FACULTY OF NURSING SOUTH VALLEY UNIVERSITY

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OBSTETRICS AND GYNECOLOGY

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Uterine fibroid

Definition: Benign solid tumor of uterine smooth muscles.
Synonymous: leiomyoma, myoma, fibromyoma.

-Fibroid: commonest clinically used name.
-Leiomyoma: the most correct term because its origin as a neoplastic transformation of single smooth muscle (i.e. it is not a hyperplasia of the myometrium). Myoma is a simplified term.
-Fibromyoma: it describes the coexistence of smooth muscle fibres and connective tissue fibres.

Prevalence

- The commonest pelvic tumour in females.
- 20% of females above 30 years have fibroids. Autopsy studies show a prevalence of up to 50 %

Predisposing factors:

Both estrogen and progesterone appear to promote the development of fibroids. The hormone dependence is suggested by the observation that fibroids are rarely seen before puberty, are most prevalent during the reproductive years, and regress after menopause. Their size increases during pregnancy.

Predisposing factors:

1. Age: 30-40 years

2. Obesity
3. Early menarche,
4. Late menopause
5. Nulliparity
6. Africans
7. Positive family history

Pathology

A-Macroscopic Picture:

-site:

A- Uterus (99 %):

- Corporeal (95%)
  - ❖ Interstitial (synonymous; submucous): if myometrium surround the fibroid completely. It is the commonest.
  - ❖ Subserous: fibroid causing bulging in the outline of the uterus
  - ❖ Submucous: fibroid project into the uterine cavity.
  - ❖ Submucous and subserous fibroids may develop a pedicle to become Pedunculated (fibroid polyp in submucous position).
- Cervix (4%)

B- Rarely extra-uterine (1%): broad, round, ovarian, utero-sacral ligaments.

-Size: Variable (from microscopic to very huge size).

-Consistency: Usually firm. But may be soft (in hyaline degeneration and in pregnancy), cystic (if cystic degeneration) or very soft (sarcomatous) or hard (calcification).

-Cut section: white whorly appearance.

-Capsule: False capsule composed of the compressed surrounding uterine muscles.

-Number: Typically it is multiple (cervical and sarcoma are typically single).
-Blood supply: Interstitial fibroids receive their blood supply from vessels arising in the capsule & radiating to the centre (so degeneration starts in the centre while calcification starts at periphery). Pedunculated fibroids receive their blood supply through the pedicle. **Parasitic** leiomyomas: are subserous myoma that attach themselves to nearby pelvic structures from which they derive vascular support, and then may or may not detach from the parent myometrium.

B-Microscopic Picture: the tumor is formed by interlacing bundles of smooth muscle cells separated by connective tissue

Secondary pathological changes: (Complications)

A. Secondary changes in the Fibroid Itself

(A) DEGENERATIVE CHANGES

1-Hyaline degeneration: (The commonest type of degeneration)

-Etiology: it occurs when the fibroid **gradually outgrows** its blood supply resulting in necrosis. Central part of the myoma is vulnerable.

-Pathology: The fibrous and muscle tissues are replaced by hyaline tissue (homogenous Structureless eosinophilic material)

-Clinically: The patient complains of dull aching pain.

2.Cystic degeneration: Liquefaction and absorption of the hyaline material.

3. Red degeneration: (necrobiosis = carenous degeneration)

It is a haemorrhagic infarction caused by **acute disruption** of blood supply during active growth with haemorrhage into the tumour. It occurs classically during the 2nd trimester of pregnancy or puerperium. It affects half of all fibroids during pregnancy. The freshly cut tumor is **beefy red** in colour, hence the name red degeneration.

-Clinically: Localized acute abdominal pain, fever, vomiting. Examination will reveals severe tenderness over the fibroid.

-Deferential diagnosis: acute abdominal pain during pregnancy.

-Treatment

A -Conservative :

- Good response in **most** cases within one week
- Rest, diet, observation , analgesic and progesterone

B –Surgical removal rarely required for persistent intolerable pain, remove only the affected myoma.

4-Fatty degeneration:

-Etiology: Fat deposition in muscle fibres at the periphery of fibroid.

>Macroscopic picture:

- The consistency is rubbery.
- The colour of cut section is yellow.

>Microscopic picture: Stains black on "Osmic acid" and orange on "Sudan III".

5-Calcific degeneration (calcifications)

-Etiology: Deposition of calcium occurs in the final step after most degenerative changes. It affects the periphery of the tumour.

- Macroscopic picture:

- The consistency is stony hard (Womb stone).
- The colour of cut section is white.

-X ray: Showing "egg shell" or "onion skin" appearance

6-ATROPHY: It occurs after menopause.

(B) INFECTIVE CHANGES

It complicates submucous (especially polyp) or subserous fibroid.

C) Malignant Changes

(Sarcomatous changes = Leiomyosarcoma)

Incidence: The great majority arise de novo. Risk in uterine fibroids is 0.5 %. It account for 2-6 % of uterine cancers, but 26 % of mortality in uterine cancers.

Pathology: (1) ≥ 10 mitotic figures / 10 HPF; (2) atypia; (3) areas of haemorrhage and necrosis

Symptoms Suggestive Of Malignancy

1- Old age (over 40 years).
2- Rapid growth of the tumor
3- Rapid recurrence of the tumor
4- Postmenopausal growth
5- Postmenopausal bleeding
6- Pain
7- Symptoms of metastasis

Signs Suggestive Of Malignancy

General examination: Cachexia, unilateral lower limb oedema, lower limb varicosities.
Abdominal examination: Ascites, Umbilical nodules (Sister Mary Josef nodules).
Local examination: heterogenous consistency, vulval oedema, fixation, tenderness, nodules in douglas pouch.

Intraoperative features:

1. Absence of plane of cleavage between fibroid and normal myometrium
2. Loss of whorly appearance
3. Fleshy consistency
4. yellowish colour
5. Areas of haemorrhage and necrosis

(D) VASCULAR CHANGES

1-Torsion of a pedunculated subserous fibroid: resulting in the following changes: Congestion, oedema, haemorrhage & Necrosis (rare).

2- Internal haemorrhage (due to rupture of surface vein over subserous fibroid).

B. Secondary changes in the surrounding tissues

1. **-Tubes:** Tubal block (if cornual); tubal elongation (if broad ligamentary Fibroid).
2. **-Ovaries:** associated endometriotic cyst, functional cysts**.**
3. **-Uterus:**
   - Increase in surface area of the **endometrium**
   - Increase in thickness of myometrium (**myohyperplasia**)
   - Fundal submucous fibroid polyp may cause chronic uterine **inversion**
4. **Urinary System**
   - **Urethra:** stretch by cervical fibroid results in acute or chronic urinary retention with overflow incontinence
   - **Bladder:** its compression results in frequency or urgency
   - **Ureters:** their stretch and compression by broad ligament or cervical fibroid results in hydro-ureter and hydronephrosis

Clinical Picture

Symptoms:

More than 50 % of the cases are ASYMPTOMATIC and discovered accidentally.

1-Bleeding: (The commonest presenting symptom)

- **Menorrhagia : (the commonest;** typical for intramural**) may be due to :**

1- Increased vascularity of the uterus

2- Vascular congestion due mechanically interference with venous drainage

3- Increased surface area of the endometrium
4- Fibroid mechanically interferes with uterine contractions
5- Associated anovulation
6- Associated endometrial hyperplasia
7- Increseased PGI_2/ TXA_2 ratio

- **Metrorrhagia : (**typical for submucosal**).**It may be due to:

1- Ulceration of the endometrial surface over large submucous tumor
2- Infected tip of submucous fibroid polyp.
3- Malignancy: sarcoma, endometrial carcinoma.
4- Associated anovulation

- **Polymenorrhea:** due to ovarian congestion.
- **Postmenopausal bleeding**: Malignancy (sarcoma, endometrial carcinoma)
- **Intra-peritoneal haemorrhage (rare):** due to rupture of surface vein leading to collapse.
- **Postcoital bleeding**: due to necrosed tip of submucous fibroid polyp.

2-Abdominal mass: especially if thin patient and large fibroid.

3-Pain:

- Secondary dysmenorrhea
- Dull aching pain: in case of hyaline degeneration or malignant change.
- Acute abdominal pain: in case of red degeneration, infection (pain and fever), torsion, acute retention of urine.
- Colicky abdominal pain: in case of fibroid polyp the uterus try to expel the intracavitary mass

4-Pressure symptoms:

- Large fibroid: Dyspnea and palpitation (diaphragm and IVC compression), Dyspepsia ,discomfort and distension, lower limbs oedema

- Posterior wall fibroid: Constipation, low back pain (rectosegmoid compression)
- Anterior wall fibroid: Frequency, urgency
- Cervical fibroid: Frequency, urgency, retention of urine

5-Discharge: if infected fibroid polyp

6-Infertility: fibroids are associated with infertility but may be the only cause in 2 %. Post-myomectomy preg rate is 50%.

1. Anovulation
2. Associated endometriosis
3. Tubal factor: bilateral block of cornua.
4. Uterine factor
   a) Interferes with implantation: hyperplasia, abnormal vascularization, endometrial atrophy (due to pressure), abnormal cytokines, and increased local estrogen level.
   b) Increased uterine contractility
5. Cervical factor: elongation of the cervical canal.

7- complication during pregnancy

1st and 2nd trimester miscarriage, preterm labour, red degeneration, malpresentation, uterine inertia, placenta accreta, abruptio placenta, stillbirth, obstructing labour, PPH

Signs:-

- The patient may appear pale. Large fibroid may result in bilateral lower limb oedema.
- Central pelvic or peliviabdominal mass: Surface is smooth (lobulated if multiple); freely mobile unless fixed by adhesions; usually firm in consistency.
- Abdominal percussion will reveal a central dullness with resonant flanks which differentiate it from retroperitoneal tumours.
- Uterine origin is evident bimanual examination by (1) the finding of an obtuse angle between the cervix and the mass; (2) movement of the cervix is transmitted to the mass and vice versa.

(II) CLINICAL PICTURE OF MALIGNANT TUMORS

See above

Differential diagnosis

1 Causes of acute abdomen
2 Causes of abnormal uterine bleeding
3 Causes of huge abdominal mass
4 Causes of pelvi-abdominal mass
5 Causes of symmetrically enlarged uterus
6 Causes of asymmetrically enlarged uterus
7 Causes of mass in Douglas pouch

Investigations:

To confirm the diagnosis

1. Abdominal & vaginal ultrasound
   -Detect the size, site, number of fibroids, degenerations
2. Saline sonohysterography
   -Detect submucous polyp
3. H.S.G
   -Diagnosis of submucous polyp or fibroid
   -Detect the condition of the tube before myomectomy
4. Hysteroscopy
   Diagnosis of submucous polyp or fibroid
   Therapeutic: hysteroscopic myomectomy if submucous.

5. Laparoscopy
   Differentiates pedunculated subserous fibroid from small ovarian mass
   Therapeutic: hysteroscopic myomectomy if subserous
6. Endometrial biopsy: exclude malignancy in cases of metrorrahgia
7. MRI: if it is difficult to differentiate adnexal versus uterine mass

To prepare the patient for operation

- Routine: CBC, blood sugar, Liver and kidney functions, Urine analysis, ECG
- I.V.P with cervical or broad ligamentary fibroids

Treatment

Factors Affecting Treatment

8 Age and parity of the patient.
9 Site, number and types of fibroids.
10 Complications, especially suspicion of malignancy.
11 Associated pregnancy
12 Patient choice

Lines of Treatment

1. Expectant management
2. Medical: Fe, analgesics, COCs, GnRH
3. Surgical:
   a) Myomectomy: needed, safe, possible
      a) Open: abdominal myomectomy, vaginal myomectomy

b) Endoscopic (≤ 5 cm): laparoscopy, hysteroscopy

b) Hysterectomy: not needed, not safe, not possible

4. Recent: UAE, myolysis

Rule	No symptoms no treatment
Exceptions	1. Cervical fibroid (risk of ureteric compression) 2. Pedunculated subserous fibroid (liable to torsion) 3. Large size fibroid >12 weeks (liability for complications, increase size, and difficult surgery) 4. Rapidly growing fibroid 5. Fibroid distorting the cavity in infertility or RM 6. Patient choice

(11) MEDICAL TREATMENT

1-Symptomatic treatment:

1. Anaemia: Iron therapy.
2. Bleeding: antifibrinolytics.
3. Pain: Analgesics.

2-**GnRH agonists;**

1. It is not curative (myoma regrow after stoppage) but it reduce the size of uterine myomas by about 40%, so it is used pre-operatively.
2. Side effects: Hot flushes, reversible osteoporosis.

(III) SURGICAL TREATMENT

(A) Myomectomy

Definition: An operation by which we remove the myoma(s) to leave functioning uterus.

Types :

1- **Abdominal**
2- **Vaginal**: usually is done for submucous fibroid polyp protruding from cervix (polypectomy). Less commonly used for other types of myomas.
3- **Endoscopic:** if ≤ 5 cm
   a. Laparoscopy in subserous fibroid.
   b. Hysteroscopy in submucous fibroid.

Indications:

If the uterus is needed (< 40 years, low parity); myomectomy is possible (not cervical, uterus will be left functioning) and safe (no malignancy)

Contraindication:

If the uterus is not needed (>40 years, completed her family); myomectomy is not possible (cervical or uterus will be left non functioning) or not safe (malignancy)

Pre-operative preparations (prerequisites before myomectomy)

1- Written consent. including :
   Hysterectomy may be done if bleeding is excessive,
   There is a possibility of recurrence.
2-As myomectomy is a bloody operation the following precautions are needed :

- Correction of anaemia. (Hb should be 11 gm % pre-operative).
- Blood transfusion should be available,
- The operation is done post menstrual.

- GnRH analogue may be given 3m before surgery to decrease vascularity and to reduce the size of the tumor.

3-HSG
4- HSA
5- Endometrial biopsy if Metrorrhagia.

