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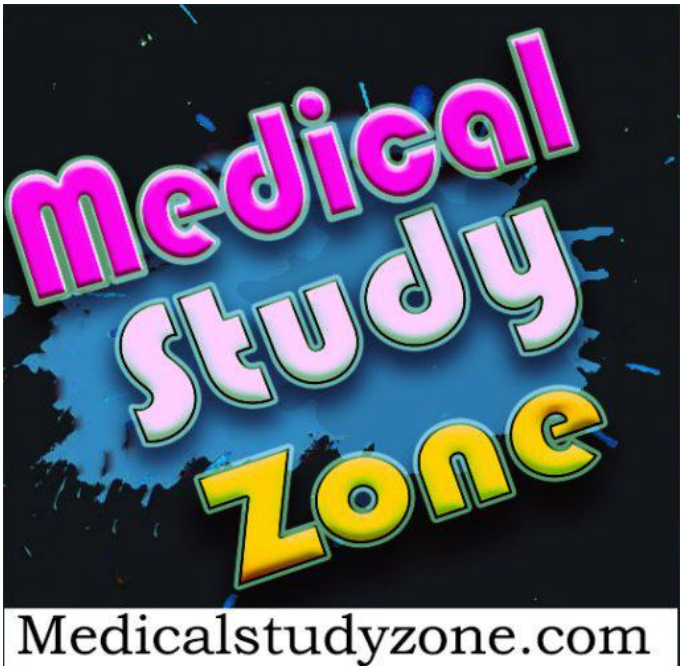
OBSTETRICS



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CONTENTS

GYNECOLOGY

OBSTETRICS

POSTPARTUM HAEMORRHAGE

→ MMR → around 130/100,000 Women
→ mcc – OBSTETRIC HAEMORRHAGE

OBSTETRIC HAEMORRHAGE – TYPES

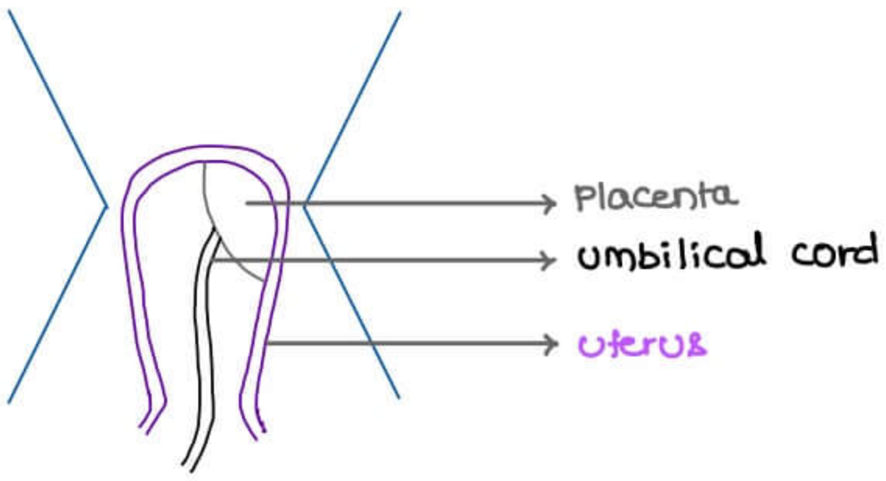
① Antepartum Haemorrhage → Any bleed in genital tract after 28 WK
② Postpartum Haemorrhage → Any bleed in genital tract after delivery
→ mcc of MMR in India

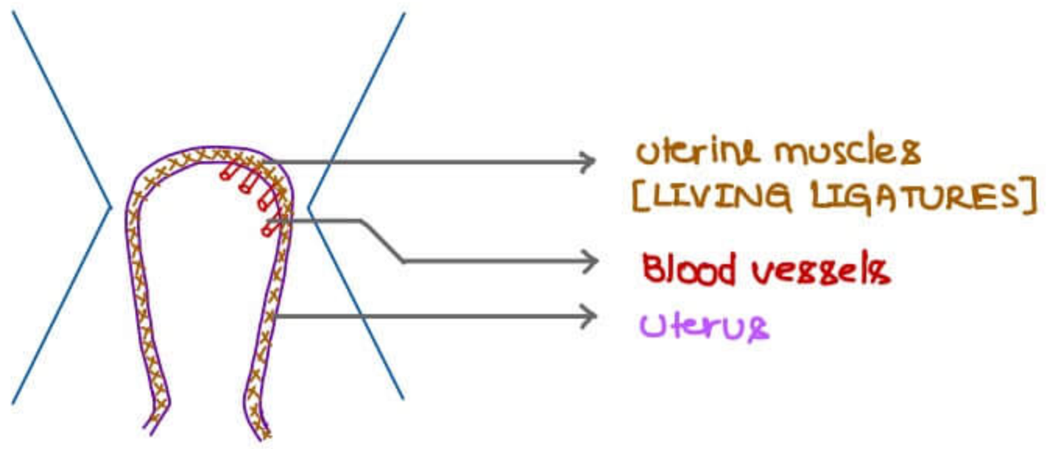
POST PARTUM HAEMORRHAGE [PPH]

DEFINITIONS

→ > 500 ml in normal Delivery
→ > 1000 ml in a Cesarean Section
→ Mild PPH → 500 ml to 1000 ml
Moderate PPH → 1000 ml to 2000 ml
Severe PPH → > 2000 ml
Massive Obstetric Haemorrhage → > 1500 ml
→ Any Haemorrhage which can reduce Hb by 1 gm% → PPH
→ If Hb drops by > 4 gm% → massive Obstetric Haemorrhage

ACTIVE MANAGEMENT OF 3rd STAGE OF LABOUR





After Removing Placenta [CONTROLLED CORD TRACT^{n}]

→ controlled cord traction
→ Uterine massage
→ Oxytocin

→ Incidence of PPH → 5%

CAUSES

1. ATONIC UTERUS [80%]
   - Large uterus → Big baby / Twins / ↑ Liquor
   - Infections → PROM / Chorioamnionitis
   - Prolonged labour

2. INJURIES [TRAUMA] → Uterus, Cervical, Vaginal

→ Rate of Rise ↑ oral & ↑ injectable preparat^{n} is same [1gm%. over 2½-3wks]

REQUIREMENT → 2.21 × wt in kg × (Targeted Hb − Pt Hb) + 1000 mg (For stores)
→ ≅ 200 mg / Hb deficiency

→ Requirement of Blood for Rx of Anemia
- Hb → < 7gm% or
  Severly anemic in Late in pregnancy
- whole blood ↑ Hb by 0.8 - 0.9 gm%
  Packed cells ↑ Hb by 0.8 − 0.9 gm%. [lesser volume load][So Better]

→ IDA INDICES

① SERUM FERRETIN
- 1st parameter to change
- Ⓝ - 40 - 160 ng/ml
- IDA - < 20 ng/ml

② Hb → ↓
③ MCV → ↓
④ MCH → ↓
⑤ Serum Iron → < 50 µg/dl
⑥ Total Iron Binding capacity → > 400 ng/dl
⑦ Red cell Distribut^{n} width [RDW] → ↑

→ THALASSEMIA INDICES

① RDW → Normal
② MCH → < 27 Pg [Ⓝ - 29 ng]
③ Hb → Normal
④ MCV / RBC → < 13 [MENTZER INDEX]

MEGALOBLASTIC ANEMIA

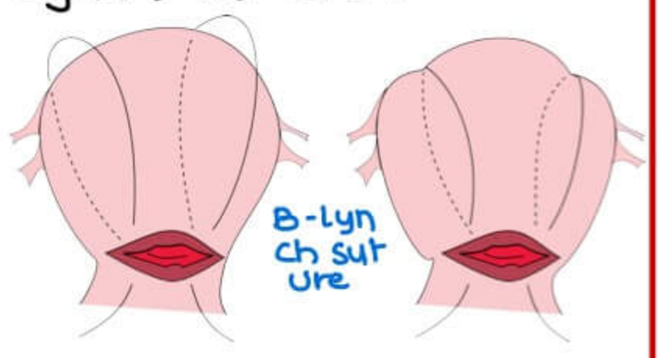
CAUSES

1 FA Deficiency
- → ↑ Demand
- → ↓ Supply
- → Malabsorpt^{n}
- → Intestinal Sx or resect^{n}

2 Vit B_{12} Deficiency
- → ↓ Absorpt^{n}
- → ↓ Intrinsic factor
- → Achlorhydria

⑩ SURGICAL METHODS :

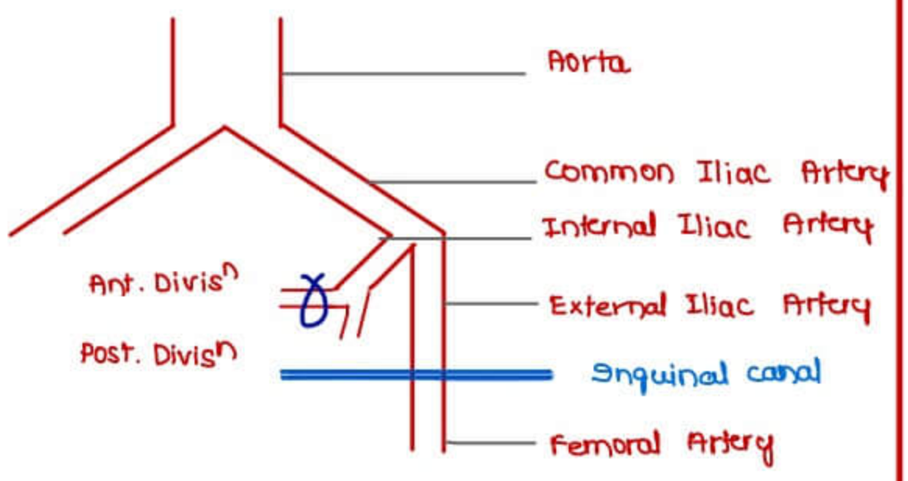
a. Compression / Brace Sutures → Christopher B Lynch in 1997
b. Heyman's Sutures
c. Uterine artery ligat^{n}
d. Ovarian artery ligat^{n}
e. Internal Iliac artery ligat^{n}
f. Hysterectomy



→ INTERNAL ILIAC ARTERY LIGATION

Ant. Divis^{n} OF Internal Iliac Branches :

- Uterine
- Obturator
- Superior vesical
- Inferior vesical
- Internal Pudendal
- Middle rectal
- Inferior Gluteal
- vulval
- clitoral



Posterior Division Internal Iliac Artery Branches

- Superior Gluteal — Short G
- Iliolumbar — IL
- Lateral sacral — LS

PRINCIPLE

- Using a snug ligature we reduce the Pulse pressure [from an Artery to vein] → sluggish flow → Induces Thrombosis

THERAPEUTICAL GOALS

→ Hb → > 8 gm/dl
Fibrinogen → > 100 mg/dl
Prothrombin Time → < 1.5 times of (N)
Activated Partial Thromboplastin time → < 1.5 times of (N)
Platelet count → > 75000

→ Immediate O -ve Blood Transfusion can be given
4 Units of Group matched blood through @ 14 guaze IV cannulas

PLACENTA

UTERINE INVERSION

→ Inversion causes
- → Neurogenic shock
- → Haemorrhagic Shock

→ Mcc of death dlt invers^{n} → Haemorrhagic Shock

CAUSES

→ Fundal Implantat^{n} of Placenta
→ Uterine atony
→ Badly adhered placenta
→ Sudden cord tract^{n}

MANAGEMENT

→ IV Access
→ Fluids, Blood
→ Try & Reposit ASAP
① Manual Reposition
② Hydrostatic Reposition → O' SULLIVAN'S
- Give Inj Terbutaline → Relaxes Uterus

↓

Re Posit

↓

Give Inj. Oxytocin
Inj. Methylergometrine

→ Surgical Methods
- HUNTINGTON'S METHOD → Atraumatic clamps
- HAULTIAN METHOD → Resect^{n} of The constricting Bands

SEPARATION OF PLACENTA

METHODS

→ Controlled cord Traction [BRANDT & ANDREW'S]
→ CREDES METHOD [Obsolete Now → causes RETAINED PLACENTAL BIT

SIGNS

→ Lengthening of cord
→ Fresh bleeding
→ Supra pubic bulge [Most specific sign]

RETAINED PLACENTA

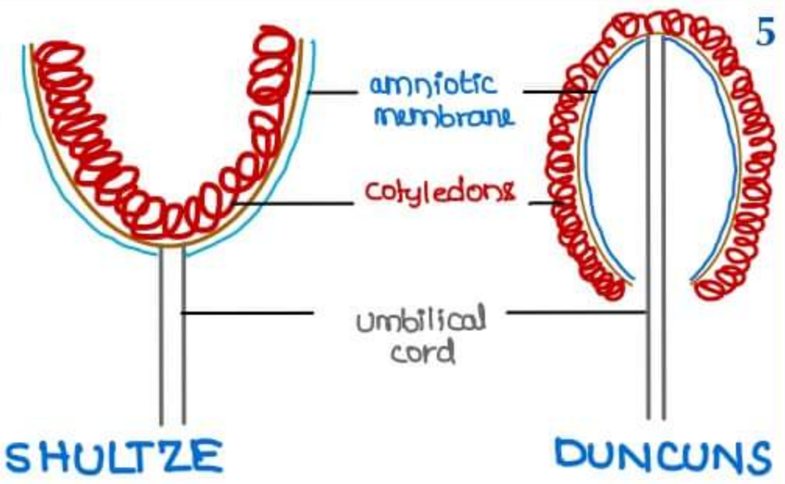
→ Seperat^{n} of Placenta → > 30 min
→ Management
- Manual Removal of placenta UNDER GENERAL ANESTHESIA
- For RETAINED PLACENTAL BIT → 2^{0} PPH

