis:

1- Partial incontinence of urine

2- Methylene blue test

3- Intravenous pyelography

4- Cystoscopy

Treatment:

Reimplantation of the ureter into the bladder

3- Rectovaginal fistula

Etiology:

A- Congenital: This is very rare

B- Traumatic: Due to different types of trauma

1- Obstetric trauma:

a- The commonest cause of rectovaginal fistula is incomplete healing of a complete perineal tear

b- Necrotic obstetric fistula: Due to obstructed labor causing prolonged compression, ischemia and necrosis of the rectovaginal septum.

c- Traumatic obstetric fistula caused by instruments as perforation

2- Surgical trauma: The rectum may be injured during operation as total hysterectomy or posterior colpoperineorraphy

3- Direct trauma: As defloration injuries, falling on sharp objects, ulceration of neglected pessary or foreign body.

C-Inflammatory: pelvic abscess may open into the vagina and rectum. Syphilis, bilharziasis or tuberculosis of the vagina or rectum are rare cases

E- **Neoplastic:** malignant tumour of the cervix, vagina or rectum.

F- Postirradiation: radium applied for the treatment of carcinoma of the cervix or vagina may cause ischemic necrosis and fistula.

Diagnosis:

1- Symptoms:

The Symptoms depend upon the size of the fistula:

a- If it is large, there is loss of voluntary control over the passage of faeces and fistula.

b- If the fistula is small the patient may complain of involuntary escape of flatus and stools

c- Irritation secondary to vulvitis, vaginitis and persistent vaginal discharge

2- Signs:

The condition diagnosed by exposing the posterior vaginal wall in good light. Small fistula is diagnosed by rectal examination

Treatment:

1- In case of inflammatory or malignant fistula, the treatment is that of the cause
2- In congenital and traumatic fistula the treatment is closure of the fistula by operation

Prevention:

1. Bladder should be kept empty during:
2. Bladder should be dissected carefully and kept away from the operative field during abdominal and vaginal operations
3. Early detection and management of obstructed labor
4. The second stage of labor should not be more than 2 hours
5. All obstetric procedure should be done carefully
6. After repair of fistula, delivery should be by C.S.

Fibroid Uterus

Outlines:

- Introduction
- Definition
- Etiology
- Types of fibroid
- Risk factor
- Symptoms
- Complications of fibroid
- Treatments
- Nursing care for fibroid

Fibroid Uterus

Introduction:

Uterine leiomyomas (fibroids or myomas) are the most common pelvic tumor in women. They are benign tumors arising from the smooth muscle cells of the myometrium. They arise in reproductive age women (40s and early 50s) and typically present with symptoms of heavy or prolonged menstrual bleeding or pelvic pain/pressure. If the fibroid was very large they can make the women like pregnant.

Definition:

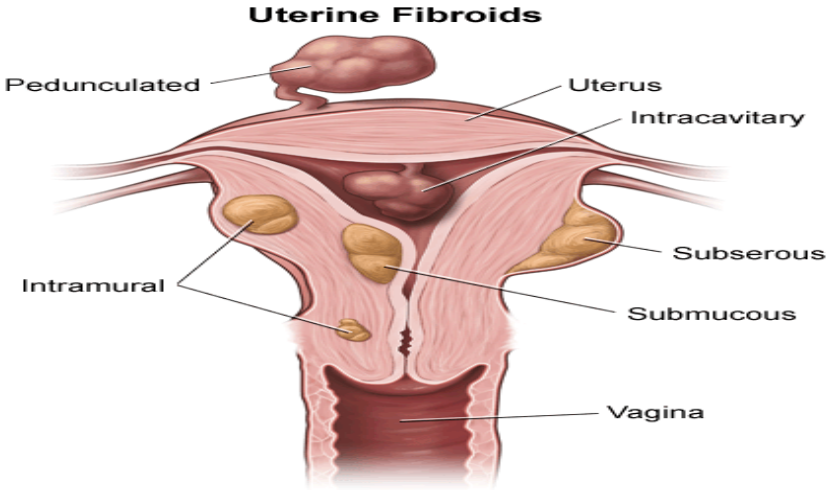
A fibroid uterus is a leiomyoma (benign neoplasm from smooth muscle fibers) that originates from the smooth muscle layer (myometrium) of the uterus. However, the tumor contains connective tissue fibers it is also called myoma, myofibroma or fibromyoma.