Principles of myomectomy:

1-adequate exposure: Midline sub-umbilical incision if uterus >12 weeks and Pfannensteil if uterus < 12 weeks.

2-mesures to control intraoperative bleeding

- Bonney's myomectomy clamp.
- Rubber tourniquet surrounding the cervix to compress the uterine arteries,
- Intra- myometrial injection of vasopressin.

4-planning the best site of uterine incision:

- In the anterior wall rather than posterior wall to avoid adhesive intestinal obstruction.
- In the midline rather than peripheral (the least vascular area is central).
- Better away from the tube rather than near,
- Least number of incisions.
- In case of posterior wall myoma: (a) Bonney 's hood operation (b) Direct Posterior incision or (c) Trans-cavitary incision

5-Enucleating the fibroid (s): via the plane of cleavage between the fibroid and its false capsule.
6-trimming of hypertrophied myometrium
7-Closure of the bed of the tumour
8-Careful approximation of the serosa

Complications of myomectomy :

• **Intra operative :**

1. Anaesthetic complications.
3. Haemorrhage (1ry) and shock
4. Injury of the bladder, ureters & intestine.

• **Early post operative**

1. Haemorrhage (reactionary or 2ry).
2. Infection (wound ...etc)

3. Pulmonary complications due to D.V.T.

• **Late Post operative**

1. Recurrence of fibroid 5-10% (within 10 year).
2. Recurrence of symptoms 1-5% (menorrhagia).
3. Rupture of scar in subsequent pregnancy.
4. Peritoneal adhesions: resulting in infertility and intestinal obstruction.

(B) Hysterectomy

It is curative treatment of fibroid as it is not associated with risk of recurrence.

One third of hysterectomies are done for fibroid uterus. It can be total or subtotal hysterectomy.

Indications: Contra indications of myomectomy

(IV) Recent treatment options

1. Myolysis using Laser (during laparoscopy, hysteroscopy, or MRI-guided).
2. Uterine artery embolization (UAE): Catheterization of femoral artery under screen to ingect particulate material e.g. polyvinyl alcohol in the uterine artery.

Cervical Fibroid

Cervical fibroid is fibroid that originate from the cervix. It may be interstitial (within the substance of the cervix) or as a cervical fibroid polyp. It account for 4 % of fibroids.
Predisposing factors, pathology is similar to corporeal fibroids.

- **Interstitial cervical fibroid** characteristically presents with acute or chronic retension of urine due to compression of urethra. On examination cervix is felt as barrel-shaped (Differential diagnosis is endophytic type of cancer cervix). Sounding will reveal an elongated cervical canal. Treatment: myomectomy is a difficult with high risk of hysterectomy, so the treatment is usually hysterectomy except in young women.
- **Fibroid polyp** usually present with Metrorrhagia, discharge. It can be seen on speculum examination. It should be differentiated from other causes of mass protruding from cervix. It is treated by Polypectomy (usually along with D&C).

Recurrence in Fibroid

Classification:

Recurrent fibroid: (5-10 %) the patient present with myoma following myomectomy

1-Development of a new fibroid
2-Missed small submucous fibroids
3-Missed small seedling fibroids

Recurrence of symptoms: the patient has persistence or reappearance of symptoms that was present before myomectomy

- Recurrent fibroid
- Persistence of the underlying cause of bleeding e.g. anovulation

Clinical Picture

Symptoms and signs of fibroid (see above)

Treatment

Hysterectomy or

Myomectomy or

Medical treatment for patients near menopause with small interstitial fibroid & slight menorrhagia

Polycystic Ovary Syndrome

PREVALANCE:
5-10% IN 20-40 YR
FEMALES

Dermatologist

Disorder of hair growth, Acne

Gynecologist

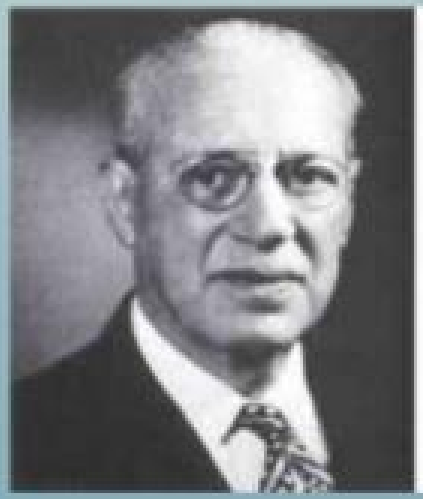
Fertility problem
Menstrual dysfunction

Internist

Obesity problem
Risk of DM II
Risk of CVS disorder

General practitioner

- 1st described by **Irving Stein** and **Michael Leventhal** (1935) as a triad of amenorrhea, obesity and hirsutism
- One of the most common endocrine disorders occurring in women



Definition of PCOS

ESHRE (European Society for Human Reproduction) & ASRM (American Society of Reproductive Medicine) 2003

2 of the 3 elements:

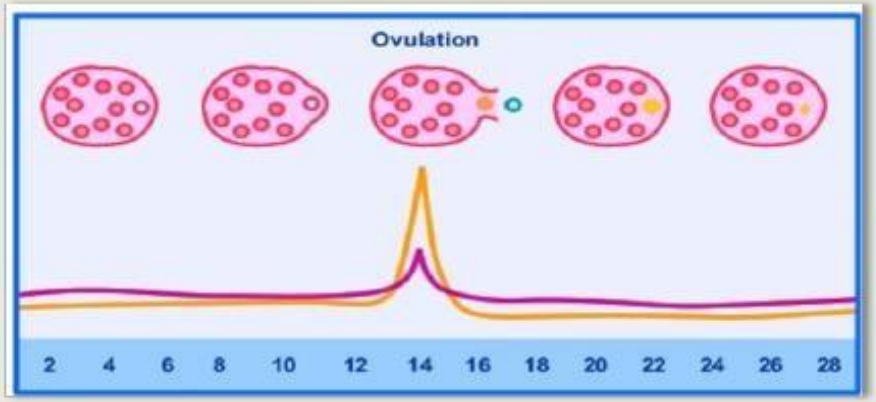
- Hyperandrogenism (clinical or biochemical)
- Chronic anovulation
- Polycystic ovaries

(with exclusion of other etiologies)

PCOS: Etiology

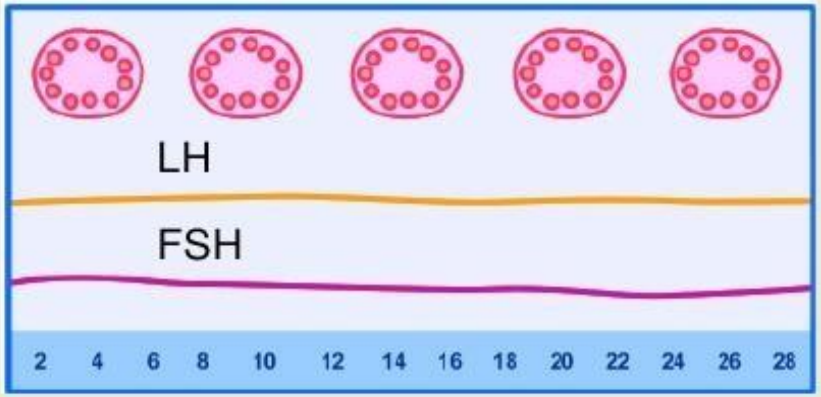
- Neuroendocrine derangement: ↑LH relative to FSH
- Hyperinsulinemia: defect in insulin action or secretion
- Androgen excess: ovarian and adrenal

Normal Menstrual Cycle



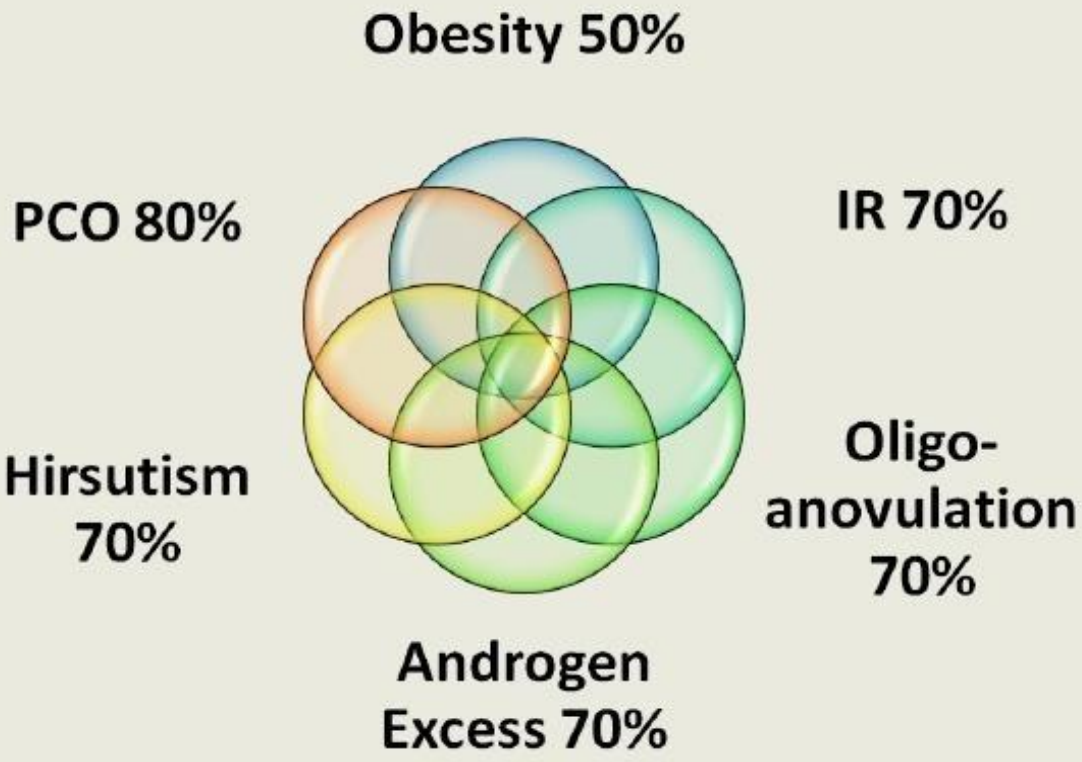
Cycle day

PCOS



Cycle day

PCOS: Clinical Presentation
Signs and Symptoms



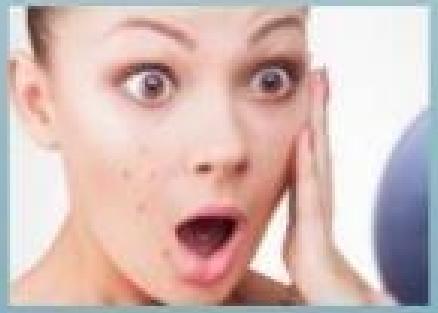
Clinical manifestation:

Hyperandrogenism	Ovulatory dysfunction	Polycystic ovary
• Acne, androgenic alopecia, hirsutism • Testosterone, dehydroepiandrosterone.	• Oligoamenorrhea • amenorrhea	• 12 or more follicles (or 25 in new US technology). • Each measuring 2-9 mm • OR ovary volume >10ml.

Clinical hyperandrogenism

Hirsutism

Androgenic Alopecia



Acne

Acanthosis Nigricans

Pregnancy Complications

- Spontaneous Abortions
- Impaired Glucose Tolerance
- Gestational diabetes
- Hypertension
- Small for Gestational Age

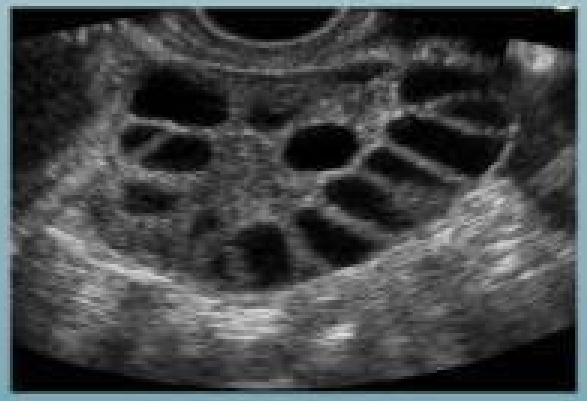
ULTRASOUND
(POLYCYSTIC OVARY)

ESHRE/ASRM

at least one ovary with ≥ 12 follicles of 2–9mm (between day 2-5 of cycle)

or

ovarian volume > 10mL in the absence of a cyst or dominant follicle > 10 mm



LAB INVESTIGATION

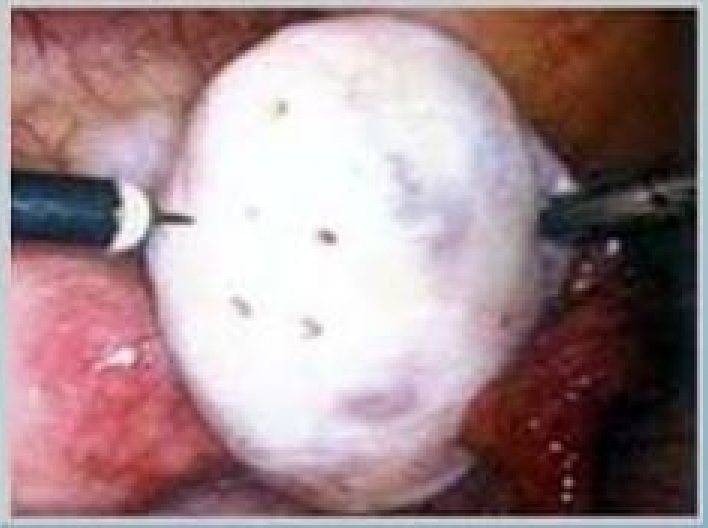
- LH: FSH ratio
- DHEAS
- Free Testosterone

Diagnostic tests for exclusion

- Thyroid function test
- Serum Prolactin
- 17- alpha OH Progesterone (CAH)

Laproscopy

Bilateral Polycystic Ovaries



Treatment:

- Treatment should be individualized based on the patient's presentation and desire for pregnancy.