M$_{x}$ by curettage → complicat^{n} → Ashermann Syndrome

MODES OF SEPERATION

CENTRAL SEPARATION / SHULTZE SEPARATION → SHINY
- membranes comes first ; More common

MARGINAL SEPARATION / DUNCONS SEPARATION → DIRTY
- cotyledons comes first

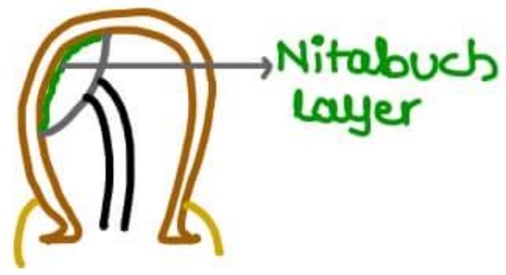


NITABUCH LAYER

→ Fibrinoid layer at which placental separatⁿ happens

→ Absence of layer → Morbidly adherent Placenta
- ⓐ PLACENTA ACCRETA
- ⓑ PLACENTA INCRETA
- ⓒ PLACENTA PERCRETA

} can cause severe PPH



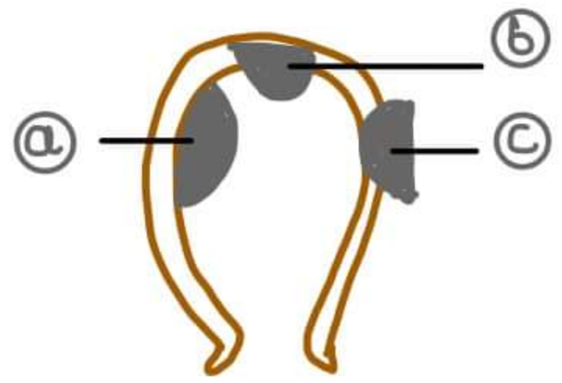
Management

- Laparotomy + Obstetric Hysterectomy
- If able to save the uterus

↓

Post Op → Methotrexate
Actinomycin

} to prevent the persistence of trophoblastic tissues.



Predisposing conditions

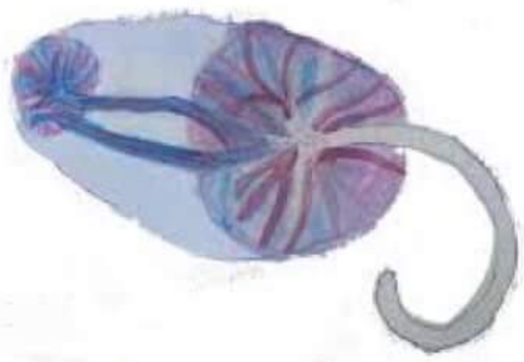
- Previous Cesarean sectⁿ
- Previous curettage
- Placenta Previa [Low Lying placenta] - mc
- chronic Infections


Battledore/Marginal Insertion

BATTLEDORE PLACENTA

→ Marginal Insertion

→ detached in delivery


Succenturiate Lobe

ACCESSORY / SUCCENTURIATE LOBE

→ form placental Retained Bit

CIRCUMVALLETE PLACENTA

→ central clearing

→ Doubled up membranes on the periphery

→ may be associated ε IUGR & APH


Circumvallate

VELLAMENTOUS CORD

→ Splitting of cord present

→ VASA PREVIA → vellamentous cord at OS
- can have fetal bleeding [50% fatal]
- Painless bleeding


Velamentous Insertion

- Diagnosis
  - Doppler [Best]
  - APT TEST [Alkaline denaturatⁿ test]
    - Additⁿ of NaOH to vaginal blood in a test tube
      colourless → Maternal blood [Alkaline denaturatⁿ]
      stays red → Febal RBC
    - Helps to distinguish between maternal & febal RBC's
    - Qualitative test
      [KLIEHAUER BETKE TEST – Quantitative test]
  - SINGER'S TEST
    - Qualitative test
    - Alkaline denaturatⁿ test

RH INCOMPATIBILITY

RH ISOIMMUNIZATION

→ ≅ Rh Allo immunization → Antibodies made in one human body acts against Red cells of another human body

RH FACTOR

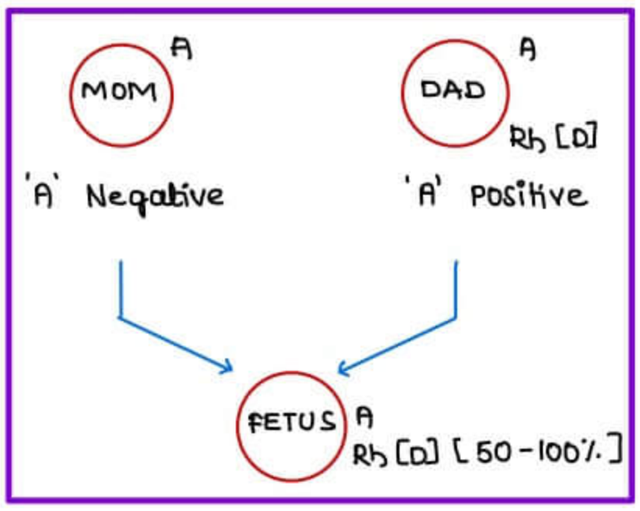
→ Present on Chromosome 1

→ Antigens in Rh factor
- RHD / RHCE
  ↓ ↓
  Ⓓ ⒸⓒⒺⓔ

- main antigen → D

→ DAD MOM
Ⓓ Ⓓ ⊖ ⊖

Ⓓ Ⓓ Ⓓ Ⓓ



→ DAD MOM
Ⓓ ⊖ ⊖ ⊖

Ⓓ Ⓓ

→ DAD MOM
Ⓓ ⊖ Ⓓ ⊖

⊖ 25%

→ DAD MOM
⊖ ⊖ ⊖ ⊖

⊖ ⊖ ⊖ ⊖

mother blood gets MIXED ī fetal blood at the time of →
- Delivery [5-30 ml] [mc]
- Abortion
- molar pregnancy
- Ectopic pregnancy
- Abruption
- Injury of abdomin
- Amniocentesis
- chorionic villi sampling

→ ① Rh Negative mother + Rh positive Baby
- Sensitization of mother
- 1st Baby will be safe

② Rh sensitized mother + Rh positive Baby
- Rh Incompatibility occurs
- Baby is not safe

Antigen / Antibody Reaction on fetal RBCs →

- Hemolysis
- Anemia
- ↑ Bilirubin → Jaundice, Kernicterus [> 20 mg/dl]
- ↑ 3rd Space collections → Ascites, Pleural effusion, Pericardial effusion, Edema } HYDROPS FETALIS
- ERYTHROBLASTOSIS FETALIS

PREVENTION

→ Mortality → 20 - 30%

→ ANTI - D, 300 µg within 72 hrs
- Will neutralize 30 ml blood [15 ml RBCs]
- can be given upto 4 wks

ANOTHER SITUATION

→ 1st PREGNANCY → Rh Negative Mother & Rh Positive Baby

↓

ANTI - D GIVEN in 72 Hrs

↓

→ 2nd PREGNANCY → Baby dies d/t Hydrops Fetalis

→ PROBABLE CAUSES

① NON IMMUNE HYDROPS FETALIS

→ mcc of Hydrops fetalis

CAUSES

→ cardiac [mc] → congenital Heart Block
→ Infectious → Parvo Virus B-19
→ GI causes
→ Haematological → α Thalassemia
→ Renal → Polycystic kidney disease
→ Genito urinary → Posterior urethral valve
→ cystic hygroma

② ABORTION

③ MIXED - MATCHED BLOOD TRANSFUSION

④ INADEQUATE ANTI - D

KLIEHAUER BETKE TEST [Acid Elution Technique]

→ measures feto maternal Haemorrhage

→ Quantitative test

→

$$FMH = \%\ \text{Contamination} \times \text{Maternal Blood Volume} \times \frac{\text{Maternal Haematocrit}}{\text{Fetal Haematocrit}}$$

CASE 1

→ Rh Negative & 1st visit

INDIRECT COOMB TEST

1st visit	→	Negative
20 weeks	→	Negative
24 weeks	→	Negative
28 weeks	→	Negative
32 weeks	→	Negative
36 weeks	→	Negative
40 weeks	→	Delivered

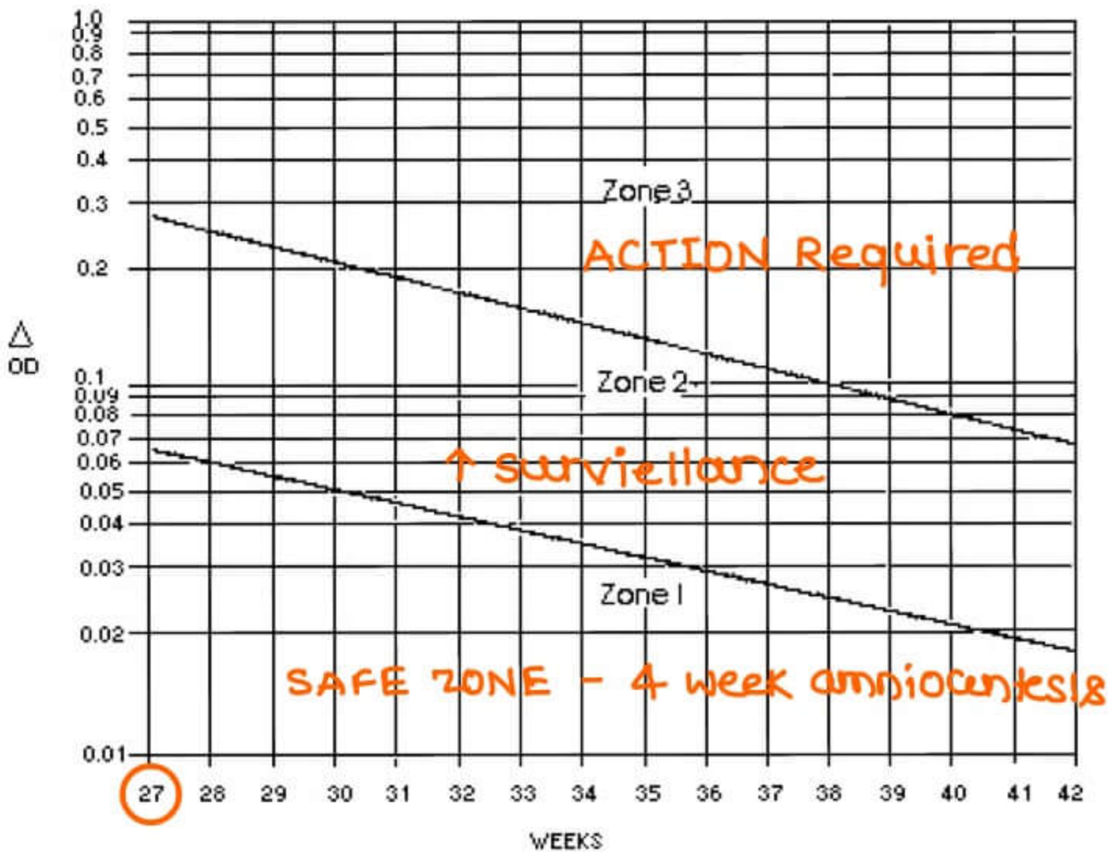
CASE 2

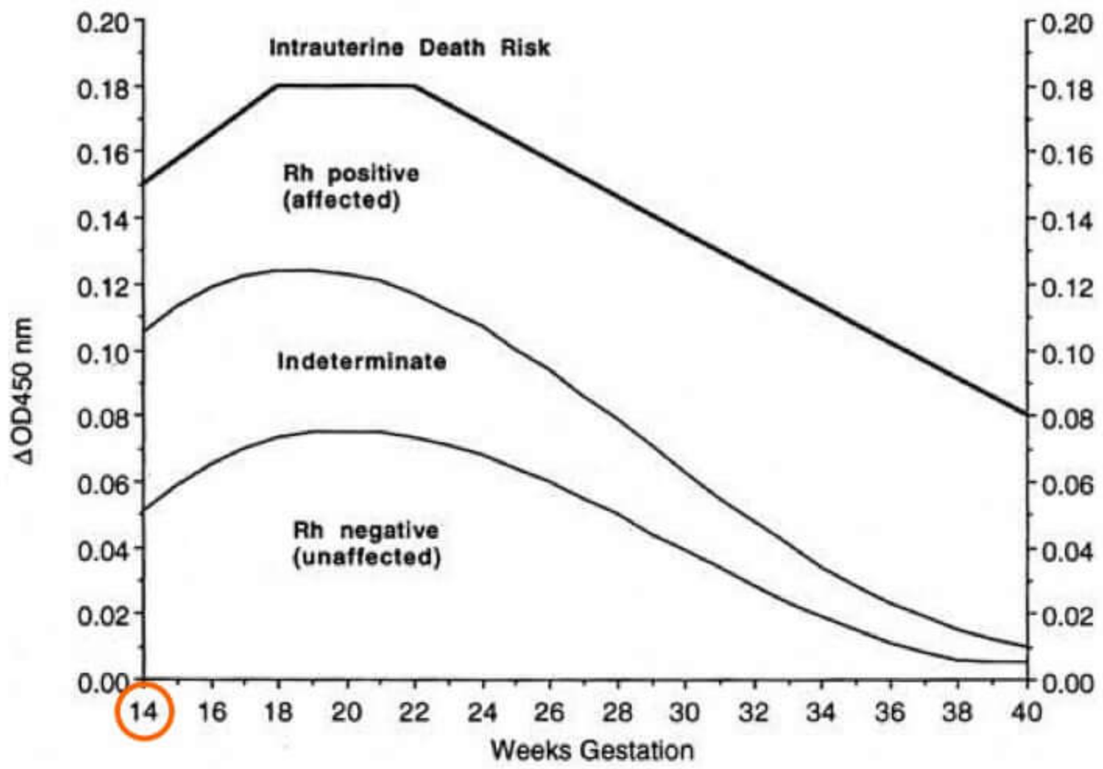
→ Rh Negative & 1st visit

INDIRECT COOMB TEST

1st visit	→	Negative
20 weeks	→	Negative [1:16 +ve is safe]
24 weeks	→	Positive [1:16 +ve is safe]
25 weeks	→	1:16 Positive
26 weeks	→	1:16 Positive
27 weeks	→	1:16 Positive
28 weeks	→	1:1024 Positive

- DO Amniocentesis & DO Spectometry i the Amniotic fluid [Bilirubin] & Plot LILLEY'S GRAPH
- Plot QUEENAN'S CHART [more sensitivity]





Q Optical Density at 28 weeks increased from 0.5 to 0.8 [upper 3rd zone]. MANAGEMENT Should be ?