Etiology:

The exact cause is unknown, however, the tumour is oestrogen dependent and excessive oestrogen stimulation predisposes to fibroids and this is evidence by:

1. Fibroid never start before puberty or after menpause and existing tumour undergo atrophy after the menopause.
2. They are frequently associated with other lesions caused by excessive oestrogen as endometrial hyperplasia, endometriosis, and endometrial carcinoma.
3. They are more common in nullipara because the high progesterone level during pregnancy anatogonises oestrogen.
4. The tumour has more oestrogen receptors compared with the normal surrounding myometrium.
5. Anovulation may lead to development of fibroids.

Types of fibroid:

- 

- **Intramural fibroids**: are located in the muscle wall of the uterus and are the most common type.
- **Subserosal fibroids**: are located just under the outside covering of the uterus and can become very large.
- **Submucosal fibroids**: are located just under the surface of the uterine lining.
- **Pendunculated leiomyomas:** these fibroids develop occurring on a long stalk on the outside of the uterus or inside the cavity of the uterus; it may become twisted, causing severe pain.
- **Cervical fibroids:** are located in the wall of the cervix (neck of the uterus).

Risk Factors:

1. **Age:** Fibroids are most common in women who are 30s through early 50s. (After menopause, fibroids tend to shrink.) About 20 - 40% of women age 35 and older have fibroids of significant enough size to cause symptoms.

2. **Family History:** having a mother or sister who had fibroids, may increase risk.

3. **Race and Ethnicity:** Uterine fibroids are particularly common in African-American (black) women, and these women tend to develop them at a younger age than white women.
4. **Obesity**: Women who are overweight are at higher risk for fibroids. For very heavy women, the risk is two to three times greater than average.
5. **Eating habits:** Eating a lot of red meat (e.g., beef) and ham is linked with a higher risk of fibroids. Eating plenty of green vegetables seems to protect women from developing fibroids.

Symptoms of fibroids:

Most fibroids do not cause any symptoms, but some women with fibroids can have:

- Abnormal bleeding/menorrhagia, polymenorrhea, metrorrahagia: menorrhagia being the most common abnormal pattern observed.
- Pelvic Discomfort: Women with large fibroids may feel heaviness or pressure in their lower abdomen or pelvis.
- Pelvic Pain:
- Bladder Problems: The most common bladder symptom is frequent urination.
- Low Back Pain
- Rectal Pressure: Fibroids also can press against the rectum and cause a sensation of rectal fullness.
- Large abdominal fibroid may cause dyspnea and palpitation
- Discomfort or pain with sexual intercourse.
- Miscarriage or infertility.

Complications:

1. Menorrhagia which lead to iron-deficiency anaemia.
2. Torsion of pedunculated fibroid lead to acute abdominal pain.
3. Bladder frequency, constipation (due to increased pelvic pressure).

4. Ureteral obstruction causing hydronephrosis.
5. Infertility
6. Infection of the tumour
7. Malignant changes
8. Inversion of uterus
9. Uterine prolapse.

Complication during pregnancy: there are increased incidences of

- Recurrent miscarriage.
- Fetal malpresentation.
- Premature labour.
- Ectopic pregnancy.
- Non engagement of the head.
- Placenta previa
- Red degeneration: presents with fever, pain and vomiting.
- Intrauterine growth restriction.
- Hydronephrosis.

Complication during labour

- Obstructed labour
- Prolonged labour
- Retained placenta
- Cesarean section
- Postpartum hemorrhage

Complication during puerperium

- Sub involution of the uterus
- Secondary postpartum hemorrhage
- Puerperal sepsis.

Treatment:

1) No treatment:

Small symptomless fibroid require no treatment but the patient is kept under observation and examined every 6 months. The exceptions to this rule are:

- If the size of the tumors is more than 12 weeks pregnancy.
- Pedunculated subserous fibroid which is liable to torsion.
- If the tumor is growing rapidly.
- The presence of infertility

2) Medical treatment:

- **Birth control pills** and other types of hormonal birth control methods as progesterone injection (e.g. depoprovera). These drugs often are used to control heavy bleeding and painful periods.

3) Surgical:

Surgery is indicated when:

- There is excessively enlarged uterine size.
- Pressure symptoms are present.
- Medical management is not sufficient to control symptoms.
- Subfertility is also a factor.

Surgical options include:

A) Myomectomy is the surgical removal of fibroids while leaving the uterus in place. Because a woman keeps her uterus, she may still be able to have children. Fibroids do not regrow after surgery, but new fibroids may develop.

B) Hysterectomy is the removal of the uterus. Hysterectomy is done when other treatments have not worked or fibroids are very large. A woman is no longer able to have children after having a hysterectomy.