Non-pharmacological interventions

LIFESTYLE MODIFICATION

- WEIGHT LOSS
- EXCERSICE
- BALANCED DIET

PHARMACOLOGICAL MANAGEMENT

- COMBINED ORAL CONTRACEPTIVES
- INSULIN SENSITISERS – METFORMIN

Hirsutism

- Manual hair removal
- Laser
- Eflornithine (locally acting antiandrogens)
- Spironolactone
- Finasteride

Thank you

Hypertensive disorders of pregnancy

Definitions and Classification:

• Gestational hypertension: BP≥ 140/90, no proteinuria. The BP returns to normal within 12 weeks postpartum. Final diagnosis is made only postpartum.

• Pre-eclampsia: BP≥ 140/90 after 20 weeks' gestation + Proteinuria ≥ 300mg on a 24-hour collection of urine or >+1 dipstick.

• Pregnancy-induced Hypertension (PIH) includes Gestational hypertension & Pre-eclampsia.

• Eclampsia: Tonic clonic convulsions+ Pre-eclampsia.

• Chronic hypertension: BP≥ 140/90 before pregnancy or before 20 weeks' gestation + Proteinuria. It persist after delivery. Women with chronic hypertension may develop proteinuria and is called superimposed preeclampsia.

Pre-eclampsia is classified into mild and severe. Pre-eclampsia is considerd severe if it has any of the followings:

1. BP ≥ 160/110
2. Proteinuria ≥ 2 gm/24 hours or ≥ +2 dipstick
3. Severe headache

4. Epigastric pain, Vomiting
5. Blurring of vision
6. Papilloedema
7. Liver tenderness
8. Low platelets (< 150 X 10^3/ml)
9. Raised liver enzymes: AST, ALT (> 70 iu/l)
10. IUGR

Prevalence

About 10–15% of primigravid women will develop some form of hypertension. 2% will develop pre-eclampsia.

Pregnancy-induced Hypertension (PIH) is almost entirely a disease of **primigravidae**.

Pre-eclampsia may occurs in multigravid women under the following conditions:

1. Those who have had it severely in the first pregnancy.
2. Pregnancies complicated by hydatidiform mole.
3. Multiple pregnancies.
4. Gestational diabetes.
5. Those with antiphospholipid syndrome.

Diagnosis:

Because women with pre-eclampsia may be asymptomatic diagnosis is usually by screening by measurement of the BP and proteinuria during the **antenatal care**.

Complications:

In the mother.

1. Cerebral haemorhage.
2. Renal failure.
3. Heart failure.
4. Liver failure.
5. Eclampsia
6. HELLP syndrome (Haemolysis, Elevated Liver Enzymes, Low Platelets)
7. DIC (Dissiminated Intravascular Coagulopathy is characterized by activation of clotting factors and bleeding liability).

In the fetus:

1. Intrauterine growth restriction.
2. Placental abruption.
3. Iatrogenic preterm delivery.

Management

1- Treatment of hypertension:

Mild hypertension: requires no drugs- just follow up on an outpatient base.

BP ≥ 160/110 requires admission and drug therapy. **Severe preeclampsia must not be discharged from the hospital until after delivery.**

Antihypertensive drugs:

Methyldopa (Aldomet ^{R}) is the drug of choice. Side effects: sedation

Nifidipine (the Slow release forms: Epilat Retard) Side effects: headache

2- Maternal monitoring:

Serial assessment of the following: Bp, proteinuria, renal fuction, liver function, platelet count

3- Fetal Monitoring:

Serial ultrasound for fetal growth, amniotic fluid volume, umbilical artery Doppler.

4- Decision regarding the time of delivery:

The only cure for pre-eclampsia is delivery. This should not be done before adequate control of BP, Coagulopathy, and Convulsions.

Convulsions are prevented and treated by magnesium sulphate iv infusion.

Indications of delivery:

- Gestation > 34 weeks
- Inabilty to control BP
- Rapid worsening of maternal biochemistry/ haematology eg. falling platelets < 100 X 10 ^{3}/ml , increasing creatinine, ALT,AST.
- Eclampsia or any other maternal risks
- Severe IUGR

Treatment of Eclampsia

AIMS
• Keep the woman alive during the fit.
• Prevent more fits.
• Deliver the baby.

DURING THE FIT
• Turn the woman on her side.
• Maintain the airway.
• Stop the fit by giving i.v. diazepam and magnesium sulphate.
Dose of magnesium sulphate: 6 gm Iv over 20 min. then it is given with a rate of 1 gm/hour.

AFTER THE FIT
• Prevent further fits. This is usually done by giving a continuous infusion of magnesium sulphate.
• If the woman is not in hospital, arrange an emergency transfer.
• control BP.
• Deliver the baby.

ANTINATAL CARE

DEFINITION: comprehensive health supervision of a

pregnant woman before delivery

Or it is planned examination, observation and guidance given to the pregnant woman from conception till the time of labor.

Goals

- **To reduce maternal and perinatal mortality and morbidity rates**
- **To improve the physical and mental health of women and children**

Importance of Antenatal Care

- **To ensure that the pregnant woman and her fetus are in the best possible health.**
- **To detect early and treat properly complications**
- **Offering education for parenthood**
- **To prepare the woman for labor, lactation and care of her infant**

Schedule for Antenatal Visits:

The first visit or initial visit should be made as early is pregnancy as possible.

Return Visits:

- **Once every month till 28 w.** - **Once every 2 weeks till the 36 w** - **Once every week, till labor.**

Frequency of antenatal appointments

- **Nulliparous with an uncomplicated pregnancy, a schedule of 10 appointments.**
- **Parous with an uncomplicated pregnancy, a schedule of 7 appointments.**

History

- **Personal history**
- **Family history**
- **Medical and surgical history**
- **Menstrual history**
- **Obstetrical history**
- **History of present pregnancy**

Fetal kick count

- **The pregnant woman reports at least 10 movements in 12 hours.**
- **Absence of fetal movements precedes intrauterine fetal death by 48 hours.**

Physical Examinations

- **Height of over 150 cm indication of an average-sized pelvis**
- **The approximate weight gain during pregnancy is 12 kg.; 2kg in the first 20 weeks and 10 kg in the remaining 20 weeks (1.5 kg per week until term).**
- **Symphysis–fundal height should be measured and recorded at each antenatal appointment from 24 weeks.**
- **Fetal presentation should be assessed by abdominal palpation at 36 weeks.**

- **Fetal heart sound is heard by sonicaid as early as 10thweek of pregnancy.**
- **Fetal heart sound is heard by Pinard' s fetal stethoscope after the 20thweek of pregnancy.**

Breech presentation at term

- **ECV.**
- **If is not possible to schedule at 37 weeks then ?!**

Pregnancy after 41 weeks

- **Prior to formal induction of labour, women should be offered a vaginal examination for membrane sweeping.**
- **42 weeks ?!**

Investigations(in clinic):

- **Urine should be tested for ketones and protein.**

Health Teaching during the First

Trimester

- **Physiological changes during pregnancy**
- **Weight gain**

- Fresh air and sunshine
- Rest and sleep
- Diet
- Daily activities
- Exercises and relaxation
- Hygiene
- Teeth
- Bladder and bowel
- Sexual counseling
- Smoking :
- Medications
- Infection
- Irradiation
- Occupational and environmental hazards
- Travel
- Follow up
- Minor discomforts
- Signs of Potential

Complications

Common Discomforts of Pregnancy, Etiology, and Relief Measures :

Urinary frequency

RELIEF MEASURES:

- **Decrease fluid intake at night.**
- **Maintain fluid intake during day.**
- **Void when feel the urge.**

Fatigue

RELIEF MEASURES:

- **Rest frequency.**
- **Go to bed earlier.**

Sleep difficulties

RELIEF MEASURES:

- **Rest frequency**
- **Decrease fluid intake at night**

Nasal stuffiness and epistaxis

ETIOLGY: Elevated estrogen levels

- **RELIEF MEASURES :**
- **Avoid decongestants.**
- **Use humidifiers, and normal saline drops.**

Ptyalism (excessive salivation)

ETIOLGY: Unknown

RELIEF MEASURES:

- **Perform frequent mouth care.**
- **Chew gum.**
- **Decrease fluid intake at night.**
- **Maintain fluid intake during day.**

Nausea and vomiting

- **most cases of nausea and vomiting in pregnancy will resolve spontaneously within 16 to 20 weeks.**
- **that nausea and vomiting are not usually associated with a poor pregnancy outcome.**
- **non-pharmacological:**
- **ginger**
- **P6 (wrist) acupressure**

•pharmacological:
•antihistamines.

Nausea and vomiting

- RELIEF MEASURES:
- Avoid food or smells that exacerbate condition.
- Eat dry crackers or toast before rising in morning.
- Eat small, frequent meals.
- Avoid sudden movements. Get out of bed slowly
- Breath fresh air to help relieve nausea.

Heartburn

RELIEF MEASURES:

- Eat small, more frequent meals.
- Use antacids.
- Avoid overeating and spicy foods.

Dependent edema

- Avoid standing for long periods.
- Elevate legs when laying or sitting.
- Avoid tight stockings.

Varicosities

- **Rest in sims' position.**
- **Elevate legs regularly.**
- **Avoid crossing legs.**
- **Avoid long periods of standing**

Hemorrhoids

RELIEF MEASURES:

- **Maintain regular bowel habits.**
- **Use prescribed stool softeners.**
- **Apply topical or anesthetic ointments to area.**

Constipation

RELIEF MEASURES:

- **Maintain regular bowel habits.**
- **Increase fiber in diet.**
- **Increase fluids.**
- **Find iron preparation that is least constipating**

Backache

RELIEF MEASURES:

- **Wear shoes with low heels.**
- **Walk with pelvis tilted forward.**
- **Use firmer mattress.**
- **Perform pelvic rocking or tilting**

Leg cramps

- **RELIEF MEASURES:**
- **Extend affected leg and dorsiflex the foot.**
- **Elevate lower legs frequently.**
- **Apply heat to muscles.**

Faintness

RELIEF MEASURES:

•Rise slowly from sitting to standing. •Evaluate hemoglobin and hematocrit.

•Avoid hot environments

Screening

Asymptomatic Bacteriuria

- **Women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy. Identification and treatment of asymptomatic bacteriuria reduces the risk of pyelonephritis.**

Gestational age assessment

- **New Pregnant women should be offered an early ultrasound scan between 10 weeks 0 days and 13 weeks 6 days to determine gestational age and to detect multiple pregnancies.**
- **New Crown–rump length measurement should be used to determine gestational age. If the crown–rump length is above 84 mm, the gestational age should be estimated using head circumference.**

Screening for fetal anomalies

- **New The 'combined test' (nuchal translucency, beta-human chorionic gonadotrophin, pregnancyassociated plasma protein-A) should be offered to screen for Down's syndrome between 11 weeks 0 days and 13 weeks 6 days.**
- **For women who book later in pregnancy the most clinically and cost-effective serum screening test (triple or quadruple test) should be offered between 15 weeks 0 days and 20 weeks 0 days.**

Screening for gestational diabetes

- **New risk factors for gestational diabetes :**
- **body mass index above 30 kg/m2**

- previous macrosomic baby weighing 4.5 kg or above
- previous gestational diabetes (refer to 'Diabetes in pregnancy
- family history of diabetes (first-degree relative with diabetes)
- family origin with a high prevalence of diabetes:
- South Asian (specifically women whose country of family origin is India, Pakistan or Bangladesh)
- black Caribbean
- Middle Eastern (specifically women whose country of family origin is Saudi Arabia, United Arab Emirates, Iraq, Jordan, Syria, Oman, Qatar, Kuwait, Lebanon or Egypt).

Screening for haematological conditions

- New Screening for sickle cell diseases and thalassaemias should be offered to all women as early as possible in pregnancy (ideally by 10 weeks).

Anaemia

- Screening shouldtake place early in pregnancy (at the booking appointment).
- at 28 weeks when other blood screening tests are being performed.
- At 36 weeks.
- Normal range:
- 11 g/100 ml at first contact and 10.5 g/100 ml at 28 weeks) should be investigated and iron supplementation considered .

Blood grouping and red-cell alloantibodies

- **Women should be offered testing for blood group and rhesus D status in early pregnancy.**
- **To give anti-D at 28 weeks and post delivery if the baby (+)**

Hepatitis B virus

- **Serological screening for hepatitis B virus should be offered to pregnant women so that effective postnatal interventions can be offered to infected women to decrease the risk of mother-tochild transmission.**

Hepatitis C virus

- **Pregnant women should not be offered routine screening for hepatitis C virus because there is insufficient evidence to support its clinical and cost effectiveness.**

Rubella

- **Rubella susceptibility screening should be offered early in antenatal care to identify women at risk of contracting rubella infection and to enable vaccination in the postnatal period for the protection of future pregnancies.**

Nutritional Supplements

Folic Acid

- **Start before conception and throughout the first 12 weeks.**
- **reduces the risk of having a baby with a neural tube defect (for example, anencephaly or spina bifida).**

- **The recommended dose is 400 micrograms per day.**

Vitamin D

New women at greatest risk are following advice to take this daily supplement. These include:

- **women of South Asian, African, Caribbean or Middle Eastern family origin**
- **women who have limited exposure to sunlight, such as women who are predominantly housebound, or usually remain covered when outdoors**
- **women who eat a diet particularly low in vitamin D, such as women who consume no oily fish, eggs, meat, vitamin D-fortified margarine or breakfast cereal**
- **women with a pre-pregnancy body mass index above 30 kg/m2.**

Vitamin A

Vitamin A supplementation (intake above 700 micrograms) might be teratogenic and should therefore be avoided

Iron

- **Iron supplementation should not be offered routinely to all pregnant women. It does not benefit the mother's or the baby's health and may have unpleasant maternal side effects.**

Normal Labour

Definition of normal labour

It is the spontaneous delivery of a single, living, term fetus, presenting with vertex, through the birth canal, within 24 hours, without intervention (apart from episiotomy), without fetal or maternal complications.

