15 CHAPTER

OBSTETRICS AND GYNAECOLOGY

Mullerian Anomalies

- Initial Investigation **: USG**
- IOC **: 3D USG > MRI**
- Gold standard **: Laparoscopy + Hysteroscopy** *(Diagostic + Therapeutic)*

- Presentation **:** Recurrent **2nd trimester** pregnancy loss
  D/d : *Cervical incompetence*

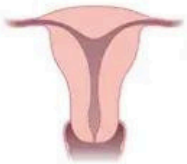
Mullerian anomalies

Diagnosed on **HSG**

Need **3D USG** or **MRI**

Bi-sep

Arcuate



- Best reproductive outcome

Not considered an anomaly but a uterine variant.

Didelphys

- Best reproductive outcome after arcuate
- **Transverse lie** not possible

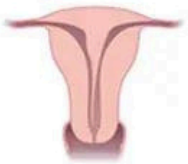
Unicornuate

- Max assoc. with **renal anomaly**

Bicornuate

- T/t : **Metroplasty** (*Straussman*)

Septate



- **Most common** mullerian anomaly
- Asso. with **infertility** (worst outcome)
- T/t : Hysteroscopic *septum resection*

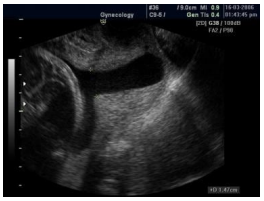
Cervical incompetence

- **2 or more second trimester** painless abortions**.**
- Pre-pregnancy diagnosis**: No. 8** Hegar's dilator *passes without resistance*

Management in pregnancy

- Uterocervical length < **25mm** (only cervical Insufficiency): *Only progesterone*
- **>2** painless preg loss in **T²** : **Prophylactic cerclage**
- **1** painless preg loss in **T²** : USG in **18-24 weeks**, if **<25mm** then **prophylactic cerclage**

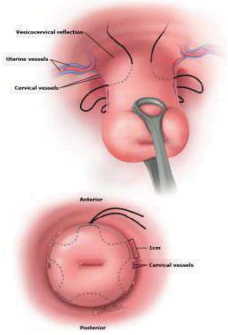
- **Pre-pregnancy** cerclage: **Lash and Lash** cerclage (*Trans abdominal*)



Cervical Insufficiency

1. **T/Y** shaped cervix
2. **Funneling of OS** > 1cm
3. Utero-cervical length **< 25mm**

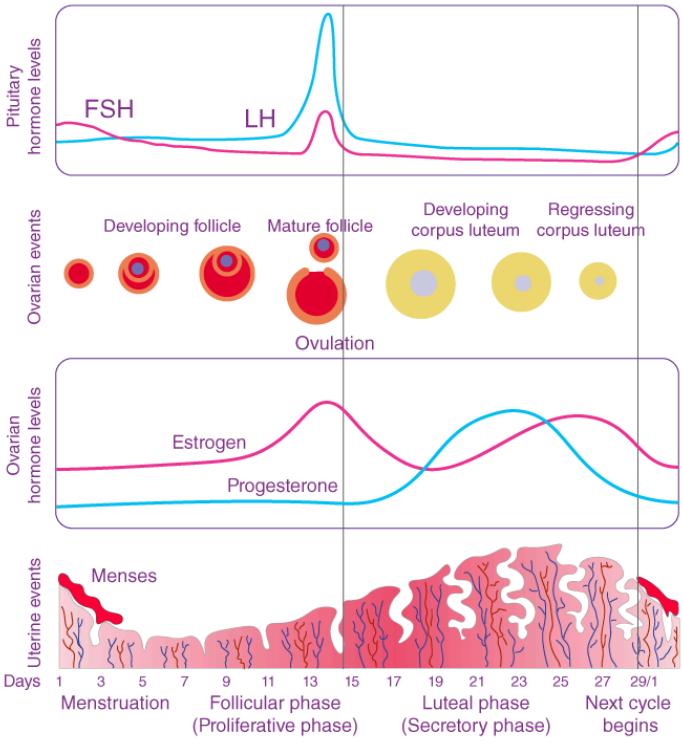
Purse string sutures



1. **Shirodkar**
2. **Mc Donald's**
3. **Worm's method**

Removed at **37 weeks** of pregnancy

Reproductive Physiology



Follicular phase : *Estrogen dominated*

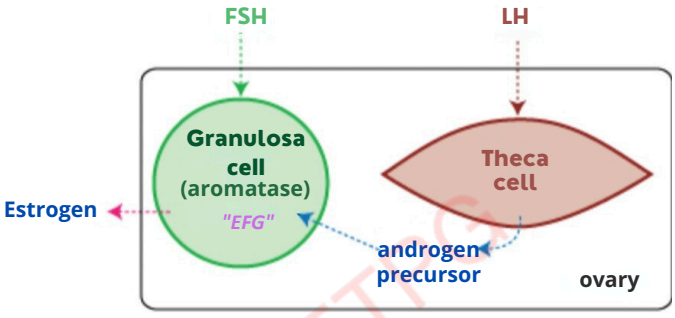
- **Granulosa cells** produce **estrogen** (under FSH)
  (from *androstenedione* produced by *theca cells*)
- Endometrium starts proliferating (aka **Proliferative phase**)
- Estrogen production gradually increases till **14th** day
- Estrogen peak (200pg/ml for 50 hrs) leads to **LH surge** **Ovulation**

Luteal phase : *Progesterone dominated*

- **Corpus Luteum** produces **progesterone** (under LH)
- Basal body temperature increases
- Endometrial gland thickening (aka **Secretory phase**)

Menstrual Phase

- When progesterone decreases due to **involution of corpus luteum**

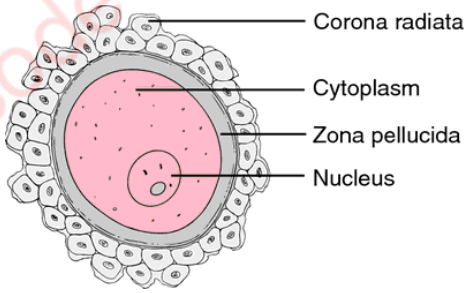


(LH/FSH** increased in **PCOS)

An-ovulation

- MCC of female infertility is **anovulation** due to PCOS

1. Initial investigation : **USG** - *follicular monitoring*
2. Best method : **Serum progesterone** on **day 21** of cycle
   (increased if ovulation has occurred)
3. Gold standard : **Endometrial biopsy** on **day 21** of cycle
   (secretory and thick if ovulation has occurred)



Ovarian Reserve

- Maximum follicles in **fetal stage**
- Gradually decreases across life
- Granulosa cells produce **Inhibin** and **AMH** (used as proxy markers for ovarian reserve)

1. **FSH > 40** (low Inhibin) ***F - Fourty***
2. **AMH < 1** ***A - 1***

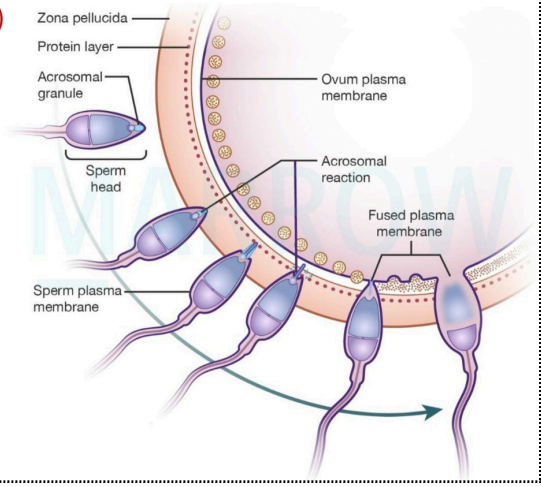
- **Fetal** : Max oocytes (Oogenesis starts)
- **Birth** : 1 million oocytes
- **Puberty** : 4 lakh oocytes (1st meiotic div)
  *Arrested in **Diplotene stage** of **prophase 1***
- **Fertilisation** : 2nd meiotic div
- **Menopause** : 400 oocytes

- **Spermatogonia** 1° spermatocyte (2n) 2° spermatocyte (n) Spermatids (n)
- *Spermiogenesis* : Spermatids Sperms

- Sperms get *stored* and *mature* at Epididymis

- **Seminal vesicles :** Major portion of semen *(alkaline, fructose)*
- **Prostatic** : Secretions are **acidic**

- **Capacitation** of sperms occur in the female genital tract and take 6-8 hours
- **Acrosomal reaction** occurs on binding to zona pellucida (needs Ca2+), for penetration of sperms
- **Zona reaction** : Change in egg protein that prevents other sperms to enter

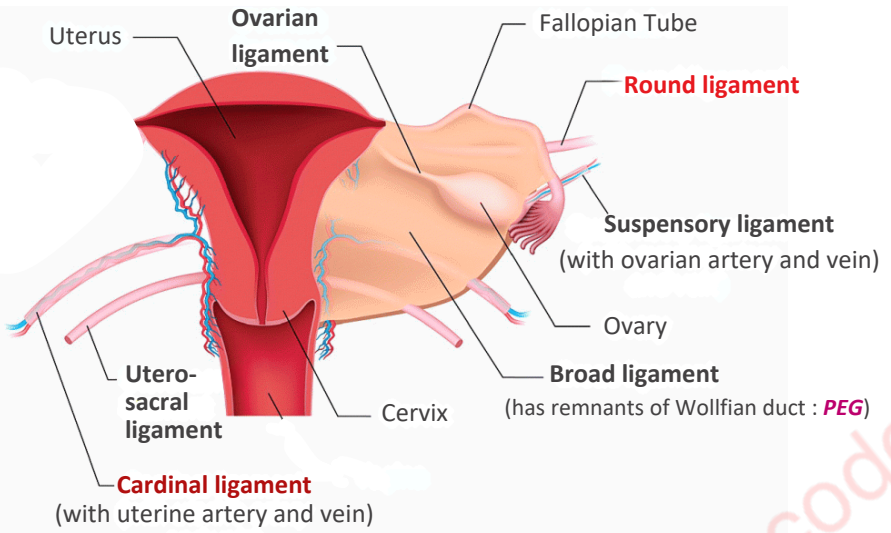


Barr body *(Lyon's Hypothesis)*

- Out of the two X chromosomes in females, only one is active and the other forms a Barr body.
- Number of **Barr body = (X - 1)**
- Females have 1 (samples from buccal mucosa)
- **Davidson body** : Barr body present as inclusion in neutrophils of females.

1. **Normal males** : No Barr body
2. **Klinefelter** : 1 Barr body *(Pseudo Barr body)*
3. **Turner** : No Barr body

Reproductive Anatomy

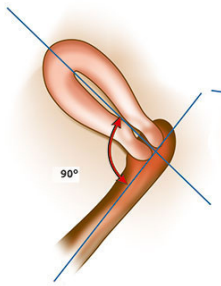


Cardinal Ligament

- aka **Mackenrodt ligament**
- Prevents prolapse, along with uterosacral and pubo-cervical ligament

Round Ligament

- Maintains **angle of anteversion** in pregnant uterus
- Homologous to **gubernaculum testes** in males

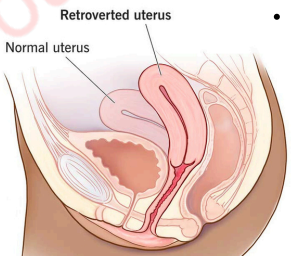


Ante-version

- Cervix with **Vagina**
- At external OS
- Maintained by **round ligament** in pregnant uterus

Ante-flexion

- Cervix with **Uterus**
- At internal OS



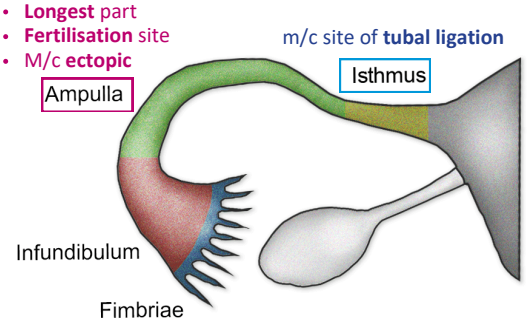
- Normally uterus is **ante-verted** and **ante-flexed**
- Uterus is **retroverted** in **almost 25%**

Lowest part of cervix on palpation

In normal uterus → **Anterior lip** of cervix

In retroverted uterus → **Ext OS** or **posterior lip**

- **Longest** part
- **Fertilisation** site
- M/c **ectopic**



Female sterilisation

- It's done *free of cost* in India
- Most common <u>site of ligation</u> : **Isthumus**
- MCC of <u>failure</u> : **Round ligament ligation**
- Consent of spouse : **Not needed**

Fallope Ring applicator

Veeres needle
(Creates pneumo-peritoneum)

- **45°** angle of insertion
- **CO^2** (<2 L, 20mm Hg)

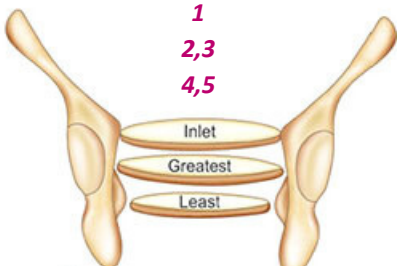
- Stump buried in broad ligament

- **Most commonly** done
- Surgically reversible

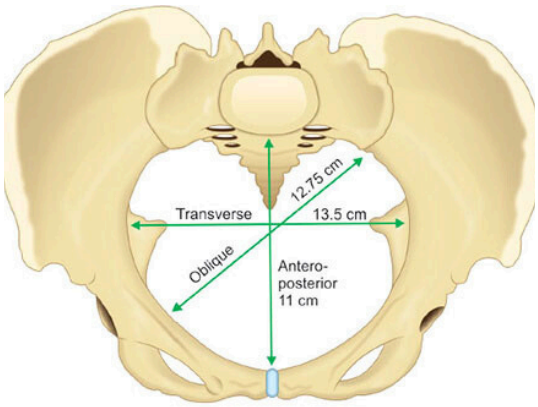
- **Crushed**

- **Fimbriectomy**

Pelvis



- Pelvic **inlet** : S^1
- Plane of **max** pelvic dimension : S^2 - S^3
- Plane of **least** pelvic dimension : S^4 - S^5

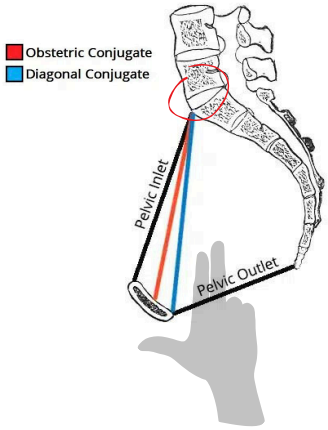


Antero-posterioir

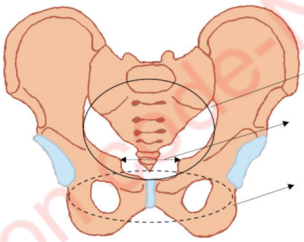
- Between **sacral prom.** and **pubic symphysis**
- True *Obstetric* *Diagonal*
- **Diagonal conjugate** (*can be measured clinically*) : **13 cm**
- **Obstetric conjugate** is least : **11.5 cm**
- Contratced pelvis if OC **<** **10 cm**