A Intra Uterine Blood Transfusion into the cord or intra peritoneal transfusn

PREVENTIVE MEASURES

→ Rh Negative & 1st visit

INDIRECT COOMB TEST

1st visit	→	Negative		
20 weeks	→	Negative		
24 weeks	→	Negative		
28 weeks	→	Negative	→	Inj ANTI-D 300 µg [work for 6 wks]
34 weeks	→	Negative	→	Inj ANTI-D 300 µg
At Delivery	→	Positive	→	Inj ANTI-D 300 µg
	→	Negative	→	Nothing to be done

→ Prophylactic Anti-D now is given at 28 wks & then at delivery if Baby is Rh +VE

TWIN PRGNANCY, MOLAR PREGNANCY, GTD, CONTRACEPTION [SPL CASES]

TWIN PREGNANCY

HELLIN'S LAW

→ Incidence

Twins	→	1 in 80 Pregnancies
Triplets	→	1 in $(80)^2$ Pregnancies
Quadraples	→	1 in $(80)^3$ Pregnancies

↑ CHANCE

→ ↑ Age
→ ↑ Parity
→ ↑ Weight
→ Blacks > Caucasians
→ Infertility Rx → CLOMIPHENE CITRATE, IVF

MATERNAL COMPLICATIONS

→ ↑ Abortions
→ ↑ Hyperemesis
→ ↑ Preterm Labour
→ HTN / PET
→ DM
→ PPH

FETAL COMPLICATIONS

IUGR
Growth Discordancy
Single fetal Demise
congenital abnormalities
malpresentatn
Twin to twin transfusn Syndrome

PLACENTAL COMPLICATIONS

→ ↑ Placenta Previa
↑ Abruptions
cord entanglement
PROM

FORMATION OF TWINS

MONOZYGOTIC / IDENTICAL TWINS

→ Incidence → 1/250 pregnancies

DIZYGOTIC / NON IDENTICAL / FRATERNAL TWINS

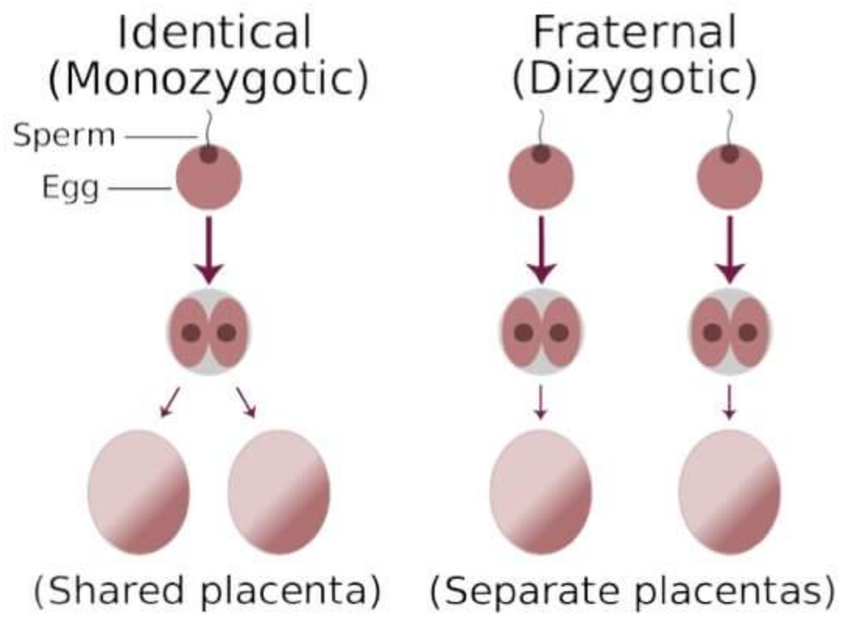
→ Incidence → 1/60 – 1/80 Pregnancies

SUPERFECUNDITY

- 2 oocytes in 1 cycle
- more common type of Dizygotic twins

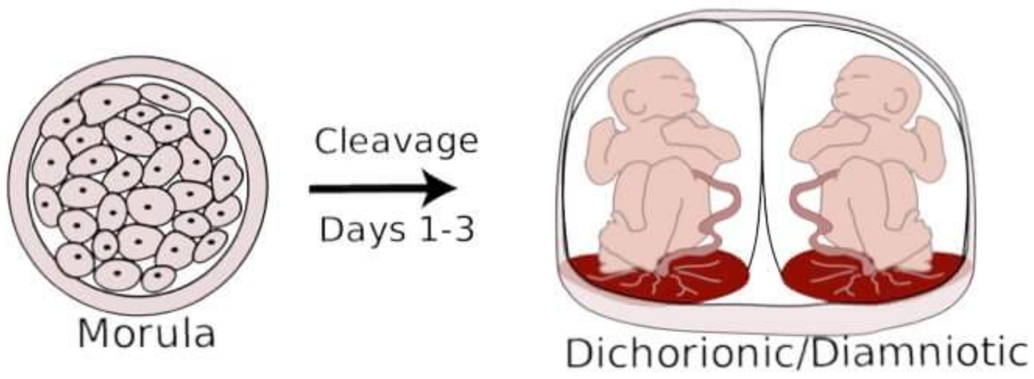
SUPER FETATION

- 2 oocytes in 2 cycles
- Rare in humans, common in cattle & horses

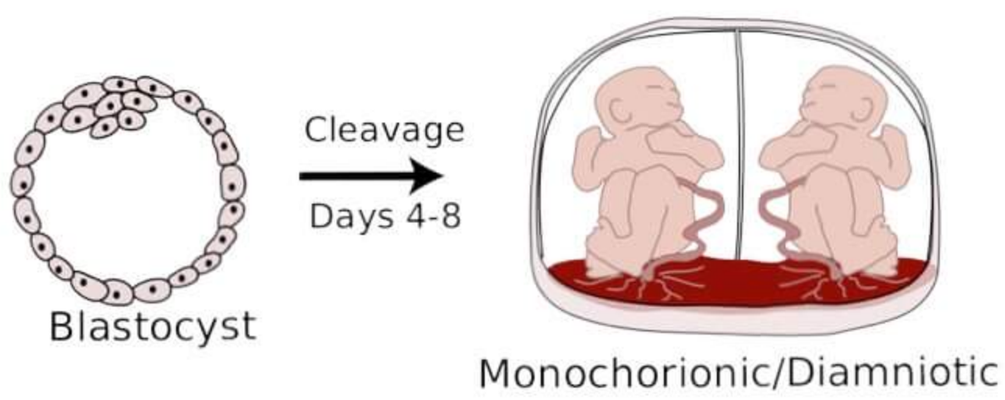


FATE OF MONOZYGOTIC TWINS

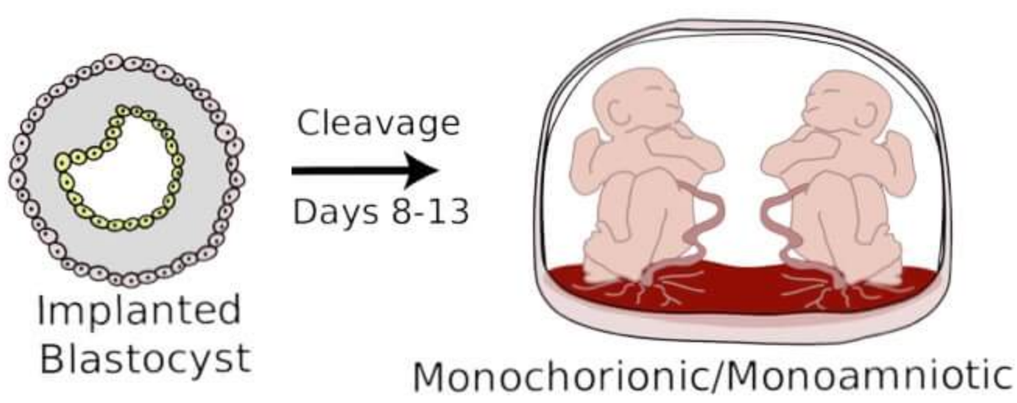
1 Dichorionic Diamniotic [35%]



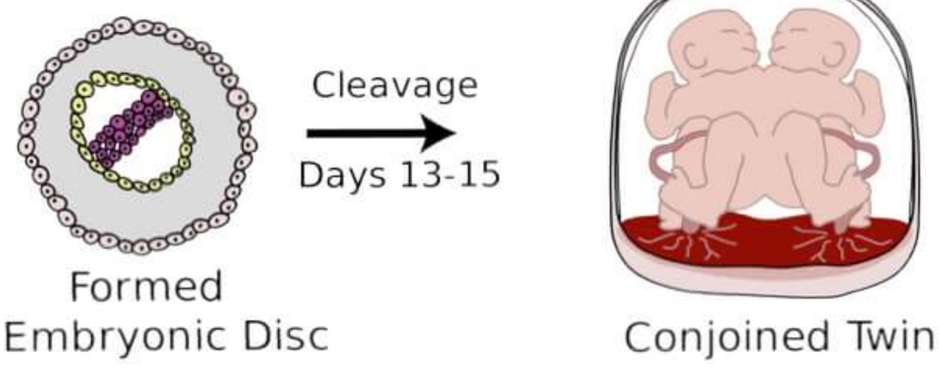
2 Monochorionic Diamniotic



3 Monochorionic Monoamniotic



4 conjoined / Siamese



FATE OF DIZYGOTIC TWINS → mcly Dichorionic Diamniotic

BEST / LEAST COMPLICATED → DICHORIONIC DIAMNIOTIC

MONOZYGOTIC TWINS COMPLICATIONS

1 TWIN TO TWIN TRANSFUSION SYNDROME

→ d/t deep AV anastamosis
→ Hb difference → ≥ 5gm/dL
→ wt difference → > 20%

2 DISCORDANT TWINS

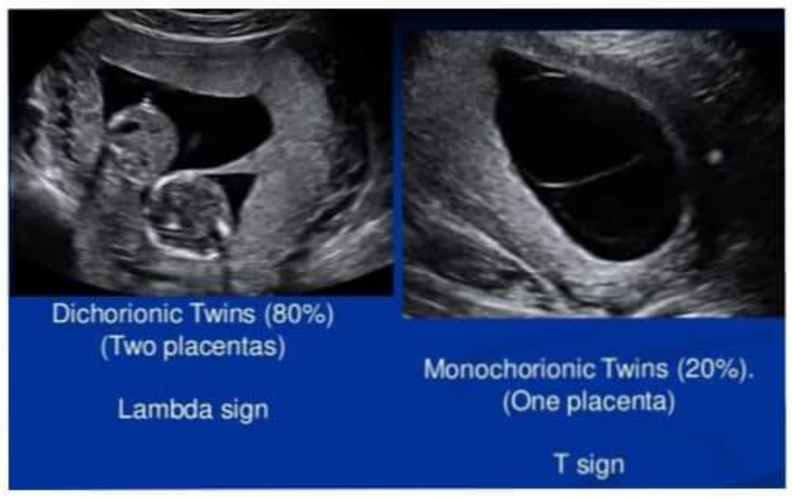
→ Abdominal circumference → > 15%.
→ wt difference → > 20%.