Diagnosis of labour

1. Labour pain

- True labour pain is described as lower abdominal pain, rhythmic in nature (pain comes in attacks with intervening periods free of pain).
- The pain is typically of increasing frequency, intensity, and duration. This typical characters differentiate it from false labour pain which is variable in frequency, intensity, and duration.
- Also true labour pain is associated with progressive cervical changes, while false labour pain is not associated with progress in cervical changes.
- False labour pain is managed by giving the patient analgesia and if there is no progressive cervical changes the woman is sent home.

N.B. Braxton Hicks contractions

These are rhythmic contractions of the uterus. It occurs throughout pregnancy. It is felt by most of women from the beginning of pregnancy. It is quite similar to pain of meses. It is physiological. These contractions are only few seconds and may progress at the end of pregnancy to become labour pain.

2. Vaginal discharge (show)

The women at the onset of labour may complain of passage of mucous tinged with blood. This show is the mucous blug that normally occlude the endocervical canal to prevent ascending infection.

N.B. Women may complain of vaginal spotting or bleeding following PV examination.

3. Uterine contractions

Palpation of the uterus at time of labour shows the presence of uterine contractions. It is felt by palpating the uterus using the palm and the palmar surface of the right hand. The uterine contractions are felt as change in the consistency of the uterine muscle from soft to firm structure. The contractions develop gradually, continue for 30-90 seconds then fade gradually. **Efficient uterine contractions** that define the onset of labour is characterized by:

- Frequency: 3-5 contractions per 10 minutes
- Duration: 30-90 second (average 1 minute)

4. Cervical changes: Cervical dilatation & Effacement

Cervical dilatation

It is the degree of dilatation of the cervical canal as tested by the examining fingers during PV examination. The cervical canal has a fusiform shape. The upper constriction is the internal os. The lower end is the external os. The degree of dilatation is measured for the internal os as the external os may be dilated without labour in multiparous woman (multiparous os).

It is usually described as centimeters or fingers (the width of the finger is roughly 1.5 cm. e.g. 2 fingers is 3 cm).

Effacement

It is the shortening of the cervical canal to be continuous with the uterine cavity. Effacement is described as a percentage of the taken up part of the cervix. For example, 70% effacement means that only 30% of the cervical length is still preserved and the remaining (70%) part is taken up.

N.B. In nullipara cervical dilatation starts in the internal os then progress to the reset of the cervical canal so that the canal becomes gradually short (effacement). However, in multipara both dilatation and effacement occur simultaneously.

Mechanisms of labour:

Delivery of the fetal head

For the process of labour to be accomplished, the fetal presenting part needs to have the following **cardinal movements** during the passage through the birth canal.

Flexion

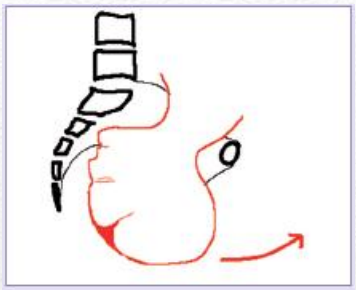
Cardinal movements of labour

1. Flexion
2. Descent
3. Internal rotation
4. Delivery of the head: by extension in vertex presentation
5. Restitution
6. External rotation

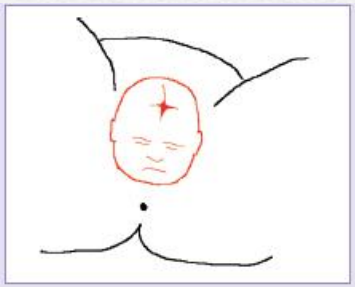
Flexion of the fetal head brings the smallest head diameter to be the engaging diameter. In case of vertex presentation it is the suboccipito-pregmatic diameter (9.5 cm)

1. Descent
   Following flexion of the head, it passes down through the birth canal under effect of the uterine contractions. The head become engaged. The process of head descent continue through the birth canal until the head comes out of the birth canal.

2. Internal rotation
   When the engaging diameter of the head reaches the level of the greatest pelvic dimentions, the head rotates so that the head **become direct occipitoanterior** (45° anticlockwise if rotation from the left occipitoanterior (LOA) which represent the most common position)
3. Delivery of the head: by extension in vertex presentation
   The lower edge of the maternal symphysis pubis become the fulcrum for the fetal head.

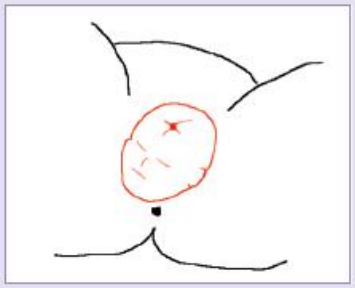


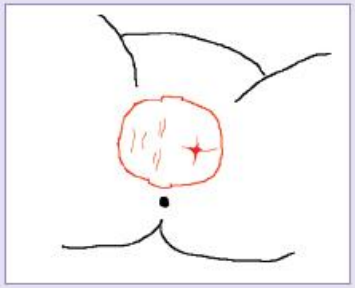
4. Restitution
   The internal rotation results in twisting of the fetal head become outside the vulval ring, this twist rotate back to its original position (45° clockwise if



neck. Once the fetal results in the head to rotation from the LOA)

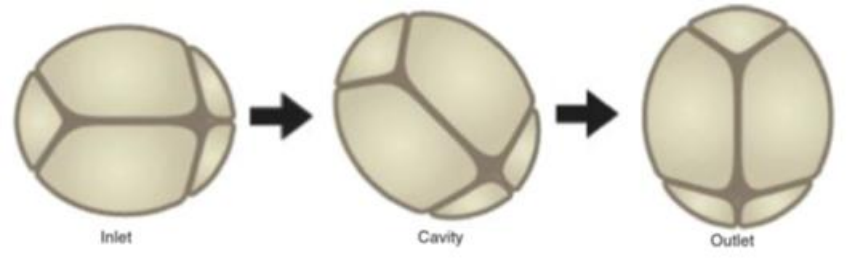
5. External rotation
   The head rotates due to passage of the fetal is the distance between the acromions; 12 cm) anteroposterior diameter of the maternal pelvis. 45° clockwise if rotation from the LOA i.e. in the restitution). After the external rotation fetal head in position (baby looks to the right maternal thigh in





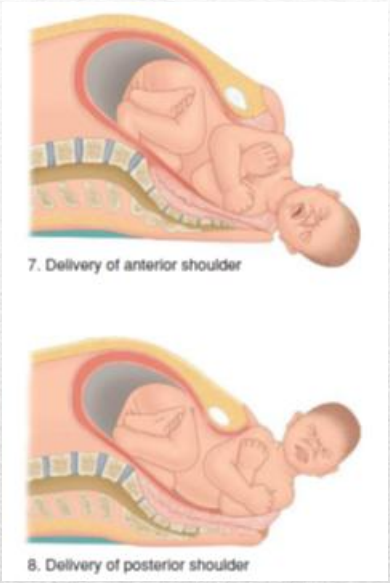
biacromial diameter (it through the (The rotation is another same direction of the the direct lateral case of LOA)

Pelvic plane	A-P diameter	Oblique diameter	Transverse diameter
Inlet	11	12	13
Cavity	12.5	12.5	12.5
Outlet	13	12	11



Delivery of the fetal trunk

After the external rotation, the anterior shoulder of the baby lies behind the symphysis pubis below the upper border of the symphysis pubis and the posterior shoulder lies in the concavity of the sacrum below the sacral promontory. Under the effect of further uterine contractions the anterior shoulder comes out from the under surface of the symphysis pubis and passes the vaginal ring. This is followed by delivery of the posterior shoulder by lateral flexion of the fetal trunk anteriorly. The rest of the fetal trunk and lower limbs follow easily.



Management of normal labour

Management of the first stage

The first stage start from the onset of labour till the full cervical dilatation

Initial assessment

The aim of initial assessment to detect any risk factor (e.g previous CS, breech, etc) and to diagnose labour.

History taking

This include the usual items of history especially the age, parity, number of livings, time since last delivery/miscarriage, previous cesarean/ instrumental delivery, the last menstrual period (LMP), the outcome of previous deliveries (fetal and maternal), the current complications during this pregnancy, and complaint of the woman (pain, discharge, fluid leakage, fetal movement , etc).

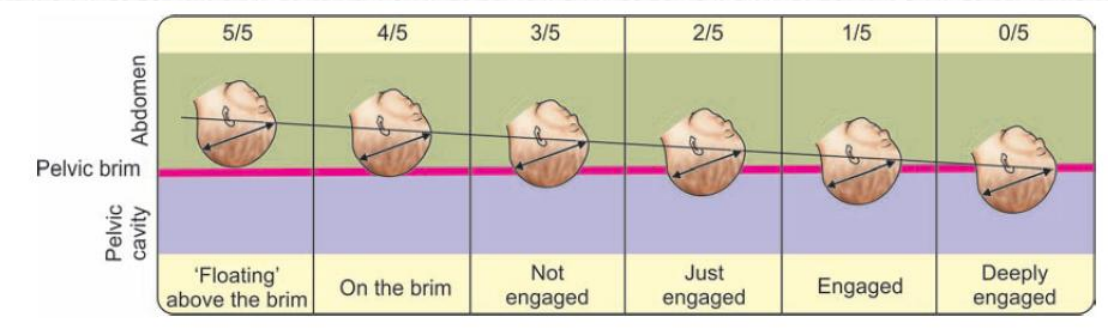
Examination

It includes the usual items of examinations especially the general look, the vital signs (pulse, blood pressure, respiratory rate, and temperature), obstetric examination, and PV examination.

Assessment of the head descent by abdominal palpation:

Technique: use the radial border of the index finger just above the symphysis pubis to feel the fetal head. Then move the index finger gradually upward until you reach the groove between the fetal head and the neck. The description is given as a fifth system. 0/5 means that the head is no longer palpable abdominally. 1/5 means that only one fifth of the head is palpable abdominally, and so on. Engagement occur at 1/5.

This method of assessment of the fetal head descent has the following advantage: (1) avoid PV examination (2) not affected by the presence of caput



Findings on PV examination

1. Cervical dilatation:

It is measured in centimeters of fingers. Cervical dilataion has two phases:

- Latent phase: from the onset of labour to cervical dilatation of 3 cm. the duration of the latent phase is quite variable.

Findings on PV examination

1. Cervical dilatation
2. Effacement
3. Presenting part
4. Station
5. Membranes:
6. Pelvis:

- Active phase: from cervical dilatation of 3 cm to full cervical dilatation (10 cm). The normal duration of this phase is 8 hours in nullipara and 5 hours in multipara

When the cervix is dilated to the extent that only a rim of the cervix is felt around the fetal head, it is usually described as "rim"

2. Effacement:

It is described as percentage

3. Presenting part

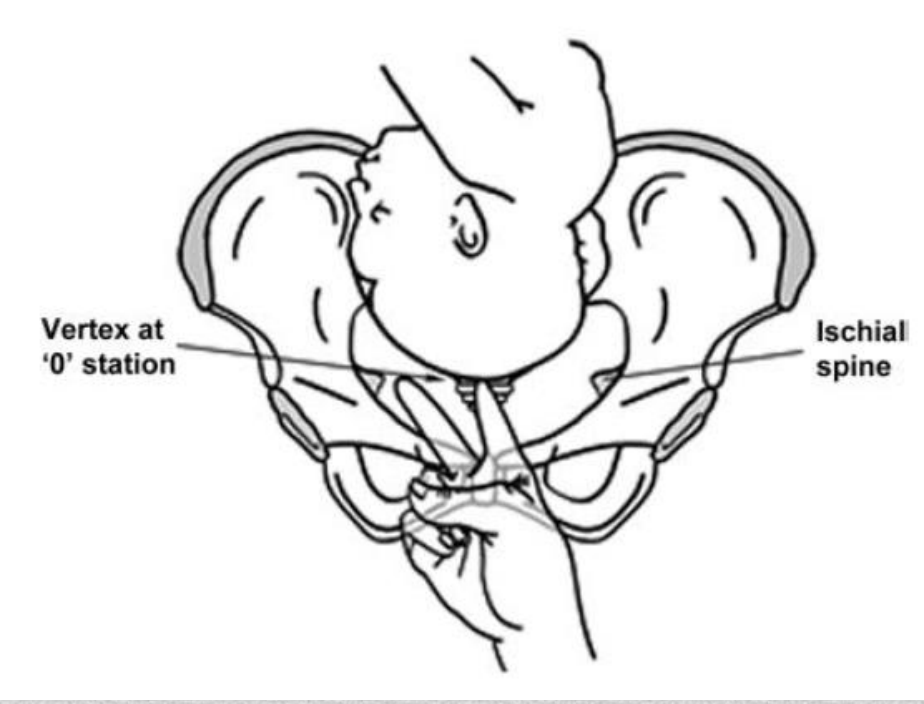
The vertex is known by the sensation of the parietal bones with the sagittal suture in between. The posterior fontanelle is felt as a triangular area. The anterior fontanelle is felt as a rhomboid shape.

4. Station

The station is the relation of the lower most part of the vertex to the level of the ischial spine. The ischial spine is felt as a projecting bone (spine) in the lateral pelvic side wall during PV examination. Palpation of the ischial spine requires some experience.

When the engaging diameter reaches the pelvic inlet, it is said that the head became engaged (station 0). At engagement, the lowermost part of the fetal head reaches the level of the ischial spine. Head station above and below the level of the ischal spine is described according the distance in centimeters above or below the

level of the ischal spine. Above the ischial spine is -1, -2, or -3. Below the ischial spine is +1, +2, or +3. The station -3 the head is usually described as "floating" means that is freely floating in the abdomen above the pelvic inlet. The station +3 the head is usually described as "head on perineum" or "crowning" means that the head separates the vulva even in between the uterine contraction. N.B. Caput may result in a false impression of a "low head".