Transverse diameter

- At right angle to obstetric conjugate
- Normal value : **13 cm**
- Contracted pelvis if : **< 12 cm**



Contracted pelvis



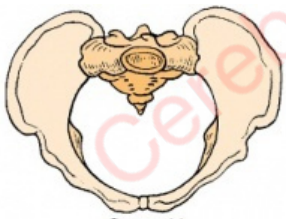
inlet

- **AP dia.** *(obstetric conj.)* **< 10cm**
- **Transverese diameter** **< 12cm**

Inter <u>spinous</u> distance < 8 cm

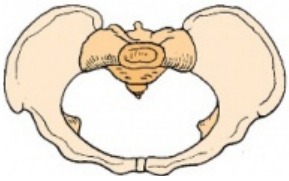
Inter <u>ischial</u> distance **< 8 cm**

Gynecoid pelvis



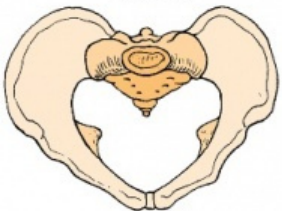
- **Most common** type (in females)
- **Round** shaped

Platypelloid pelvis



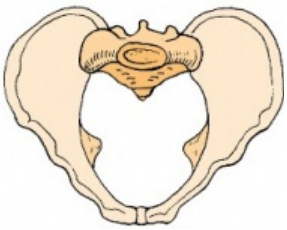
- **Least common** type (in females)
- **Oval** shaped

Android Pelvis



- Most common **male pelvis**
- **Heart shaped**
- **DTA** seen here

AnthroPoid Pelvis



- **AP** diameter > transverse diameter
- **Face to pubes** delivery seen here

Infertility

- **1 year** of regular intercourse for age **< 30yrs**
- More than 30 yrs : **6 months**
- **Initial investigation** : Male sperm analysis
- **MCC of male infertility** : **Oligo-spermia** (sperm count < **16 million**/ml)

FSH and LH

- **Low** → **Hypogonadotropic Hypogonadism**
  - **Kallman Syndrome**
  - *Assoiciated with anosmia*
- **High** → **Testicular failure**
  - *MCC of azoospermia*
  1. **Orchitis in mumps**
  2. **Varicocele**
- **Normal** → **Obstructive**
  - **Cystic fibrosis**
  - *Congeital absence of vas deferns*

- *Oligospermia* : Reduced sperm count
- *Azoospermia* : **No sperms** at all

1. Most important is **morphology** : **4%**
2. **Concentration** : **16 million/ml**
3. Progressive **motility** : **32%**

MCP : 4 - 16 - 32

Amenorrhea

Uterus present

Serum **FSH**

- **High** (***Gonadal dysgenesis***)
  - **Karyotype XO** → **Turner Sx**
    - Short stature, Streak ovaries
    - Webbed neck, shield chest
    - Widely spaced nipples
    - **Peripheral lymphedema** at birth
    - **Bicuspid aortic valve**
  - **Karyotype XY** → **Swyer's Sx**
    - **SRY** gene affected
    - **No testes**
    - No **AMH** : *Uterus develops*
- **Low**
  1. **Kallman Sx** (anosmia)
  2. **Sheehan Sx**
  3. **Anorexia nervosa** (BMI <18.5)
- **Normal** → **PCOS**
  - **Withdrawal bleed** with progesterone
  - **MCC** of female infertility

Uterus absent

- **Karyotype XY** → **Androgen Insensitivity Sx** (*aka testicular feminisation sx*)
  - Androgen in excess and **peripherally converted to estrogen**
  - Flawless skin, **pubic and axillary hair absent**
  - **Good breasts** (estrogen)
  - Undescended testes (high chance of **gonadoblastoma**)

  Perfect female is a male
- **Karyotype XX** → **MRKH Syndrome** (*Mullerian agenesis*)
  - Ovaries present
  - Lower 1/3 of vagina present

Male pseudo-hermaphrodites

Leydig cells : testosterone

- Development of **Wolffian duct**
- Forms **DHT** : *male external genitalia*
- Axillary and pubic hair

Sertoli cells : AMH

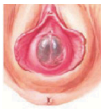
- Cause **regression of Mullerian duct**
- No testes : Uterus is present

- **Testes absent** → **Swyer's Sx**
- **Testes present**
  - Perfect female → **AIS**
  - Not perfect female → **5 α reductase def**, **CAH** - 17αOH def

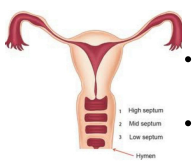
Crypto-menorrhea

Cyclical pain abdomen

- **Imperforate hymen**
  - **Bluish bulge** at Vagina
  - T/t : **cruciate** incision



- **Transverse vaginal septum**
  - **Hematocolpus** : Blood in vagina
  - **Hematometra** : Blood in uterus



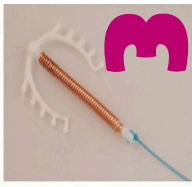
Contraceptives

IUDs

- 1st gen : Lippe's loop
- 2nd gen : **Copper** containing
- 3rd gen : **Hormonal (***Not under NFWP)*

Copper T 380 A

- **M/c used IUD**
- Has copper in **arms also**
- **380 :** Surface area of Cu
- **10 years** *(effective till 12 years)*



Multiload 375

5 years

Progestasert

- Progesterone IUD
- **65 µg/**day

Mirena

- **LNG** IUD
- 5 years
- Preferred in females having **menorrhagia**

Menorrhagia : Mirena

Barrier method

1. **Condoms** (male and female)
2. Cervical diaphragm
3. Vaginal Sponge

- **Spermicidal agent** : **Nonoxyl 9**
- *Disrupt **cell membrane** of sperm*

Male condom

More effective than female condom

Female condom

- Has **2 rings**
- Polyurethane
- Can be used **twice** within 24 hours

Cervical diaphragm

1 year

Vaginal sponge *(Today)*

24 hours

OCPs

Mala N : free of cost
Mala D : not free

Hormonal OCP

1. **LNG** : **0.15 mg**
2. **Ethinylestradiol** : **0.03 mg**
3. *Ferrous fumarate* : **7 pills**

0.15, 0.03

Chhaya

Non hormonal OCP

- Previous name : ***Saheli***
- Non steroidal, contains **Ormiloxofene** (*Centchroman*)
- Developed in **CDRI Lucknow**

Progestone only pill

Contraception of choice during **lactation** *(estrogen interferes with lactogenesis)*

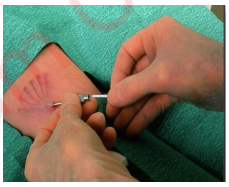
1. Makes the **cervical mucus thick**
2. **Decreases tubal motility**
3. Main mechanism is still inhibiting ovulation.

Miscellaneous Contraceptives

Antara (DMPA)

Depot medroxyprogesterone acetate

- **Depot injection**: 150 mg IM
- Contraception for **3 months**
- Useful in patients with
  1. **Seizures**
  2. **Sickle cell anemia**



NORPLANT

LNG subdermal implants

- Effective for **5 years**
- **Immediate reversal** on removal

ESSURE device

- **Hysteroscopically** put in Fallopian tube
- Causes **fibrosis**
- Effective after **3 months**

Transdermal patch

Nuva ring

Pearl's index

Accidental pregnancy / **100** woman years

Emergency Contraceptives

Levonorgestrel

- **1.5** mg : single dose
- **0.75** mg : 2 doses *12 hours apart*

Ulipristal

- Single dose **30mg,** upto **5 days**
- *Most effective hormonal contraceptive*
- Not provided by government of India

Most effective emergency contraceptive :

- **Copper IUD** (*within 5 days*)

*Other drugs that **can be used** as emergency contraception:*

1. **Mifepristone**
2. **OCP** - *Yuzpee regimen*
3. **Centchroman** - 60 mg × 2

*Drugs that **can't be used** as emergency contraception.*

1. **Danazol**
2. **Misoprostol**

OCPs

- **Estrogen** or **progesterone** or a *combination of both*.
- **MOA** : Primary mechanism in both is **inhibition of ovulation**
- **Estrogen** suppresses **GnRH** and **FSH**
- **Progesterone** suppresses **LH**
- Additionally **progesterone** makes the **cervical mucus thick** (prevents penetration of sperms)

Protective in *CEO*	Risk factor for
1. **Colorectal** cancer	1. **Breast** cancer
2. **Endometrial** cancer	2. **Cervical** cancer
3. **Ovarian** cancer	3. **Hepatic adenoma**

Non contraceptive uses

1. **PCOS**
2. **Dysmenorrhoea**
3. **Endometriosis**
4. Uterine **fibroid**
5. *Dysfunctional uterine bleeding* (DUB)

Newer generation OCPs

Based on type of **Progesterone**

- 2nd gen : Less side effect - *Norgestrel/LNG*
- 3rd gen : Less androgenic - *Norgestimate*
- 4th gen : **Anti-androgenic** (in PCOS) - *Drospirenone*

All generations will have risk of **thrombosis**

Absolute Contrainidcations (WHO - 4)

- Thromboembolism / DVT / Stroke
- Heart disease *(Valvular/Ischemic)*
- Hypertension

- Breast cancer
- Hepatic adenoma

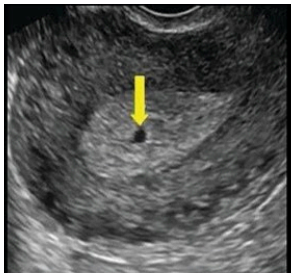
- Pregnancy or breast feeding

Contraception of Choice

1. Woman on anticoagulation for DVT : **IUD** (*OCPs are CI*)
2. Molar pregnancy : **OCPs**
3. Post partum/ Breastfeeding : **POPs** > IUD
4. Reversible : **Norplant**

Early pregnancy ultrasound *"GYED 4.5"*

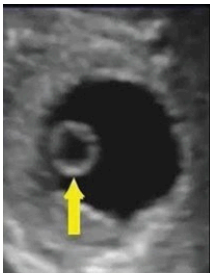
Gestational sac



TVS : **4.5** weeks

Yolk sac

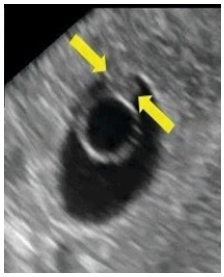
Confirms intra-uterine preg.



TVS : **5.5** weeks

Embryo

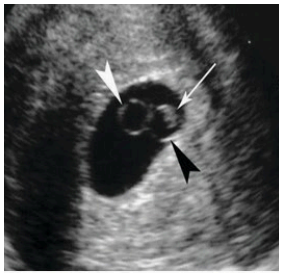
Fetal heart sounds (+)



TVS : **6.5** weeks

Double bleb sign

Amniotic and Yolk sac



TVS : **7** weeks

For TAS add 1 week

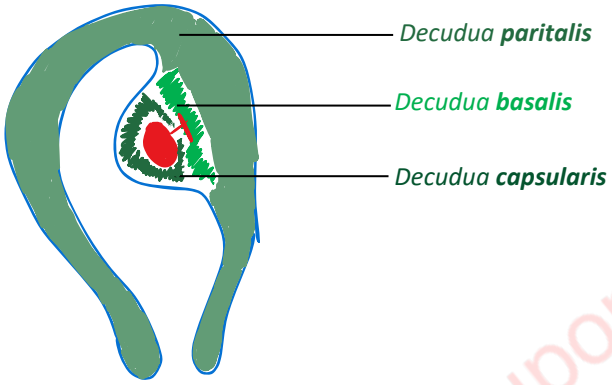
Gestational sac

Intra decidual sign

- **Earliest sign** on USG
- *First sign of pregnancy*

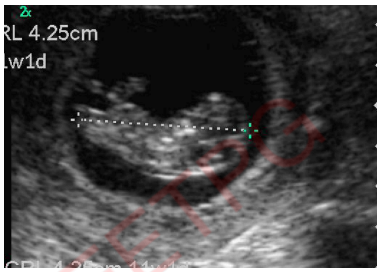
Double decidual sac sign

1. *Decudua **capsularis***
2. *Decidua **parietalis***



- Normal G sac is implanted <u>eccentrically</u>
- **Pseudosac** is implanted in midline

Crown Rump Length



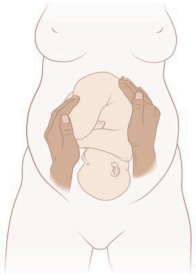
- Most accurate method to estimate **gestational age** in **1st trimester**
- GA in <u>weeks</u> : CRL (*in mm*) + **6.5**
- GA in <u>days</u> : CRL (*in mm*) + **42**

Leopold Manoeuvres

First maneuver

Fundal grip

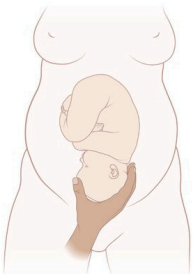
- Determine **presenting part**
- Hard and ballotable mass at fundus : Breech



Second maneuver

Lateral/ umbilical

- Determine fetal back

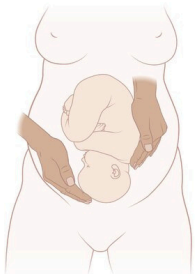


Third maneuver

1st pelvic

*aka **Pawlik***

- Engagement and mobility of presenting part



Fourth maneuver

2nd pelvic

- For **fetal attitude** and **descent**
- Only manoeuvre where examiner **faces towards patient feet**

Aneuploidy Screening

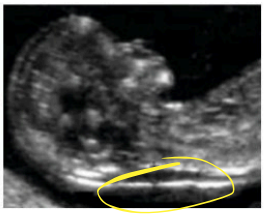
1st trimester

Nuchal translucency scan

- **<3mm** is normal
- If increased then could be *Aneuploidy* or *CVS defect*

Dual marker

- **HCG** and **PAPP**
- **HCG high** and **PAPP low** suggestive of *Down's sx*



Nuchal translucency
<3mm is normal

2nd trimester

Anomaly scan

- **Entire fetus** checked using USG for anomalies
- **Nuchal skin fold thickness** is checked here (*not nuchal translucency*)

Triple marker

- **H**CG, **A**FP and Unconjugated **E**striol HAE

Quadruple marker

- Triple marker + **Inhibin A** HAE - I am

Summary of triple screen

1. **hCG is High : Down's**
2. **Everything low : Edwards**
3. **AFP high : NTDs**

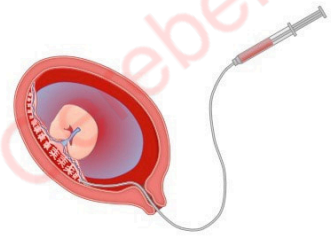
Non invasive prenatal testing (NIPT)

- **Screening** test (**99%** accuracy)
- Only **maternal blood** needed
- Can't be used to confirm diagnosis

Confirmatory test

Chorionic Villous Sampling

- 10-13 weeks
- **Trophoblasts** are taken for sampling
- Can lead to **limb reduction defects**

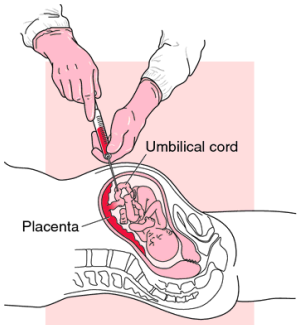


Amniocentesis

- 15-20 weeks
- **Amniocytes** and **fetal dermal fibroblasts** are taken for sampling
- **Most commonly** done