3 cord entanglement
4 Single fetal Demise
5 Abruptn
6 PROM
7 Sepsis
8. IUD of one or Both fetuses

Terminatn of Pregnancy at 34 wks or even 32 wks [c steroids] By CESAREAN SECTION is advisable

CHORIONICITY SCAN

① Dichorionic Diamniotic
- → 2 Placentas, 2 Sacs
- → 2 Different sexes
- → TWIN PEAK / LAMBDA SIGN
- → Inter twin membrane thickness → > 2mm



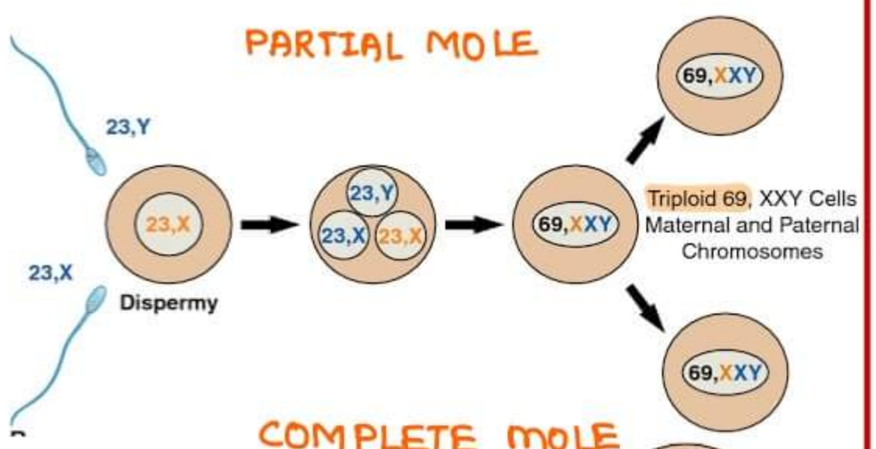
② Monochorionic Diamniotic
- → T SIGN

TWIN TO TWIN TRANSFUSN SYNDROME MANAGEMENT
- → Mortality dlt TTTS, if present at 26 wks or before → 100%.
- → Assess Deep AV Anastamosis by
  Fetoscopic / Doppler
  ↓
  Ablate the AV anastamosis ASAP

MODE OF PRESENTATION & DELIVERY
- → Both Cephalic [>60%] } Normal vaginal delivery can be done
- → First cephalic, and breech } Normal vaginal delivery can be done
- → First Breech, and breech → Elective cesarean sectn
  → interlocking of twins is rare

MOLAR PREGNANCY

PARTIAL MOLE
- → Non viable beyond 12-16 wks
- → Almost no chance of 2-4% of choriocarcinoma
- → can be 69xxx [mc], 69xyy, but never 69yyy

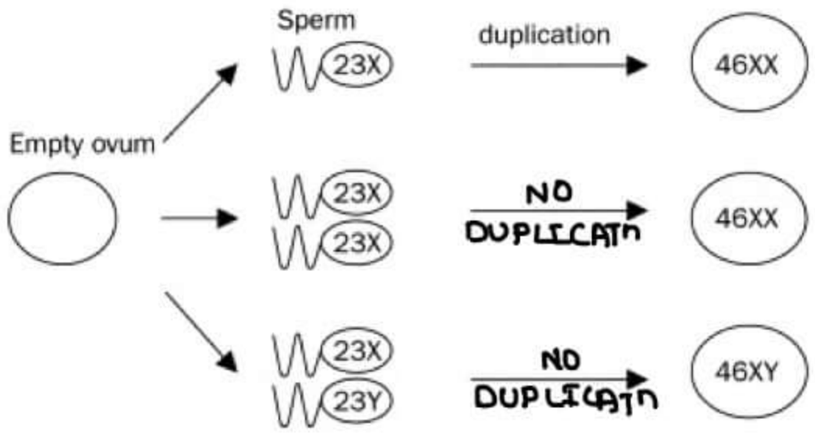


COMPLETE MOLE

Type 1
- → Always happens ī a sperm of 23x
- → Endoduplicatn occurs
- → Both chromosomes are of Paternal origin
- → AKa Vesicular mole → SNOW STROME APPEARANCE in USG

TYPE 2
- → Empty ovum fertilized by 2 Sperms of 23x each
- → No Duplicatn occurs

TYPE 3
- → Empty ovum fertilized by 2 Sperms of 23x & 23Y
- → NO Duplicatn occurs
- → Never be 23YY



COMPLETE MOLE - TYPES

PARTIAL MOLE	COMPLETE MOLE
→ Fetus present	→ No fetus
→ Focal Trophoblastic hyperplasia	→ Diffuse Trophoblastic hyperplasia
→ focal chorionic villi swelling	→ Diffuse chorionic villi swelling
→ Scalloping of villi +nt	→ Scalloping of villi absent
→ Trophoblastic stromal Indusⁿ +nt	→ Trophoblastic stromal Indusⁿ −nt
→ chance of ChorioCA is 2-4%.	→ Chance of Choriocarcinoma is 20%.

ASSOCIATED MORE WITH

- → Asian / South East Asians [Rice eaters]
- → Vit A deficiency
- → elderly Pregnancy

DIAGNOSIS

1. USG
2. Flow cytometry
3. Immuno Histochemistry

} more specific tests

- If P57 is −ve → complete mole

PRESENTATION

INCOMPLETE MOLE → Missed Abortⁿ

COMPLETE MOLE

- → ↑↑ HCG → Thyrotoxicosis [Thyroid strom [↑PR, ↑Temp]
  - Keep β blocker ready at evacuatⁿ
- → Hyperemesis
- → Passage of grape like vesicles [Rare]
- → Bleeding PV [mc Presentatⁿ]
- → Uterus Size → > POG
- → Empty Uterus [DOUGHY]
- → Trophoblastic Embolizatⁿ
- → Theca Lutein cysts
- → Early onset HTN

MANAGEMENT OF VESICULAR MOLE / COMPLETE MOLE

→ Suctⁿ Evacuatⁿ [also do a Gentle curretage ĩ a sharp currette]

↓

Do USG after a week to Rule out Retined Bits

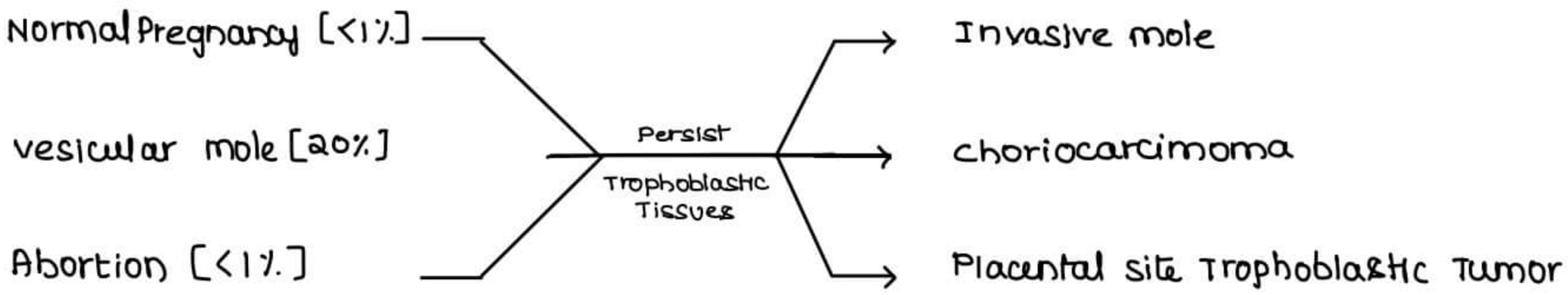
Do CXR to Rule out metastasis [mc site of metastasis → Lung]

HCG follow up

- Weekly HCG estimatⁿ till negative
  [vesicular mole takes 9 wks & partial mole takes 7 wks]
- Weekly HCG till 3 more wks
- Once in a month for 6 months [NO Pregnancy at this time]

BENIGN TROPHOBLASTIC CONDITIONS

GESTATIONAL TROPHOBLASTIC NEOPLASMS



EXCEPTION → Invasive mole does not follow a normal Pregnancy

INVASIVE MOLE / CHORIOADENOMA DESTRUENS → produces HCG
- → villi are preserved
- → Sx is preferred Rx

CHORIOCARCINOMA → produces HCG
- → NO villi
- → chemotherapy preferred
- → Sx Rx if age is > 40 yrs

Placental Site Trophoblastic Tumor
- → Made by intermediate trophoblasts [cytotrophoblast] → Produces HPL
- → Sx management should be done
- → Human Placental Lactogen follow up done

CHORIOCARCINOMA
- → ↑ HCG at Dx [$>10^5$]
- → Uterine size → Big
- → > 6cm Theca Lutein cyst

} ↑ chance of choriocarcinoma

20%	of	vesicular moles	will become	choriocarcinoma
<1%	of	Normal pregnancy	will become	choriocarcinoma
<1%	of	Abortions	will become	choriocarcinoma
50%	of	choriocarcinomas	follow	vesicular mole
25%	of	choriocarcinomas	follow	Normal Pregnancy [WORST PROGNOSIS]
25%	of	choriocarcinomas	follow	Abortion

→ WHO PROGNOSTIC SCORE — BAD PROGNOSIS
- Antecedent Pregnancy → Normal Pregnancy
- HCG → 10^5 or more
- Size of Tumor → >5cm
- Chemotherapy [No. of Drugs] → > 2
- Age → > 39 years
- Metastasis → at the time of Diagnosis
- Metastasis → in Liver & Brain
- Time Interval after Mx of vesicular mole → Longer
- Blood Group → B

→ Score ≥ 7 → Poor Prognosis

→ Management

- < 7 → Single Agent [Methotrexate / Actinomycin]
  → Combo [MTX + Actinomycin + cyclophosphomide]

- ≥ 7 → ETOPOSIDE
  MAC [MTX + Actinomycin + cyclophosphomide]
  ONCOVIN

STAGING of MOLAR DISORDERS

→ Stage I → within uterus

→ Stage II → In Pelvis, vagina [Donot take biopsy untill HCG done]

→ Stage III → Lung

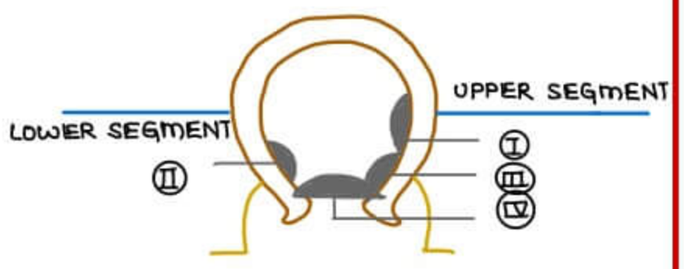
→ Stage IV → Distant Metastasis

ANTE PARTUM HAEMORRHAGE

→ Any bleeding in the genital tract after >28 weeks of gestation

PLACENTA PREVIA [PP]

CLASSIFICATION



I → Dips into the Lower segment } Minor degree
II → in the LS but donot cover OS } Minor degree
III → Partially Covering the OS } Major degree
IV → Fully Covering the Os } Major degree

MORE ACCEPTED CLASSIFICATION

PLACENTA PREVIA → Internal OS is partly or completely covered
LOW LYING PLACENTA → Placenta in the lower segment but within 2 cm of internal OS

PRIMARY MANAGEMENT IN ALL THESE CASES IS RESUSSCITATION

CASE 1 → PP → Painless bleeding at term [>37-40 wks], Management ?
M_X → Cesarean Section

MOST CASES OF PP DOES NOT BLEED AT THE TIME OF PRESENTATION

CASE 2 → PP at term [not bleeding], Management ?
M_X → ① TYPE IV [complete / Total] → Cesarean Section

② TYPE III [Incomplete]
- DOUBLE SET UP EXAMINATION / Examinat^n under anesthesia
  Under anesthesia,
  Drape the patient, keep another Surgeon ready
  DO per vaginal examinat^n
  ↓
  Placenta moved away → Normal vaginal delivery
  Placenta not moved away → Cesarean Section

③ TYPE II
a. Anterior low lying placenta → Normal Vaginal delivery
b. Posterior low lying placenta → cesarean Section
[Dangerous Placenta Previa]

④ TYPE I → Normal vaginal delivery

CASE 3 → PP Bleading, <34 wks [Lung not matured]. Management ?
M_X →
1. Resusscitat^n
2. Steroids to the baby
3. Sedate

} MCAFFEE JHONSON REGIME
BLEEDING STOPPED IN 90% OF Cases

→ Bleeding does not stop [10%.] → cesarean section

→ NO TOCOLYSIS

ABRUPTIO PLACENTA / ACCIDENTAL HAEMORRHAGE

ASSOCIATED WITH

→ Hypertension, Pre eclamptic Toxemia
→ smokers
→ Multiparous women
→ Twins
→ Pre Mature Rupture of membranes
→ Chorioamnionitis
→ Previous abruptn
→ Thrombophilias
→ Elderly women

SHER & PAGE CLASSIFICATION

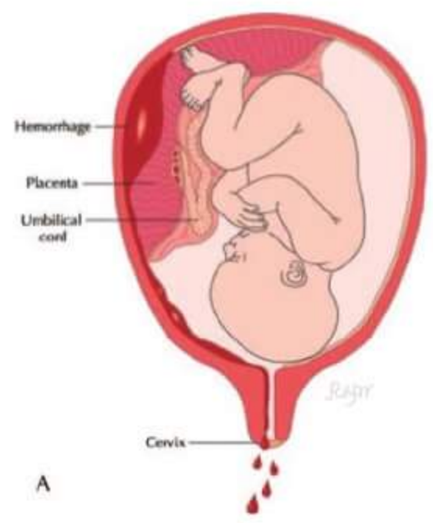
TYPE I
- Bleed seen only after delivery
- No uterine tenderness
- fetus is alive & FHR is (N)

TYPE II
- Bleed seen during labour
- anociatid ĩ uterine tetany
- Fetal Heart Rate — Normal

