Clinical Round in Obstetrics and Gynecology

QMA Notes

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Prepared by:

Dr. Abdallah Odeh Abdallah Alwakhyan

Dr. Mahmoud Bilal Mahmoud AlAli

Dr. Qusai Ahmad Hasan Hamdan

Dr. Saed Waleed Khaled AlHamawi

دار جليس الزمان
للنشر والتوزيع

Jordan - Amman - Queen Rania Street - Opposite the College Of Agriculture Al-Assaf Building - Ground Floor
Tel.: 0096265343052Fax: 0096265356219

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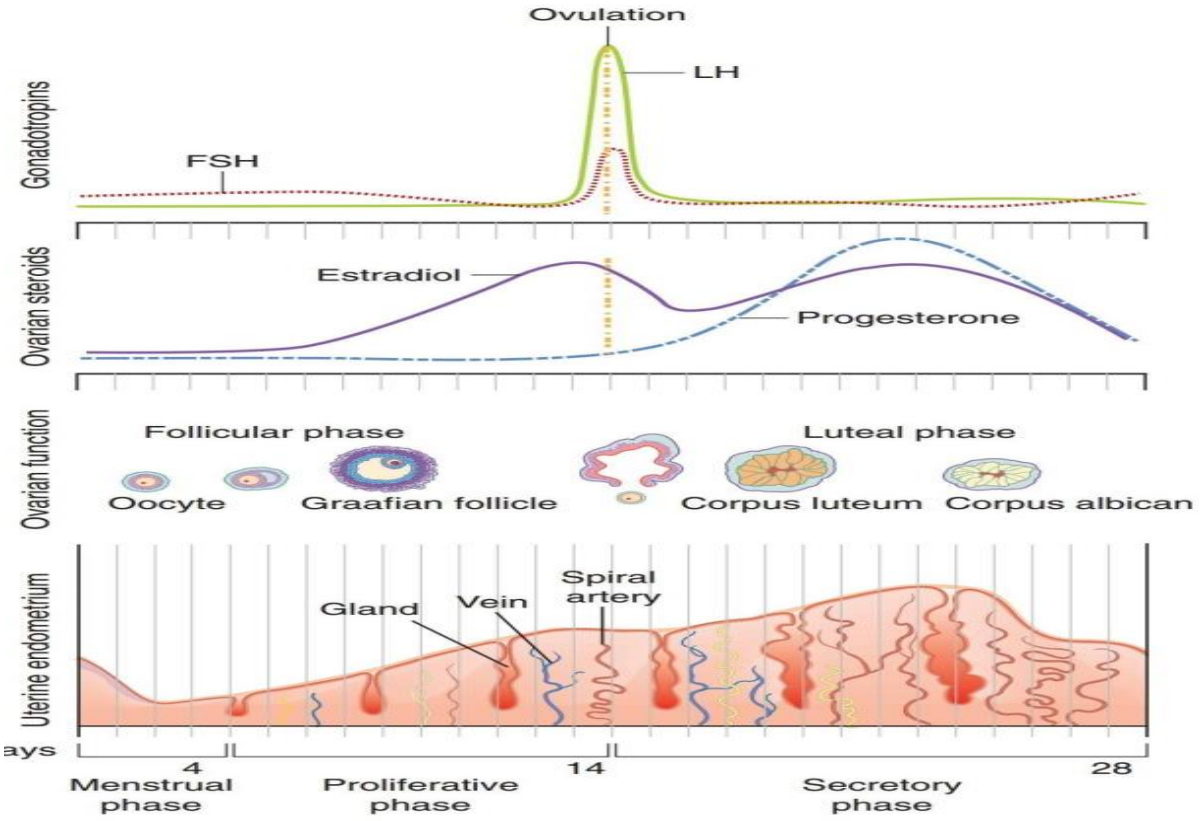
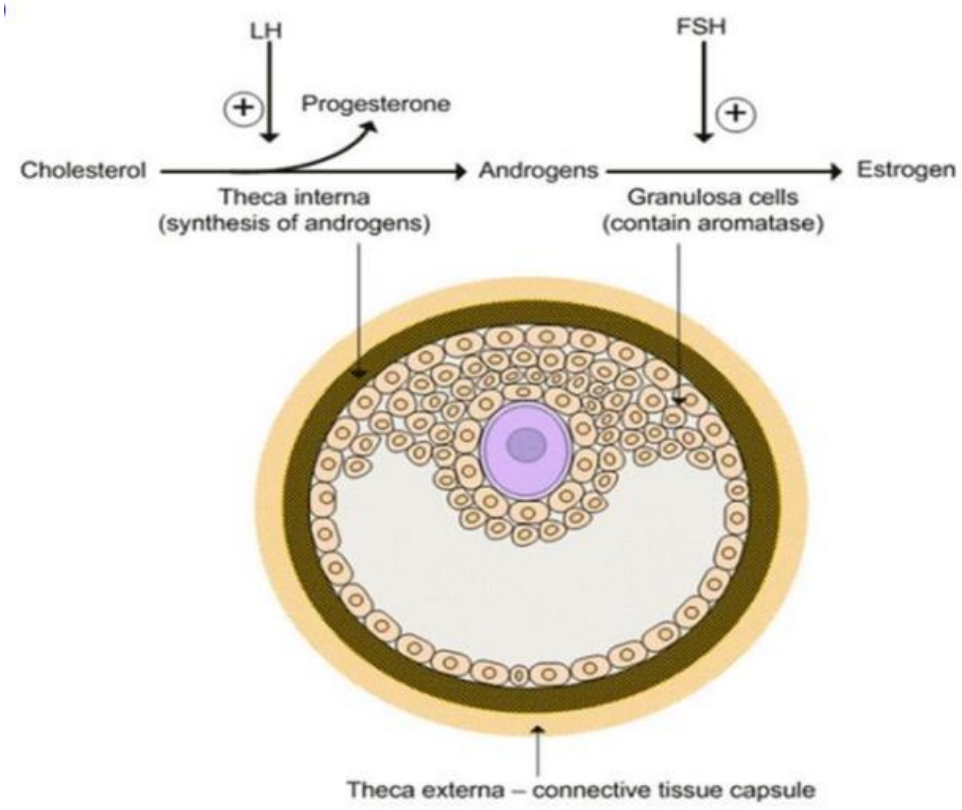
Chapter 1

GYNECOLOGY

Menstrual Cycle





- The ovarian menstrual cycle is approximately **28 days**.
- It consists of **two phases** and **one event**.
- Each of the two phases is about **14 days**.
- Variable lengths in the menstrual cycle are usually due to **variations in the follicular phase**.
- Once **ovulation** occurs, menstruation occurs almost **exactly 14 days later.**
- The length of the menstrual cycle in days minus 14 gives a good estimate of the day of ovulation.

Follicular Phase (Days 1-14):

- This represents the growth of the dominant follicle within the ovary, driven mainly by FSH.
- It is probably the largest follicle and the one with the greatest number of FSH receptors.
- The main hormonal secretion is estrogen by the granulosa cells.
- One function of the estrogen is to stimulate the replacement of the cells of the functional layer of the endometrium lost in the last menstruation.

Ovulation: Preceded by the **LH surge** near the end of the follicular phase, which induces ovulation on about **Day 14.**

Luteal Phase (Days 14-28):

- Formation and functioning of **the corpus luteum**, driven by **L**H.
- The main function of the corpus luteum is to secrete **progesterone plus some estrogen.**
- The estrogen is needed for progesterone to function.
- The progesterone secreted in the first week of this phase creates the thick, secretory endometrium required for implantation.

- **Regression** of the corpus luteum occurs by **day 23** if there is **no pregnancy**, causing decreased levels of progesterone → Constriction of the **spiral arteries** occurs 1 day before menstruation, causing endometrial ischemia and release of **prostaglandins**, followed by leukocyte infiltration. The resulting necrosis leads to **painful cramps** and **menstruation**.
- When **a pregnancy occurs**, the serum β-human chorionic gonadotropin (β-hCG) becomes positive at **day 22-23** of the cycle. The β-hCG becomes positive when the zygote **implants** into the endometrium, usually 7-8 days after ovulation. Therefore, the serum β-hCG becomes positive before the missed period.

▪ **Theca Cells:** They have LH receptors and stimulation by **LH**; they produce large amounts of androgen.
- The main androgen synthetized is **androstenedione**, but some testosterone is also synthetized.
- Some androgen diffuses to the circulation, but most is **transferred** to the granulosa cells.

▪ **Granulosa Cells:**
- Mural granulosa cells are very sensitive to **FSH**.
- They express **aromatase** and convert the **androgen to estrogen.**
- FSH also stimulates the production and secretion of **inhibin**, Inhibin acting on the pituitary **inhibits** the secretion of FSH.

- **Estrogen:**
  - Estrogen has some important peripheral actions during **the follicular phase**.
  - It induces the **replacement** of the cells of the functional endometrium lost in the last menstruation.
  - It also causes the **cervical mucus** to be **thin and watery**. This facilitates the transport of Sperm.

- **Progesterone:**
  - Progesterone rises and peaks about the **midpoint** in the **luteal phase**.
  - During the **First week** of the luteal phase, the progesterone along with estrogen creates the **secretory endometrium**. This prepares the uterus for **implantation** (Progesterone is pro-gestation).
  - Progesterone also causes the **cervical mucus** to become **thicker**. This makes it more difficult for sperm as well as bacteria to penetrate the uterus.

Definitions

- **Dys**menorrhea: **Pain** with menses; often associated with endometriosis.
- **Oligo**menorrhea: > 35-day cycle.
- **Poly**menorrhea: < 21-day cycle.
- **Metro**rrhagia: uterine bleeding at irregular intervals, particularly between the expected menstrual periods.
- **Meno**rrhagia: Heavy menstrual bleeding; > 80 mL blood loss or > 7 days of menses.
- **Menometro**rrhagia: Heavy, irregular menstruation.

Primary Amenorrhea

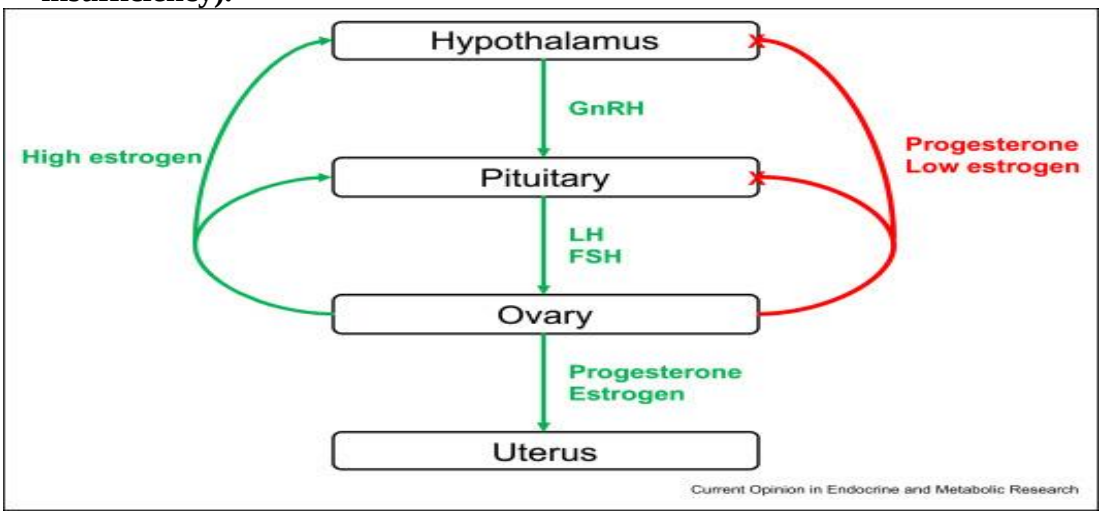
Definitions

Amenorrhea means absence of menstrual bleeding.
- Primary means that menstrual bleeding has never occurred.

▪ Diagnosis:
- Primary amenorrhea is diagnosed with absence of menses at age 14 without secondary sexual development or age 16 with secondary sexual development.

Etiology:

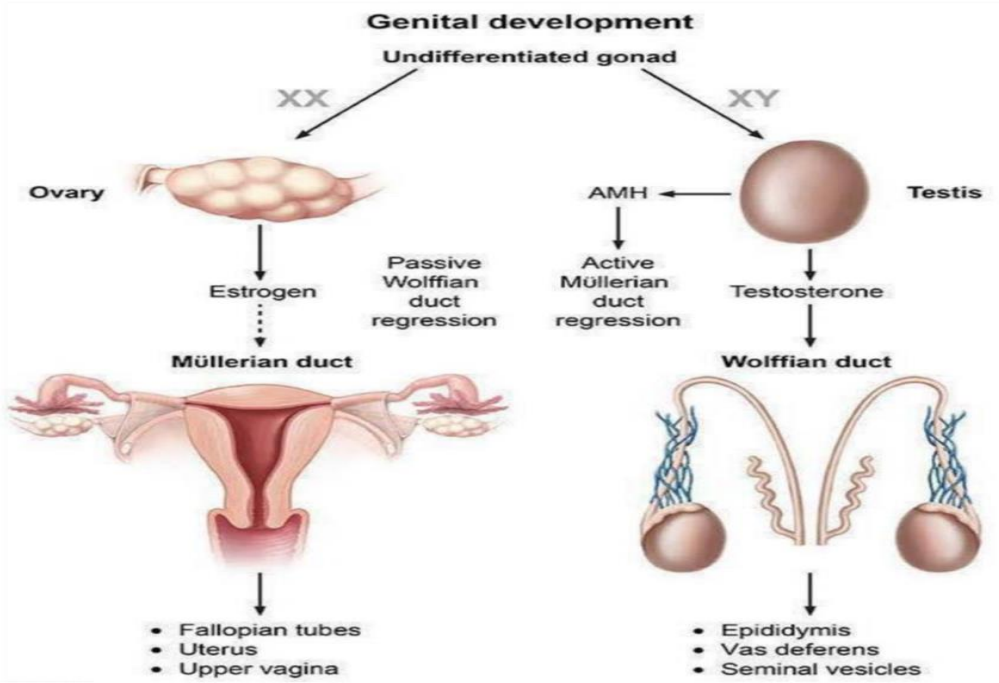
- **The two main categories of etiology are anatomic (vaginal agenesis/septum, imperforate hymen, or Mullerian agenesis) or hormonal (complete androgen insensitivity, gonadal dysgenesis [Turner syndrome], or hypothalamic-pituitary insufficiency).**

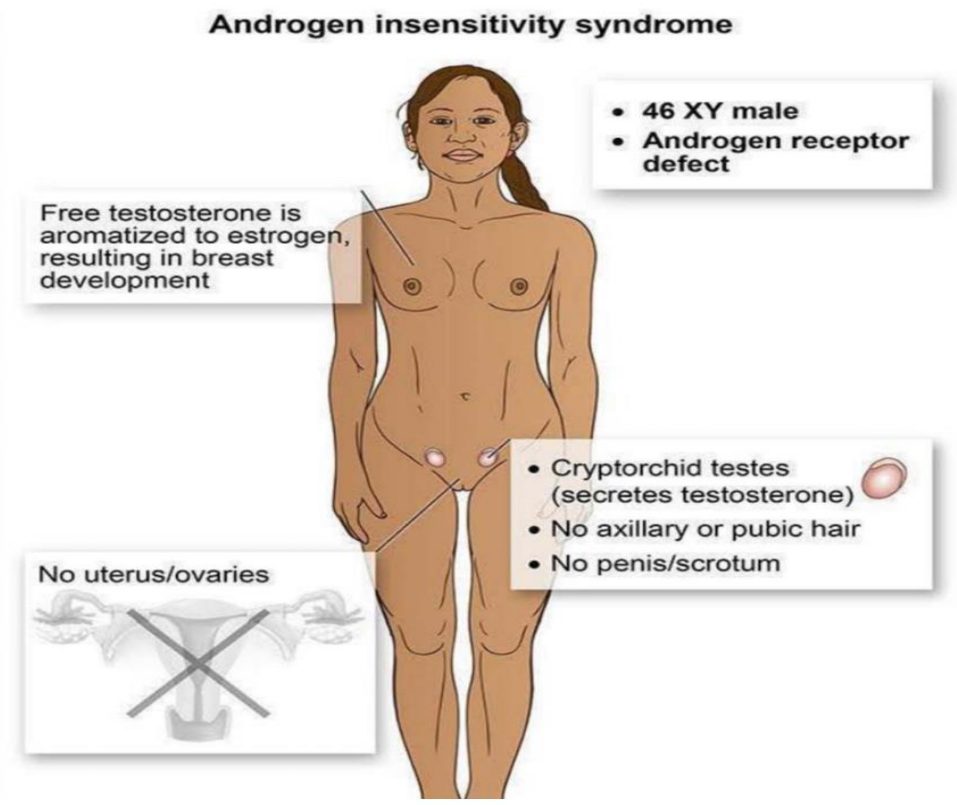


Androgen insensitivity

- **In these genetically male (46, XY) individuals with complete lack of androgen receptor function, their bodies do not respond to the high levels of androgens present.**
- **Without androgen stimulation, internal Wolffian duct structures atrophy. With testicular Mullerian inhibitory factor present, the Mullerian duct derivatives involute.**
- **Without body recognition of dihydrotestosterone, external genitalia differentiate in a female direction. Patients function psychologically and physically as females and are brought up as girls.**
- **At puberty, when primary amenorrhea is noted, the diagnosis is made.**
- **Female secondary sexual characteristics are present because the testes do secrete estrogens without competition from androgens.**
- **Testosterone levels are normal male. However, the functionally normal gonads are cryptorchid as testicular descent is an androgen-dependent process. The testes may be found in the abdomen, inguinal canal, or labia majora.**

- **Management: testes removal at age 20 because the higher temperatures associated with the intraabdominal position of the testes may lead to testicular cancer. Estrogen replacement is then needed.**
- **Why 20? - In general, the benefits from undergoing gonad-stimulated puberty (attainment of adult height) outweigh the low risk of malignancy. Therefore, a gonadectomy can be deferred until completion of puberty.**





Mullerian agenesis

- **These are genetically normal females (46, XX) with idiopathic absence of the Mullerian duct derivatives:**
  fallopian tubes, uterus, cervix, and upper 1/3 of the vagina; the lower vagina originates from the urogenital sinus.
- **Patients develop secondary sexual characteristics because ovarian function is intact; Mullerian ducts do not give rise to the ovaries.**
- **Normal pubic and axillary hair is present.**
- **Testosterone levels are normal female.**
- **Management: surgical elongation of the vagina for satisfactory sexual intercourse.**

Imperforate hymen:

- **Common anatomic cause of primary amenorrhea.**
- **This occurs when the hymen fails to fenestrate during embryonic development.**
- **Infants may present with a bulging membrane due to mucus collection, but this typically resolves, and patients remain asymptomatic until menarche.**
- **When menstruation occurs, blood collects in the vagina behind the hymenal membrane (hematocolpos).**
- **The enlarging blood collection with each menstrual period causes increasing pressure on the surrounding pelvic organs, resulting in lower back pain, pelvic pressure, or defecatory rectal pain.**
- **Pelvic examination typically reveals a blue, bulging vaginal mass or membrane that swells with increased intraabdominal pressure (Valsalva).**
- **Treatment is with incision of the hymen and drainage of the hematocolpos.**
- **Patients with abnormal genital tract development should be evaluated for associated renal abnormalities with renal ultrasound.**

Clinical Approach:

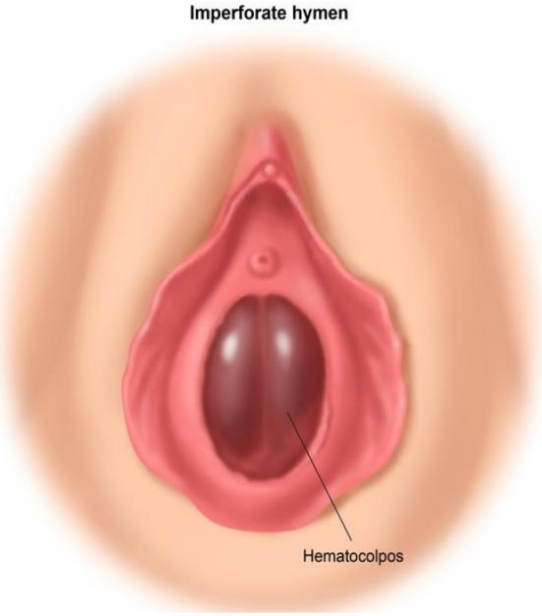
- Are breasts present or absent? A physical examination will evaluate secondary sexual characteristics
  - Presence of breasts indicates adequate estrogen production.
  - Absence of breasts indicates inadequate estrogen exposure.

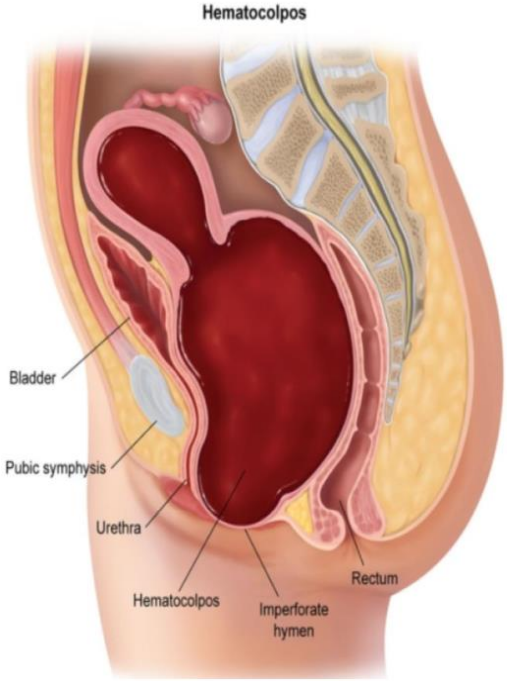
- **Clinical Approach Based on Findings Regarding Breasts and Uterus:**

A. Breasts present, uterus present:
- Differential diagnosis includes an imperforate hymen, vaginal septum, and vaginal agenesis.

B. Breasts present, uterus absent:
- Differential diagnosis is:
  - Mullerian agenesis (Rokitansky- Kuster-Hauser syndrome).
  - Complete androgen insensitivity (testicular feminization).
- Testosterone levels and karyotype help make the diagnosis.

C. Breasts absent, uterus present:
- Differential diagnosis is:
  - Gonadal dysgenesis (Turner syndrome).
  - Hypothalamic-pituitary failure.
- FSH level and karyotype help make the diagnosis


Imperforate hymen
Hematocolpos


Hematocolpos
Bladder
Pubic symphysis
Urethra
Hematocolpos
Imperforate hymen
Rectum

Secondary Amenorrhea

Definition:

- Amenorrhea means absence of menstrual bleeding.
- Secondary means that previously menstrual bleeding had occurred.

▪ Diagnosis:
- Secondary amenorrhea is diagnosed with absence of menses for 3 months if previously regular menses or 6 months if previously irregular menses.

Causes
1. Pregnancy
2. Anovulation
3. Estrogen deficiency
4. Outflow obstruction

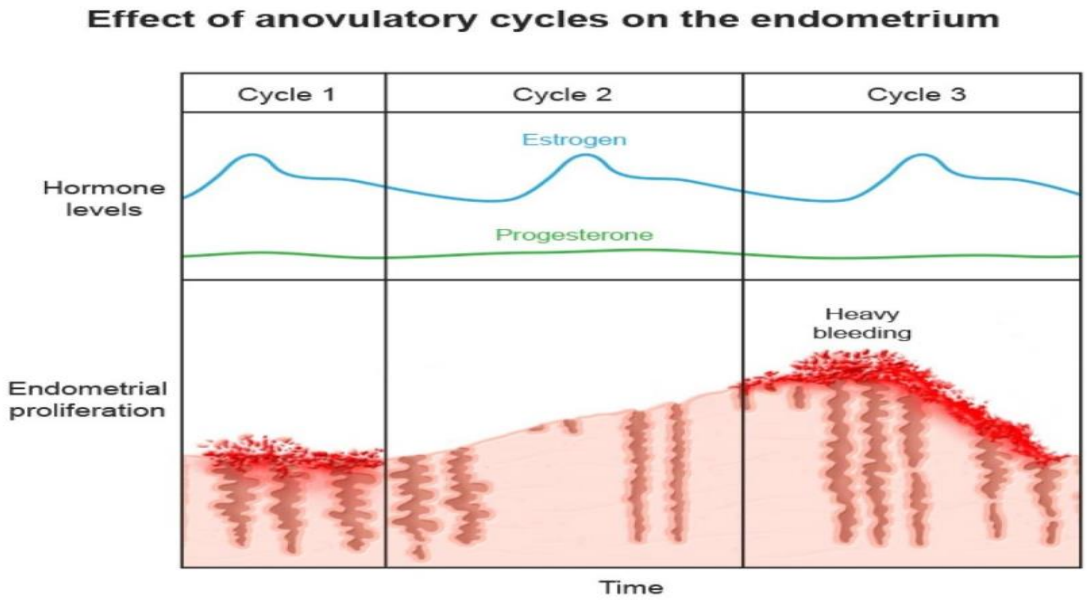
Pregnancy:

- The first step is a β-hCG to diagnose pregnancy.
- This is the most common cause of secondary amenorrhea.

Anovulation:

- If no corpus luteum is present to produce progesterone, there can be no progesterone-withdrawal bleeding. Therefore, anovulation is associated with unopposed estrogen stimulation of the endometrium. Initially the anovulatory patient will demonstrate amenorrhea, but as endometrial hyperplasia develops, irregular, unpredictable bleeding will occur.

- **The causes of anovulation are multiple, including PCOS, hypothyroidism, , elevated prolactin, and medications (antidepressants).**



Progesterone Challenge Test (PCT):

If the β-hCG is negative, and TSH and prolactin levels are normal, administer either a single IM dose of progesterone or 7 days of oral medroxyprogesterone acetate (MPA):

A.Positive PCT:

- Any degree of withdrawal bleeding is diagnostic of anovulation.
- Cyclic MPA is required to prevent endometrial hyperplasia.
- Clomiphene ovulation induction will be required if pregnancy is desired.

B. Negative PCT:

- Absence of withdrawal bleeding is caused by either inadequate estrogen priming of the endometrium or outflow tract obstruction.

Estrogen Deficiency:

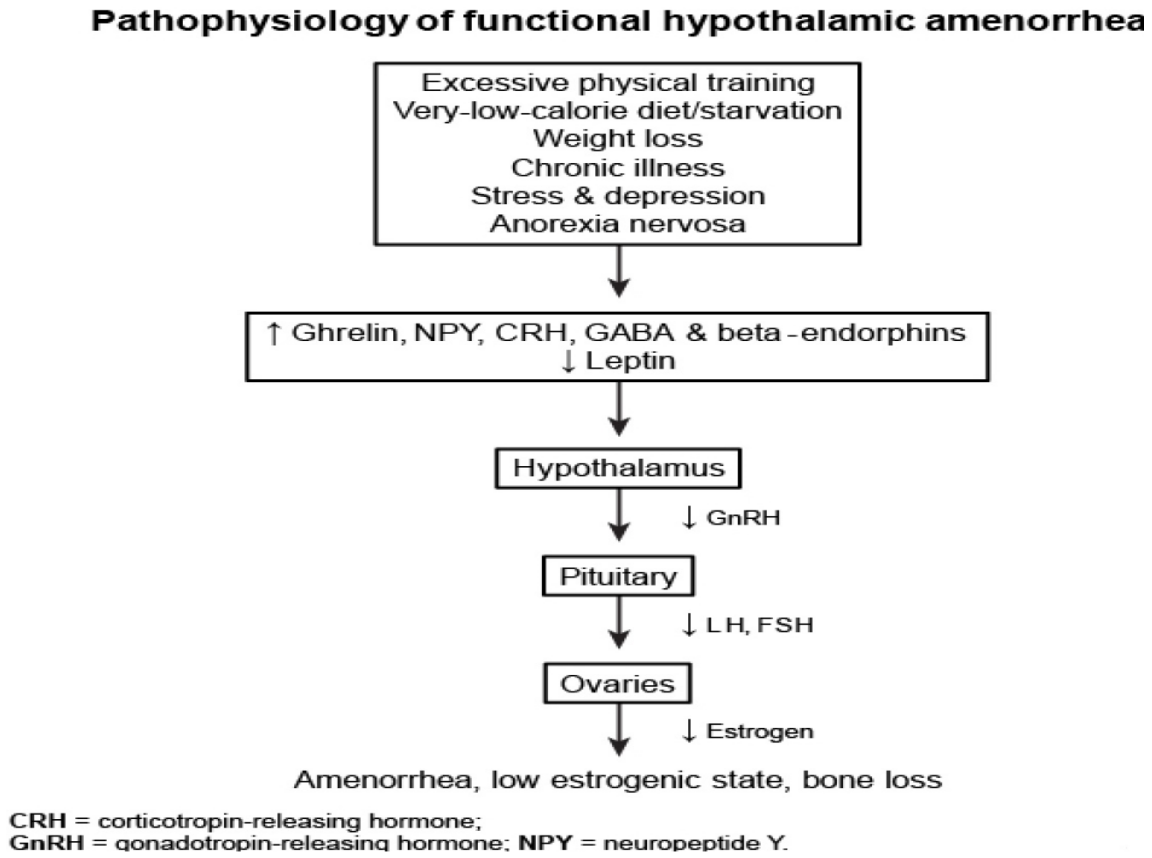
- **Without adequate estrogen priming the endometrium will be atrophic with no proliferative changes taking place.**
- **The causes of hypoestrogenic states are multiple, including absence of functional ovarian follicles or hypothalamic- pituitary insufficiency**.

Estrogen-Progesterone Challenge Test (EPCT):

- **If the PCT is negative, administer 21 days of oral estrogen followed by 7 days of MPA:**

A. Positive EPCT:

- **Any degree of withdrawal bleeding is diagnostic of inadequate estrogen.**
- **An FSH level will help identify the etiology:**
  - **A. Elevated FSH suggests ovarian failure.**
  - **B. Low FSH suggests hypothalamic-pituitary insufficiency: Order a CNS imaging study to rule out a brain tumor. Functional hypothalamic amenorrhea should be suspected in a patient with significant weight loss, strenuous exercise, anorexia nervosa, marijuana use, starvation, stress depression, or chronic illness.**



Negative EPCT:

- Absence of withdrawal bleeding is diagnostic of either an outflow tract obstruction or endometrial scarring (Asherman syndrome; also called intrauterine synechiae).
- Asherman is the result of extensive uterine curettage and infection-produced adhesions. It is treated by hysteroscopic adhesion lysis followed by estrogen stimulation of the endometrium. An inflatable stent is then placed into the uterine cavity to prevent re-adhesion of the uterine walls.

Infertility

Definition

- Inability of the couple to conceive after 1-2 years of regular unprotected sexual intercourse.
- Primary infertility; couple have failed to conceive before.
- Secondary infertility; woman has previously been pregnant regardless of the outcome of the pregnancy and now unable to conceive.

Chances of conception

- People who are concerned about their fertility should be informed that 85% of couples in the general population will conceive within 1 year if:
  - the woman is aged under 35 years
  - they do not use contraception and have regular sexual intercourse.
- Half of those who do not conceive in the first year will do so in the second year **(cumulative pregnancy rate over 92%)**

Factors affecting Fertility

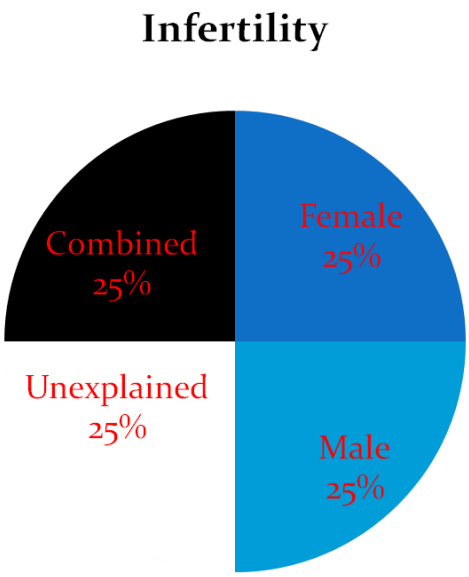
- **Frequency/Timing of sexual intercourse:**
  - Every 2 to 3 days optimises the chance of pregnancy

Frequency of intercourse	Probability of conception (within 6 months)
1 time per week	17 %
3 times per week	50 %

- **Obesity:**
  - Women who have BMI of over 30 should be informed that they are likely to take longer to conceive and will affect treatment su ccess rates.
- **Low body weight**
  - Women with BMI less than 19 and irregular menstruation should be counselled to gain weight.
- **Smoking**
  - Strong association between smoking and fertility in both partners.
  - Affects success rates of ARTs.
- **Alcohol**
  - Female patients should be informed that 1 or 2 units of alcohol once or twice per week increase risk of harming a developing fetus.
  - Intoxication may affect semen quality.

- **Tight underwear**
  - There is an association between elevated scrotal temperature and reduced semen quality.

Causes: It is estimated that infertility affects 1 in 7 couples, women's age ≤35 yrs.



Basic Work-up for Infertility.

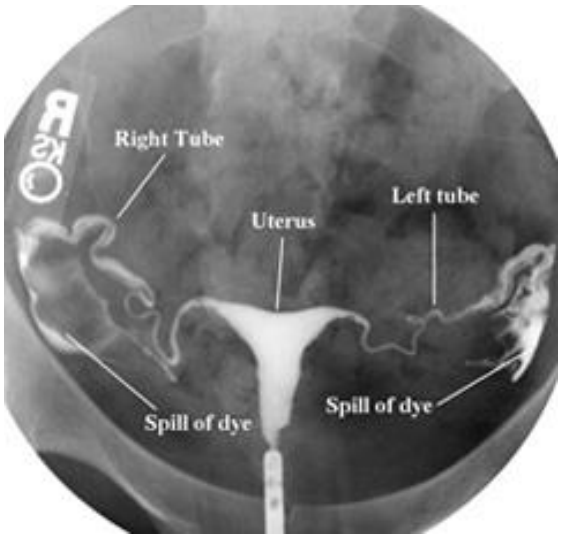
- **Semen analysis: (WHO 2010).**
  - Semen volume: 1.5ml or more.
  - pH: 7.2 or more.
  - Sperm concentration: 15 million spermatozoa per ml or more.
  - Total sperm number: 39 million spermatozoa per ejaculate or more.
  - Total motility: 40% or more motile or 32% or more with progressive motility.
  - Vitality: 58% or more live spermatozoa.
  - Sperm morphology (percentage of normal forms): 4% or more.

- **Evidence of ovulation:**
  1. Menstrual history of regular cycles.
  2. Serum progesterone in the mid-luteal phase of their cycle (day 21 of a 28-day cycle) even if they have regular menstrual cycles.
  3. Serum gonadotrophins (follicle-stimulating hormone and luteinising hormone) on Day2-3 especially in irregular periods.

Further investigations

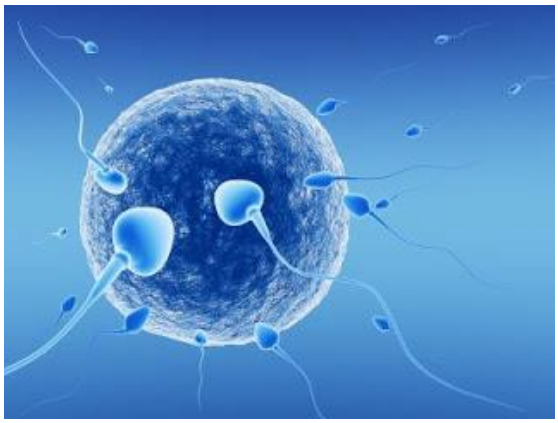
- **Ovarian reserve**
  - More important in >35 years old, suspected ovarian failure and to detect response to ovulation induction.
    1. Total antral follicle count. (AFC)
    2. Anti-Müllerian hormone (AMH) of less than or equal to 5.4 pmol/l for a low response and greater than or equal to 25.0 pmol/l for a high response
    3. Follicle-stimulating hormone greater than 8.9 IU/l for a low response and less than 4 IU/l for a high response

- **Investigation of suspected tubal and uterine abnormalities:**
  1. Hystersalpingography (HSG):
     - Usually after failed successive cycles of ovulation induction, and in some centres after failed IUI.
     - Good predictive but requires expertise.



- **Laparoscopy:**
  - Invasive procedure.
  - To check for pelvic disease; such as endometriosis and to check tubal patency.
  - Therapeutic as in laparoscpic myomectomy, LOD and tubal surgery.

- **Hysteroscopy:**
  - To evaluate uterine cavity.
  - In case of repeated failed IVF cycles.
  - Therapeutic as in intrauterine septum.



Management

1. Counseling.
2. Treatment of the cause.
3. Ovulation induction.
4. Artificial insemination (IUI)
5. IVF/ICSI

Treatment of the cause:

- **<u>Male Factor:</u>**
  (Liaise with the andrologist)

  1. **Medical management:**
     - Men with hypogonadotrophic hypogonadism should be offered gonadotrophin drugs.
     - Men with idiopathic semen abnormalities should not be offered anti-oestrogens, gonadotrophins, androgens, bromocriptine.

  2. **Surgical management:**
     - Surgical correction of epididymal block in obstructive azoospermia.
     - No evidence for surgical treatment of varicocele in infertility. (remains an area of debate)
     - SSR (PESA, TESA and TESE)...then ART

  3. **Management of ejaculatory failure:**
     - Can be of great value as in retrograde ejaculation.

- **Ovulation disorders:**
  The WHO classifies ovulation disorders into 3 groups:
  1. Group I: hypothalamic pituitary failure (hypothalamic amenorrhoea or hypogonadotrophic hypogonadism).
  2. Group II: hypothalamic-pituitary-ovarian dysfunction (predominately polycystic ovary syndrome).
  3. Group III: ovarian failure.

- **Ovulation disorders: (Group I)**
  - Weight gain if BMI less than 19.
  - Pulsatile administration of gonadotrophin-releasing hormone or gonadotrophins with luteinising hormone activity to induce ovulation.

- **Ovulation disorders: (Hyperprolactinaemic amenorrhoea)**
  - Women with ovulatory disorders due to hyperprolactinaemia should be offered treatment with dopamine agonists such as bromocriptine.
  - Consideration should be given to safety for use in pregnancy and minimising cost when prescribing.

- **Tubal and uterine factors:**
  1. Tubal microsurgery and laparoscopic tubal surgery:
     - May be more effective than no treatment.
     - No strong evidence. (e.g.: fimbrial end dilatation)
  2. Tubal catheterisation or cannulation:
     - With proximal tubal obstruction, selective salpingography plus tubal catheterisation, or hysteroscopic tubal cannulation, may be treatment options.
  3. Uterine surgery:
     - Women with amenorrhoea who are found to have intrauterine adhesions should be offered hysteroscopic adhesiolysis because this is likely to restore menstruation and improve the chance of pregnancy.
  4. Surgery for hydrosalpinges before in-vitro fertilization treatment:
     Laparoscopic salpingectomy or disconnection of both tubes improve IVF/ICSI success rates (↑ pregnancy rate by 50%).

- **Endometriosis:**
  1. Medical management:
     - Ovarian suppression of minimal and mild endometriosis diagnosed as the cause of infertility in women does not enhance fertility and should not be offered.
  2. Surgical ablation:
     - In minimal or mild endometriosis; surgical ablation or resection of endometriosis plus laparoscopic adhesiolysis improves the chance of spontaneous pregnancy.
     - Laparoscopic resection of endometriomas may be beneficial, however recent RCTs suggest intervention only in endometriomas > 4cm.
     - In moderate or sever endometriosis; surgical treatment should be offered. (Debatable)
     - Post-operative medical treatment does not improve pregnancy rates.

- **Unexplained infertility:**
  - Ovarian stimulation should not be considered as does not improve pregnancy or birth rates.
  - Advise to try to conceive for two years of unprotected sexual intercourse before other options (Fecundity is 3-5%).
  - After two years of failure to conceive, consider IVF/ICSI.

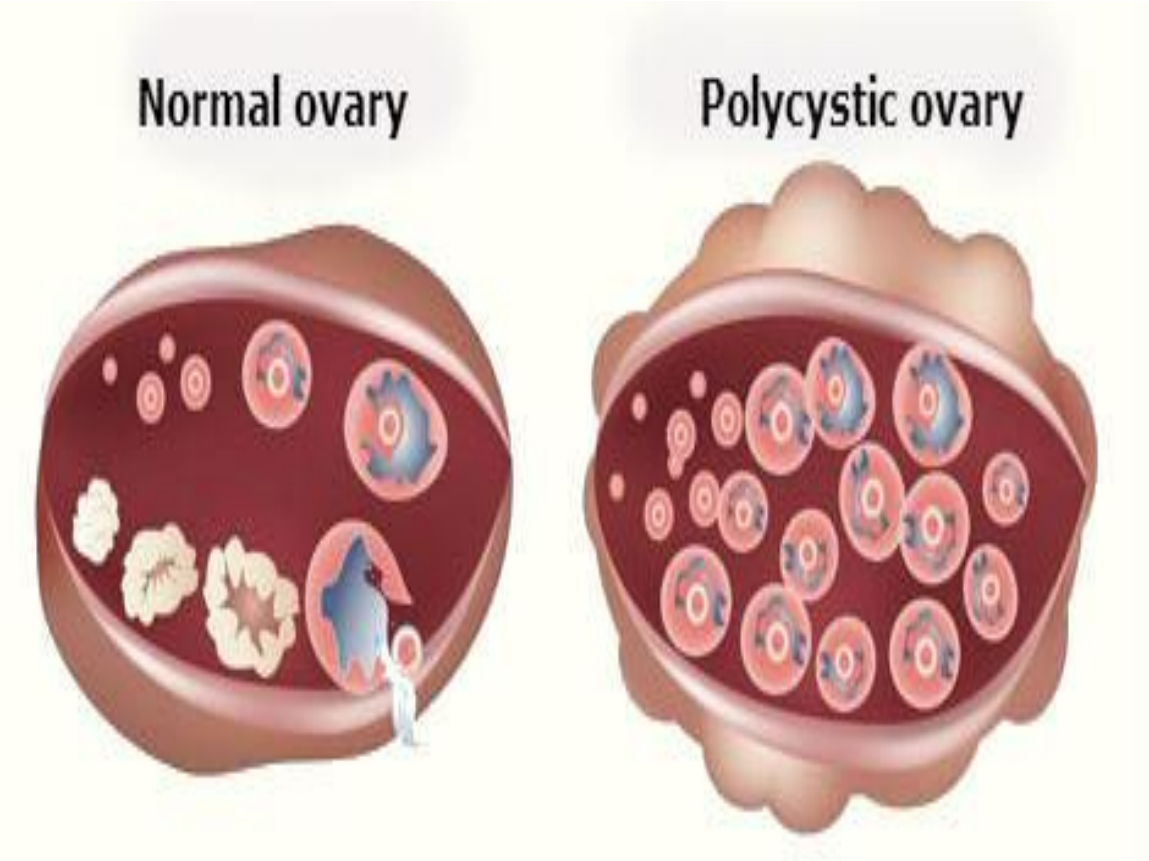
Polycystic Ovary Syndrome (PCOS)

Criteria for Defining PCOS

(Rotterdam criteria)

Two of the following in addition to exclusion of related disorders :

- Oligo and/or anovulation
- Hyperandrogenism and/or hyperandrogenemia
- PCO on U/S
  ≥ 12 follicles in each ovary, 2-9mm and/or ovarian volume (>10ml)

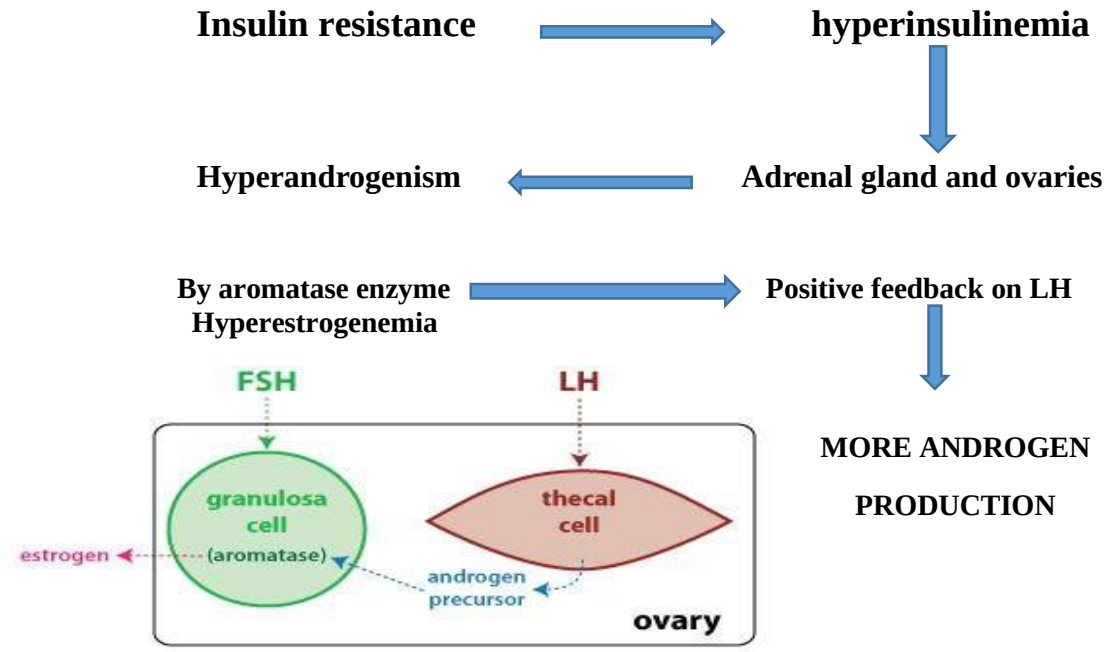


Aetiology

- Unknown
- PCOS is a multifactorial and polygenic.
- %40family HX

Hyperinsulinemia and hyperandrogenisim are in the heart of this condition.

Pathophysiology



Long term effects

- Obesity
- DM
- Cardiovascular diseases.
- Ca endometrium
- PCOS and pregnancy
- Hirsutism
- Infertility

Obesity

- ≥ %50 of patients with PCOS
- Most often a central obesity with an android appearance and an increased waist-to-hip ratio > 0.8
- Related to insulin resistance .
- Women with PCOS find it more difficult to lose weight and appear to gain weight more easily.

Treatment of Obesity

- Lifestyle changes
- Pharmacological agents
  1. Centrally acting serotonin & norepinephrine uptake inhibitor, Sibutramine
  2. Peripherally acting lipase inhibitor, Orlistat
- Bariatric surgery

Work up

- **TSH.**
- **FBS and lipid profile.**
- **PRL elevated in 40% of patients with PCOS, secondary to stimulation of the prolactin-producing cells by chronic oestrogen.**
- **Free androgen index.**
- **FSH and oestradiol to exclude the possibility of premature ovarian failure.**
  - **FSH should be elevated greater than 25 pg/mL.**
  - **Associated with a suppressed oestradiol less than 30 pg/mL.**

Management of PCOS

- **Treatment depends on needs of patient and preventing long term health problems.**
- **Weight reduction results in improvement in all symptoms of PCOS ..... 10% wt. Loss will restore normal hormones level and spontaneous ovulation in 40% of women.**

Ovulation induction

.Metformin.... Ovulation rate is 8%

- Anti-oestrogens....e.g. Clomiphene citrate.

%75will ovulate within 6 months.

- Gonadotropins (Risk of M.P &OHSS 15% in PCOS vs. 0.3-5% non-PCOS).
- Aromatase inhibitors...for clomid ROS (25%).

Insulin sensitizing agents

Metformin

- If MBI ≥ 25, life long.
- Weight loss.
- Pregnancy rate 8%.
- Safe if continued into the 1st trimester, may decrease the risk of miscarriage in obese pts.

Laparoscopic ovarian drilling LOD

- When medical Rx. Failed.
- 4punctures , 2–4 mm deep in the cortex of each ovary. 40 W for 4 seconds.
- Ovulation rate of 80% & clinical pregnancy 60%.
- Mechanism unknown, destruction of luteinized follicles.
- Thermal damage.

- LOD has a similar outcome to Gonadotropins in term of Ovulation and pregnancy rate, but it's preferred option because it is free of side effects of gonadotropins (MP&OHSS).
- Long term consequences.....POF.
- Cheaper overall.

Abnormal Uterine Bleeding (AUB) Approach

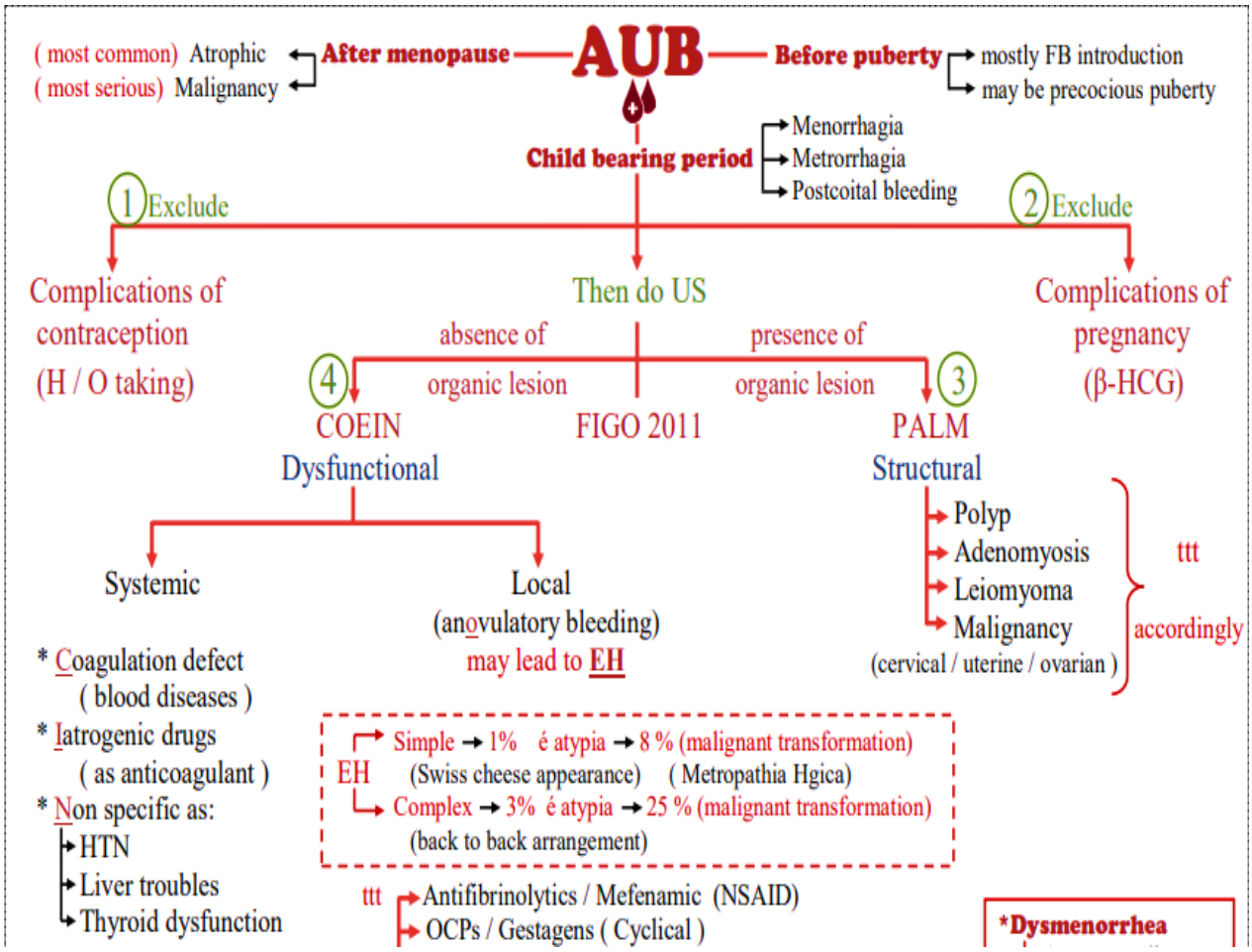
Basic Physiology

What is **normal uterine bleeding?**

1. Duration: **4.5- 8 days**.
2. Volume: **(25-50) ml**.
3. Regular every **(21-35 days).**
4. **No** postcoital/ intermenstrual bleeding/ no clots.

Definitions

- **Oligomenorrhea: Infrequent, bleeding usually at intervals >40 days.**
- **Polymenorrea: Frequent but regular bleeding usually at intervals of 21 days or less .**
- **Menorrhagia: excessive bleeding in amount (>80 ml) and/or duration (>8 days) at regular intervals.**
- **Metrorrhagia (Inter-menstrual bleeding): Irregular but not excessive bleeding.**
- **Menometrorrhagia: Irregular bleeding that is excessive in amount and/or duration.**



History of AUB

- **Patient profile:** Name, age, occupation, residency, **Gravida and Para, blood group (Rh +/-).**
- **Chief compliant & duration:**
- Female will come to you complains of vaginal bleeding
- **HOPI:**
- **Onset.**
- **Analysis of the bleeding:** amount, color, passage of clots/tissues/vesicles, severity : (no# of pads per day/soaked)?
- **Associated symptom:** pain, fever, persistent vaginal discharge.
- **Symptoms of anemia** (postural dizziness, dyspnea, fatigue, palpitation).