C) Uterine artery embolization (UAE) – Also called uterine fibroid embolization, UAE is a newer minimally-invasive (without a large abdominal incision) technique. The arteries supplying blood to the fibroids

are identified, and then embolized (blocked off). The embolization cuts off the blood supply to the fibroids, thus shrinking them.

D) Myolysis – A needle is inserted into the fibroids, usually guided by laparoscopy, and electric current or freezing is used to destroy the fibroids.

E) Endometrial Ablation– The lining of the uterus is removed or destroyed to control very heavy bleeding. This can be done with laser, wire loops, boiling water, electric current, microwaves, freezing, and other methods.

F) Radio frequency ablation – Is one of the newest minimally invasive treatments for fibroids. In this technique the fibroid is shrunk by inserting a needle-like device into the fibroid through the abdomen and heating it with radio-frequency (RF) electrical energy to cause necrosis of cells.

Nursing care for myomectomy:

Before surgery:

- Informed consent is a legal document that explains the tests, treatments, or procedures that may needed.
- Inform and explain to the patient about investigation needed to performed as Physical exam and Blood tests
- Instruct the patient not to eat or drink for at least eight hours before the procedure.
- Give the patient IV fluids.
- Explain to the patient that she will receive general anesthesia that will keep her asleep and free from pain during surgery.

Immediately after the operation

After the operation, the nurse should:

- Observed temperature, pulse, respiration and blood pressure
- Note any vaginal discharge.
- Give an intravenous fluid line to replace fluids loss.
- Monitor tubes at the wound site to drain off excess fluid. .

- You may have a catheter to drain off urine for the next day or so.
- Encourage the patient to perform breathing, coughing and leg exercises hourly when she awakes.
- Assisted the patient out of bed and taken for a walk the day following surgery.

Possible complications

Possible complications of myomectomy include:

- Haemorrhage
- Injury to the uterus
- Damage to the nearby organs of the urinary system
- Formation of scar tissue (adhesions) within the uterus
- Infection
- Blood clots
- Eventual re-growth of fibroids.

Maternal mortality

Out lines:-

- Introduction
- Egyptian national maternal mortality ratio 1990- 2008
- Measuring maternal mortality
- Definitions
- Prevalence
- Time of Maternal Death
- High risk for maternal mortality.
- Causes of (MM)
- Egyptian national maternal mortality ratio 1990- 2008
- Causes of maternal death in Egypt
- Why do women not get the care they need?
- Measures to reducing or avoiding maternal deaths.

Maternal mortality

Introduction:

Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth. 99% of all maternal deaths occur in developing countries. Maternal mortality is higher in women living in rural areas and among poorer communities. Young adolescents face a higher risk of complications and death as a result of pregnancy than older women. Skilled care before, during and after childbirth can save the lives of women and newborn babies.

Measuring maternal mortality

We measure maternal mortality for the following reasons:

1. To establish levels, trends and differentials in maternal mortality.
2. To identify characteristics and determinants of maternal deaths.
3. To monitor and evaluate the effectiveness of activities designed to reduce maternal mortality
4. To monitor progress towards international development targets

Definitions of maternal mortality

1- Maternal mortality or obstetrical death:

According to the World Health Organization "A maternal mortality : is defined as the death of a woman while pregnant or within 42 days of pregnancy termination irrespective of the duration and site of the Pregnancy, and from any cause related to or aggravated by the Or its management but not from accidental or incidental causes."

2- Maternal Mortality Rate:

The number of maternal deaths in a given period per 100,000 women of reproductive age (15-49 year) during the same period. This measures the impact of maternal deaths on the population of women as a whole.

3- Maternal Mortality Ratio (MMR):

Is the ratio of the number of maternal deaths per 100,000 live births per year. The MMR is used to measure the quality of the health care system (Number of maternal deaths per100.000 live births per year)

4-Maternal Morbidity:

Refers to serious disease, disability or physical damage caused by pregnancy-related complications.

Prevalence:

In 2010 the United Nations estimated global maternal mortality at 287,000 of which less than 1% occurred in the developed world. However, most of these deaths have been medically preventable.

The high incidence of maternal death is one of the signs of major inequity spread throughout the world reflecting the gap between rich and poor.

A total of 99% of all maternal deaths occur in developing countries. More than half of these deaths occur in sub-Saharan Africa and one third in South Asia. The maternal mortality ratio in developing countries is 450 maternal deaths per 100000 live births versus 9 in developed countries. Because women in developing countries have many pregnancies on average their lifetime risk more accurately reflects the overall burden of these women. A woman's lifetime risk of maternal death is 1 in 7300 in developed countries versus 1 in 75 in developing countries.