Cordocentesis

- 18-20 weeks
- Fetal blood cells are taken from **umbilical cord**



Physiological changes in pregnancy

Increases

- **Blood volume** increased
- **RBC** and **WBC count** increase (*increased production*)
- All **clotting factors** and **fibrinogen** increased (hypercoagulable state) *except factor **11** and **13***

- **Total proteins** increased
- **SHBG** and **TBG** increased
- **ESR** increased

- **Cardiac activity** increased (***Cardiac output, heart rate, stroke volume***)
- **Respiratory activity** increased (***Tidal volume, Insp. capacity, minute ventilation***)
- **Renal activity** increased (**Renal blood flow, GFR**)

Decreases

- **Haemoglobin** and **Hematocrit** decreased (*hemodilution*)
- **Platelet count** decreased (*hemodilution*)
- Factor **11** and **13** decreased
- **Protein C/S** decreased (anticoagulant activity decreased)

- **Vaginal pH** decreased (**more acidic**, *lactobacilli increased*)

- **Peripheral vascular resistance** and **BP** decreased (*vasodilation*)
- **FRC** of lung decreases (*diaphragm pushed up*)
- **Serum urea and creatinine** decreased (*renal activity increased*)

Constant

1. **BT** and **CT** remain constant
2. **EF** remain constant
3. All other lung volumes except (**IC**, **TV**, **MV** and **FRC**)
4. Free **T3**, **T4** and **TSH**

Thyroid in pregnancy

- α Subunit of HCG is like **TSH**, therefore **T^3** and **T^4** production increases
- **TBG also increased** (*binds the extra T^3 and T^4*)
- "**Free T^3 & T^4**" remains constant
- If patient is on Levothyroxine, dose has to be **increased** because **TBG is increased.**

Pathologies in pregnancy

Anemia in pregnancy

- Hb : < **11** g/dl
- MCC : **Physiological** > IDA

Prophylaxis for all

1. GOI IFA pill : Iron (**60** mg) + FA (**500** µg)
2. Deworming : **Albendazole** single dose (400 mg) in 2nd Trimester

Management

> **7**g/dl
- **<** 34 wks : **IFA** *(BD instead of OD)*
- **>** 34 wks : **IV iron** *(iron sucrose)*

< **7**g/dl
- < 34 wks: **IV iron** (*iron sucrose*)
- > 34 wks or < **5**g/dl: **Blood transfusion**

Heart diseases in preg.

- **Mammary soufle** : Continuous murmur in 2nd-4th ICS (normal in pregnancy)
- **Abnormal murmur :** Any pansystolic or diastolic murmur
- **MC heart disease :** MS due to *RHD*
- **Preferred mode of delivery *:*** NVD + Instruments use
- **MC time for heart failure** *:* 1. **32-34** weeks 2. **Intrapartum**

Pregnancy not recommended *(WHO Grade IV)*

1. **Pulmonarty artery htn**
2. Ventricular dysfunction **(< 30% EF)**
3. Severe MS
4. **Aortic dissection**
5. **Coarctation of aorta**
6. **Eissenmenger's** Sign (worst prognosis - 50% mortality)
7. **H/o** *Peripartum Cardiomyopathy*

Oligo-hydramnios

- AFI < **5** or SDP < **2**
- Uterine size is smaller than GA
- Lesser fetal movements

1. MCC : Undiagnosed rupture of membrane
2. **Renal agenesis** in fetus (ACEi/ARB)
3. **Posterior urethral valve**

Poly-hydramnios

- AFI > **5^2** or SDP > **2^3**
- Uterine size is larger than GA
- Fetal parts **not palpable**, **FHS muffled**

1. NTDs, Cleft lip, anencephaly (can't swallow)
2. **Gestational DM**
3. Omphalocele
4. Twins, trisomy

- **GDM**
- **PIH**
- **Eclampsia**
- **APLA**
- **Liver diseases**

Gestational Diabetes Mellitus

Screening done at **24-28** weeks

1. *IADPSG* screening : Fasting > **92** | 1 hr OGTT > **180** | 2 hr OGTT > **153**
2. *DIPSI* screening : 2 hr OGTT > **140**

Management of GDM

- 1st line : **Diet control** and **HbA1c every 3 months**
- **Insulin therapy** is preferred over OHA (doesn't cross placenta)
- *Metformin crosses placenta, but is safe in pregnancy*

Complications of GDM

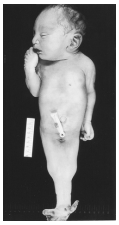
- **Macrosomia** (> 4 kg) leads to *shoulder dystocia* and *clavicle fracture*
- **Polyhydramnios**
- Neonatal **hypoglycemia**
- Neonatal **hypocalcemia**

Overt diabetes (Pre gestational) :

- Fasting blood glucose > **126 mg/dl**

Congenital anomalies with **Overt diabetes**

- Most common : **VSD**
- Most specific CVS anomaly : **TGA**
- Most specific : **Caudal regression syndrome**



Pregnancy Induced hypertension

1. Hypertension (>140/90) **after 20 weeks** POG in **previously normotensive** female — **PIH**
2. If PIH **+ Proteinuria** — **Pre-eclampsia**
3. Pre-eclampsia + **H**emolysis + **E**levated **L**iver enzymes + **L**ow **P**latelets (< 1 lakh) — **HELLP Sx / Severe Pre-eclampsia**
4. Presence of **Seizures** — **Eclampsia**

HELLP can present without ***hypertension*** *or* ***proteinuria***

Patho-physiology

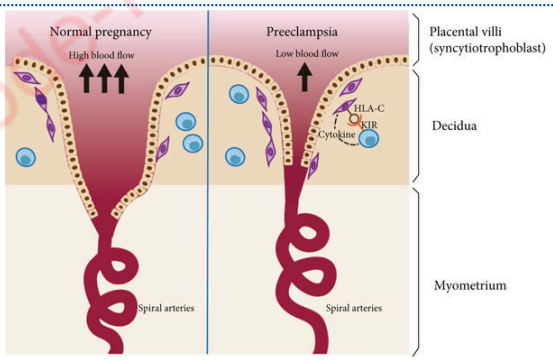
Invasion of spiral art. by extra villious trophoblasts

- Makes the arteries : **Low resistance** and **high flow systems**
- Failure in pre-eclampsia

Other Risk factors

- **Primi**gravida
- **Molar/twin/Rh-negative** preg
- **h/o** pre-eclampsia
- *New paternity*

Smoking is protective



Management

PIH

Anti- hypertensives

Pre-eclampsia

- Definitive management is **termination of pregnancy** at **37 weeks**
- Anti-hypertensives

Severe Pre-eclampsia

- Admit to **labor room**
- **$MgSO_4$** (*Pritchard regime*)
- Anti-hypertensives
- **Cortico-steroids** for lung maturation
- Deliver at **34 weeks**

- **Anti hypertensives in preg.**
  1. Labetalol
  2. Methyl-dopa
  3. Nifedipine
  4. Nitroprusside
  5. Nitroglycerine
  6. Hydralazine
- **Contraindicated in preg.**
  1. **ACE/ARB** : Renal agenesis
  2. **Beta blockers** *(except labetalol)* : Fetal bradycardia and hypoglycemia
  3. **Diuretics** : IUGR

Termination of pregnancy *if*

1. **HELLP**
2. **Eclampsia**
3. **Fetal compromise**
4. Any other **complication**

Liver diseases in pregnancy

Raised liver emzymes

Associated with **PIH**

HELLP

- C/f **: Epigastric pain**

Tenesse Criteria

1. **Hemolyisis (***LDH , Bilirubin , presence of* ***schistosyctes)***
2. **Elevated liver enzymes (AST** > 70)
3. **Platelets** (< **1** lakh)

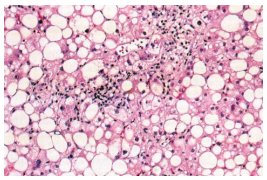
HELLP can present without ***hypertension*** *or* ***proteinuria***

- Mx : **Immediate TOP**

in late **3rd trimester**

Acute fatty liver of pregnancy

- NH^3 , Fibrinogen
- **Hypoglycemia**
- Mx : **Immediate TOP**



Intrahepatic cholestasis of Preg.

- Direct bilirubin
- Pruritis
- Mx: **UDCA tablets**
- Terminate at **37 weeks**

Infection (fever)

Viral Heptitis

- MCC : **Hepatitis E**
- aka non A non B enteric hepatitis
- Feco oral transmission
- Can cause **fulminant hepatitis in pregnancy**

APLA Syndrome

Modified Sydney/ Sapporo criteria

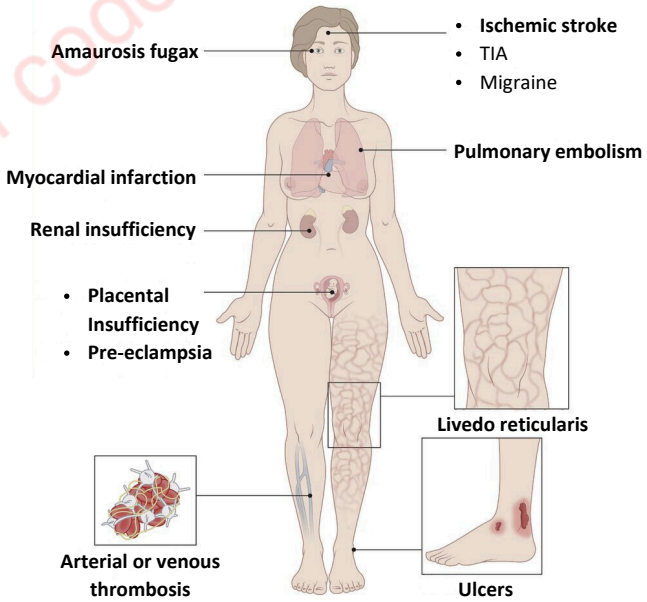
Obstetric criteria

- One or more **unexplained deaths** of a *morphologically normal fetus* at or **beyond 10 weeks**
  or
- Three or more unexplained **consecutive spontaneous abortions before 10 weeks**
  or
- **Severe pre-eclampsia** or **placental insufficiency** requiring delivery **before 34 weeks**

Laboratory criteria

- Presence of **lupus anticoagulant**
  or
- **Anticardiolipin** antibodies
  or
- **Anti-β2 glycoprotein** antibody

Hyper-coagulable condition, causing thrombosis.



Treatment

Heparin + Aspirin

β_2 Microglobulin : Multiple myeloma
Glycoprotein : APLA
Transferrin : CSF Rhinorrhea

Anti-coagulation in pregnancy

- Till **12** weeks **: LMWH** *(warfarin is teratogenic)*
- **12- 36** weeks **: Warfarin**
- After **36** weeks **: LMWH** *(increased risk of PPH with Warfarin)*

1st Trimester Bleeding

1st trimester bleeding

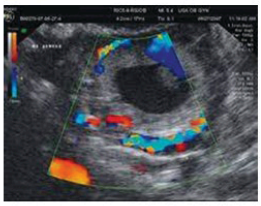
Ectopic Pregnancy

- Most common location : **Ampulla**
- Most common cause : **PID**
- Maximum risk **: Tubal surgeries**
- Measure **β HCG** and repeat after **48 hours**
  1. Doubles : Normal Pregnancy
  2. Decreased : Missed abortion
  3. Increased but not doubled : **Ectopic**
- **Management**
  1. **β HCG** < **1500** or **sac** < **3cm** : **Expectant management**
  2. **β HCG** < **5000** or **sac** < **3.5cm** : **Mtx single dose IM injection** *(repeat β HCG on day **4** and **7**)*
  3. **Surgical management** if β HCG > 5000 or sac > 3.5 cm (also for **ruptured** ectopic pregnancy)

> ***3 1500 : Expectant***
> ***3.5 5000 : Medical***

- **Criterias**
  1. **Rubin** : Cervix ***Rubin the cervix***
  2. **Spielsberg** : Ovarian ***Spielberg's movies***
  3. **Studdiform** : Abdominal ***Studd to the abdomen***

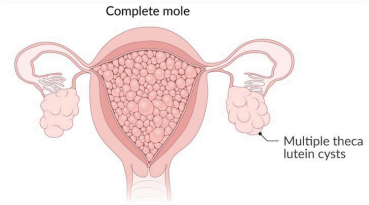
- On USG doppler : **Ring of fire** / **Bagel sign**



Molar Pregnancy

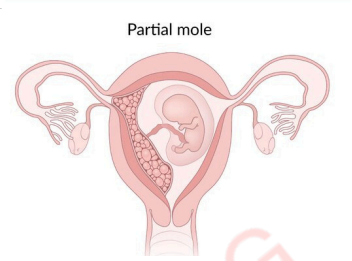
Complete mole

- *Empty ovum* (**entirely Paternal**)
- **Diploid/tetraploid**
- No fetal development
- Uterus increased in size
- Theca lutein cysts
- More medical **complications**
- More risk of **choriocarcinoma**



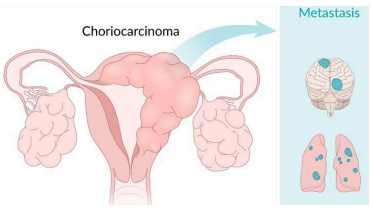
Partial mole

- Maternal + Paternal
- **Triploid**
- Some fetal development
- Diagnoed as *missed abortion*



GESTATIONAL TROPHOBLASTIC DISEASE (GTD)

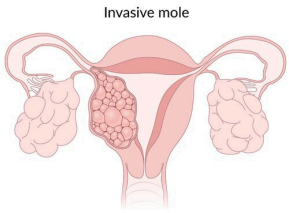
- **MALIGNANT FORM**
  - **GESTATIONAL TROPHOBLASTIC NEOPLASM (GTN)**
    - **TROPHOBLASTIC TUMOR**
      - **EPITHELIAL**
      - **PLACENTAL SITE**
    - **CHORIOCARCINOMA**
    - **INVASIVE MOLE**



- **Persistent bleed**
- Uterine **subinvolution**
- Persistent **TL cyst**
- Mets ***Mc mets → Lungs***
- **H/P** evidence

ß-HCG

- **Plateau** for a month or **increase**
- Detectable **> 6months**



Treatment

- Confined to uterus : **Methotrexate**
- Mets to lungs/adnexa : **Methotrexate**
- Other mets : **EMACO** regime

Abortion

OS Open
Bleeding and **pain**

Incomplete abortion

- Uterus < POG
- **Retained product of conception** in uterus

Inevitable abortion

- Uterus = POG
- Fetal Cardiac activity **absent**

OS closed
Spotting

Complete abortion

- Uterus < POG
- Bleeding has **stopped**

Threatened abortion

- Uterus = POG
- FCA **present**
- Bed rest and progesterone

Missed abortion

- No symptoms
- **Empty G-sac** aka *blighted ovum*
- ***CRL > 7*** *(but no FHS)*
- ***MSD > 25*** *(but no embryo)*

Pre-term Labor

Requisites

1. Contractions (+)
2. **>2cm** dilation

Management

- >34 weeks: **GBS prophylaxis** ± **Steroids**
- <34 wks: **Tocolytic** (*nifedipine*) + **GBS prophylaxis** + **Steroids**
- <32 wks: add **$MgSO^4$**