* Analysis of **previous normal cycle**: duration, regularity, no# of pads, soaked? , color, presence of clots, associated dysmenorrhea and define its type, intermenestrual bleeding or spotting.

***LMP, sure? Was regular (the last 3 cycles), lactating**.

*Assess **for symptoms of pregnancy if sexually active** (morning sickness, Nausea & vomiting, breast fullness & tenderness, urinary frequency & constipation), method of birth control.

*Ask specifically about the **type of contraception** used and if it's hormonal check the compliance for it / if miss pills? (Breakthrough bleeding), If it's IUD when inserted? Any complication happened associated with?

* Ask about **chronic illness (DM, RA), sever stress, excessive exercise, eating disorders (anorexia, sudden weight change)**? (Hypothalamic related).

*Ask about symptoms **hypo/hyperthyroidism:**

- Tremor, Sweating, heat intolerance, goiter, tachycardia, Nervousness, anxiety and irritability à hyperthyroidism.
- Cold intolerance, weight gain, bradycardia, Fatigue, constipation, impaired memory à hypothyroidism.

*Ask about Pallor, anorexia, weight loss, pelvic mass (**symptoms of malignancy**).

* History of **pelvic Infections/ STD?**

* Recent **Trauma/ Pelvic surgeries?**

***Post-coital Bleeding?**

* Ask about **bleeding from other orifices** [Hematuria, epistaxis, PR, ecchymosis, hemoptysis, aspirin/heparin intake or fetal demise (DIC)? **Coagulopathy** as a cause of AUB.

***last Pap smear**?

* Ask about **pressure symptoms:** urinary frequency, urgency & retention, incontinence, constipation, pain on defecation, recurrent pregnancy loss (Symptoms of Fibroid).

- **Past medical history:** DM, thyroid disease, bleeding disorder, HTN, breast disease.
- **Drug HX:** ask specifically about **Anticoagulants** (Heparin), tamoxifen.
- **Family history:** [Endometrial /breast/colon /cervical/ovarian] **cancer**. Family history of **bleeding** tendency.
- **Social history:** smoking and alcohol.

Physical examination of AUB

1) General Examination (ill? Signs on Anemia /pale? BMI?) + Vital sign (assess hemodynamic stability).

2) Neck Examination (thyroid).

3) Breast Examination (breast development ,galactorrhea, breast atrophy).

4) Abdominal Examination (masses/ Ascitis).

5) Pelvic Examination

- **External genetalia** Inspection of vulva and perineum (masses/fissures/ulcers/pubic hair?).
- **Speculum Examination**(polyps/ulcers/masses/cervical motion tenderness).
- **Bimanual Examination** (uterine or Adnexal mass /tenderness).
- **LN Examination** (Inguinal and supraclavicular).

Investigations of AUB

A. Labs:

- CBC (Hb), platelets, pregnancy test, coagulation profile (PT & PTT), blood type & Rh, TFT (TSH, T4), LFT, KFT, prolactin level, serum progesterone & estrogen.

B. Imaging and BX:

- Pelvic U/S.
- Hysterosalpingogram, hysteroscopy, laparoscopy.
- Endometrial biopsy, D & C, Pap smear.

Management

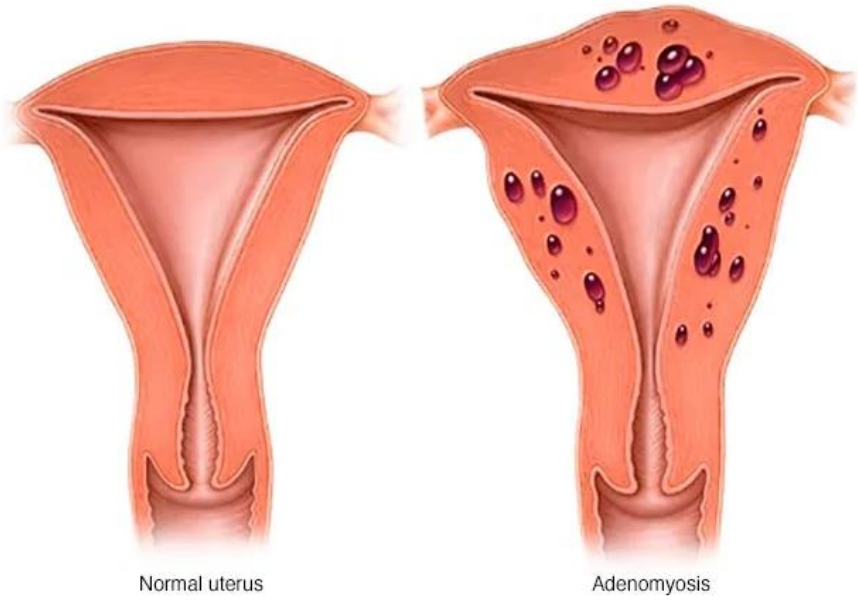
- **If AUB:** correct the underlying anemia, and treat the cause.
- **If DUB:**

1. **Pharmacological**:
   - Non- Hormonal (Mefenamic acid, Tranexamic acid).
   - Hormonal (COPS, IUS, Danazol, GnRH analogs).
2. **Surgical**: Endometrial ablation, D&C, TAH.

AUB in Child-bearing Age

Child bearing AUB (Adenomyosis)

- **Definition**: Endometrium (**Gland and stroma**) in **myometrium** so uterus is affected.
- **Etiology**: Theory in **Multipara** (invagination of endometrium in myometrium).
- **Clinical picture:**
  1. Symptoms: **bleeding (menorrhagia)**
  2. Pain (dysmenorrhea)
  3. Signs: Bimanual: Halban sign (enlarged tender uterus).
- **Investigations**: **US/ MRI**.
- **Ttt**: **Conservative Analgesics & Hemostatic**, Hormonal: **Cyclic OCPS / gestagens** to (↓↓ bleeding & pain), **Mirena IUD**, **Surgical (definitive): TAH**.



Endometriosis

- **Clinical picture:** A. Symptoms **PAIN**: dysmenorrhea (crescendo-decrescendo), dyspareunia (deep). **B. Infertility.**
- **Signs:** Bimanual nodules in DP, tender ovaries.
- **Investigations:** US :
  1. Ground glass in endometrioma.
  2. Laparoscopy: gold standard.
  3. CA125: prognostic & follow up.

• **Treatment:**

A. Conservative 1. Analgesics (NSAIDs). 2. Hormonal: **continuous OCPS / gestagens**, GnRh agonist. 3. Laparoscopic: laser or diathermy for lesions ovarian cystectomy if > 4cm.

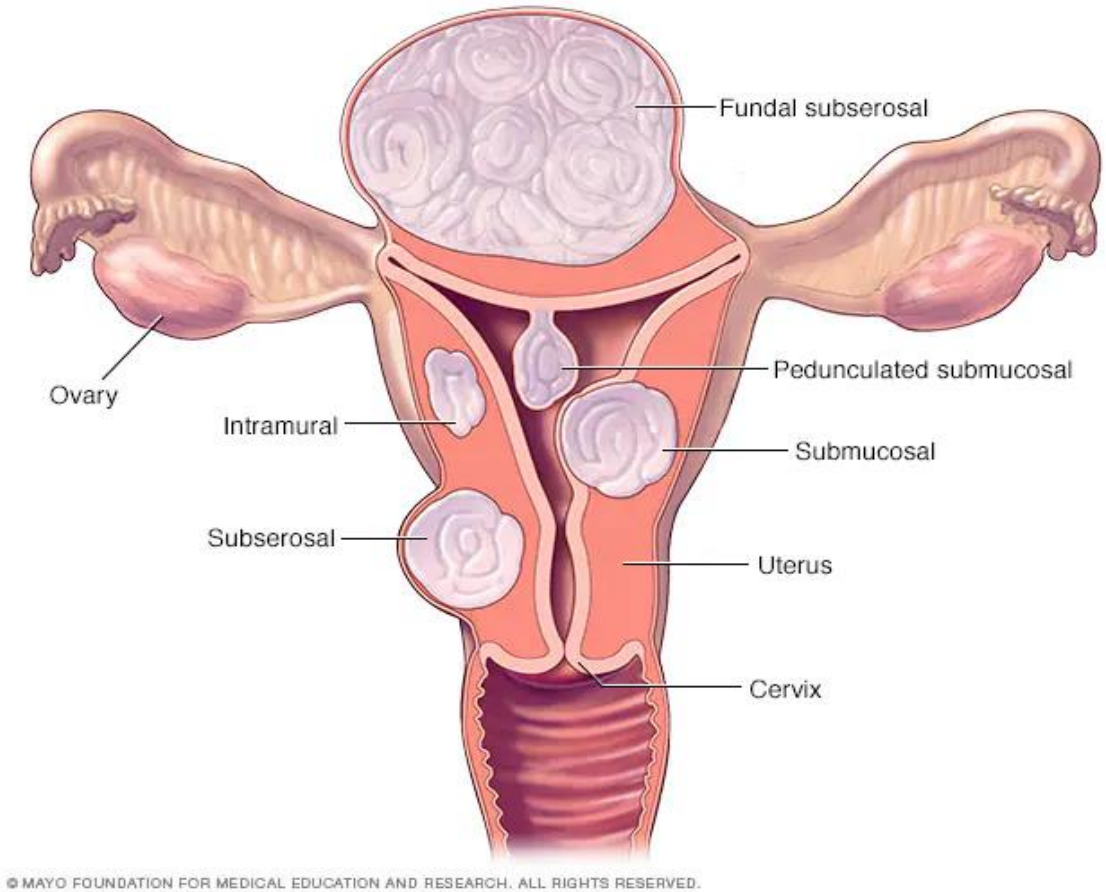
B. Surgical (definitive): **TAH + BSO.**

Fibroid (Etiology)

• **Benign smooth muscle tumors of myometrium.**
• 20% of women over 35 years.
• **Peak symptoms: 35-45 years.**
• These tumors **have greater concentrations of estrogen and progesterone receptors.**
• The **most common indication of hysterectomy**.

Risk factors:
1. **Age** more than 35 years.
2. **Black** race (9 times more than white).
3. **Nulliparity or infertility.**
4. **Obesity**.

Types:
1. **Intramural** (Most common).
2. **Subserosal** (Cause back and leg pain).
3. Pedunculated.
4. Submucosal.
5.
6. Iterligamentary.
7. Parasitic.



Fibroid (Clinical presentation)

- **If uncomplicated:**
  1. **Bleeding and anemia.**
  2. **Pain** (Dysmenorrhea.)
  3. **Pressure symptoms:** Urine frequency, urgency, incontinence, constipation, pain in defecation.
  4. **Infertility.**
  5. **Abortion.**
  6. **Polycythemia.**

- **If complicated :**
  1. Torsion of pedunculated .
  2. Hemorrhage.
  3. Infection.
  4. **Hyaline degeneration.**
  5. **Cystic degeneration.**
  6. **Red degeneration** (Necrobiosis): During pregnancy, presents like acute abdomen and abruption.
  7. Calcification.
  8. **Malignant transformation:** If
     1. Rapid growth.
     2. Large size.
     3. Symptomatic (0.1-1 %), most common between 50-60 years.

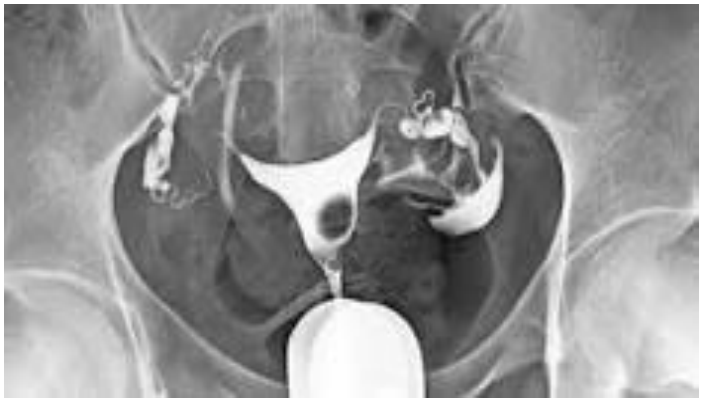
Pregnancy and fibroids

• **How can fibroid prevent the ability to achieve a term pregnancy?**
1. **Causing infertility:** Bilateral cornual fibroid causes tubal obstruction, submucosal may prevent implantation.
2. **Causing abortion:** Interfere with normal placentation, implantation.
3. **Causing preterm labor:** irritation of the myometrium causing preterm uterine contractions.

• **Ho dose the fibroid affect the pregnancy?**
1. Increase **rate for C/S.**
2. Increased risk for **uterine inversion.**
3. **Red degeneration**.
4. **Malpresentation, placenta previa.**

Investigations

- U/S.
- MRI,CT.
- Hysteroscopy & biopsy.
- Hysterosalpingogram.



Management

1. **Conservative with serial examination annually:** used for small tumor, asymptomatic, slowly growing, during pregnancy, near menopause.
2. **Hormonal (GnRH):** If large fibroid prior resection, in peri-menopausal state, if immediate surgery is contraindicated.
   Side effect of GNRH are:
   1. Menopausal state.
   2. Osteoporosis (> 6 months of usage).
3. **Surgical:** severe blood loss, symptomatic, large tumor or rapidly growing (doubling in < 6months), if fibroid is a factor of infertility or recurrent abortion.

There are **two types of surgery either**:
1. Myotomy.
2. Hysterectomy.

AUB Post-Menopausal Bleeding

Etiology

1. **Atrophic changes (Most common).**
2. **HRT**.
3. **Polyps (endometrial & cervical).**
4. Endometrial hyperplasia.
5. Endometrial cancer.
6. Cervical cancer.

Investigations

- **Rectovaginal/pelvic exam.**
- CBC.
- Pap test.
- **US.**
- **Endometrial biopsy.**
- CA-125 marker level.

Endometrial Hyperplasia (EH)

- **Due to unopposed (E2).**

- **Etiology:**
  1. **Early menarche**.
  2. **Late menopause**.
  3. Multipara.
  4. **HRT (E2)/ Tamoxifen**.
  5. **Fertility induction therapy.**
  6. **Obesity.**
  7. Polycystic ovary syndrome.
  8. E2 producing tumors (Granulosa …..).

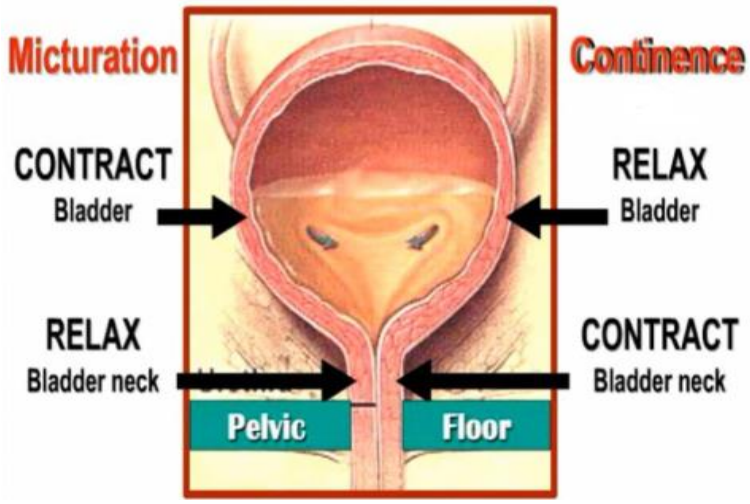
- **Classifications:**
  1. **Without atypia** = Enlarged dilated mucosal membrane gland (Swiss cheese pattern).
  2. **With atypia:** 1. Pronounced proliferation of glandular tissue.
     2. Glands positioned back to back.
     3. **Atypical cells** (Extensive mitosis/ scant cytoplasm/ prominent nucleus/ loss of cells polarity).

1. In without atypia: Risk for malignancy is 1-3% in the next 10 years.
2. In with atypia: Risk for malignancy is up-to 23% in the next 10 years.

- **Clinicarl presentation:** AUB (Post menopausal/ intermenstrual/ constant).
- **Diagnosis:**
  1. First US if the thickness is > 4mm.
  2. Do sampling using one of the following (D@C/ Pipelle BX/ Hysteroscopic).
  3. FSH/ E2/ Testosterone.

- **Treatment: if**
  1. Without atypia: **Cyclical progestin >> surgery, Follow-up every 6 months.**
  2. With atypia: **TAH+ BSO, Follow-up every 3 months.**

Urinary Incontinence



Definition:

- Urinary incontinence is the inability to hold urine, producing **involuntary urinary leakage.**

Physiology of Continence

- Continence and micturition involve a **balance** between **urethral closure** and **detrusor muscle activity.**
- Urethral pressure normally **exceeds** bladder pressure, resulting in urine remaining in the bladder. The proximal urethra and bladder are normally both **within the pelvis.** Intraabdominal pressure increases (from coughing and sneezing) are transmitted to both urethra and bladder **equally**, leaving the **pressure differential** unchanged, resulting in continence.
- Normal voiding is the result of **changes in both of these pressure factors**: urethral pressure falls, and bladder
  pressure rises.

Stress incontinence

This is the **most common** incontinence in **young** women.

- Stress incontinence typically results from **pelvic floor weakness**, → weakens urethral support, resulting in urethral hypermobility.
- **Causes of muscle weakness:**
  Obesity, multiparity, menopause and pelvic surgery.
- **Leiomyoma (fibroids)** can cause direct pressure on the bladder from an irregularly enlarged uterus.

  Rises in bladder pressure because of intraabdominal pressure increases **(coughing and sneezing)** are **not transmitted** to the proximal urethra because it is no longer a pelvic structure owing to loss of support from pelvic relaxation.

History:

- Loss of urine occurs in small spurts simultaneously with coughing or sneezing.
- It does not take place when the patient is sleeping.

Examination:
- Pelvic examination may reveal a cystocele.

Post-void residual	<100 mL
Sensation of fullness	200–225 mL
Urge to void	400–500 mL

Investigative studies:
- Urinalysis and culture are normal.
- Cystometric studies are normal.

Management:

Medical therapy:
Kegel exercises (improve pelvic floor strength).
SNRI (Duloxetine) increase sphincter activity.
Estrogen replacement in postmenopausal women.

Surgical therapy:
Sling (TVT, or TOT).

Urge (Hypertonic) Incontinence

The **most common** incontinence in **older** women.

Involuntary rise in bladder pressure occur from idiopathic **detrusor contractions** that cannot be voluntarily suppressed.

Causes:
Idiopathic, **I**rritation (stone), **I**nfection.

History:
- The most common symptom is **urgency**.
- Loss of urine occurs in **large amounts** often **without warning**.
- This can take place both **day and night**.

Examination:
- Pelvic examination shows normal anatomy.
- Neurologic examination is normal.

Investigative studies:
- Urinalysis and culture for **infection**.
- Cystoscopy for **stones.**
- Cystometric studies show **normal residual volume**, but **involuntary detrusor contractions** are present even with small volumes of urine in the bladder.

Management:
First-line treatments for urgency incontinence are **bladder training and pelvic floor muscle exercises.**
Non-responders can use an **antimuscarinic agent** (**oxybutynin**) to decrease detrusor activity. **(Medical therapy)**

Surgical therapy:
- Botilinum toxin.
- Sacral neuromodulation.

Overflow (Hypotonic) Incontinence:

Rises in bladder pressure occur **gradually** from an **overdistended**, **hypotonic** bladder.
- When the bladder pressure **exceeds** the urethral pressure, **involuntary** urine loss occurs but only **until** the bladder pressure **equals** urethral pressure.
- The bladder **never** empties. Then the process begins all over.

Causes:
Denervated bladder (**diabetic neuropathy**, multiple sclerosis) or systemic medications (**epidural anesthesia**, anticholinergics).

History:
- Loss of urine occurs **intermittently** in **small** amounts.
- This can take place **both day and night.**
- The patient may complain of pelvic fullness.

Examination:
- Pelvic examination may show normal anatomy; however, the neurologic examination will show decreased **pudendal nerve** sensation.

Investigative studies:
- Urinalysis and culture are usually normal.
- Cystometric studies show markedly increased residual volume & No desire on 200 ml.

Management:
- **Intermittent self-catheterization** may be necessary.
- Discontinue the offending systemic medications.
- **Cholinergic** medications to stimulate bladder contractions and **α-adrenergic blocker** to relax the bladder neck.

Fistula

Fistula: abnormal tract between 2 organs.
The normal urethral-bladder mechanism is **intact** but is **bypassed** by urine leaking out through a fistula from the urinary tract.

Causes:
Vesicovaginal fistulas may result from occult bladder injury during **pelvic surgery (iatrogenic)** or from tissue ischemia due to **radiotherapy** for cancer or from **obstetric trauma.**

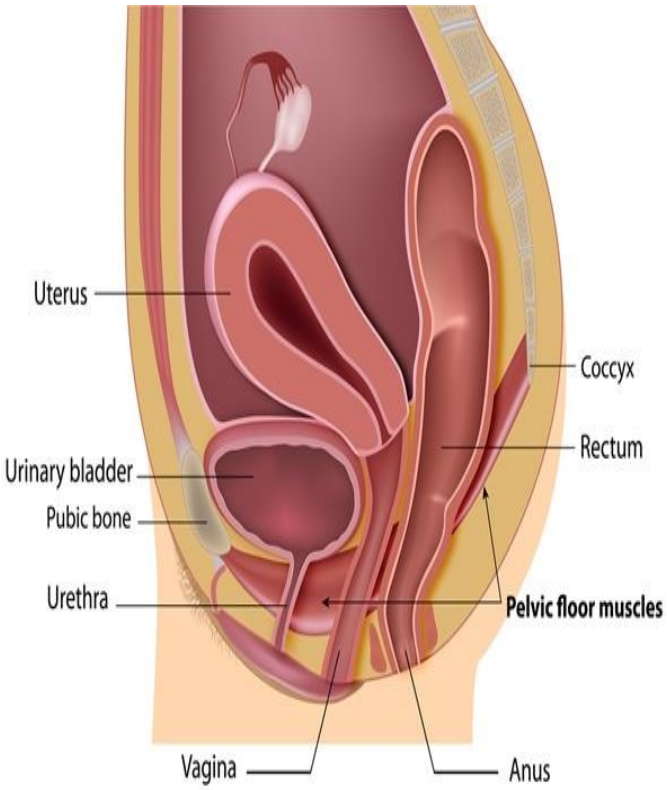
History:
- The patient usually has a **history** of radical pelvic surgery or pelvic radiation therapy.
- Loss of urine occurs **continually** in small amounts.
- This can take place both **day and night.**

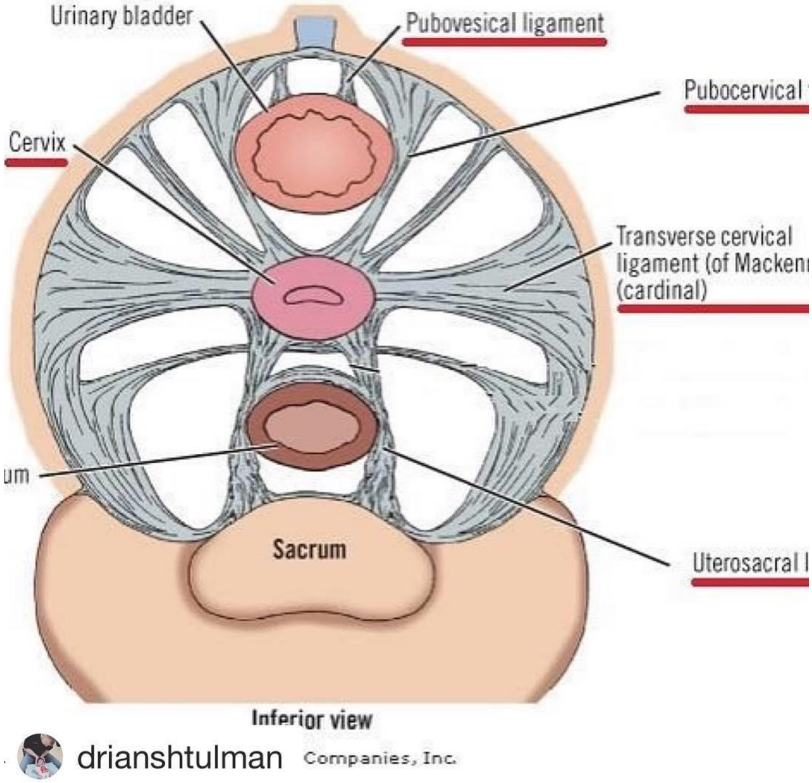
Examination:
Pelvic examination may show normal anatomy and normal neurologic findings.

Investigative studies:
- Urinalysis and culture are normal.
- Dye tests and/or **cystourethroscopy** may be performed to identify a **small fistula** that is difficult to detect on visual inspection.

Management:
Surgical repair of the fistula.

Pelvic Organ Prolapse





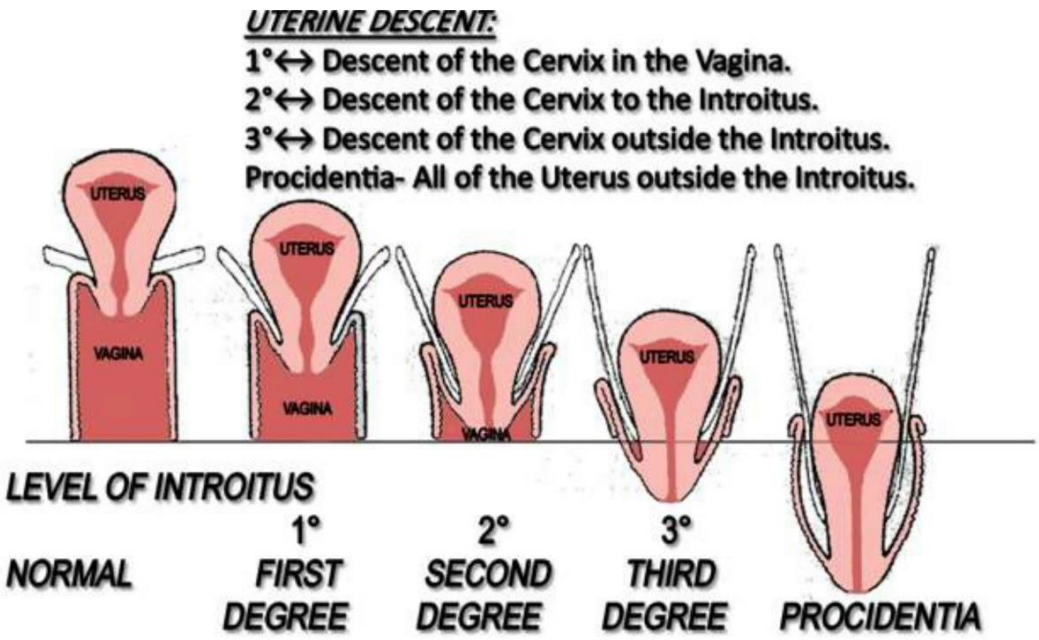
Etiology

Predisposing factors:
- Repeated childbirth.
- Menopause.
- Connective tissue disorders.

Precipitating factors:
- Cough & strain.
- Increase intra abdominal pressure.
- Heavy lifting.

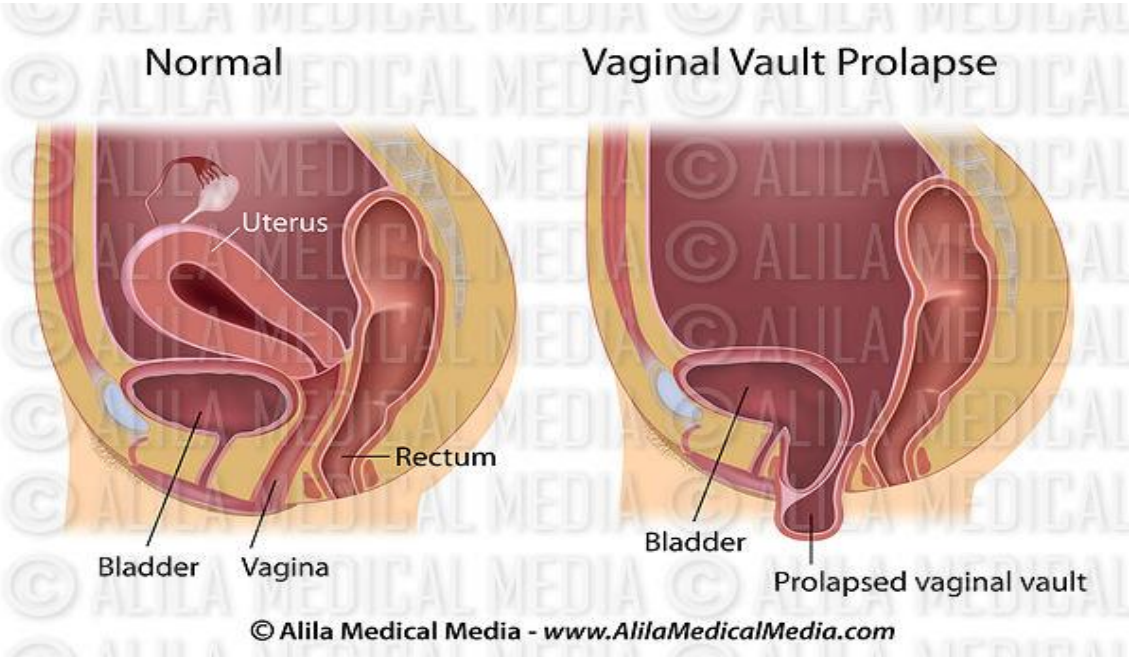
Uterine Prolapse

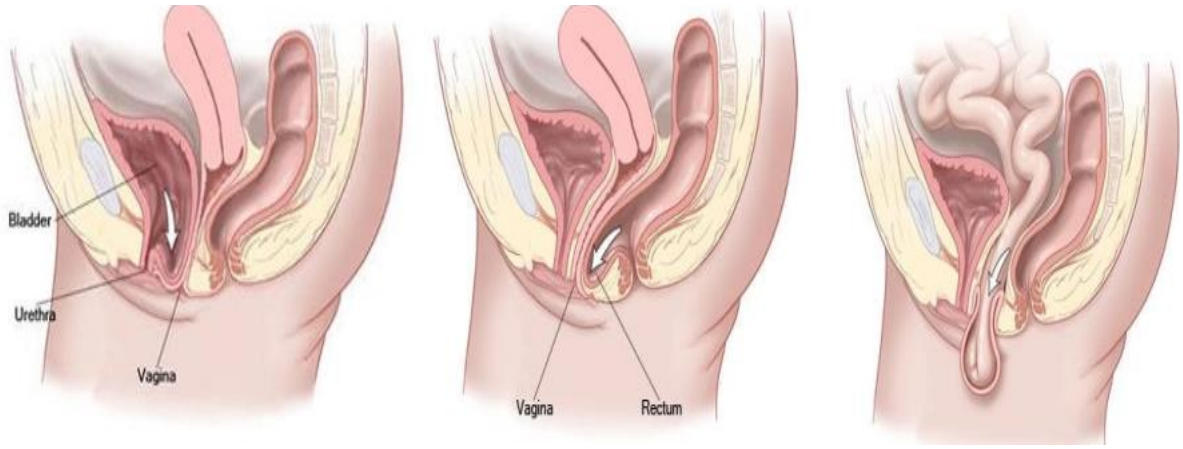
- **Grade I**: Cervix descends **half-way** to the **hymen**.
- **Grade II**: Cervix descends to the **hymen**.
- **Grade III**: Cervix extends **halfway past** the **hymen**.
- **Grade IV** or **procidentia**: The **entire** uterus, as well as the anterior and posterior **vaginal walls**, extends outside the introitus.



Vaginal prolapse

- **Cystocele**: Herniation or bulging of the **anterior vaginal wall** and **overlying bladder** base into the **vaginal lumen**.
- **Rectocele**: Herniation or bulging of the **posterior vaginal wall** and underlying **rectum** into the **vaginal lumen**.
- **Enterocele**: Herniation of the **pouch of Douglas** containing **small bowel** into the **vaginal lumen.**
- **Vault** prolapse: after **hysterectomy.**





Clinical picture

General symptoms in all types:
- Sensation of Heaviness & or Mass protruding from vagina.
- Backache.
- Vaginal dryness.
- Sexual embarrassing.

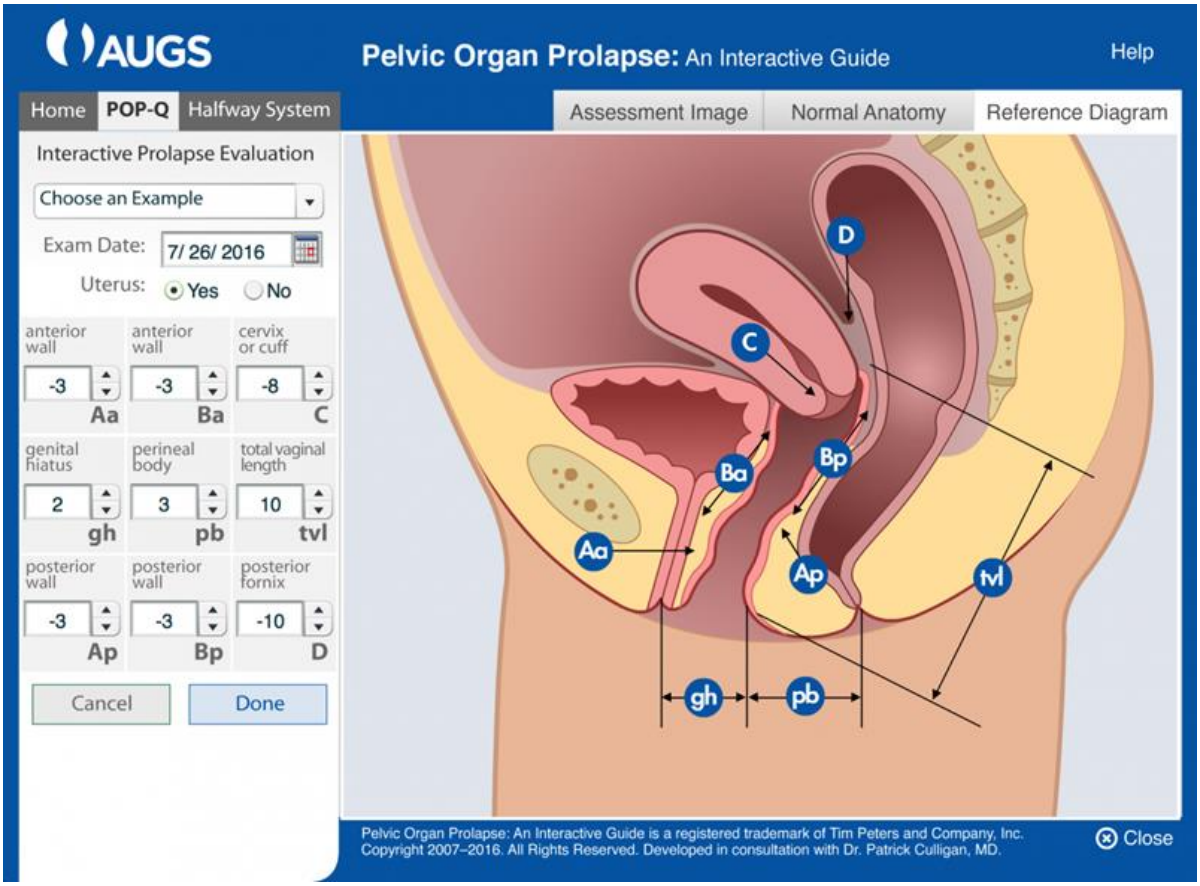
Urinary symptoms in **Anterior** vaginal wall prolapse. (Frequency, urgency, incontinence, UTIs)

Bowel symptoms >> **posterior** vaginal wall prolapse. (Constipation, incontinence, incomplete emptying)

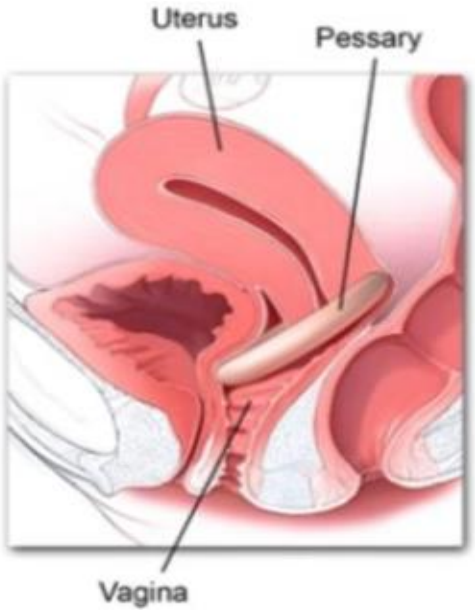
POP-Q system

The degree of prolapse in number.
The **hymen ring is 0.**
Above hymen >> **-ve** numbers.
Below hymen >> **+ve** numbers.

POP-Q Staging Criteria	
Stage 0	Aa, Ap, Ba, Bp = -3 cm and C or D ≤ – (tvl – 2) cm
Stage I	Stage 0 criteria not met and leading edge < -1 cm
Stage II	Leading edge ≥ -1 cm but ≤ +1 cm
Stage III	Leading edge > +1 cm but < + (tvl – 2) cm
Stage IV	Leading edge ≥ + (tvl – 2) cm



Treatment



Prevention:

Spacing / kegel's exercises / proper management of 1st 2nd, 3rd stages of labor.

Conservative:

pessary.

Surgical (permenant)

Surgical treatment

Vaginal prolapse:

- Anterior repair >> Cystocele.
- Posterior repair >> Rectocele.

Uterine prolapse:

Desire of fertility >> Vaginal sacrospinous fixation, abdominal sacrocolpopexy.

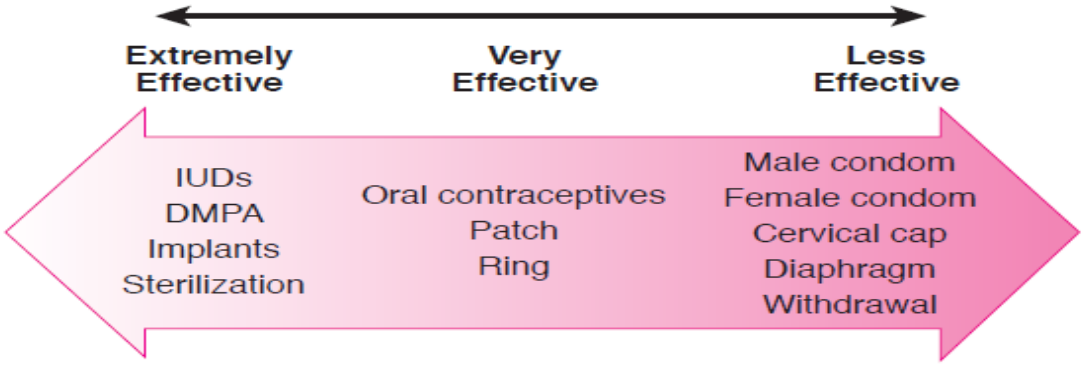
No desire >> vaginal hysterectomy, Le Fort operation (colpoclesis)

Hx taking

- **Profile** (age, marital status, parity, work).
- **Hx of lump** (duration, always present or not, aggravated by long standing, relived by lying down, impact on social & sexual life).
- **Associated symptoms** (urinary, bowel, backache, ulceration or bleeding).
- **Risk factors** (multiparty & long labor, menopause, pelvic surgery)
- **Gyne Hx** (Menopause & HRT, previous prolapse)

Contraception

Overview of fertility control



Pearl index

- Methods of contraception are compared by the Pearl index.
- The Pearl index will be determined by the number of unintentional pregnancies related to 100 women using certain method of contraception for I year.
- If three pregnancies occur during this period in this group, the Pearl index will be 3.0
- Perfect Use efficacy rates: AKA "Correct Use", reflect what happens when a contraceptive method is used correctly all of the time.
- Typical Use efficacy rates: AKA "Actual Use", reflect what happens in the real world when we factor in human error in the first year of use of a method.

Barrier spermicidal method

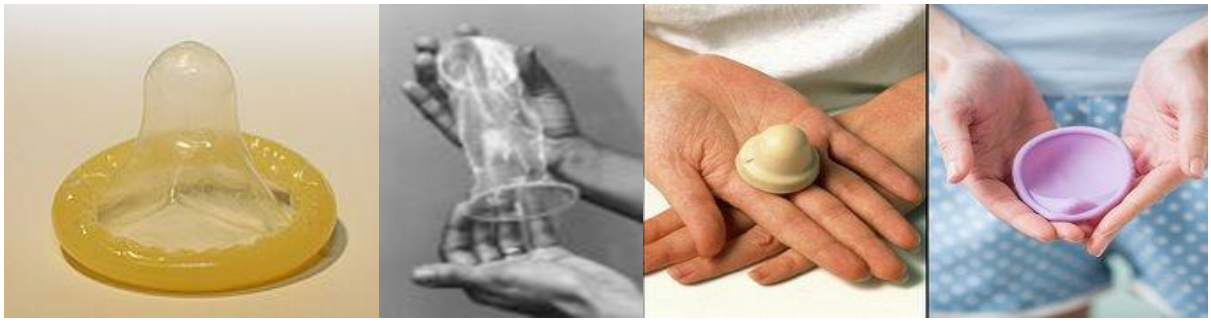
- **Mechanisms of Action:** preventing entry of sperm in through the cervix.
- **Advantages:**
  1. Effective with advancing age and the associated natural decline in fertility.
  2. They do protect against some STDs. (no skin to skin contact)
  3. They do not have systemic side effects.
- **Disadvantages:**
  1. Failure rate approaches 20%.
  2. They are coitally dependent, requiring a decision for each use.

Barrier methods

1. **Male Condoms:** These are penile sheaths that must be placed on the erect penis. No individual fitting is required. They are the most common barrier contraceptive method used.
2. **Female condom:** physically inserted in the vagina.

3. **Vaginal diaphragm.** This is a dome-shaped device placed in the anterior and posterior vaginal fornices holding spermicidal jelly against the cervix. It can be placed an hour before intercourse. Individual fitting is required. If too large it can result in urinary retention.
4. **Cervical cap**

- **Spermicides:** active ingredient is nonoxynol-9, disrupts cell membranes, thus the possible side effect of genital membrane irritation, and increases the risk of HIV transmission.



Steroid contraception

- **Mechanisms of Action:**

1. Inhibition of the midcycle luteinizing hormone (LH) surge, thus preventing ovulation
2. Alteration of cervical mucus making it thick and viscid, thus retarding sperm penetration
3. Alteration of endometrium inhibiting blastocyst implantation.

Table II-9-1. Mechanism of Action of Steroid Contraception

Pituitary	↓ LH surge	E>P
Ovary	↓ ovulation	E>P
Endometrium	Atrophy	P
Cervix	Hostile mucus	P

- **Estrogen-Mediated Metabolic Effects:**
  1. Fluid retention from decreased sodium Excretion
  2. Accelerated development of cholelithiasis
  3. Increase in hepatic protein production (e.g., coagulation factors, carrier proteins, angiotensinogen)
  4. Healthy lipid profile changes (increase in [HDL] decrease in [LDL])
  5. Increased venous and arterial thrombosis.

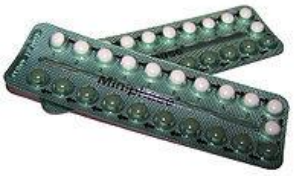
- **Progestin-Mediated Metabolic Effects:**
  1. Mood changes and depression from decreased serotonin levels
  2. Androgenic effects (e.g., weight gain, acne)
  3. Unhealthy lipid profile changes (decreased HDL, increased LDL).

- **Absolute Contraindications:**
  1. Pregnancy
  2. Acute liver disease and HCC
  3. History of vascular disease (e.g., thromboembolism, DVT, CVA, SLE)
  4. Hormonally dependent cancer (e.g., breast);
  5. Smoker ≥35
  6. Uncontrolled hypertension
  7. Migraines with aura
  8. Diabetes mellitus with vascular disease
  9. Thrombophilia.

- **Relative Contraindications:**
  1. Migraine headaches
  2. Depression
  3. Diabetes mellitus
  4. Chronic hypertension
  5. Hyperlipidemia.

- **Noncontraceptive Benefits:**
  1. Decreased ovarian and endometrial cancer
  2. Decreased dysmenorrhea and dysfunctional uterine bleeding
  3. Decreased PID
  4. Ectopic pregnancy.
  5. Decrease risk of Colorectal cancer
  6. Decrease Acne

Steroid contraception: combination modalities:



1. Combination OCPs: estrogen and a progestin.
- Administered daily with 21 days on and 7 days off. When "off" the hormones, withdrawal bleeding will occur.
- Started during the first 5 days of the cylce
- The only one to have regular, predictable menses.
- Failure rate is 2% with ideal use.
- Reduces severe PMDD symptoms by 50%.

2. Combination Vaginal Ring:
- Inserted into the vagina.
- It is removed after 3 weeks for 1 week to allow for a withdrawal bleed.
- Failure rate is similar to combination OCPs 2%.

3. Transdermal Skin Patch:
- A patch is replaced every week for 3 weeks then removed for 1 week to allow for a withdrawal bleed. Levels of steroids are 60% higher than combination OCPs.

Steroid contraception: Progestin-Only Modalities

- Specially recommended for patients who breastfeed and patients with contraindication to estrogen.

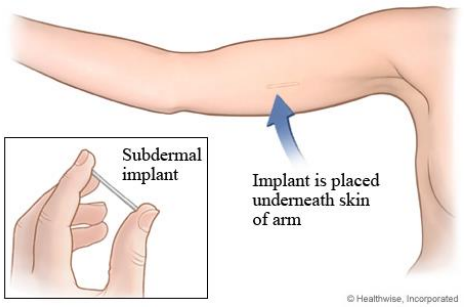
1. Progestin-Only OCPs:

- Called the "minipill."
- Taken daily and continuously.
- A frequent side effect is **break-through bleeding**.
- Failure rate is 3% with ideal use.

2. Progestin-Only Injectable:

- Trade name Depo-Provera.
- IM injection of depo-medroxyprogesterone acetate (DMPA).
- The slow release allows administration only every 3 months.
- A frequent side effect **is break-through bleeding**. Other side effects are prolonged time for fertility return and decreased bone mineral density.
- Failure rate is <1%.

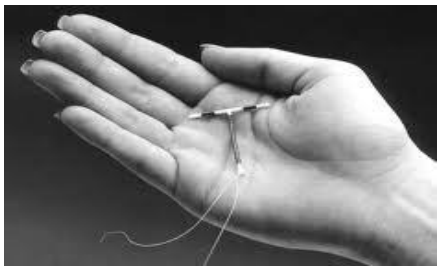
3. **Progestin-Only Subcutaneous Implant.**
   - The core contains a small amount of barium, making it visible on x-ray.
   - Continuous release continues for 3 years.
   - A frequent side effect **is break-through bleeding**.
   - Failure rate is <1%.



4. **"Morning-After" Pill:** AKA "Plan B,"
   - levonorgestrel tablets
   - postcoital contraception
   - Administered as one tablet, immediately followed by one additional tablet in 12 h.
   - Failure rate is 1%.

Intrauterine contraception

- long-acting reversible contraceptive method
- Placement of a small t-shaped object inside the uterus.
- Failure rate is <1%.
- **Types: Copper IUD** "**Paragard**" contains 380 mm2 copper, approved for 10 years, **Levonorgestrel (LNg) IUD** "**Mirena**" contains 52 mg LNg, approved for 5 years



- **Mechanisms of Action:**
  1. inhibition of sperm transport (copper IUS)
  2. increased tubal motility causing failure of implantation of immature zygote
  3. inhibition of implantation secondary to endometrial inflammation
  4. phagocytic destruction of sperm and blastocyst
  5. Alteration of cervical mucus (progesterone IUSs).
  6. Endometrial atrophy (progesterone IUS)

- **Absolute Contraindications:**
  1. Confirmed or suspected pregnancy
  2. Known or suspected pelvic malignancy
  3. Undiagnosed vaginal bleeding
  4. Known or suspected salpingitis.

- **Relative Contraindications:**
  1. Abnormal uterine size or shape (submucosal fibroid).
  2. Medical condition (e.g., corticosteroid therapy, valvular heart disease, HIV or any instance of immune suppression increasing the risk of infection)
  3. Mulligravidity
  4. Abnormal Pap smears
  5. History of ectopic pregnancy.
  6. Wilson's disease

- **Side Effects:** possible increase in menstrual bleeding and pain with the copper IUS.
- **Potential Complications**
  1. **Chlamydia.** Most of the increased risk of infection actually attributable to IUS use is within 20 days after infection. Any vaginal infection should be treated before insertion of the IUS to prevent introduction of organisms into the upper genital tract.
  2. **PID:** may occur within the first 2 months after placement if pathogenic organisms are present in the reproductive tract.
  3. **Expulsion:** in young, low parity women.
  4. **Ectopic pregnancy. The IUS does not increase ectopic pregnancies**. However, with pregnancy from failed IUS, the likelihood of it being ectopic is higher because primarily, intrauterine pregnancies are prevented.
  5. **Septic abortion** occurs in 50% of patients with concurrent pregnancy.
  6. **Uterine perforation**: occurs more likely at time of insertion.

- IUS is inserted Immediately after menstruation:
  1. You are sure no pregnancy
  2. The cervix is reasonably dilated to allow easy insertion.

- Done under full sterile technique after assessment of uterine position to avoid perforation.
- The site of the IUS can be confirmed by presence of the tail in vagina or by US (more accurate).

Long-acting reversible contraception

- Long-acting reversible contraceptives (LARCs) provide effective contraception for an extended period without requiring user action.
- **Methods used:**
  1. Intramuscular injection (e.g. DMPA)
  2. IUD (Mirena, Paragard)
  3. Subdermal contraceptive implant (implanon)
- Considered the most effective reversible method of contraception because patient compliance is not required.
- 'Typical use' failure rates, at <1% per year, are about the same as 'perfect use' failure rates (similar to sterilization procedures).
- Well-liked by users, and very cost-effective.

Natural family planning

- Avoiding sexual intercourse around the time of predicted ovulation.
- It assumes the egg is fertilizable for 12 to 24 hours and sperm is capable of fertilizing the egg for 24 to 48 hours. (fertile phase of the cycle 11-17, in a 28 days cycle), requires regular menstrual cycle of the female.
- **Methods used**: Prediction of ovulation may be inferred from:
- Menstrual records
- BBT charting (temperature rise from thermogenic effect of progesterone)
- Change in cervical mucus from thin watery to thick sticky.
- **Advantages**.
- Inexpensive.
- Readily available.
- No steroid hormonal side-effects.
- **Disadvantages**.
- Inaccurate prediction of ovulation, Requires high degree of discipline from both sexual partners, high failure rates 10-15 %.

Lactation

- Elevated prolactin levels with exclusive breast feeding inhibit pulsatile secretion of GnRH from the hypothalamus.
- Effectiveness is dependent on the frequency (at least every 4-6 hours day & night) and intensity (infant suckling rather than pumping) of milk removal.
- **Advantages:**
- Enhanced maternal and infant health, bonding, and nutrition.
- Readily available.
- Inexpensive.
- Free of systemic side effects.
- **Disadvantages:**
- High failure rate if not exclusively breast feeding.

Withdrawal

* Removal of penis from the vagina before ejaculation occurs
* NOT a sufficient method of birth control by itself
* 1 of 5 women practicing withdrawal become pregnant
* Very difficult for a male to ‘control’

Sterilization

- **Mechanisms of Action:**
- Surgical procedures involving ligation of either the female oviduct or male vas deferens.
- Permanent and irreversible.
- **Tubal Ligation:** Destruction or removal of a segment of the oviduct is performed in an operating room through a transabdominal approach using a laparoscopy or laparotomy.
- Failure rate is 1 in 200.
- If the procedure fails and pregnancy results, an ectopic pregnancy should be ruled out.
- **Vasectomy:** Destruction or removal of a segment of vas deferens is performed as an outpatient procedure using local anesthesia. Failure rate is 1 in 500.
- A successful procedure can be confirmed by absence of sperm on a semen specimen obtained 12 ejaculations after the surgery.
- Sperm antibodies can be found in 50% of vasectomized patients.

Sterilization	Tubal ligation	Vasectomy
Destroy/ligation	**Oviduct**	**Vas deferens**
Where performed	**OR**	**Office**
Anesthesia	**General, spinal**	**Local**
Failure rate	**1 in 200**	**1 in 500**
Success criteria	**None**	**Azoospermia after 12 ejaculations**
Complications	**R/O ectopic if pregnant**	**Anti sperm antibodies**

Emergency or post coital contraception

1. Hormonal:

   Levonorgestrel (Progestin), taken as a single dose (1.5 mg) within five days (120 hours) of unprotected intercourse.