TYPE III
- most severe
- FHR Problem, distress
- A → Without DIC
  B → With DIC

PRESENTATION

→ Painful bleeding
→ Protractn of labour
→ PPH



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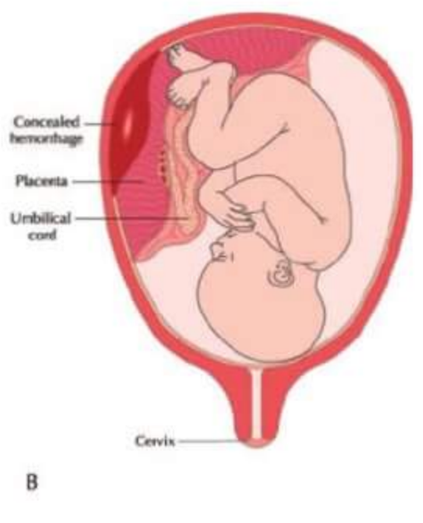

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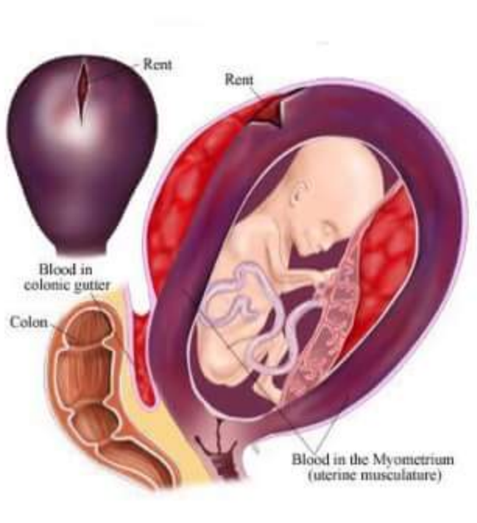


COVULAIRE / BRUISED UTERUS

MANAGEMENT

1. AT TERM
   - Resusscitatn
   - IF fetal distress tnt → cesarean sectn
     - FHR <110 on doppler
     - fetal scalp blood PH is < 7.2

- Abruptⁿ per se is not a indicatⁿ for cesarean section → NORMAL DELIVERY

- Loss of Fetal movements
  Inability to localize FH sounds
  } NOT FETAL DISTRESS

NORMAL DELIVERY IN ABRUPTION

→ By Artificial Rupture of membranes
- Local Prostaglandins are released → Induce labour
- The compression Stops the bleeding

→ can also add OXYTOCIN → Augments labour

2. AT 32 WEEKS
   1. Resuscitation
   2. Steroids to baby
   3. Sedation

→

BLOOD CLOT
↓
Tissue Thromboplastin
↓
Extrinsic Coagulatⁿ cascade
↓
Consumptive Coagulopathy
↓
DIC
↓
DEATH

4 DO ARM & Deliver the Baby

→ NO TOCOLYSIS

NO TOCOLYSIS IN APH

Placenta Previa
Abruptio Placenta
Vasa Previa

Only conditⁿ in APH Where conservative Mx is useful, <34WK → Placenta Previa

EXCEPTIONS/CONTRA INDICATIONS
- Intra Uterine Death
- Anomalous Baby
- Severe shock of mother

Q Placenta Previa, 32 weeks of Gestatⁿ ī Pre term labour.
- (A) Tocolysis can not given
- (B) Tocolysis can be given

A. If no bleeding in placenta previa, tocolysis can be given

HYPERTENSIVE IN PREGNANCY

- After 20 weeks of gestation,
  in a previously normotensive,
  BP > 140/90, in > 2 occasions
  > 6 hrs apart.

PRE ECLAMPTIC TOXEMIA [PIH - earlier name]

- HYpertension with
  Proteinuria > 300 mg/24 hr urine or 1+ in dipstick
  Protein : creatine Ratio ≥ 0.3

ECLAMPSIA

- Pre Eclamptic Toxemia with
  Generalized Tonic clonic convulsions

- PREDISPOSING FACTORS FOR SEVERE HTN or IMMINENT ECLAMPSIA
  - Headache
  - Nausea/vomiting
  - Blurring of vision
  - ↑ Knee jerks
  - Epigastric Pain
  - Proteinura → > 2gms/24 hrs urine [> 3.5g - nephrotic range]
  - BP → > 160/110 mm Hg

PRE EXISTING HTN

→ Essential HTN

→ Chronic HTN
- Renal Artery stenosis
- Pheochromocytoma

→ Acute on chronic HTN
- Platelets → < 100,000
- creatinine → > 1.1
- New onset Proteinuria
- Transaminases > 2 times

→ Delta HTN
- BP is normal through out the pregnancy and it reaches high normal values in the later stage of pregnancy
- Can be associated ī convulsions

ECLAMPSIA MANAGEMENT

→ DOC → $MgSO_4.7H_2O$ → IM + IV [PRITCHARD'S REGIME – MOC]
→ IV only [ZUSPAN REGIME]

→ PRITCHARD'S REGIME
- IV $MgSO_4$ 4 gms
  IM $MgSO_4$ 10 gms [5 gms in each buttock]
  IV $MgSO_4$ 2 gms added if no relief
- Follow up :
  - Im $MgSO_4$ for 24 hrs after the last convulsion or the delivery whichever is later
  - monitor Knee jerks → +
    Respiratory Rate → > 14/min
    Urine output → > 100 ml / 4 hrs

→ DELIVERY is the most important step in the Mx of Eclampsia
90% or more are normotensive in one week of delivery

→ Add IV LABETELOL → DOC of Hypertensive emergencies in pregnancy
- 20 mg iv over 10 min
  ↓
  another 20/40 mg
  ↓
  80 mg in 10 min
  ⇣
  upto 220 mg

- α + β Blocker [LABETALOL]

→ IV HYDRALAZINE
- 5 to 10 mg IV Bolus
- Alternative to Labetalol

→ GUDEL'S AIRWAY
- Prevents the tongue bite
- maintains the oxygenat^{n}
- Do not use mouth gags, etc

HYPERTENSION MANAGEMENT

→ Tab. LABETELOL
- 1st line drug
- 100 - 200 mg TID
- α + β blocker

→ Tab. METHYL DOPA
- Prodrug
- Active form → α Methyl Norepinephrine
- 250 - 500 mg QID.

→ Tab. HYDRALAZINE
- 25 - 50 mg BD or OD
- Arteriolar dilator

→ Tab. NIFEDEPINE
- S/L Nifedepine is C/I
- 10 mg TID [upto 80 mg/day can be given]

→ Tab PRAZOSIN
- α Blocker
- 2.5 - 5 mg/day

CONTRA INDICATED DRUGS

→ FRUSEMIDE, β Blockers, ACE INHIBITORS } cause Intra Uterine Growth Restrictⁿ

→ ACE Inhibitors can cause
- Hypocalvaria
- Renal Agenesis
- Oligoamnios

→ ETIOLOGY OF HTN
- > 20 wks, Trophoblastic invasion & Replacement of smooth muscle layer } (N)
- Persistence of smooth muscle layer or inadequate trophoblastic invasion } vaso-spasm
- VASOSPASM [Pathology] ⟶ HTN [PIH]
- As Furosemide ⟶ ↑ VASOSPASM ⟶ contraindicated
- Normal SALT DIET

→ Anti hypertensive drugs have to be started → ⩾ 150/100

OTHER ASSOCIATIONS OF PIH

→ 1st exposure to villi [Primi]

→ more exposure to villi [Twins, molar Pregnancy]

→ Pre existing endothelial damage

- Renal Disease

  DM

→ Genetic Predisposition

- Altered Methyl Tetra Hydrofolate gene
- Factor V leiden abnormality

→ ↓ Nitric Oxide Production from L. Asperginase by endothelium

PREDICTION OF HTN

ROLL OVER TEST – >10mm Hg increase

ISometric Exercises

↑ Uric Acid

↓ Calcium

↑ Homocysteine

Micro albuminuria

PREVENTION

calcium supplimentat^{n}

Fish oil capsules

Low dose Aspirin [75-150 mg]

Antioxidants [vit C/D/E]

GESTATIONAL DIABETES MELLITUS

WHITES CLASSIFICATION

GESTATIONAL DM [A]

- A_1 → Sugar controlled ī diet
- A_2 → Sugar controlled ī insulin

PRE GESTATIONAL DM

- B → <10yrs of duration
- C → 10-19 yrs of duration
- D → > 20 yrs of duration
- F → associated ī Nephropathy
- R → associated ī Retinopathy
- H → associated ī Heart disease

GESTATIONAL DM

→ At 24 WKS, Human Placental lactogen made from Placenta

HPL
↓
Insulinase action ← ↑ Estrogen
↓
↓↓ Insulin
↓
↑↑ Sugars ← ↑ GH, ↑ Cortisol

→ No Anomalies [Organogenesis over]

→ Screening of GDM
- After 24 weeks
- Glucose challenge Test ī 50 gms of Sugar in a non fasting women
  Screening Test [obsolete now]
- Glucose Tolerance Test ī 100 gms of Sugar in a fasting women
  Diagnostic test [obsolete now]
- 1 STEP TEST [Screening & Diagnostic test Now]
  Glucose Tolerance Test ī 75 gms of Sugar in a fasting women
  - Fasting → < 92
  - At 1 hr → < 180
  - At 2 hrs → < 153

  } Any one abnormal value is Dx of GDM

PRE GESTATIONAL DM / OVERT DM

→ 1st Trimester Sugars ∝ Anomalies
- Screening for DM should be done in 1st trimester itself
  Screening done by
  - Glycosylated Hb → < 6.5
  - Serum fructosamine → 258 - 288 µmol

MATERNAL COMPLICATIONS

- → Large Baby → ↑ cesarean sectⁿ
  ↑ Instrumentatⁿ
  ↑ Birthcanal Injuries
  Shoulder dystocia

- → Polyhydramnios → PROM → Chorioamnionitis
- → Puerperal Sepsis
- → Preterm Labour
- → Association ī
  PIH [25%]
  Abruption
  Sudden intra uterine Death at term

NEWBORN COMPLICATIONS

- → Hypoglycemia
- → Hypomagnesemia
- → Hypocalcemia
- → Polycythemia
- → Hyperbilirubinemia
- → Anomalies
  - cardiac [mc]
    - Transpositⁿ of Great vessels [mc & most specific]
    - VSD
    - PDA
  - Neural tube defects
    - Anencephaly
    - Spinal Bifida
    - Facial defects - cleft palate, Cleft lip
  - Sacral Agenesis / Caudal Regression syndrome [most specific]

FETAL COMPLICATIONS

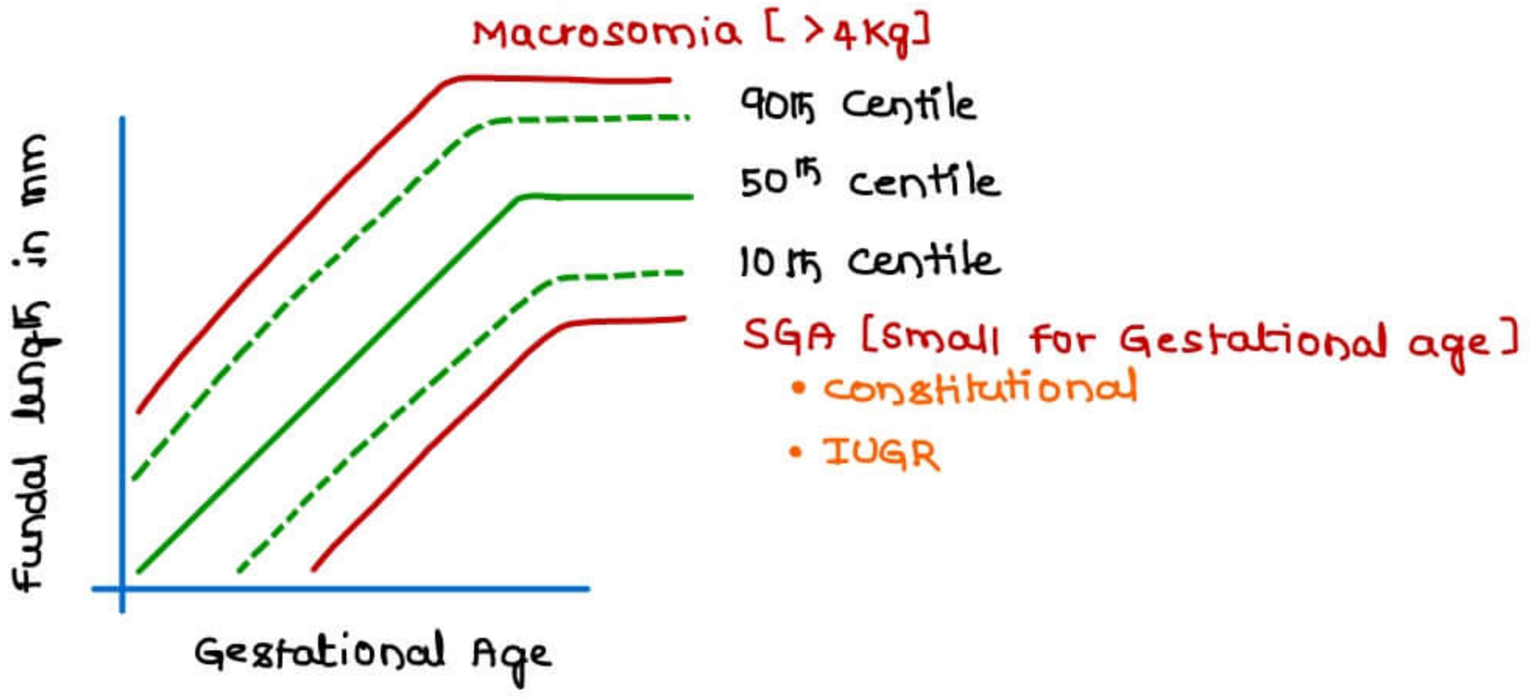
→ ↑↑ SUGARS → ↑↑ Insulin from Pancreas → hypoglycemia
[β cell Pancreatic Hyperplasia]