Indications for Induction of Labor : **PPROM**

- r/o *chorioamnionitis*, *fetal distress*, *abruption*

Tests to confirm Amniotic fluid

1. Ferning
2. Nitrazeneblue test-alkaline
3. Nile blue sulfatase (fetal skin cells)

Induction of Labor

Modified Bishop's score

	0	1	2	3
Position	Posterior	Middle	Anterior	--
Consistency	Firm	Medium	Soft	--
Effacement	0-30%	40-50%	60-70%	80%+
Dilation	Closed	1-2cm	3-4cm	5+cm
Station	-3	-2	-1/0	+1/+2

B - Bishop's score
I - i(e)ffacement
S - Station
H - Hard/soft (Consistency)
O - Opening (Dilation)
P - Position

- Scoring system used to assess **labour induction outcomes**
- A score **>6** is considered favorable for IOL

Indications of IOL

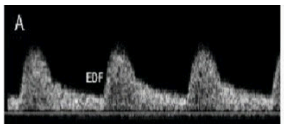
- **Post-term pregnancy** (m/c cause)
- **Abruption placentae**
- **Premature rupture of membranes**
- **Rh-isoimmunization**
- Intra-uterine growth restriction (**IUGR**)

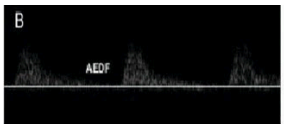
Contra-indications of IOL

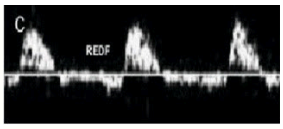
- **Distorted pelvis** and **CPD**
- **Placenta previa** or **vasa previa**
- Active **genital herpes**
- **Pelvic tumor** & carcinoma cervix
- **Transverse lie** or **footling breech**
- **Umbilical cord prolapse**
- **Previous classical cesarean or hysterotomy**
- **Previous history of uterine rupture**
- Previous 3 or more **lower transverse CS**

Doppler in Pregnancy

Indication

- IUGR → **Umbilical artery doppler**
  - 

    Normal
  - 

    ***Absent** end diastolic flow*
    - **<34 weeks** → **Steroids** *For fetal lung maturation*
    - **>34 weeks** → **Terminate**
  - 

    ***Reverse** end diastolic flow* → **Immediate termination**
- Fetal Anemia → **MCA doppler**
  *Peak Systolic velocity **>1.5** mom in fetal anemia*
- Early onset pre-eclampsia → **Uterine artery doppler**

Signs in Pregnancy

Sign	Where	Description
Jacquemier's or Chadwick's sign	Vaginal sign	Bluish hue of ant vaginal wall
Osiander's sign	Vaginal sign	Increased pulsation felt through the lateral fornices
Goodell's sign	Cervical sign	Soft cervix
Piscacek's sign	Uterine sign	Asymmetrical uterine enlargement in lateral implantation
Hegar's sign	Uterine sign	On bimanual exam, the abdominal and vaginal fingers appose below the body of the uterus
Palmer's sign	Uterine sign	Regular and rhythmic uterine contractions elicited on bimanual exam

Stages of Labor

- **Stage 1** : Onset of **labor pain** to **full dilatation** of cervix (**10 cm**)
  - ***Latent** phase*
    *till **5 cm** (WHO) and **6 cm** (ACOG)*
  - ***Active** phase*
- **Stage 2** : Expulsion of **fetus**
- **Stage 3** : Expulsion of **placenta**
- **Stage 4 : 1 hr** after delivery

Stage 1

Recommended

- **Delay admission** till active labor
- *PV examination* every **4h**
- FHR with **doppler/ stethoscope**
- **Respectful** maternity care
- Pain relief
- Encourage mobility
- Fluid and food intake
- Effective communication and companionship

Not recommended

- Routine pelvimetry
- Routine cardiotocography
- "**Early**" oxytocin/amniotomy to shorten duration of labor
- Routine **vaginal cleaning with chlorhexidine**
- Use of **IV fluids** to shorten duration of labor

Prolonged latent phase

- *Primi* para : **20** hours
- *Multi* para : **14** hours

T/t : **Sedation**

- False labor pain would go away
- If pain persists, augment using oxytocin

Active phase arrest

No dilation for **4 hrs** despite **adequate contraction**

Stage 2

Recommended

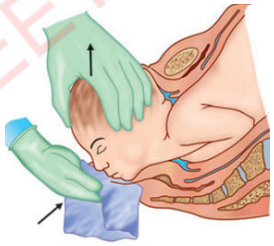
- To reduce perineal trauma - **warm compress/ perineal massage** (*Ritgen's maneuver*)
- Encourage the mother to **follow her own urge** to push
- Birthing **position of choice** (lithotomy is not compulsory)

Not recommended

- **Routine episiotomy** is not recommended
- **Fundal pressure** is not recommended

Duration of 2nd stage of labor

- **Normal** : **1 hr** *(0.5 hr in multipara)*
- **Prolonged** : **2 hr** *(1 hr in multipara)*
- **Arrest** : **3 hr** *(2 hr in multipara)*



Ritgen's maneuver

This allows to **control speed of delivery** and hence ***reduces perineal trauma***

Stage 3

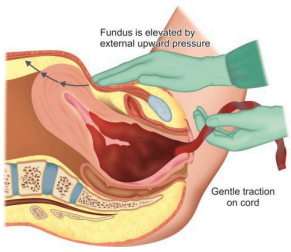
Recommended

Active management of third stage of labor (AMTSL)

1. **Uterotonic** administration (Oxytocin **10 IU**)
2. **Controlled cord traction**
3. **Delayed cord clamping** (after 1-3 min)
4. Intermittent assessment of uterine tone

Not recommended

- **Uterine massage** (now done to examine cause of PPH)
- **Crede's method** (fundal pressure for placental separation), can lead to *uterine inversion*



Brandt Andrew's Maneuver

*One hand puts **gentle traction on the cord** while the other **presses the anterior surface** of the uterus backward.*

Uterotonics in AMTSL

***Most important step** of AMTSL*

1. **Oxytocin 10 IU :** Uterotonic of choice
2. **Carbetocin - 100 mcg**
3. **Misoprostol p/o** : If skilled birth attendant not present
4. **Methylergometrine : Contraindicated** in hypertensive females

Early cord clamping done in

1. **Neonatal resuscitation program** (birth asphyxia)
2. **Rh-iso immunisation**
3. **HIV** (recommended by NACO)

Obstructed labor

Good uterine contraction but still **no descent**

Features

- **Maternal exhaustion** and dehydration
- **Moulding** (+)
- **Vagina feels hot and dry**
- Upper uterine segment **tender** on p/a
- Groove between upper and lower uterine segment : **Bandls ring**

Causes

- **CPD** (*most common cause*)
- **Small pelvis**
- **Big baby** (macrosomia)
- Deformed pelvis e.g. poliomyelitis
- Abnormal presentations & position

Management

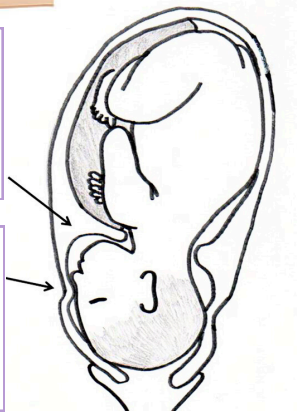
- Emergency **LSCS** (can lead to *uterine rupture*)

Schroeder's constriction ring

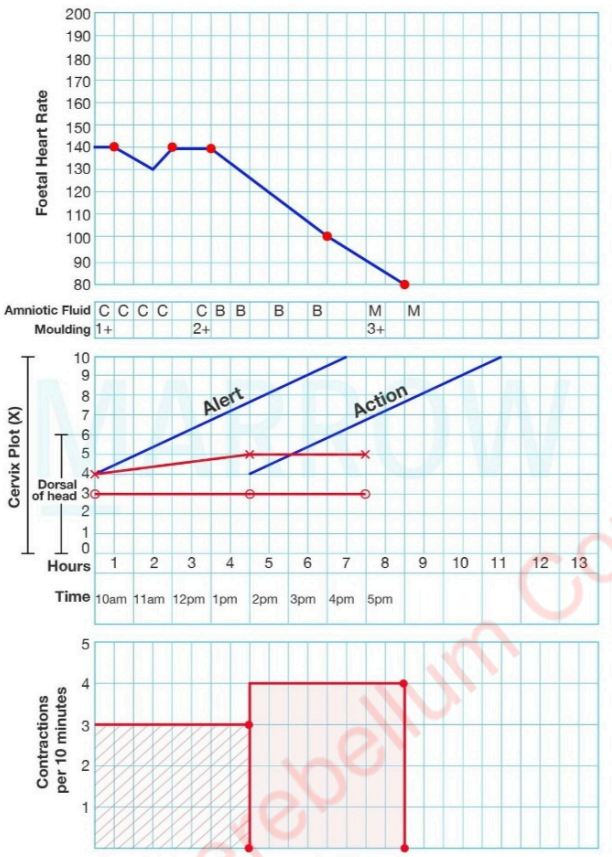
- **Incoordinate uterine contractions** due to injudicious use of uterotonics
- Ring not felt p/a but **felt p/v**

Bandl's contraction ring

- Due to **obstructed labor**
- Progressively **moves upwards**
- Ring felt **per abdomen** but not p/v



Fetal monitoring



Every 30 mins (small box)

1. Fetal heart rate
2. Maternal heart rate (pulse)
3. Uterine contractions

Every 4 Hours

1. Blood pressure
2. Temperature
3. Vaginal examination

Other values

1. **Oxytocin**-dose and concentration
2. **Urine** analysis
3. State of **membranes** and color of **liquor**

Antepartum setting

CTG done
(*aka NST here*)

NST abnormal

Repeat NST

NST still abnormal

Non stress test

Modified BPP
(**NST** + **AFI**)

Still abnormal

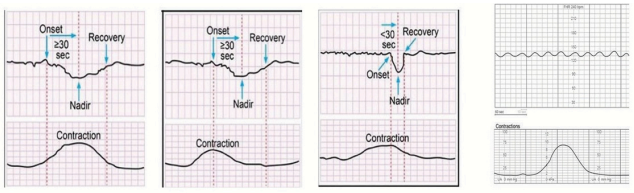
BPP
(Manning score)

Manning Score (BPP)

B	Breathing
A	AFI
T	Tone
Ma	Movements
N	NST (FHR)

Intra-partum setting

CTG done



Early declaration	Late declaration	Variable declaration	Sinusoidal wave
Head compression	**Utero-placental insufficiency**	**Cord compression**	**Fetal anemia**
Change position of mother	**TOP**		

"Early head late UPI"

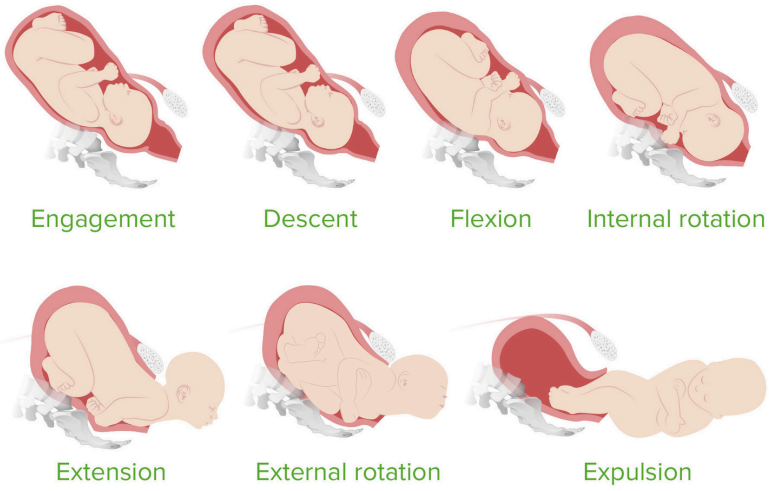
Cardinal movements of Labor

(ED FIrE ErE)

- **Engagement**
- **Descent**

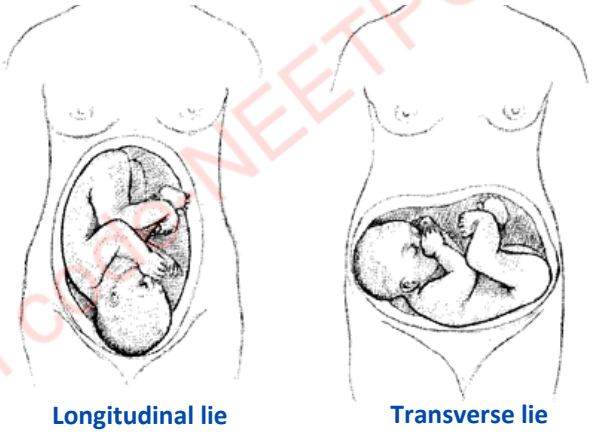
- **Flexion**
- **Internal rotation**
- **Extension**

- **External rotation (restitution)**
- **Expulsion**



Transverse Lie

- Presenting part : **Shoulder**
- Denominator: **Acromion process**
- Prematurity is the **m/c cause** (*fetus with transverse lie mostly spontaneously rotate to longitudinal by term*)
- Most common cause at term : **Placenta previa**



Features

- Height of uterus < Gestational age
- Fundal grip and deep pelvic grip are empty

Complications

- Maximum chance of **cord prolapse**

Management

1. Attempt **ECV**
2. **LSCS**
3. **Internal podalic version**, for second twin in transverse lie.

External Cephalic version

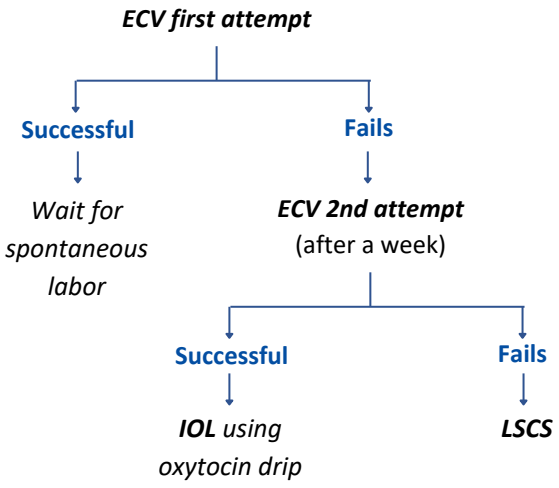
Pre-requisites

- **Singleton** with breech/ transverse lie (*not for knee or footling*)
- Reached **36 weeks** of gestation
- **Normal FHR**
- Membranes intact, adequate liquor
- No placenta previa

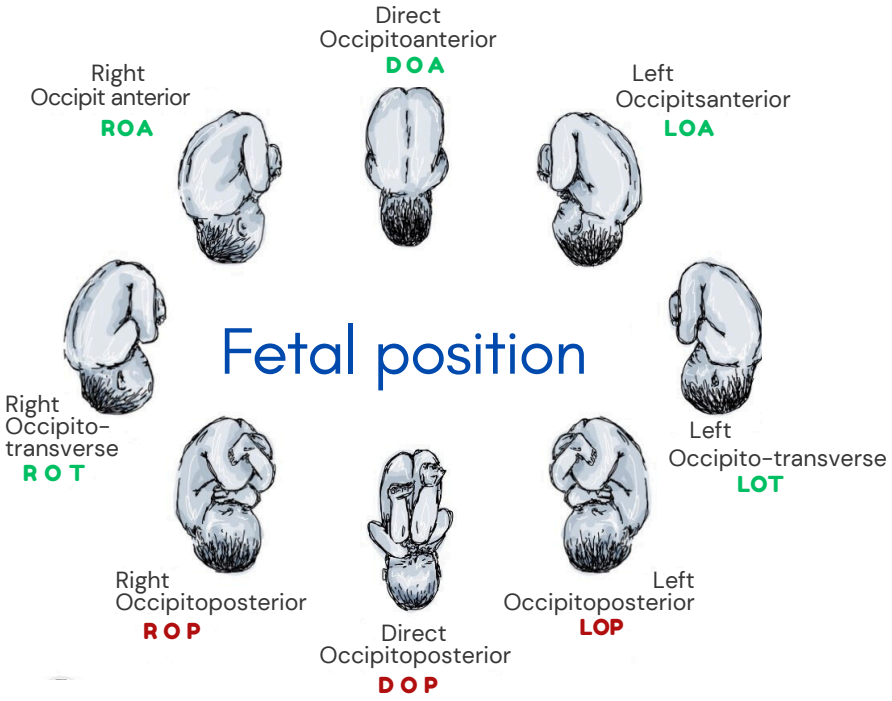
Internal podalic version

Pre-requisites

- Second twin in transverse lie (no h/o LSCS)
- Converts the transverse lie to a breech position
- Done in OT



Fetal Position



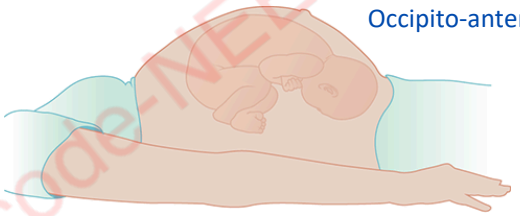
- **Fetal POSITION** - refers to the relation of fetal presenting part (*named DENOMINATOR*) to the pelvic inlet.