   Levonorgestrel in two doses (0.75 mg each; 12 hours apart).

   Combined E+P pill (Ovral 2 tab, ethinyly estradiole 100 mg + Levonorgestril 0.5mg)

2. IUS:

   Copper IUD, inserted within five days of unprotected intercourse

Menopause & HRT

Menopause

- **Menopause: absent menstruation due to cessation of ovarian activity for > 12 months.**
- **Climacteric:** a transitional period leading to menopause in which the ovarian activity decrease.
- **Post menopause:** The period after complete cessation of menstruation, in 80% of female it comes after 1 year.
- **Premature ovarian insufficiency (POI):** Absent of menstruation **before age of 40**.
- Age range of menopause **is 48-55 years**, median age: **50-52 years.**
- **Smokers experience menopause up to 2 years earlier.**
- Average perimenopausal period is 4 years.

Menopause Clinical Findings:

- The **lack of estrogen** is responsible for the majority of menopausal symptoms and signs:

A. Amenorrhea:

- The most common symptom is **secondary amenorrhea**.
- Menses typically **become anovulatory and decrease during a period of 3-5 years** known as perimenopause.

B. Hot flashes:

- Unpredictable **profuse sweating and sensation of heat** are experienced by 75% of menopausal women.
- This is probably mediated through the hypothalamic thermoregulatory center.
- **Obese women are less likely to undergo hot flashes owing to peripheral conversion of androgens to estrone in their peripheral adipose tissues.**

C. Reproductive tract: Low estrogen leads to **decreased vaginal lubrication, increased vaginal pH, and increased vaginal infections**.

D. Urinary tract: Low estrogen leads to **increased urgency, frequency, nocturia, and urge incontinence.**

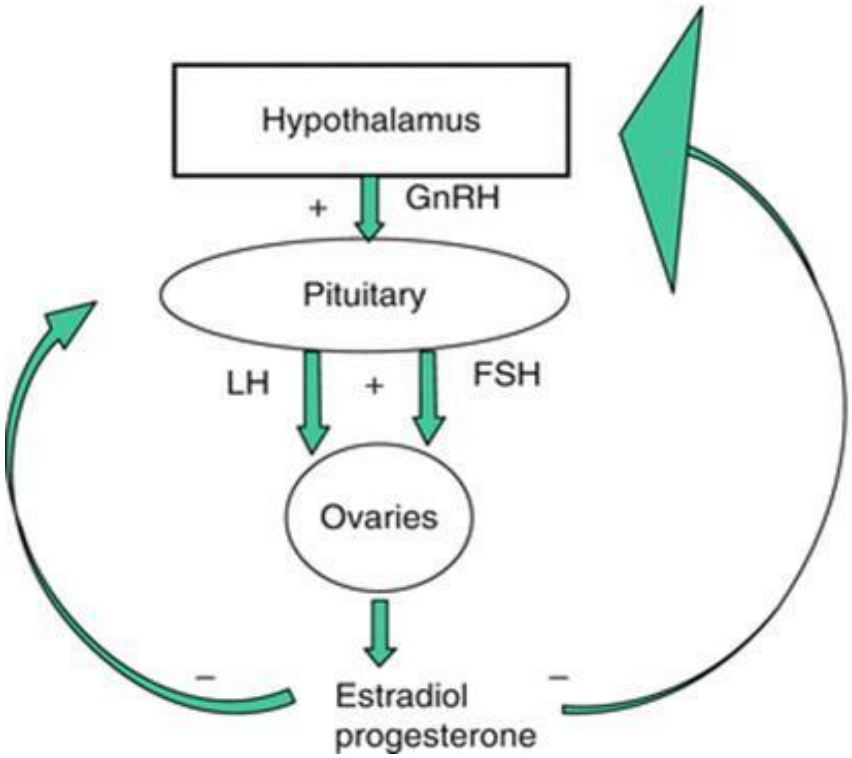
E. Psychic: Low estrogen leads to **mood alteration, emotional lability, insomnia, and depression.**

F. Cardiovascular disease: This is the **most common cause of mortality (50%)** in postmenopausal women, with **prevalence rising rapidly after menopause.**

G. Osteoporosis: This a disorder of **decreased bone density leading to pathologic fractures** when density falls below the fracture threshold.

Menopause diagnosis

–The laboratory diagnosis of menopause is made through serial identification of elevated gonadotropins **FSH, LH.**



History of menopause

• **Gynecological history:**

1. **Symptoms of menopause and their impact on life and sexual activity.**
   - General symptoms: Vasomotor symptoms (Hot flushes, night sweats), insomnia, depression, anxiety, short-term memory loss.
   - Genital symptoms: Vaginal dryness, dyspareunia, decreased libido.
   - Urinary symptoms: Irritative symptoms, stress incontinence.
   - Skeletal symptoms: Pathological fractures, shortening (Compressive fracture of spine), pain in these sites.
2. **History of AUB.**
3. **Last Pap smear or endometrial biopsy.**
4. **Gynecological cancer.**
5. **History of fibroids or endometriosis.**
6. **Any gynecological surgical history.**

Past history:

- HTN, IHD, CVA, DM, DVT &PE.
- Benign or malignant breast lesion and the last mammogram results.
- Liver diseases.

Family history:

- HTN, IHD, CVA, DM, DVT &PE.
- Osteoporosis, breast cancer, gynecological malignancy.

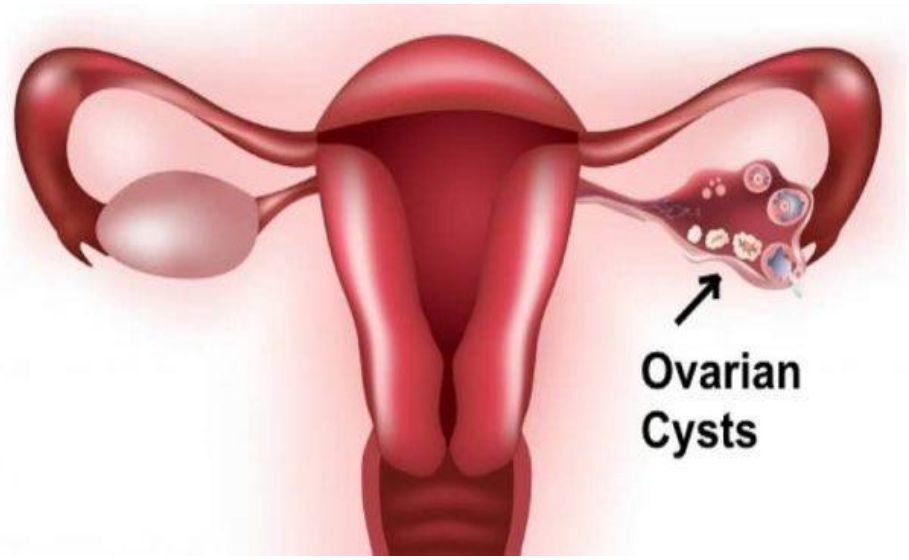
Physical examination

1. **General:** obesity or weight changes, BP measurement, neck masses.
2. **Breast examination.**
3. **Chest examination to asses heart status.**
4. **Abdominal examination looking for any masses.**
5. **Pelvic examination** looking for atrophic changes in vagina, cervical smear, bimanual examination for masses.

HRT

- Can be **estrogen only or progesterone only or both**.
- Can be given **orally or locally.**
- The **contraindication is the same of COCPS.**
- Patient **need regular follow up** (Breast, BP, and Pelvic examination).
- The used nowadays is to alleviate **hot flushes, and locally for dryness**.
- Warning the patient about the start-up method **(Breast tenderness, nipple sensitivity, weight gain, calf cramps, and increased appetite)** thus may persist up to **3 months**.

Ovarian Cysts



Premenopausal Women

- Approx 10% of women will have surgery for an ovarian cyst.
- Tend to be **benign** in young women.
- More difficult to pre-operatively decide if benign or malignant.
- Tumors are usually **germ cell tumors.**
- Premenopausal women have **functional** ovaries so conservative management of the cyst where possible.
- **Referral** to a gynaecological oncologist where appropriate.

Postmenopausal Women

- **It is a malignancy till definitely proven otherwise! Usually epithelial cell carcinoma**

Symptoms of ovarian cysts in general

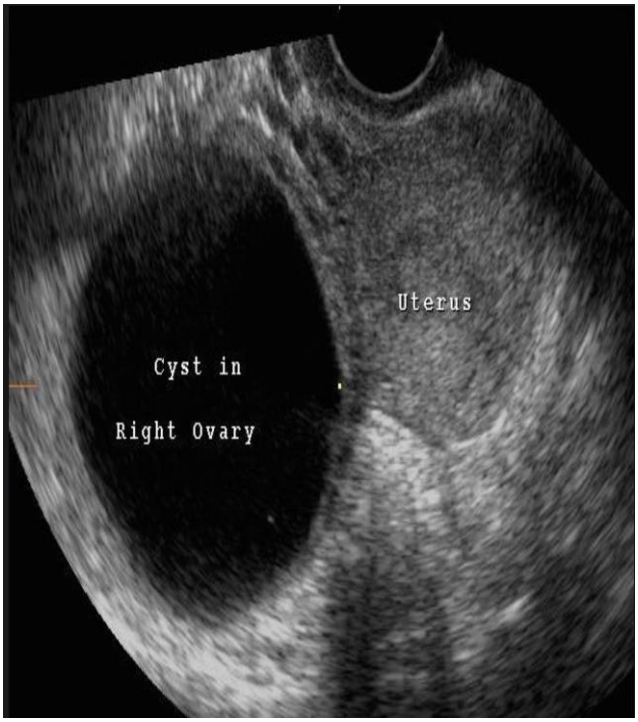
- **Asymptomatic.(most common)**
- Pain
- Pressure symptoms – bloating, urinary frequency, bowel symptoms
- Symptoms of endometriosis
- Constitutional symptoms!!

Imaging

- Utrasound. **Transabdominal** then **transvaginal**
- MRI may aid diagnosis
- An estimation of the risk of malignancy is essential in the assessment of an ovarian mass

Analysis of the cyst

Simple



Homogenous.

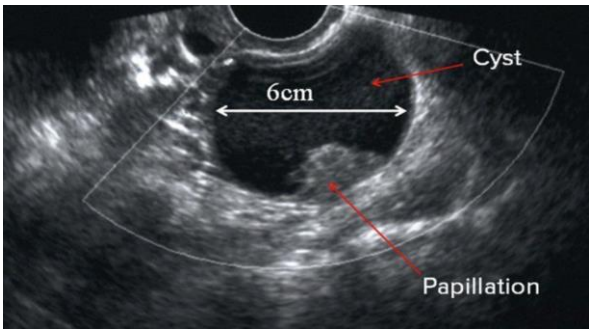
Hypoechoeic

Unilocular.

No solid components

Acoustic shadowing

Complex



- **Ascites**
- **Bilateral lesions**
- **Septations**
- **Solid Components/Papillary projections**
- **Metastases**

Approach in postmenopausal lady:
Calculate Risk of Malignancy Index (RMI)

CALCULATION OF THE RMI I

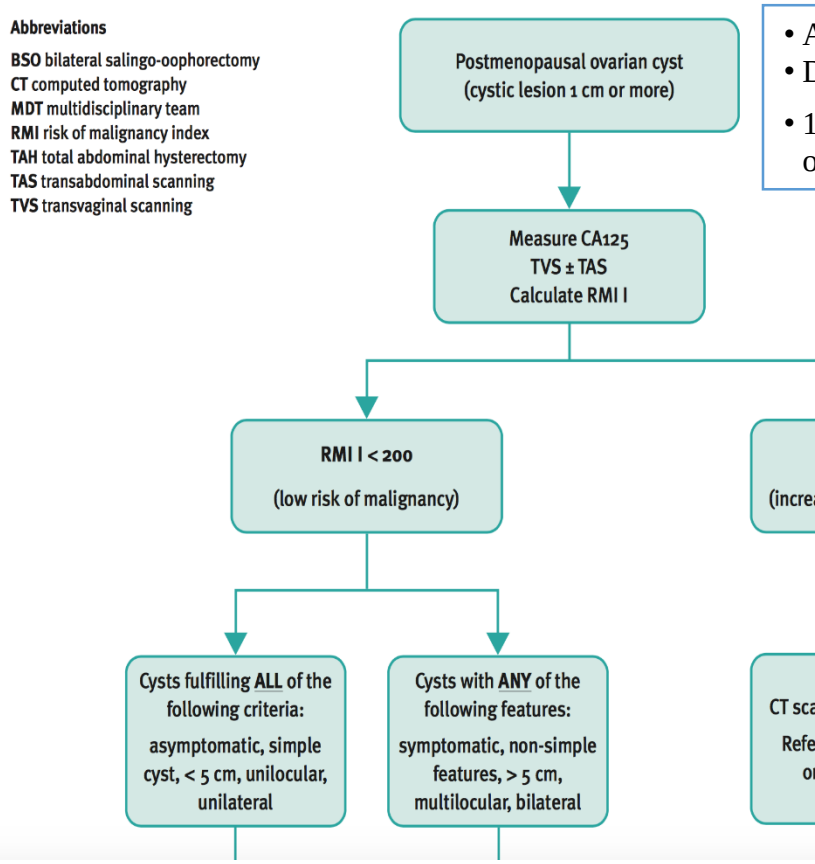
The RMI I combines three presurgical features. It is a product of the serum CA125 level (iu/ml); the menopausal status (M); and an ultrasound score (U) as follows:

RMI = U x M x CA125

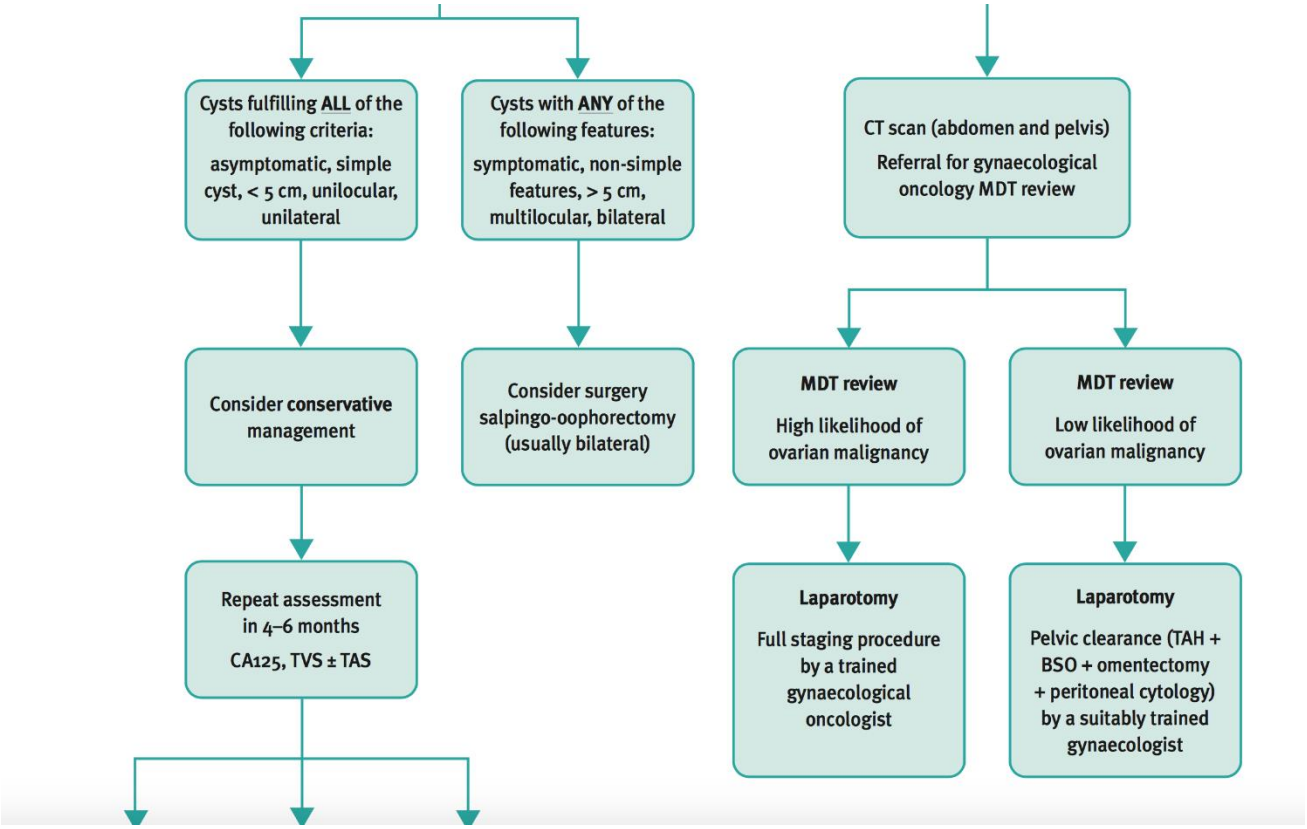
- The ultrasound result is scored 1 point for each of the following characteristics: multilocular cysts, solid areas, metastases, ascites and bilateral lesions.
  U = 0 (for an ultrasound score of 0)
  U = 1 (for an ultrasound score of 1)
  U = 3 (for an ultrasound score of 2–5)
- The menopausal status is scored as:
  1 = premenopausal
  3 = postmenopausal
  This guideline is directed at postmenopausal women and therefore all will be allocated the same score of 3 for menopausal status.
- Serum CA125 is measured in iu/ml and can vary between zero and hundreds or even thousands of units.

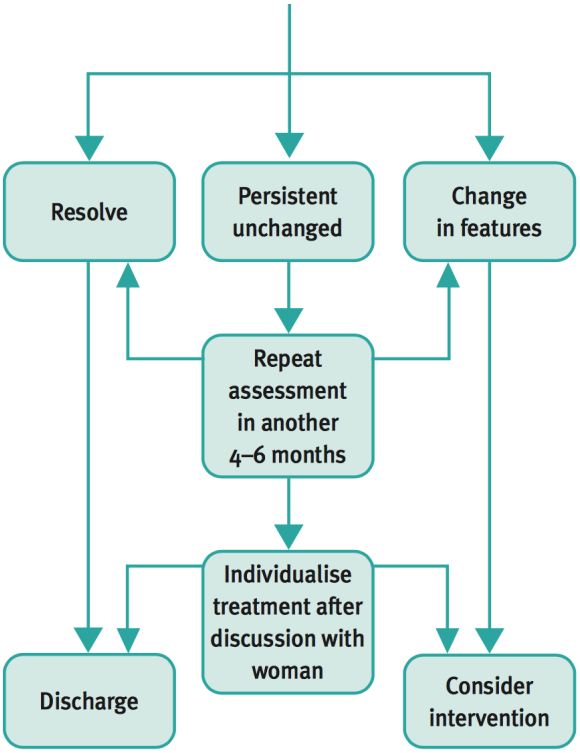
Abbreviations

BSO bilateral salingo-oophorectomy
CT computed tomography
MDT multidisciplinary team
RMI risk of malignancy index
TAH total abdominal hysterectomy
TAS transabdominal scanning
TVS transvaginal scanning



- Ascites
- Distant metastasis
- 1st degree relative with ovarian or breast cancer.


Cysts fulfilling ALL of the following criteria:
asymptomatic, simple cyst, < 5 cm, unilocular, unilateral
Cysts with ANY of the following features:
symptomatic, non-simple features, > 5 cm, multilocular, bilateral
CT scan (abdomen and pelvis)
Referral for gynaecological oncology MDT review
Consider conservative management
Consider surgery salpingo-oophorectomy (usually bilateral)
MDT review
High likelihood of ovarian malignancy
MDT review
Low likelihood of ovarian malignancy
Repeat assessment in 4–6 months
CA125, TVS ± TAS
Laparotomy
Full staging procedure by a trained gynaecological oncologist
Laparotomy
Pelvic clearance (TAH + BSO + omentectomy + peritoneal cytology) by a suitably trained gynaecologist


Resolve
Persistent unchanged
Change in features
Repeat assessment in another 4–6 months
Individualise treatment after discussion with woman
Discharge
Consider intervention

Approach in premenopausal women

Types of cysts

Benign ovarian	Functional cysts Endometriomas Serous cystadenoma Mucinous cystadenoma Mature teratoma
Benign non-ovarian	Paratubal cyst Hydrosalpinges Tubo-ovarian abscess Peritoneal pseudocysts Appendiceal abscess Diverticular abscess Pelvic kidney
Primary malignant ovarian	Germ cell tumour Epithelial carcinoma Sex-cord tumour
Secondary malignant ovarian	Predominantly breast and gastrointestinal carcinoma.

- If you find a mass with **simple** features→functional cyst→ **excise only** if size>7 or symptomatic
- If you find a mass with **complex** features (excluding metastasis) in a **premenopausal** lady. Do the **IOTA classification (not RMI!)**and check **blood tumor markers for germ cell tumors**

Management of simple cysts in a premenopausal lady:

- **50 >mm diameter** ‹simple ovarian cysts **do not require follow-up** very likely to be physiological and almost always resolve within 3 menstrual cycles .
- Simple ovarian cysts of 50–70 mm in diameter **should have yearly ultrasound follow-up.**
- Larger simple cysts should be considered for **either further imaging (MRI) or surgical** intervention: difficulties in examining the entire cyst adequately at time of ultrasound.

IOTA classification

malignant[1,4,5]	
Benign (B-rules)	**Malignant (M-rules)**
Unilocular cysts	Irregular solid tumour
Presence of solid components where the largest solid component <0.7 cm	Ascites
Presence of acoustic shadowing	At least four papillary structures
Smooth multilocular tumour with largest diameter <10 cm	Irregular multilocular solid tumour with largest diameter >10 cm
No blood flow	Very good blood flow

Tumour markers in young women

• Lactate dehydrogenase (LDH), α-FP and bhCG

Should be measured in all women under age 40 with a COMPLEX ovarian mass because of the possibility of germ cell tumours
• LDH→ ovarian dysgerminoma
• α-FP→ yolk-sac tumor
• B-hCG→ choriocarcinoma
• B-hCG+α-FP→embryonal carcinoma

• **CA 125 can be raised in many conditions in**
• **Young women such as . . . . . ؟**

Causes of elevated CA125

Malignant conditions

- Gynecologic Cancers
- Epithelial ovarian cancer
- Some germ cell tumors
- Some stromal tumors
- Fallopian tube cancers
- Endometrial cancer
- Endocervical cancer

Non Gynecologic Cancer ;

- Pancreatic cancer
- Lung cancer
- Colon cancer

Benign conditions

- Endometriosis
- Leiomyomata uteri
- Ectopic pregnancy
- Normal pregnancy
- Pelvic inflammatory disease
- Menses

Nongynecologic conditions ;

- Pancreatitis
- Cholecystitis
- Cirrhosis
- Peritonitis
- Peritoneal tuberculosis
- Peritoneal sarcoidosis
- Recent laparotomy

- CA-125 is unreliable in premenopausal women, high rate of false positives and reduced specificity.
- CA-125 may be raised in numerous conditions including fibroids, endometriosis, adenomyosis and pelvic infection .
- A raised serum CA-125 should be interpreted cautiously.
- CA-125 is primarily a marker for epithelial ovarian carcinoma and is only raised in 50% of early stage disease

Treatment:
- Ovarian cysts that persist or increase in size are unlikely to be functional and warrant surgical management.
- OCPs **protect** against functional cysts but **do not treat** them.
- **Aspiration** of cyst is **ineffective**
- **Laparoscopic management** of presumed **benign** ovarian cysts should be undertaken
- DO NOT **SPILL!**

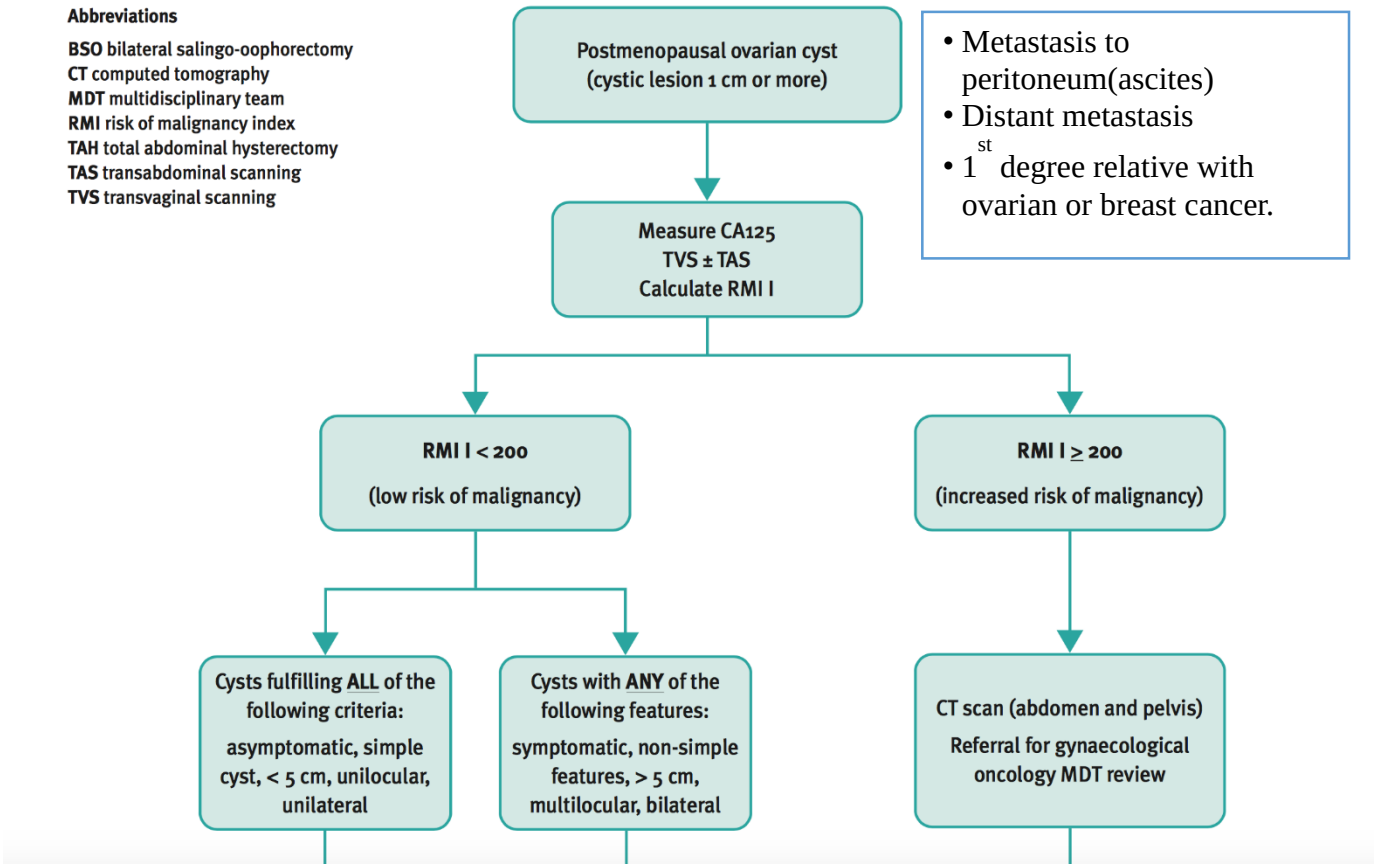
Postmenopausal Women

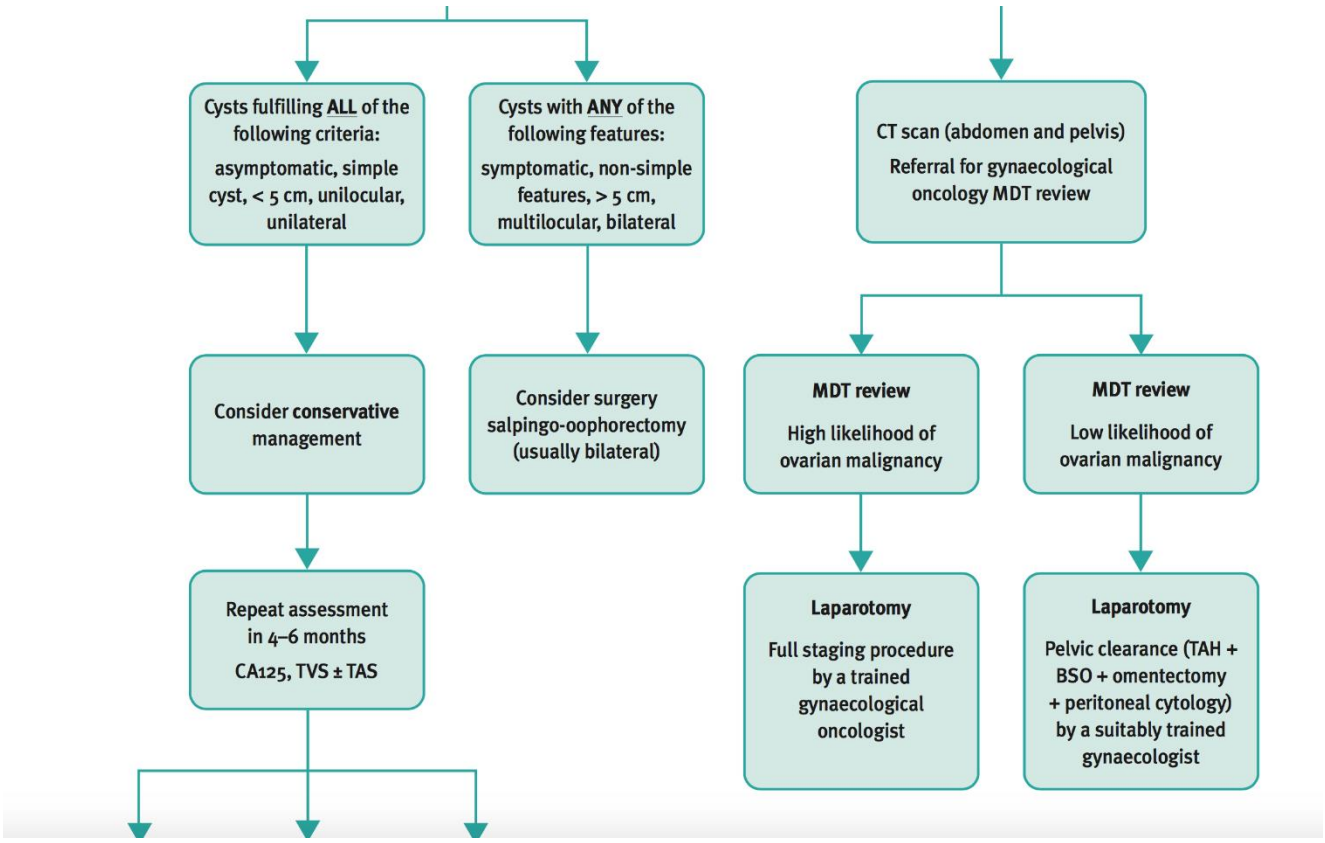
Cyst in a post menopausal woman is a tumour until proven otherwise

Symptoms :
- **B**loating
- **E**arly saiety
- **A**bdominal Distension/Pain
- **T**oilet - Urinary frequency

Incidence is approx between 4 – 17%
Can be detected incidentally

History
Full examination inc pelvic
USS
Bloods – CA 125
CT TAP/MRI

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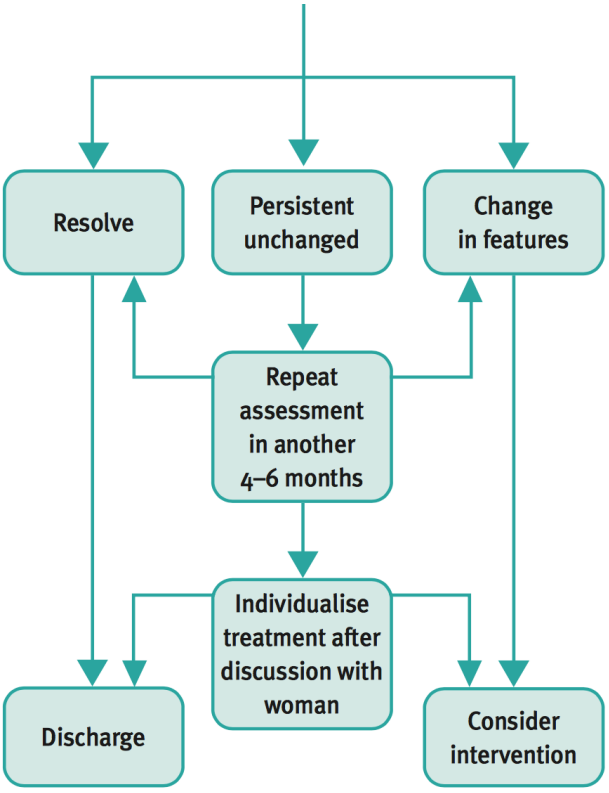

Resolve
Persistent unchanged
Change in features
Repeat assessment in another 4–6 months
Individualise treatment after discussion with woman
Discharge
Consider intervention

Ovarian Torsion

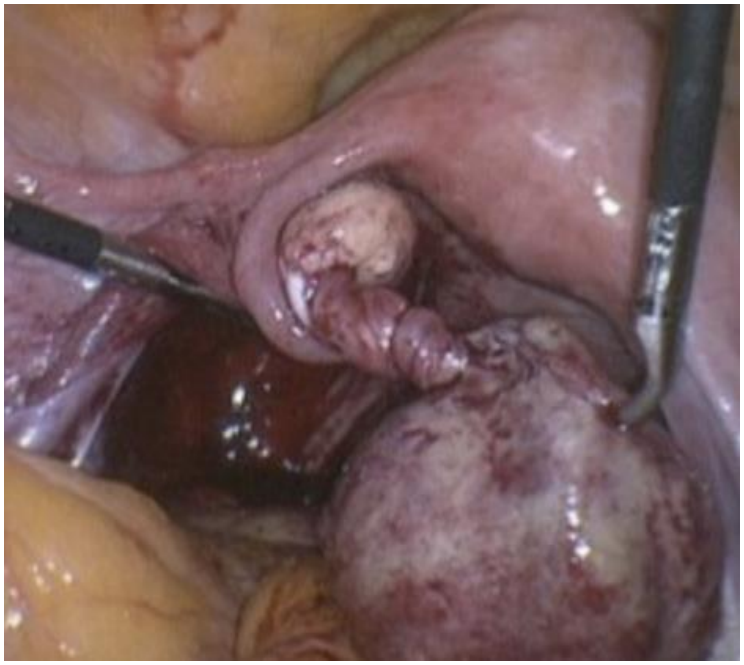
- Ovarian Torsion is where the ovary twists on itself stops it's blood supply, goes septic/black and dies . . . . . .
- And if untreated the patient goes septic/black and dies!

• Patients with ovarian torsion often present with sudden onset of sharp and usually unilateral lower abdominal pain

• %70of cases accompanied by nausea and vomiting

• Raised WCC & CRP

• Pain out of proportion with the physical findings.(minimal tenderness and guarding)



USS findings

• Doppler :

• Little or no intra-ovarian venous flow. This is commonly seen in ovarian torsion.

• Absent arterial flow. This is a less common finding in ovarian torsion

• Absent or reversed diastolic flow

• Other USS features include:

1. Enlarged hypoechogenic or hyperechogenic ovary
2. Peripherally displaced ovarian follicles
3. Free pelvic fluid. This may be seen in more than 80% of cases
4. *Whirlpool sign* of twisted vascular pedicle
5. Underlying ovarian lesion can often be found
6. Uterus may be slightly deviated towards the torted ovary.

Pap smear & cervical cancer

Cervical neoplasia

- **Presentation:** Premalignant lesions are **asymptomatic**.
- The progression from premalignant to invasive cancer has been reported to be approximately 8–10 years.
- Most lesions will spontaneously regress; others remain static, with only a minority progressing to cancer.

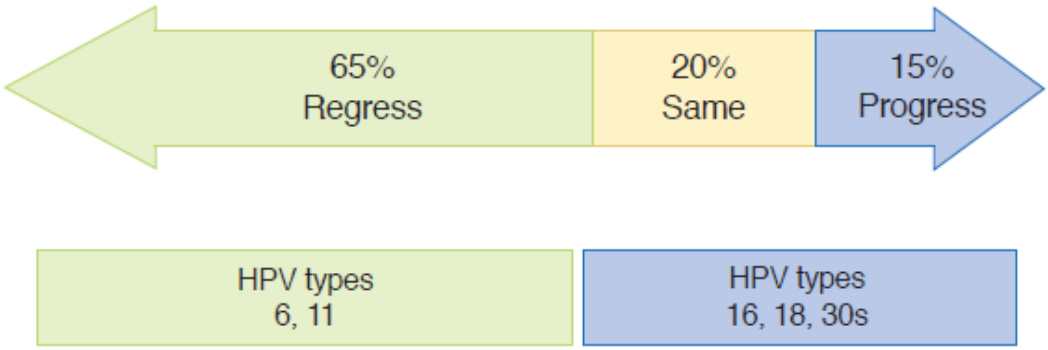


Figure II-4-2. Natural History of Cervical Dysplasia: Response to HPV types

- **Etiology:** The **most common** etiology of cervical cancer is the human papilloma virus (HPV). HPV **16, 18, 31, 33,** and **35** are the **most common.** HPV **6** and **11** are the **most common** HPV types associated with benign condyloma acuminata.
- **Risk Factors:**
  1. early age of intercourse
  2. multiple sexual partners
  3. cigarette smoking
  4. Immunosuppression.

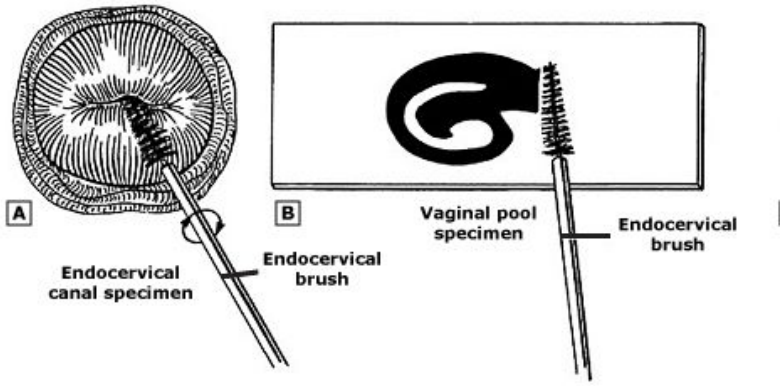
Pap smear

- The best screening test for premalignant lesions is **pap smear cytology**.
- The **most common** site for cervical dysplasia is the transformation zone (T-zone).
- Two specimens are obtained with the Pap smear: an ectocervical sample performed by scraping the T-zone with a spatula, and an endocervical sample obtained with a cytobrush in the non pregnant woman or a cotton-tip applicator in a pregnant woman.
- **screening methods:**
- **Conventional method**, the specimens are smeared onto a glass slide, which is placed in fixative and then microscopically examined.
- **Thin-layer, liquid-based cytology**, the specimens are rinsed into a preserving solution and are then deposited on a slide as a thin layer of processed cells.
- Both methods are equivalent for cancer screening but the liquid-based method has the advantage of doing reflex HPV-DNA typing.

Pap test Ayre spatula

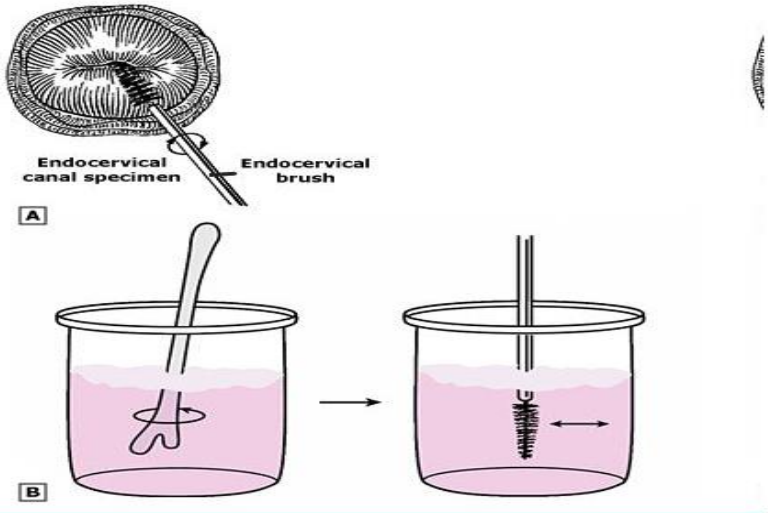
Close up view of cross section of upper vagina and cervix with wooden or plastic spatula pressed against cervix, longer end introduced slightly into os. Arrow indicates rotation to obtain ectocervical sample.

Conventional Pap smear



A) Obtaining endocervical portion of Pap smear. B) Smearing specimen on slide.

Liquid-based cervical cytology



A) Obtaining endocervical portion of Pap test. B) Placement of specimens in liquid collection medium.

- Pap smear should be started at:
- **Age <21**: no Pap test or screening for HPV, regardless of sexual activity
- **Age 21***:* Start Pap test with cytology alone without HPV testing; the recommendation is the same whether HPV vaccinated or not.
- The frequency of recommended Pap smear:
- **Age 21–29**: repeat Pap every 3 years with cytology alone
- **Age 30–65**: repeat Pap every 3 years with cytology but no HPV testing **OR** repeat Pap every 5 years if both cytology and HPV testing (the recommended option in this age group)
- Pap smears should be discontinued:
- **After age 65** if negative cytology and/or HPV tests for past 10 years **AND** no history of CIN 2, CIN 3 or cervical carcinoma
- **Any age** if total hysterectomy **AND** no history of cervical neoplasia.

Pap smear classification

- The **Bethesda system** is the current classification used in the United States.
  1. Negative (for intraepithelial lesion or malignancy; comments may report trichomoniasis, candida, BV, HSV, or atrophy)
  2. Abnormal squamous cells
  3. Abnormal endocervical cells
- **Abnormal squamous cells** (99% of abnormal Pap smears):
- **ASC-US (atypical squamous cells of undetermined significance):** changes suggestive of but not adequate to label LSIL
- **LSIL (low-grade squamous intraepithelial lesion):** biopsy is expected to show histologic findings of HPV, mild dysplasia, or CIN 1
- **ASC-H (atypical squamous cells can't rule out HSIL):** changes suggestive of but not adequate to label HSIL
- **HSIL (high-grade squamous intraepithelial lesion):** biopsy is expected to show histologic findings of moderate–severe dysplasia, CIN 2, CIN 3, or CIS
- **Squamous cell carcinoma**: biopsy is expected to show histologic findings of invasive cancer.
- **Abnormal endocervical cells** (1% of abnormal Pap smears):
- **AGC-NOS (atypical glandular cells, not otherwise specified)**
- **AGC-neoplastic (atypical glandular cells, can't rule out neoplasia):** changes suggestive of but not adequate to call AIS or cancer
- **AIS (adenocarcinoma in situ)**
- **Adenocarcinoma**

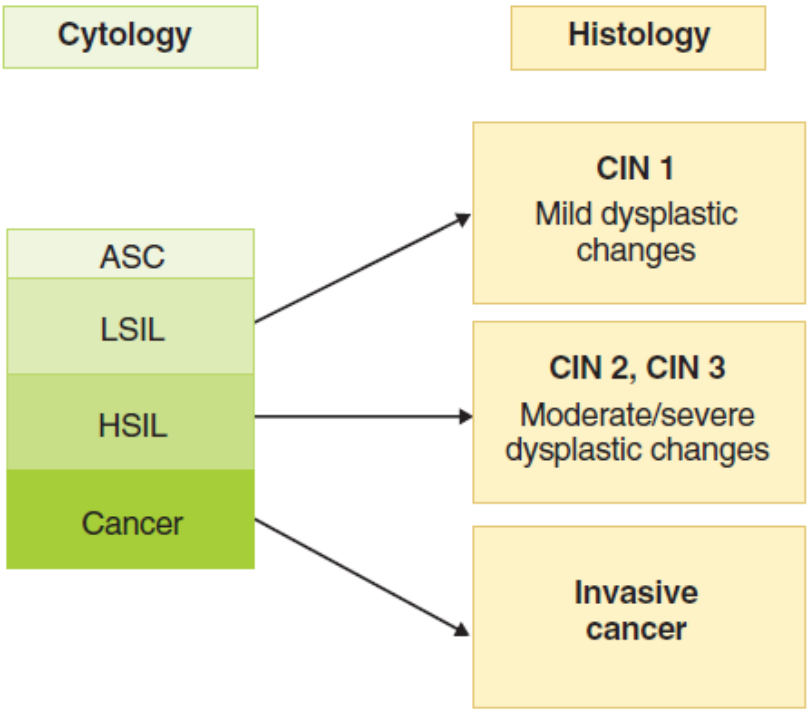


Figure II-4-3. Classification of Cervical Dysplasias

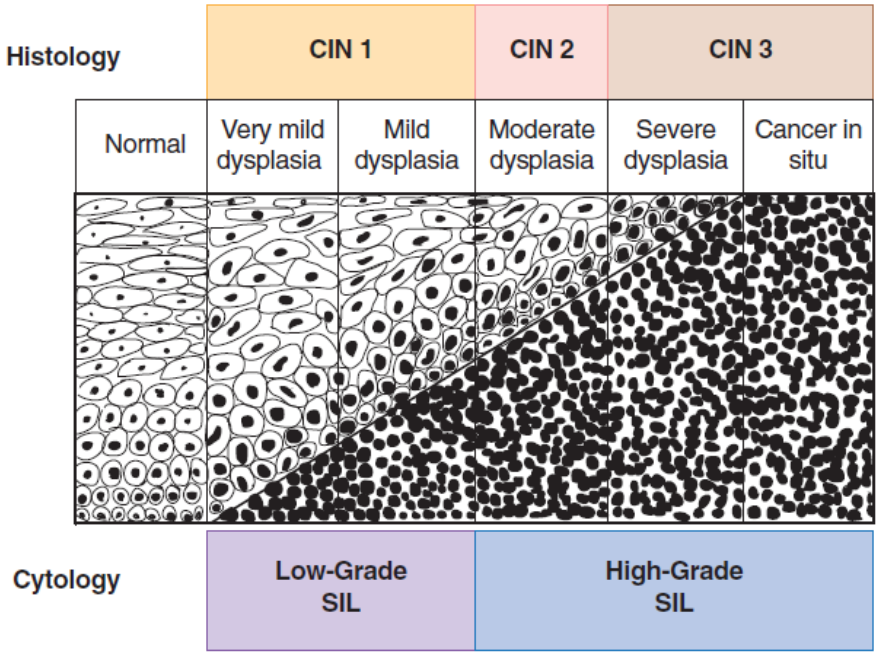
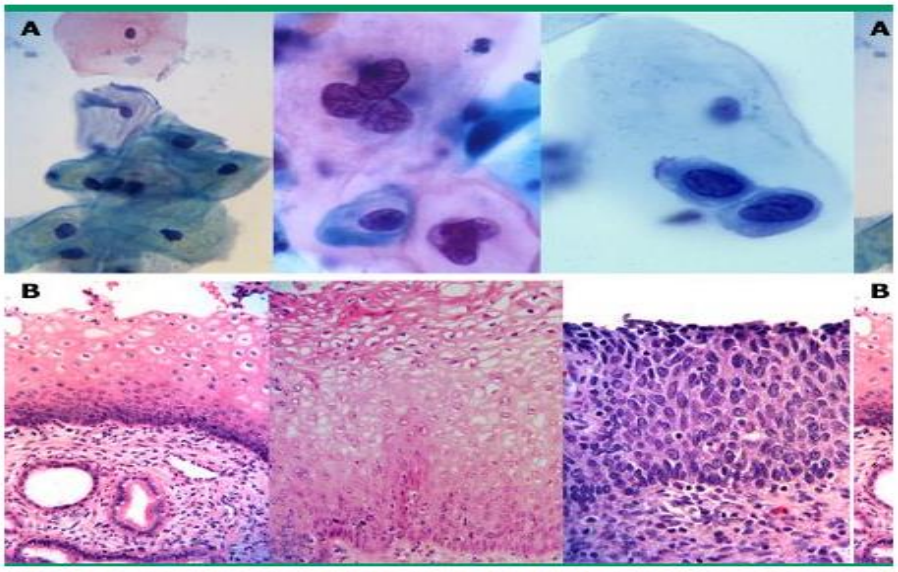


Figure II-4-4. Histologic Appearance of Cervical Dysplasia with Progressive Severity

Comparison of normal, low grade and high grade lesions by cervical cytology findings and histology from colposcopically directed biopsies



A) Normal, low grade and high grade cervical cytology. B) Cervical intraepithelial neoplasia I, II, III.

Diagnostic approach to abnormal Pap smear

1. **Accelerated repeat Pap.** ASC-US in patients of any age, but preferred option with either ASC-US or LSIL in patients ages 21-24.
   • Repeat the Pap in 12 months.
   • If repeat cytology is negative, repeat Pap in another 12 months.
   • If repeat cytology is anything other than negative, proceed to colposcopy and biopsies.
2. **HPV DNA testing.** ASC-US in patient's age ≥25.It is acceptable but not preferred in patients ages 21-24.
   • If liquid-based cytology was used on the initial Pap, one can use this specimen for DNA testing.
   • If conventional methods were used, repeat a second Pap.
   • Perform colposcopy only if high-risk HPV DNA is identified.
3. **Colposcopy:** LSIL in patients age ≥25, and all patients with ASC-H and HSIL.
   • **Satisfactory or adequate** colposcopy is diagnosed if the entire T-zone is visualized and no lesions disappear into the endocervical canal.
   • **Unsatisfactory or inadequate** colposcopy is diagnosed if the entire T-zone cannot be fully visualized.
4. **Endocervical curettage (ECC):** All nonpregnant patients with unsatisfactory colposcopy will undergo an ECC to rule out endocervical lesions.
5. **Ectocervical biopsy:** Lesions identified on the ectocervix by colposcopy (e.g., mosaicism, punctation, white lesions, abnormal vessels) are biopsied and sent for histology.

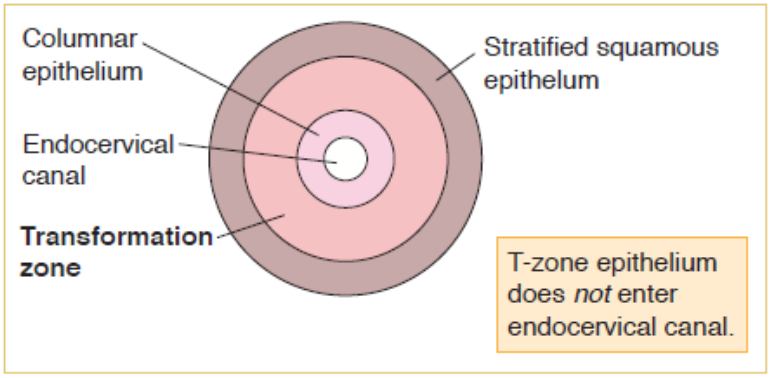


Figure II-4-6.
Cervical Dysplasia: Satisfactory Colposcopy

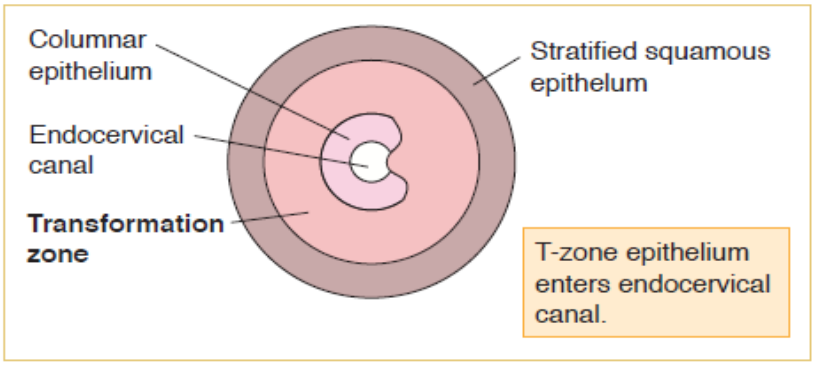


Figure II-4-7.
Cervical Dysplasia: Unsatisfactory Colposcopy

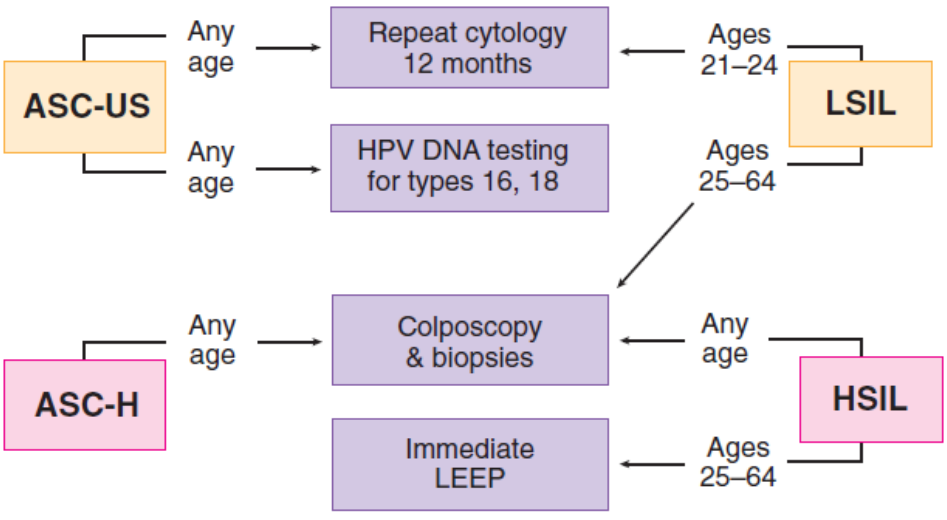


Figure II-4-5. Diagnostic Options for Abnormal Pap Smear (2013)

Diagnostic approach to abnormal pap smear

- **Compare Pap smear and biopsy.** When the biopsy histology is complete, it is compared with the level of Pap smear abnormality to ensure the level of severity is comparable.
- **Cone biopsy:**
  1. If the Pap smear is worse than the histology (suggesting the site of abnormal Pap smear cells was not biopsied), then a cone biopsy is performed.
  2. Abnormal ECC histology.