MANAGEMENT

- → Diet → 25 - 30 K.cal / Kg/D [Ⓝ requirement → 35 - 40 K.cal / Kg/D]
- → Monitor Sugars → fasting / Post breakfast / Post Lunch / Post Dinner
  Monitor Fetus → Antepartum Surviellance
- → Plan Delivery → by 38WKS & Give Steroids
- → DOC → Insulin
  OHA → GLYBURIDE [Glibenclamide]
  [oral Hypoglycamics] METFORMIN
- → Fundus EXAM → Look for Retinopathies → Background [80%.]
  Proliferative [20%.] [Neovascularizatⁿ] → C. Section

→ clinical Lag of 2-3 weeks fundal height corresponding to Gestational age

→



→ Weight < 2.25 Kgs [2.3 Kgs] &
Femoral length [FL] ÷ Abdomenal circumference Ratio ≅ 22 after 21 weeks (N)
→ > 23.5 → S/O IUGR

→ 1st Parameter affected during Growth restrict^{n} → Abdomenal circumference
2nd Parameter affected during Growth restrict^{n} → Upper & Lower limbs
last Parameter affected during Growth restrict^{n} → Brain [d/t preferential circulation]

SYMMETRICAL IUGR / TYPE 1	ASYMMETRICAL IUGR / TYPE 2
→ Early onset	→ Late Onset
→ d/t Infections chromosomal disorders congenital anomalies	→ d/t HTN Renal Disease
→ PONDEREL INDEX → 8.3 (N) Estimated fetal weight / FL^3	→ PONDEREL INDEX → <7
→ HC/AC → 1 (N)	→ HC/AC → >1
→ Poor Prognosis	→ Better Prognosis

ETIOLOGY

→ IDIOPATHIC [65%]

Maternal causes

→ chronic Kidney Disease, HTN, Infections, connective tissue disorders, Heart Disease [III, IV], Smoking, Drugs, Alcohol, BURNT OUT DM [↓ micro angiopathy]

Placental causes

→ Placental Infarcts, Abnormal Placentas, Abnormal Placentation

fetal causes

→ Inborn Errors of metabolism, chromosomal anomalies, infections

FETAL COMPLICATIONS

Antepartum

- → Oligoamnios
- → Hypoxia
- → still Birth

Intrapartum

- → Hypoxia
- → Acidosis

NEONATAL COMPLICATIONS

- → Limp, Loose skinned, Thin, Poor tone
- → Respiratory Distress Syndrome
- → Intra ventricular Haemorrhage
- → Neonatal Death
- → Persistence of Primitive circulatⁿ

MANAGEMENT

- → **NOT THE TREATMENT**
  - – ↑ Diet
  - – Protein Powders
  - – Stopping to smoke
  - – Stopping to Drink
  - – Stop using Drugs

TREATMENT

- → RESTING IN A LATERAL POSITION [only Proven method, which ↑ the weight]
- → ↑ SURVIELLANCE
- → ADEQUATE DIET for required womin
  - – calories → 35 - 40 Kcal / Day
  - – carbohydrates → 50%
  - – Proteins → 30%.
  - – Fats → 20%.

ANTEPARTUM FETAL SURVIELLANCE IN HIGH RISK PREGNANCY

TOOLS

Daily Fetal Movement count [DFMC] → > 10 | 12 waking hours

Non Stress Test

- → Sympathetic VS Parasympathetic system well being
  - established at 28 WKS
  - Test will be done 32 WKS onwards

- → REACTIVE NON STRESS TEST
  - ≥2 accelerations, > 15 Beats from base line, > 15 seconds in 20 minutes
  - Chance of IUD → < 1% / next 1 week

→ FREQUENCY OF NST

- Weekly after 32 wks, for all pregnant ♀
- Biweekly for high risk pregnancies
- 1/48 hrs for controlled DM & Severe HTN
- Daily for uncontrolled DM

BIO PHYSICAL PROFILE / MANNING SCORE

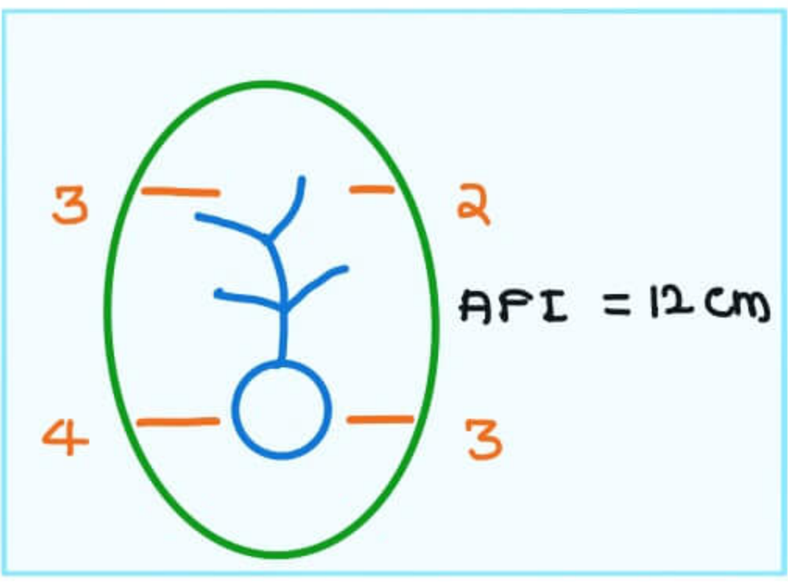
→ Done by USG

→ Fetal movements	→	2
Fetal tone	→	2
Fetal breathing movements	→	2
Adequate NST	→	2
Amniotic Fluid Index	→	2
GOOD BIOPHYSICAL PROFILE	→	10

AMNIOTIC FLUID INDEX

→ Arythematic sum of 4 cord free pockets

→ Normal	→	10 - 15 cm
Oligoamnios	→	< 5cm
Polyhydraminos	→	> 24 cm



ABSOLUTE AMOUNT OF LIQOR

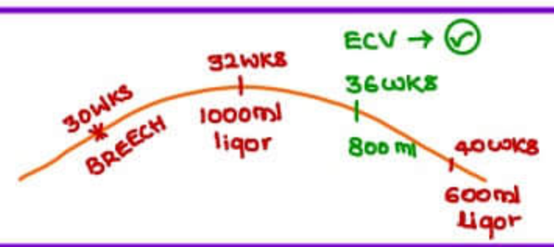
→ Normal	→	1000 ml
oligoamnios	→	500ml
Polyhydraminos	→	2500 ml

SINGLE POCKET

→ Oligoamnios	→	⩽ 2cm
Polyhydramnios	→	> 8cm

EXTERNAL CEPHALIC VERSION DONE AT

for Primigravida at	→	36 wks
for Multigravida at	→	37 wks



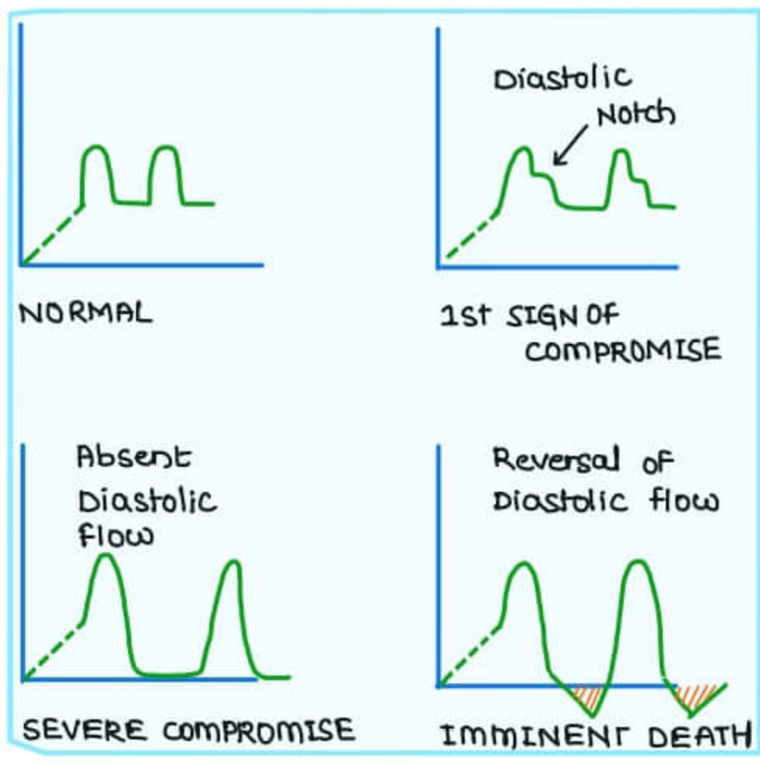
MODIFIED BIO PHYSICAL PROFILE → Includes AFI & NST

VIBRO ACOUSTIC STIMULATION TEST

DOPPLER of

→ umbilical arteries
Uterine arteries
Ductus Venosus

→ Most important Doppler for assessment of uteroplacental flow } UMBILICAL ARTERY DOPPLER



→ Which of the following flow patterns done by Doppler assessment will best signify Perfusion to the baby → DUCTUS VENOSUS FLOW PATTERNS > UMBILICAL ARTERY DOPPLER

CONTRACTION STRESS TEST / OXYTOCIN STIMULATION TEST

→ Tells us the plausibility of doing a normal vaginal delivery

INTRAPARTUM SURVIELLANCE

Fetal HR → by Stethoscope
→ by Doppler

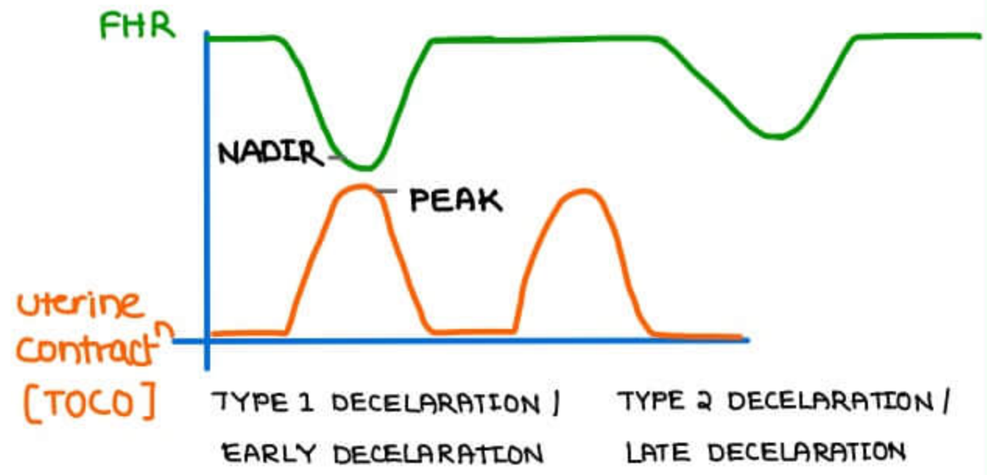
Fetal Scalp Blood PH → > 7.2

Fetal ECG
- 1 Probe ECG → ST Wave Analysis [STAN]
- 2 Probe ECG

CARDIOTOCOGRAPHY

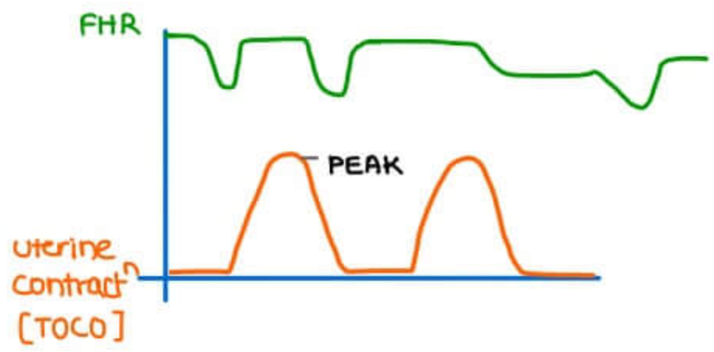
→ Single best test for monitoring Labor

→ TYPE 1 / EARLY DECELERATION
- The Nadir of FHR & Peak of Uterine contractn close to each other
- Seen in Normal Pregnancies
- onset of decelaratn & coming back to normal → > 30sec



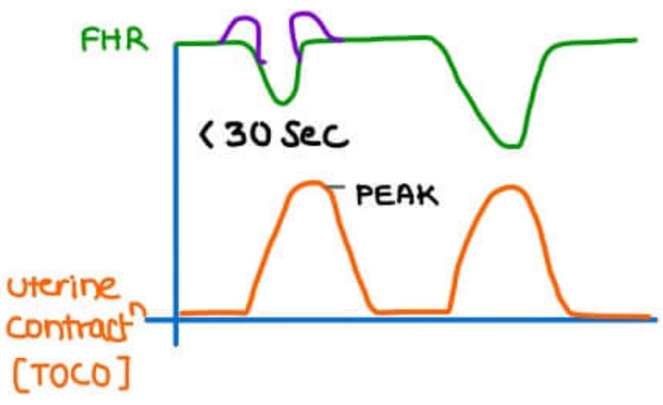
→ TYPE 2 / LATE DECELERATION
- The Nadir & Peak are away from each other
- Seen in Placental insufficiency
- onset of decelaratn & coming back to normal → > 30sec