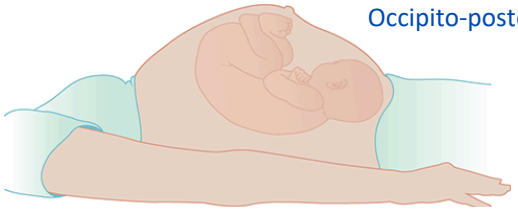
- **Left occiput transverse** is the most common fetal position followed by **left occiput anterior** in longitudinal lie ***"LOT common"***
- In **occipito-transverse** or **occipito-anterior** position, vaginal delivery is normal

- **Occipito-posterior** is an *abnormal fetal position* (most common malposition)
- Amongst OP position, **ROP** is more common than **LOP**

Occipito-posterior position

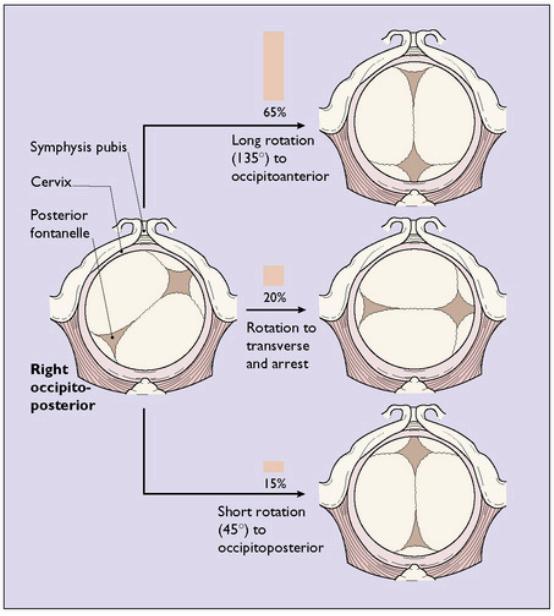
- Most common fetal **malposition**
- Features : **Infraumbilical flattening** and **fetal heart beat heard in flanks**
- More common in primi-gravida
- Causes deflexed head (*m/c cause of non engagement of head in primi-gravida*)
- Most common cause : **Anthropoid/Android pelvis**
- Management - **wait and watch** (*rotates itself in 90% cases*)





Mechanism of labor in OP position

1. **Long arc rotation** 135° (becomes DOA)
2. **Short arc rotation** 45° (becomes DOP) → face to pubis delivery, associated with more perineal tears
3. **Deep transverse arrest** : Head gets arrested while undergoing long arc rotation
4. **Persistent OP**

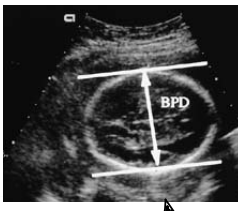


Deep transverse arrest (DTA)

- Also known as **incomplete forward rotation**
- Fetal head gets arrested while performing *long arc rotation*
- Sagittal suture struck in transverse plane
- Results in **obstructed labor**
- More common in **Android pelvis** (prominent ischial spines)
- Treatment : LSCS in primi
  Vaccum in multi para (rotation)

Fetal Presentation

Diameter	Attitude of the head	Presentation
Suboccipitobregmatic 9.5 cm	Complete flexion	Vertex
Suboccipitofrontal: 10 cm	Incomplete flexion	Vertex
Occipitofrontal 11.5 cm	Marked deflexion	Vertex
Mentovertical 14 cm	Partial extension	Brow
Sub-mento vertical 11.5 cm	Incomplete extension	Face
Submentobregmatic 9.5 cm	Complete extension	Face



*"we **SOB flexed**"*

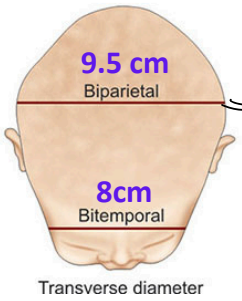
- **SOB** and **SMB** both **9.5cm**
- **SOB** - Complete Flexion - Vertex
- **SMB** - Complete Extension - Face

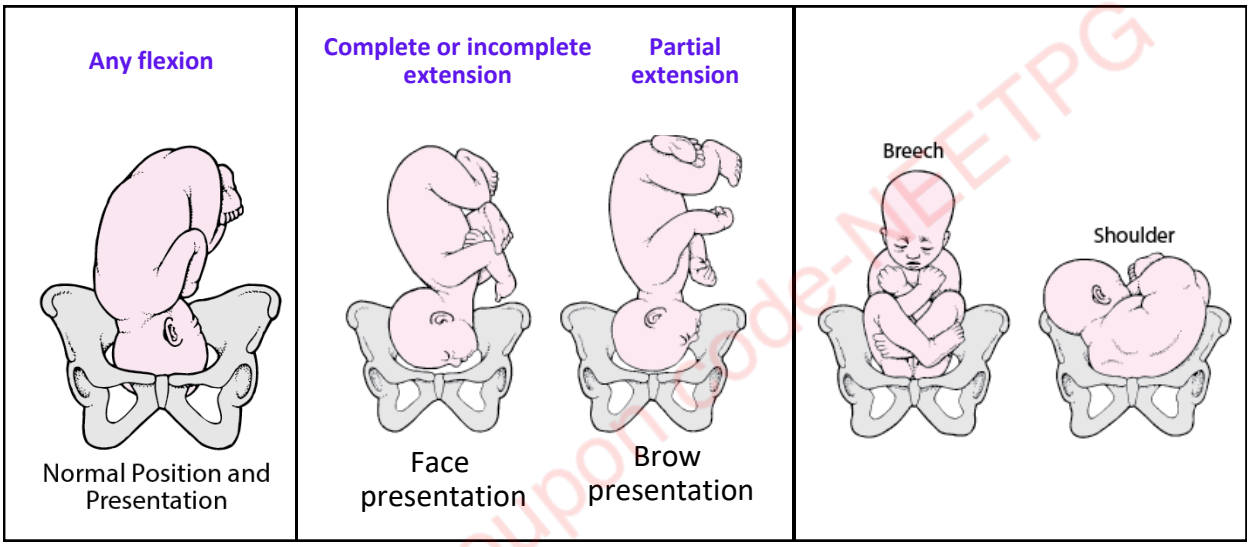
- **MV** - **14cm**
- **Partial extension** - Brow

partially extended "bro"

Bi-parietal
- **Engaging diameter**
- Also **9.5cm**

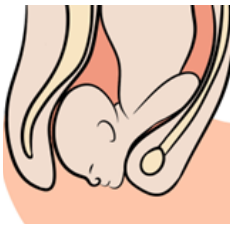
Bi-temporal
- **Smallest** diameter of skull



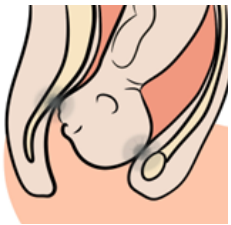


Face presentation

- Complete/incomplete **extension** of head
- Engaging diameter → **Submentobregmatic** (9.5cm) or **Submentovertical** (11.5cm)
- Denominator - **Chin**
- Can be of 2 types - Mento posterior and mento anterior
- M/c cause - **Anencephaly**
- M/c pelvis - **Platypelloid**



Mento - anterior
Head can be **delivered with flexion** (like breech delivery)



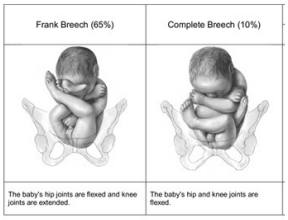
Mento -posterior
LSCS has to be done

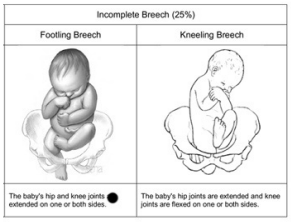
"Face anterior is natural"

- **Delivery by flexion of head :** Breech and mento-anterior face presentation
- **No delivery, LSCS has to be done :**
  1. Transverse lie
  2. Brow presentation
  3. Mento posterior face presentation

Breech presentation

- Most common **malpresentation**
- At 28 weeks, **1/4** of babies are in breech → **spontaneously rotate**, hence **prematurity is the m/c cause of breech**
- At term, **3-4%** breech presentation
- M/c breech : **Frank breech** (*extended knee joints*)





ECV can be attempted

Vaginal breech delivery attempted in

- **Frank** breech
- Facilities for **emergency LSCS** present
- **Skilled obstetrician** present
- Twins with **second twin in breech**

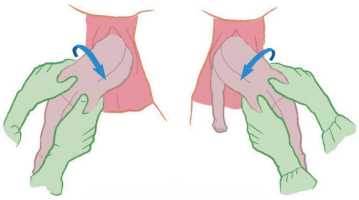
C section for breech considered when

- **Large fetus**: 3800 to 4000 g
- **Severe IUGR**, term weight <2.5kg to 2.8kg
- **Incomplete breech** presentation
- Oligohydramnios
- Hyperextended head (**Stargazer breech**)
- **Contracted pelvis**
- **Prior cesarean delivery**
- Twins, with the **first baby in the breech** position

Assisted breech delivery methods

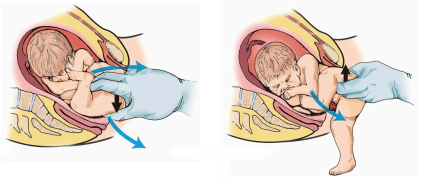
- Loveset's
- Pinard's
- Burns and Marshall
- Mauriceau–Smellie–Veit
- Use of Pipers forceps

"Smellie piper burns and pins Love"



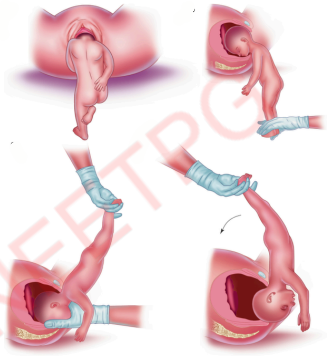
Loveset's maneuver

"Loveset - Offset"

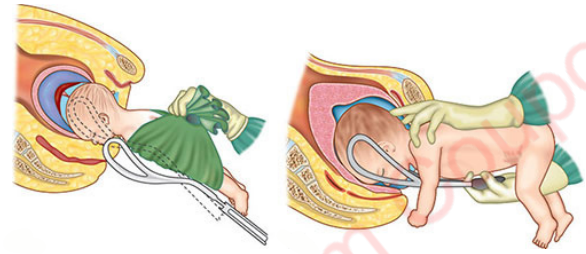


Pinard's maneuver

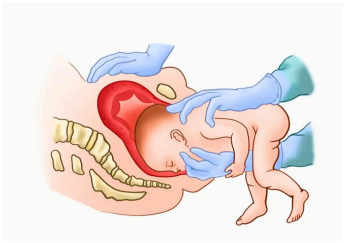
"Pin - Knee - rd"



Burn Marshall's maneuver



Piper's forceps - for aftercoming head of breech



Mauriceau–Smellie–Veit maneuver

Shoulder dystocia

- Call for help
- Episiotomy
- Suprapubic pressure
- **Mc-Robert's** Maneuver (abduction of thighs)

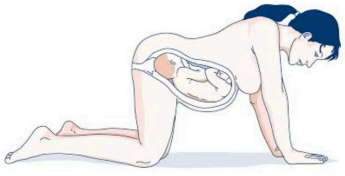
↓

If failed

↓

1. **Woods corkscrew** maneuvre
2. **Zavanelli maneuvre** (put the head back in and take for LSCS)
3. **Rubin's maneuvre**
4. **Gaskin** (all four's position)
5. **Cleidotomy** (fracture of the clavicle of baby)

Mc-Robert's Maneuver



***Gaskin's Maneuver** (all four)*

Post partum haemorrhage

1. **> 500 ml** in **vaginal** delivery
2. **> 1L** in **C section**

- **Primary PPH :** Atonic uterus (**mcc**)
- **Secondary PPH :** Retained products of conception
  Succenturiate placenta

D & C contra-indicated in PPH

Max chance of **Ashermann** Syndrome

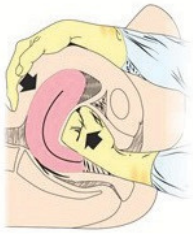
Postpartum haemorrhage

Immediate steps
1. Call for help.
2. Resuscitation

Abdominal palpation

Uterus atonic (*Atonic PPH*)

1. **Bi manual** uterine massage
2. **Oxytocin infusion**
3. Inj. **Methergine**
4. **Blood transfusion**



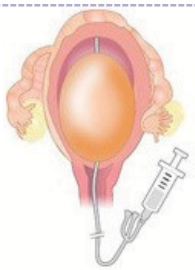
Bi-manual massage

Uterus still atonic

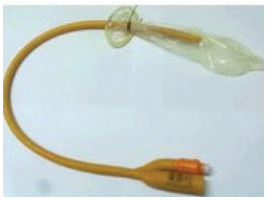
1. **Carboprost** I.M
2. **Misoprostol** rectally

Uterine tamponade

1. Condom catheter
2. Bakri baloon



Bakri baloon



Condom catheter

Uterus hard and well contracted (*Traumatic PPH*)

Exploration (*cervicovaginal inspection*)

Haemostatic sutures on the tear sites

Suspicion of uterine rupture

Emergency laparotomy

SURGERY **Devascularisation**

1. First **hemostatic sutures** are tried
2. If bleeding doesnt stop then devasclarisation

B/L **uterine**

B/L **utero-ovarian**

Ant div of Internal iliac artery

"U-O-I"