Management according to histology

- Observation is appropriate for CIN 1 and include any of the following: repeat Pap in 6 and 12 months; colposcopy and repeat Pap in 12 months; or HPV DNA testing in 12 months.
- Ablation can be used for CIN 1, 2, and 3. These include cryotherapy (freezing), laser vaporization, and electrofulguration.
- Excisional procedures can be used for CIN 1, 2, and 3. These include LEEP (loop electrosurgical excision procedure) or cold-knife conization.
- Hysterectomy: biopsy-confirmed recurrent CIN 2 or 3.
- **Follow-Up.** Patients treated with either ablative or excisional procedures, repeat Pap smears, colposcopy and Pap smear, or HPV DNA testing every 4 to 6 months for 2 years.

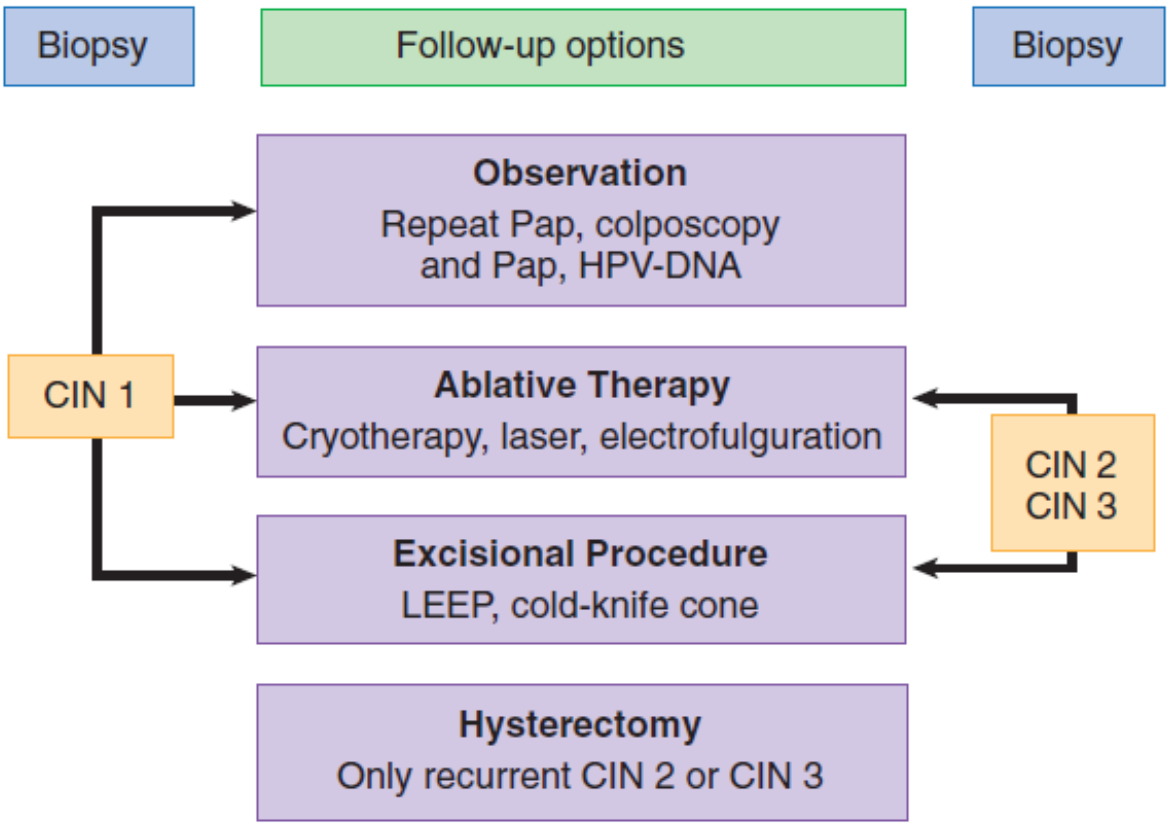


Figure II-4-8. Cervical Dysplasia: Management According to Histology

Invasive cervical carcinoma

• **Presentation:** Patients with invasive cervical cancer can present with postcoital vaginal bleeding, irregular vaginal bleeding and, in advanced stage, lower extremity pain and edema.
• **Epidemiology:** Cervical carcinoma is the third most common gynecologic malignancy.
• Mean age at diagnosis of **45 years**.

Diagnostic tests

- **Cervical biopsy:** The initial diagnostic test.
- **Metastatic workup:** pelvic examination, chest x-ray, intravenous pyelogram, cystoscopy, and sigmoidoscopy.
- **Imaging studies:** the only gynecologic cancer that is staged clinically; an abdominal pelvic CT scan or MRI cannot be used for clinical staging.

Staging

- Stage 0: Carcinoma in-situ (CIS). The basement membrane is intact.
- Stage I: Spread **limited** to the cervix. This is the **most common** stage at diagnosis.

Ia1. Invasion is ≤3 mm deep (minimally invasive)
Ia2. Invasion is >3 but ≤5 mm deep (microinvasion)
IB. Invasion is >5 mm deep (frank invasion)

- Stage II: Spread **adjacent** to the cervix

IIa. Involves upper two thirds of vagina
IIb. Invasion of the parametria

- Stage III: Spread **further** from the cervix

IIIA. Involves lower one third of vagina
IIIB. Extends to pelvic side wall or hydronephrosis

- Stage IV: Spread **furthest** from the cervix

IVA. Involves bladder or rectum or beyond true pelvis
IVB. Distant metastasis

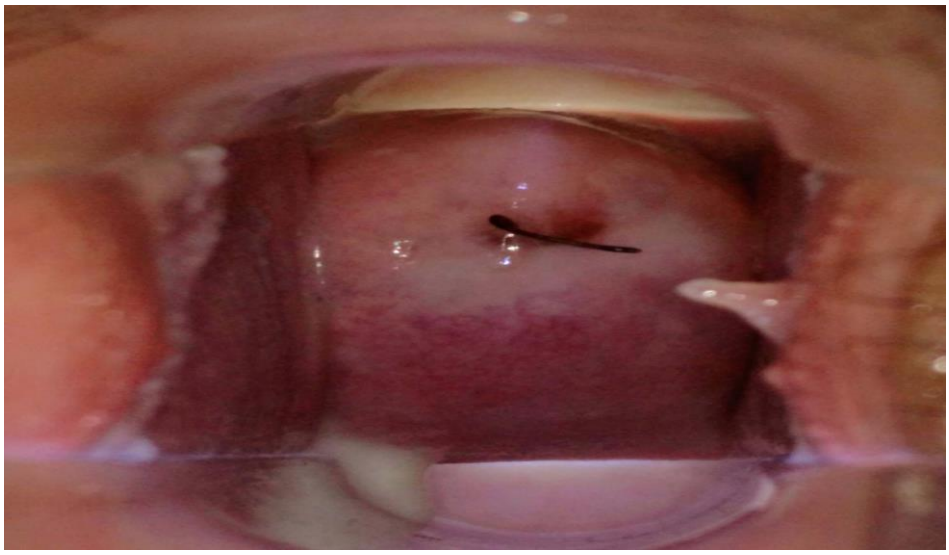
Management

• **Specific by stage:**
• Stage Ia1: Total simple hysterectomy, either vaginal or abdominal
• Stage Ia2: Modified radical hysterectomy
• Stage IB or IIA: Either radical hysterectomy with pelvic and para aortic lymphadenectomy (if premenopausal) and peritoneal washings or pelvic radiation (if postmenopausal).
• Stage IIB, III, or IV: Radiation therapy and chemotherapy for all ages.
• Patients treated surgically are evaluated for risk factors for metastatic disease and tumor recurrence:

1. Metastatic disease to the lymph nodes
2. Tumor size >4 cm,
3. Poorly differentiated lesions
4. Positive margins.

• Patients with these findings are offered adjuvant therapy (radiation therapy and chemotherapy).

Vaginal Discharge



Classification

- Vaginal discharge is a sign/chief complaint, not a diagnosis on its own.
- Vaginal discharge can be physiological in women of child-bearing age and is one of the most common causes. Keep this in mind!
- discharge can be generally divided to:-
  1. **Infectious**: Caused by disruption of normal flora or by a specific infectious entity. The infection may involve the **vagina(vaginitis)** or the **cervix(cervicitis)**. Infectious vaginal discharge can be classified into sexually transmitted and non-sexually transmitted.
  2. **Non-infectious**: e.g. A broad category that includes lots of causes such as physiological, OCP, chemical irritation, dermatitis, foreign body, etc…

Analysis of the vaginal discharge

- History: All components of the history are important in forming your differentials especially **age, character, and associated S/S**
- Physical exam via speculum: visualization of the discharge and its character plus vulvar and vaginal inspection.
- From the history and physical:-
  - Associated signs of vaginitis: vaginal burning sensation,superficial dyspareunia, vaginal/vulvar/perineal erythema and edema, pruritis,
  - Associated signs of cervicitis: Mucopurulent cervical discharge. Cervical erythema and edema, friable cervix on contact,deep dyspareunia

Causes of infectious vaginal discharge in an adult woman

Vaginosis/vaginitis:-

Non-STI
- Bacterial vaginosis
- Vaginal candidiasis
- Aerobic vaginitis

STI
- Trichomoniasis

Cervicitis-:

STI
- Trichomoniasis
- Gonorrhea
- Chlamydia

Vaginosis/vaginitis:

Bacterial vaginosis

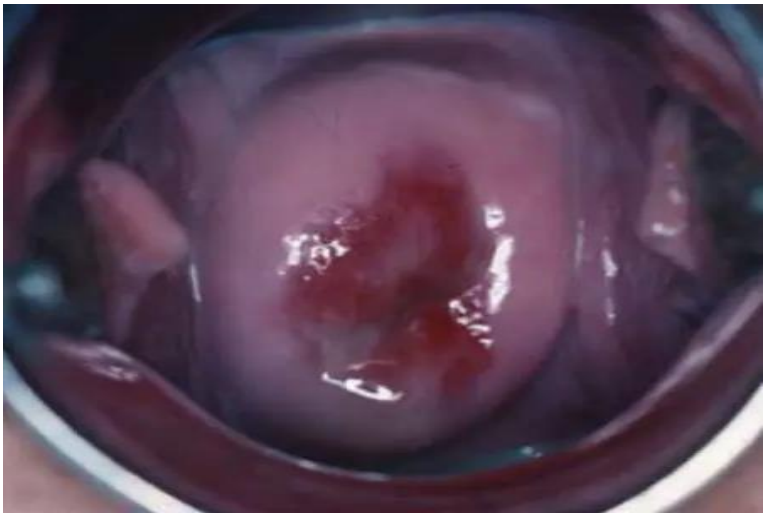
- **Pathophysiology**: Normal flora disruption leading to lower concentrations of **Lactobacillus** lead to overgrowth of **Gardnerella vaginalis** and other anaerobes **No** vaginal epithelial **inflammation** due to **absent immune response**

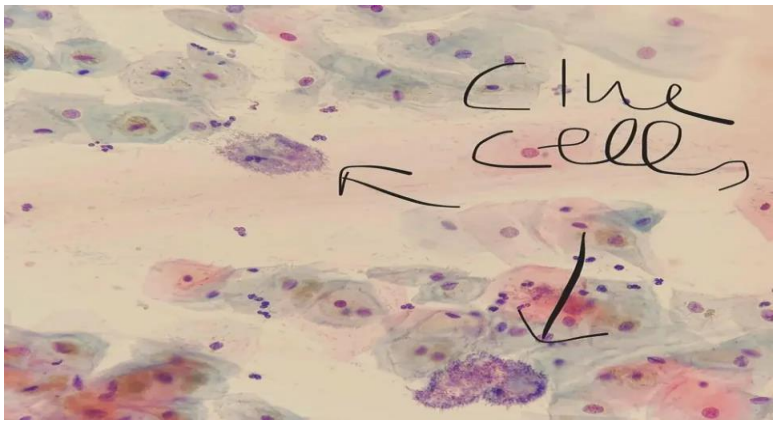
- **Risk factors: Sexual intercourse, vaginal douching, IUCD,smoking,antibiotics**

- **Clinical features:-**
  1. Discharge: **Thin, gray/milky and fish-smelling**
  2. Associated S/S of burning sensation, dyspareunia, etc… are **very uncommon**
- **Investigations: Amsel's criteria(3 out of 4):-**
  1. **Adherent, homogenous greyish white** vaginal discharge
  2. Vaginal **pH>4.5**
  3. Presence of **clue cells** on **wet mount** microscopy
  4. **Positive whiff test** on addition of KOH to the vaginal discharge

- **Treatment:-**
  Anaerobic antibiotics of oral /topical **metronidazole or clindamycin.**
  Advice against **vaginal douching, antiseptics and vaginal shower gels.**
  Male partner doesn't have to be treated

Bacterial vaginosis discharge





Vaginitis: -

Vaginal Candidiasis

- **Pathophysiology**: **Candidal overgrowth** due to vaginal **flora disruption** or **immunosuppression.** vaginal epithelial **inflammation** due to **immune response**

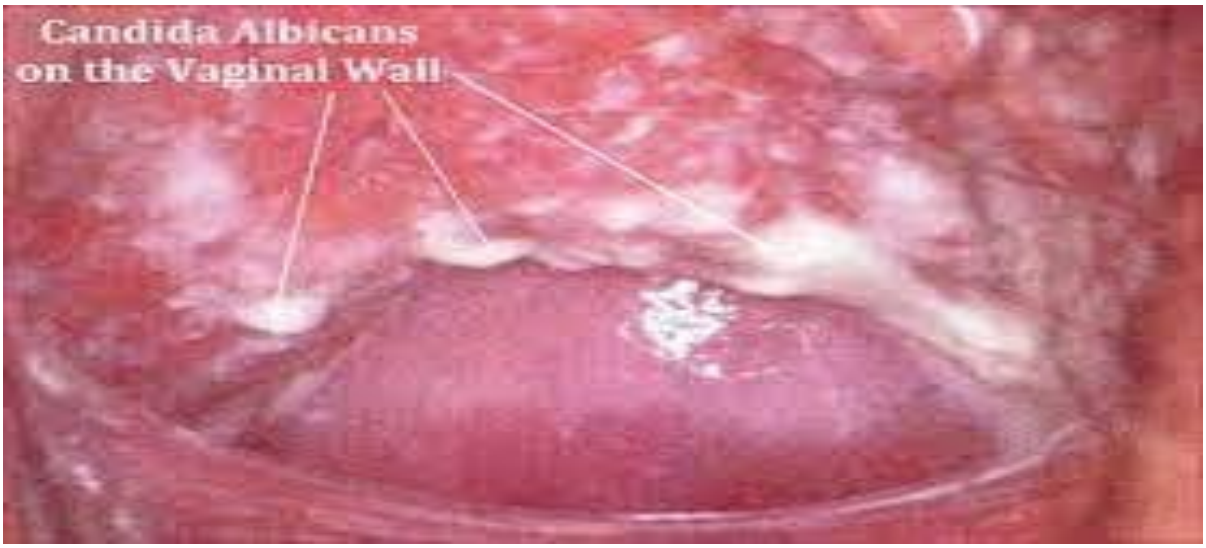
- **Risk factors:Immunosuppression, prolonged antibiotics usage, DM**

- **Clinical features:-**
  1. Discharge: **Thick, cheesy and curdlike, ordorless**
  2. Associated S/S of burning sensation, dyspareunia, etc… are **present**

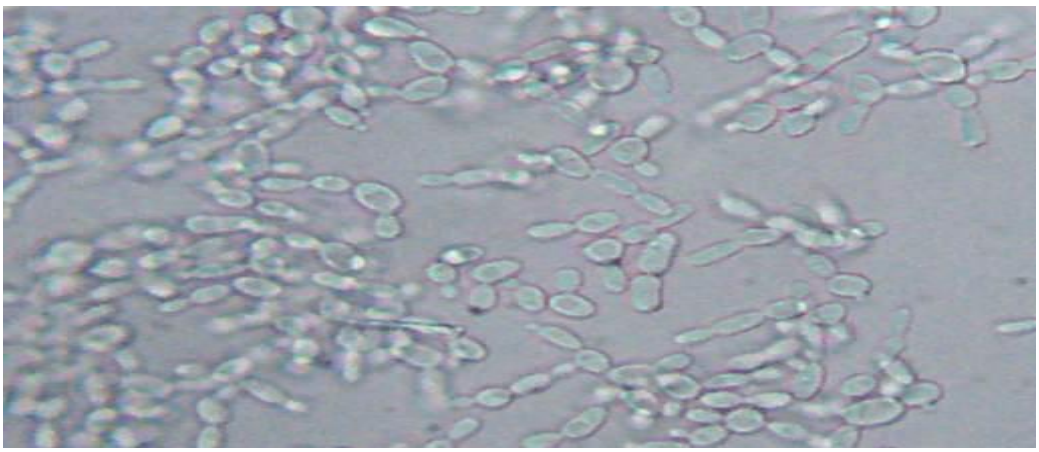
- **Investigations:-**
  High vaginal swab for:-
  1) **Wet mount microscopy with KOH: (+) result is Presence of pseudohyphae/budding yeasts. Presence of WBC is a general sign for infection**
  2) **Suboaraud agar culture: (+) result is candida growth**
  3) **pH test would show normal vaginal pH of 4.0-4.5**

- **Treatment:-**
  - Oral or intravaginal **antifungals(-azole family and the topical nystatin)**
  - Male partner **doesn't** have to be treated

Vaginal candidiasis discharge



Vaginal candidiasis pseudohyphae



Vaginitis:-

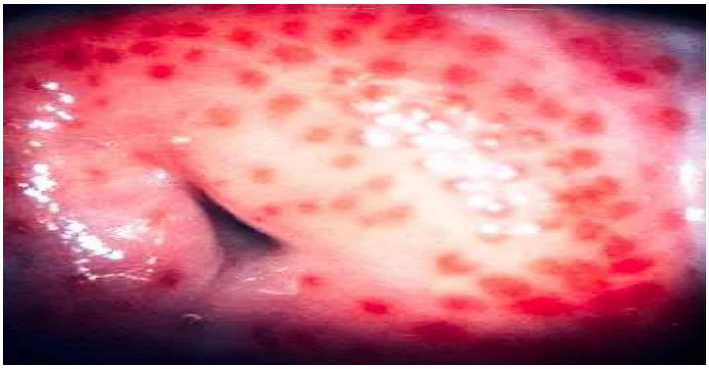
Trichomoniasis

- **Pathophysiology**: **STI caused by anaerobic protozoa trichomonas vaginalis.** vaginal epithelial **inflammation** due to **immune response**

- **Risk factors: multiple sexual partners, unprotected sex.**

- **Clinical features:-**
  1. Discharge: **Very foul smelling! With variable color and consitency**
  2. Associated S/S of vaginitis**: burning sensation, dyspareunia**, etc… are **present.**
  3. Associated S/S of cervicitis: **Very friable Strawberry cervix(specific) , cervical erythema and edema, friable cervix on contact,deep dyspareunia**

Strawberry cervix of trichomniasis



- Investigations: **Wet mount** shows **motile flagellated** organisms

  (+)Giemsa culture

- Treatment: **Metronidazole or tinidazole**

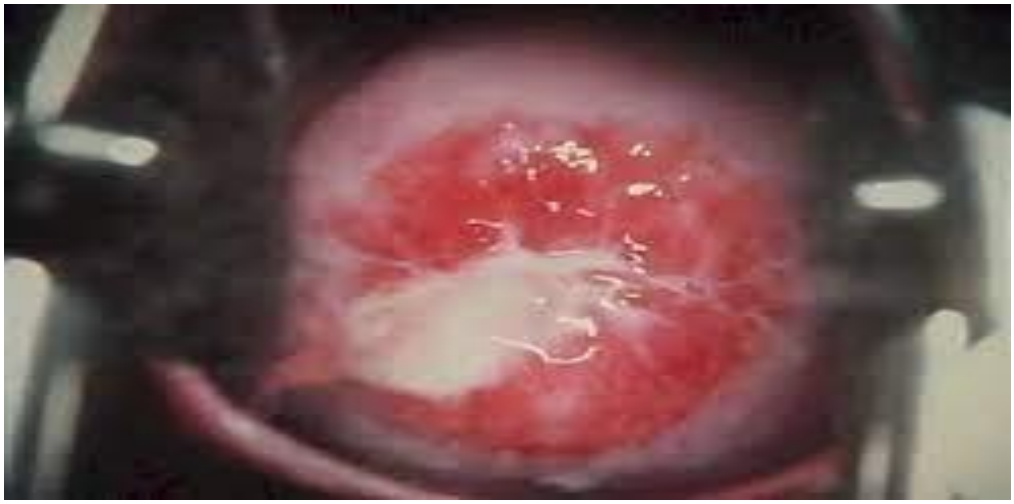
  Male partner has to be treated

Cervicitis:-

Gonorrhea and chlamydia

- **Pathophysiology: STI** caused by the gram negative diplococcus **Neisseria gonorrhea** and the gram negative intracellular **chlamydia trachomatis**
- **Risk factors: multiple sexual partners, unprotected sex.**
- **Clinical features: Mucopurulent discharge, cervical erythema and edema, friable cervix on contact, deep dyspareunia.**
  May extend to become PID with its S/S
- **Investigations: Nucleic acid amplification tests**
- **Treatment: Ceftriaxone and azithromycin. Treat sexual partner**

Mucopurulent cervix of **gonorrhea and chlamydia**



Causes of non-infectious vaginal discharge in an adult woman

Cause	Features
Physiological(Due to menstrual cycle variation or pregnancy)	• **Very common** • **Excessive vaginal discharge with no inflammation** • **Discharge clear or white** • **Non-offensive** • **Variation during menstrual cycle**
OCP	Same features as above
Atrophic vaginitis	After menopause due to decreased estrogen:- Vaginal discharge with non-specific associated symptoms such as thinning and atrophy.
Endometrial or cervical polyp or malignancy	• Discharge that may be **bloody** and **foul**
Foreign body	• **Recurrent** vaginal discharge that may be **foul smelling** or **bloody**
Dermatoses	According to underlying dermatological condition

Causes of vaginal discharge in pediatric age groups

Cause	Features
Non-specific bacterial vulvovaginitis(80%)	Discharge is minimal with irritation of perineum and vagina
Infectious(commonly from URT)	Discharge is **profuse** and **offensive**
Foreign body	**Recurrent** vaginal discharge that may be **foul smelling or bloody**
Sexual abuse	**Recurrent** vaginal discharge that may be **bloody** May result in STI for the child!!
tumors	**Recurrent** vaginal discharge that may be **bloody**
Precocious puberty	Same as physiological discharge

Precocious puberty

Precocious puberty is defined as the development of secondary sex characteristics before the age of 8 in girls and 9 in boys.

- Precocious puberty is more common in girls than boys.
- Accelerated bone growth and advanced bone age are also common.

Diagnosis	Female secondary sexual characteristics Accelerated growth <8 years of age in girls	
Normal pubertal landmarks	Thelarche Breast development	9–10 years
	Adrenarche Pubic and axillary hair	10–11 years
	Maximal growth Growth spurt	11–12 years
	Menarche Onset of first menses	12–13 years

Classification of precocious puberty:-

A. Incomplete Precocious Puberty:
- This involves only one change (either thelarche, adrenarche, or menarche).
- This condition is the result of either transient hormone elevation or unusual end-organ sensitivity.
- Management is conservative.

B. Complete Precocious Puberty:
- All changes of puberty are seen including breast development, growth spurt, and menstrual bleeding.
- The primary concern is premature closure of the distal epiphyses of the long bones, resulting in short stature.

- The causes of Complete precocious puberty can be broken into two categories (central and peripheral):-

A. central
- It is the result of premature activation of the hypothalamic-pituitary-ovarian (HPO) axis.
- Therefore, FSH and LH levels are elevated in central precocious puberty.

Causes:
1. Idiopathic:
   - The most common explanation is constitutional without a pathologic process present, accounting for 80% of precocious puberty.
   - The diagnosis is usually one of exclusion after CNS imaging is shown to be normal.
   - Management is GnRH agonist suppression (leuprolide) of gonadotropins until appropriate maturity or height has been reached.

2. CNS pathology:
   o This is a rare cause of precocious puberty.
   o A CNS pathologic process stimulates hypothalamic release of GnRH.
   o This may include hydrocephalus, meningitis, sarcoid, and encephalitis.
   o CNS imaging is abnormal.
   o Management is directed at the specific pathologic process.

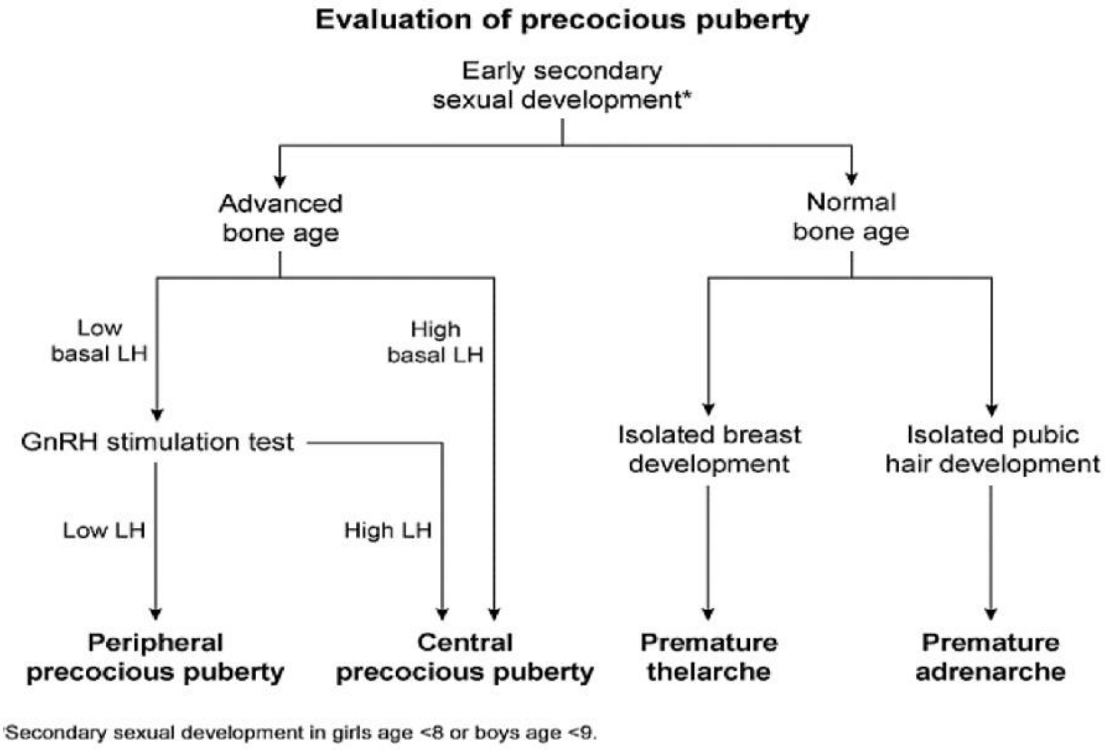
B. **Peripheral precocious** puberty is caused by gonadal or adrenal release of excess sex hormones.
- Patients with peripheral precocious puberty present with low FSH and LH levels.

- Causes:-
1. McCune-Albright syndrome:
   o This disorder is characterized by autonomous stimulation of aromatase enzyme production of estrogenby the ovaries.
   o Management is administration of an aromatase enzyme inhibitor.

2. Granulosa cell tumor:
   o A rare cause of precocious puberty is a gonadal-stromal cell ovarian tumor that autonomouslyproduces estrogen.
   o A pelvic mass will be identified on examination or pelvic imaging.
   o Management is surgical removal of the tumor.

3. Congenital adrenal hyperplasia (21, 17 hydroxylase enzyme deficiency).

4. Exogenous testosterone.



Treatment:

- Precocious puberty is an important medical and psychosocial issue, as affected children appear different than their peers and physical changes precede emotional maturity.
- The primary treatment option for idiopathic GDPP is GnRH agonist therapy to prevent premature epiphyseal plate fusion and maximize adult height potential.

Management of Precocious Puberty

Idiopathic	GnRH agonist
CNS lesions	Medical or surgical treatment
Ovarian tumor	Surgical excision
McCune-Albright	Aromatase inhibitors

Endometrial cancer

- **Definition:** Tumor arising from Endometrial glands
- **Epidemiology:** the most common gynecologic malignancy, occurring in 1% of women.
- The mean age at diagnosis age 61.
- **Etiology**: unopposed estrogen. This results from excessive hyperstimulation of the endometrium without the stabilizing effect of progesterone.

Pathology

• **Gross appearance**: Localized (endometrial polyp), Diffuse (endometrial thickening)
• **Microscopy**

1. Adenocarcinoma (best prognosis) & commonest
2. Adenoacanthoma (+ benign sq metaplasia)
3. Adenosquamous (+ malignant sq cells)
4. Clear cell ca / papillary cell ca (undifferentiated, poorest prognosis)

• **Grading** :
G I < 5% malignant undiff.cells = best prognosis
G II 5-50% malignant undiff.cells = intermediate prognosis
G III > 50% malignant undiff.cells = poor prognosis

• **Spread** :

1. Direct**:** myometrium / Cx / adnexa / vagina
2. Lymphatic: para aortic / inguinal / paracervical
3. Blood : Lung, bone, liver

Risk Factors

1. Obesity
2. Hypertension and diabetes mellitus (cofactors)
3. Tamoxifen (SERM)
4. Nulliparity
5. Early menarche late menopause
6. chronic anovulation conditions (PCOS), infertility
7. Previous pelvic irradiation
8. Positive family history of breast, ovarian, and to lesser extent colon cancer (BRCA 1,2, Lynch syndrome)

- Smoking! Multiparity And Use of OCP and progesterone are protective factors

Signs and Symptoms

- Symptoms :
  1. Post menopausal bleeding
  2. Offensive discharge (pyometra)

- Signs:
- General: signs of metastasis / anemia / jaundice / virchow's LNs, bone pain, SOB…
- Abdomen: enlarged uterus ± signs of metastasis (ascites: very rare)
- PV & bimanual: enlarged uterus ± adnexal masses

Diagnosis and assessment

- **History:**
- Postmenopausal bleeding or staining (this symptom should be assumed to be caused by carcinoma of the endometrium until proved otherwise), only 10% of PMB have endometrial carcinoma.
- Perimenopausal menstrual irregularities.
- Blood stained vaginal discharge.
- Heavy and irregular vaginal bleeding.
- **Physical examination:**
  - Palpation of supraclavicular and inguinal lymph nodes, abdominal palpation.
  - Gynaecological examination: inspection of vulva, vaginal skin and cervix.
  - Bimanual vaginal examination assesses uterine size, and mobility, state of parametria and adnexa. And bimanual recto-vaginal examination.

Investigations

- Initial screening test for evaluating the endometrium: Either endometrial biopsy or transvaginal U/S.
- **Endometrial sampling:**
  - Pipelle biopsy: office procedure, it is ideal for global lesions but not very sensitive for diagnosing localized structural lesions such as polyps or submucousal leiomyomas. (blind biopsy)
  - D and C under GA
  - Hysteroscopy
- **Transvaginal U/S**: a thin, homogenous endometrial stripe < 5mm can reasonably exclude endometrial carcinoma. A thicker endometrial stripe warrants further assessment with an endometrial sampling.

Other test

- CBC.
- Liver function test.
- Renal function test.
- Chest X ray.
- Pap smear.

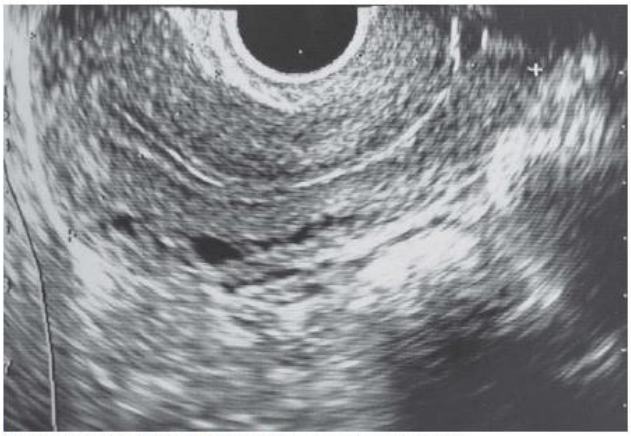


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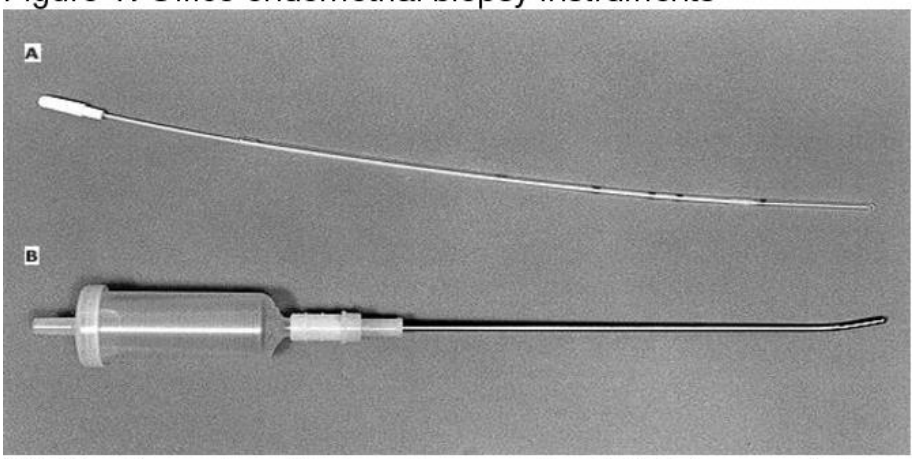
Figure II-4-11. Ultrasonography Demonstrating Normal Endometrial Stripe (<5 mm)

Figure 1: Office endometrial biopsy instruments



(A) Pipelle endometrial suction curette. (B) Vabra aspirator.

FIGO Staging

Staging is surgical, proctoscopy, sigmoidoscopy, cystoscopy, and bone scan when there is a clinical suspicion of metastasis.

- Stage I: Spread **limited** to the uterus (**most common** stage at diagnosis)

IA. Limited to the endometrium or invasion less than half of myometrium

IB. Invasion more than half of myometrium

- Stage II: Extension to the cervix but not outside the uterus
- Stage III: Spread **adjacent** to the uterus

IIIA. Invades serosa or adnexa or positive cytology

IIIB. Invasion of vagina

IIIC. Invasion of pelvic or para-aortic nodes

- Stage IV: Spread **further** from the uterus

IVA. Involves bladder or rectum

IVB. Distant metastasis

Management

• If the endometrial histology sampling reveals atrophy > hormone replacement therapy.

• If the endometrial sampling reveals adenocarcinoma > surgery

• **Surgical therapy:**

- Total abdominal hysterectomy (TAH) and
- Bilateral salpingo-oophorectomy (BSO),
- Pelvic and para-aortic lymphadenectomy, and
- Peritoneal washings.

• **Radiation therapy:** Patients with poor prognosis:

1. Metastasis to lymph nodes
2. >50% myometrial invasion
3. Positive surgical margins
4. Poorly differentiated histology.

- **Chemotherapy:** for metastatic disease.
- Low risk stage I disease (well differentiated) may be treated with a TAH and BSO.
- High risk stage I disease (poorly differentiated) treated surgically with post operative radiation therapy. (as stage 2)
-

Table II-4-4. Endometrial Carcinoma Management

TAH-BSO: Basic Treatment for All Stages		
Stage I	TAH BSO Lymph node dissection	—
Stage II		Radiation
Stage III		Radiation, chemotherapy
Stage IV		

Chapter 2

OBSTETRICS

Booking Visit

Diagnosis of pregnancy

1. **Symptoms**: missed period, nausea and vomiting, breast tenderness, increased skin pigmentation.
2. **Signs**: amenorrhea (Naegle's formula) EDD: LMP + 9months + 7days), enlargement of the uterus.
3. **Investigations**:
   • Quantitative blood test βHCG (on day of missed period)
   • Qualitative blood pregnancy test (+ve / -ve) (2-3 days after missed period)
   • Urinary pregnancy test βHCG (3-5 days after missed period)
   • US (TVS) at 5wks GS GS + yolk sac CRL 6wks (fetus) with pulsations.

- **Booking visit** one of the first interactions with the health services when a woman becomes pregnant.
- You should take a detailed history, examine the woman and perform a series of routine investigations in order that appropriate care can be offered.
- Once this baseline information is established, there is no need to go over this information at every visit.

Booking visit and first trimester tests

1. **Body mass index**: Women with raised BMI have more complications during pregnancy.
2. **General pregnancy dietary advice**: avoid snacks, Eat fibre-rich foods, eat starchy foods, plenty of fluids, Dieting in pregnancy is not recommended.
3. **Blood pressure** assessment: Blood pressure falls by a small amount (a few mmHg) in the first trimester and increases to pre-pregnancy levels by the end of the second trimester. Allows the detection of previously unrecognized chronic hypertension.

4. **Urine tests:**
   • **Culture**: for asymptomatic bacteriuria (ASB), if left untreated may progress to pyelonephritis.
   • **Urinalysis**: performed every antenatal visit, screen for protein (preeclampsia) and nitrites (UTI) (if positive nitrites send for microscopy and culture).

5. **Full blood count:**
   - **Hemoglobin** and hematocrit: Normal pregnancy hemoglobin reference range is 10–12 g/dL. Allow you to detect anemia and treat early.
   - **MCV**: Because hemoglobin and hematocrit reflect pregnancy dilution, MCV may be the most reliable predictor of true anemia. A low MCV (<80μm3) most commonly suggests iron deficiency. High MCV (>100) suggests folate deficiency or vitamin B12 deficiency.
   - **Platelet count**: A low platelet count (<150,000/mm3) is most likely indicative of pregnancy-induced thrombocytopenia, Preeclampsia with severe features, idiopathic thrombocytopenic purpura (ITP), and DIC.
   - **Leukocyte count:** White blood cell count in pregnancy is normally up to 16,000/mm3. Leukopenia suggests immune suppression or leukemia.

6. **Blood group:** to identify rhesus D-negative women through **Direct Coombs test, and** Isoimmunization is identified if atypical antibodies are present by **Indirect Coombs test.**
7. **Infection screen**: hepatitis B, HIV (if hepatitis B positive), syphilis, cervical cultures for chlamydia and gonorrhea, rubella status (if IgG positive she is immunized).
8. **Dating ultrasound**: Accurate dating through first trimester ultrasound is key to avoiding issues later in pregnancy such as incorrect identification of growth restriction and postdates pregnancy. First trimester ultrasound also enables early identification of multifetal pregnancies, screening for trisomies, and fetal gross anomalies.

Second trimester tests

- **Mid trimester US (also called the 18- to 20-week scan):** fetal anatomy for abnormalities, amount of amniotic fluid.
- **Anomaly scan:** This is a detailed structural scan to detect conditions such as spina bifida, major congenital anomalies (Down), diaphragmatic hernia and renal agenesis:

1. **Maternal Serum α-Fetoprotein (MS-AFP): 15–20 weeks**.
2. **Quadruple Marker Screen:** maternal serum screen for **MS-AFP**, **hCG**, **estriol**, and **inhibin-A**. **15–20 weeks**.
   - This is an elective prenatal test, not a routine one.
   - Elevated AFP: Fetal structural defects (open neural tube defect [NTD] and ventral wall defects), multifetal pregnancy, and placental bleeding.
   - With Down syndrome, levels for **MS-AFP and estriol are decreased**, but **hCG and inhibin-A are, increased**. Perform an amniocentesis for **karyotype.**

Third trimester tests

1. **Gestational diabetes mellitus:**
   - **1-h 50-g oral glucose tolerance test (OGTT)**
   - This **screening** test is administered to all pregnant women between 24 and 28 weeks'.
   - A normal value is <140 mg/dL.
   - If >140 mg/dL then do a 3-h 100-g OGTT.
   - Not necessarily in fasting state.
   - **3-h 100-g OGTT**
   - This is the **definitive** test for glucose intolerance in pregnancy.
   - Normal values are FBS <95 mg/dL, 1 h <180 mg/dL, 2 h <155 mg/dL, and 3 h <140 mg/dL.
   - Gestational diabetes is diagnosed if ≥2 values are abnormal.
   - Impaired glucose intolerance is diagnosed if only 1 value is abnormal.
   - Done in fasting state.

2. **Complete Blood Count:**
   - **Hemoglobin and hematocrit:** iron deficiency, which was not present early in pregnancy.
   - **Platelet count:** Reassessment of pregnancy-induced thrombocytopenia.
   - **Atypical Antibody Screen (indirect coombs test):** to ensure she has not become isoimmunized since her previous negative AAT earlier in pregnancy.

3. US: Amount of amniotic fluid, biophysical profile test, and the position of the fetus.

4. **Group B Strep screening**: vaginal and rectal swabs between 36-37 weeks.

If positive > intravenous (IV) antibiotics during labor and delivery

Early Pregnancy Bleeding (Abortion)

• Definition:

Bleeding that occurs before 12 weeks' gestation.

- The most common cause of early pregnancy loss is **fetal in origin.**
- **Abortion** Most common cause of early Pregnancy bleed.
- Speculum examination is essential to rule out **vaginal or cervical lesions** that are causing bleeding.
- **Molar** and **ectopic pregnancy** should be ruled out in all patients with early pregnancy bleeding.

Abortion / Early Pregnancy loss / miscarriage

Definition:
Expulsion of Products of conception (POC) **before** age of viability < 24 weeks.

Incidence: **15** % of all pregnancies.

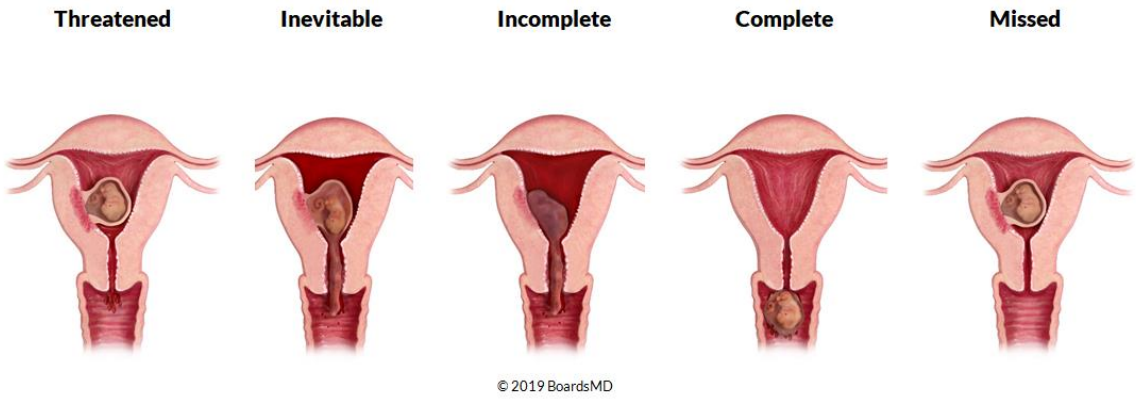
Causes:

1st trimester:
Chromosomal abnormalities "most common"
Endocrine abnormalities "DM, Thyroid dysfunction, Corpus luteal insufficiency".

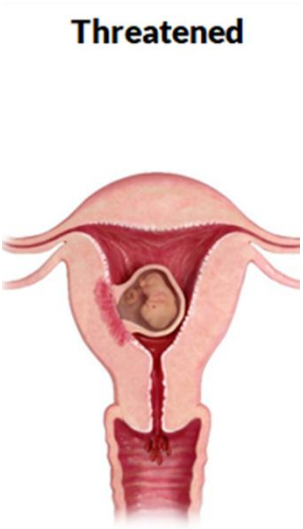
2nd trimester:
Cervical incompetence
Infections
Uterine anomalies.
Sub-mucous fibroid.

Types

1- Threatened
2- Missed
3- Inevitable
4- Incomplete
5- Complete Septic

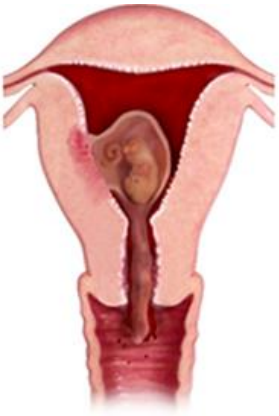


1- Threatened



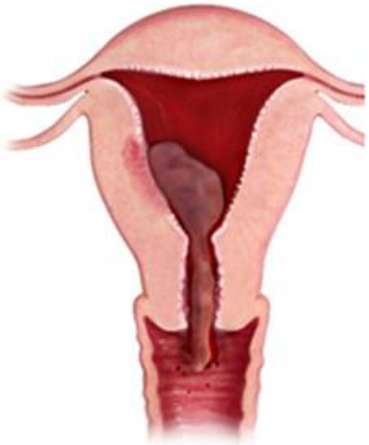
- **C/P :** **Mild** vaginal bleeding ,may be followed by **mild abdominal pain**
- **On Exam** : Good general condition , **closed** cervix , Fundal height is compatible with period of amenorrhea.
- **U/S** : **Fetal heart Present " live "** , You must do U/S to diagnose.
- **Mx. :** Reassurance "Anti D if she is –ve Rh & GA > 12 week"
- **Half** of these pregnancies will **continue to term successfully**

2- Inevitable



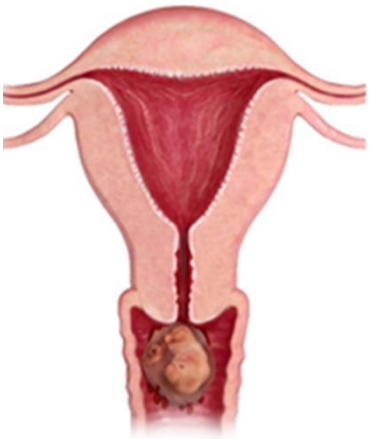
- **C/P :** Heavy Vaginal bleeding without passage of **POC**, Followed by severe abdominal pain
- **On Exam** : **bad** general condition , **Dilated** cervix , **Fundal height is compatible with period of amenorrhea.**
- **U/S** : Fetal heart Variable may be Present
- **Mx. :** Resuscitation , Oxytocic drugs "Ergometrine , PGs , Oxytocin" , E & C and Post abortion management .

3- Incomplete



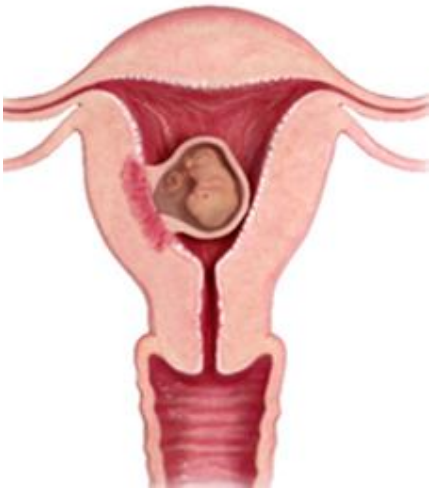
- **C/P :** Heavy Vaginal bleeding with **POC** , Followed by severe abdominal pain
- **On Exam** : **bad** general condition , **Dilated** cervix , **Fundal height is NOT compatible with period of amenorrhea.**
- **U/S** : Fetal heart **Absent.**
- **Mx. :** Resuscitation , Oxytocic drugs "Ergometrine , PGs , Oxytocin" , E & C and **Post abortion management** .

4- Complete



- **C/P :** Heavy Vaginal bleeding with Passage of **POC** , Followed by severe abdominal pain & **every thing has stopped**.
- **On Exam** : **Closed** cervix , **Fundal height is NOT compatible with period of amenorrhea.**
- **U/S** : Empty uterus or Retained POC .
- **Mx. :** IF 1- Empty Uterus → Conservative .
  2- Retained POC → E & C.
  & Post abortion management.

5- Missed "Silent miscarriage"



- **Death of fetus before age of 24 weeks (remaining inside the uterus), incidental finding.**
- **C/P:** Mild Vaginal bleeding, loss of Symptoms of pregnancy, absent fetal movement after 20 weeks.
- **On Exam: Closed** cervix, **Fundal height may be NOT compatible with period of amenorrhea.**
- **U/S**: Necessary for **diagnosis.**
  - **GS > 25 mm without embryo**.
  - **2 Scans 7 days apart at least, Embryo > 7weeks, with no fetal heart.**
- **Investigations:** Hb, Blood grouping & cross match, Coagulation profile "DIC".

Missed "Silent miscarriage" Mx

1- Conservative	2- Active
- Leave the dead fetus **inside the uterus until expelled by itself**. - More risk for DIC if more the 2 weeks, infections & hemorrhage.	- Evacuation of the uterus. Decrease risk for DIC - May be : **A- Medical:** Prefered, can be done at any gestational age, longer time, no anesthesia, no complication of surgery. By Misoprostol "Cytotec" , Vaginally or orally 200 microgram, 2tablets/3 hours, maximum 5 times a day. **B- Surgical :** E & C Only Done < 12 weeks, Shorter time.

6- Septic Abortion

- Most commonly occurs after an **unsterile and/or incomplete procedure for an elective abortion or it may occur on top of Missed or incomplete abortion**.
- **C/P :** It presents with **fever, heavy vaginal bleeding, purulent discharge**, and **uterine tenderness.**
- **U/S :** Retained POC , **Thick** endometrium **.**
- **Causative Organisms : E.Coli , Bacteroides , Strep & Staph .**
- **M.x.: broad-spectrum antibiotics (Cephalosporins & Metronidalzole)** and **surgical evacuation of the uterus (suction curettage)** after 12 hours of Abx..

Post Abortion Management

- **Support** to the patient from the stuff & family.
- Anti D **"if > 12 weeks , if Surgical evacuation done even before 12 wk. "**
- Explain that :
  1- There is **no obvious cause** most of the time, Chromosomal abnormalities.
  2- **Sexual intercourse & bed rest** are not related.
  3- **80%** Rate of successful pregnancy.
  4- Wait **2-3 month to get pregnant.**
  5- Use **Contraceptive method** immediately after the abortion.

Complications of Miscarriage

- **Hemorrhage**, DIC & Increase maternal mortality.
- **Infection** which may lead to adhesions in **infertility.**
- **Rh-isoimmunization**.
- Surgical complications: **Uterine perforation, cervical injury.**
- **Psychological trauma.**

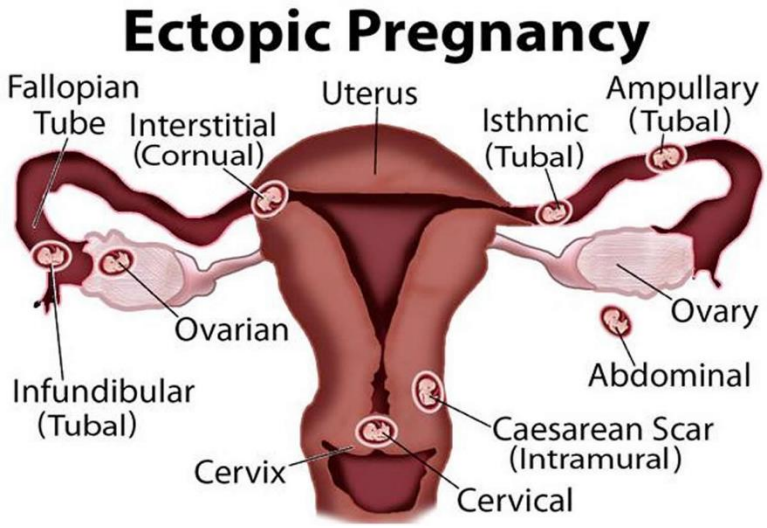
Ectopic Pregnancy

Early Pregnancy Bleeding

• **Definition:**

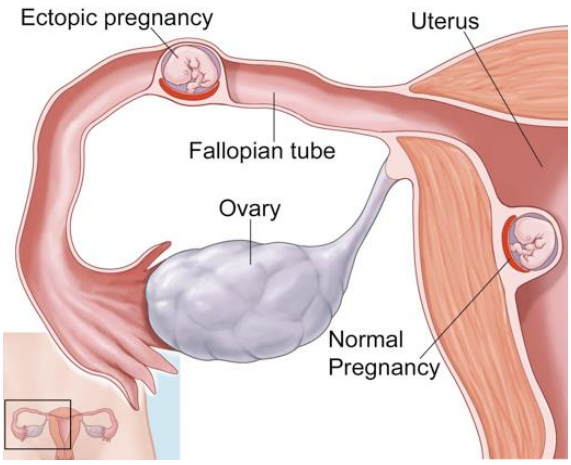
Bleeding that occurs before 24 weeks' gestation.