→ VARIABLE DECELERATION
- Most common deceleration
- dlt umbilical cord compression
- More Patterns

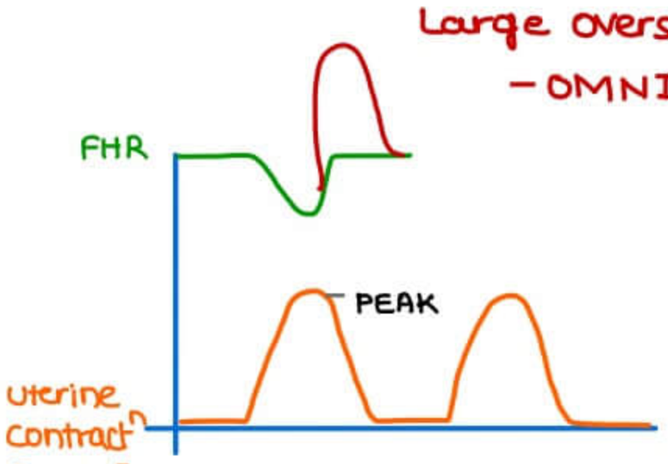


SHOULDERS - compromise

NO shoulder - OMNIOUS



Large overshoot - OMNIOUS



3-5 cycles / min - omnious

SINE WAVE [SINUSOIDAL]

dlt Fetal anemia

Mx → C. sectn

HEART DISEASES

RHEUMATIC HEART DISEASE [RHD]

→ MC heart disease in INDIA

→ Mitral stenosis [MC Presentatⁿ]

- Failure → Antenatal [around 30-32 wks] [MJC] → CO ↑ by 50%
  → Postnatal → 1st 24 Hrs → CO ↑ by 70-75%.
- Balloon Mitral valvotomy in 2nd trimester can be done antenatally
- Post natally → Keep in High risk ward [for 1st 24 hrs]
  → Inj. Lasix → ↓ Preload

OBSERVATION PERIOD REQUIRED POST NATALLY FOR HEART DISEASE → 1st 24 hrs
OBSERVATION PERIOD REQUIRED POST NATALLY FOR PPH → 1st Hour

→ Labour Inductⁿ is safe in most of the Heart Diseases
Normal Delivery can be done.

Cesarean Sectⁿ Indications

→ Obstetric Indications
→ Aortic root dilatations → > 4cm
→ Aortic Aneurysms
→ Severe Aortic stenosis
→ Recent MI
→ congestive Heart failure
→ Warfarin Rx in previous 2 wks

LABOUR MANAGEMENT

→ ↓ IV Fluids
→ Position → SEMI RECUMBENT
→ PAIN RELIEF
  - Opioids
  - Epidural Analgesia
→ Avoid straining in 2nd Stage
  - cut short it by forceps/vaccum
→ Inj frusemide → ↓ Preload } Given
Iv/Im Oxytocin
Methy Ergometrine → contraindicated
→ Observatⁿ in High Risk ward for 24 hrs
Do not discharge for 5 days

DELAYED COMPLICATIONS

- Arrythmias
- cardiac rupture
- Infective Endocarditis
- Thrombo Embolic Phenomenon
- Mitral valve Prolapse

CONTRA INDICATIONS TO PREGNANCY

- → Eisenmengher Syndrome
- → Severe Aortic Stenosis
- → Primary Pulmonary HTN
- → Marfan involving Aortic Root

COARCTATⁿ OF AORTA IS NOT A CONTRA INDICATION → C. Sectⁿ indicated

HYPOTHYROIDISM

VALUES

- → TSH → < 2.5
  [2.5 – 4.0] → Check Anti Thyroid Peroxidase
  If +ive → Start ELTROXIN

MATERNAL COMPLICATIONS

- → Abortion
- → Preterm labour
- → Preeclamptic toxemia
- → Abruption
- → PPH

NEONATAL COMPLICATIONS

- → Morbidity & mortality ↑
- → Cretinism
- → ↓ IQ
- → Neuro Psychiatric illness
- → Poor cognitive development
- → Deafness & Growth Restriction

HYPERTHYROIDISM

MATERNAL COMPLICATIONS

- → Pre Eclamptic Toxemia
- → Thyroid strom
- → Preterm labour
- → High output cardiac failure
- → Intra Uterine Growth Restrictⁿ
- → Intra Uterine Death

MANAGEMENT

- → DOC → PROPYLTHIOURACIL 100 – 150 mg TID
- → METHIMAZOLE [from 2nd Trimester]

EPILEPSY

- → 30% have ↑ convulsions
  20% have ↓ convulsions
  50% have unchanged convulsions

MANAGEMENT

- → PHENOBARBITONE → not Given
  PHENYTOIN } Given, but CATEGORY D Drugs → FETAL HYDANTOIN SYND.
  CARBAMAZEPINE }
  LAMOTRIGINE [DOC] } CATEGORY C Drugs
  LEVITIRACETAM }

→ Poor Prognosis

→ ↑ Risk for fulminant hepatic failure

Intra Uterine Death

MANAGEMENT

→ DOC → CHLOROQUINE

→ complicated Malaria

- ARTESUNATE
- QUININE
- MEFLOQUINE [> 12 wks]

RHEUMATOID ARTHRITIS → Better Prognosis

SARCOID → Better Prognosis

ULCERATIVE COLITIS → UNCHANGED

→ WORSE PROGNOSIS → IF 1st time Presentat^{n} in Pregnancy

APPENDICITIS → Poor Prognosis

→ ↑ed abort^{n}, Sepsis, Preterm labour & IUD

→ Early Surgery advised

TUBERCULOSIS → Worse Prognosis

→ WORST IN PUERPERIUM

- ↑ed demand
- ↓ed supply
- Ongoing Immuno Suppression
- Low Socio Economic Status
- Over Crowding, Poor ventilat^{n}
- Heat, Humidity

INFECTIONS IN PREGNANCY

VERTICAL TRANSMISSION

→ refers to passage from mother to fetus of an infectious agent through

↳ the placenta

↳ during labour or delivery or

↳ breast feeding

→ RISK FACTORS

↳ Preterm rupture of membranes

↳ Prolonged labour

↳ Obstetrical manipulations

HORIZONTAL TRANSMISSION

→ Spread of an infectious agent from one individual to other

SECONDARY ATTACK RATE

→ Probability that infection develops in a susceptible individual following contact ī an infectious person

VIRAL INFECTIONS

CYTOMEGALO VIRUS

→ DNA Herpes virus
→ MC perinatal infection in the developed world
→ upto 85% of poor & 50% of higher classes are seropositive by the time of pregnancy
→ women who develop primary CMV infection during pregnancy [were seronegative before pregnancy], are at greatest risk to have an infected fetus

MATERNAL INFECTION FEATURES

10-15% of infected adults have

→ Mononucleosis-like syndrome
→ Fever, pharyngitis
→ lymphadenopathy
→ polyarthritis

Features of Immuno compromised

→ myocarditis, pneumonitis
→ hepatitis, retinitis,
→ gastroenteritis or
→ meningoencephalitis

TRANSMISSION RATES

→ 30-36% in 1st Trimester
30-40% in 2nd Trimester
40-72% in 3rd Trimester

FETAL INFECTION [only 5-10% neonates demonstrate this syndrome]

FEATURES

→ Growth restriction, microcephaly
→ Intracranial calcifications
→ chorioretinitis
→ mental retardation, sensorineural deficits
→ Hepatosplenomegaly
→ Jaundice, hemolytic anemia
→ Thrombocytopenic purpura

COMPLICATIONS

→ hearing loss
→ Neurological deficits
→ chorioretinitis
→ psychomotor retardation
→ Learning disabilities

DIAGNOSIS

Nucleic Acid Amplification Testing [NAAT] of Amniotic fluid
→ Gold standard for Dx of fetal infection

MANAGEMENT

→ Despite the high infection rate ī primary infection in the 1st half of pregnancy, most fetuses develop normally

→ if recent infection is confirmed → Offer Am. Fluid CMV
Pregnancy termination may be an option for some

→ Oral valacyclovir 8G daily tried
→ NO vaccine

VARICELLA ZOSTER INFECTIONS

→ 90% of adults have serological evidence of immunity
→ Primary infection → varicella or chickenpox
→ transmitted by direct contact ī an infected individual
→ Incubation period → 10 to 21 days
→ 1 to 2 day flu like prodome followed by Pruritic vesicular lesion that crust after 3 to 7 days

→ Period of communicability → 1 day before rash, untill lesions crusted

MATERNAL MORTALITY

→ predominantly d/t VZV [pneumonia] in pregnancy
↳ Risk factors → smoking, > 100 cutaneous lesions

→ Reactivation of 1° varicella years later causes →
HERPES ZOSTER or SHINGLES
↳ U/L dermatomal vesicular eruption
↳ a/w Severe pain
↳ not more frequent or severe in pregnant women
↳ congenital varicella syndrome rarely develops in maternal Herpes zoster

FETAL & NEONATAL INFECTION

CONGENITAL VARICELLA SYNDROME

→ The highest risk is b/w 13 - 20 weeks
→ Chorioretinitis
Microphthalmia
cerebral cortical atrophy
Growth restriction

→ After 20 weeks of gestation, no evidence of congenital infection
Hydronephrosis
Limb hypoplasia
Cicatrial skin lesions

AROUND DELIVERY

→ active infection just before or during delivery [before maternal antibody formed] is a serious threat

Neonatal mortality rate is 30%.
Disseminated visceral & CNS disease is commonly fatal

Varicella zoster Immunoglobulin [VZIG] should be administered to neonates born to mothers who have clinical evidence of varicella — 5 days before & upto 2 days after delivery

DIAGNOSIS OF VARICELLA

MATERNAL

→ clinical diagnosis

→ confirmed by NAAT of vesicular fluid

→ Scraping the vesicle base

a Tzanck smear, tissue culture, or direct fluorescent antibody testing

FETAL → congenital varicella Dx ī NAAT OF amniotic fluid

MANAGEMENT

MATERNAL EXPOSURE

→ Exposed pregnant women & seronegative → VZIG given

Best given īin 96 hrs of exposure

can given upto 10 days

ESTABLISHED MATERNAL INFECTION

→ IV ACYCLOVIR therapy ī hospitalizatⁿ at 10-15 mg/kg every 8 hrs

INFLUENZA

→ Pregnant women more susceptible to serious complications espicially dlt pulmonary involvement

→ Orthomyxoviridae → RNA virus → both causes epidemics

→ Influenza A not related ī congenital malformations

→ viremia is infrequent

→ Transplacental passage is rare

→ Abortion, pre term labour, Still birth all reported, but more dlt severity of maternal infection

→ NASO PHARYNGEAL SWABS

→ Reverse transcriptase PCR → most sensitive & specific test

→ Rapid Influenza Diagnostic test [RIDT] → Least sensitive & least indicative

→ TREATMENT

NEURAMINIDASE INHIBITORS

→ Oral OSELTAMIVIR for prophylaxis

→ ZANAMIVIR Inhalation for treatment

MEASLES & MUMPS → Not teratogenic

RUBELLA / GERMAN MEASLES

→ RNA Togavirus

MATERNAL INFECTION

→ mild Febrile illness

→ Generalized maculo-papular rash on face & trunk

→ 25-50% are asymptomatic

DIAGNOSIS

ELISA → Ig M Antibody detected after 4-5 days onset

→ Ig G peaks 1-2 weeks after rash

→ High avidity Ig G antibodies indicates infection was atleast 2 months prior

- → Most complete teratogen
- → Worse during organogenesis
- → Rash in

1st trimester	MTCT	→ 90%.
2nd trimester	MTCT	→ 50%.
End of 2nd trimester	MTCT	→ 25%.

CONGENITAL RUBELLA SYNDROME

- → cardiac septal defects
- → Pulmonary stenosis
- → microcephaly
- → cataracts
- → microphthalmia
- → Hepatosplenomegaly
- → sensorineural deafness
- → Intellectual disability
- → Neonatal purpura
- → Radiolucent bone disease

- → Neonates ⊂ congenital rubella may shed the virus for many months [threat to others]
- → DELAYED MORBIDITIES A/W CRS
  - → Progressive Pan Encephalitis
  - → IDDM
  - → Thyroid disorders

- → PREVENTION
  - → Droplet precaution for 7 days after rash
  - → can try passive immunization within 5 days of exposure
  - → MMR to all non pregnant women
    avoid 1 month before or during pregnancy [Live attenuated virus]

VACCINES IN PREGNANCY

CONTRAINDICATED	SAFE
Measles	Tetanus & Diphtheria toxoids [Tds]
Mumps	Hepatitis B
Rubella	Influenza
varicella	Meningococcal
BCG	Rabies

Anthrax, Hepatitis A, JE, Polio IPV, Yellow fever → given on Special recommendat^n

ZIKA VIRUS

- → 1st Mosquito borne teratogen
- → day time Aedes mosquito bites
- → Flaviviridae
- → may have sexual transmission

MATERNAL INFECTION

→ Rash, fever, Headache, Arthralgia, conjunctivitis
→ neurological complications
  ↳ Guillian - Barre Syndrome, neuropathy & myelitis

FETAL INFECTION [can be severely infected]

→ Birth defects [5-15 %]
→ Neonatal Deaths [5-7%]

CONGENITAL ZIKA SYNDROME

→ microcephaly
→ Lissencephaly
→ ventriculomegaly
→ intra cranial calcifications
→ Ocular abnormalities
→ congenital contractures

DIAGNOSIS IN PREGNANT WOMEN

ZIKA virus in blood & urine
→ Serological testing & confirm by PCR

no specific treatment or vaccine so far

PROTOZOAL

TOXOPLASMOSIS

→ Feline stage in cats
→ Non feline stage in Humans
→ infection is ī cat feces or infected meat ingestion

MTCT OF TOXOPLASMOSIS

→ rises ī increasing gestational age
  1st trimester → 15 %.
  2nd trimester → 44 %.
  3rd trimester → 70 %.