5. Membranes: intact or ruptured

The membrane is felt as a bulging cystic bag in front of the fetal skull bone. It becomes tense during contractions. If the membranes are ruptured, the amniotic fluid will be pour out of the cervix. The nature of the amniotic fluid is either clear (normal), blood stained, or meconium stained.

6. Pelvis: average or contracted

The pelvis is assessed during PV examination (internal pelvimetry). Usually we consider the pelvis contracted if the sacral promontory is easily reached (contracted inlet), there is jutting ischial spine or the subpubic angle does not admit two fingers easily (contracted outlet).

Care of the woman during the first stage

Diet: once labour pain start the woman is instructed to have soft drink and light food only. Nothing per mouth (NPO) is needed only if there is high possibility for cesarean section.

Evacuation of the bladder and rectum: the woman is instructed to evacuate the bladder and rectum. Full bladder or rectum may contribute to uterine inertia. In addition soiling of the perineum (and episiotomy) by faeces may occur at time of delivery of the fetal head. Rectal enema for evacuation of the rectum routinely used. If she cannot micturate by herself evacuation of the bladder using metallic or plastic catheter is done.

Position: the woman is allowed to take any position she like. Lying in bed is not recommended. Walking and setting is encouraged.

Analgesia: the woman should be provided with good analgesia as morphine, bethidine, inhalation (nitric oxide), or epidural analgesia.

Maternal & Fetal monitoring:

The monitoring is best through the partogram.

The aim of the monitoring is (1) to detect the mechanical progress of labour (2) to detect maternal or fetal distress

Maternal monitoring: the vital signs, presence of dehydration (check the tongue for dryness), uterine contractions, engagement by abdominal examination, PV examination every 2-4 hours to assess the progress of labour (see findings on PV examination above). PV examination should not be done more than every 2 hours except if there is sudden gush of fluid (rupture of membranes) to exclude the occurance of cord prolapse or if there is bearing down (see later).

Fetal monitoring

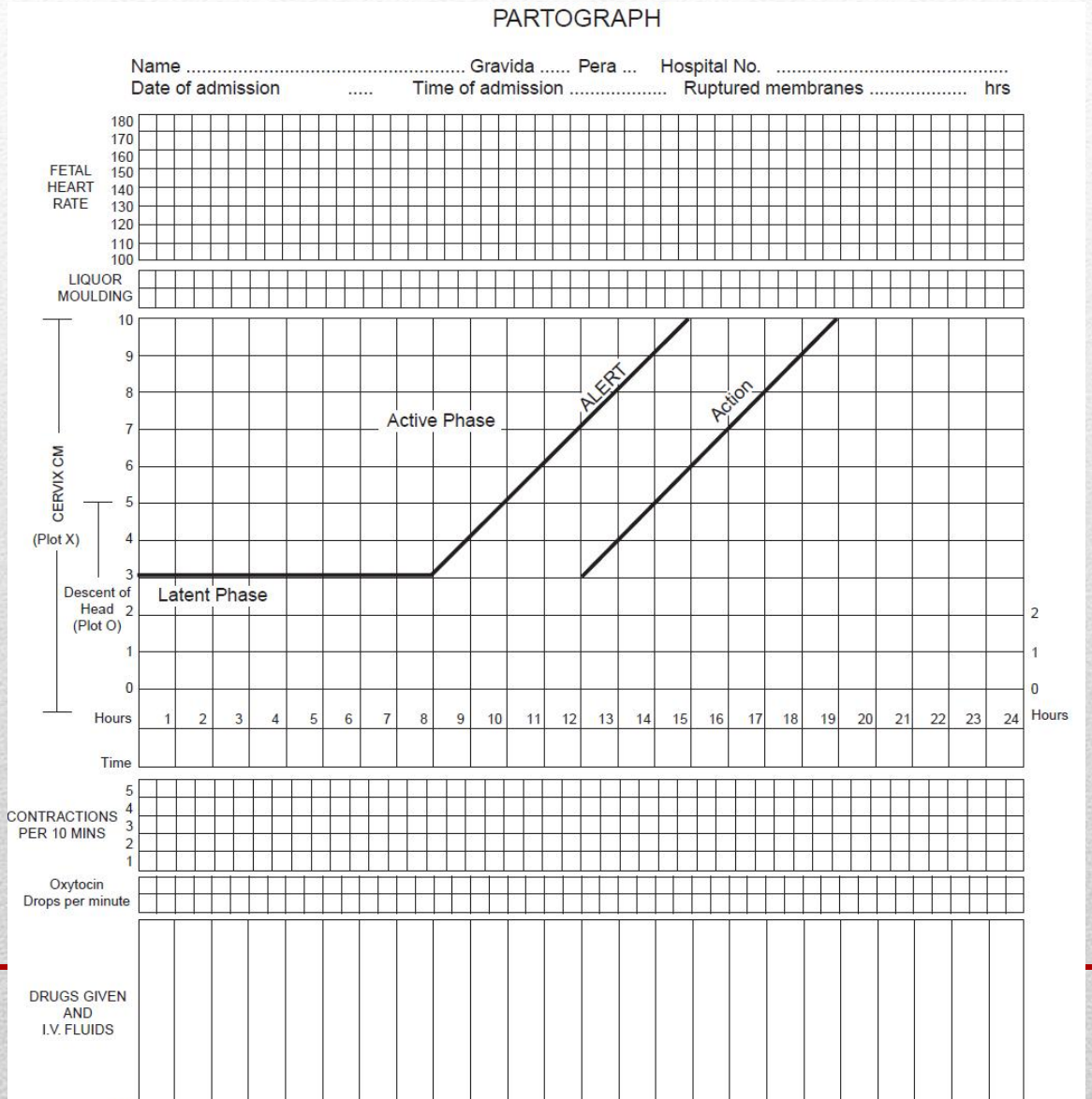
Low risk women

Intermittent auscultation of the fetal heart rate (Every 15 minutes) by the Pinard stethoscope or Sonicaid

For high risk women (e.g. PROM, previous 1 cesarean section, breech, Diabetes, preeclampsia, oligohydramnios, etc)

Continuous electronic fetal monitoring by the Cardiotocogram (CTG)

Figure: Partogram


PARTOGRAPH
Name ..... Gravida ..... Pera ... Hospital No. .....
Date of admission ..... Time of admission ..... Ruptured membranes ..... hrs
FETAL HEART RATE
180
170
160
150
140
130
120
110
100
LIQUOR MOULDING
CERVIX CM
(Plot X)
10
9
8
7
6
5
4
3
2
1
0
Active Phase
ALERT
Action
Latent Phase
Descent of Head (Plot O)
2
1
0
Hours
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Hours
Time
CONTRACTIONS PER 10 MINS
5
4
3
2
1
Oxytocin Drops per minute
DRUGS GIVEN AND I.V. FLUIDS

WHO Partogram

Management of the second stage

Definition: the second stage start from the full cervical dilatation till the complete expulsion of the fetus. (i.e. it is the stage of fetal expulsion).

Care of the woman during the second stage

Diet, Position, **Analgesia,** and **Maternal monitoring**: the same as the first stage

Shifting the mother to labor room:

Care of the woman during the first stage is usually in a labour ward. The labour room is equipped by labour bed that facilitate care in lithotomy position. It has the equipment for anesthesia, surgical instruments,

medications, and baby resuscitation tools. It is usual for nullipara to be shifted in the active phase of the second stage (beginning of bearing down) and multipara are shifted once the cervix is fully dilated.

Lithotomy position

The laboring woman at this stage is usually agitated and in pain. Care must maintain the patient dignity. After sterilization by idodine solution, keep the patient's abdomen, legs, and thighs covered. Only leave the area of the perineum exposed.

Fetal monitoring

Low risk women: Intermittent auscultation of the fetal heart rate (Every 5 minutes) by the Pinard stethoscope or Sonicaid

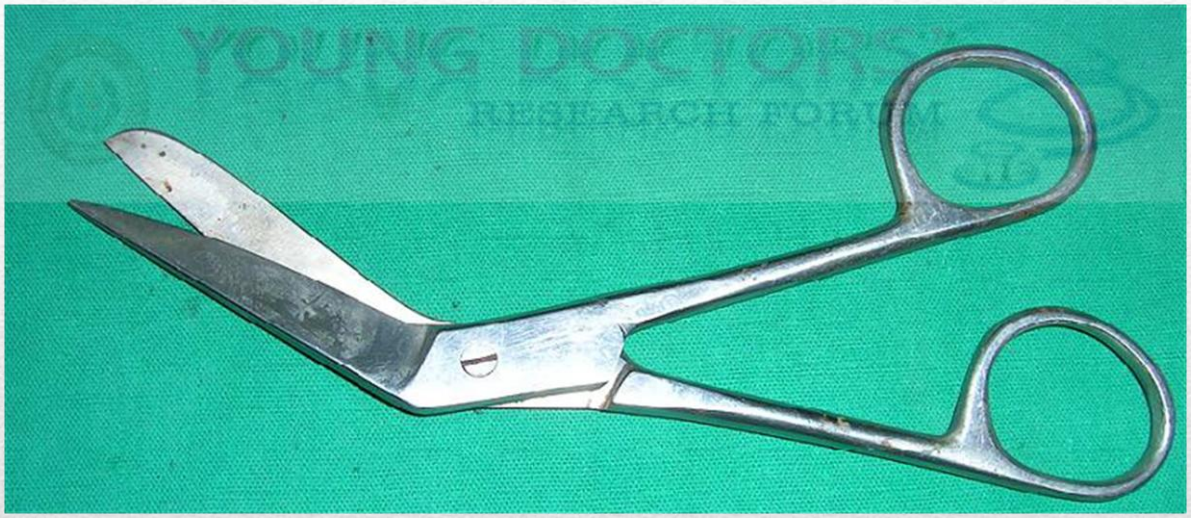
For high risk women: continuous electronic fetal monitoring by the Cardiotocogram (CTG)

Encouraging the woman to bear down "Couching"

The woman is encouraged to bear down up on her urge (i.e. once she has the feeling to do so). The obstetrician may guide the woman to bear down at time of uterine contraction and to take a rest at time of uterine relaxation.

Episiotomy:

Definition: it is incision in the vagina and perineum to allow for easy passage of the fetal head.



Timing: it is done by the time of crowning. It may be done earlier in multiparous woman as the process of delivery may be fast. Care must be taken to avoid early episiotomy as it results in more blood loss. In addition sometimes the second stage become prolonged and the woman needs cesarean section. So, the decision to do episiotomy is done only if the delivery of the fetal head is eminent.

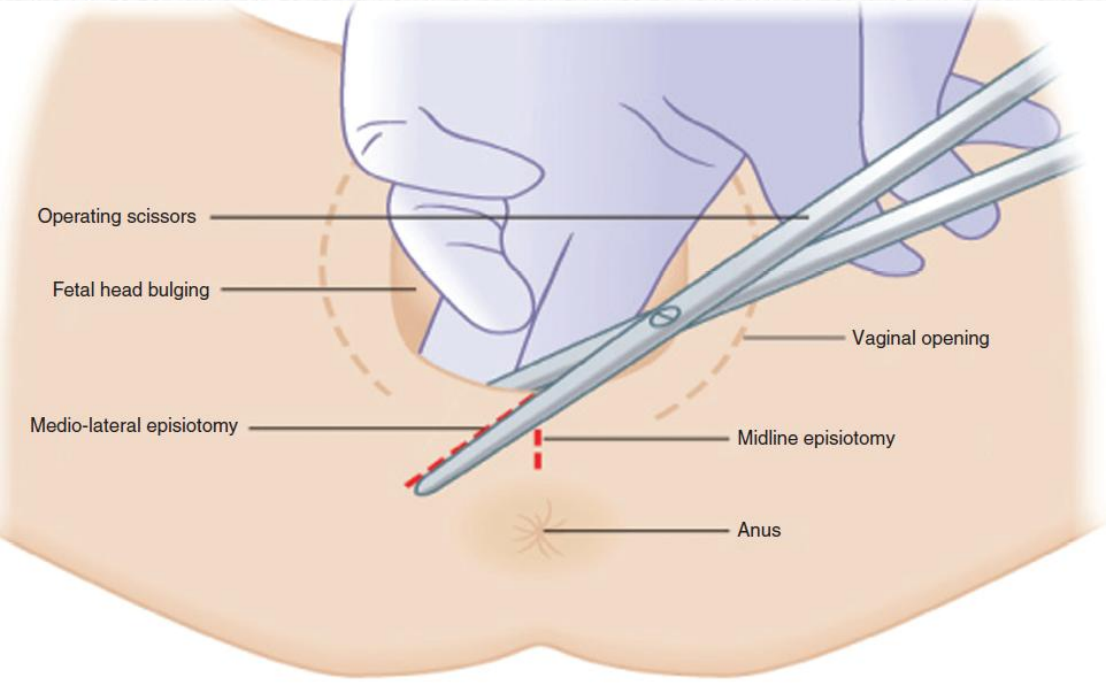
Indications

1. Rigid perineum: almost all nulliparous women and some multiparous woman needs episiotomy. The decision for multiparous woman is taken individually.
2. Preterm delivery: the head of the preterm baby is smaller than the head of the term baby but it is softer and the intracranial vessels are more vulnerable. The preterm head cannot tolerate the compression-decompression forces during its passage through the birth canal.
3. Before forceps or vacuum
4. Breech delivery

Types:

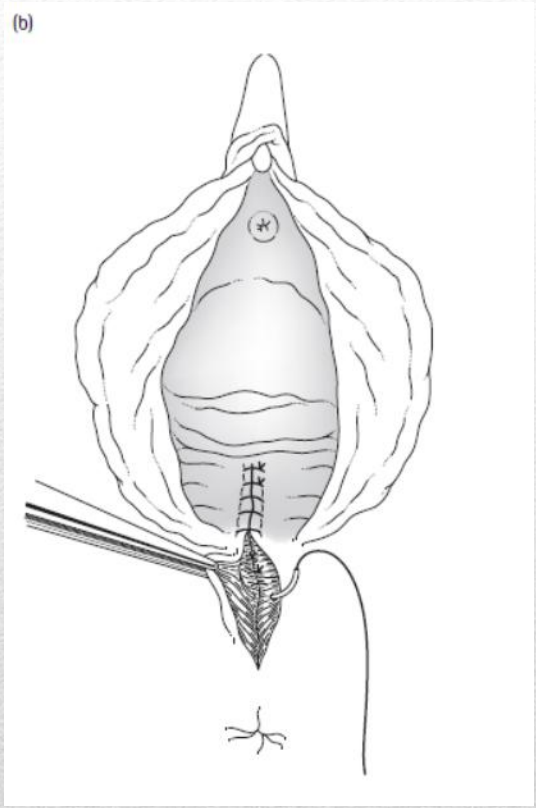
Mediolateral, midline, and J-shaped type.