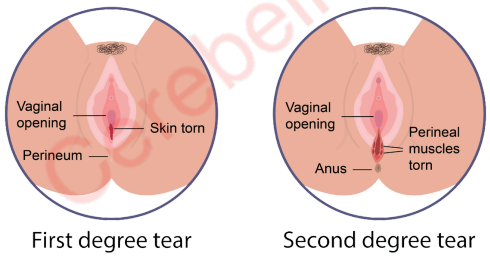
SURGERY **Hysterectomy**

Hemostatic sutures

B - Lynch | Hayman | Cho's

B Lynch : Hay man, *Kem* ***Cho !!***

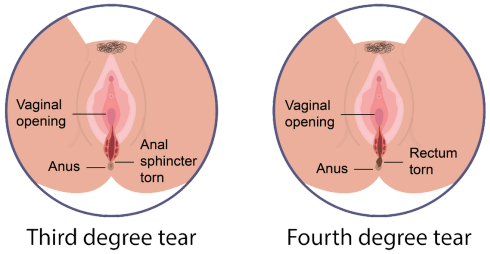
Perineal tear



First degree tear | Second degree tear

- 1st degree **: Vaginal mucosa**
- 2nd degree **: Perineal muscles**

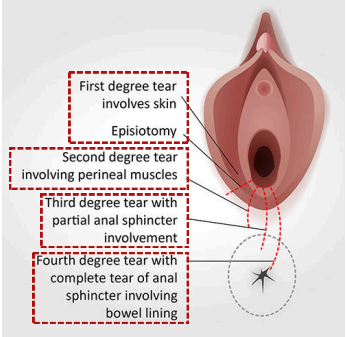
Repair in **Labor room**



Third degree tear | Fourth degree tear

- 3rd degree **: Anal sphincter**
- 4th degree **: Rectum torn**

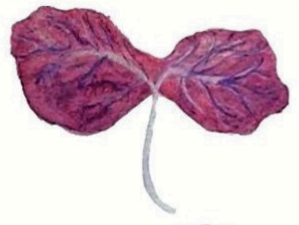
Repair in **OT**



If tear found **>24 hrs**

repair after **6 weeks**

Types of Placenta



Bi-lobed placenta

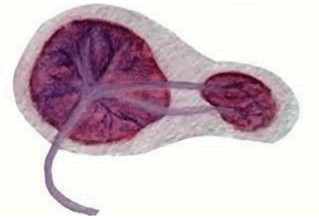
Circum marginate

***Marg**inate looks like a **marg**herita pizza*

Circumvallate

Battledore Placenta

Marginal insertion



Succenturiate placenta

*"**So-Cute** placenta"*

(r/o PPH if smaller lobe is retained)

Velamentous cord insertion

(r/o Vasa previa)

Substances that cannot cross placenta

- Albumin
- IgM, IgA (*IgG can cross*)
- PTH and calcitonin

Antepartum Haemorrhage

Antepartum haemorrhage

either

- Unstable mother
- Fetal distress
- DIC

Immediate LSCS

Patient and fetus stable

- **1st step** : **Resuscitation**
- **1st inv** : **P/A** examination + **USG** (***P/V is contraindicated*** *because it could be* ***Vasa previa***)

Tests to determine if bleeding is fetal or maternal

1. **APT** test **:** Qualitative *APT quality*
2. **KB** test **:** Quantitative

Both tests are based on the principal that "***Fetal blood is resistant to alkali***"

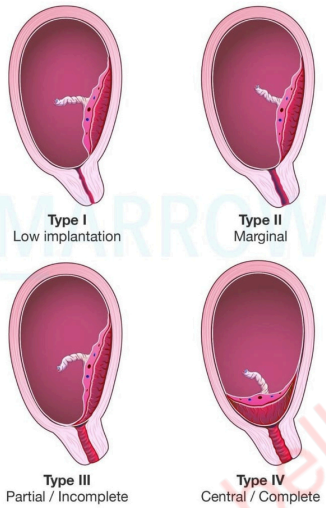
- Painless
- Bright red bleed
- Soft uterus

- Painful
- Dark red bleed
- Tense and tender uterus

Placenta Previa

Placenta in front of int. OS

- No fetal distress mostly
- Fundal height = POG
- *Malpresentations common*
- APT test on blood : **Negative** (*maternal blood*)
- Diagnosis <u>without bleeding</u> : **USG**



<u>Management</u>

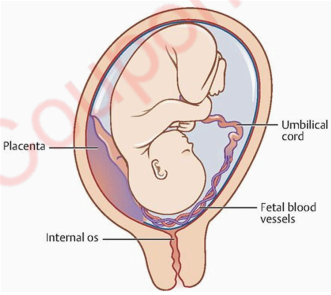
- **< 37 weeks** : **Mcafee and Johnson** *(conservative mx with bed rest)*
- **> 37 weeks** : **LSCS**

Vasa Previa

Vessels in front of int. OS

- Fetal distress **++**
- Fundal height = POG
- CTG : *Sinusoidal*
- APT test : **+ve** *(fetal blood)*
- Diagnosis <u>without bleed</u> : **Colour doppler**

"Associated with ***velamentous cord*** *insertion"*

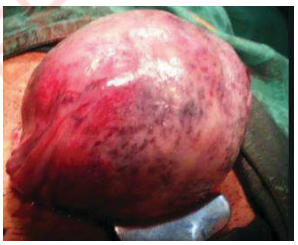


<u>Management</u>

Immediate LSCS

Abruptio placenta

- h/o Trauma or PIH
- Fetal distress present
- Fundal height > POG



Couvellaire uterus

<u>Management</u>

- **< 34** weeks : **Steroids**
- **> 34** weeks : **IOL** (*not LSCS*)

Rh Iso-immunisation

- **Fetal Rh antigen** can sensitise mother to produce **antibodies against it**
- These antibodies if reaches fetus can cause **Hemolytic disease of newborn**

Indirect Coomb's tests
*(check mother's **serum** for **antibodies**)*

ICT (+)
Antibodies against Rh produced in mother
(Make sure fetus is not affected)

MCA doppler
MCA PSV > 1.5 MoM

> 34 weeks → **Deliver**

< 34 weeks → *Repeat after a week* → No improvement

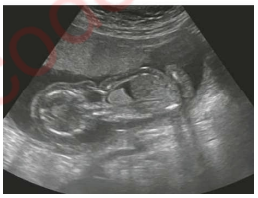
Fetal USG
Features of **Hydrops**

→ **Cordocentesis**
Intra-uterine blood transfusion if
- Hb **< 10** or
- Hct **< 30 %**

ICT (-)
Mother not yet sensitised
(Make sure mother doesn't get sensitised)

- Sensitisation can happen in mother during **birth/abortion/trauma**
- To prevent sensitisation : **Anti D Ig (300µg IM)**
- Routinely administered at **28 weeks**
- <u>After birth</u> **:** if baby **Rh (+)** and **DCT (-)** *(Antibodies absent **on RBCs** of fetus)* to prevent iso-immunisation in <u>further preg</u>.

- **Direct** Coomb's test : **Hemolytic anemia** in baby
- **Indirect** Coomb's test : Rh **iso-immunisation** in mother



Hydrops Fetalis
Fluid in 2 out of 4 compartments
1. Ascites
2. Pleural effusion
3. Anasarca
4. Pericardial effusion

Non-immune hydrops
MCC : CVS anomalies > Parvovirus B[19]

Complications after birth

Amniotic fluid embolism
- Onset **during labor** or within **30 minutes** of delivery
- Sudden onset shock and **DIC**
- <u>No fever</u>

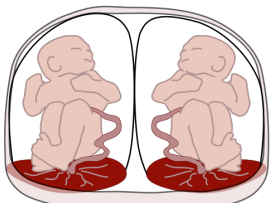
Puerperal fever
- Temperature > **38° Celsius**
- At **two occasions** (within 10 days of delivery)

Fever in <u>1st 24 hrs</u> is not included here

Obstetric Neuropathies
- Most common - **Lateral cutaneous nerve of thigh** (*Meralgia parasthetica*)
- **Foot drop** can be seen due to peroneal nerve injury

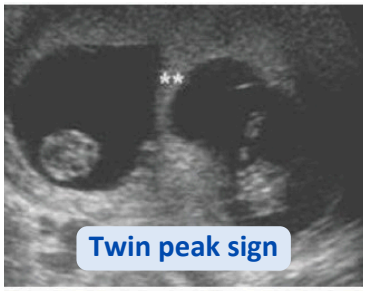
Peri-partum cardiomyopathy
Type of dilated cardiomyopathy
- Cardiac failure in **last month of pregnancy** or **within 5 months** after delivery
- No other cause for HF
- Left ventricular **systolic dysfunction** demonstrated

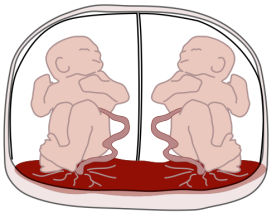
Types of twins



Dichorionic - **Di**amniotic

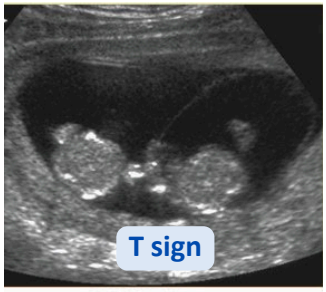
0-4 days

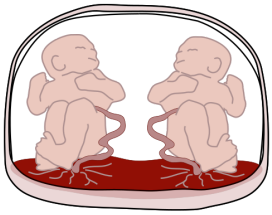




Monochorionic - **Di**amniotic

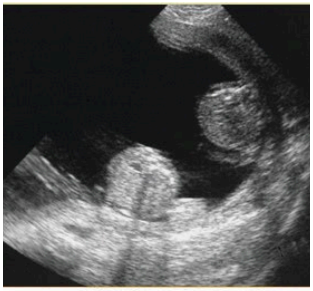
4-8 days





Monochorionic - **Mono**amniotic

8-12 days



- **>13 days** : Conjoint (m/c **thoracopagus**)
- Best time to identify type of twin on USG : **11-14 weeks**

Miscellaneous

Pregnancy formula

G - No. of **conceptions**
- Irrespective of viability
- Include present pregnancy

P - No. of **past pregnancies >28wks**
- Twins are considered single parity

Calorie requirement in pregnancy

- **Second** trimester: **+350** Kcal/day
- **Third** trimester: **+450** Kcal/day
- **Lactation** (0-6m): **+600** Kcal/day
- Lactation (6-12m): **+500** Kcal/day

Post VVF repair *(Latzko procedure)*

- Abstinence : **3 months**
- No pregnancy : **1 year**

Distension media in hysteroscopy

- Monopolar cautery : **Glycine/ CO^2**
- Bipolar cautery : **Normal saline**

*Glycine can cause **water intoxication syndrome***

Teratogens

- **Valproate/Phenytoin** : *Neural tube defect*
- **ACE / ARB** : *Renal agenesis*
- **Lithium** : *Box shaped heart (ebstein's anomaly)*
- **Misoprostol** : *Mobius Syndrome*
- **Isotretinoin** : *Cleft lip/ Cleft palate*
- **Alcohol** : *Smooth philtrum, mental retard*
- **Warfarin** : *Stippled epiphysis (**Chondro-dysplasia punctata**)*
- **Methotrexate** : *Clover leaf skull*
- **Methimazole** : *Cutis aplasia*
- **Indomethacin** : *Premature closure of PDA*
- **Tetracycline** : *Enamel hypoplasia*
- **Thalidomide** : *Phecomalia (flipper baby)*

STEROIDS in pregnancy

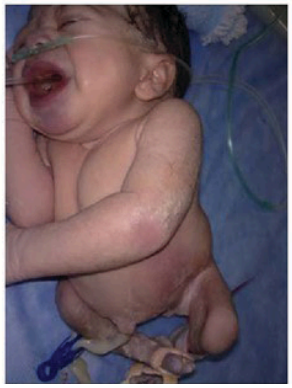
<34 weeks

DOC- Betamethasone **12** mg - **2** doses - **24** hrs
GOI- Dexamethasone **6** mg - **4** doses - **12** hrs

24mg in 48hrs ***Beta : Baarah "12mg"***

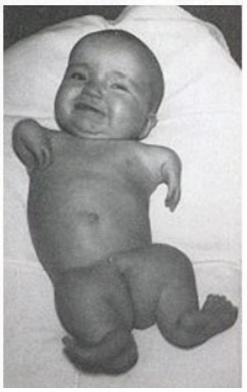
Reduce : RDS, NEC, IVH, neonatal mortality
Neonatal jaundice- No effect

Maximum amniotic fluid: **34 weeks**
Major contributor: **Fetal Urine**



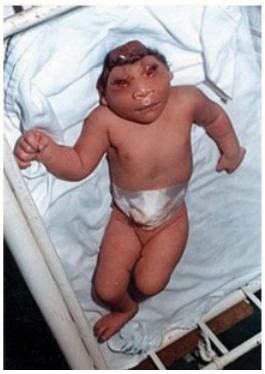
Caudal regression syndrome

Overt DM (*not GDM*)



Phecomalia *(flipper baby)*

Proximal limb defects



Anencephaly

(frog eye sign)

Amniotic band syndrome

- Seen with **oligohydramnios**
- **Distal limb** defects
- **Potter sequence** (*pulmonary hypoplasia*)

Gastroschisis

- **R**ight of midline
- No membrane

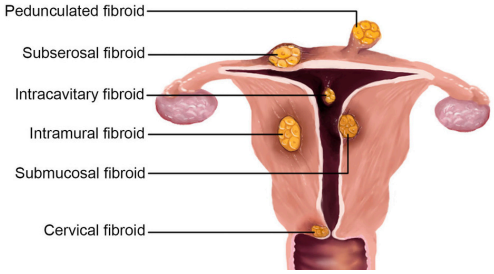
Omphalocele

- On **m**idline
- **M**embrane present
- M/c asso. with **o**ther anomalies

Uterine masses

Uterine fibroids

Assymetric and **enlarged** uterus



- Fibroids are **most common** benign uterine tumors
- **Estrogen dependant** tumors
- **Asymptomatic** in most cases
- Large fibroids can present with ***infertility*** *(cornual block)*
- **Hyaline degenration** is *m/c*
- Indications of **myomectomy**
  1. Fibroid causing **cornual block** leading to infertility
  2. Size > **12 weeks**
  3. **Pedunculated** or **sub-serosal**
  4. **Rapidly growing** after menopause (malignant suspicion)
- **Complications**

Red degeneration

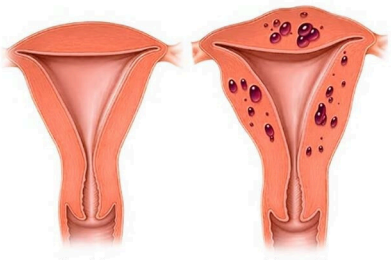
- In **late pregnancy**
- **Hemorrhagic infarction** of **central part** of fibroid
- Focal **abdominal pain** with **fever** and **leucocytosis**.
- Treatment is **conservative**

Torsion of fibroid

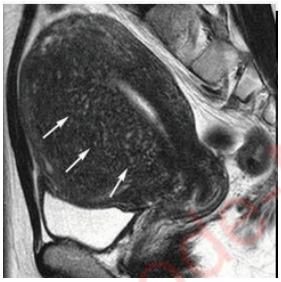
- Seen with **sub-serosal** or **pedunculated** fibroids
- Focal abdominal pain **without fever or leucocytosis**

Adenomyosis

Symmetric, tender and **globular** uterus



- **Endometrium inside myometrium**.
- Multiparous women **> 40 years.**
- **Painful symptoms** - menorrhagia, dysmenorrhea, dyspareunia.
- **Symmetrical enlarged** uterus corresponding to **12-14** weeks size.
- The uterus is **soft** and **tender** on bimanual examination.