Time of Maternal Death :

Most maternal deaths took place during delivery or postpartum

- 9% of deaths occurred in early pregnancy (before 6 months).
- 16% of deaths occurred in late pregnancy (between 6 and 9 months).
- 49% occurred during delivery and the 24 hours after delivery.
- 26% occurred in the late postpartum period (11% in week one, 7% in week two, and 8% in weeks three to six postpartum).

High risk women for maternal mortality:

1-Factors related to maternal and pregnancy:

1- Maternal Age and Parity:

- Teenage pregnancy (before 20 years) is associated with a higher MM.
- Nullipara 35 over advanced maternal age.
- Multipara 40 years or over
- Interval of 8 years or more since last pregnancy.
- High parity.
- Pregnancy occurring 3 months or less after last birth.

2- Pregnancy – induced hypertension, kidney diseases.

3- Anemia and hemorrhage, Hemorrhage in previous pregnancy or in the present pregnancy.

4- Fetal factors:

- Previous preterm birth.
- Two or more spontaneous preterm births.
- One or more stillbirths at term gestation.
- One or more gross anomalies.
- Rh- incompatibility
- History of large infants (over 4kg).

5- History of concurrent conditions:

- Diabetes mellitus or gestational diabetes.
- Hyperemesis gravidarium: severe morning that continues past the first trimester.
- Thyroid disease (hypo or hyperthyroidism).
- Malnutrition or extreme obesity.
- Heart disease.
- Tuberculosis or other serious pulmonary condition (asthma).
- Malignant or permalignant tumors.
- Substance dependency.

- Psychiatric disease or epilepsy.
- Mental retardation.

6- other conditions:

- Contracted pelvis or cephalopelvic disproportion.
- Multifetal pregnancy in the current pregnancy.
- Two or more breech births.
- Previous operative births (e.g. cesarean birth).
- History of prolonged labor.
- Previously diagnosed genital tract infection
- Lifestyle choices as smoking cigarettes (in Egypt negative smoking), drinking alcohol and using illegal drugs) can put a pregnancy at risk.

2-Factors related to service facilities:

- Low social status of some women and some families.
- Poverty at family or community level.
- Lack of access to modern family planning.
- Young adolescent marriages (early marriage).
- Low community awareness of danger signs of pregnancy.
- Violence in pregnancy.
- Rural location (long time to reach health facilities).
- Unwillingness of some pregnant women to attend antenatal care.
- Weak health systems:
- Emergency transport gaps.
- Facility location, capacity and equipment.
- Staff quantity, quality (skills).
- Supply chain difficulties.

Causes of maternal mortality

The leading causes of maternal death are classified as direct or indirect:

a. Direct causes:

Direct Causes are those related to obstetric complications of pregnancy, labor and delivery, and the post-partum periods. Direct causes account for 80% of maternal death.

Direct causes include:

1-Hemorrhage (uncontrolled bleeding):

- Accounts for approximately 25% of maternal deaths and is the single most serious risk to maternal health.

2-Sepsis (infection):

- Accounts for approximately 15% of maternal deaths.
- Related to poor hygiene and infection control during delivery or to the presence of untreated sexually transmitted infections during Pregnancy.

3-Hypertensive disorders:

- Accounts for approximately 12% of maternal deaths as pre-eclampsia and eclampsia.

4-Prolonged or Obstructed Labor:

- Accounts for 8% of maternal deaths.
- Caused by cephalopelvic disproportion (CPD), increased incidence among women with poor nutritional status use of assisted vaginal delivery methods such as forceps or vacuum extractor

5-Unsafe Abortion

- Accounts for approximately 13% of maternal deaths.

b-Indirect Causes

- Indirect causes are those relating to pre-existing medical conditions that may be aggravated by the physiologic demands of pregnancy. Accounts for approximately 20% of maternal deaths.

- Pre-existing medical conditions such as anemia, malaria, hepatitis, heart disease, and HIV/AIDS can increase the risk of maternal death.

Maternal Mortality Ratio (MMR) in Egypt:

- ☒ 1993 174/100,000 live births.
- ☒ 2000 84/100,000 live birth (50%).
- ☒ 2003 68/100,000

Causes of maternal death in Egypt

. The main causes of maternal death in Egypt are as follow (Ministry of Health and Population, National maternal mortality Study, 2000.