All types start in the mid-point of the posterior forchette. The direction of cut in the midline type is directly toward the anus. It may cause injury to the anal sphincter. The mediolateral type is the most common type. It is directed posterolaterally at 45° usually on the right side. The J-shaped type start as a midline cut the curves away from the anus.


Operating scissors
Fetal head bulging
Vaginal opening
Medio-lateral episiotomy
Midline episiotomy
Anus

Technique:

Infiltrate the perineal skin and vaginal skin by 1% Lidocaine. Insert one blade of the episiotomy scissor in the vagina between the stretched index and middle fingers of the left hand to protect the fetus. Cut the tissues generously to allow the head to pass easily. Small episiotomy incision may results in extension of the episiotomy with difficult repair.


(b)

Repair the episiotomy by absorbable sutures (like Chromic 2/0 or Vicryl rapide 2/0). Start by suturing the vaginal apex of the incision by continuous sutures until the junction between the vaginal and the perineal skin is reached. Then repair the perineal muscles using interrupted sutures. Lastly repair the perineal skin by interrupted sutures.

Complications:

1. **Extension of the episiotomy**: this results in deep apex or branching tear. This is usually repaired under general anaesthesia as the exposure will be better and the infiltration anaesthesia is usually insufficient to provide patient comfort during the repair.
2. **Traumatic Postpartum haemorrhage**: due to failure to identify extension or tears or failure to adequately repair them.
3. **Infection**: it may be due to bad suturing technique as cutting the sutures just above the knot or improper sterilization.
4. **Hematoma**: paravaginal hematoma may extend in the retroperitoneum up to the kidneys. It is usually due to missing vessels at the vaginal apex.

Delivery of the fetal head:

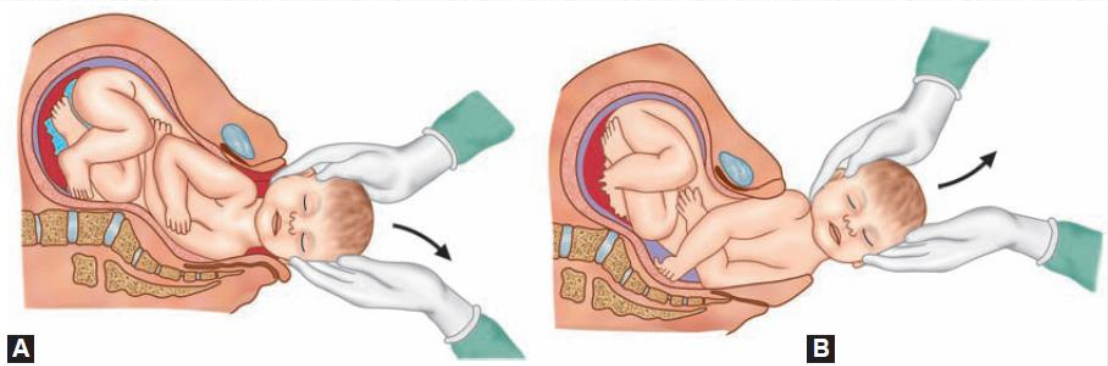
The fetal head is expelled exclusively by the maternal effort (bearing down).

The role of the obstetrician in delivery of the fetal head is (1) to support of the head when it stretch the vaginal ring (stage of crowning) to prevent early extension of the fetal head. Early extension results in perineal trauma. (2) to support of the perineum at time of delivery of the head by extension. (3) perform episiotomy in the proper time.

Delivery of the shoulders & fetal trunk

Usually the maternal effort is quite sufficient to result in easy expulsion of the fetal trunk immediately after delivery of the head.

The role of the obstetrician in delivery of the fetal trunk is (1) The expulsion of the fetal trunk may be so fast that the obstetrician must be ready to catch the baby's feet with right hand and the left hand is supporting the fetal to prevent it slippage on the ground. (2) Sometimes, there is delay in the delivery of the trunk. The obstetrician simulate the normal mechanism of labour by grasping the fetal head in between the two hands (using the index and middle fingers of each hand to hook the oociput and the sinciput). Draw the head gently posteriorly until the anterior shoulder appears below the symphysis pubis. Then, draw the head gently upward until the posterior shoulder is delivered. This technique is called **assisted delivery of the shoulder**. Then axial traction on the trunk to deliver the rest of the body.



Figs 12.26A and B: Assisted delivery of the shoulders—(A) Anterior shoulder. (B) Posterior shoulder

The duration of the second stage:

It should be less than 2 hours in nullipara and 1 hour in multipara. Extra one hour is allowed for women under epidural analgesia.

It has two phases:

- Passive phase: from full cervical dilatation till the beginning of the bearing down. The bearing down is a reflex involuntary contraction of abdominal muscle and diaphragm in response to the pressure of the fetal head on the levator ani muscle. The bearing down increase the intraabdominal pressure and help in the mechanism of labour. The woman feel as if she will defecate.

- Expulsive phase: from the beginning of the bearing down till the expulsion of the fetus.

Management of the third stage

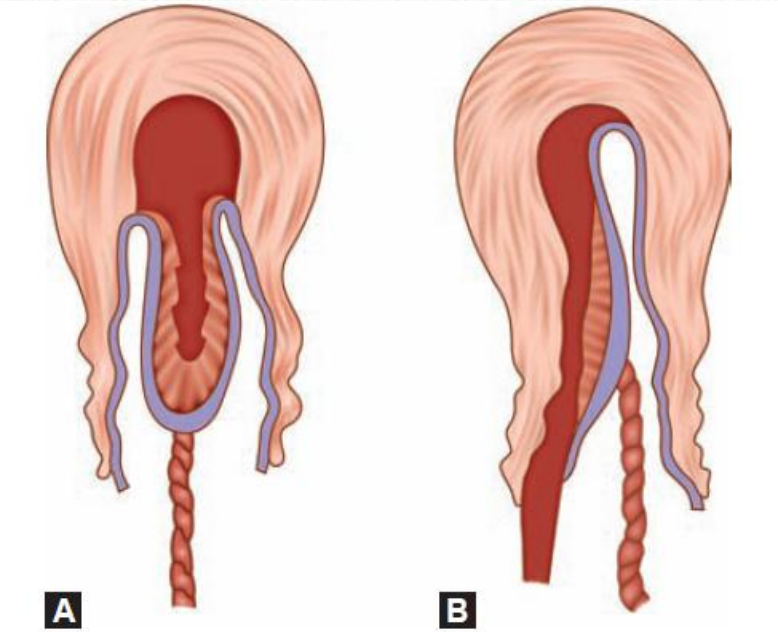
Definition: it is the stage following expulsion of the fetus till the complete expulsion of the placenta and fetal membranes. (i.e. it is the stage of placental expulsion).

Mechanism of delivery of the placenta

Following expulsion of the fetus, contractions of the uterus results in marked decrease in the uterine volume. The uterus is usually at the level of the umbilicus immediately after delivery of the fetus. This decrease in the uterine volume results in decrease in the surface area of the placental attachment. The placenta is plasticity but not elasticity (i.e. cannot change its surface area). This results in separation of the placenta from its bed. The separation leads to accumulation of blood in the retroplacental space which further increases the separation, and so on.

There are two ways of separation:

- Central separation (Shultze): the central part deliver first
- Marginal separation (mathiew-Ducan): the marginal part deliver first



Figs 12.10A and B: Types of separation of the placenta—(A) Schultze method, (B) Mathews-Duncan method

Method of delivery of the placenta

The usual method is known as **Brandt-Andrews method** (controlled cord traction method). Controlled cord traction is done by grasping the cord by the right hand and the palmar surface of the left hand press on the suprapubic area. The pressure on the suprapubic area is approximately at the junction between the upper and the lower uterine segment. The body of the uterus is pushed backward and upward to prevent the uterus from descent with traction and help separation of the placenta. The suprapubic pressure protect the uterus from inversion.

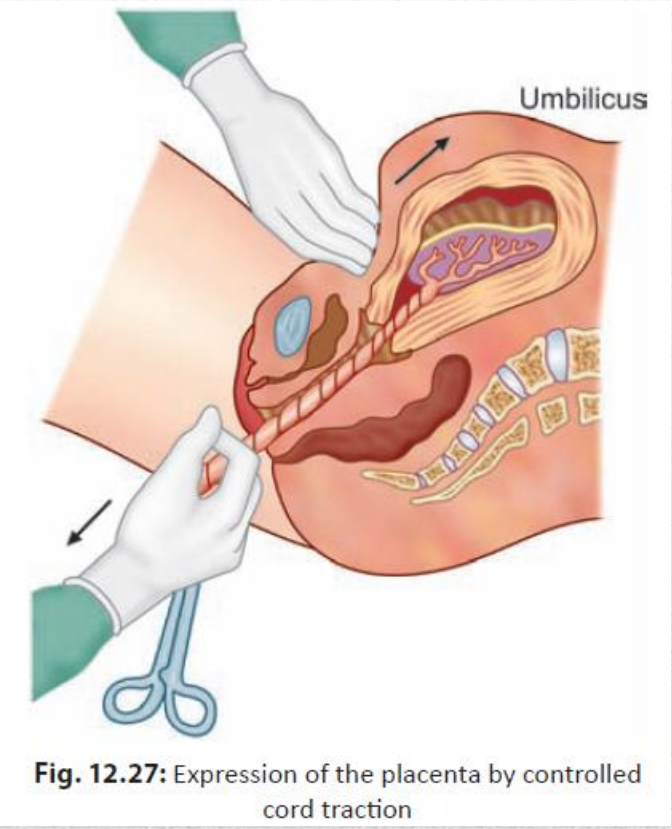


Fig. 12.27: Expression of the placenta by controlled cord traction

Care of the woman during the third stage

- Deliver the placenta

A. Expectant management of the third stage
   It is called physiological management. It is less commonly used. It involves (1) delayed cord clamping: the cord is not clamped until pulsation of the cord vessels stop (2) there is no traction on the cord. The placenta delivers by maternal efforts only

B. Active management of the third stage
   It is the most commonly used method. It involves (1) Early cord clamping (2) give 5 IU Oxytocin direct intravenous or 10 IU intramuscular by the time of delivery of the anterior shoulder (3) controlled cord traction when there is signs of placental separation.

- Examine the placenta and membranes for completeness.

Retained part of the placenta (cotyledon) or membranes is a cause of postpartum hemorrhage.

- Examine the genital tract
  - ❖ Bimanual examination: The uterus must be

Signs of placental separation

- Elongation of the cord
- Sudden gush of blood
- The uterus Harden and become globular

contracted by palpation of the lower abdomen using the left hand. The examining right hand in the birth canal check for emptiness of the uterine cavity.

- ❖ Inspect the vagina and perineum:
  - Press on the posterior vaginal wall by the index and middle finger of the right hand. Sim's speculum or vaginal retractor is used in difficult cases
  - check if there is any tear. Check if the angle of the episiotomy is easily reached for repair.
  - Observe for the amount and colour of the blood coming from the uterus: normally the blood is dark. The presence of fresh blood may indicate traumatic postpartum haemorrhage. The amount of the bleeding is assessed by experience as usual or increased. The woman should not come out of the labour room if there is bleeding.

- Repair of episiotomy and any tear

  This is usually done under local anaesthesia. General anesthesia is indicated if the woman cannot tolerate the suturing under local anaesthesia or the episiotomy apex is extended and cannot be reached easily

- Shift the mother from the labour room to the postnatal ward
- Encourage the woman to breastfeed her baby
  This help uterine contraction (through endogenous secretion of Oxytocin) and continuation of breastfeeding
- Observation for vaginal bleeding

The first hour following delivery is called the "fourth stage of labour" as most of the postpartum hemorrhage occur during this hour.

Duration of the third stage:

It should be less than 60 minutes with expectant management and less than 30 minutes with active management.

Post-partum Hemorrhage

Introduction

Post-partum haemorrhage (PPH) re
a major cause of maternal mortality
morbidity worldwide. Approximatel
half a million women die annually f
causes related to pregnancy and
childbirth.

Incidence

- In the developing world, several countrie
  have maternal mortality rates in excess o
  1000 women per 100,000 live births, and
- World Health Organization statistics sug
  that 25% of maternal deaths are due to P
  accounting for more than 100,000 matern
  deaths per year.

Clinical Definition

- Any bleeding **from** or **into** the **genital** tract **following birth** **the baby** up to the **end of puerperium** which **adversely affects** the ***general*** **condition** the patient evidenced by rise in pulse rate and falling blood pre is called "Post Partum Hemorrh (PPH)".

Quantitative definition

- Blood loss >500 ml following vaginal birth of the baby
- Or >1000 ml after CS (**WHO**).

- **ACOG**: Either a 10% drop of Hematocrit of need for Packed transfusion following birth of th baby.

Types

- **Primary postpartum hemorrhage** is th
  hemorrhage occurring during the third st
  labor and within 24 hours of delivery.

- **Secondary postopartum hemorrhage** i
  hemorrhage occurring after 24hours of
  delivery and within 6weeks of delivery. I
  also referred to as puerperal hemorrhage.

How much time do we have ?