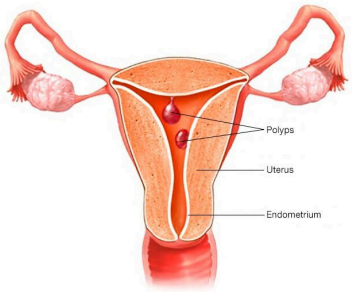


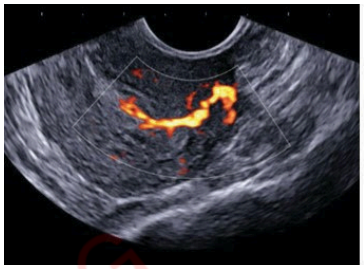
*on MRI : **Salt and pepper** appearance*

- Confirmation is by **histopathology**
- **Management**

1. **Hysterectomy** is TOC because most patients are multipara > 40 yrs of age.
2. **Mirena** in young females (LNG containing IUD)

Endometrial polyps





Feeding vessel sign

- **Saline infusion sonography** done to distinguish it from a fibroid

Uterine prolapse

Young patient *Sling for singles*

- Fertility preserving **Abdominal Sling Surgeries**
- Shirodkar / Khanna

Old patient *old as a Fort*

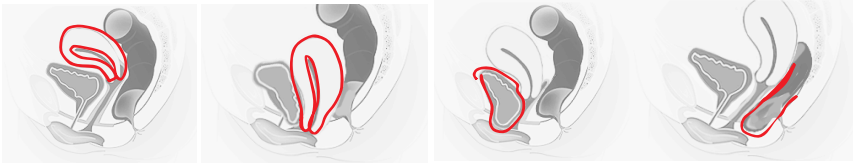
- Vagina closed - (No sexual function)
- **Colpo-cleisis**
- **Le-Fort** repair

Middle aged *M-M*

- **M**iddle - ***M**anchester* repair
- If family complete then Hysterectomy
- Complication : **Vault prolapse**

During Pregnancy / Post-natal

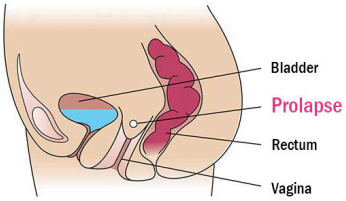
- **P**essary
- Kiegel's exercises



Normal Pelvis | **Uterine prolapse** | **Anterior prolapse** | **Posterior prolapse**

Vaginal Vault Prolapse

Vaginal vault prolapse occurs when the upper portion of the vagina (the apex) descends into the vaginal cavity.



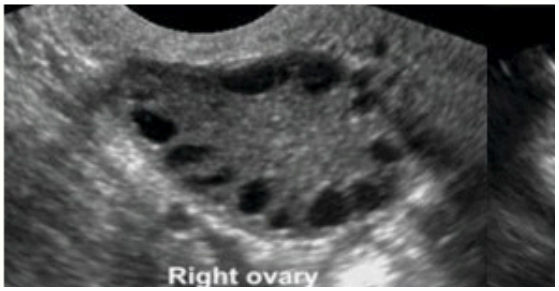
Patient is fit for abdominal surgery:

- **Transabdominal** *sacral colpopexy* (Colpos : Vagina)
- aka *Uterosacral suspension*
- **Best method** for vault prolapse

Patient is not fit for abdominal surgery:

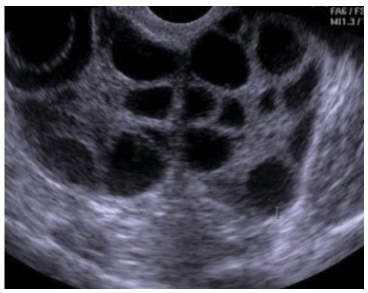
- **Transvaginal** *sacrospinous ligament fixation*.
- Ring pessaries can be tried when surgery is not possibble

Approach to enlarged ovaries



Small follicles

PCOD



Large follicles

- H/o **IVF** → **OHSS**
- H/o **molar pregnancy** → **Theca lutein cysts**

Rotterdam Criteria > 2/3

Clinical	Biochem.	Radiology
• Hirsuitism • Oligo-menorrhea • Infertility	• LH / FSH ↑	• > **20** follicles • < **10**mm in size • Most specific is ↑echogenecity

"More than 20 less than 10"

Management for PCOD

1. **Lifestyle modification** is enough in mild cases
2. **OCP** for menstrual abn
3. **Metformin** for insulin sensitivity.
4. **Letrozole** > Clomiphene for infertility

OHSS

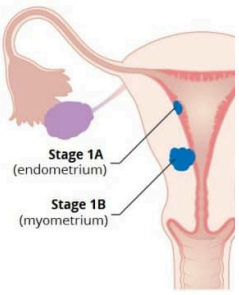
- Complication of ovulation induction therapy for infertility.
- Assocaited with ovarian enlargement with **large follicles** + **increased capillary permeability**
- It occurs due to over stimulation of granulosa cells by **hCG.**

- **Abdominal pain** occurs due to ovarian enlargement and accumulation of peritoneal fluid.
- Increased vascular permeability cause **ascites** and result in hemoconcentration.
- **Hemoconcentration** causes hypercoagulability.
- Management is only symptomatic

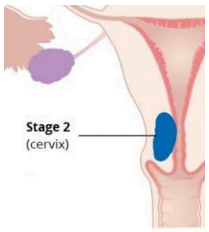
Theca Leutein cysts

- Type of follicular cysts
- They typically occur after the first trimester due to exceptionally **high hCG** or **LH**. (HCG and LH have similar action)
- Can be seen **GTN**, **multifetal** pregnancy
- **Asymptomatic** condition, surgically managed only if complications arise.

Carcinoma Endometrium

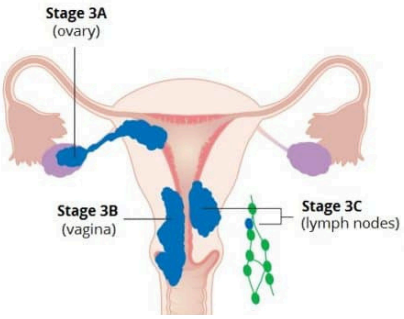


- **1a** : **<50%** myometrial invasion
- **1b** : **>50%** myometrial invasion



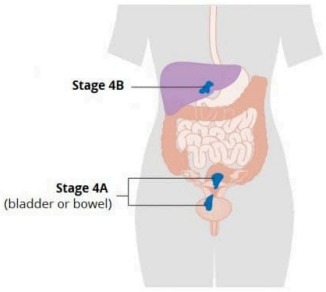
Cervical stromal invasion

Cervical glands not included



- **3a** : Serosa, adnexa ***SA***
- **3b** : Vagina, paramet ***VP***
- **3c** : Pelvic & para-aortic LN ***CP***

SA VP in CP

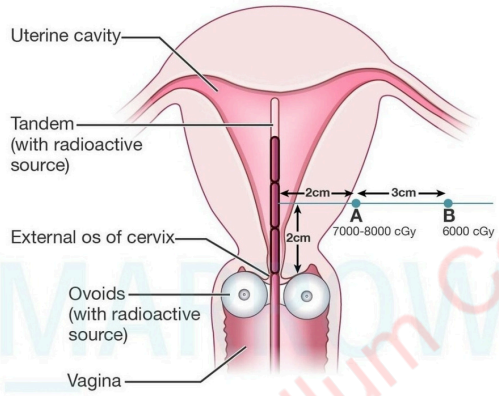


- **4a** : Bowel, bladder
- **4b** : Distant mets *(including Inguinal LN)*

Management for endometrial carcinoma

- **1a** - **Only surgery**
- **1b** and **2** : **Sx + RT**
- **3** and **4** : **Inoperable** (*brachytherapy*)

Manchester points in Brachytherapy



- **Point A** : **2** cm X **2** cm (7k-8k Gy)
- **Point B** : **3** cm from A (6k Gy)

2 3 6

Normal endometrial thickness

- Ovulatory **: <** **11** mm
- Post menopausal **: <** **4** mm

Endometrial Hyperplasia

- *Simple* hyperplasia : **1** % r/o carcinoma
- *Complex* hyperplasia : **3** % r/o carcinoma
- *Simple* + **Atypia** : **8** % r/o carcinoma
- *Complex* + **Atypia** : **29** % r/o carcinoma

Management for endometrial hyperplasia

- **Progesterone therapy** *if no atypia*
- With **atypia** in post menopausal - **Hysterectomy**
- With **atypia** in young - **High dose progesterone**

Corpus cancer syndrome

- **Obesity + Htn + DM**
- **Endometrial cancer**

Carcinoma Cervix Screening

- Start at : **21** years
- Stop at : **65** years

- Pap smear : **3 yearly**
- Co testing (**HPV** + **PAP** smear) : **5 yearly** *(for age > 30yr)*

- Immunocompromised : **Annually**
- Vaccinated : **No change**

Stains used in Pap smear

1. **95% alcohol** (fixative)
2. **Harris Hemotoxylin**
3. **Orange G-6**
4. **EA - 50**

"95% HOE"

Government setup

- ***Ayre's*** spatula
- ***Koplin's*** jar

Advanced setup

- **Cervi-brush**
- *Liquid based cytology media*
- **More sensitive**

Interpretation of pap smear

- Grade **1** : Normal
- Grade **2** : Inflamma2ory
- Grade **3** : **CIN** 1 - **LSIL** T/t : Regular screening, **Cryoablation**
- Grade **4** : **CIN** 2 or 3 - **HSIL** (pre-malignant) T/t : **LEEP** / **LETZ**
- Grade **5** : *Invasive carcinoma*

Colposcopic Biopsy

If **abnormal screening** or patient has **features** of **cervical carcinoma** *eg. post-coital bleeding*

Human Papilloma Virus

HPV

- **Low** risk
  - ***6,11***
  - **Condyloma acuminata**
  - *(Genital warts)*
- **High** risk
  - ***16, 18, 31, 33, 45, 52, 58***

HPV Proteins

- E^6 : against P^{53} ***5 and 6 together***
- E^7 : against **Rb**
- L^1 : Capsid protein
  (***Vaccines*** *designed against* ***L^1***) *Virus took* ***one L***

- **M/c** for **ca cervix** : 16
- **Most malignant** : 18
- **Most specific** : 18

WHO SAGE guidelines for HPV vaccination

- Age **9-20** : **1** or **2** doses
- Age **21-50** : **2** doses *(6 months interval)*
- **Immunocomp. / HIV** : **3** doses

Most important group is ***9-14*** *years*

- **Gardasil 4 : 6, 11, 16, 18**
- **Cervarix : 16, 18**
- **Cervavac : 6, 11, 16, 18**
  (Made in Serum institute, India)

0.5 ml IM (male and female)

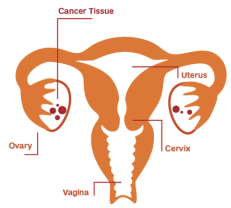
Carcinoma Cervix Staging

Within cervix	Involves Vagina *(VP)*	Beyond Vagina *(V-P in CP)*	Bowel - bladder
1a : **Microscopic** t/t *conisation* **1b** : b¹ < **2**cm b² **2-4**cm b³ **>** **4**cm ***"B - 2 - 4"***	**2a** : Upper ⅔ of **v**agina **2b** : **P**arametrium	**3a** : Lower ⅓ of **v**agina **3b** : **P**elvic side wall • Hydronephrosis • mc stage of presentation **3c** : **P**elvic and para-aortic LN	• **4a** : Bowel, bladder • **4b** : Distant mets *(including Inguinal LN)*

- Fertility preservation procedure (conisation) can be done till **1B¹**
- For all other stages its **CT + RT**

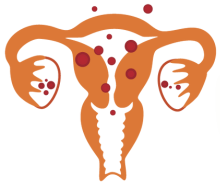
Carcinoma Ovary

Stage 1



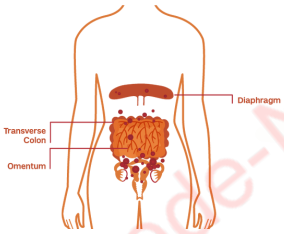
- **1a** : **U/L** ovary
- **1b** : **B/L** ovaries
- **1c** : **Capsule** involved

Stage 2



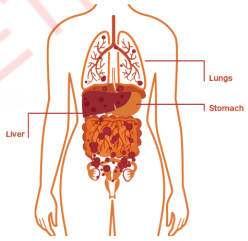
- **2a** : Fallop. tubes or uterus
- **2b** : Other pelvic str.

Stage 3



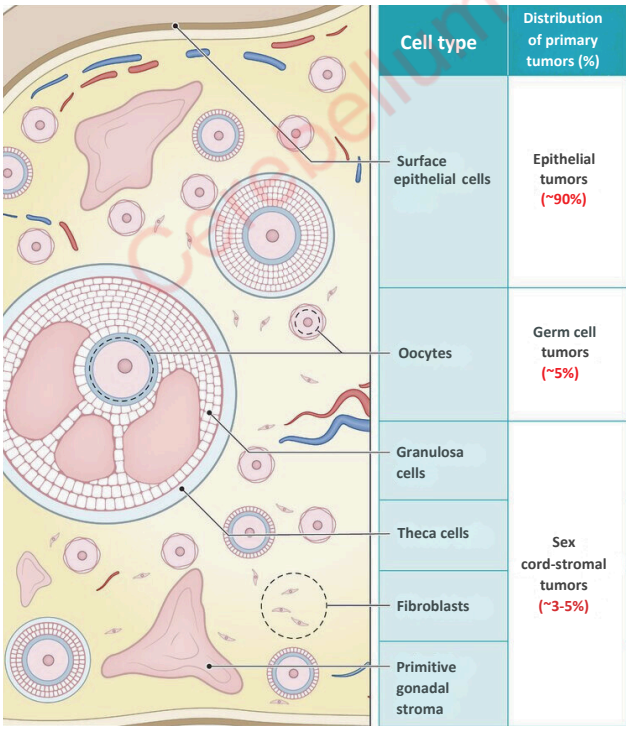
Peritoneal spread

Stage 4



- **4a** : **Pleural effusion**
- **4b** : Distant mets *(including Inguinal LN)*

Ovarian tumors are **not radiosensitive** and **radiotherapy does not form part of the protocol for treatment** of ovarian cancers.