DDx for Early Pregnancy bleed:
- **Abortion** Most common cause of early Pregnancy bleed.
- Speculum examination is essential to rule out **vaginal or cervical lesions** that are causing bleeding.
- **Molar** and **ectopic pregnancy** should be ruled out in all patients with early pregnancy bleeding.



Ectopic Pregnancy

Definition:
This is a pregnancy in which implantation has **occurred outside of the uterine cavity**.
The most common location of **ectopic** pregnancies is **Fallopian tube**.
The most common location within the **Fallopian tube** is the **distal ampulla.**



Incidence: 1.1 % of all pregnancies.

Risk Factors:
1- **P**revious Ectopic Pregnancy increase risk to15%.
2- **P**elvic inflammatory disease (PID).
3- **P**elvic surgery. (tubal ligation, tubal surgery).
4- **P**regnancy on top of IUS (MIRENA).
5- **O**vulation induction & IVF.

C/P : " Stable or Not !! "
- Classic triad (Abdominal Pain, vaginal bleeding amenorrhea).
- Shock.

O/E:
Abdominal tenderness, Adnexal mass, Cervical excitation (unilateral), normal sized uterus.

If D/C done: Arias Stella: is pathognomonic.
Is a benign change in the endometrium (decidual reaction without villi).

Diagnosis

- The diagnosis of an **unruptured ectopic pregnancy** rests on the results of :
  1- Quantitative serum β-hCG titer.
  2- Trans Vaginal Sonogram (TVS).

- **Trans Abdominal Sonography (TAS)** cannot reliably visualize a gestational sac in **early pregnancy**
  • **Serial B HCG** (**No doubling** after 48 hours).
  • Level of B-HCG with U/S – **Discriminatory zone** " the level of B-HCG at which we have to see Gestational Sac" :

    Sac is visible at B-HCG = **1000-2000 with TVS.**

    Sac is visible at B-HCG = **4500-6000 with TAS.**
  • **U/S: Extra-uterine sac**, **blood** in the **peritoneum** or **pouch of Douglas** .
  • Definitive diagnosis by **Laparoscopy** .

DDx Of Pregnancy of Unknown location

1- Very Early pregnancy.
2- Complete Miscarriage.
3- Early Ectopic Pregnancy.

Repeat B-HCG till discriminatory zone.

Management

• Resuscitation, blood grouping & cross match.

1- Expectant management with serial B-HCG: 1- B-HCG **decreases** or **less than normal.** 2- No **Fetal heart** 3- **Asx**.

2- Medical management → if Stable

- With **Methotrexate** (based on weight)
- Repeat B-HCG at 4^{th} & 7^{th} day.
- Indications for MTX :
  1- GS < 3 cm.
  2- No fetal heart activity.
  3- B-HCG < 5000.
  4- No Contraindication for MTX "liver, bone or kidney diseases."

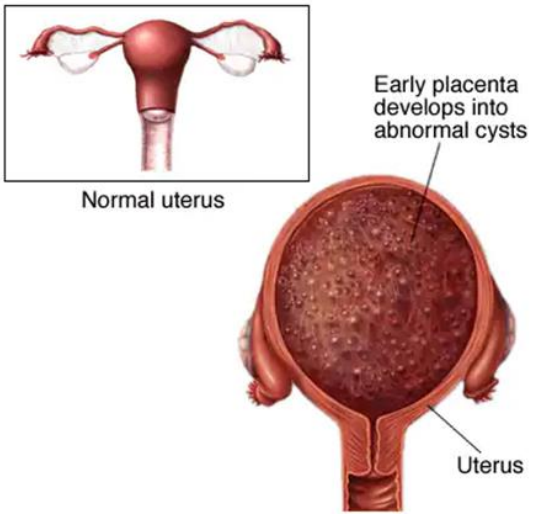
• **Surgical management :**

- **Linear Salpingostomy** (linear incision , removal of the sac & incision closed by Secondary intention or may be sutured) , **When the other tube is unhealthy & damaged.**
- **Salpingectomy** (removal of the whole tube affected). for the patient **with a ruptured ectopic pregnancy or those with no desire for further fertility.**
- **Laparotomy:**
  1- Profuse hemorrhage **(Unstable patient)**
  2- **Certain Locations** (abdominal , cornual (interstitial) , Cervical)
  3- **Inadequate visualization** on Laparoscopy.

Gestational Trophoblastic disease

• **Definition**:

- GTN, or molar pregnancy, is **an abnormal proliferation of placental tissue involving both the cytotrophoblast and/or syncytiotrophoblast.**
- It can be **benign** or **malignant.**
- Malignant GTN can be characterized as either **localized or metastatic** as well as classified into either **Good Prognosis or Poor Prognosis.**



• **INCIDINCE : .15%**

• **Risk Factors:**

Extreme ages , Race " **Asian**" , **H/O of v.mole.**

Complete vs. Partial Mole	
Complete	**Partial**
• (-) Fetal/embryonic tissue • 46XX, 46XY • Diploid • p57-negative	• (+) Fetal/embryonic tissue • 69XXY, 69XYY, 69XXX • Triploid • p57-positive

Classification

- **Benign GTN is the classic hydatidiform mole:**

A. Complete mole:
- Complete mole is **the most common benign GTN.**
- It results from **fertilization of an empty egg** with **a single X sperm** resulting in paternally derived **(androgenetic) normal 46, XX karyotype.**
- **No fetus**, **umbilical cord or amniotic fluid is seen.**
- The uterus is filled with **grape-like vesicles composed of edematous avascular villi.**
- Progression to **malignancy is 20%.**

B. Incomplete mole "Partial Mole":
- Incomplete mole is **the less common benign GTN.**
- It results from **fertilization of a normal egg** with **two sperm resulting in triploid 69, XXY karyotype.**
- **A fetus, umbilical cord and amniotic fluid** is seen which results ultimately in fetal demise.
- Progression to **malignancy is 10%.**

Clinical Findings

- **Symptoms :**
  Vaginal bleeding , **Passage of vesicles** from the vagina**.**
  Other Sx : **hypertension, hyperthyroidism, hyperemesis gravidarum.**

- **Signs:**
  1- Fundus larger than dates
  2- Absence of fetal heart tones
  3- Theca-lutein cysts: Bilateral cystic enlargements of the ovary that are associated with ovarian hyperstimulation **from markedly elevated β-hCG levels.**

Diagnosis

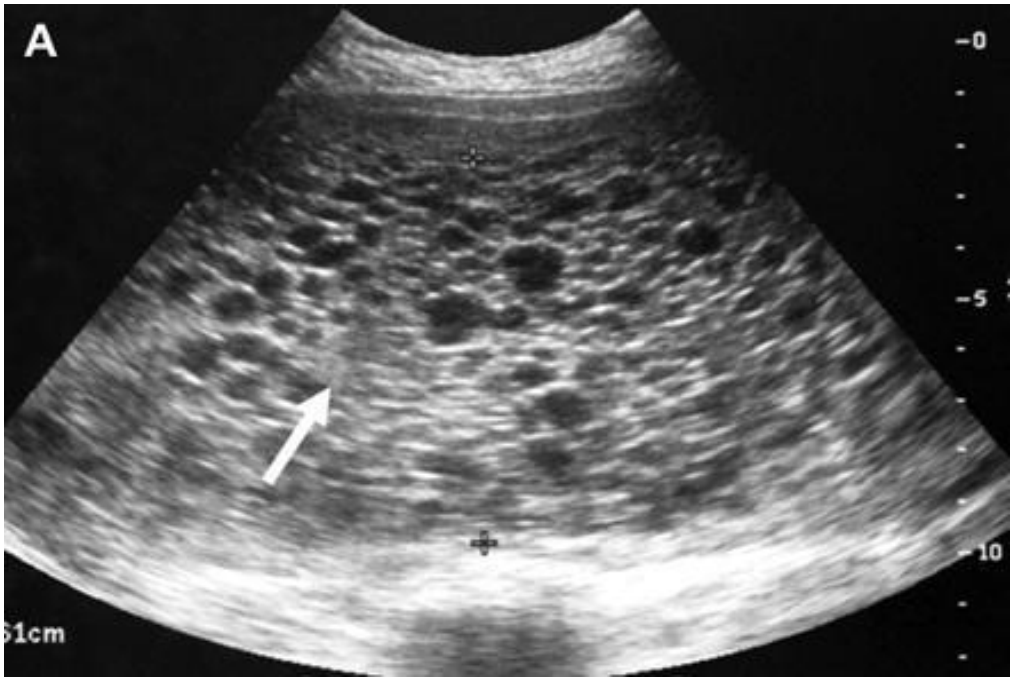
- β- HCG : very high > 50000.

- **U/S :**

Complete hydatidiform mole is an endometrium with a **"snowstorm appearance"** due to **cystic hydropic villi** that create a heterogenous mass.

Additional ultrasound finding may include:
Theca lutein cysts: large, bilateral, multilocular cysts.

Snowstorm Appearance



Management

- **Baseline** quantitative β-hCG titer.
- Chest x-ray to rule out lung metastasis.

Treatment:

1- Suction Evacuation (with ecbolics)

2- Hysterectomy (in old age, not desiring fertility)

- Place the patient on **effective contraception** (oral contraceptive pills) **for 6 months** of the follow-up period to ensure **no confusion between rising β-hCG titers from recurrent disease and normal pregnancy.**
- Treatment is then based on **histology and location of metastasis**

Case Scenario

- **A 23 years old female, presented to you with vaginal bleeding of 3 hours duration after 4 weeks of amenorrhea, How to manage this patient?**

1- History

- **History of Present Pregnancy**
  - LMP Sure dates or not (regular, contraceptives or lactating)
  - **Symptoms** of pregnancy
  - **Diagnosis** of pregnancy
  - Any **previous vaginal bleeding** in this pregnancy

- **History of Present Illness:**
  - **Analysis of bleeding:** Amount, color, clots Severity (symptoms of shock)
  - Associated symptoms (**pain**, **passage of POC**, **shoulder-tip pain, bathroom sign**)
  - **Risk factors for Ectopic pregnancy:** Previous ectopic, pelvic surgery, PID, Pregnancy on top of an IUD or progestin-only pills Ovulation induction or IVF.
- **Past Obstetric history:** Previous abortions (type, GA, D&C) Previous ectopic.
- **Gynecologic history:** History of infertility, Contraceptive history, History of fibroids.

2- Examination

- **General examination & Vital signs**
- **Vaginal examination :**

  1- **Cervical motion tenderness**

  2- Assessment of the **cervix (Dilated or not)**

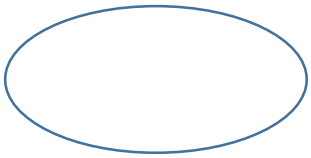
  3- **Any visible source of bleeding**
- **Work-up Blood grouping & cross match for resuscitation**.
- **Monitor vitals , CBC (Hb).**
- **Level of B-hCG**
- **U/S** : (sac present , size, correlation with B-hCG, fetal heart)

Gestational trophoblastic disease

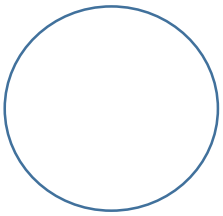
Labor

Anatomy Of the Maternal Pelvis

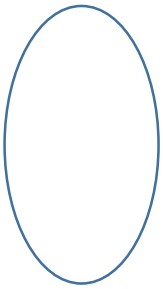
- Inlet 13 x 11 cm

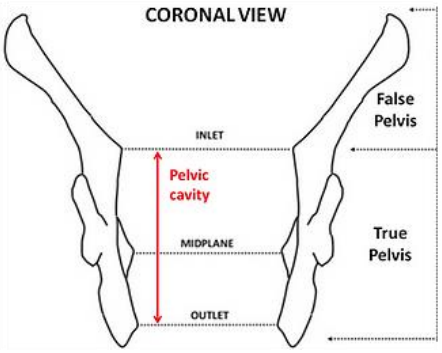


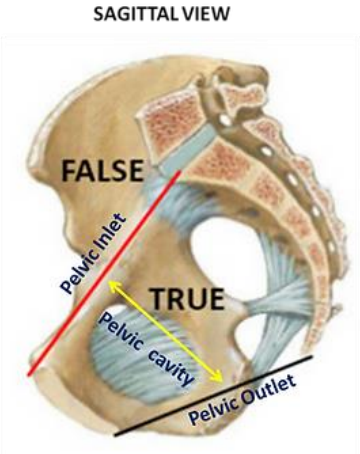
- Mid cavity 12.5 x 12.5 cm



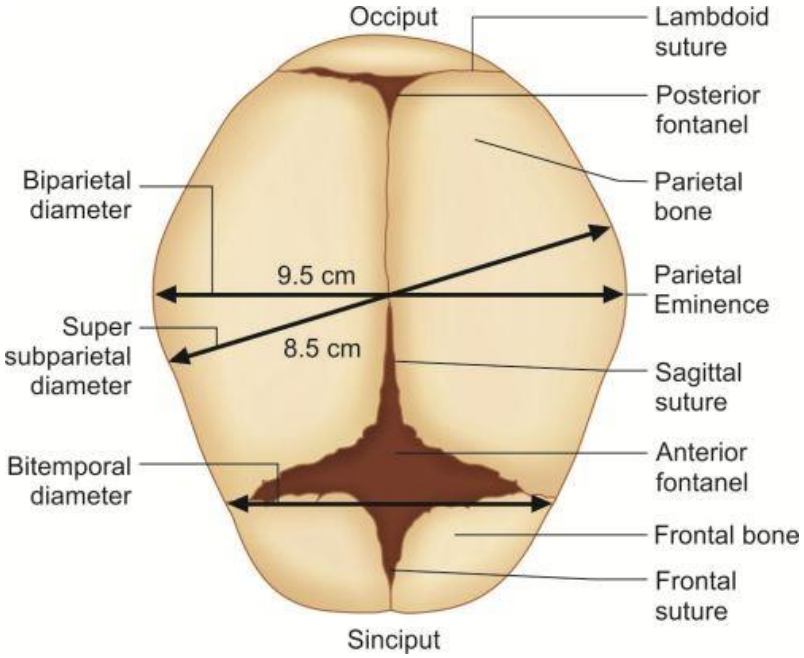
- Outlet 11 x 13 cm

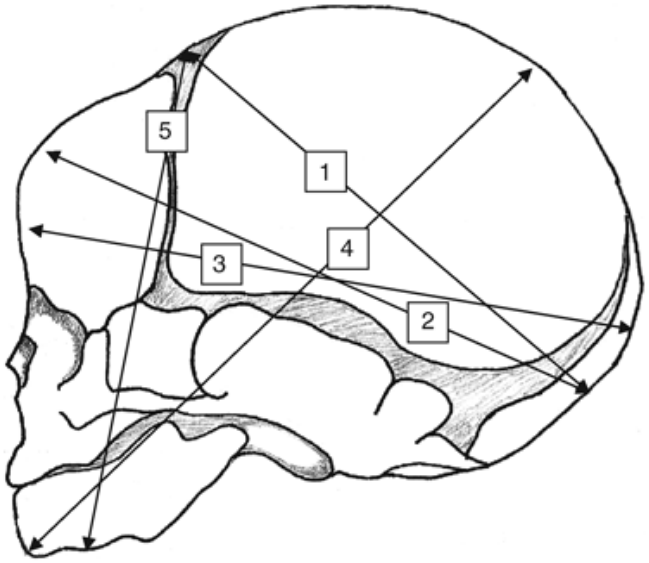






Anatomy Of the Fetus Skull





1. Suboccipito-bregmatic, 9.5 cm
2. Suboccipito-frontal, 10.5 cm
3. Occipito-frontal, 11.5 cm
4. Mento-vertical, 13.5 cm
5. Submento-bregmatic, 9.5 cm

Definitions

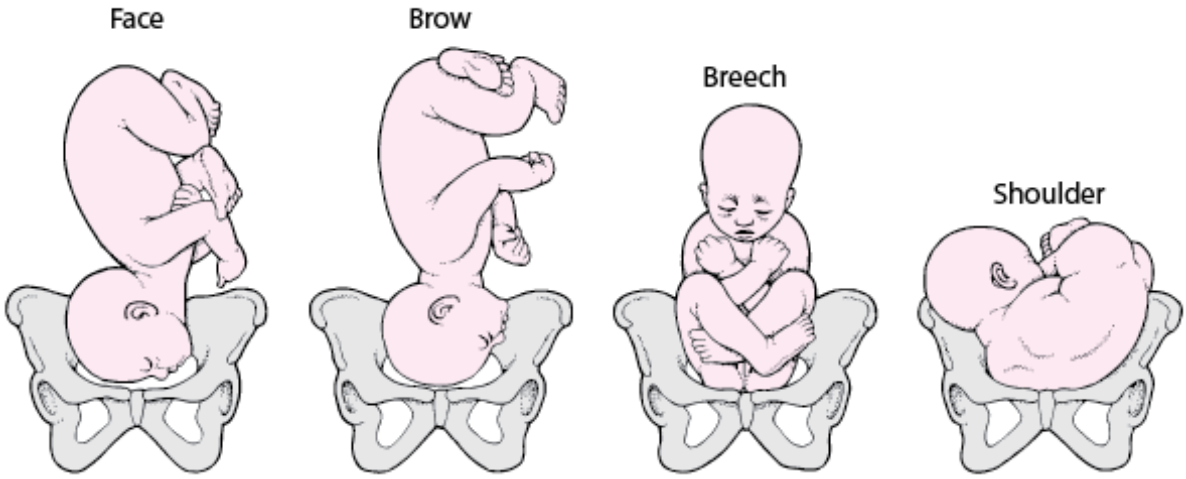
1 - Presentation (presenting part) :

Anatomical part of the fetus which is **occupying the lower pole of the uterus** it may be :

A- **Cephalic** 96% : Vertex 95% , Face 0.5% , Brow 0.1% .

B - **Breech** 3.5%

C - **Shoulder** 0.5%



Cephalic Presentation

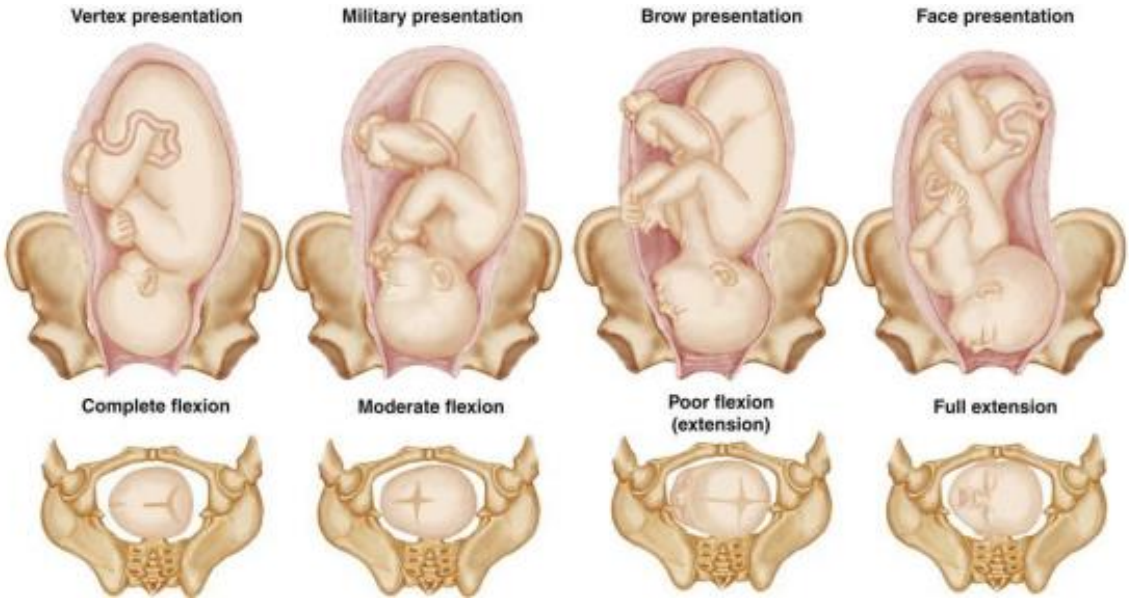
- In Cephalic Presentation you should know what the meaning of **ATTITUDE** is.

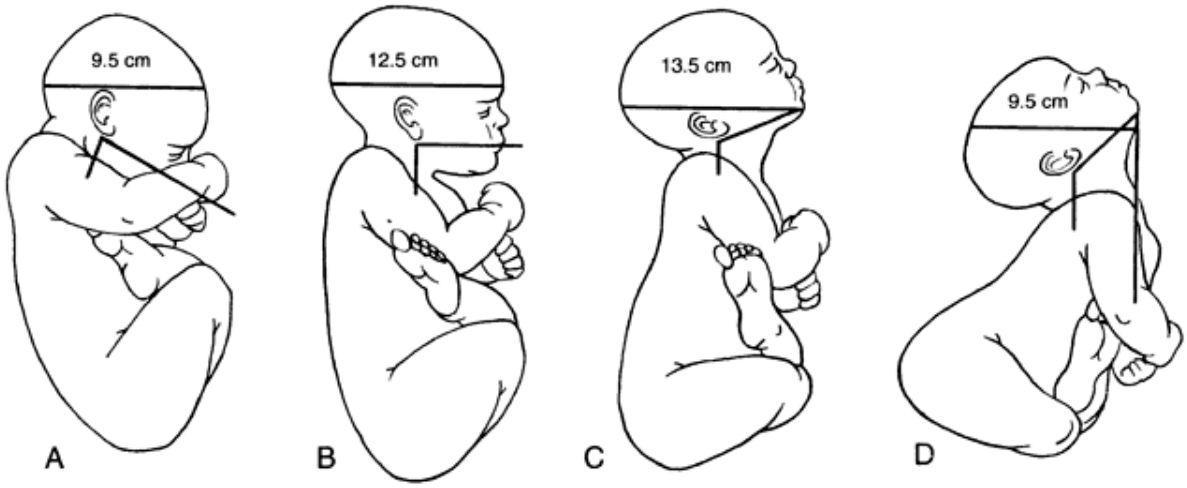
ATTITUDE:

- Degree of extension-flexion of the fetal head with cephalic presentation.

- **Vertex**: head is **maximally flexed**. The most common attitude.
- **Military**: head is **partially flexed**.
- **Brow**: head is **partially extended**.
- **Face**: head is **maximally extended.**

Fetal Attitude





Breech Presentation

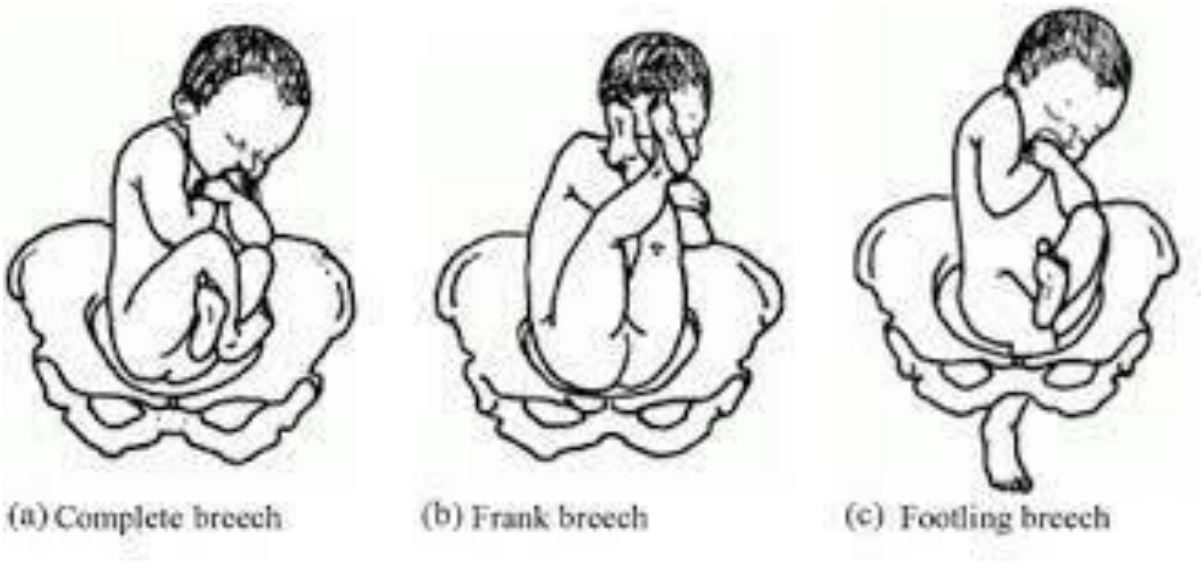
Breech: **feet** or **buttocks** present first.
- The major risk of vaginal breech delivery is **entrapment of the after-coming head.**

Types:

1- Frank **breech:** thighs are **flexed**, and legs **extended**. This is the only kind of breech that **potentially could be safely delivered vaginally.** **65 %**

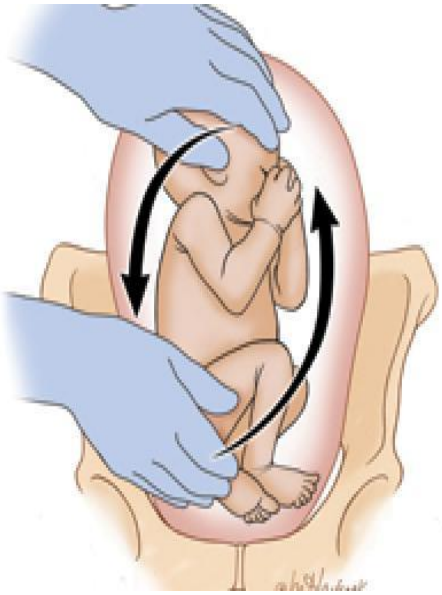
2- **Complete breech**: **thighs** and **legs** **flexed**. **10%**

3- **Footling breech: thighs** and **legs** **extended.**



External Cephalic Vesion

- **Manual conversion of the fetus** to **vertex** presentation so that the patient can labor and potentially **avoid cesarean delivery.**
- Singleton breech fetus with **no contraindications** to :
  1. vaginal delivery (placenta previa, active herpes lesion, prior classical cesarean delivery)
  2. ECV (ruptured membranes, abnormal fetal heart tracing, oligohydramnios) should be offered ECV at >37 weeks gestation and has been shown to reduce the rate of cesarean deliveries.



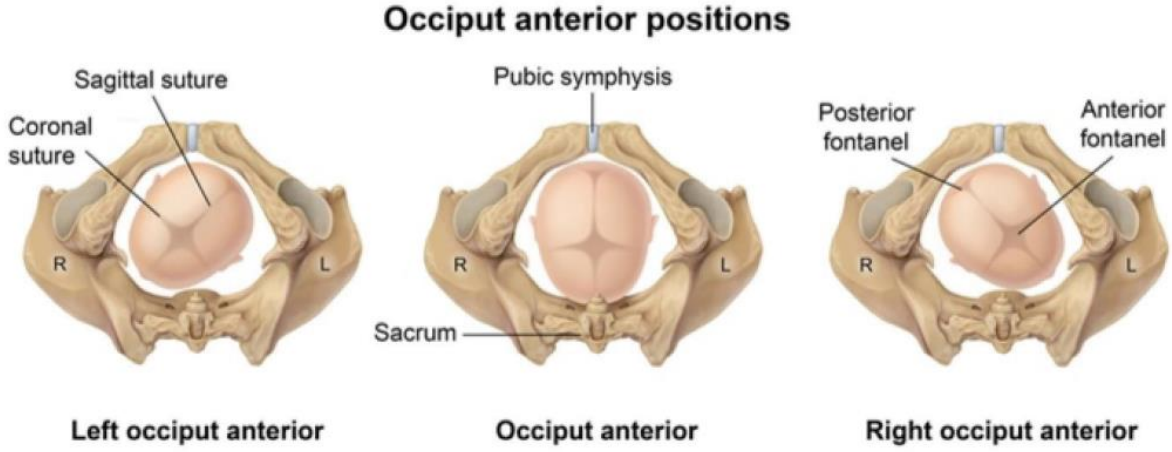
- **Complications :**
- **Abruptio placente , Intrauterine fetal demise .**

2- Denominator:

Bony landmark of the **presenting part,** which can be **felt During PV.**
In Vertex → **Occiput**
In face → **the mentum (chin)**
In breech → **the sacrum**
In shoulder → **the scapula.**

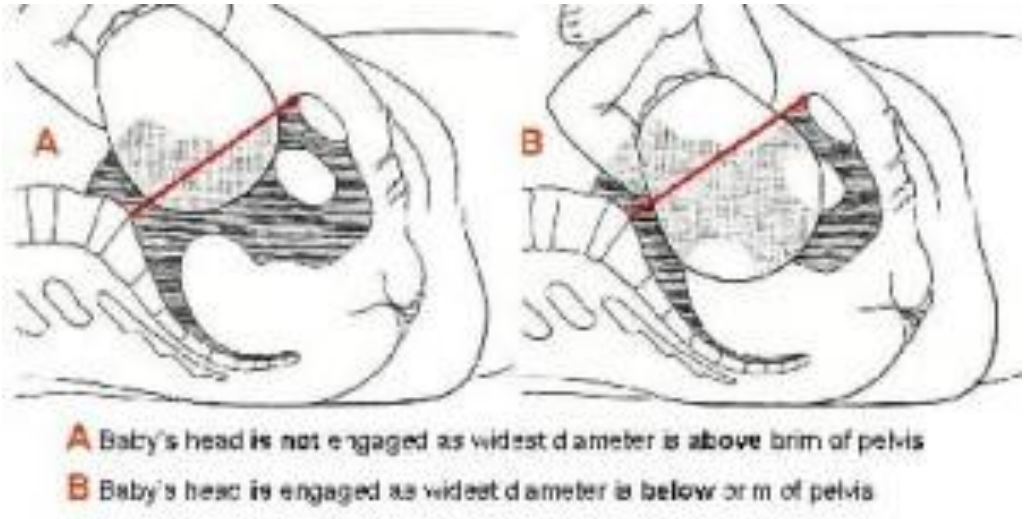
3 - Position:

The **relationship of the denominator** (occiput/sacrum) of the presenting part to **the maternal bony pelvis.**
- The most common position at delivery is **occiput anterior.**



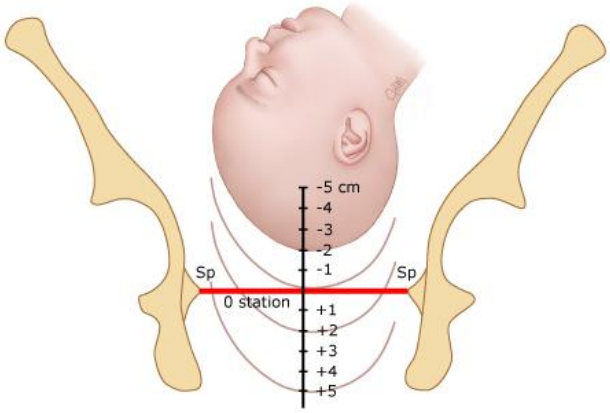
4 - Engagement:

The widest transverse diameter of the presenting part is below the **pelvic brim.**



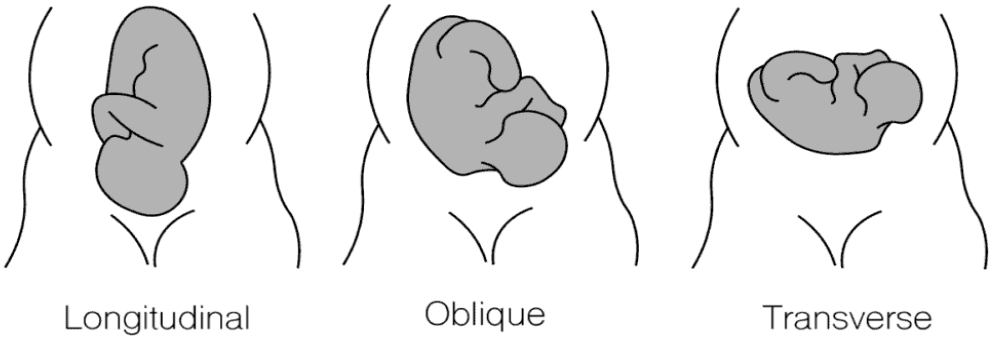
5 - Station:

Degree of **descent of the presenting** part through the **birth canal.**
- Expressed in **centimeters above or below the maternal ischial spine.**
- **0** when **vault at level of ischial spine.**



6 - Lie:

Relationship of the **long axis of fetus** to the **long axis of the uterus** e.g. longitudinal, transverse, oblique.



7 - Descent:

Passage of the presenting part of the fetus through the birth canal, this occurs as a result of the active forces of labor.

8- Asynclitism (tilt)

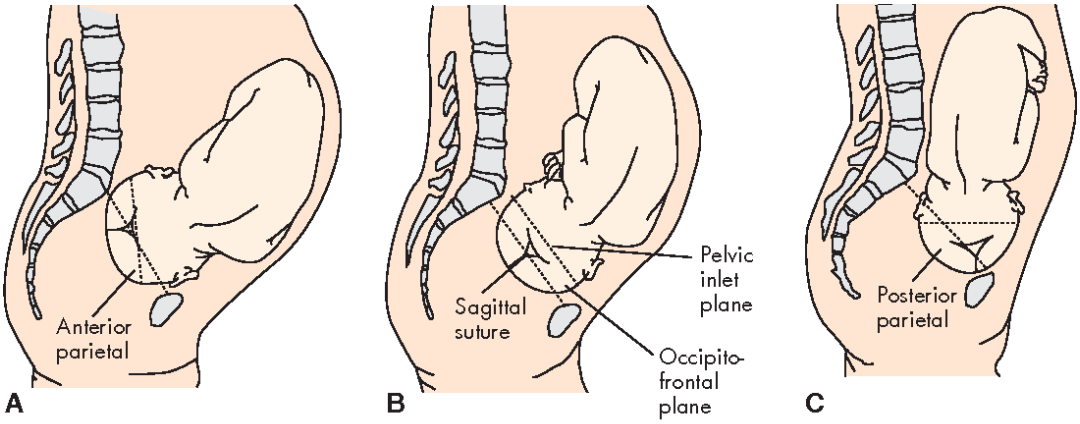


Fig. 11-14 Synclitism and asynclitism. **A,** Anterior asynclitism. **B,** Normal synclitism. **C,** Posterior asynclitism.

Normal Labor

• **Definition:**

Is a **process** whereby over time **regular & Efficient uterine contractions** bring about **progressive effacement and dilation of the cervix,** resulting in **delivery of the fetus and expulsion of the placenta,** normally b\w 37 - 42 weeks..

• **Theories:** ↑ PGs / ↑ fetal cortisol / ↑uterine distension, ↓ PRG / ↓ pl.oxytocinase.

• **Diagnosis**: when painful uterine contractions accompany diltation and effacement of the cervix. (Hx & PE)

• **What Does Regular & Efficient Contractions mean?**

Contractions with increasing **frequency** and **intensity** that cause **gradual cervical changes.**

- **3 Contractions / 10 min.**
- **Every contraction lasts 20-60 second.**
- Intensity of **40-60 mmHg.**

Normal Vaginal delivery

• Spontaneous on **onset** & From **Natural Passage.**
• No **complications** on Mother or fetus.
• **Single**, Alive, **Term** (37-42) & in **vertex** position Infant.
• With **No interference** (except Episiotomy).

False labor Vs True labor		
Contractions	**False(Braxton Hicks contractions)**	**True**
Timing	**Irregular , Infrequent**	**Regular , increasing Frequency**
Strength	**Weak**	**Increasing intensity**
Pain	**None to mild**	**YES**
Cervical Changes	**No**	**YES**
Relieved by analgesics or sleeping	**YES**	**No**

True Labor Leads to:

1- Uterine Changes:

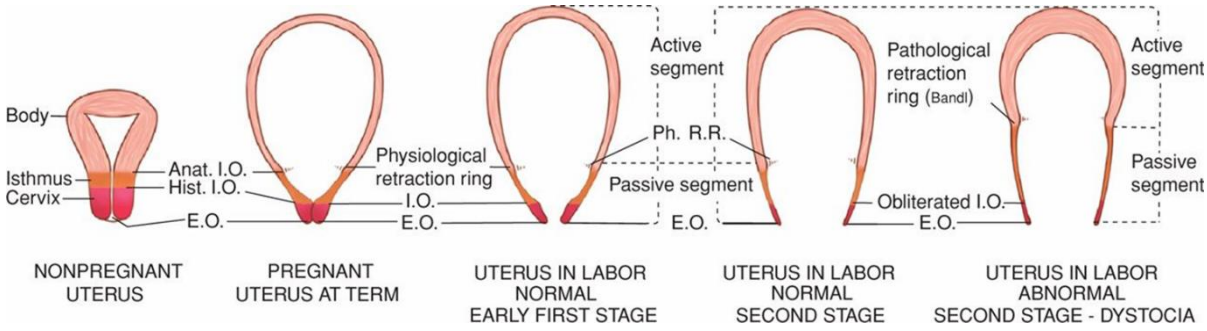
- **Upper uterine segment,** containing mostly **smooth muscle fibers**, becomes thicker as labor progresses, exerting forces that expel the fetus down the birth canal.
- **Lower uterine segment**, containing mostly **collagen fibers,** passively thins out with contractions of the upper segment.

2- Cervical Effacement:

- Cervical **softening and thinning** occur as increasing levels of oxytocin and prostaglandins lead to **breakage of disulfide linkages of collagen fibers, resulting in increasing water content.**
- Progressive shortening and thinning lead to full effacement (100%) in which the **cervix has no length and is paper-thin.**

3- Cervical Dilation:

- This occurs as the passive **lower uterine segment is thinned and pulled up by the contractile upper segment.**
- In early labor (latent phase), the rate of dilation is **slow,** but **at 4 cm of dilation**, the rate accelerates to a maximum rate in the **active phase of labor.**
- **Complete dilation** is expressed as **10 cm.**



Stages of Labor

1- 1st Stage (Stage of Cervical dilatation) Divided into: Latent & Active Phase.
2- 2nd Stage (Fetal Delivery).
3- 3rd Stage (Placental Delivery).
4- 4th Stage (not an official stage of labor)

First Stage (Cervical dilatation)

- The first stage of labor begins with **the onset of regular contractions** and **ends when the patient is 10 cm dilated**.
- It consists of :
  A. Latent phase → **gradual cervical dilation**
  B. Active phase → **rapid dilation.**
- The transition between the latent and active phase typically occurs at **4 cm** dilation.

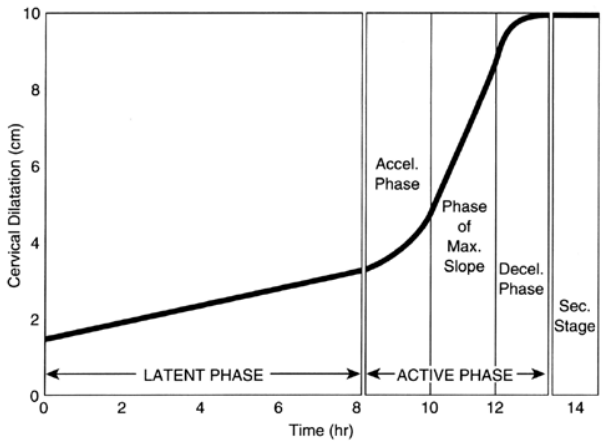
A - Latent Phase (0 - 4 cm)

- Begins at onset of **regular contractions** & **ends with the acceleration of cervical dilation**.
- Its purpose is to **soften and efface the cervix** preparing it for rapid dilation.
- **Minimal descent** of the fetus through the birth canal occurs.
- **Latent phase** duration:
  - **12-20 h in a Primigravida (PG).**
  - **6-12 h in a Multipara (MG).**

B - Active Phase (≥ 4 cm -10 cm)

- Begins with cervical dilation **Acceleration** ending with **complete cervical dilation (10 cm).**
- Active Phase of labor has **an expected, predictable rate** of cervical dilation of**: 1 cm / hr in PG, 1.5 cm /hr in MG.**
- Provided that contractions are **efficient**.
- Slow Progressive labor in first stage of labor is **normal** and it not indication for cesarean delivery.
- **Arrest of active phase:**
  No cervical change despite **4 hours of adequate uterine activity** or **≥ 6 hours ofoxytocin administration** with inadequate uterine activity.

Friedmann curve



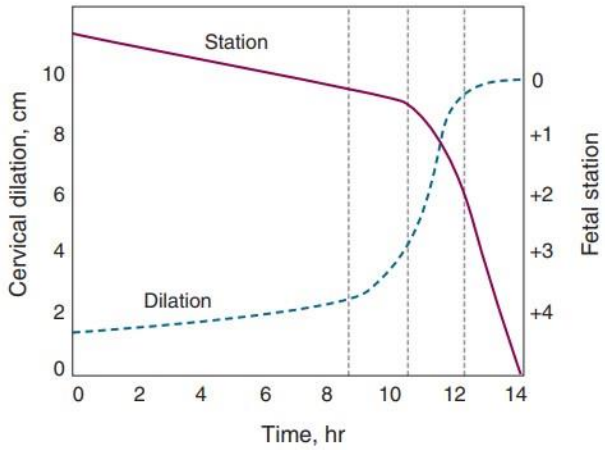


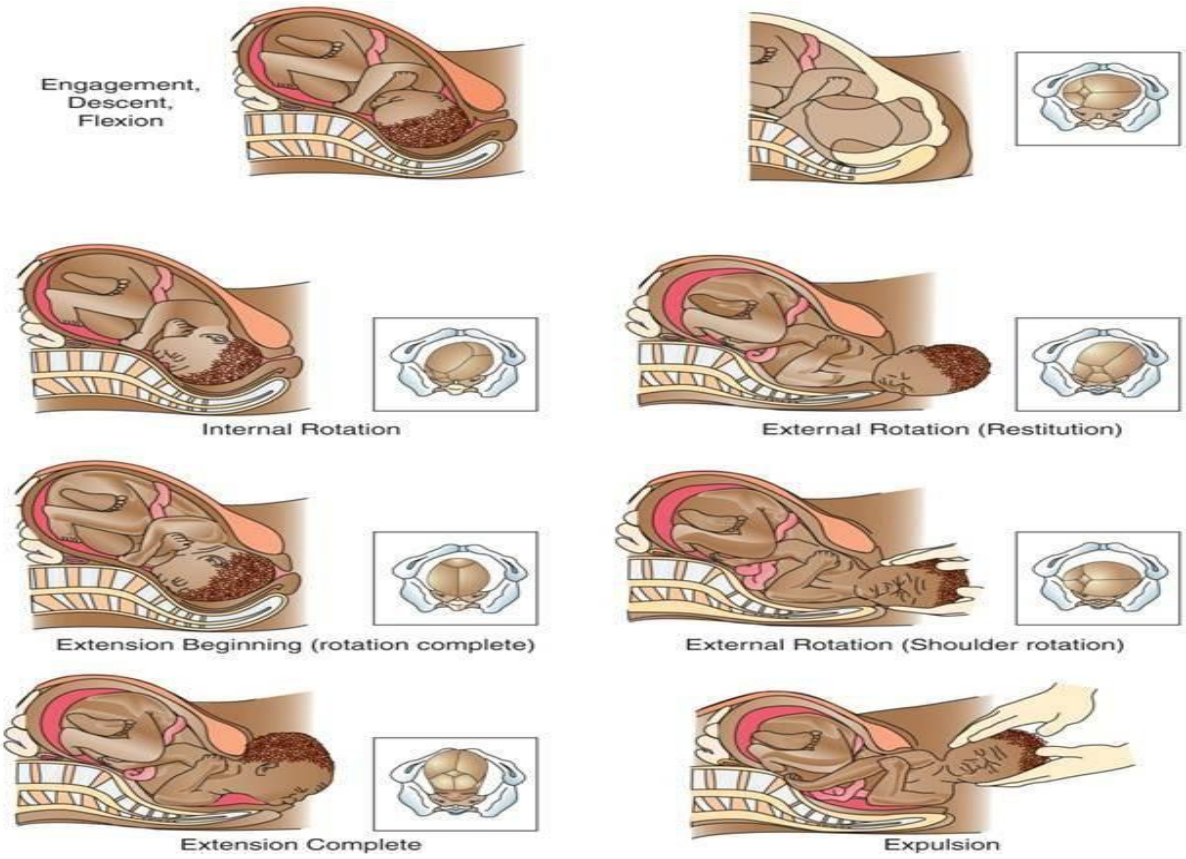
FIGURE 8.5. Graphic representation of cervical dilation and station during the first and second stages of labor.

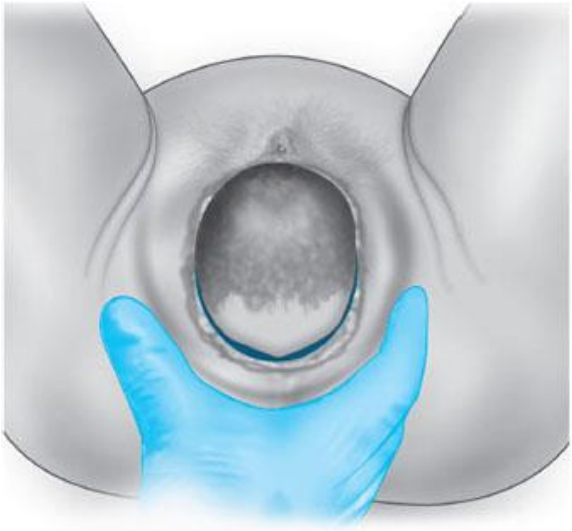
Second Stage (Fetal Delivery)

- Begins **After complete cervical dilation** and **ends with delivery of the fetus**
- In Stage 2 **maternal pushing efforts** are vitally important to augment the uterine contractions **to bring about descent of the fetal presenting part.**
- **Duration of the second stage : 1-2 Hrs in PG , .5-1 Hrs in MG**
  - Not more than 3 h in PG (4 h with epidural)
  - Not more than 2 h in MG (3 h with epidural).
- Main abnormality is prolonged second stage which can be due to **maternal exhaustion.**

Cardinal Movements of Labor

1. **Descent**: movement of the presenting part **down through the curve of the birth canal.**
2. **Engagement:** movement of the **presenting part** below the **plane of the pelvic inlet.**
3. **Flexion**: fetal chin on his thorax **(when head reaches pelvic floor)**
4. **Internal rotation:** rotation of the position of the fetal head in the mid pelvis **from transverse to anterior-posterior**.
5. **Extension**: **fetal chin moves away from his thorax**.
6. **External rotation (Restitution):** rotation of the fetal head **outside** the mother as the head passes through **the pelvic outlet.**
7. **Expulsion: delivery** of the **fetal shoulders (Ant. Then Post.) And body.**





Crowning: when the largest diameter of the fetal head is **encircled by the vulvar ring**.

Third Stage (Placental Delivery)

- Begins **After delivery of the fetus,** ends with **expulsion of the placenta.**
- The mechanism of placental separation from the uterine wall is dependent on **myometrial contractions shearing off the anchoring villi.**
- It is usually augmented with **IV oxytocin infusion.**
- Duration may be **up to 30 minutes in all women**.
- **Signs of separation:**
  1) Gush of blood
  2) Elongation of cord
  3) Suprapubic bulge

Fourth Stage

- **Critical 2-h** period of **close observation** of the patient immediately after delivery.
- **Vital signs and Vaginal bleeding** are monitored to recognize and promptly treat **Preeclampsia & Postpartum hemorrhage.**

Abnormal Labor

First Stage Abnormalities

A. Prolonged Latent Phase:

▪ **Diagnosis:**
- Cervical dilation is **< 4 cm**, and the **acceleration phase of dilation has not been reached.**
- **> 20 h** in a primipara or to **>14** h in a multigravida.

▪ **Cause:**
- Most commonly caused by **injudicious analgesia.**
- Other causes are **contractions**, which are **hypotonic** (inadequate frequency, duration, or intensity) or **hypertonic** (high intensity but inadequate duration or frequency).

▪ **Management:**

This involves **therapeutic rest and sedation**.

B. Prolonged or Arrested Active Phase:

▪ **Diagnosis:**

- Cervical dilation **is > 4 cm.**

May be:

1- Prolongation (Protraction)

Is diagnosed if cervical dilation is **< 1cm/2 hrs**. Prolonged active phase is **an indication for IV oxytocin but not for cesarean delivery.**

2- Arrest

Is diagnosed if **membranes are ruptured** and **cervical dilation has not changed** for ≥ 4h with **adequate uterine contractions** or ≥ 6 h with **inadequate uterine contractions.**

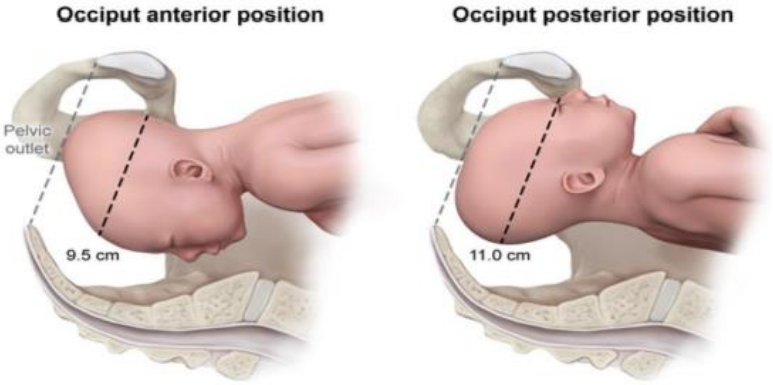
▪ **Causes:**

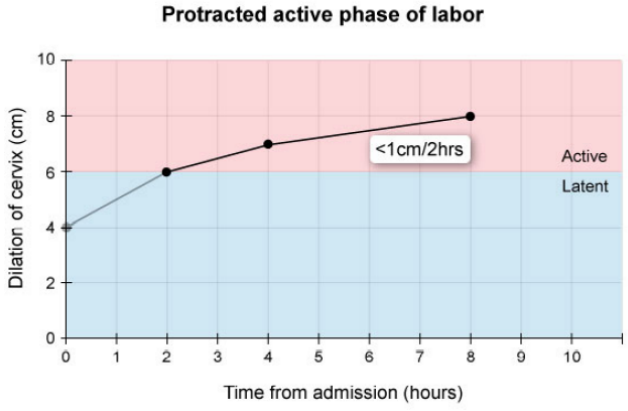
- Active-phase abnormalities , Caused by abnormality in :

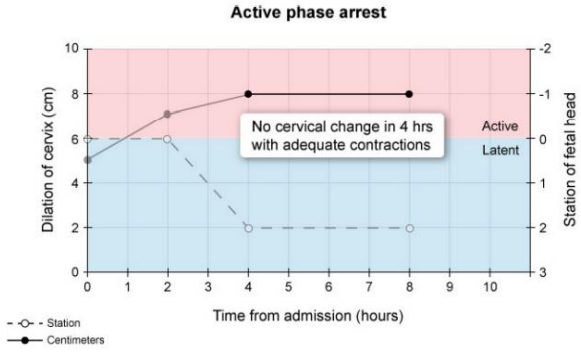
1- **Passenger** → CephaloPelvic Disproportion "CPD" In which **the fetal head is too large to fit** through **the maternal pelvis**.

2- **Passages: Pelvis** (bony pelvis size).

3- **Powers** (dysfunctional or inadequate uterine contractions).