It is estimated that, if untreated,
Death occurs on average in:

2 hours	**from Postpartum Hemorrhage**
12 hours	**from Antepartum Hemorrhage**
2 days	**from Obstructed Labor**
6 days	**from Infection**

Causes of PPH

4 'T's

- **Tonicity-** Atonic PPH- most common (75-90%).
- **Trauma-** Traumatic PPH (10-2
- **Tissue-** Retained tissues relate PPH (Placenta, membranes).
- **Thromboplastin-** Coagulation defect related PPH.

Causes

Primary postpartum hemorrhage are:

- Atonic uterus
- Trauma
- Mixed (combination of both atonic and trauma)
- Retained product of conception
- Uterine rupture
- Uterine inversion
- Blood coagulopathy

2.Secondary postpartum haemorrhage include:

- Retained bits of cotyledon or membranes.
- Infection
- Cervico-vaginal laceration
- Endometritis
- Subinvolution of the placental site
- Secondary hemorrhage from caesarean section
- Other rare causes – chorion epithelioma, carcino
  cervix, placental polyp, fibroid polyp and puerpe
  inversion of uterus.

Risk factors

- Prolonged third stage of labor
- Multiple delivery
- Episiotomy
- Fetal macrosomia
- History of postpartum hemorrhage.
- Grandmultiparity
- Placenta previa
- Placental abruption
- Pregnancy induced hypertension
- Infection

Symptoms

- massive blood loss
- passing large clots
- dizziness
- lightheadedness or fatigue.
- Decreased blood pressure.
- Increased heart rate
- Swelling and pain in tissues in the vagina perineal area

Management of PPH

1. Prevention
2. Treatment

Prevention of PPH

Antenatal

- Improvement of the health status.
- High risk patients.
- Blood grouping
- **Intranatal**
- Slow delivery of the baby.
- Expert obstetric anesthetist needed.
- Spontaneous separation and delivery of placenta during caesarean section.

- Active management of third stage of labo
- Examination of placenta.
- Induced or accelerated labor by oxytocin
- Exploration of utero-vaginal canal.
- To observe the patient for about two hour after delivery.

Golden Hour

- The 1st hour of PPH is taken as
  golden hour, coz if managemer
  started within 1st hour of onset
  PPH, then the patient has the b
  chance of survival.

- Chance of survival decrease sh
  after the 1st hour.

Rule of 30

1. SBP drops by 30mmHg
2. Heart rate falls by 30 bpm
3. Resp rate becomes >30/ min
4. Hematocrit/ Hb drops by 30%
5. Urine output becomes <30 ml

- It means that the pt has lost >
  of her blood and is in moderate
  shock.

Active Treatment of Postpartum Haemorr

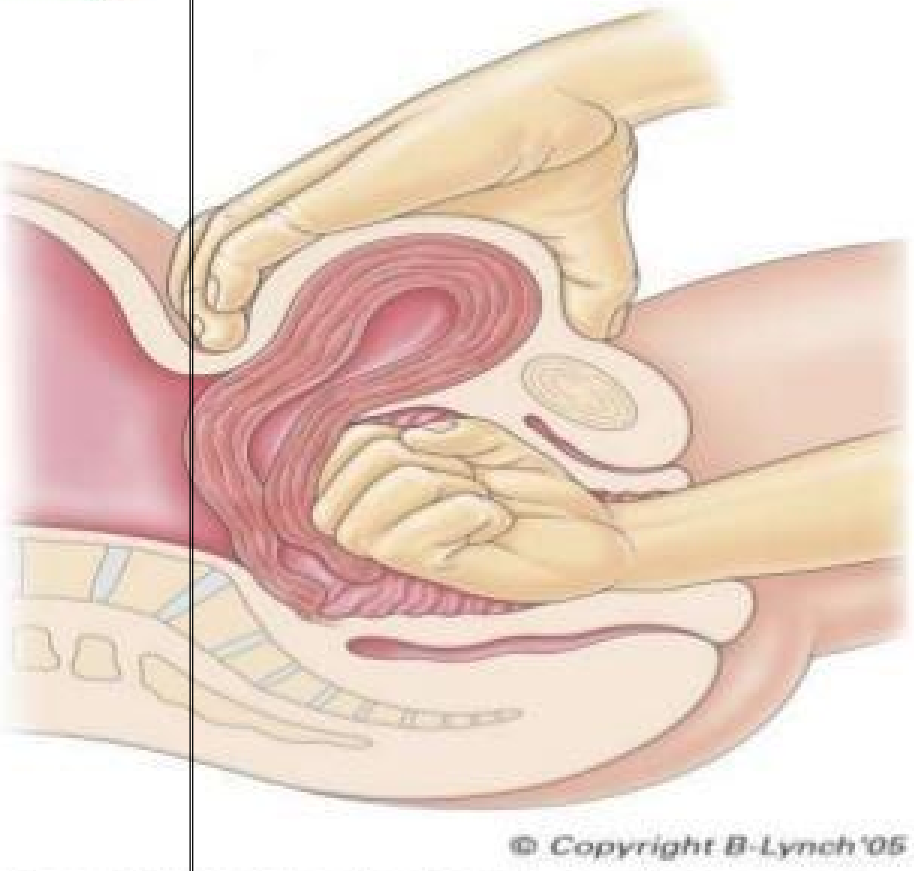
- Rub up the uterus to stimulate contraction and retraction.
- Administer ergometrine(0.2mg) intramuscularly . Syntometrine (1ml) intramuscularly may be given instead of ergometrine.
- Expel the placenta with the next uterine contracti fundal pressure or controlled cord traction.
- Empty the urinary bladder by catheterization.
- A second dose of syntometrine or ergometrine ma given in ten minutes if bleeding is not controlled.

Management of true PPH

Tone

- **Uterine massage -** If the uterus is soft, massage is performed by placing one han the vagina and pushing against the body uterus while the other hand compresses t fundus from above through the abdomina wall. The posterior aspect of the uterus is massaged with the abdominal hand and t anterior aspect with the vaginal hand.

Bimanual compression of th uterus



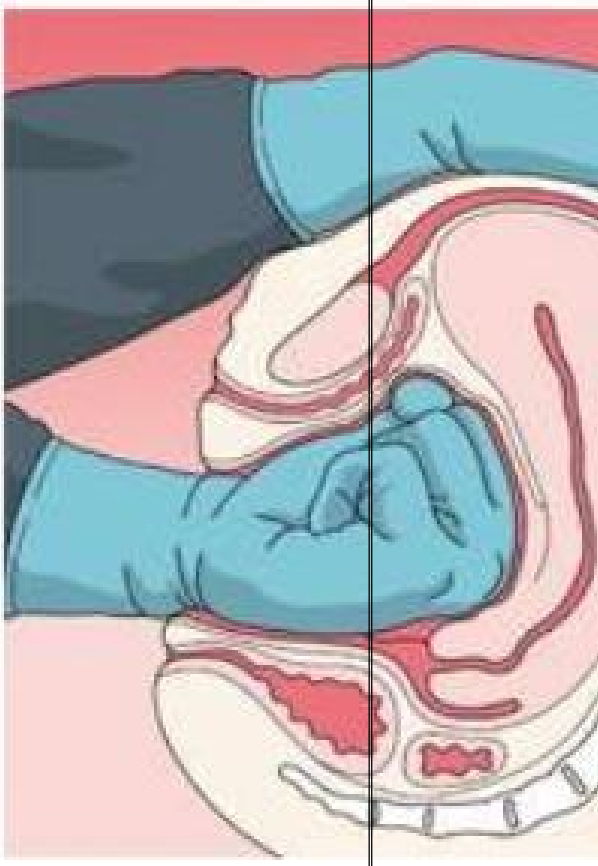


Figure 1 Illustration showing bi-manual compression of the uterus.

Uterotonic agents - Uterotonic agents include oxytocin, ergot alkaloids, and prostaglandins.

- **Oxytocin -** 10 international units (IU) should b injected intramuscularly, or 20 IU in 1 L of sali may be infused at a rate of 250 mL per hour. A as 500 mL can be infused over 10 minutes with complications.
- **Methylergonovine (Methergine) and ergome** a typical dose of methylergo-novine, 0.2 mg administered intramuscularly, may be repeated required at intervals of two to four hours.

Prostaglandins –

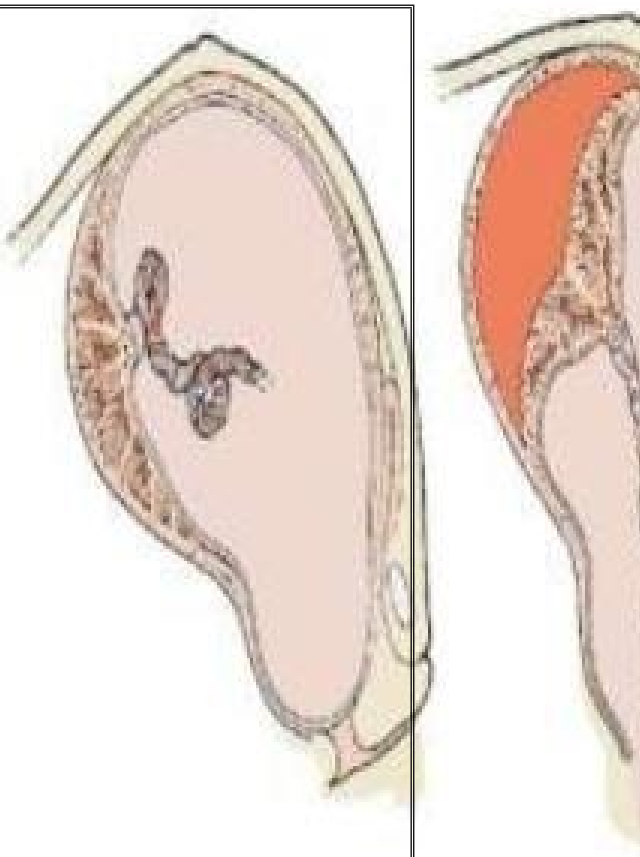
- **Carboprost** can be administered intra-myometrially or intramuscularly in a dos 0.25 mg; this dose can be repeated every minutes for a total dose of 2 mg.
- **Misoprostol** is another prostaglandin; It be administered sublingually, orally, vagi and rectally. Doses range from 200 to 1,0 mcg; the dose recommended by FIGO is mcg administered rectally.

Trauma

- **Lacerations and hematomas** resulting f
  birth trauma can cause significant blood l
  that can be lessened by hemostasis and ti
  repair.
- **Uterine Rupture** - Symptomatic uterine
  rupture requires surgical repair of the def
  hysterectomy.
- **Uterine inversion** is rare.

Tissue

Classic signs of placental separation include a small gush of blood with lengthening of the umbilical cord and a slight rise of the uterus in the pelvis. Placental delivery can be achieved by use of the Brandt-Andrews maneuver, which involves applying firm traction on the umbilical cord with one hand while the other applies suprapubic counter-pressure.



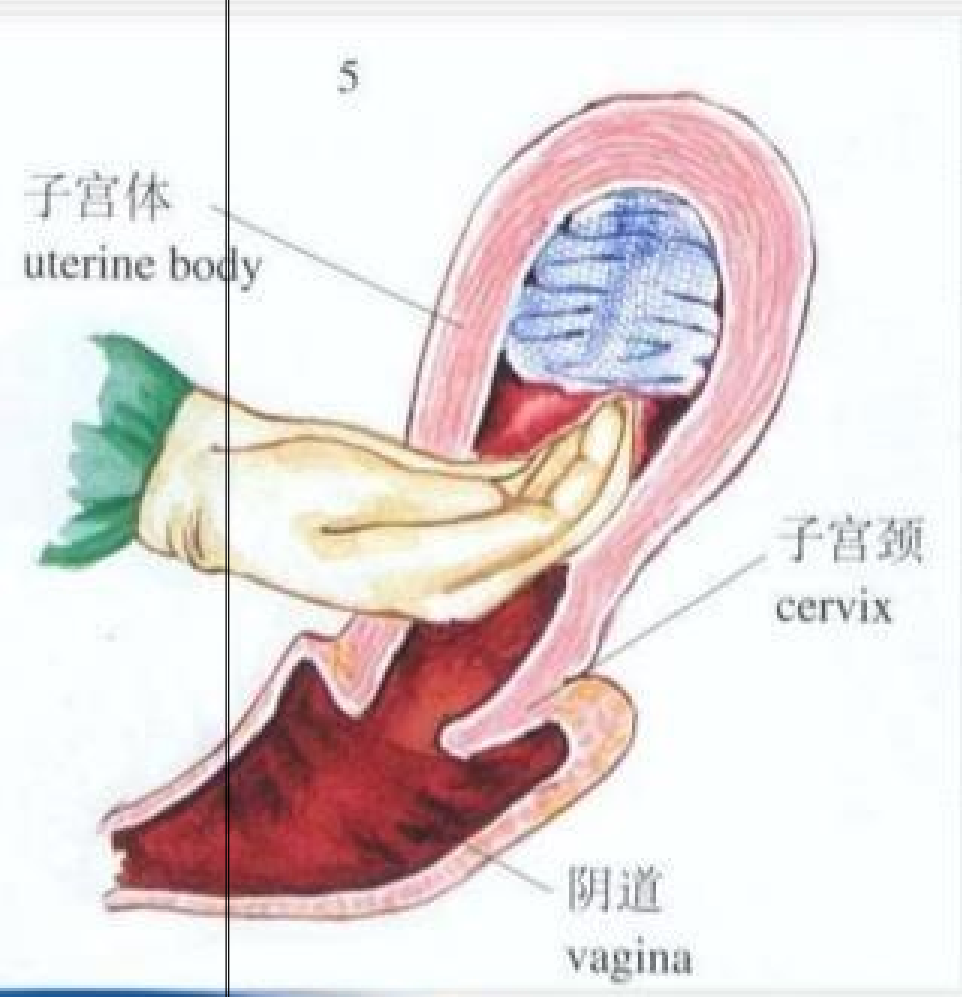
Thrombin

Coagulation disorders, a rare caus
post-partum hemorrhage, are unlikel
respond to the measures described al
Most coagulopathies are identified b
delivery, allowing for advance plann
preventing postpartum hemorrhage.