Epithelial tumors (germinal epithelium)

- Most common ovarian tumors
- **Serous** (watery; psammoma bodies) or **Mucinous**
- **CA-125** raised

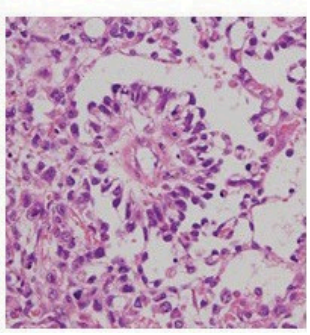
1. **Cystadenoma** : Single cyst
2. **Cystadenocarcinoma** : Complex cyst
3. **Endometroid** : Resembles endometrium
4. **Brenner** : Bladder like, coffee-bean nuclei

Germ cell tumors

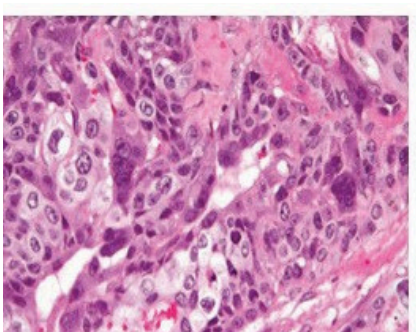
1. **Dysgerminoma** : **LDH elevated,** m/c GCT (Radiosensitive)
2. **Yolk Sac tumor** : **AFP elevated** (Schiller Duval)
3. **Choriocarcinoma** : **HCG elevated**
4. **Teratoma** : Mature (dermoid cyst, m/c GCT overall), Immature (Embryonal carcinoma)

Sex cord stromal tumors

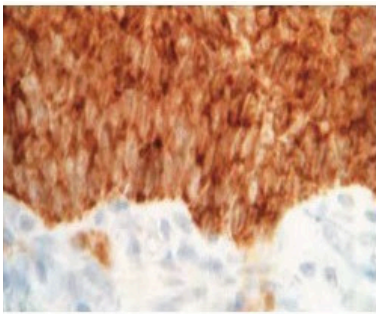
1. **Granulosa cell tumor** : **Estrogen excess** *(Call Exner bodies)*
2. **Sertoli - Leydig cell tumor** : **Androgen excess** *(Reinke crystalloids)*
3. **Fibroma** : **Meig's Syndrome** (Pleural effusion + Ascites + Ovarian tumor)



Schiller Duval bodies
Yolk sac tumor



Cyto-Syncitio-trophoblast
Chorio-carcinoma



Inhibin B
Granulosa cell tumor

Krukenberg: diffuse gastric CA mets bilaterally to ovaries; signet ring cells

Pseudomyxoma peritonei: Mucinous tumor of appendix with mets to ovary

Functional ovarian cyst

- Simple **unilocular** cyst in **women of reproductive age**
- Size less than **7 cm**
- Only regular follow up needed
- OCP if symptomatic

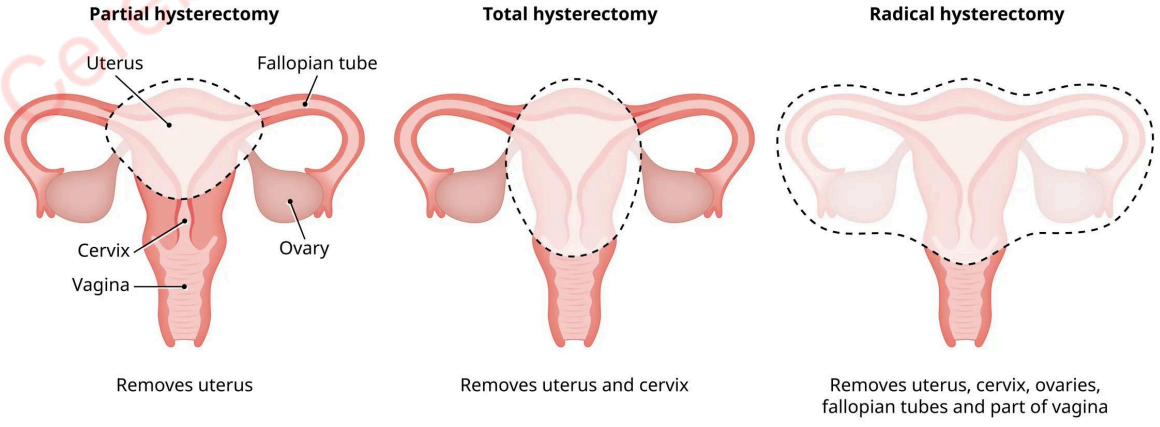
Ovarian cyst in post-menopausal

- **Ca-125** to be checked

Carcinoma Vulva

- **Squamous cell carcinoma** is most common - **HPV 16**
- Older females : **55-85 yrs**
- The most common site of vulvar cancer is **Labia Majora** > **Clitoris** > **Labia Minora**
- **LN status** in groin is best prognostic indicator - **Sentinel lymph node biopsy** done
- Vascular spread is very rare

Types of hysterectomy



Removes uterus

Removes uterus and cervix

Removes uterus, cervix, ovaries, fallopian tubes and part of vagina

Important OBG drugs

Drugs related to prostaglandins

A. **Misoprostol** ***(PG E1)***
- **Uterotonic** agent
- **800**mg (mucosal) for **MTP**

B. **Dinoprostone** ***(PG E2)*** ***Dinner for 2***
- Available as *gel*
- Used for **induction of Labor**
- Never used for PPH

C. **Carboprost** ***(PG F2 alpha)*** ***Alpha drug for PPH***
- Best drug to **control PPH**
- **0.25mg** IM
- Max doses **8** (2mg)

D. **Mifepristone** : ***Inhibits progesterone***
- Used for **MTP**
- aka **RU-486**
- **200**mg mucosal

Uterotonics

A. **Syntocin**
- *Induction* and *augmentation*
- ***AMTSL*** *: 10 IU*
- ***PPH*** *: 40 IU*
- ***MTP*** *: 2nd trimester*
- Complication : Tachysystole

B. **Methyl-ergometrine**
- Used for **PPH**
- Contraindicated in **htn**, **heart diseases**, **twins**

C. **Oxytocin**
- At low dose increases **force** and **frequency** of contractions
- At high doses causes **HYPOTENSION** *hence never administered as bolus*

Magnesium Sulphate

1. Treatment of **eclampsia** (*Pritchard regimen*)
2. **Neuroprotective** and **membrane stabiliser** (*reduces motor endplate sensitivity to Ach*)
3. **Tocolytic**

Pritchard regimen

Loading dose : 14 gm ***Prit chauda***
- **4**gm (20%) IV
- **10**gm (50%) IM - 5gm in each buttock

Maintenance dose :
- **5**gm (IM) in alternate buttock (4 hourly)

Therapeutic level
- **4-7** meq/L

Side effects
- Pulmonary edema
- Anuria

Monitoring for toxicity
- **Deep tendon reflexes lost** (1st sign of toxicity, skip the maintenance dose)
- Resp. distress
- Cardiac arrest

T/t for toxicity : **Calcium gluconate**

Tocolytics

1. **Ritodrine** (ß agonist)
2. **Nifedipine** *(tocolytic of choice)*
3. Terbutaline
4. **MgS04**
5. Indomethacin
6. Atosiban

Selective receptor modulators

A. **Tamoxifen** ***(SERM)***
- Estrogen **antagonist at breast**
- Agonist at endometrium (risk of *endometrial cancer*)
- DOC for **luminal A** type **breast cancers** in pre-menopausal patients

B. **Raloxifene** ***(SERM)***
- Used for **post menopausal osteoporosis**
- **No risk** of breast/endometrial cancer
- All SERMs have higher risk of **VTE**

C. **Ulipristal** ***(SPRM)***
- Best emergency contraceptive

D. **Letrozole** **(Aromatase inhibitor)**
- Prevents peripheral conversion of androgens to estrogen
- No risk of VTE

MTP

1st trimester

1. **Mifepristone**
2. **Miso** + Mife
3. **Miso** + Mtx
4. **Miso** + Tamoxifen

- ***Vaccum aspiration***
- ***Suction and evac.***
- *Dilation and evac.*

2nd trimester

1. **Misoprostol**
2. **Miso** + Mife
3. *Dinoprostone*
4. *Carboprostone*

- *Dilation and evac*
- ***Oxytocin infusion***

- Mild preclampsia : **37 weeks**
- Severe preclampsia : **34 weeks**
- Eclampsia/ HELLP : **Immediate TOP**

- Rh isoimmunization nonsensitised : **39 weeks**
- Rh isoimmunization sensitized : **37 weeks**

- Placenta previa : **37 weeks**
- Abruptio placenta : **34 weeks**

- Absent EDF : **34 weeks**
- Reversal of EDF : **Immediate TOP**

Upper limit of MTP

1. Upto **20 weeks** for contraception failure (1 RMP needed)
2. Upto **24 weeks** for rape/vulnerable women (2 RMPs needed)
3. **No upper limit** for fetal anomalies

Qualification :

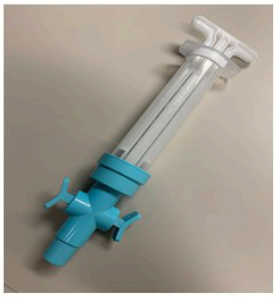
- DNB/MS OBG
- RMP **25 cases**
- **6 months** housejob in OBG

Consent :

- Only patient's consent needed
- Husband's consent not needed

Record maintenance :

- Can't disclose patient's identity
- Patient's name not recorded.



MVA

- Used for **MTP at 7-12** weeks of gestation
- **660** mm Hg
- **60** ml capacity

Cerebellum

Mission NEET PG 2.0 – 3rd Batch

Comprehensive Strategy to Ace

NEET PG 2025

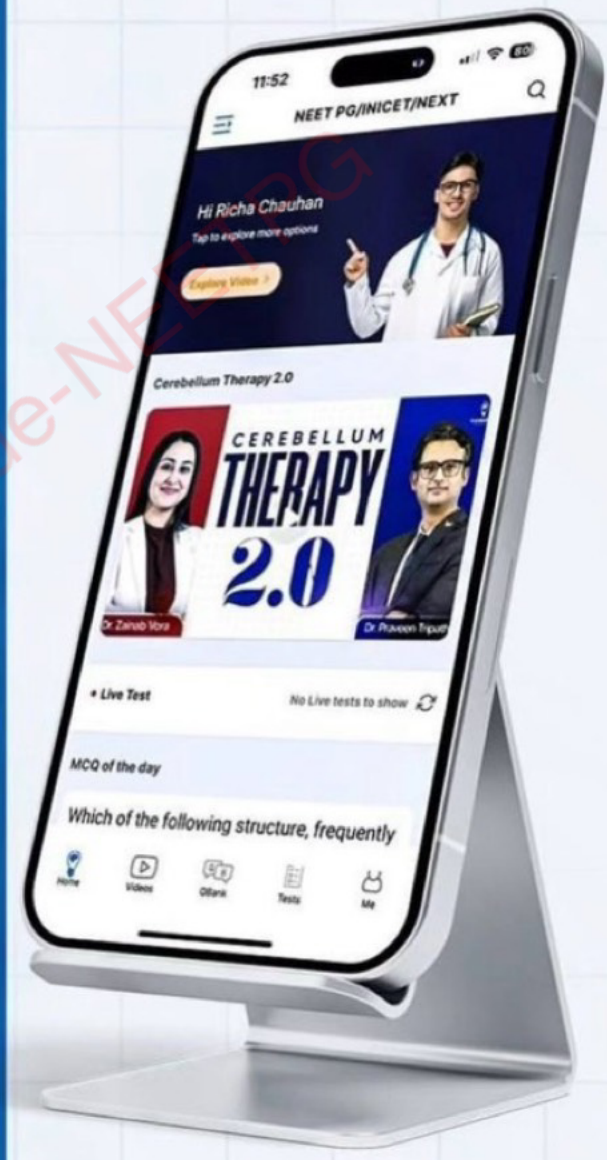
Starting from

25th Nov

Apply coupon code-NEETPG

« Swipe Left for the

Tentative Schedule



Mission NEET PG/INI CET 2.0 - 3rd Batch

Topic	Date	E&D
Pharmacology (Dr. Gobind Rai Garg)	25th-29th Nov	
Pathology (Dr. Sparsh Gupta)	30th Nov-4th Dec	
Combined E&D (Pharma + Patho)		5th Dec
Medicine-I (Dr. Dilip Kumar)	6th Dec - 9th Dec	
10th - Dec - Break		
Medicine-2 (Dr. Dilip Kumar)	11th Dec - 14th Dec	15th Dec
Physiology (Dr. Pooja Nigade)	16th Dec - 19th Dec	20th Dec
BTR E&D (Integrated Subjects) (Dr. Zainab Vora)		21st Dec
Biochemistry (Dr. Ankur Jain)	22nd Dec - 25th Dec	
FMT (Dr. Atul Gupta)	26th-28th Dec	
Biochemistry & FMT Combined E&D		29th Dec

SWIPE LEFT

Topic	Date	E&D
BTR E&D (FMT+Biochem)		30th Dec
31th - Dec - Break		
Anatomy (Dr. Shrinkant)	1st Jan - 5th Jan	6th Jan
Microbiology (Dr. Priyanka Sachdev)	7th Jan - 10th Jan	11th Jan
BTR E&D (Anatomy + Microbiology)		12th Jan
13th - Jan - Break		
Psychiatry (Dr. Praveen Tripathi)	14th Jan - 15th Jan	16th Jan
Ophthalmology (Dr. Gaurav Nagpal)	17th-20th Jan	
ENT (Dr. Praneeth)	21th-24th Jan	
Combined E&D (Ophtha + ENT)		25th Jan
BTR E&D (Psy/Oph/ENT) (Dr. Zainab Vora)		26th Jan
Radiology (Dr. Zainab Vora)	27th Jan - 28th Jan	

SWIPE LEFT

Topic	Date	E&D
Orthopedics (Dr. Apurv Mehra)	29th Jan - 30th Jan	
Combined E&D (Radiology + Orthopedics)		31st Jan
Surgery (Dr. Amrit Nasta)	1st Feb - 4th Feb	
5th - Feb - Break		
Surgery-2 (Dr. Amrit Nasta)	6th Feb - 8th Feb	9th Feb
BTR E&D (Surgery/Ortho/Radio) (Dr. Zainab Vora)		10th Feb
PSM-1 (Dr. Vivek Jain)	11th-13th Feb	
14th - Feb - Break		
PSM (Dr. Vivek Jain)	15th-17th Feb	18th Feb
Anesthesia (Dr. Jhanvi Bajaj)	19th-20th Feb	
Dermatology (Dr. M.Srinivas)	21st-22nd Feb	
Combined E&D (Anesthesia + Dermatology)		23th Feb

SWIPE LEFT

Cerebellum

Topic	Date	E&D
BTR E&D (PSM/Anes/Derma) (Dr. Zainab Vora)		24th Feb
Pediatrics (Dr. Anand Bhatia)	25th Feb - 27th Feb	28th Feb
OBG-1 (Dr. Raina Chawla)	1st Mar - 4th Mar	
5th - Mar - Break		
OBG-2 (Dr. Raina Chawla)	6th-7th Mar	8th Mar
BTR E&D (Pediatrics/OBG) (Dr. Zainab Vora)		9th Mar

Enroll from the Android device or website
[For ios user]
Apply coupon code-NEETPG
[Get maximum discount]

2nd - Mar - Break

SWIPE LEFT

Cerebellum

Hurry!

Subscribe Now

Apply coupon code-NEETPG for 6 Months Plan

Get 2 Months FREE

(Limited Time Offer)

21000/-

Scan the QR Code

To Download Our App