Prolonged Second Stage

• **Diagnosis:**
- Insufficient **fetal descent** after **pushing ≥ 3 hours in PG** or **≥ 2 hours in MG.**
- With **epidural analgesia** add additional **1 hour.**

• **Cause**: "as active-phase abnormalities: Passenger, Passage or Powers.
- Most common cause of a **Prolonged or Arrested second stage is fetal malposition.**
- Optimal fetal position is **Occiput Anterior** as it facilitates the cardinal movements of labor.
- **Deviations from this position** (occiput transverse, occiput posterior) can **cause CPD and arrest of the second stage.**

• **Management:**
- Involves **assessment of uterine contractions** and **maternal pushing efforts**. Use **IV oxytocin** or **enhanced coaching as needed.**
- If they are both adequate, assess whether **the fetal head is engaged:**

  1- If Not Engaged → **emergency cesarean.**

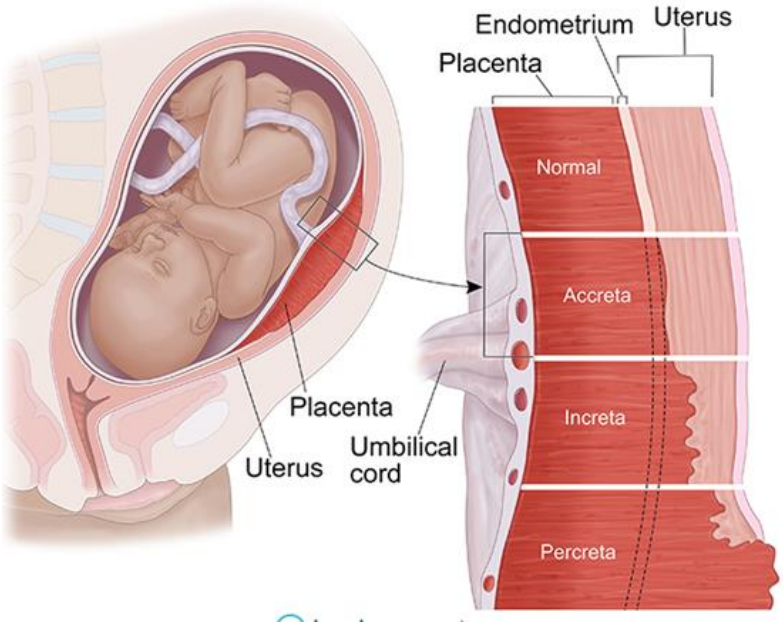
  2- If Engaged → consider a trial of either **obstetric forceps or a vacuum extractor delivery.**

Prolonged Third Stage

▪ **Diagnosis:**
- Failure to deliver the placenta **within 30 minutes.**

▪ **Cause:**
- May be **inadequate uterine contractions.**
- If the placenta does not separate, in spite **of IV oxytocin stimulation of myometrium contractions,** think of abnormally **adherent placenta (accreta /increta/ percreta).**

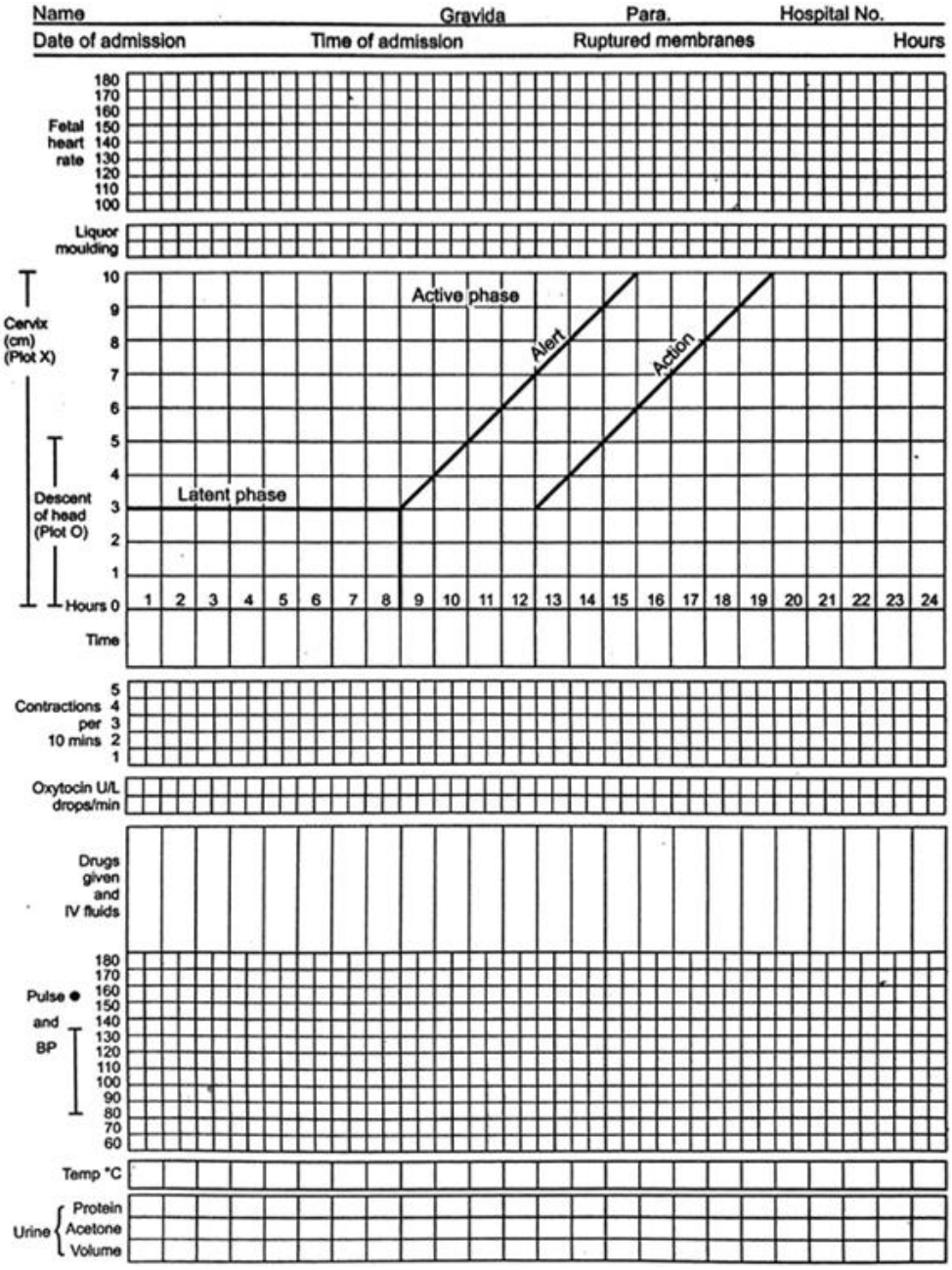
▪ **Management**:
- May require **manual placental removal** or rarely even **hysterectomy**



Partogram

Definition:

- **Partogram** or **partograph** is a composite graphical record of **key data (maternal and fetal) during labor entered against time on a single sheet of paper**.
- Relevant measurements might include statistics such as **cervical dilation, fetal heart rate, duration of labor and vital signs.**
- It is intended to provide an **accurate record of the progress in labor**, so that any **delay or deviation** from **normal** may be **detected quickly** and **treated accordingly.**



Components

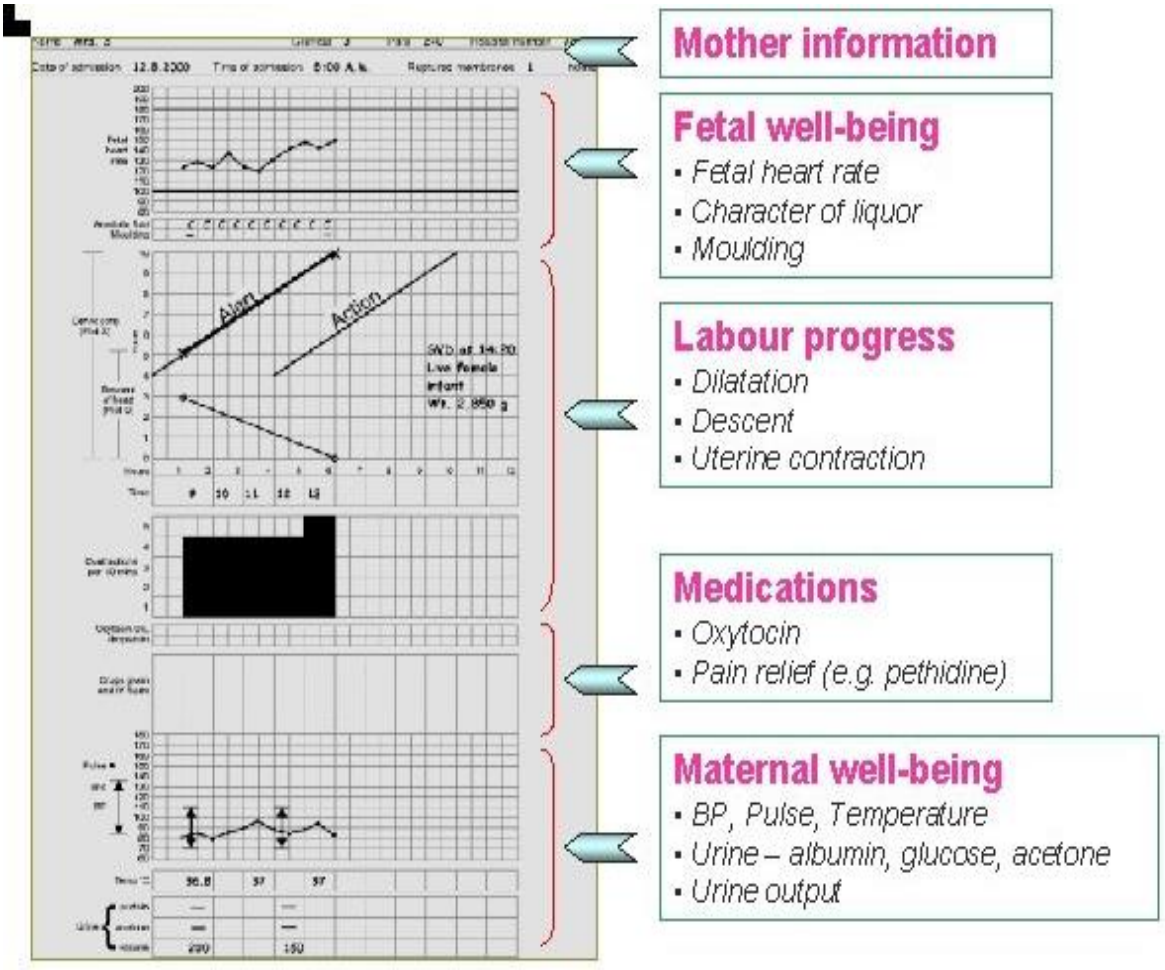
- **Patient identification**
- **Time**: It is recorded at an interval of one hour.
  - Zero time for spontaneous labor is time of admission in the labor ward.
  - For induced labor is time of induction.

- **Fetal wellbeing :**
  1- Fetal heart rate: It is recorded at an interval of **30 minutes**.
  2- State of membranes and colour of liquor: "I" designates intact membranes, "C" designates clear and "M" designates meconium stained liquor.
  3- Degree of Moulding

- **Progression of labor :**
  1- Cervical dilatation and descent of head
  2- Uterine contractions: Squares in vertical columns are shaded according to duration and intensity.

- **Drugs and fluids**
  - Oxytocin: Concentration is noted down in upper box; while dose is noted in lower box.

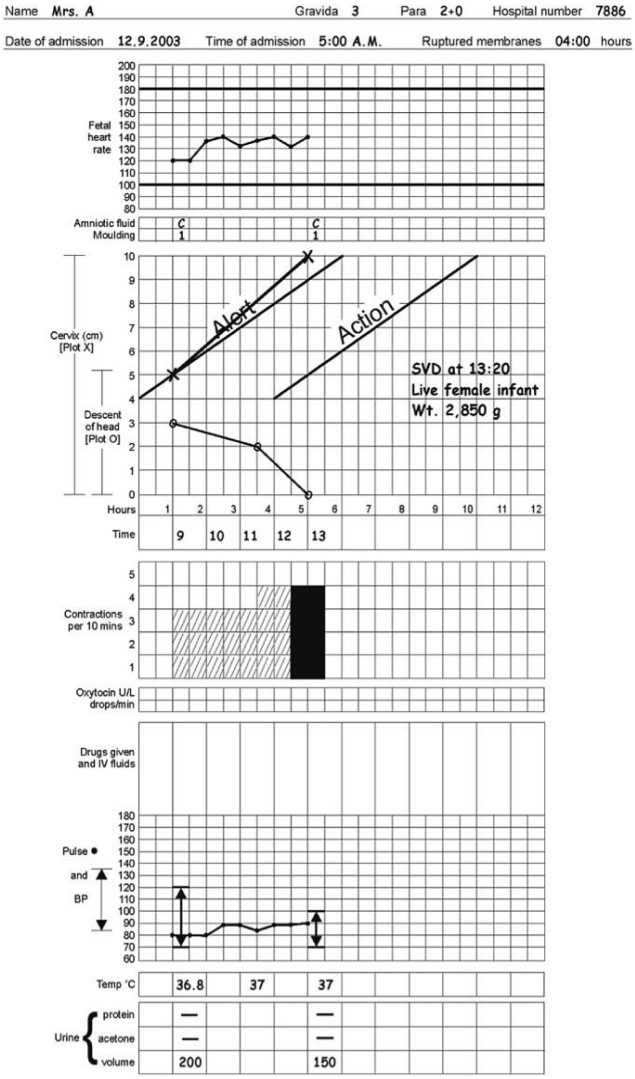
- **Maternal Wellbeing**
  1- Blood pressure: It is recorded in vertical lines at an interval of **2** hours.
  2- Pulse rate: It is also recorded in vertical lines at an interval of **30 minutes.**
  3- Urine analysis
  4- Temperature record

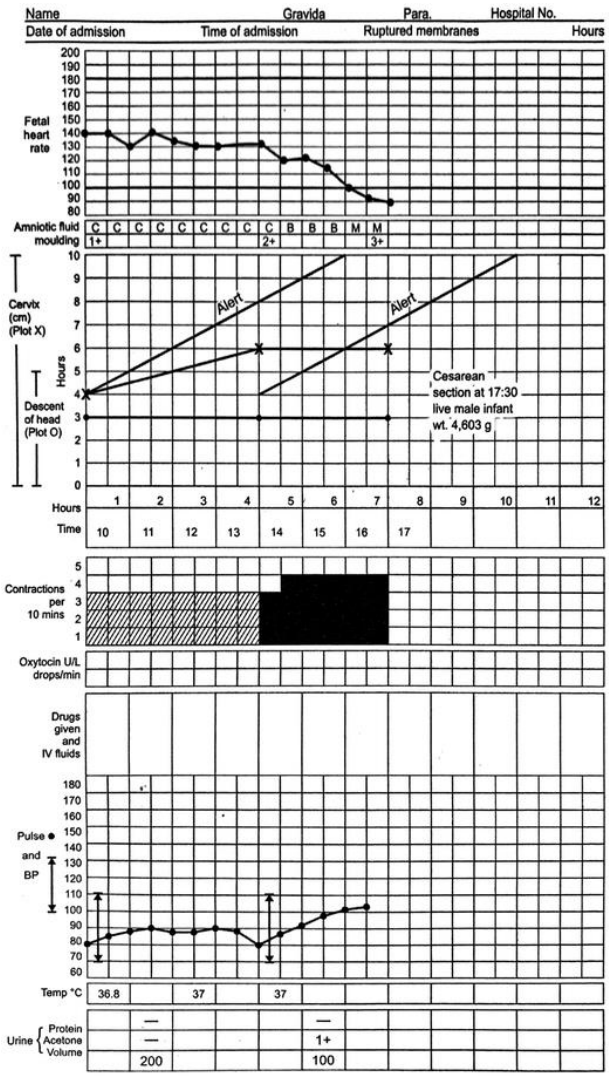


Advantages

1- Provides **information on single sheet of paper.**
2- **Early prediction of deviation** from normal **progress of labor.**
3- Improvement in **maternal morbidity, perinatal morbidity** and **mortality**.

Examples



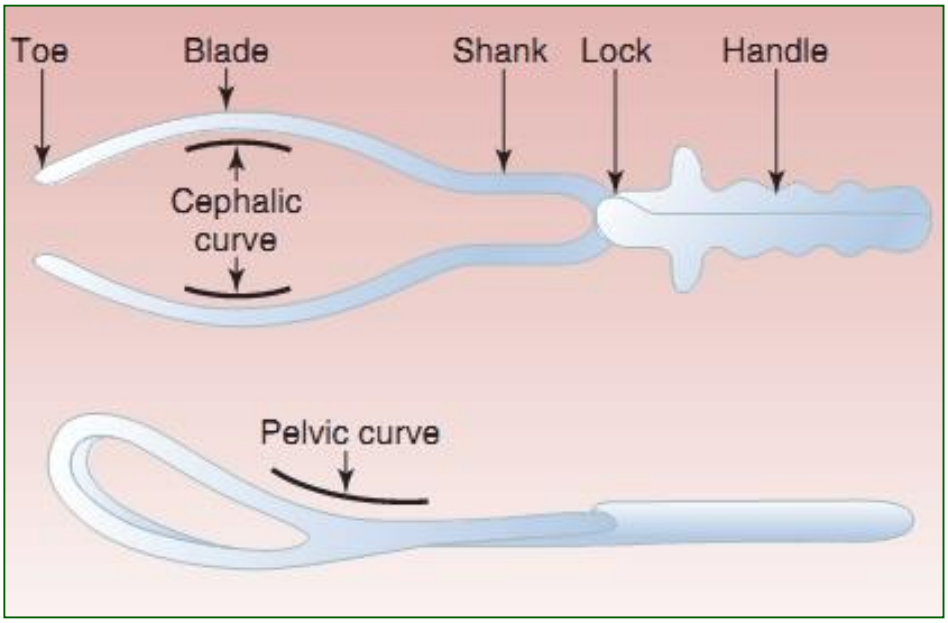


Instrumental vaginal delivery

OBSTETRIC FORCEPS

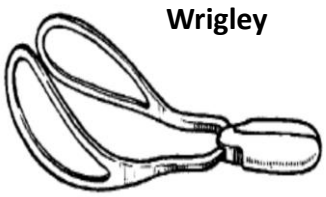
- **Definition:** These are metal instruments used to provide traction, rotation, or both to the fetal head.

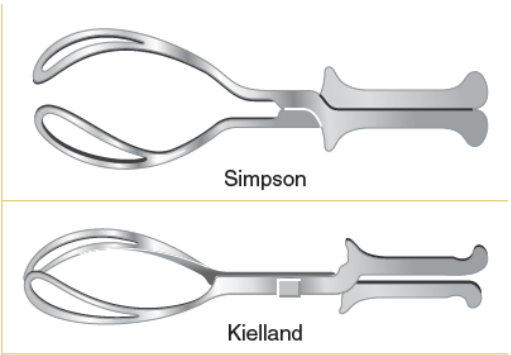
- **Classification:**
- **Outlet:** fetal head is on the pelvic floor. Most forceps use is in this category.
- **Low:** fetal head is below +2 station, but has not reached the pelvic floor.
- **Mid:** fetal head is below 0 station, but has not reached +2 station. This is seldom used today.
- **High:** fetal head is unengaged, above 0 station. This is never appropriate in modern obstetrics because of the risk to both mother and fetus.



Obstetric Forceps

- **Simpson, Wrigley:** used for traction only.
- **Kielland:** used for head rotation and traction.
- **Piper:** used for the after-coming head of a vaginal breech baby.





Forceps indications

1. **Prolonged second stage:** This is the most common indication for forceps.
2. **Category III EFM strip (fetal distress):** suggests the fetus is not tolerating labor.
3. **Avoid maternal pushing:** In conditions where pushing efforts may be hazardous to the parturient, cardiac, pulmonary, or neurologic disorders.
4. **Breech presentation:** Shorten the time to deliver the head of a vaginal breech fetus.

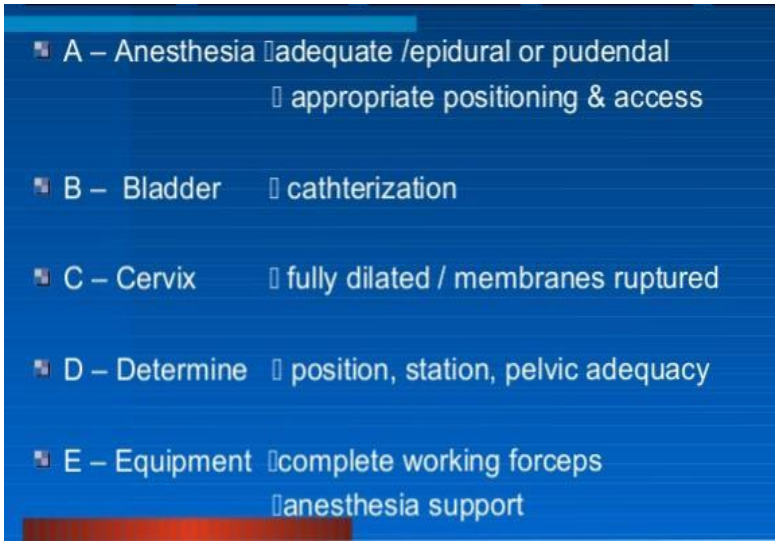
Prerequisites

1. Clinically adequate pelvic dimensions
2. Experienced operator
3. Full cervical dilation
4. Engaged fetal head
5. Orientation of fetal head is certain.

Complications

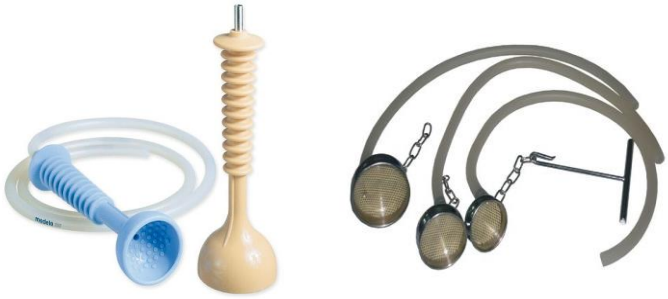
- **Maternal:** lacerations to the vagina, cervix, perineum, and uterus.
- **Fetal-neonatal:** soft-tissue compression or cranial injury caused by incorrectly placed forceps blades.

Technique



VACUUM EXTRACTOR

• **Definition.** Cuplike instruments that are held against the fetal head with suction.
• Traction is thus applied to the fetal scalp.
• The cups may be metal or plastic, rigid or soft.
• Cups diameter average 40-60 mm



Forceps vs Vacuum

• **Advantages Over Forceps**

1. **Fetal head orientation.** Precise knowledge of fetal head position and attitude is not essential.
2. **Space required.** The vacuum extractor does not occupy space adjacent to the fetal head.
3. **Perineal trauma.** Third- and fourth-degree lacerations are fewer.
4. **Head rotation.** Fetal head rotation occurs spontaneously at the station best suited to fetal head configuration and maternal pelvis.

• **Disadvantages Over Forceps**

1. **Cup pop-offs.** Excessive traction can lead to sudden decompression as the cup suction is released.
2. **Scalp trauma.** Scalp skin injury and lacerations are common.
3. **Subgaleal hemorrhage and intracranial bleeding** are rare.
4. **Neonatal jaundice** arises from scalp bleeding.

Indications

1. **Prolonged second stage.**
2. **Nonreassuring EFM strip:** suggests the fetus is not tolerating labor.
3. **Avoid maternal pushing.**

Prerequisites

1- Clinically adequate pelvic dimension
2- Experienced operator
3- Full cervical dilation
4- Engaged fetal head
5- Gestational age is >34 weeks

Correct application

• To maintain head flexion.

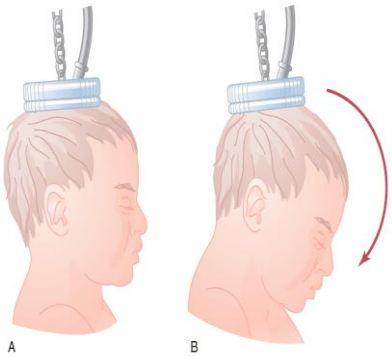
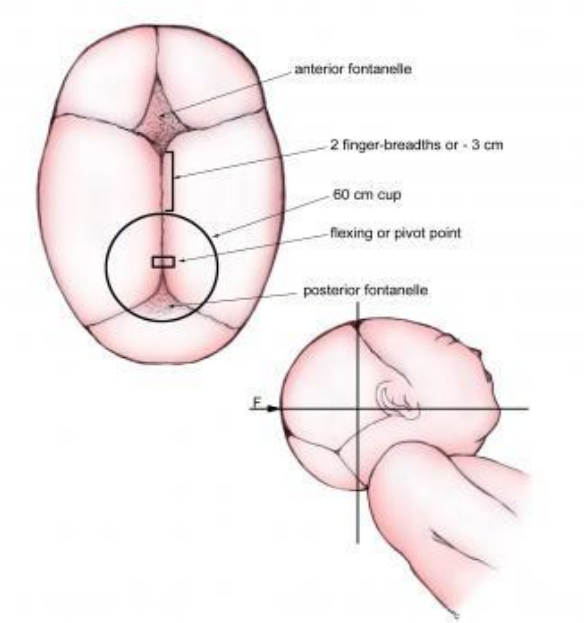


FIGURE 17-6 Application of the vacuum extractor. A, Incorrect application, which deflexes the fetal head, thereby increasing the presenting diameter. B, Correct application over the posterior fontanel, which flexes the fetal head when traction is applied.



Complications

- **Maternal:** vaginal lacerations from entrapment of vaginal mucosa between the suction cup and fetal head.
- **Neonatal:** neonatal **cephalohematoma** and scalp lacerations are common; life-threatening complications of **subgaleal hematoma** or **intracranial hemorrhage**, although uncommon, are associated with vacuum duration >10 min.

Induction of labor

• **Definition :**
An intervention designed to **artificially initiate** uterine contractions leading to progressive dilatation and effacement of the cervix and birth of the baby in a woman who is not in labor.

Augmentation of Labor:
An intervention designed **to increase the rate of progress of labor**

• Not a single intervention but **is a complex set of interventions.**

Indications

- Induction of labour is indicated **only when it is agreed that the mother or fetus will benefit** from **a higher probability of a healthy outcome than if birth is delayed.**
- The process of induction of labour should only be considered **when vaginal delivery is felt to be the appropriate route of delivery.**

• Postdate (40-42) and Posterm > 42.
• PROM (>34 w).
• PET (>37w), DM.
• Abruptio Placenta (stable term fetus).
• IUGR (>34 w), IUFD.
• Chorioamnionitis.
• Rh-isoimmunization (35 w).
• Fetal anomalies.

Contraindications

Absolute:

• **P**revious classical C/S.
• **P**revious 2 C/S.
• **P**revious C/S with recurrent cause.
• **P**revious successful pelvic floor repair and incontinence surgery.
• **P**lacenta previa.
• **A**bnormal CTG (Fetal distress).
• **A**ctive genital herpes infection.
• **C**ontracted pelvis.
• **T**ransverse lie.
• **T**umor occupying the pelvis / cervical cancer.

Relative:

• Severe PET.
• Grand multiparity
• Polyhydrominios
• Breach presentation
• Still not engaged

Assessment

• Modified Bishop score
• Likelihood of success is with **a score >6**

BISHOP SCORE

htt://Medchrome.com Online Medical Magazine

BISHOP SCORE =…….. (total)			Date of Bishop Score: ……/…../…..	
Score	0	1	2	3
Dilation	Closed	1 - 2	3 - 4	5
Length	> 4	3 - 4	1 – 2	0
Consistency	Firm	Medium	Soft	—
Position	Posterior	Midline	Anterior	—
Head: station	-3	-2	-1, 0	+1,+2

Bishop scoring system:

Score	Dilation (cm)	Position of cervix	Effacement (%)	Station (-3 to +3)	Cervical Consistency
0	Closed	Posterior	0-30	-3	Firm
1	1-2	Mid position	40-50	-2	Medium
2	3-4	Anterior	60-70	-1, 0	Soft
3	5-6	--	80	+1, +2	--

Methods

A- Medical

1. Prostaglandins
2. Oxytocin

Prostaglandins

- Act locally (autocrine and paracrine hormones)
- **PGE2** and **PGF2** both cause myometrial contraction
- **PGE2** is primarily important for **cervical ripening.**
- **PGF2** → **myometrial contraction.**
- **Vaginal tablets**- PGE2
- 3 milligrams PGE2 6–8 hourly
- Maximum dose daily 2 tablets

Oxytocin

- Oxytocin (Syntocinon®) is **a synthetic non peptide identical with oxytocin**.
- Indicated if effective uterine contraction not reached **after 1-2 hours of ARM**.
- **Anti-diuretic activity**
- In women with **intact membranes**, **amniotomy** should be performed where feasible before starting an oxytocin infusion.
- Use the minimum dose possible and aim **for a maximum of 3 – 4 contractions in ten minutes.**

B- Mechanical

1. **Membrane sweeping**
   - Digital separation of the **chrioamniotic membranes from the wall of the cervix** and **lower uterine segment.**
   - Leads to Prostaglandins release

2. Amniotomy

- Membranes are ruptured artificially using an instrument called an **amnihook.**
- Releases **Prostaglandins.**
- It is only performed when **the cervix has been deemed as 'ripe'.**

3. Foley catheter

Amnihook

Complications

1- Failure of induction (15%)
Offer a further cycle of **prostaglandins**, or a **caesarean section.**

2- Uterine hyperstimulation
Contractions last too long or are **too frequent**, leading to **fetal distress**. Can be managed with **tocolytic agents** (anti-contraction) such as terbutaline.

3- Cord prolapse
Can occur at time **of amniotomy**, particularly if **the presentation of the fetal head is high.**

4- Infection
Risk is reduced by using pessary vs tablet/gel, as fewer vaginal examinations are required to check progress.

- **Uterine rupture (rare)**
- **Pain** – IOL is often **more painful than spontaneous labour**. Often epidural analgesia is required.
- **Increased rate of further intervention vs spontaneous labour** - 22% **require emergency caesarean sections,** and 15% **require instrumental deliveries.**

Side Effects Specific to oxytocin

1- Water intoxication
Symptoms and signs of water intoxication:
Headache
Nausea/Vomiting /Abdominal pain
Lethargy, drowsiness
Unconsciousness
Grand mal type seizures

2- Hyponatremia

Management of uterine hyper-stimulation

- **Immediately :**
  Stop oxytocin
  Turn patient on her side.
  Give oxygen by mask
  Give rapid infusion of 250-500ml N/S
  If Persisted give terbutaline 0.25 mg bolus IV.
  If Persisted → C/S.

Persistent fetal distress:
- Scalp blood sampling to measure **fetal pH.**
- If **pH >7.25** this excludes hypoxia and acidosis , continue with vaginal delivery
- If pH is < 7.2 → emergency C/S
- If PH between 7.25 - 7.2 , **repeat after 30 min** , If becoming > 7.25 then continue with vaginal deliver , but if persisted or worsened go for emergency C/S.

Antepartum Hemorrhage

Postpartum Hemorrhage

Blood Loss **> 500 ml** following vaginal delivery OR **> 1000 ml** following Cesarean Section.

Primary >> within 24 hours of the birth of a baby.
Secondary >> from 24 hours after delivery up to 12 weeks postpartum.

Incidence
5 % of all deliveries for primary PPH.

"The APH weakens, the PPH kills"

Causes of PPH

1ry >> 4Ts: Tone, Tissue, Trauma, Thrombin

2ry >>
• Endometritis
• Retained placental tissue
• Sub-involution of placental site
• Pseudo-aneurysms and arteriovenous malformations (rare).

Tone: abnormalities of uterine contraction	
Overdistension of uterus	Polyhydramnios Multiple gestation Macrosomia
Functional or anatomical distortion of uterus	Precipitous labour, prolonged labour, fibroids, uterine anomalies, placenta praevia
Intra-amniotic infection	Chorio-amnionitis from Prolonged Rupture of Membranes
Uterine Relaxants	Nifedipine, magnesium, terbutaline, halogenated anaesthetics, GTN
Bladder distension	Prevents uterus from contracting

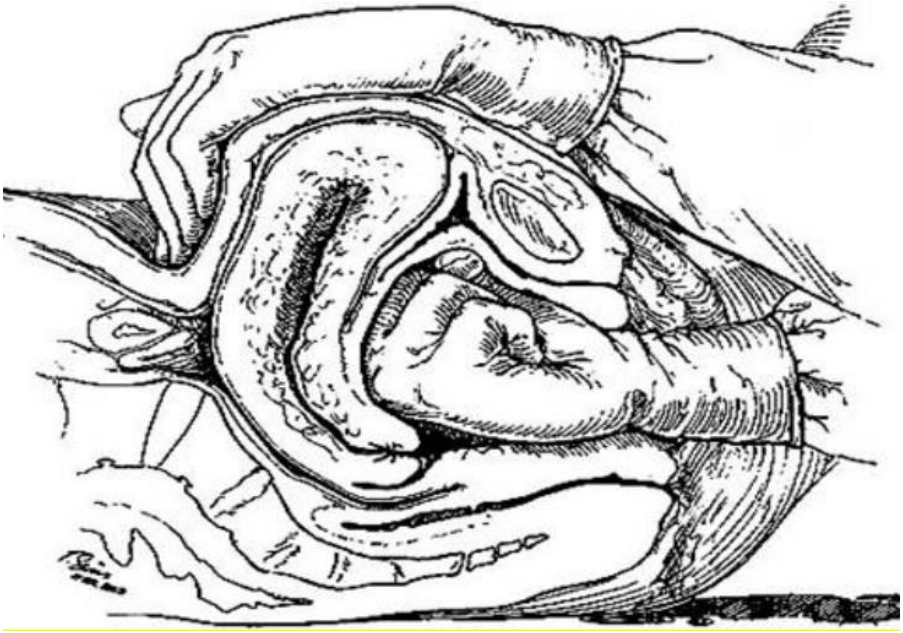
Tissue: retained products of conception	
Retained placental tissue	Retained placenta Retained cotyledon / succenturiate lobe Placenta accreta spectrum
Retained blood clots	

Trauma: genital tract injury	
Lacerations of perineum, vagina, cervix	Precipitous labour Operative delivery
Extensions / lacerations at caesarean section	Deep engagement Malposition
Uterine Rupture	Previous uterine surgery
Uterine Inversion	Excessive cord traction High parity
Thrombin: abnormalities of coagulation	
Pre-existing states	Haemophilia A Idiopathic thrombocytopenic purpura Von willebrand's disease History of previous PPH
Acquired in pregnancy	Gestational thrombocytopenia
Disseminated intravascular coagulation	In-utero death Sepsis Abruption Amniotic fluid embolus Acute fatty liver of pregnancy
Therapeutic anticoagulation	Heparin Warfarin

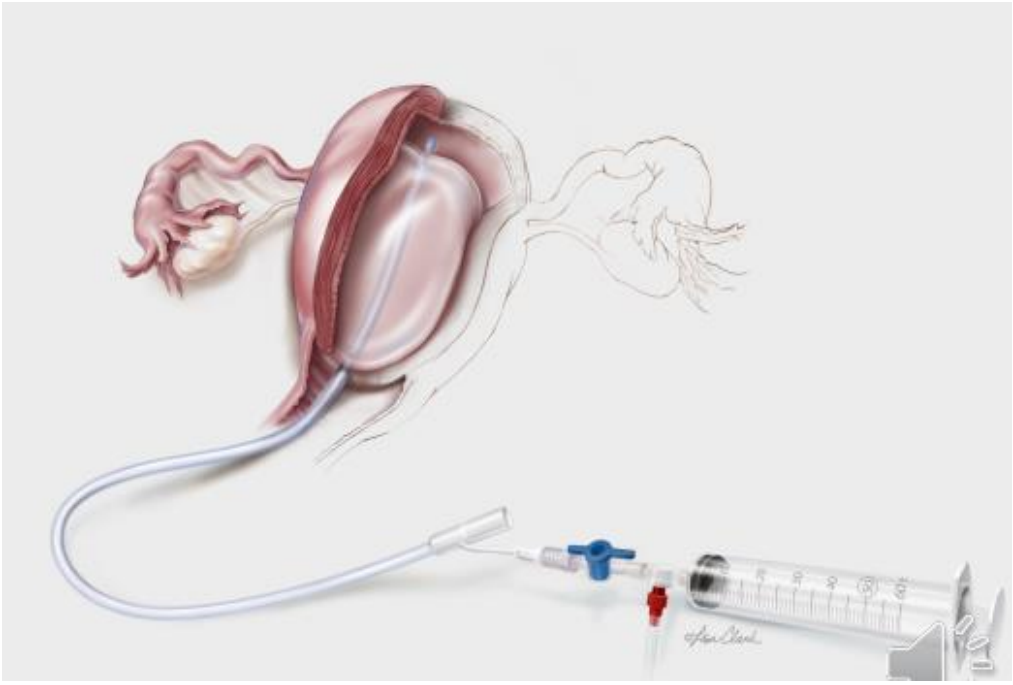
Management

- Call for help
- ABC
- 2 larges IV lines
- Cross match 4-6 units of blood
- Anti-D if RH –ve
- Uterine massage & **Bimanual uterine compression.**
- Intrauterine balloon tamponade
- Uterotonic drugs- **oxytocin**
- Examine the vagina and cervix to rule out lacerations; repair if present
- Explore the uterus to rule out retained placenta
- Internal iliac artery ligation
- B-Lynch suture
- Hysterectomy

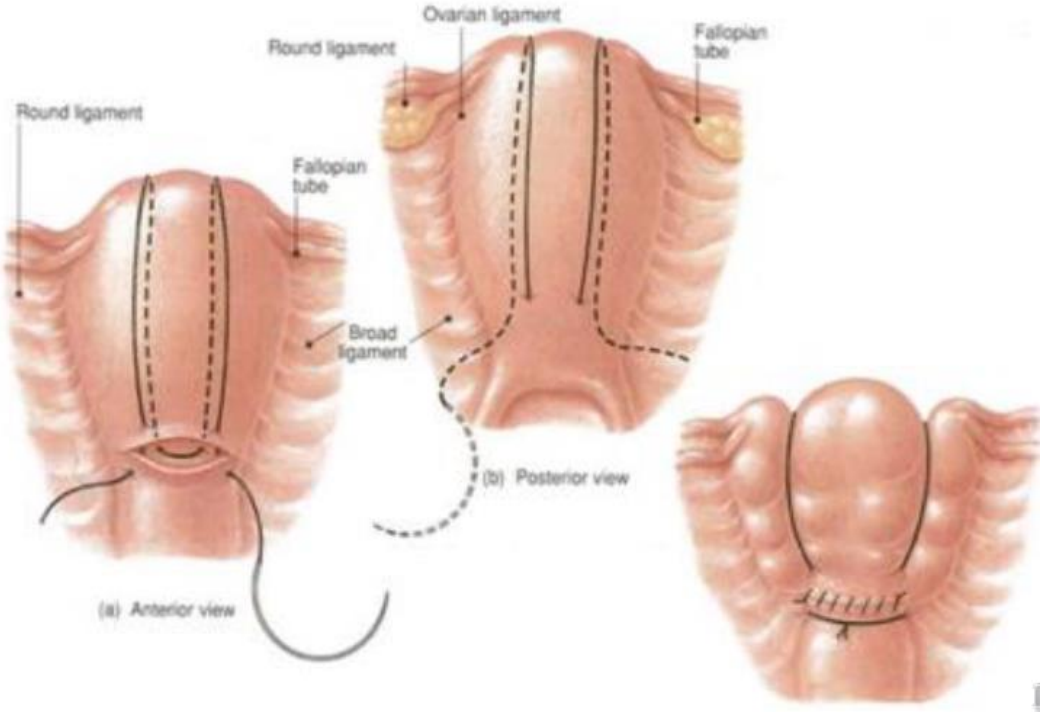
Bimanual uterine compression



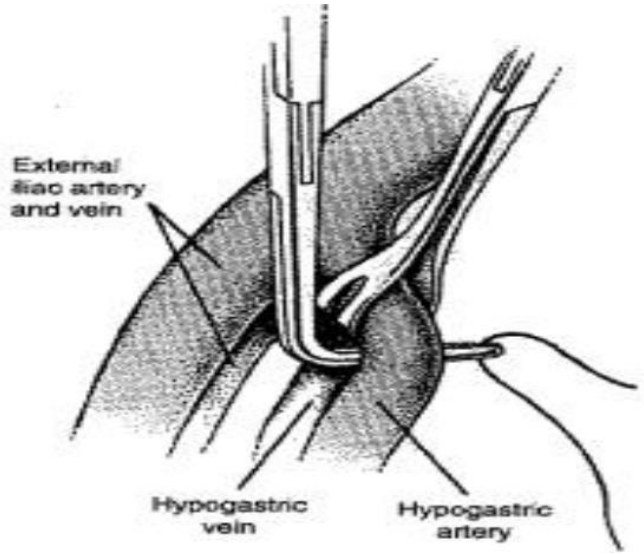
Intrauterine balloon tamponade



B-Lynch suture



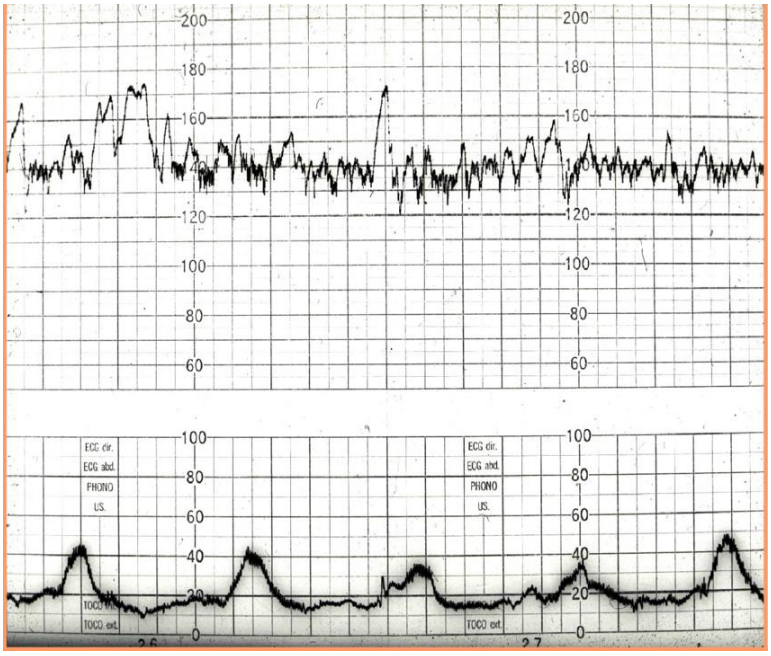
Internal iliac artery ligation



Complications of PPH

- Sheehan's syndrome: Pituitary ischemic injury (necrosis of the anterior lobe of the pituitary gland)
- Postpartum infection
- DIC
- Anemia
- Transfusion hepatitis
- Asherman's syndrome

Antepartum fetal monitoring



CTG

C: cardio (fetal heart)
T: toco (uterine contraction)
G: graphy

- If there is uterine **contraction** >> **stress** test.

- If there is **no** uterine **contraction** >> **non-stress** test.

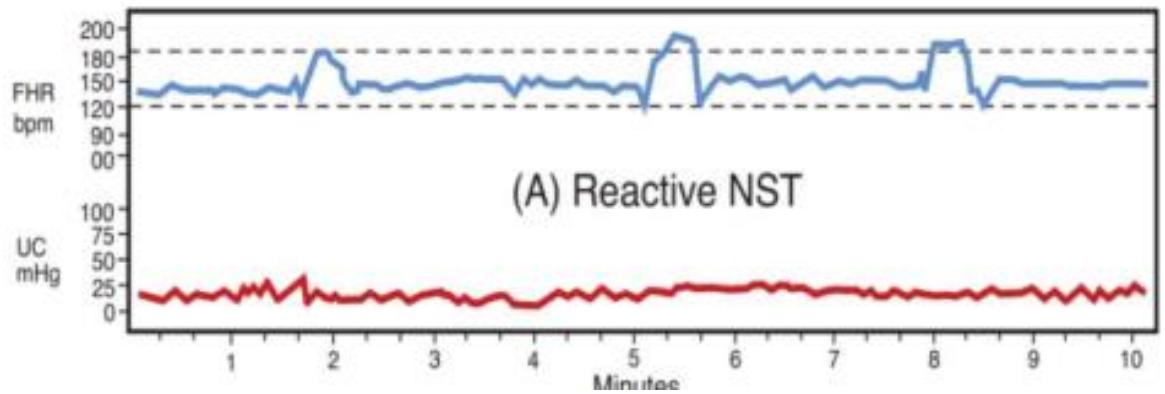
- It's a **screening** test **not a diagnostic** test.

Sensitive but **not specific.**
It's –ve >> it's ok / it's +ve >> not sure
False –ve: 0.003
False +ve: 0.5

In CTG we look for **4 things** (these 4 things affected by **O2 deficiency**):

1. **Fetal heart rate base line**: 110 – 150 BPM
   > 150: Tachycardia.
   < 110: Bradycardia.
2. **Acceleration:** Increase in FHR of **>15bpm** which persists for **>15sec.** associated with **fetal movements, external stimuli or uterine Cx.**

   Loss of accelerations is usually **first sign** of hypoxia but also absent in **quite sleep phase** of fetus.
   - Normally **2** accelerations must be recorded in **30 min**.



3. **Deceleration:** A drop in FHR of >15bpm which persists for 10sec or more and it has 3 types:
   A- **Early** decelerations: mirror image of uterine Cx.
   Causes: NL (benign) or head compression.

   B- **Late**: Start after the peak of Cx and persist after Cx end.
   Causes: Placental insufficiency.

   C- **Variable**: Not related to uterine Cx
   Causes: **C**ord compression & **C**ord prolapse

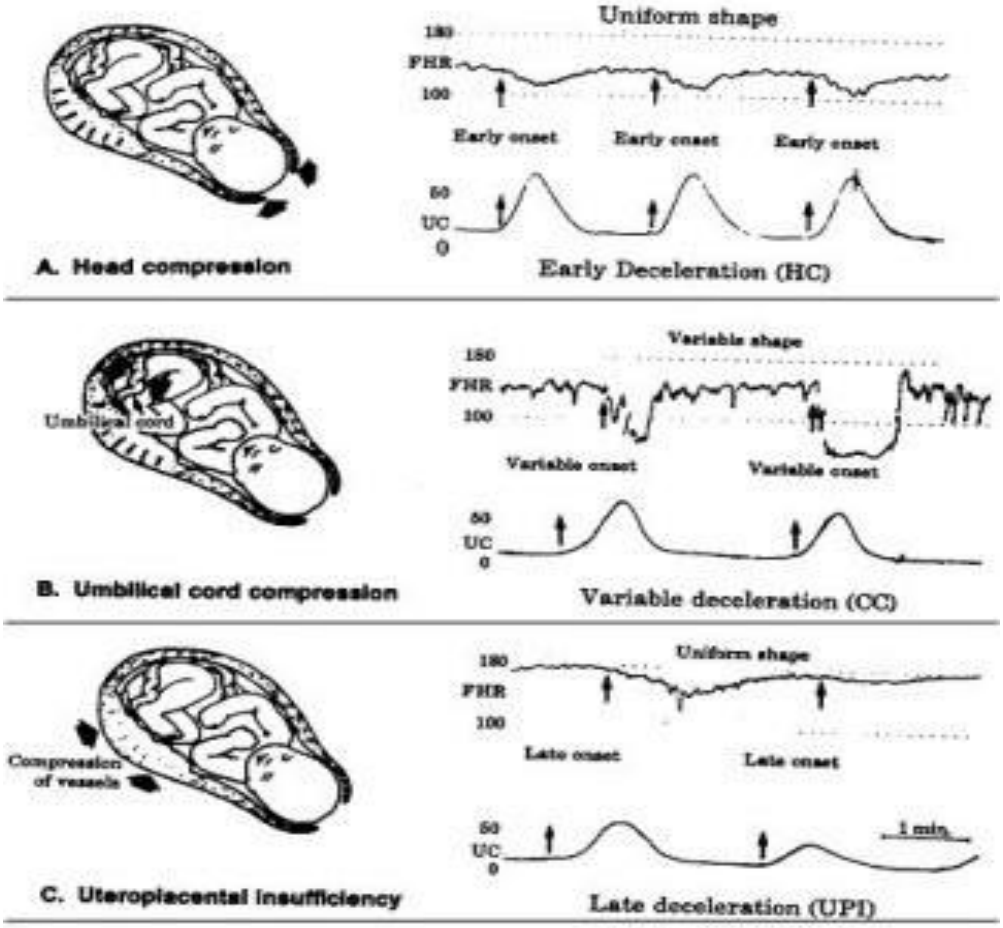


Figure 24-2 FHR deceleration patterns and implied etiology according to E.H. Hon. (From E.H. Hon. *An Atlas of Fetal Heart Rate Patterns* Hartley Press, New Haven, 1968)

4 . **Variability**: **THE MOST IMPORTANT FACTOR** Fluctuations in the baseline FHR that

is **irregular** in amplitude and frequency, visually quantified.

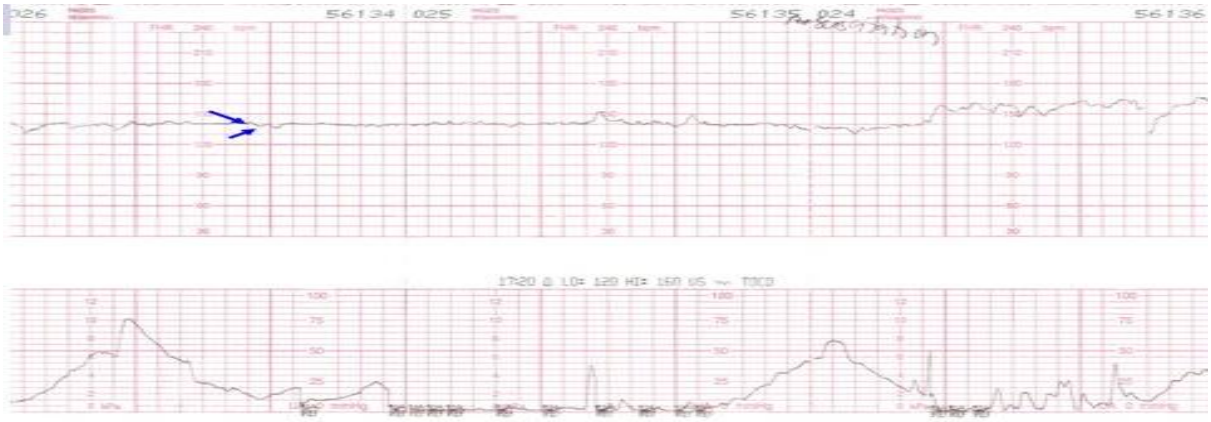
It may be:

A- Absent or minimal **< 5 BPM** (Physiological or pathological)
Physiological causes: fetal sleep cycle / extreme prematurity / Narcotics
Pathological causes : Metabolic academia or hypoxia.

B- NL **6 – 25 BPM**.

C- Marked **> 25 BPM** >> Sinusoidal rhythm >> fetal anemia.

Poor variability



CTG

Results of CTG:
1- **Reactive** CTG >> 4 variants are normal.
2- **Non-reassurance** >> abnormality in **1** variants >> **repeat CTG**.
3- **Abnormal** >> **2 or more** abnormalities

Management: is fetal vibroacoustic stimulation or fetal scalp sampling.

Antepartum fetal testing

- Antepartum fetal surveillance evaluates for fetal **hypoxia**.
- It is performed in pregnancies with a high risk of fetal demise due to **maternal** (hypertension, diabetes mellitus, decreased fetal movements) or **fetal** (post-term pregnancy, growth restriction) conditions.
- High risk pregnancy may need **weekly** BPPs starting at **32 weeks** gestation.

Biophysical profile (BPP)

A complete BPP:
- Measures 5 components of fetal well-being:
1. NST.
2. Amniotic fluid volume.
3. Fetal gross body movements.
4. Fetal extremity tone.
5. Fetal breathing movements.

Biophysical profile*	
Component	**Normal finding**
Nonstress test	Reactive fetal heart rate monitoring
Amniotic fluid volume	Single fluid pocket ≥2 cm × 1 cm or amniotic fluid index >5
Fetal movements	≥3 general body movements
Fetal tone	≥1 episodes of flexion/extension of fetal limbs or spine
Fetal breathing movements	≥1 breathing episode for ≥30 seconds

Scores given for each component are **0** or **2**.
▪ A normal BPP (**8/10 or 10/10**) suggests that the fetus is **well- oxygenated.**

▪ A score of **0/10 to 4/10** indicates **fetal hypoxia** due to placental dysfunction (placental insufficiency).
- The patient requires **prompt delivery** due to the high likelihood of fetal demise.

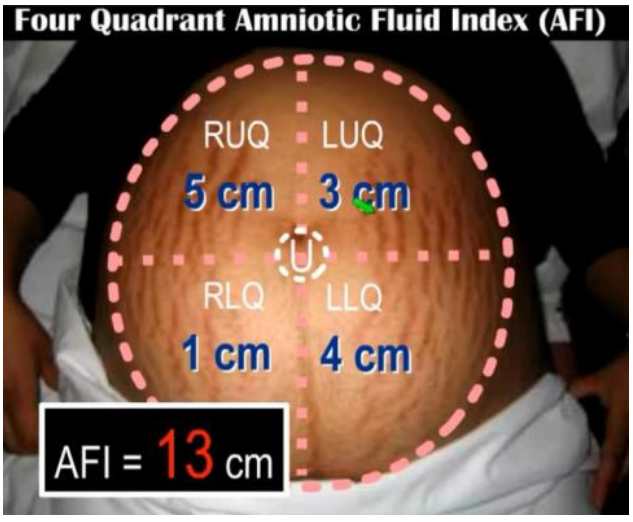
▪ A BPP of **6/10** is **equivocal** and should be **repeated in 24 hours**.