1- Direct obstetric causes 77%

* Hemorrhage 30%
* Hypertensive diseases of pregnancy 13%
* Ruptured uterus 8%
* Genital sepsis 6%
* Pulmonary embolism 6%
* Anesthesia 5%
* Caesarean section 4%
* Abortion 3%
* Other direct cause 2%

2- Indirect obstetric causes 20%

* Cardiovascular 10%
* Infectious and parasitic diseases 3%
* Digestive 3%
* Other indirect causes 4%

3- Unknown causes:

The 3 Delays Related to maternal death:

According the WHO, maternal mortality in resource-poor nations has been attributed to the "3 delays": in deciding to seek care, delay in reaching care in time, and delay in receiving adequate treatment.

1- **The first delay** is on the part of the mother, family, or community not recognizing a life-threatening condition. Because most deaths occur during labor or in the first 24 hours postpartum, recognizing an emergency is not easy. Most births occur at home with unskilled attendants, and it takes skill to predict or prevent bad outcomes and medical knowledge to diagnose and immediately act on complications. By the time the lay midwife or family realizes there is a problem, it is too late.

2- **The Second delay** is in reaching a health-care facility, and may be due to road conditions, lack of transportation, or location. Many villages do not have access to paved roads and many families do not have access to vehicles. Public transportation (or animals) may be the main transportation method. This means it may take hours or days to reach a health-care facility. Women with life-threatening conditions often do not make it to the facility in time.

3- **The third delay** occurs at the healthcare facility. Upon arrival, women receive inadequate care or inefficient treatment. Resource-poor nations with fragile health-care facilities may not have the technology or services necessary to provide critical care to hemorrhaging, infected, or seizing patients. Omissions in treatment, incorrect treatment, and a lack of supplies contribute to maternal mortality.

Why do women not get the care they need?

- Poverty
- Distance
- lack of information
- inadequate services
- Cultural practices.

Measures to reducing or avoiding maternal deaths:

Most maternal deaths are avoidable, as the health-care solutions to prevent or manage complications are well known. All women need access to

antenatal care in pregnancy, skilled care during childbirth, and care and support in the weeks after childbirth. It is particularly important that all births are attended by skilled health professionals, as timely management and treatment can make the difference between life and death.

During premarital care:

- Access to adolescent reproductive health education and services.

During antenatal care:

- Access to evidence –based antenatal care& counseling.
- Nutritional advice and supplement (iron, vitamins).

Blood pressure screening. Pre-eclampsia should be detected and appropriately managed before the onset of convulsions (eclampsia) and other life-threatening complications. Administering drugs such as magnesium sulfate for pre-eclampsia can lower a woman's risk of developing eclampsia.

- Preparation of birth preparedness including preparing for emergencies.
- Screening for sexually transmitted infections and other infections.
- Diagnosis and treatment of urinary tract infection.
- Tetanous toxoid administration.
- Access to preventive therapy in pregnancy(malaria).
- Access to safe abortion.
- Access to skilled assistance and delivery.
- Access to care of obstetric complications.

During intrapartum care:

- Basic tool to prevent maternal mortality during labor(partograph).
- Accessibility of the referral system.
- Blood bank.
- Persistent of urgent medications.
- Facilities of operating room

During post natal care:

- Access to post partum care. **Severe bleeding** after birth can kill a healthy woman within two hours if she is unattended. Injecting oxytocin immediately after childbirth effectively reduces the risk of bleeding. **Infection** after childbirth can be eliminated if good hygiene is practiced and if early signs of infection are recognized and treated in a timely manner.
- Access to family planning information and services.
- To avoid maternal deaths, it is also vital to prevent unwanted and too-early pregnancies. All women, including adolescents, need access to family planning, safe abortion services to the full extent of the law, and quality post-abortion care.