Surgical management of PPH

- **Transvaginal uterine packing**
- **Conservative surgical approach -** Uteri
  Artery Ligation, Ovarian Artery Ligation
  Vaginal Artery Ligation, Internal Iliac
  Ligation, Angiographic Arterial Emboliz
  Hysterectomy.

Packing the uterine cavity



Internal Uterine Tamponad

Bakri baloon

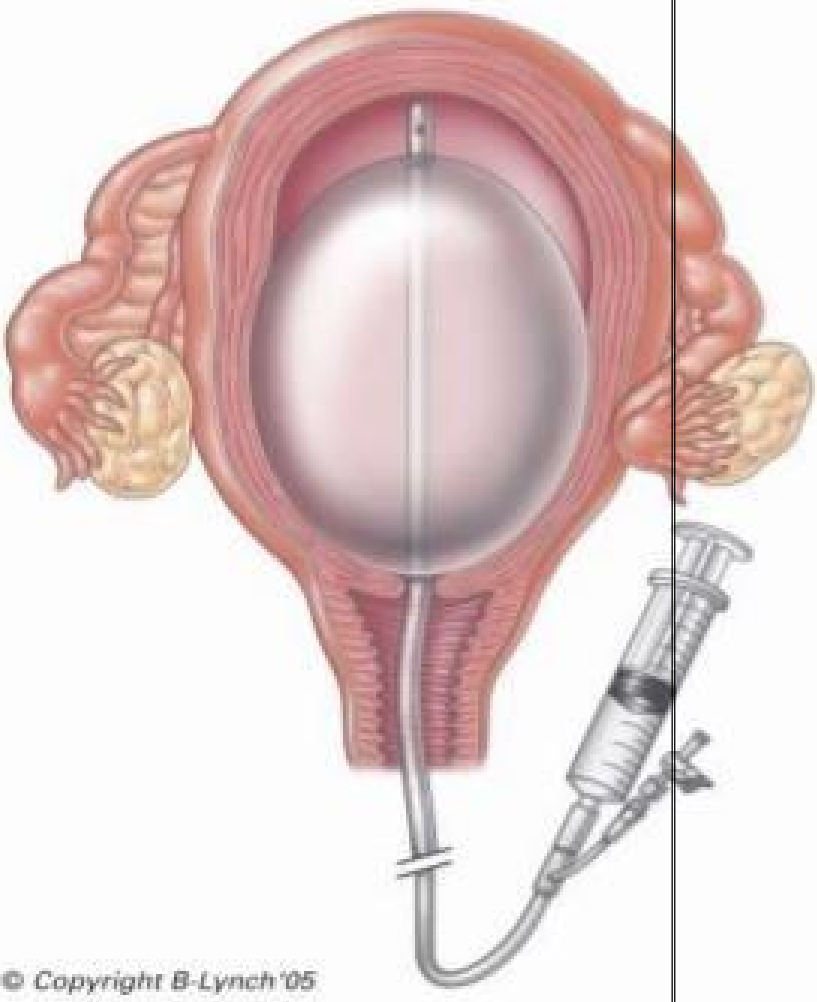
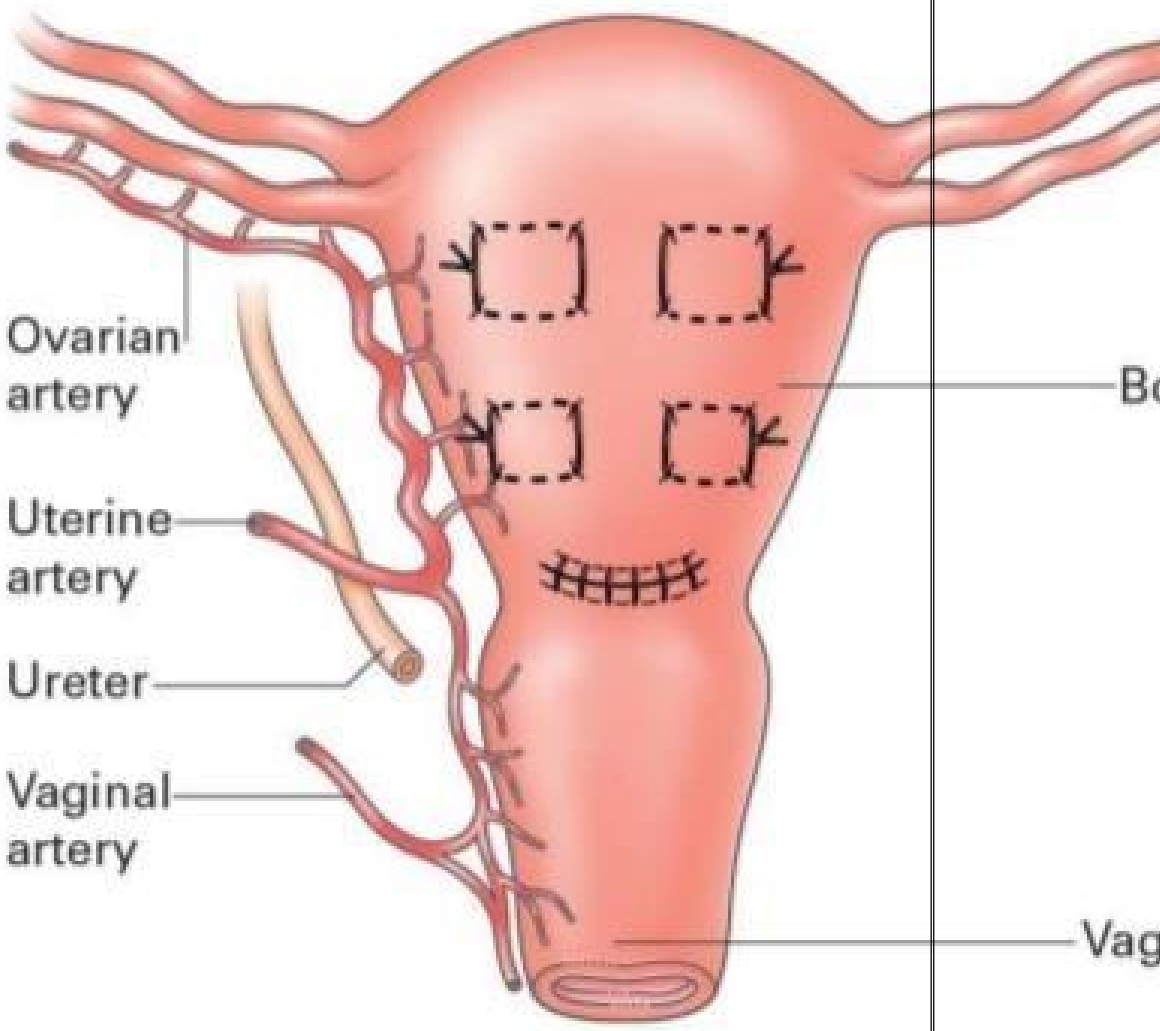


Figure 1 Inflated Bakri Balloon max capacity 500mls.

A= Apply compression sutu

- B-Lynch
- Modified B-Lynch
- Cho sutures

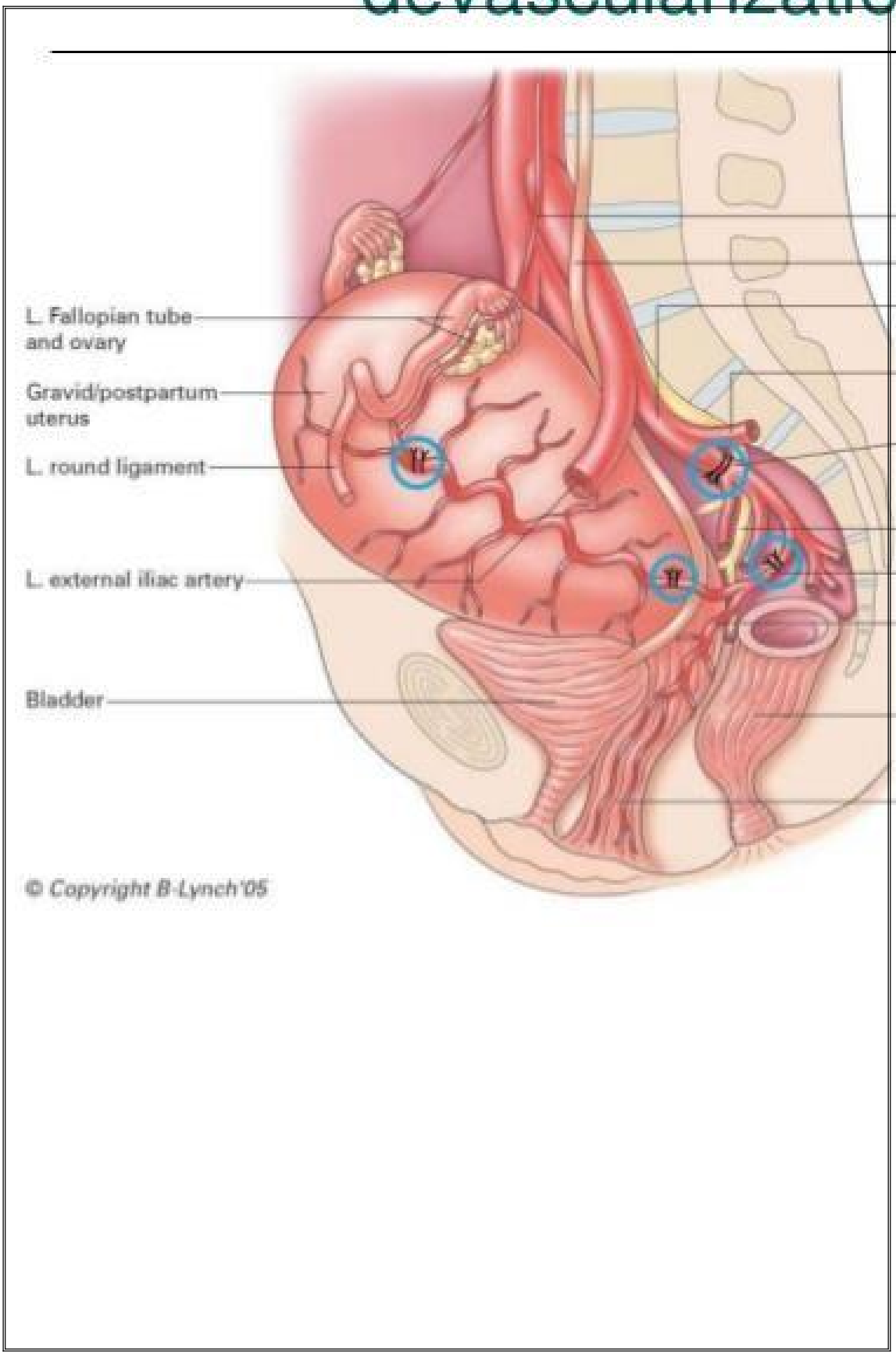
Cho sutures



S= Stepwise pelvic devascularization

1. Uterine artery ligation.
2. Ligation of round ligaments ar
3. Internal iliac (Hypogastric) art ligation

S= Stepwise pelvic devascularization



Hypogastric Artery Ligation

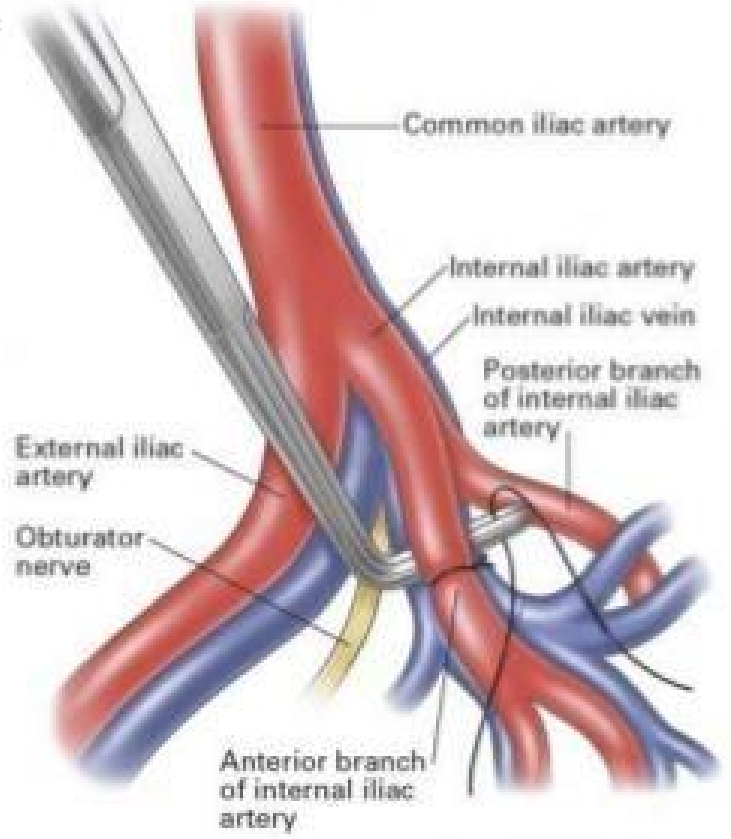


Figure 1 Demonstrates ligation of the anterior branch of the internal iliac artery with its associated vein, in a vulnerable position.

Complication

- Blood loss
- Shock
- Death
- Septicemia
- Orthostatic hypotension
- Anemia
- Fatigue

Conclusion

Postpartum hemorrhage, defined as the loss of
than 500 mL of blood after delivery, occurs in
18 percent of births.1,2 Blood loss exceeding 1
mL is considered physiologically significant an
result in hemodynamic instability. Uterine aton
responsible for most cases and can be managed
uterine massage in conjunction with oxytocin,
prostaglandins, and ergot alkaloids.

Thank you