Amniotic fluid index

The **4-quadrant** amniotic fluid index test assesses in **centimeters** the deepest single vertical amniotic fluid pocket in each of the 4 quadrants of the uterus.

The **sum** of the pockets is known as the **amniotic fluid index, or AFI.**

Normally:
- Single fluid pocket **> 2 cm**.
- AFI **> 5 cm.**



Premature rupture of membranes (PROM)

▪ Definition:
- Rupture of the fetal membranes **before** the onset of labor, whether at term or preterm.

▪ Risk Factors:
- **Ascending infection** from the lower genital tract is the **most common** risk factor for PROM. Other risk factors are local membrane defects and cigarette smoking.

▪ Clinical Presentation:
- Typical **history** is a **sudden gush** of copious vaginal fluid.
- **On external examination**, clear fluid is flowing out of the vagina.
- **Oligohydramnios** is seen on **ultrasound** examination.

Diagnosis

PROM is diagnosed by **sterile speculum examination** meeting the following **criteria**:

1. **Pooling positive**: clear, watery amniotic fluid is seen in the **posterior vaginal fornix.**
2. **Nitrazine** positive: the fluid turns pH-sensitive paper blue.

   Fern positive: the fluid displays a ferning pattern when allowed to air dry on a microscope glass slide.

Chorioamnionitis

- Chorioamnionitis is diagnosed **clinically** with all the following **criteria** needed:
  1- Maternal fever.
  2- Uterine tenderness.
  3- Maternal tachycardia.
  4- Fetal tachycardia (□160/min).
  5- Malodorous amniotic fluid.
  6- Purulent vaginal discharge.

- **In the presence** of confirmed **PROM**, in the absence of a URI or UTI.

Management

- It depends on the fetus's **Gestational Age** and **Presence of Chorioamnionitis.**
- If **Chorioamnionitis** is present (Etiology is typically polymicrobial), obtain cervical cultures :
  1- Start broad spectrum therapeutic **IV antibiotics**.
  2- Initiate **Prompt Delivery** to reduce the risk of life-threatening neonatal infection and maternal complications.

- If **no infection (uncomplicated) is present**, management will be based on **gestational age.**

Mx of Uncomplicated PROM

A. Before viability (<24 weeks) Outcome is dismal (previable):
- Risk of fetal pulmonary hypoplasia is **high.**
- Either **induce labor** or manage patient with **bed rest** at home.

B. With preterm viability (24-33 weeks):
- Conservative management.
- **Hospitalize the patient** at bed rest.
- Administer **IM betamethasone** to enhance fetal lung maturity if <32 weeks, obtain cervical cultures.
- Start a **7-day course** of prophylactic **Ampicillin** and **Erythromycin** (to decrease risk of chorioamnionitis).
- Delivery is indicated **if there are signs of :**
  1- Intraamniotic infection.
  2- Deteriorating fetal/maternal status
  3- At 34 weeks gestation.

C. At term (>34 weeks):
- Initiate prompt delivery **to decreases the incidence of chorioamnionitis**.
- If vaginal delivery is expected, **use oxytocin or prostaglandins .as indicated.** otherwise, perform **cesarean delivery**
- If **uterine contractions** occur, **tocolysis** is **contraindicated**

Preterm labor

Preterm delivery is **the most common** cause of perinatal morbidity and mortality. Overall, **12%** of pregnancies deliver prematurely.

▪ Many patients will have preterm contractions but not be in preterm labor.
- **Three criteria** need to be met:
- **Gestational age**: pregnancy duration **>20 weeks**, but **<37 weeks**.
- **Uterine contractions**: at least **3** contractions in **30** min.
- **Cervical change**: serial examinations show a change in dilation or **effacement**, or a single examination shows cervical dilation of >2 cm. A short cervical length is a strong predictor of preterm labor.

Risk Factors

1) Most common: prior preterm birth (PTB)
2) Short transvaginal (TV) cervical length (<25 mm)
3) PROM.
4) Multiple gestation.
5) History of cervical surgery.
6) Uterine anomaly.

Supplementation with exogenous progesterone decreases the rate of preterm delivery in patients with short cervices or history of preterm birth.

Investigation

Fetal Fibronectin (fFN):

- fFN is a protein matrix produced by fetal cells that acts as a biological glue binding the trophoblast to the maternal decidua. It “leaks” into the vagina if PTB is likely and can be measured with a rapid test using a vaginal swab.

Interpretation: main value of the test is a negative. With a positive result, the likelihood of PTB is 50%

Management

Confirm labor using the **3 criteria** listed earlier:
- **Rule out** contraindications to **tocolysis** using criteria listed above.
- Initiate IV hydration with isotonic fluids.
- Start tocolytic therapy with terbutaline, nifedipine or indomethacin (if <32 weeks) for no longer than 48 hours to allow for antenatal steroid effect.

Cont.

- Start IV MgSo4 for fetal neuroprotection (if <32 weeks) at least 4 hours before anticipated birth.
- Administer maternal IM betamethasone to stimulate fetal type II pneumocyte surfactant production if gestational age is <34 weeks.
- Obtain cervical and urine cultures before giving IV penicillin G (or erythromycin) for group B Streptococcus sepsis prophylaxis.

Pharmacological agents

▪ **Intravenous Magnesium Sulfate** for Fetal **(Central effect)** neuroprotection:

- Maternal IV MgSo4 may reduce the severity and risk of cerebral palsy in surviving very preterm neonates.
- Start infusion if PTB is anticipated <32 weeks gestation regardless of the anticipated route of delivery.

Cont.

▪ **Antenatal Corticosteroid therapy:**

- A single course of corticosteroids is recommended for pregnant women with **gestational age 24-34** weeks of gestation who are at risk of preterm delivery within 7 days.

- Advantages:
Decrease severity, frequency, or both of:

Respiratory Distress Syndrome, Intracranial Hemorrhage, Necrotizing Enterocolitis and **death**.

▪ **Tocolytic Agents**:

- **Parenteral agents** may prolong pregnancy but for no more than **72 h**.
- This does provide **a window of time** for:

(1) Administration of maternal IM betamethasone to enhance fetal pulmonary surfactant and

(2) Transportation of mother and fetus in utero to a facility with neonatal intensive care.

A. Magnesium sulfate: (peripheral effect)

- It is a competitive inhibitor of calcium.
- Clinical monitoring is based on decreasing but maintaining detectable deep tendon reflexes.
- Side effects include muscle weakness, respiratory depression, and pulmonary edema.

• Magnesium overdose is treated with IV calcium gluconate.

- Contraindications include renal insufficiency and myasthenia gravis.

β-Adrenergic agonists (terbutaline):

- Tocolytic effect depends on the β2-adrenergic receptor myometrial activity → causes myometrial relaxation.
- Cardiovascular side effects (hypertension, tachycardia) are from β1 receptor cardio-vascular activity.
  Other side effects are hyperglycemia, hypokalemia.
- **Contraindications**: Cardiac disease, diabetes mellitus, uncontrolled hyperthyroidism.

C. Calcium-channel blockers:

- Decrease intracellular calcium (nifedipine).
- **Side effects** include reflex tachycardia, hypotension, and myocardial depression.
- **Contraindications** include hypotension.

D. Prostaglandin synthetase inhibitors:

- Decrease smooth muscle contractility by decreasing prostaglandin production **(indomethacin)**.
- **Side effects include:** oligohydramnios, in utero ductus arteriosus closure, and neonatal necrotizing enterocolitis.
- **Contraindications** include gestational age >32 weeks.

Cesarean Section

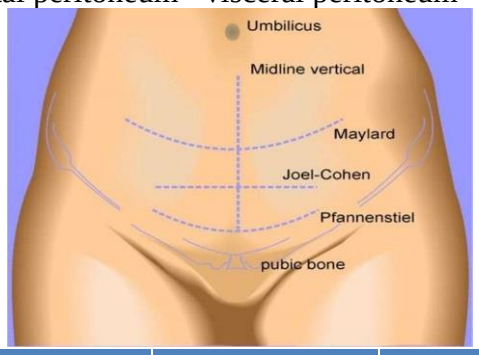
Definition

- Delivery of a viable (> 24 wks gestation) fetus through an abdominal (usually Pfannensteil skin incision) & uterine (usually transverse lower segment) incision, irrespective the fetus was living or dead.
- If < 24 wks it is called hysterotomy .

Abdominal wall incisions

1. The vertical incision in the midline extending from just below the umbilicus to a point 2 cm above the symphysis.
2. The transverse (pfannestiel) incision: extend transversely for 15 cm at a point 2 cm above the symphysis.

- Skin layers: skin> superficial fascia> deep fascia> rectus sheath> rectus muscle> transversalis fascia> parietal peritoneum> visceral peritoneum> uterine muscle.



Abdominal incisions	Cosmetic appeal	Post op pain	Wound dehiscence	Time taken
Vertical	Less	More	More	Less
Transverse	More	Less	Less	More

Uterine incisions

Uterine incisions	Site in uterus	TOLAC	Bleeding and adhesions	Lie of the fetus
Low segment transverse	Non contractile lower segment	Safe (risk of uterine rupture < 0.5%)	Less	Longitudinal lie
Classical	Contractile fundus	Not safe (risk of rupture 5%)	More	Any orientation

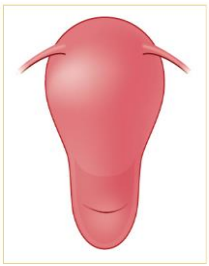


Figure I-17-2. Low Segment Transverse Incision

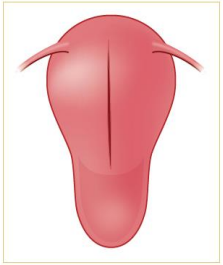


Figure I-17-3. Classical Uterine Incision

Classification of CS

• Elective: arranged ahead of time.
• Emergency: when the caesarean section is done because of sudden deterioration in maternal/fetal condition.

Classification of CS according to urgency

Category 1- requiring IMMEDIATE delivery
-a threat to maternal or fetal life
Category 2- requiring URGENT delivery
-maternal or fetal compromise that is not immediately life threatening
Category 3- requiring EARLY delivery
-no maternal or fetal compromise
Category 4-ELECTIVE delivery
-at time suited to the woman and maternity staff

Indications

- **Maternal:** CPD / Medical disorders with failed IOL or if CI / active genital herpes, and HIV .
- **Fetal:** Distress (while Cervix is not fully dilated) / Macrosomia / Multiple gestations or twins with 1st non – cephalic .
- **Obstetric:** Previous more than 1 CS / Placenta previa / Malpresentations that CI vaginal delivery (face presentation mento posterior, brow, transverse lie, footling breech, persistent oblique occipito posterior).

Preoperative preparation for CS

❑ The patient is asked to be fasting 8 hours preoperative
❑ I.V line.
❑ Fluids.
❑ Foley catheter.
❑ External fetal and maternal monitors.
❑ Antibiotic prophylaxis.
❑ Antiacids.

- **LAB TESTS:**

❑ CBC.
❑ BLOOD TYPE AND CROSS MATCH.
❑ Coagulation study.

- **ULTRASOUND (**document fetal position and estimated fetal weight and site of placenta)

Complications

- **Short term complication:**
  1. Hemorrhage: The mean estimated blood loss at cesarean delivery is approximately 1000 mL. (Once the fetus is delivered, an oxytocic agent (5 IU Syntocinon™ IV) is administered to aid uterine contraction and placental separation).
  2. Infection: without prophylactic antibiotics, the rates of postpartum endomyometritis are high (staph and GBS).
  3. Incidental Surgical Injuries: Bladder injuries are the most common injuries, Less common surgical injuries involve the bowel or ureters.

- **Late post operative:**
  1. Wound infection
  2. Paralytic ileus
  3. Thromboembolic complications
  4. Adhesions & subsequent tubal & peritoneal factors of infertility
  5. Placenta accreta if implanted on the scar site

Post operative pyrexia

Within 30-45 min: Bacteremia .
On first day: Atelectasis .
On 3rd day: Pneumonia or UTI .
On 5th day: DVT
On 7th day: Wound infection .
On 10-15 day: Deep abscesses, mastitis.

Postoperative care

1. **Maternal monitoring In the immediate postoperative period:**
   Vital signs, uterine tone, vaginal and incisional bleeding, and urine output are monitored closely.
2. **Pain relieving:**
   Analgesia followed by oral nonsteroidal anti-inflammatory drugs.
3. **Bladder catheter:**
   Removing the catheter as soon as possible minimizes the risk of infection.
4. **Diet and activity:**
   Early ambulation (when the effects of anesthesia have abated) and oral intake (within six hours of delivery) are encouraged
5. **Breastfeeding:**
   Can be initiated in the delivery room.
6. **Wound care**:
   Dressings can be removed, and patients may shower within 48 hours of surgery.

VBAC

- **VBAC (Vaginal Birth After CS) or TOLAC (Trial Of Labor After CS):**
- Prerequisites:
  1. previous only one LCSC with NO post operative complications (infection, proper spacing >18 months)
  2. No indications for CS in current pregnancies
- Complications of VBAC : rupture uterus

Multiple Gestations

Definition:

- This is a pregnancy in which more than one fetus is present.

- The fetuses may arise from one or more zygotes.

- **Di**zygotic ("fraternal") twins arise from **2 eggs** that are separately **fertilized** by **2 different sperm** (always 2 zygotes) and will have **2 separate amniotic sacs** and **2 separate placentas (chorions).**

- **Incidence** is increasing with identifiable **risk factors** include race, maternal age, family history, or ovulation induction.

- **Mono**zygotic ("identical") twins arise from **1 fertilized egg (1 egg + 1 sperm)** that splits in early pregnancy.

- **Incidence** is constant **4/1000** and configure 1/3 of twins

- The **timing of splitting** determines **chorionicity** (number of chorions) and **amnionicity** (number of amnions).

Up to 72 hours: (30%)

- The twins are **di**chorionic, **di**amnionic.
- There are 2 placentas and 2 sacs.
- This is the **lowest risk** of all monozygotic twins.

Between 4 and 8 days: (69%)

- The twins are **mono**chorionic, **di**amnionic.
- There is 1 placenta and 2 sacs.
- A specific additional complication is **twin-twin transfusion**, which develops in 15% of mono-di twins.

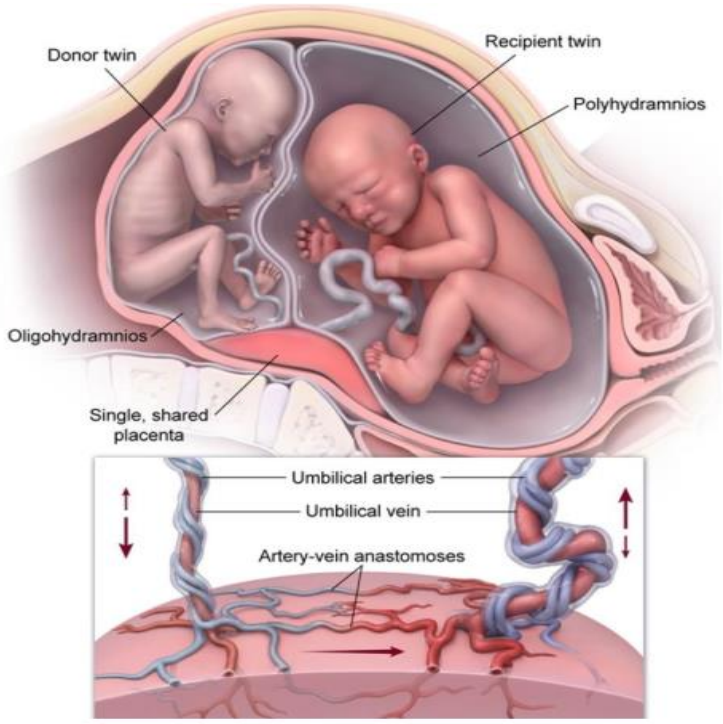
Twin-Twin Transfusion Syndrome

- The twins share a **single placenta** but do so **unequally**.-

- The **donor** twin gets **less blood supply,** resulting in growth restriction, oligohydramnios, and anemia. However, **neonatal outcome** is usually **better**.

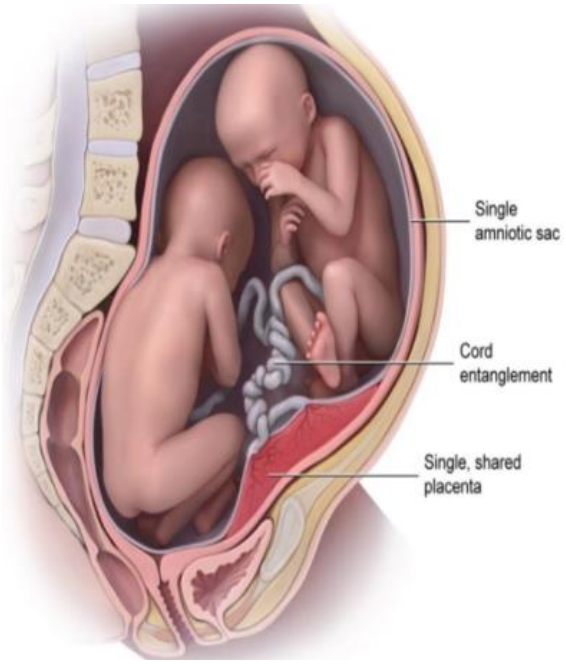
- The **recipient** twin gets **more blood supply**, resulting in excessive growth, polyhydramnios, and polycythemia.

- Intrauterine fetal **surgery** is indicated to laser the vascular connections on the placental surface between the 2 fetuses.



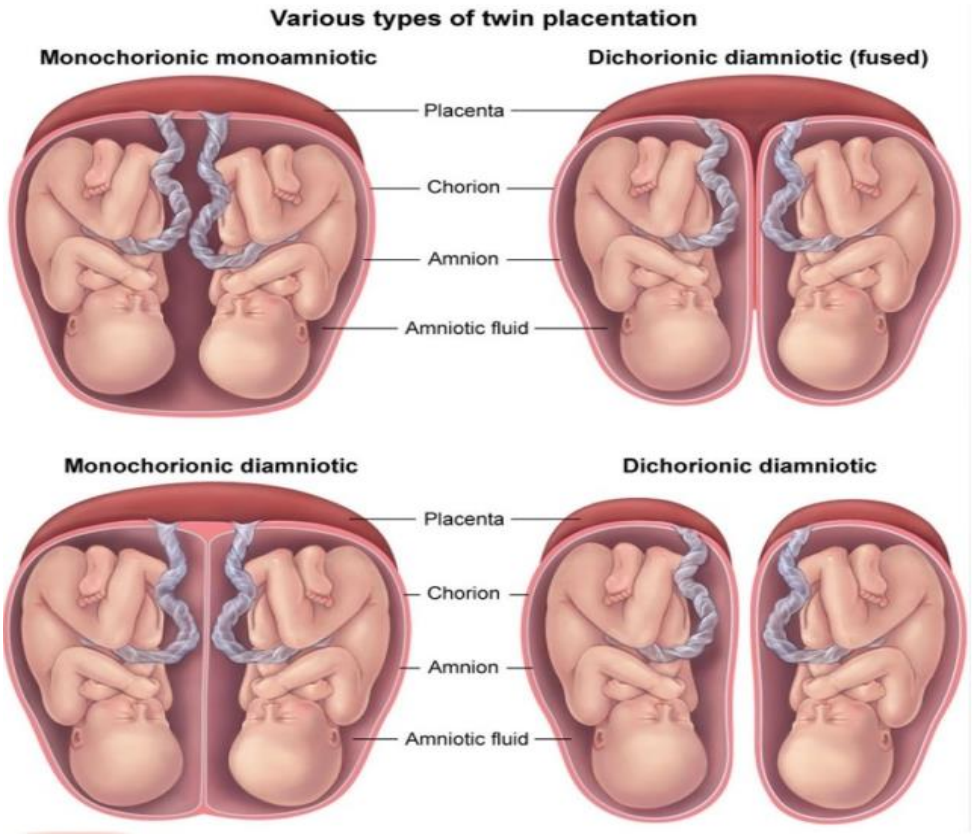
Between 9 and 12 days:

- The twins are **mono**chorionic, **mono**amnionic.
- There is only 1 placenta and 1 sac.
- Specific additional risks are twin-twin transfusion but particularly **umbilical cord entanglement** which can result in fetal death.
- This is **the highest risk** of all monozygotic twins.



After 12 days:

- **Conjoined** twins result. (Siamese twins)
- Most often this condition is **lethal**.



Clinical Findings

- **Hyperemesis gravidarum** is more common from high levels of **β-hCG** which is **severe vomiting** during the **1st to early 2nd** trimesters. It can be differentiated from typical nausea and vomiting of pregnancy by the presence of **ketones on urinalysis**, laboratory abnormalities and changes in volume status (**dehydration**).

- Uterus is **larger than date.**

- Maternal serum **α-fetoprotein** is excessively higher than with one fetus.

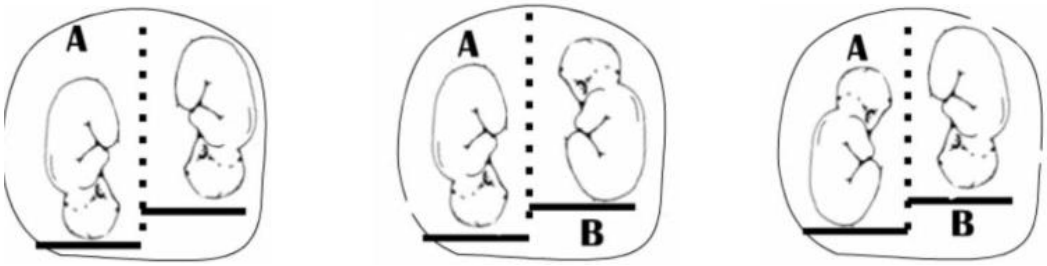
Complications:

- For all twin pregnancies include:
Nutritional **anemia** (iron and folate), **preeclampsia.**

Preterm labor (50%), **malpresentation** (50%), **cesarean delivery** (50%).

Postpartum hemorrhage.

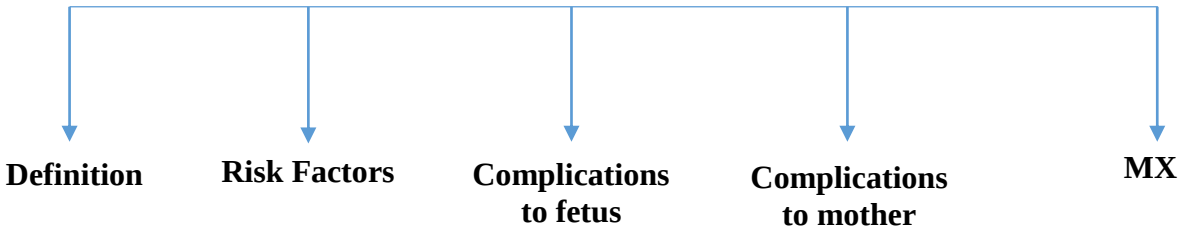
Route of delivery is based on presentation in labor:
- **Vaginal** delivery if **both** are **cephalic** presentation (50%).
- **Cesarean** delivery if **first** twin in **noncephalic** presentation (10%).



Hypertensive disorders in pregnancy

Gestational diabetes mellitus

Post-term & Post-date pregnancy



Definition:

Because most of the time the date of conception is not known, a practical definition is a pregnancy that continues >42 weeks after the first day of the last menstrual period

Post date pregnancy: is the pregnancy the extend beyond 40 week till 42 week

Etiology:

The most common cause of true postdates cases are idiopathic (no known cause). It does occur more commonly in young primigravida.

Significance:

Maternal mortality:

- **Increased two- to threefold.**

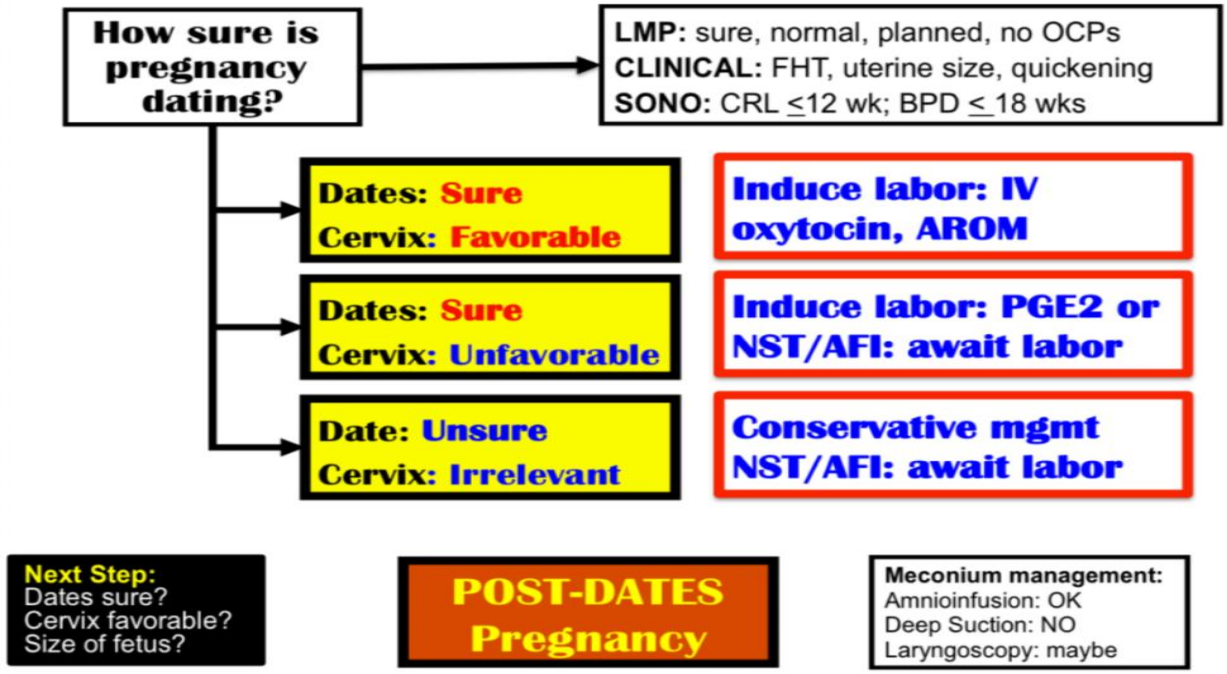
This is a direct result of changes on placental function over time.
Macrosomia syndrome (80%):

- **In most patients, placental function continues providing nutritional substrates and gas exchange to the fetus, resulting in a healthy but large fetus.**
- **Shoulder dystocia is more common with risks of fetal hypoxemia and brachial plexus injury**

Dysmaturity syndrome (20%):

In a minority of patients, placental function declines as infarction and aging lead to placental scarring and loss of subcutaneous tissue.

- **This reduction of metabolic and respiratory support to the fetus can lead to the asphyxia that is responsible for the increased perinatal morbidity and mortality.**
- **Oligohydramnios results in umbilical cord compression.**
- **Hypoxia results in acidosis and in utero meconium passage.**



Management:

Patients can be classified into 3 groups:

A. Dates sure, favorable cervix:

- **Management is aggressive.**
- **There is no benefit to the fetus or mother in continuing the pregnancy.**
- **Induce labor with IV oxytocin and artificial rupture of membranes.**

Dates sure, unfavorable cervix:

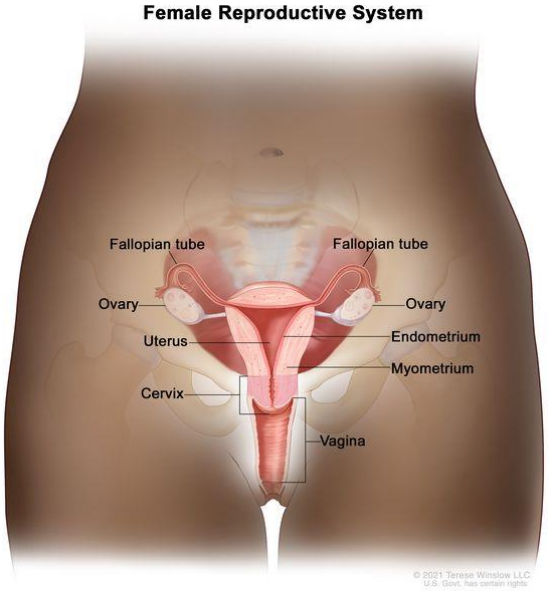
- **Management could be aggressive, with cervical ripening initiated with vaginal or cervical prostaglandin E2 followed by IV oxytocin.**
- **Or management could be conservative with twice weekly non-stress test (NSTs) and Amniotic Fluid Index (AFIs) awaiting spontaneous labor.**
- **The diagnosis of oligohydramnios is an indication for delivery even if antepartum fetal testing is normal.**

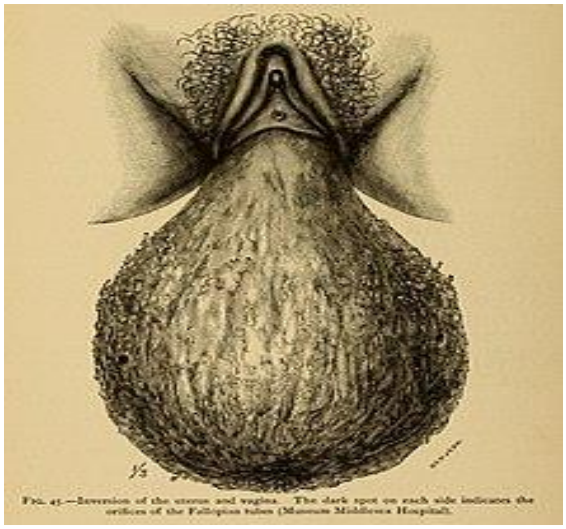
Dates unsure:

- **Management is conservative.**
- **Perform twice weekly NSTs and AFIs to ensure fetal well-being and await spontaneous labor.**
- **If fetal jeopardy is identified, delivery should be expedited.**

Obstetric Emergencies

Uterine inversion



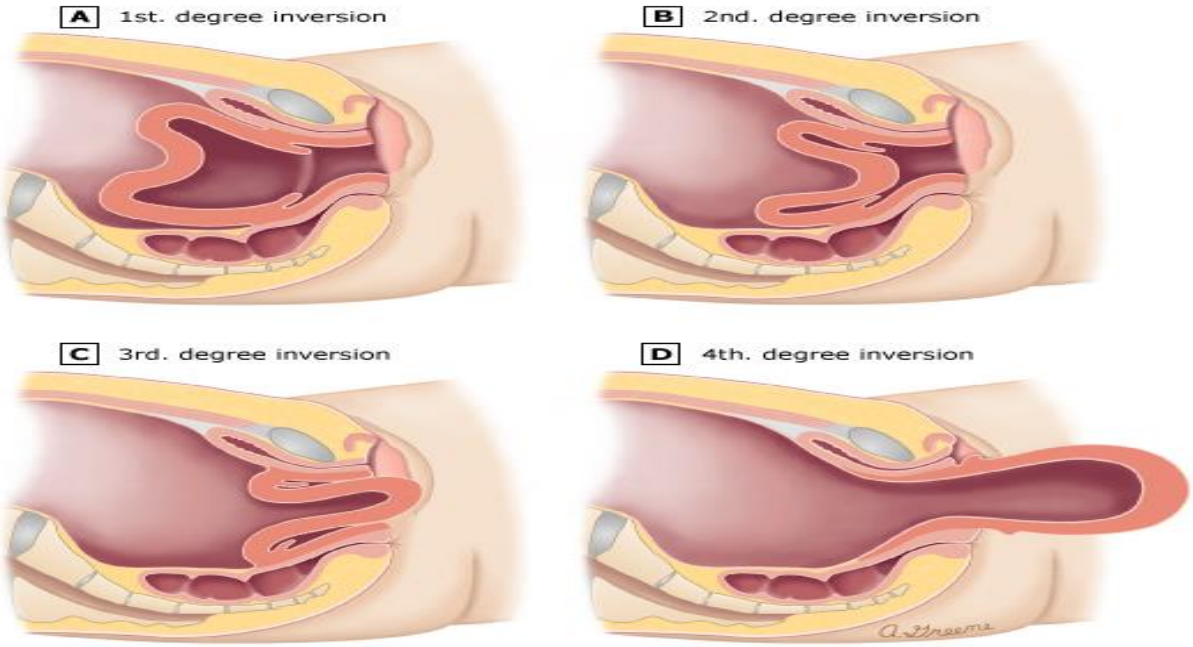


Definition

- A rare complication of vaginal or caesarian delivery (by implication, it occurs in the 3rd stage of labor) in which the uterine fundus completely or partially collapses into endometrial cavity.
- The inversion of the uterus prevents the contraction of the uterus after fetus delivery, actually it stretches the myometrium! Leading to severe hemorrhage and shock, resulting in maternal death.

Risk factors

Excessive traction force on fundus	Atony/laxity of the uterus and the fundus
Fundal placenta	**Overdistension of the uterus:-** Macrosomia, polyhydramnios, multiple gestation
Short umbilical cord	**Anatomical or functional distortion of the uterus:-** Uterine anomalies, fibroids, placenta previa, abnormal placentation, precipitous/prolonged labor, infection, etc...
Excessive fundal pressure	**Drugs**: Uterine relaxants (tocolytics)



Clinical features of uterine inversion

Signs and symptoms include one or more of the following:

- **Mild to severe vaginal bleeding**
- **On speculum exam:A smooth, round mass protruding from the cervix or vagina**
- **On abdominal palpation: the uterine fundus is absent from its expected periumbilical position. With severe prolapse, the inverted uterus is readily appreciated protruding at the perineum.**
- Mild to severe lower abdominal pain
- Urinary retention

The diagnosis of uterine inversion is a clinical one!!

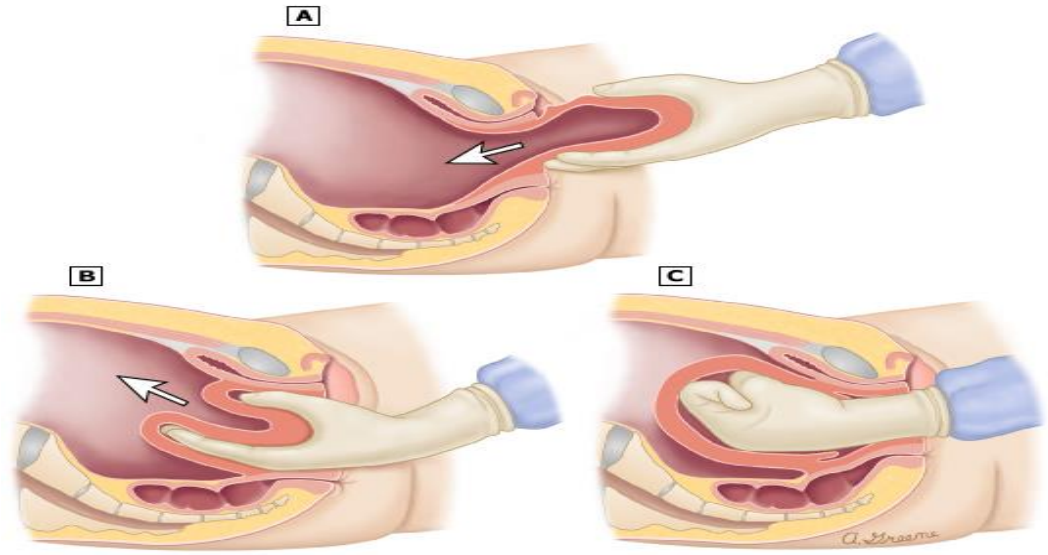
Differential diagnoses

- Protruding fibroids: However, in fibroids, the fundus is **normally palpated periumbilically** whereas in uterine inversion the **fundus is absent or markedly abnormal** (cupped and smaller than expected)

Management

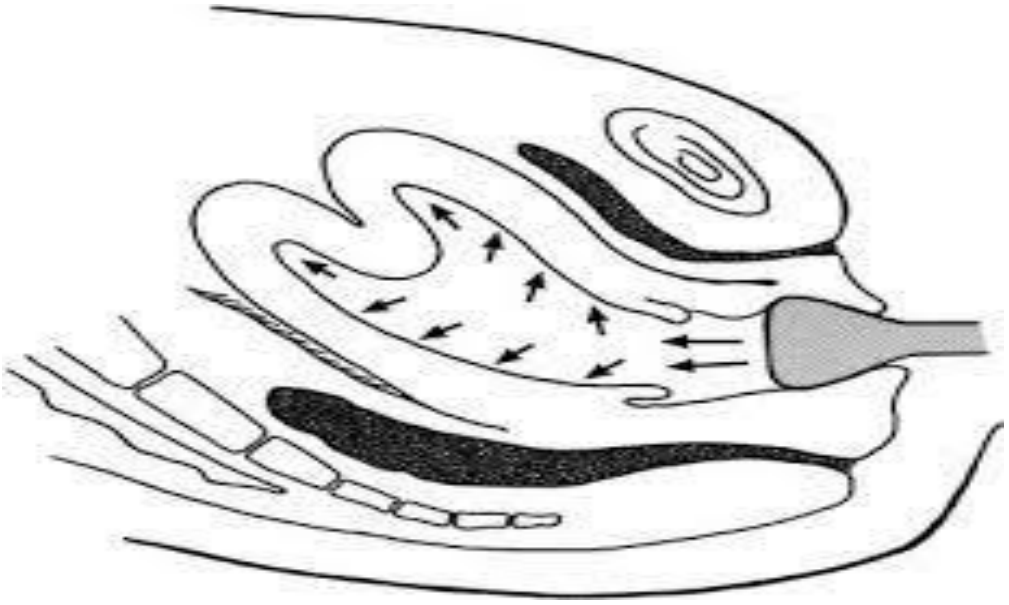
1. **Save the life!/resuscitate/ ABC:-**
   - Call for help, including an anesthesiologist staff! You need a team!
   - **A**:Protect the airways(since they might be lost in a patient with reduced consciousness)
   - **B**: Administer 100% oxygen via mask.
   - C:-Insert two large bore IV cannula
   - Draw some blood from the cannula for CBC, blood typing, and coagulation studies(to exclude DIC) and cross-match 4-6 units of blood and any other necessary blood components.
   - Administer IV crystalloid boluses and blood products via the cannula to restore hemodynamic stability

2. **Give analgesia**
3. **Discontinue uterotonic drugs to facilitate smooth reduction of the uterus back into its original position**
4. **Manually replace the uterus back into position using Johnson's method**



5. **If attempt has failed,** administer **tocolytics** like nitroglycerin and terbutaline or alternatively induce general anesthesia
6. If **2nd attempt has failed or hemodynamically unstable**, then go for **laparotomy and surgical reduction**
7. If surgery is not feasible you might consider **hydrostatic reduction**
8. Once the uterus is successfully restored to its original position, **administer uterotonics** to hold it in place
9. **Prophylactic antibiotics** (usually 1st generation cephalosporin+metronidazole)

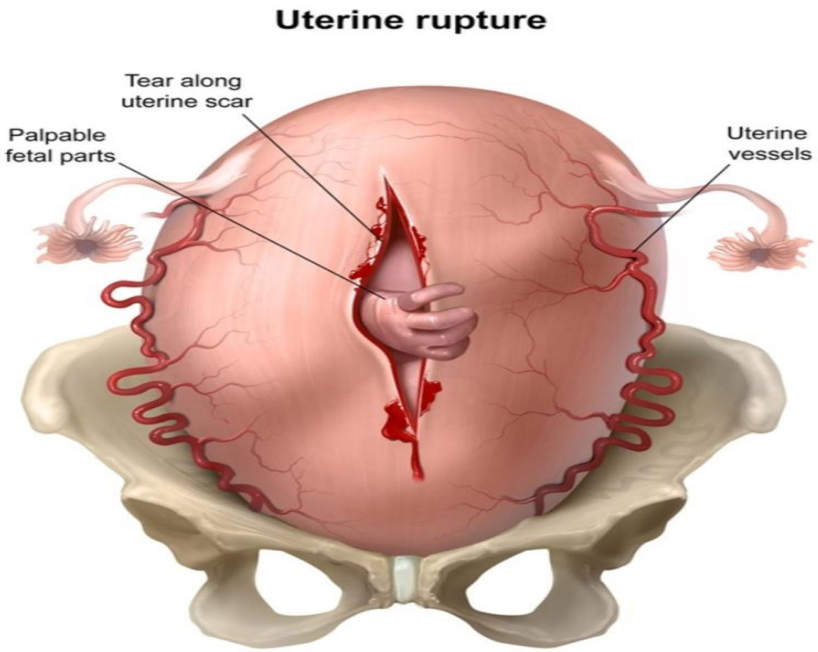
Hydrostatic reduction



Complications

- Hypovolemic shock and death
- Pre-renal acute kidney injury
- Sheehan syndrome
- Anemia
- Endometritis and sepsis due to exposure of endometrium to vaginal flora
- Blood transfusion complications like dilution coagulopathy
- Surgical management complications

Uterine rupture



Outline

- Definition
- Clinical Pathology
- Risk factors/causes
- Clinical features
- Differential diagnosis
- Complications
- Management

Definition

- Uterine rupture: Separation of all layers of uterine wall including the serosa
- Uterine dehiscence: the incomplete uterine scar disruption with an intact serosa
- Uterine rupture is a much more life-threatening condition than dehiscence. **It is an obstetric emergency**

Clinical pathology

- Uterine rupture leads to severe **hemorrhage and shock**
- Contractions would be ineffective→ fetus is trapped in the tight uterus and can't take breaths→**fetal hypoxia/distress**.

Risk factors/etiology

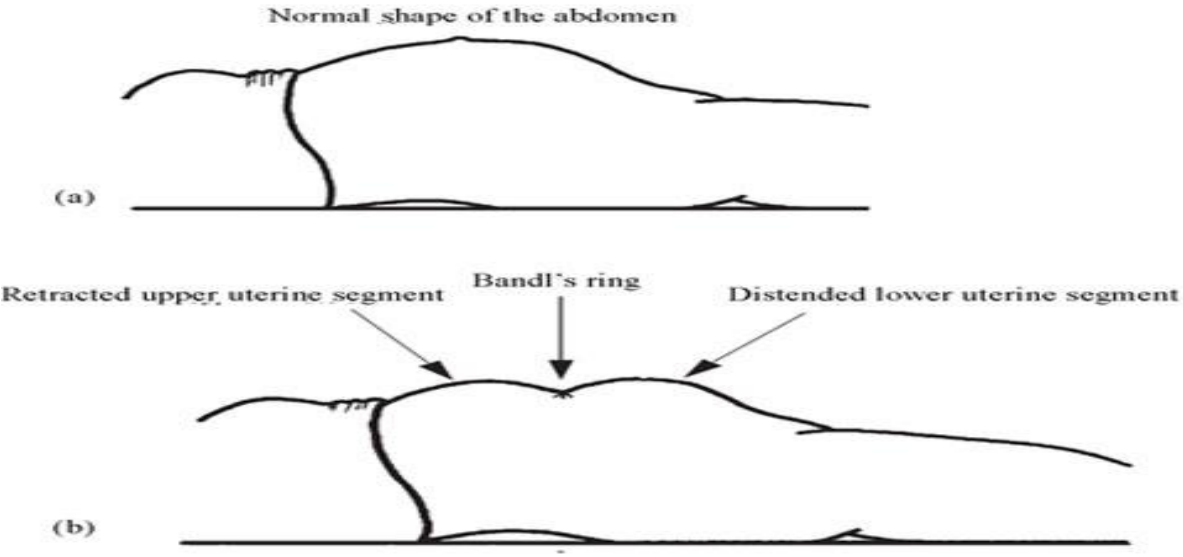
Weakness of uterine wall	Trauma	Overdistension of uterus	Overstimulation of uterine myometrium
Most important: Previous uterine scar Incidence of rupture in ladies without previous caesarian=0.006% Incidence of rupture in ladies with previous lower segment transverse C-section scar=0.5% Incidence of rupture in a lady with classical vertical C-section scar-5-7%	A blow or hit(like in RTA)	Multiple gestation	Iatrogenic: induced or augmented labor
Previous myomectomy	Iatrogenic: instrumental delivery (with forceps), external cephalic version or breech extraction	Polyhydramnios	Preciptous labor
Grand multipara	Shoulder dystocia and obstructed labor	Macrosomia	Prolonged labor
Abnormal placentation			
Congenital uterine anomalies			

Clinical features and diagnosis

• Highly variable!! Not all of these have to be present:-

Imminent (incoming) rupture:-

Severe abdominal pain
Increased contractions followed by hyperactive labor
Bandl ring



The initial clinical features of uterine rupture are non-specific and highly variable!!

- Uterine rupture:-
  1. Nonreassuring/pathological CTG→ fetal distress (Most common/earliest sign)
  2. Transition from the generalized colicky pain of normal labor(if in labor) to a sudden onset of Severe constant Pain" at the site of previous scar" the pain persists between contractions
  3. Loss of station of the presenting part
  4. Palpable fetal parts through the rupture
  5. Vaginal bleeding

The diagnosis of uterine rupture is a clinical one!!

Differential diagnosis

• Causes of antepartum hemorrhage such as placental abruption.

Management

1. Save the life!/stabilize/ resuscitate the mother/ ABC:-
   - Call for help!
   - **A**: Protect the Airway(it might get lost with reduced consciousness due to blood loss)
   - **B**: Administer 100% oxygen via mask
   - C:Insert two large bore IV cannula
   - Draw some blood for CBC, blood typing, and coagulation studies (to exclude DIC) and cross-match 4-6 units of blood and any other necessary blood components.
   - Administer IV crystalloid boluses and blood products via the cannula to restore hemodynamic stability
2) Deliver the fetus via **emergency C-section**, this will allow the fetus to draw breaths and reverse his hypoxia
3) **Laparotomy and surgical repair** of the **uterus**. If hemorrhage is still refractory, perform **hysterectomy.**

Complications of uterine rupture

1. **Maternal complication:-**
   Hypovolemic shock and death
   Pre-renal acute kidney injury
   Sheehan syndrome
   Anemia
   Blood transfusion complications like dilution coagulopathy
   Surgical management complications like bladder laceration

2. **Fetal complications:-**
   • Fetal distress/hypoxia and its sequelae like **cerebral palsy and neurodevelopmental delay**
   • Fetal **demise**

Cord prolapse

Outline

- Definition
- Classification
- Clinical Pathology
- Risk factors/causes
- Clinical features and diagnosis
- Differential diagnosis
- Management
- Complications

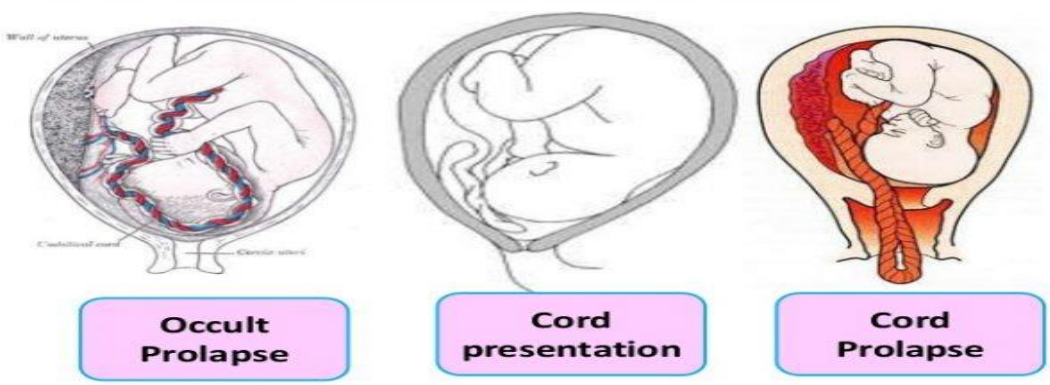
Cord prolapse definition

- The descent of the umbilical cord **alongside** or **beyond the presenting part** with **ruptured fetal membranes. It is an obstetric emergency**
- Ruptured fetal membranes is a must for the definition of cord prolapse.If the membranes are not ruptured, then this is called **cord presentation not prolapse.**

Classification

- **Occult cord prolapse**: Ruptured membranes with descent of cord **adjacent to the presenting part**(no matter whether it is head" vertex", buttocks" breech" etc…). The cord can't be palpated by PV exam and can't be seen on speculum examination.
- **Overt cord prolapse:** Ruptured membranes with descent of cord **below the presenting part**

Overt cord prolapse is in contrast to occult cord prolapse. Here the cord is below the presenting part and thus can be readily sensed by visualization or palpation



Classification

- Funic (cord) presentation: Intact membranes with the cord descending below the presenting part.
- Cord can be palpated through the intact membranes
- Harbinger of cord prolapse
- The umbilical cord carries fetal blood (umbilical cord doesn't contain any maternal blood) into the placenta to be oxygenated
- Cord prolapse means the **cut-off of fetal blood** into and back from the placenta → decreased supply of oxygenated blood into the fetus→ fetal ABC impairement→fetal **hypoxia and acidosis**→fetal death!
- **Vasospasm** from exposure of cord to relatively colder environment exacerbates fetal hypoxia!

Risk factors/etiology

Any new disruption of the normal symmetry, orientation, or size of the fetus or uterine structure (like uterus,amniotic fluid, placenta,etc…)	Abnormalities in symmetry, orientation, or size of the fetus or uterine structures (like uterus, amniotic fluid, placenta, etc…)
Spontaneous rupture of membranes	Fetal congenital anomalies
Iatrogenic rupture of membrane: via amniotomy	Multiple gestation
External cephalic version	Prematurity
Placement of internal monitors	IUGR
	Abnormal fetal lie or presentation
	Pelvic tumors
	Polyhydramnios

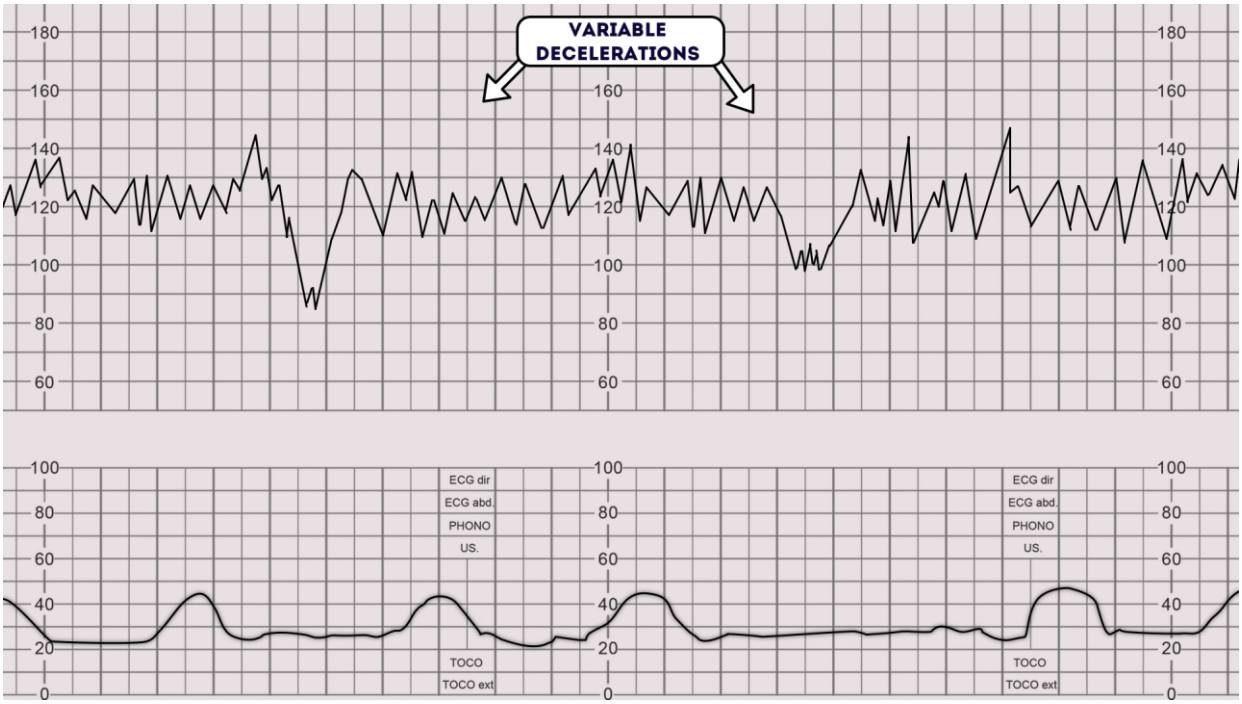
Clinical features and diagnosis

- The earliest sign is sudden, severe, prolonged **fetal bradycardia. Variable** decelerations may also show

  In **occult** cord prolapse, in which there is no visualized or palpable cord, **variable deceleration** is the only presenting sign. You suspect occult cord prolapse based on the **pathological CTG findings** and confirm it on C-section.
- Direct visualization or palpation of cord→ confirmed diagnosis of **overt** cord prolapse

The diagnosis of cord prolapse is a clinical one!!