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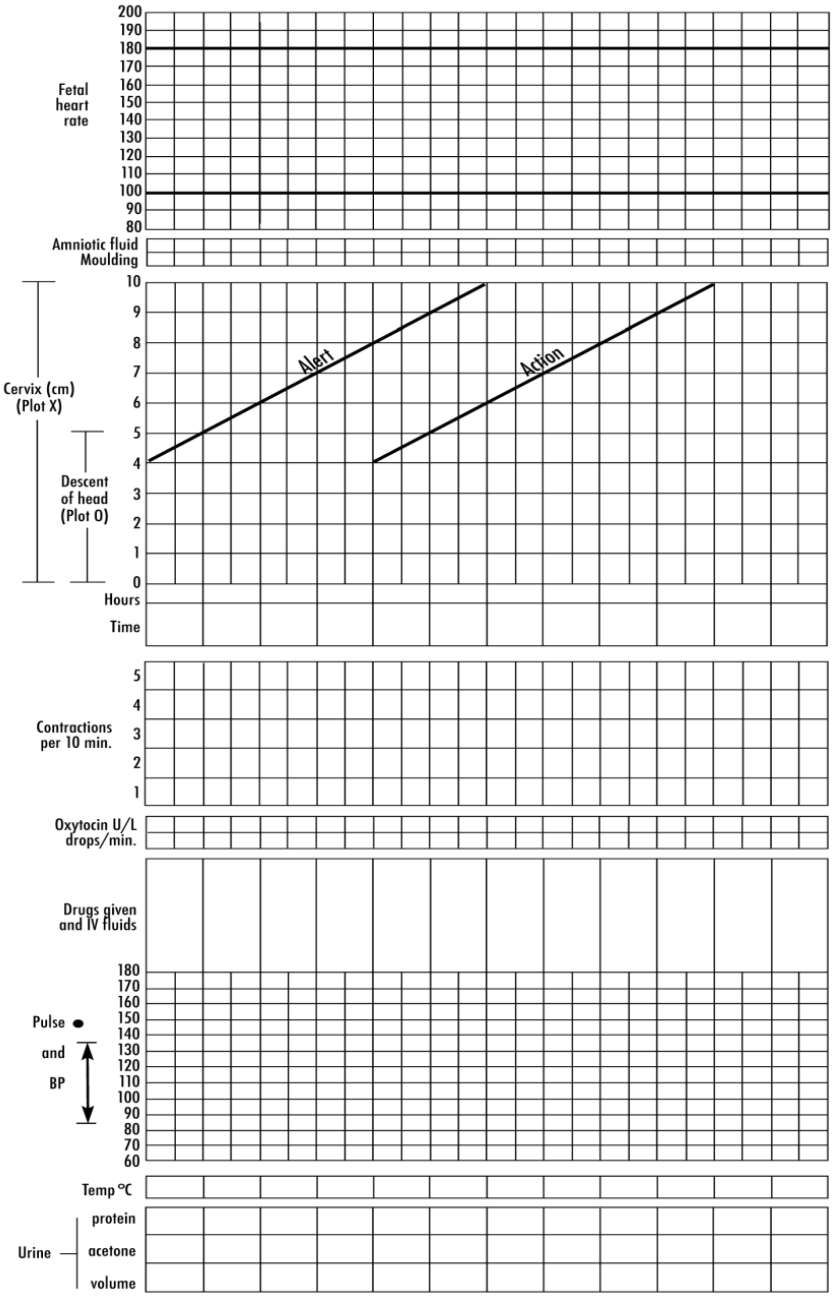
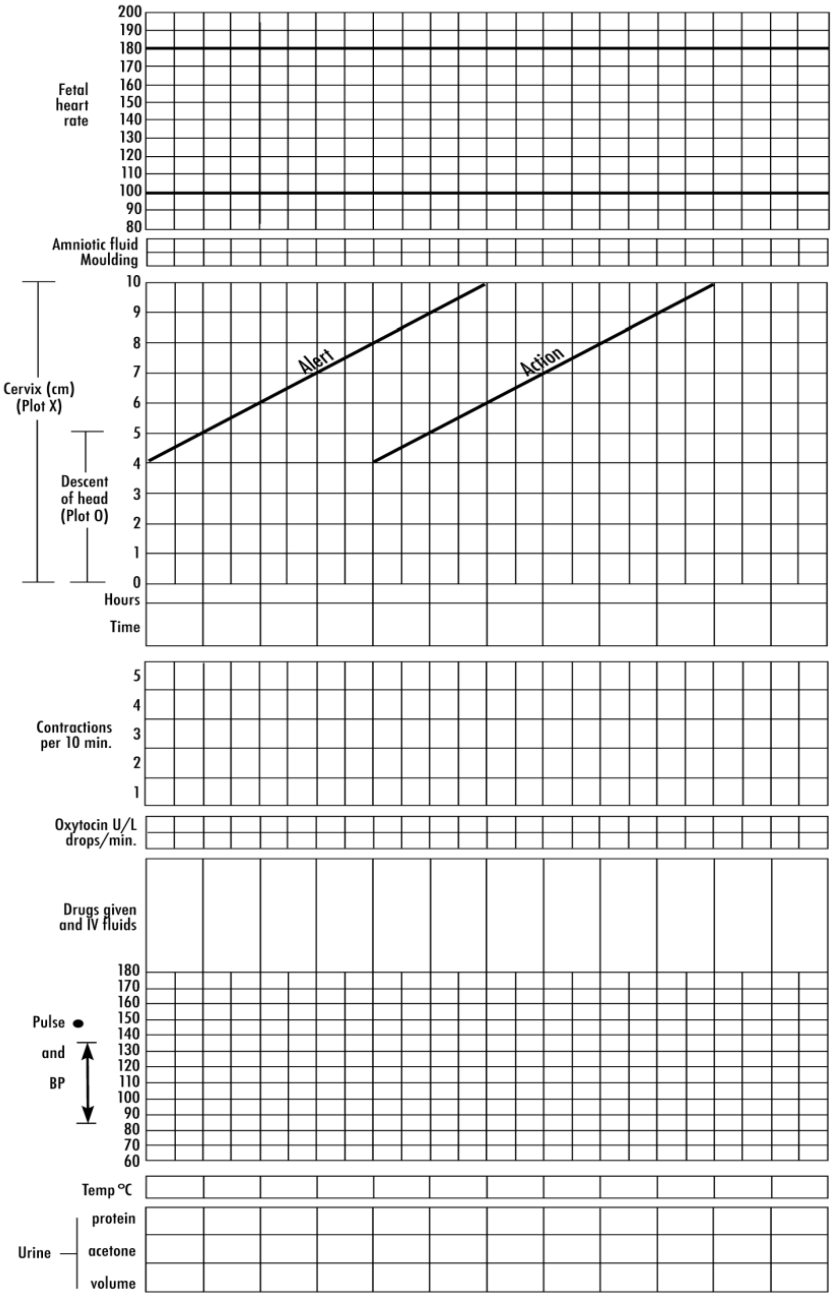
Name Gravida Para Hospital number

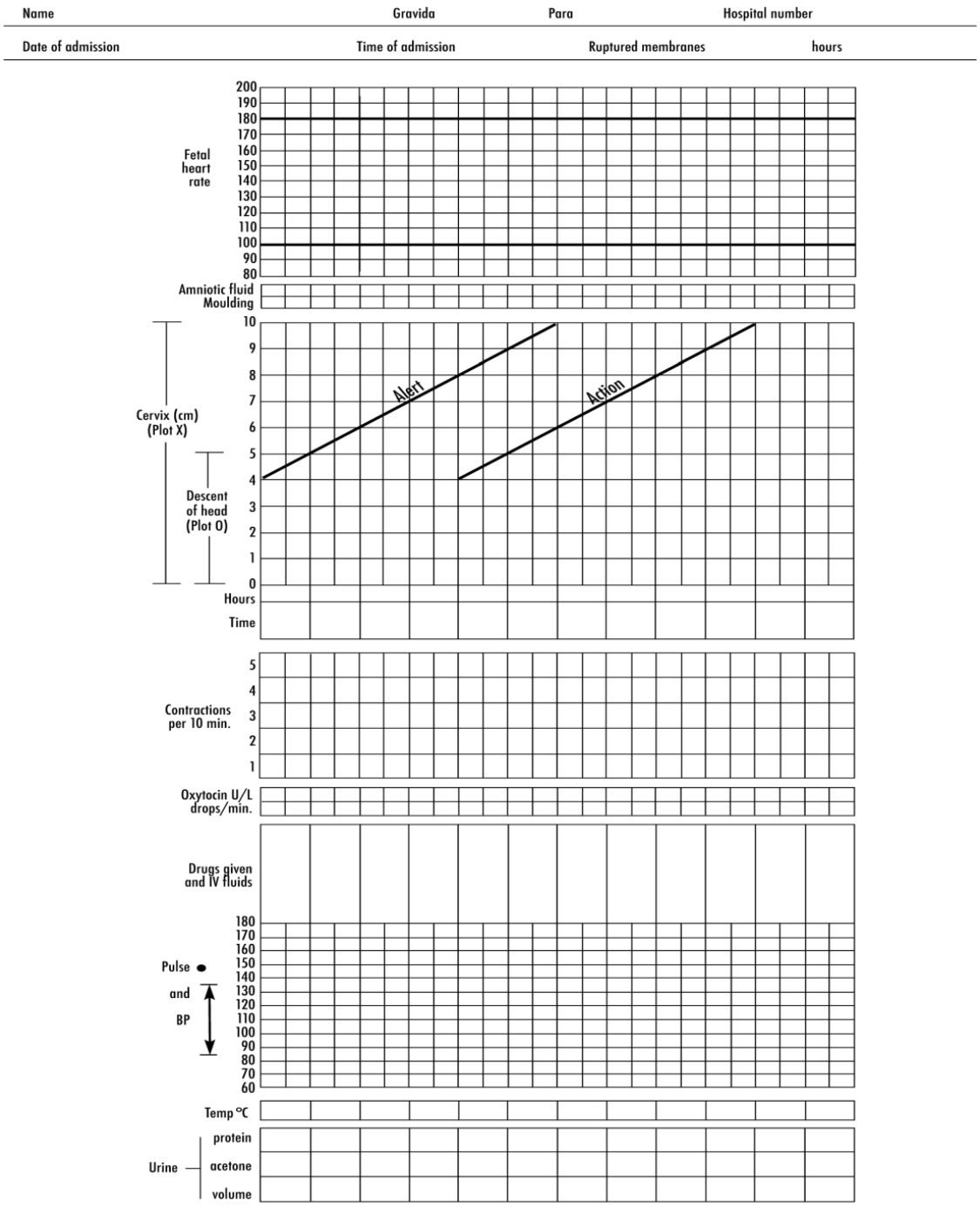
Date of admission Time of admission Ruptured membranes hours



Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours





STEP 1: Mrs. A was admitted at **05.00** on 19 September 2015. Membranes ruptured at 04.00. She is a **gravida 3, para 2+0**. The hospital number is 7886. On admission, the fetal head was 4/5 palpable above the symphysis pubis and the cervix was 2 cm dilated. **Contractions are 2 in 10**, lasting **25 seconds**.

STEP 2:

10.00 FHR 136,Contractions 2/10 each 30 seconds ,Pulse 80/minute

11.00 FHR 130, Contractions 2/10 each 40 seconds, Pulse 88/minute, Temperature 37°C

12.00 FHR 140, Contractions 3/10 each 40 seconds, Pulse 88/minute

***STEP 3*:** It is **13.00** (8 hours later). The fetal head is **2/5** palpable above the symphysis pubis. The cervix is 5 cm dilated.

***STEP 4*:** Mrs. A is now in the active phase of labor. Note the phase of labor and plot the following information on the partogram:

- 3 contractions in 10 minutes, each lasting 40 seconds
- Fetal heart rate (FHR) 120
- Membranes ruptured, amniotic fluid clear on pad check
- Blood pressure 120/70 mmHg
- Temperature 36.8°C
- Pulse 80/minute
- Urine output 200 mL; negative protein and acetone

***STEP 5*:** Vaginal assessment at **17.00** shows that the cervix is now fully dilated and the head has descended to **0/5**; Mrs. A now feels expulsive.

17.20: Spontaneous birth of a live female infant weighing 2,850 g

Case 2

STEP 1. Mrs. C was admitted at 10.00 on 19 September 2013. Membranes ruptured spontaneously at 04.00. She is a gravida 4, para 3+0. Her hospital number is 6639.

*Record the information above on the partogram, together with the following details:

- Fetal head 3/5 palpable above the symphysis pubis
- Cervix 4 cm dilated
- 3 contractions in 10 minutes, each lasting 30 seconds

- FHR 140
- Amniotic fluid clear
- Sutures apposed (Molding +)
- Blood pressure 120/70 mmHg
- Temperature 36.8°C
- Pulse 80/minute

STEP 2. Plot the following information in the partogram:

- 11.00 FHR 136, Contractions 3/10 each 45 seconds, Pulse 90/minute
- 12.00 FHR 140, Contractions 3/10 each 45 seconds, Pulse 90/minute, Temperature 37°C, Head 3/5 palpable
- 13.00 FHR 130, Contractions 3/10 each 50 seconds, Pulse 88/minute
- 14.00 FHR 130, Contractions 3/10 each 50 seconds, Pulse 90/minute, Temperature 37°C, Blood Pressure 100/70 mmHg. Fetal head 3/5 palpable above the symphysis pubis. Cervix 6 cm dilated, amniotic fluid clear. Sutures overlapped but reducible (Molding ++).

STEP 3. Plot the following information in the partogram:

- 15.00 FHR 120, Contractions 3/10 each 45 seconds, Pulse 88/minute, Blood-stained fluid
- 16.00 FHR 90, Contractions 3/10 each 50 seconds, Pulse 100/minute, Temperature 37°C
- 16.30 FHR 96, Contractions 4/10 each 50 seconds, Pulse 110/minute. Fetal head 3/5 palpable above the symphysis pubis. Cervix 6 cm dilated. Amniotic fluid meconium stained. Sutures overlapped and not reducible. Urine output 100 mL; protein negative, acetone 1+.

STEP 4. Record the following information on the partogram:

- Cesarean section at 17.30, live female infant with poor respiratory effort and weighing 4,850 g.

Q1: Plot data on your partogram.

Q2: Write E.D.D.

Q3: Write your comment on that partogram case.