Variable decelerations



Differential diagnosis

- Direct visualization or palpation of the cord eliminates any differentials and confirms cord prolapse.
- If cord prolapse is occult, other differentials causing fetal distress and bradycardia may be considered.

Management of umbilical cord prolapse

- Call for help!
- Asses fetal viability by continuous fetal monitoring
- Try to stabilize fetus by administrating oxygen to mother via mask
- Establish IV access in preparation for emergency C-section

Fetus dead

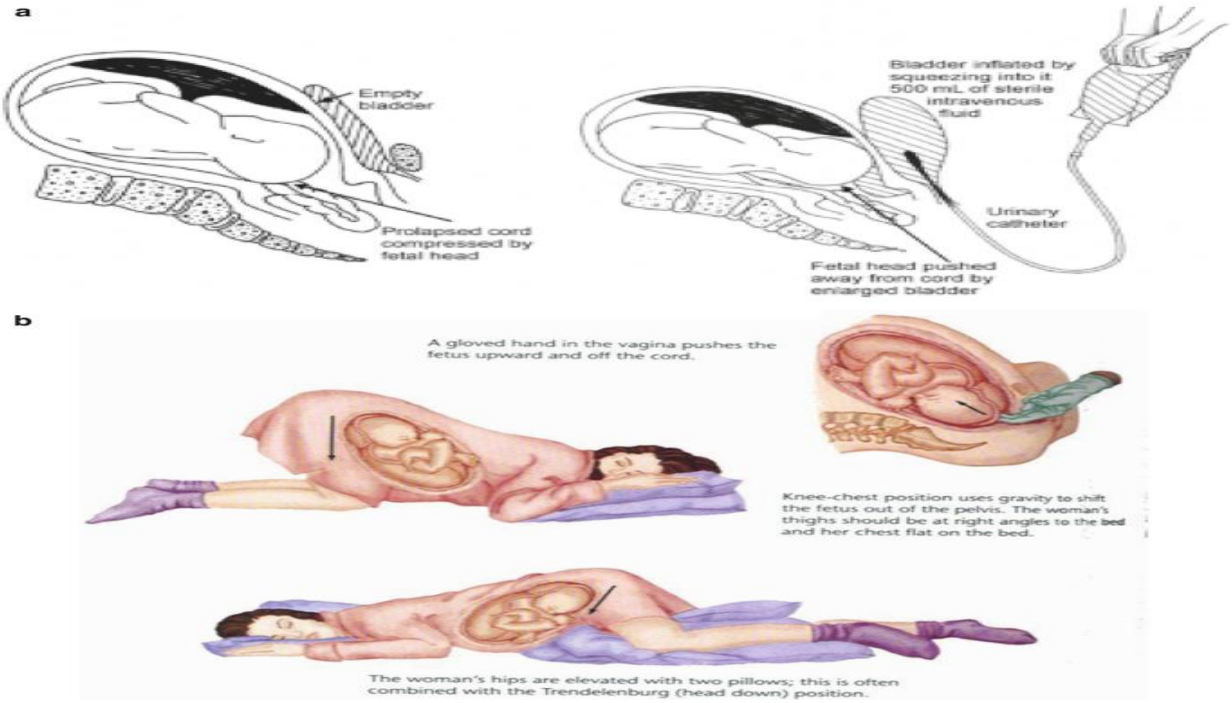
- Manage as in utero fetal demise, you go for the safest delivery for the mother(either spontaneous or induced)

Fetus alive

- Perform basic measures for reducing hypoxia
- Check if cervix is fully dilated

Yes → Consider vacuum delivery

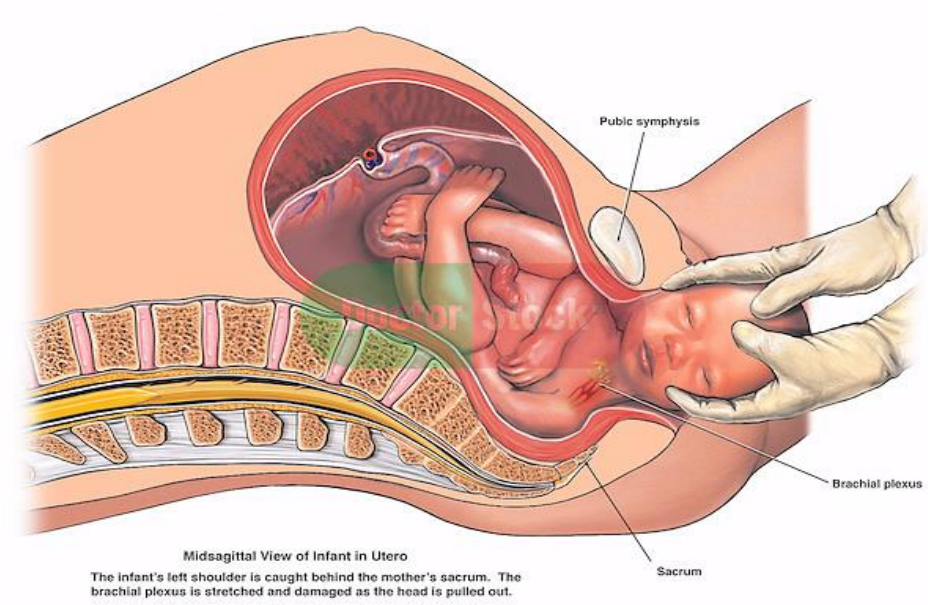
No → Emergency C-section



Complications of cord prolapse

- Fetal hypoxia and its sequelae like **cerebral palsy and neurodevelopmental delay**
- Fetal **death**
- Caeserian section **surgical complications**

Shoulder dystocia



Definition

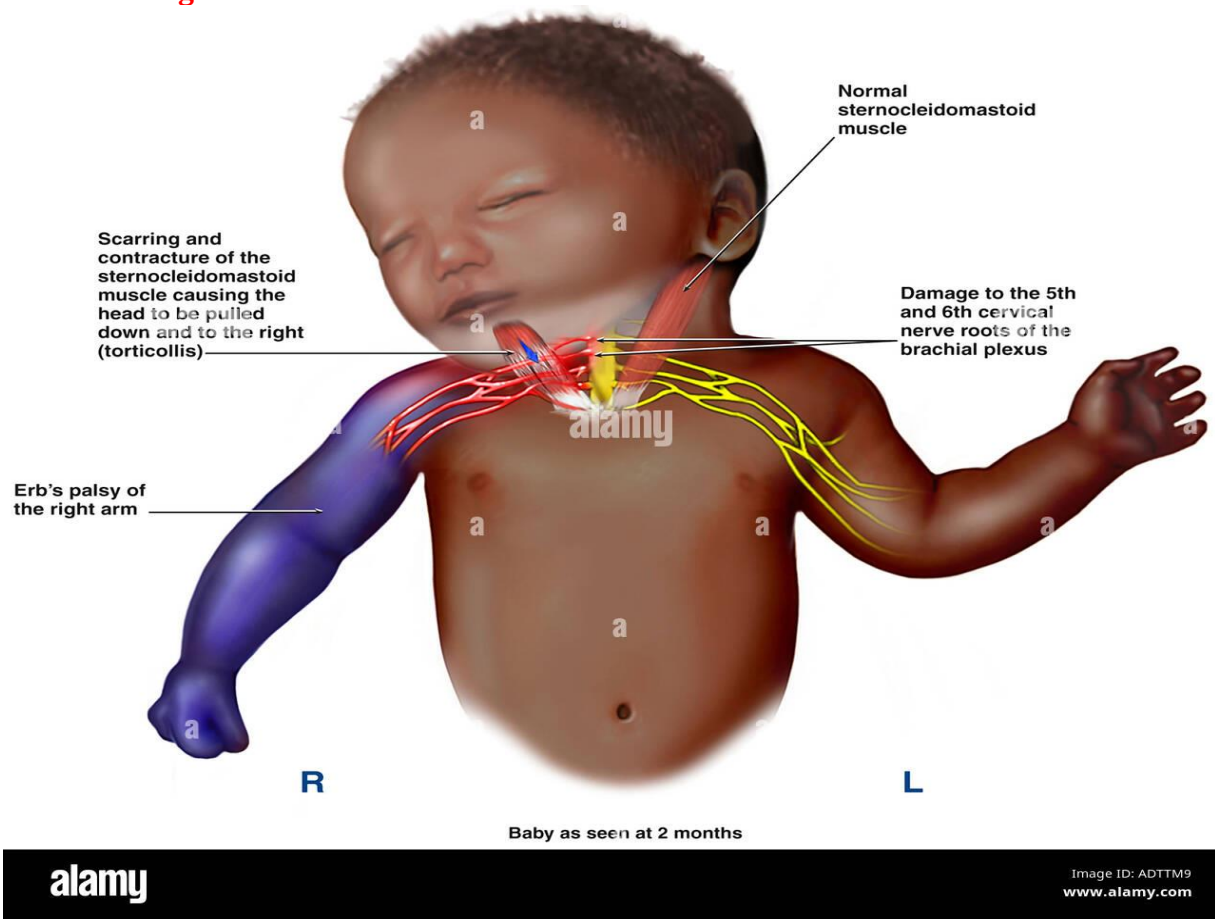
- Shoulder dystocia: dys"difficulty" tocia"delivery"
- It has been defined as:-
- Delivery of the fetal head **with impaction of the fetal shoulder** girdle or trunk against the pubic symphysis.
- Delivery of the shoulder requiring the **use of procedures**
- Prolongation of the head-to-body delivery interval to **more than 60 seconds.**

Classification

- The vast majority of cases involve impaction of the anterior shoulder only
- In very rare cases, there also might be impaction of the posterior shoulder against the sacral promontory → double shoulder dystocia

Clinical pathology

- Shoulder impaction prevents delivery of the fetus→ fetus is entrapped and so can't take adequate breaths
- Impaction of the shoulder might result in **brachial plexus injury** in addition to fractures in the humerus and clavicle
- Damage and fibrosis of **sternocleidomastoid** muscle→**torticollis**
- Shoulder dystocia might predispose the mother to **perineal tears** and **postpartum hemorrhage**



Risk factors/etiology

- There are lots of risk factors but shoulder dystocia is an unpredictable condition!
- Lots of deliveries have many of these risk factors but go smoothly without dystocia and lots of deliveries without risk factors result in dystocia!

Size mismatch between fetus and pelvis	Disruption of normal accommodation of fetus to pelvic diameters
Macrosomia	Prolonged labor
Small pelvis	Precipitous labor
Maternal obesity	Operative vaginal delivery
Post-term fetus	
Previous shoulder dystocia	

Diagnosis

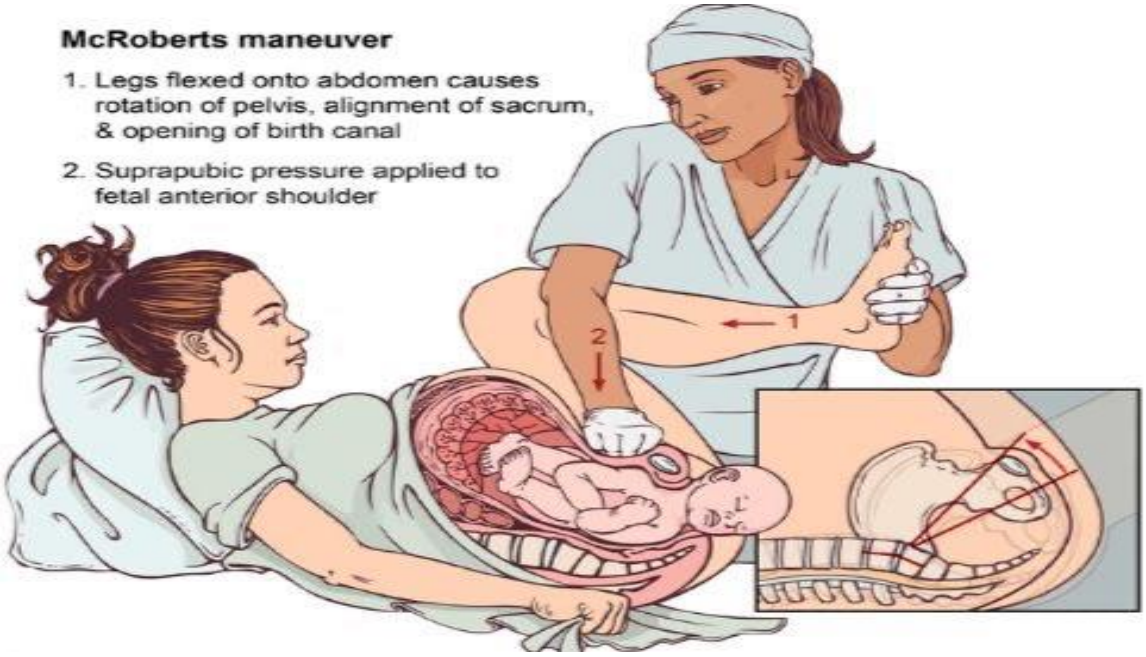
- **The diagnosis of shoulder dystocia is a clinical one!**
- The definition of shoulder dystocia constitutes its diagnosis: **Difficulty in extracting fetal trunk with customary traction**
- Turtle sign is a feature of shoulder dystocia. The head keeps popping out and retracting in like a turtle's head in a shell!

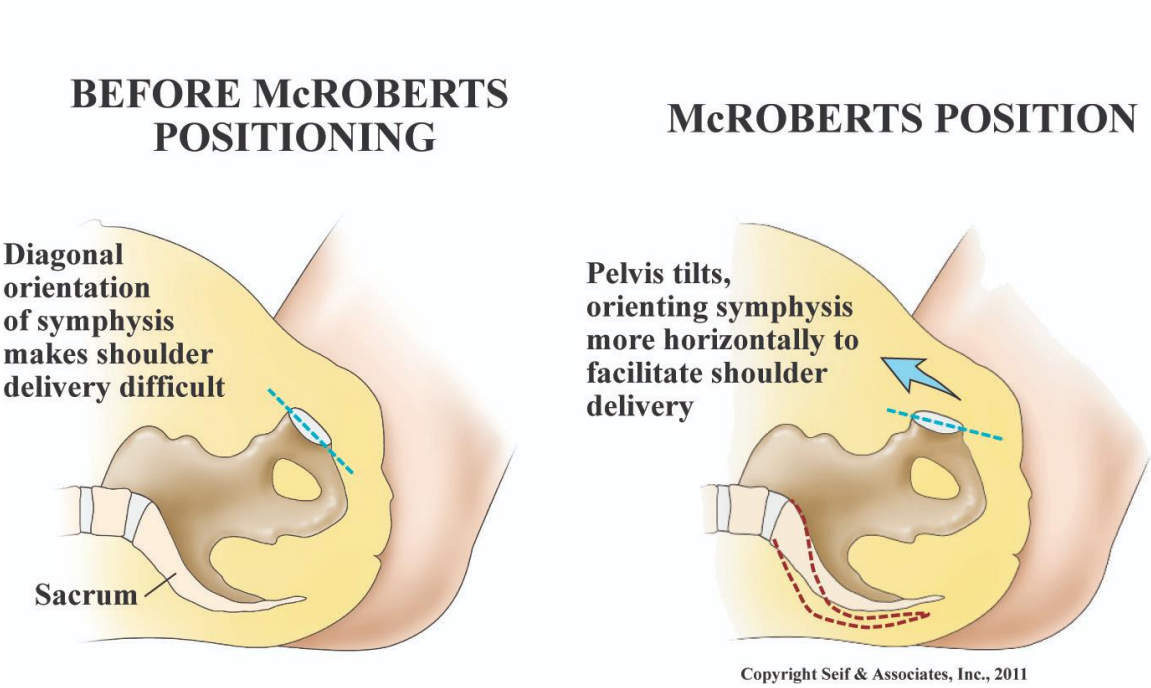
Management

- General outline: Deliver the fetus as fast as possible to prevent fetal ABC impairment and hypoxia while minimizing risks of fetal injury like brachial plexus. **You also have to anticipate post partum hemorrhage and try to prevent it!**
- Since the fetus's head is already delivered, it'd be far faster and less traumatic to continue vaginal delivery using maneuvers to relieve shoulder impaction than a C-section.
- If these maneuvers fail, drastic measures such as cleidotomy (clavicle fracturing), symphysiotomy (division of the symphysis pubis), or Zavanelli maneuver (replacement of fetal head back into the uterus and C-section) may be employed

Management: delivery maneuvers

A. McRoberts's maneuver with suprapubic pressure(Rubin 1): Mother’s thighs are hyper flexed and abducted with pressure being applied suprapubically

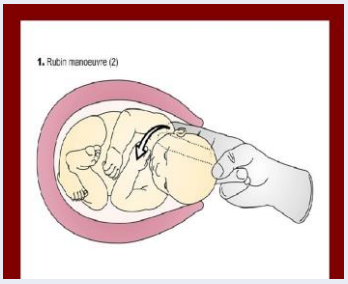
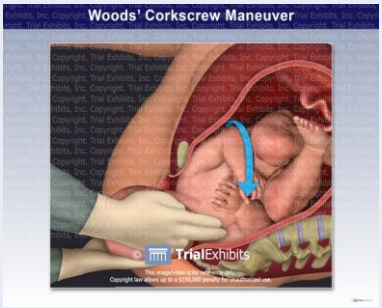




Management: delivery maneuvers

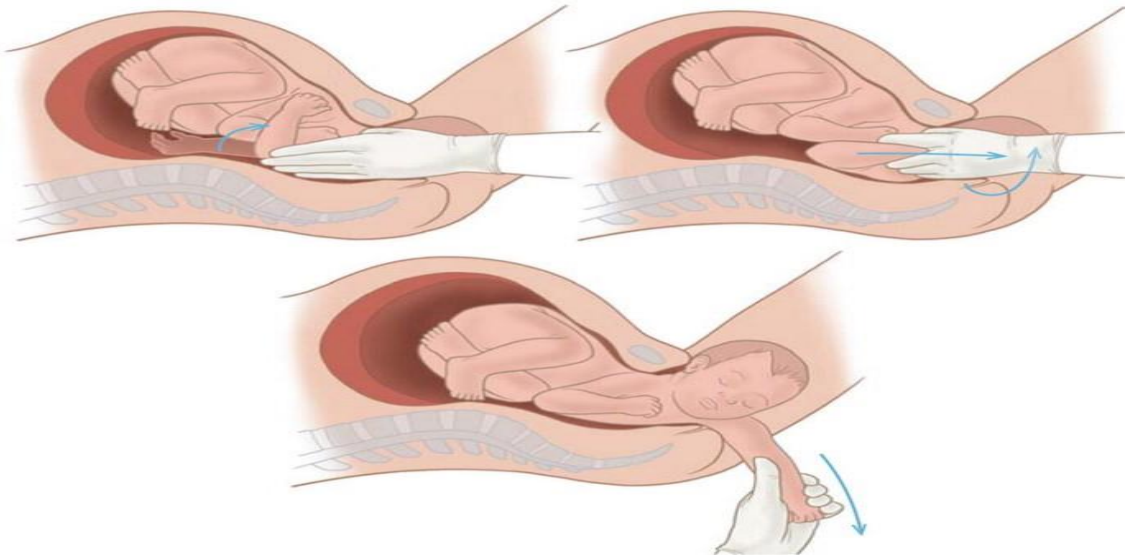
B. Enter (internal rotational maneuvers)+- episiotomy: The goal of these maneuvers is to decrease the bisacromial diameter(shoulder-to-shoulder length) of the fetus.

Internal rotational maneuvers

Rubin 2	Wood's screw	Reverse wood's screw
		
Hand is inserted into the vagina behind the anterior impacted shoulder and press the shoulder closer to the chest	You put your hand in the vagina in **front of the posterior shoulder** and you press on it	You put your hand on the **posterior aspect of the posterior shoulder** and you **press**

An alternative is the **Jacquemier (Barnum) maneuver** which is the delivery of the posterior arm first to decrease bisacromial diameter.

Jacquemier maneuver



Detailed management

1. Call for help! You need a team of senior obstetrician,midwife, and a neonatologist
2. Fetus is **trapped in uterus** → hypoxia

Continue to deliver the fetus vaginally using these maneuvers:-

- ❑ McRobert's with suprapubic pressure
- ❑ Rubin 2
- ❑ Wood's screw and reverse wood's screw
- ❑ Jacquemier (Barnum maneuver)

3. To reduce the risk of brachial plexus injury, **DO**:-
- ❑ Tell the mom to stop pushing
- ❑ Bring her buttocks to the edge of bed.

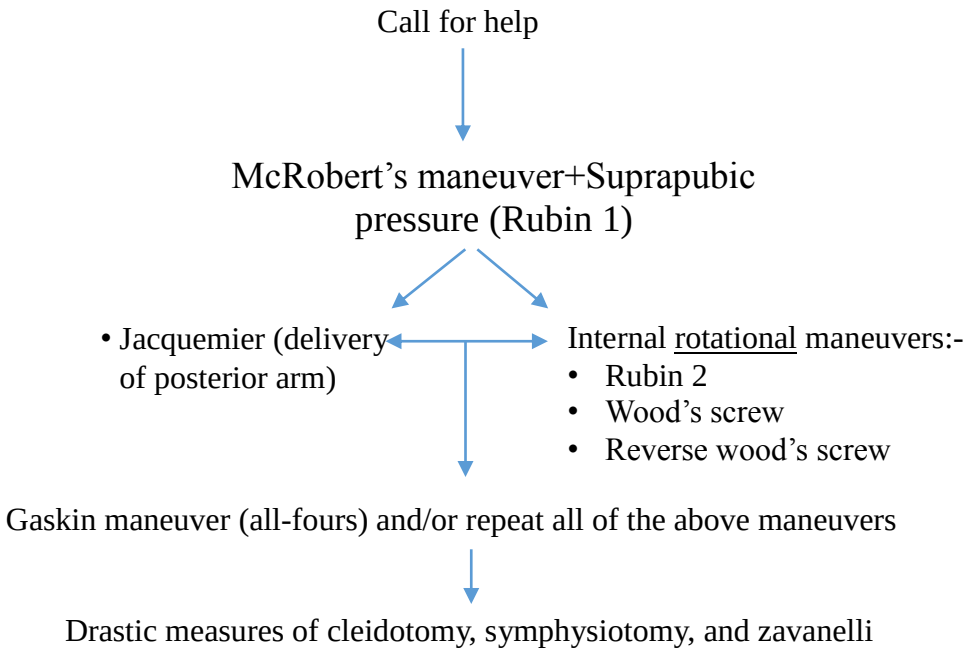
4. To reduce the risk of brachial plexus injury, **DON'T**:-
- ❑ Exert **lateral** traction on neck
- ❑ Exert **forward/backward** traction on neck
- ❑ **Rotate** the neck
- ❑ Exert **fundal** pressure

5. Put the mother in **all-four position (Gaskin maneuver)** and/or **reattempt maneuvers** again.

6. If no success, employ drastic measures such as cleidotomy, symphysiotomy, or Zavanelli.

7. After delivery of the fetus, **actively manage the 3rd stage of labor** by giving **prophylactic uterotonics** to prevent PPH.

Gaskin maneuver



Complications

1. Fetal complications:-
   - Fetal hypoxia→Fetal death
   - Fetal hypoxia→ cerebral palsy and neurodevelopmental delay
   - Brachial plexus injury→ Erb's and Klumpke's paralysis
   - Clavicle and humeral fractures

2. Maternal complications:-
   - Post partum hemorrhage
   - Uterine rupture
   - Perineal tears
   - PTSD

RH Isoimmunization

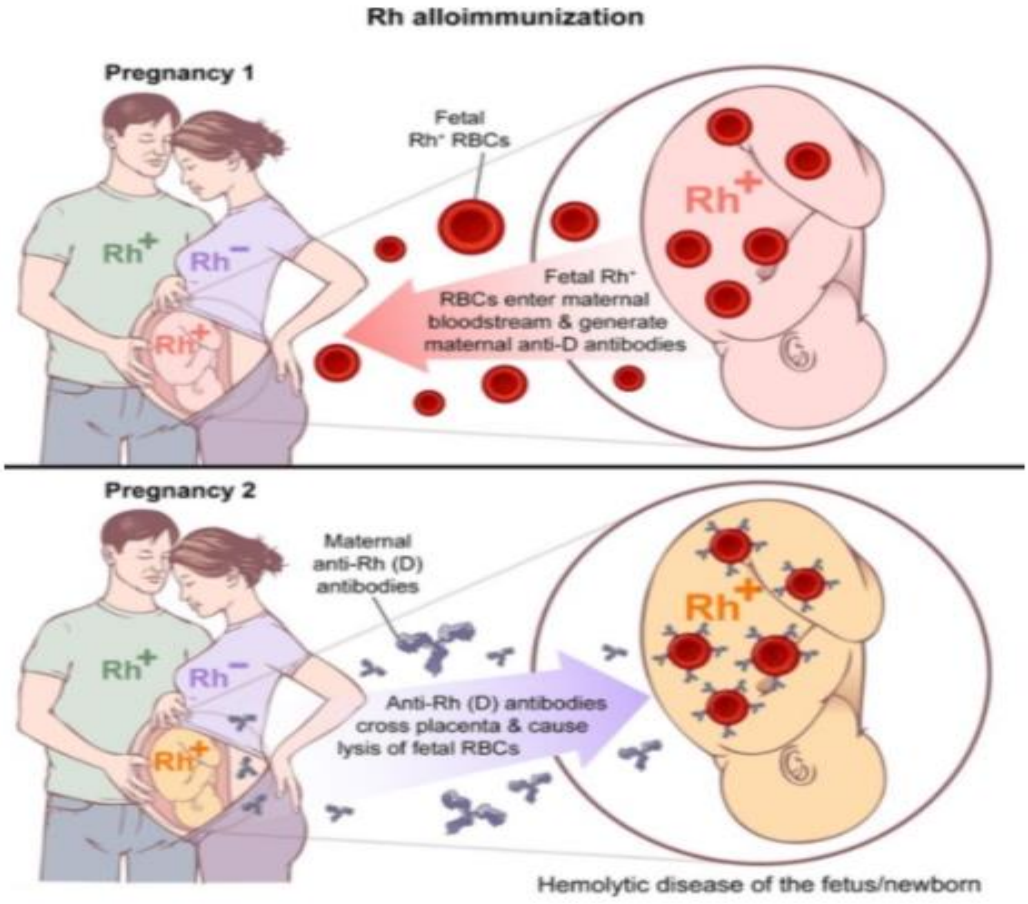
Alloimmunization

Definition:

- A pregnant woman has developed antibodies to foreign red blood cells (RBCs), most commonly against
those of her current or previous fetus(es), but also caused by transfusion of mismatched blood.

Pathophysiology:

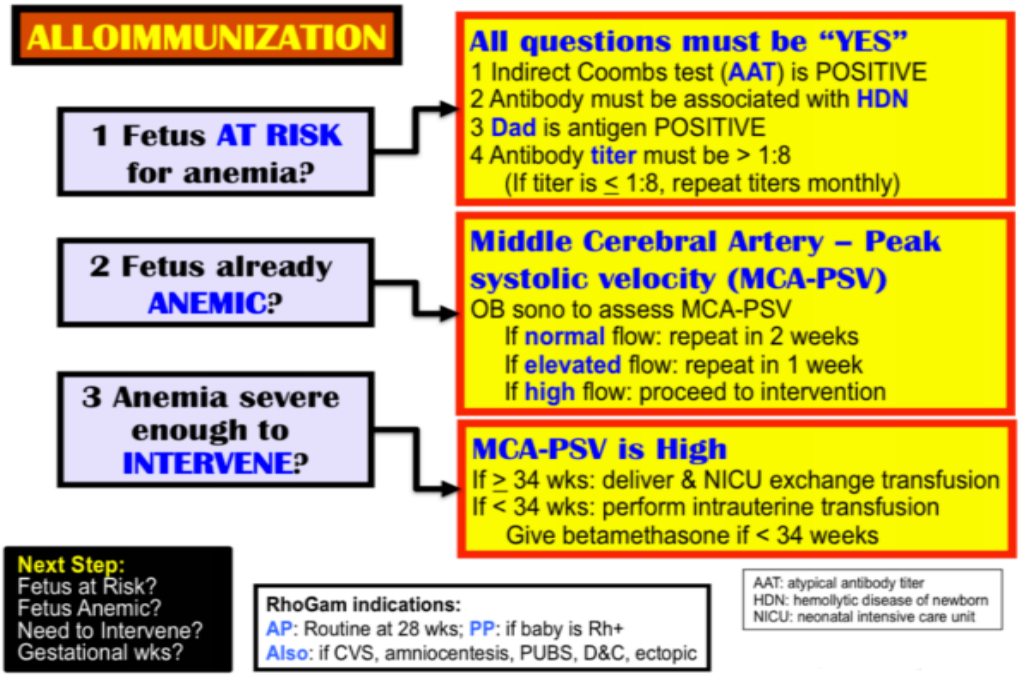
- **Hemolytic disease of the newborn (HDN) is a continuum ranging from hyperbilirubinemia to erythroblastosis fetalis. HDN is caused by maternal antibodies crossing into the fetal circulation and targeting antigen-positive fetal RBCs, resulting in hemolysis. When severe, this can result in anemia, fetal hydrops, and even death.**
- **The most common RBC antigens are of the Rh system (C, c, D, E, e), with the most common being big D.**
- **Antibodies to RBC antigens are detected by indirect Coombs test. The concentration of antibodies is**
  reported in dilutional titers with the lowest level being 1:1, and titers increasing by doubling (1:1, 1:2, 1:4, 1:8, 1:16, 1:32... etc.)



Risk Factors:

- Alloimmunization most commonly occurs when fetal RBCs enter the mother's circulation transplacentally at delivery.
- Other pregnancy-related risk factors are amniocentesis, ectopic pregnancy, D&C, abruptio placenta, and placenta previa.
- It can also occur if a woman is transfused with mismatched RBCs

Management

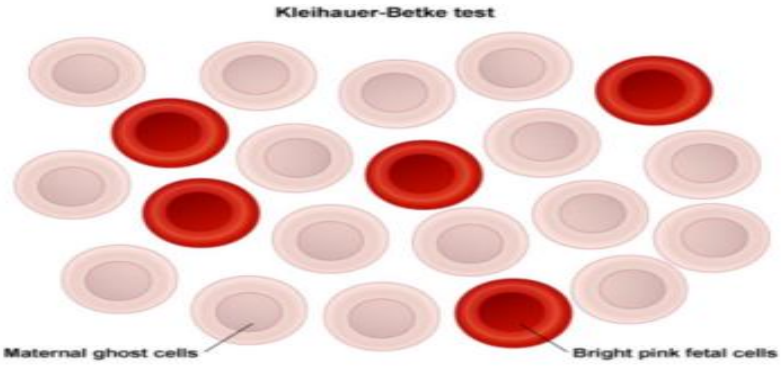


Prevention:

- RhoGAM is pooled anti-D IgG passive antibodies that are given IM to a pregnant woman when there is significant risk of fetal RBCs passing into her circulation. The passive IgG antibodies attach to the foreign RBC antigens, causing lysis to occur before the maternal lymphocytes become stimulated.

- RhoGAM is routinely given to Rh (D)-negative mothers at 28 weeks, and within 72 h of chorionic villus sampling (CVS), amniocentesis, or D&C. It is also given within 72 h of delivery of an Rh D)-positive infant.
- The initial timing of 28-32 weeks is selected because the half-life of anti-D immune globulin is about 6 weeks, which would cover any potential future exposure to fetal red blood cells through most of the third trimester.

- Kleihauer-Betke test quantitates the volume of fetal RBCs in the maternal circulation by differential staining of fetal and maternal RBCs on a peripheral smear. This can assess whether more than one vial of RhoGAM needs to be given when large volumes of fetal-maternal bleed may occur (abruptio placenta)



Indications for prophylactic administration of anti-D immune globulin for Rh(D)-negative patients*

- At 28-32 weeks gestation
- <72 hours after delivery of Rh(D)-positive infant
- <72 hours after spontaneous abortion
- Ectopic pregnancy
- Threatened abortion
- Hydatidiform mole
- Chorionic villus sampling, amniocentesis
- Abdominal trauma
- 2nd- & 3rd-trimester bleeding
- External cephalic version

*Antepartum prophylaxis is not indicated if the father is Rh(D) negative.

Chapter 3

Hx & PE

Gyne & Obs Hx

Introduce yourself , take permission
Patient profile **Name:**
Age:
Marital status: ☐Single ☐Married ☐Widowed ☐Divorced
G/P: LMP: EDD: GA:
Blood group:
Occupation:
Chief complaint + duration + Previous similar episodes
HOPI: Analysis of the Chief Complaint
Common CC:

- **Vaginal bleeding**

Amount (e.g., spotting, heavy flow, clots)
Relation to menstrual cycle/menopause/sexual contact (e.g., intermenstrual, postmenopausal, postcoital)

- **Vaginal discharge:**
  - **Color /Consistency (e.g., frothy, curd-like)/Amount/Smell (e.g., fishy)**
- **Pruritic and/or erythematous vagina**
- **Abdominal or pelvic pain:**
- **Notes: onset/ frequency / progression / Alleviating-Aggravating factors/Associated symptoms**

Current pregnancy HX (OBS HX)
- When the pregnancy was diagnosed ?
- How the pregnancy was diagnosed ?
- Wanted ? planned ?
- When/where did you book?
- Follow up (every month)?

***Booking visit includes :**
Full history ,PE , laboratory tests (blood group, urine infection, hepatitis , syphilis, AIDS , anemia).US
Supplements? folic acid , Vitamin D
Folic acid = 400 micro gram till 12 weeks (first trimester), if the pregnancy was planned, she should take it 3months before.
-Fetal movement
-Vaginal discharge
-Medication, comorbidities?
Any complications?

Gynecological history :

MENSTRUAL HISTORY

(complete even if post-menopausal or no longer having periods)

First day of last menstrual period ☐

Age at first menstrual period ☐ years

Number of days from the start of one period to the start of the next ☐ days

Number of days that you bleed ☐ days

Describe the amount of menstrual flow (circle one) light / moderate / heavy / clots

How many tampons or pads do you use on your heaviest day? ☐

Describe the amount of menstrual discomfort (circle one) none / mild / moderate / severe

Do you bleed in between your periods? Yes ☐ No ☐

Do you bleed after intercourse? Yes ☐ No ☐

If you stopped menstruating, at what age did you stop? ☐ years

Have you had bleeding or spotting since your periods stopped? Yes ☐ No ☐

Contraceptive and Sexual History:

Present birth control method:

Complications:

Birth control methods used in the past:

Are you currently sexually active? If no, have you ever been sexually active? History of postcoital vaginalbleeding.

History of sexual dysfunction (e.g., dyspareunia, low libido)Vaginal discharge? Infections? Previous STD?

Hx of Pap smear?

Obstetrics Hx

- **Past obstetrics history**
- **each gravida**
- **Was the pregnancy planned? Wanted? Booked? Regular follow up?**
- **Any complications during pregnancy?**
- **The pregnancy full term, preterm?**
- **Spontaneous vaginal labor? Induction of labor / instruments with delivery (forceps, vacuum) /Cesarean section?**
- **Any problems during delivery?**
- **Outcome of delivery? Post hemorrhage? Depression? Infection? Fever?**
- **Baby (date of birth, sex, birth weight, NICU, duration length of breastfeeding ,what is he doing now)**

Past medical and surgical: **Hx Chronic diseases, Hx of blood transfusion . Any surgeries or trauma.**

Drug & Allergy Hx **what he is taking , any recent change , adherence to medications**

Family Hx **(Ovarian, breast, endometrial, colon) Ca, DM, Htn**

Social Hx: **Smoking** history (# of pack years), alcohol**, travel history (Recently), contact with sick patient,**

House ventilation, pets.

Review of systems:
general: weight change/appetite change/Fever/recent illness/night sweats/ Fatigue/itch-rash
CVS/RS: chest pain/ dyspnea /palpitations/peripheral edema/cough/lightheadedness /LOC
GI: Abdominal pain/Nausea-Vomiting/constipation/Diarrhea/Blood per rectum

CNS: headache / seizures / vertigo/ Muscle weakness/numbness/ paraesthesia

GU: Frequency/ dysuria/ urgency /hematuria/polyuria/flank pain.MSS: recent trauma

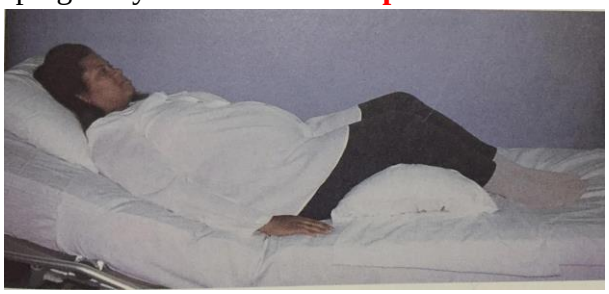
Obstetric Physical Examination

General Approach

- Make sure to always provide **comfort** and sense of **privacy**
- Instruct the patient **to empty her bladder** prior to examination
- Exposer from the **symphysis pubis** to the **xiphisternum**.

Positioning

Semi-sitting position with the knees bent supported by a pillow affords the greatest comfort, as well as protection from the negative effects of the weight of the gravid uterus on abdominal organs and vessels.
In late pregnancy in the **left lateral position.**



General examination

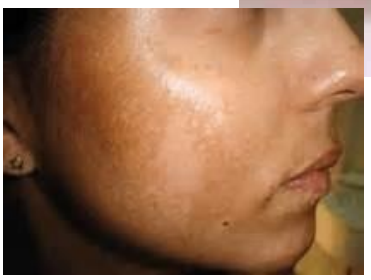
- **Appearance** (inspection of overall health, nutritional status, emotional state, neuromuscular coordination)
- **Weight, Height, BMI**
- **Vital signs** (BP, pulse rate, temperature)

Head and Neck

Skin pigmentation changes

CHLOASMA/"MELASMA GRAVIDARUM"

- Irregular brownish patches of varying size appear on the face and neck - the so-called *mask of pregnancy.*



Hair: note texture, moisture and distribution; dryness, oiliness and minor generalized hair loss may be noted.

Eyes: anemia of pregnancy may cause pallor.

Nose: nasal congestion is common among pregnant women; nose bleeds also common.

Mouth: inspect gums and teeth; gingival enlargement with bleeding is common.

Thyroid: symmetrical enlargement may be expected; marked enlargement is not normal during pregnancy.

Heart

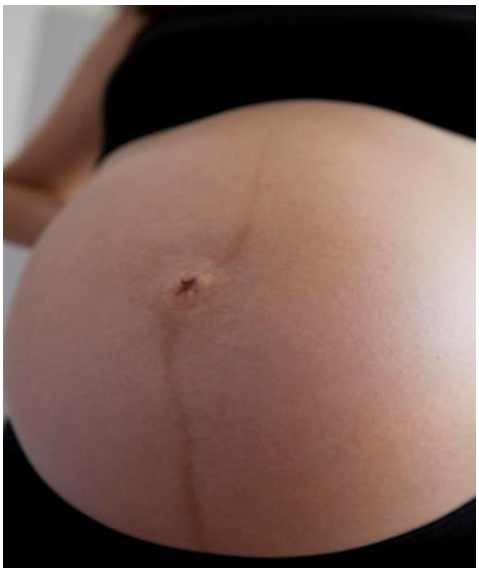
Palpate the apical impulse; In advanced pregnancy, it may be slightly **higher** than normal because of dextrorotation of the heart due to the higher diaphragm

Auscultate the heart; **soft blowing murmurs** are common, reflecting the increased blood flow in normal vessels

Abdomen

Inspection: skin changes

Linea Nigra darkening of the linea alba (midline of the abdominal skin from xiphoid. symphysis pubis) Melanophores by increase in melanocyte due to stimulation of stimulating hormone.

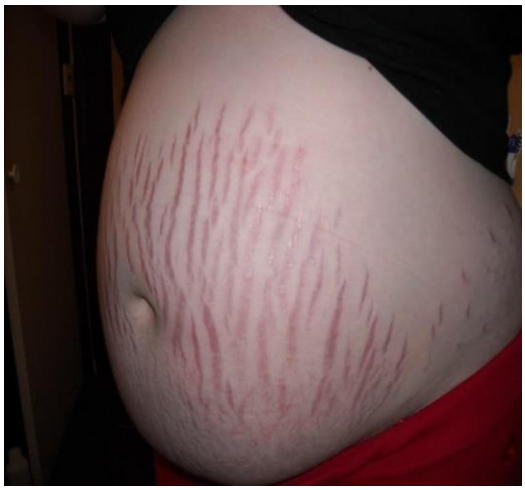


Striae gravidarum: "Stretch marks"

Separation of the underlying collagen tissue (secondary to stretching of the abdomen) and appear as irregular scars reddish or purplish

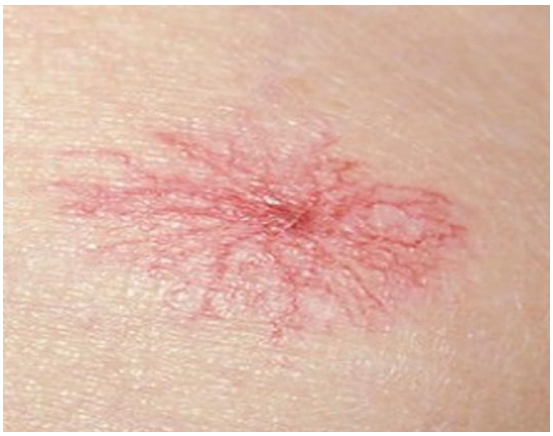
Becomes silvery after delivery

Associated **risk factors** are weight gain during pregnancy, younger maternal age, and family history.



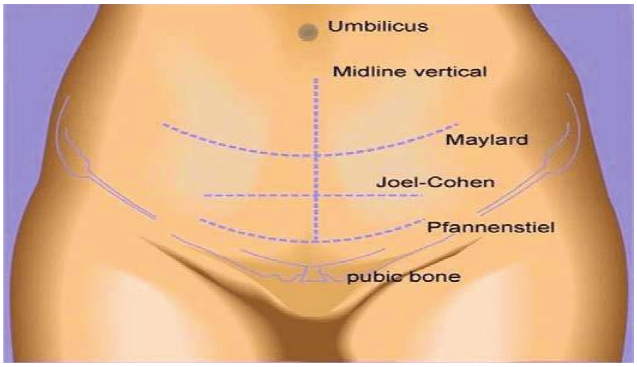
Spider telangieactasia:

Vascular stellate marks resulting from high levels of estrogen blanch when pressure is applied **palmar erythema** is an associated sign typically develops in face, neck, upper chest and arms



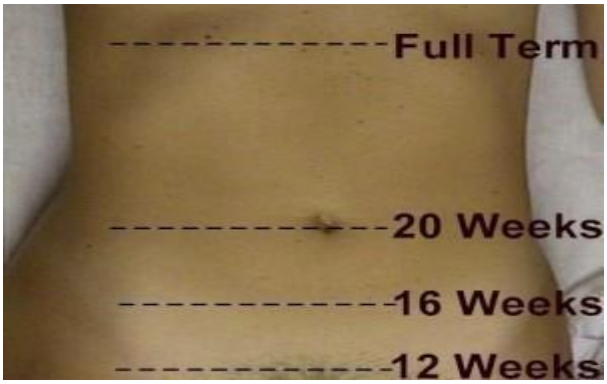
Scars:

Obs: Pfannenstiel, Joel-cohen, below umbilicus midline
Gyne: Above umbilicus midline, Cherny, Maylard, Lap incisions



Palpation: Abdominal Enlargement

0 to 12 weeks AOG: uterus is a pelvic organ
12 weeks AOG: uterus at symphysis pubis
16 weeks AOG: midway between symphysis pubis and umbilicus
20 weeks AOG: umbilical level



Linear measurement from the symphysis pubis to the uterine fundus on an empty bladder correlates with AOG at 16-32 weeks
example: 20 weeks AOG = 20 cm

Large for gestational age DDx:

Wrong date, polyhydraminos, multiple gestation, fibroid, macrosomia.

Small for gestational age DDx:

Wrong date, oligohydraminos, transverse lie, smoking, PROM, placental insufficiency

Palpation

Perception of **fetal movement** by the examiner

- Examiner may feel fetal movement **after 24 weeks** AOG (felt by the mother around **18 weeks** - "quickening")

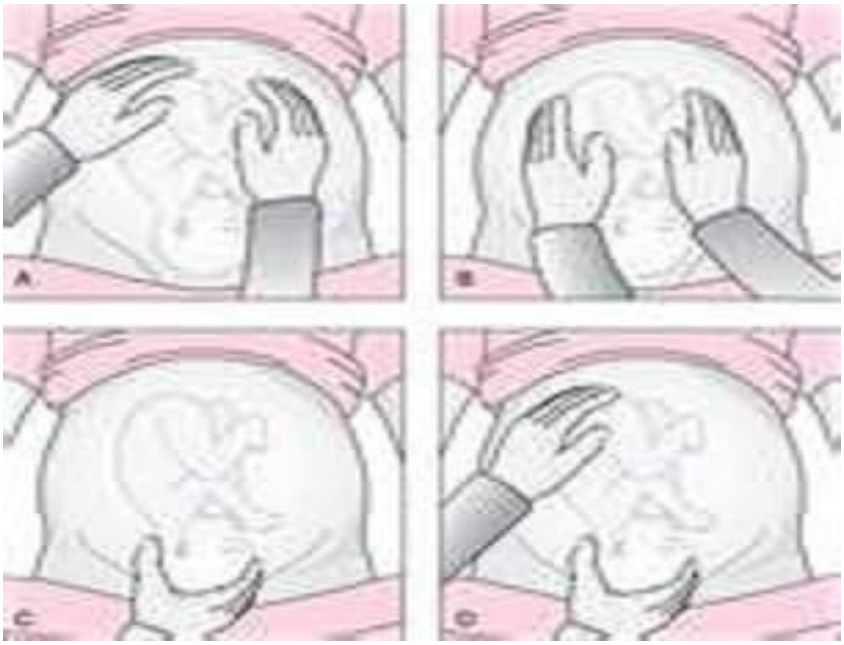
Uterine contractility:

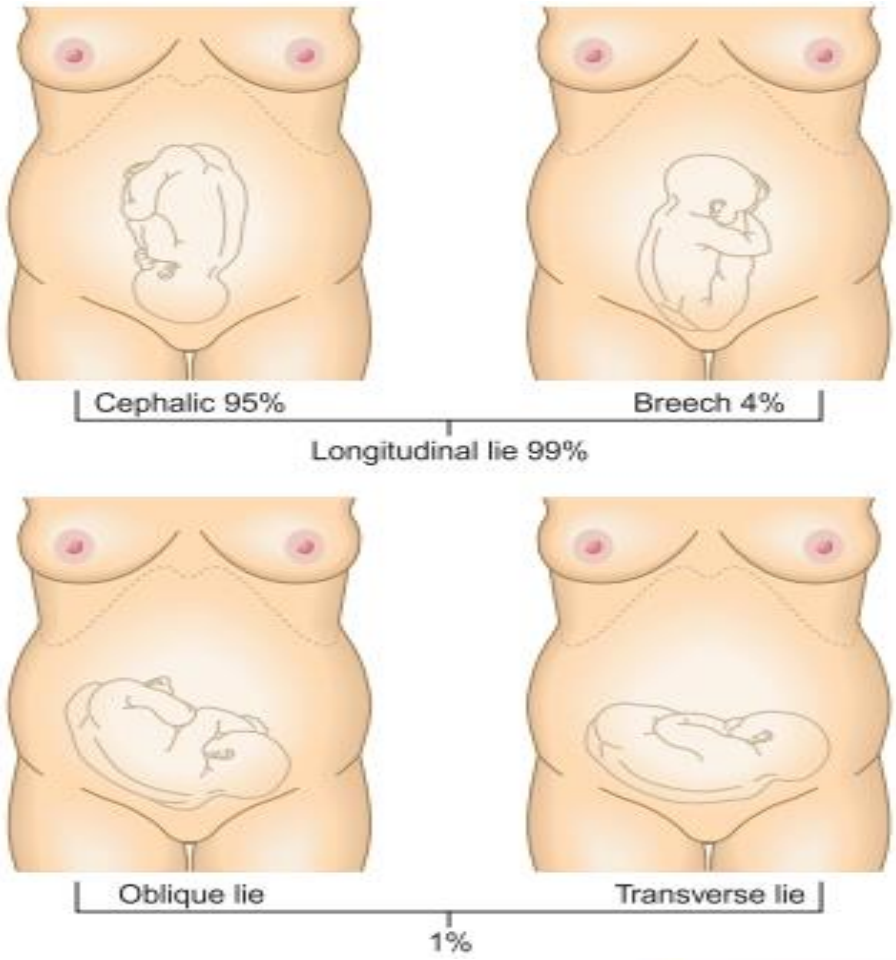
- Abdomen feels tense or firm to the examiner, especially if the patient is in labor, or near term ("Braxton-Hicks contractions")

Some fetal parts become palpable, esp if mother is non-obese

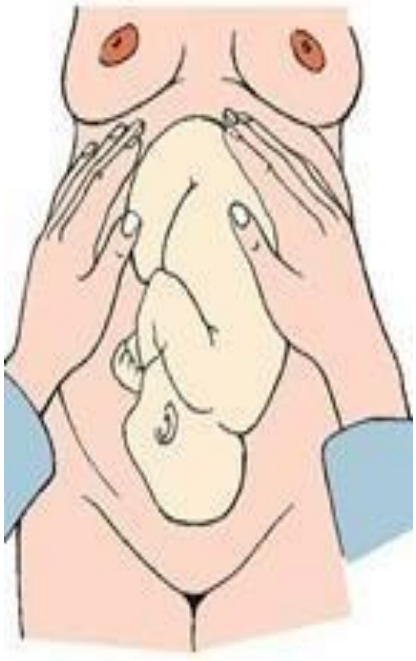
Leopold's maneuver

Palpation
Abdominal exam to determine lie, fetal presentation, presenting part, and engagement.





Leopold's maneuver



1st Leopold's maneuver "Fundal grip"

Uterine fundus is palpated to determine which fetal part occupies the fundus

Fetal head should be round and hard, ballottable
Breech presents as a large nodular mass

Also it estimates the liquor volume

2nd Leopold's maneuver "Lateral grip"

Palpation of paraumbilical areas or the sides of the uterus to determine which side is the fetal back

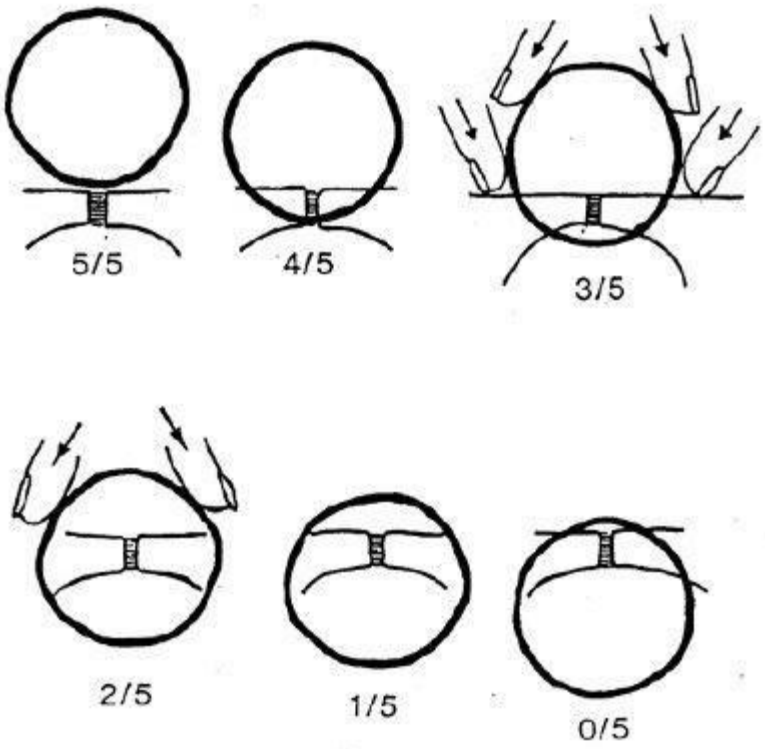
Fetal back feels like a hard, resistant, convex structure
Fetal small parts feel nodular, irregular

3rd Leopold's maneuver
1st pelvic grip

Palpation of the bilateral lower quadrants to determine presentation and presenting part
The back of the examiner toward the patient but looking at the patients face for any tenderness

4th Leopold's maneuver
Pawlik's grip"=2nd pelvic grip

Suprapubic palpation using thumb and fingers just above the symphysis pubis, to *determine engagement* (when the widest diameter of the presenting part passes through pelvic inlet)



Auscultation: Identification of fetal heart beat; heard between fetal back and head

FHR is usually at a range of 110-150 bpm, 160 if preterm

Detected through stethoscope or fetal Doppler (sonicaid fetal doppler)