CLINICALLY AFFECTED FETUSES HAVE

→ Low birth weight
→ Hepatosplenomegaly, Jaundice, anemia
→ Neurological diseases ī intracranial calcification, hydrocephalus, microcephaly
→ CLASSIC TRIAD
  Chorioretinitis
  Intracranial calcifications
  hydrocephalus

Often accompanied by convulsions

DIAGNOSIS

→ Ig G before pregnancy → NO risk
→ Ig M → appear by 10 days of infection
→ Best results are obtained ī the Toxoplasma Serologic Profile
→ Toxoplasma Ig G avidity increases ī time
→ if high-avidity Ig G result is found, infection in the preceding 3-5 months is excluded

TREATMENT

Reduction in rates of serious neurological Sequelae & neonatal demise

SPIRAMYCIN alone [Does not cross placenta]

PYRIMETHAMINE - SULFONAMIDE ī FOLINIC ACID [if fetal infection suspected]

PREVENTION

1. Cooking meat to safe temperatures
2. Peeling or thoroughly washing Fruits & Vegetables
3. cleaning all food preparation Surfaces
4. Wearing gloves When changing cat litter
5. Avoiding feeding cats raw or undercooked meat & Keeping cats indoors.

MALARIA IN PREGNANCY

→ Pregnant women have increased susceptibility
→ 'VAR2CSA antigen' leads to Ab formation, which causes accumulatⁿ of infected erythrocytes in the placenta, Leads to Pregnancy Specific antimalarial Immunity

→ Higher rates of maternal morbidity & mortality

FETAL INFECTION

→ Abortions
→ Still birth
→ Preterm birth
→ Low birth weight
→ congenital malaria [< 5% incidence]

DIAGNOSIS

→ Thin & Thick films [Best method]
→ Malaria - Specific antigens for rapid diagnostic testing
  → sensitivity in pregnancy is still an issue

TREATMENT

1. uncomplicated malaria by P vivax, malariae, ovale, Chloroquine sensitive falciparum
   → chloroquine or Hydroxychloroquine

2. complicated P Falciparum malaria → Artemisinin based regimens
3. Chloroquine resistant P. vivax → Mefloquine

HIV IN PREGNANCY

→ mostly by HIV - 1

→ TRANSMITTED BY

1. Sexual intercourse
2. Blood
3. During labour & delivery
4. Breastmilk

→ Primary determinant of transmission → Plasma HIV - 1 viral load

→ CD_4 site serves as a receptor for virus
Once infected, CD_4 lymphocytes may die

→ Illness i AIDS is dlt profound immunodeficiency that gives rise to various Opportunistic infections & neoplasms

According to CDC, 'AIDS' is

→ CD_4 T cell count < 200 cells / µl

→ CD_4 T cell count comprising < 14 % of all lymphocytes or

→ One of several AIDS - defining illness

SCREENING

→ HIV Screening using an OPT-OUT APPROACH

→ Repeat testing during 3rd trimester

→ is considered for all pregnant women

→ Antigen / Antibody combination Immunoassay
→ detects antibodies against HIV - 1 & HIV-2 & detects HIV - 1 p 24 Ag

→ HIV - 1 NAAT for confirmation

VERTICAL TRANSMISSION [MTCT Rate → 25-40% overall]

→ 1 % i < 400 copies / ml

→ NO cases of vertical transmission i maternal viral loads < 50 copies/ml at delivery

TIMING & TRANSMISSION

→ 20 % of vertical transmission occurs before 36 weeks

→ 50 % in the days before delivery

→ 30 % intrapartum

→ Breast feeding MTCT may be as high as 30 - 40 %

CAUTION

→ Didanosine, Stavudine & full dose Ritonavir, are exceptions dlt pregnancy toxicity [not teratogenecity]

→ Antiretro viral naive - are given ART regardless of trimester

→ In general, the starting regimen comprises
→ 2 Nucleoside reverse transcriptase inhibitors PLUS
→ either a Ritonavir boosted protease inhibitor or
→ an Integrase inhibitor

RECOMMENDATIONS

- → Taking ART & Pregnant
- → continue current drugs
- → all women get ART ASAP
- → Monitor CD_4 count at initial & then 3 monthly visits

- → ART NAIVE
  - ↳ 2 NRTI
    - → Abacavir / Lamivudine
    - → Tenofovir Disoproxil fumarate | Emtricitabine
  - ↳ And a PI
    - → Atazanavir / Ritonavir
  - ↳ or an Integrase inhibitor
    - → Raltegravir

INTRAPARTUM CARE

- → HIV RNA > 1000 copies / ml → C section at 38 weeks
- → HIV < 1000 copies / ml → vaginal delivery can be done

- → For HIV > 1000 copies / ml reduce MTCT
- → 2 mg / Kg ZDV IV load then 1 mg / kg hourly till delivery
- → For C section, Start the IV 3 hours prior

ANTIRETROVIRAL THERAPY

- → Ideal strategy to Suppress viral load & minimize vertical transmission includes
  1. Preconceptional ART
  2. Antepartum ART
  3. Intrapartum continuation of antepartum oral ART regimen PLUS IV zidovudine
  4. New born ART Prophylaxis

PPH in HIV Women

- → best managed ī oxytocin & Prostaglandin analogues
- → Methylergonovine [methergine] & other ergot alkaloids adversly interact ī reverse transcriptase & Protease inhibitors to cause Severe vasoconstriction

DRUGS IN PREGNANCY

FDA CATEGORY - 5 CATEGORIES

CATEGORY A

- → Safe in pregnancy
- → THYROXINE
- → MULTI VITAMINS
- → FOLIC ACID

CATEGORY B

- → have adverse effects in animals
- → all studies in human are safe
- → PENICILLIN
- → CEPHALOSPORINS
- → DIDANOSINE
- → METRONIDAZOLE
- → NITROFURANTOIN

CATEGORY C

- → Teratogenic in animals
- → inadequate human studies
- → most commonly used drugs in Obstetrics
- → Mebendazole
- → Albendazole
- → Acyclovir
- → Chloroquine

CATEGORY D

- → Known human teratogens
- → Benefit > Risk
- → ANTIEPILEPTICS [PHENYTOIN, CARBAMAZEPINE]
- → QUININE
- → LAMOTRIGINE [category C Epileptic drug ; DOC for epilepsy in pregnancy]

CATEGORY X

- → Known teratogens
- → totally contraindicated [Risk > Benefits]
- → ALCOHOLS
- → ANDROGENS
- → VITAMIN A
- → LITHIUM
- → RADIO IODINE
- → CHEMO THERAPEUTIC DRUGS
- → TETRACYCLINS

ALCOHOL IN PREGNANCY

FETAL ALCOHOL SYNDROME

1. DYSMORPHIC FACIAL FEATURES [all 3 required]
   - → Small palpebral fissures
   - → Thin vermillion border
   - → Smooth philtrum

2. PRENATAL and / or POSTNATAL GROWTH IMPAIREMENT
3. CNS ABNORMALITY [1 required]
   → Structural ; Head size < 10 th percentile , significant brain abnormality on imaging
   → Global cognitive or intellectual deficits

ALCOHOL RELATED BIRTH DEFECTS

1. CARDIAC → ASD or VSD
2. SKELETAL → Radio ulnar synostosis joint contractures
3. RENAL → Aplastic or hypoplastic Kidneys
4. EYES → Strabismus , ptosis , Optic nerve hypoplasia
5. EARS → Conductive or Neurosensory hearing loss
6. MINOR → hypoplastic nails , clinodactyly , pectus carinatum or excavatum, camptodactyly , HONEY STICK PALMAR CREASE , RAIL ROAD TRACK EARS

WARFARIN EMBRYOPATHY

WARFARIN

→ Low molecular weight → readily cross placenta
→ causes Embryotoxic & fetotoxic effect
→ 6-9 weeks AOG Exposure → **WARFARIN EMBRYOPATHY**
→ FEATURES
   1. stippling of vertebrae & femoral epiphysis
   2. Nasal hypoplasia
   3. Depression of nasal bridge

LEFLUNOMIDE

→ A Pyrimidine synthesis inhibitor
→ used for Rx of Rheumatoid arthritis
→ C/I in Pregnancy , a/w
   ↳ hydrocephalus
   ↳ Eye abnormalities
   ↳ Skeletal abnormalities
   ↳ Embryo death

→ detectable in plasma for upto 2 years
→ CHOLESTYRAMINE TREATMENT / WASHOUT
   ↳ performed for early excretion of drug
   ↳ F/b verification of serum levels [should be undetectable on 2 tests performed 14 days apart]

FETAL HYDANTOIN SYNDROME

→ d/t intake of ANTIEPILEPTICS like Phenytoin , Carbamazepine
→ FACIAL FEATURES include
   1. upturned nose
   2. mild mid facial hypoplasia
   3. Long upper lip i thin vermillion border
   4. Distal digital hypoplasia

→ atleast 3 months washout period required before planning of pregnancy

ANEMIA IN PREGNANCY

MC cause of Anemia in pregnancy in India → NUTRITIONAL ANEMIA

CAUSES OF ANEMIA

1 ↓ Production
- a Iron Deficiency Anemia
- b Megaloblastic Anemia
- c Folic Acid deficiency Anemia

2 ↑ LYSIS
- a Hemolytic Anemia
- b Chronic Blood loss

DEFINITIONS

→	WHO	→	Hb	→ < 11gm%.
→	CDC	→	Hb	→ < 11gm%. or
			Hb	→ < 10.5 gm% in 3rd trimester
→	Mild	→	Hb	→ > 10 & < 11 gm%.
	Moderate	→	Hb	→ 7 - 10 gm%.
	Severe	→	Hb	→ < 4 gm%.

IRON DEFICIENCY ANEMIA

IRON REQUIREMENT IN PREGNANCY

→ 1000mg elemental iron [per day = 4-6 mg/day × 280 = 1120 mg]
- 500mg → for Hb expansion
- 300 mg → for fetus, Placenta
- 200 mg → Wasted

MANAGEMENT

→ 100 mg/Day elemental iron Tab in (N) pregnancy
200 mg/Day elemental iron in mild to moderate anemia

→ oral iron supplementat^{n} forms
- Fe sulphate
- fe ascorbate
- carbonyl iron

} Better absorbable forms

Deworm the patient ī MEBENDAZOLE (100mg Tab BD × 3 Days]

→ Injectable Preparations
- only indicat^{n} → Intolerance or Malabsorpt^{n}
- STOP ORAL IRON at the time of giving injectables
- Injectable forms → fe dextran [im/iv], Fe Sorbital [im]
  Fe Sucrose [iv] - No anaphylaxis [No testing done]

→ Rate of Rise ↑ oral & ↑ injectable preparatⁿ is same [1gm%. over 2½-3 wks]

REQUIREMENT → 2.21 × wt in kg × (Targeted Hb − Pt Hb) + 1000 mg (for stores)
→ ≅ 200 mg / Hb deficiency

→ Requirement of Blood for Rx of Anemia
- Hb → < 7gm% or
  Severly anemic in Late in pregnancy
- whole blood ↑ Hb by 0.8 - 0.9 gm%
  Packed cells ↑ Hb by 0.8 - 0.9 gm%. [lesser volume load][So Better]

→ IDA INDICES
① SERUM FERRETIN
- 1st parameter to change
- Ⓝ - 40 - 160 ng/ml
- IDA - < 20 ng/ml

② Hb → ↓
③ MCV → ↓
④ MCH → ↓
⑤ Serum Iron → < 50 µg/dl
⑥ Total Iron Binding capacity → > 400 ng/dl
⑦ Red cell Distributⁿ width [RDW] → ↑

→ THALASSEMIA INDICES
① RDW → Normal
② MCH → < 27 Pg [Ⓝ - 29 ng]
③ Hb → Normal
④ MCV / RBC → < 13 [MENTZER INDEX]

MEGALOBLASTIC ANEMIA

CAUSES

1 FA Deficiency
→ ↑ Demand
→ ↓ Supply
→ Malabsorptⁿ
→ Intestinal Sx or resectⁿ

2 Vit B_{12} Deficiency
→ ↓ Absorptⁿ
→ ↓ Intrinsic factor
→ Achlorhydria

→ Slow onset
→ Hb↓
→ MCV → > 100 fl
→ Requirement → 0.4 to 0.5 mg/day
→ Supplementat^{n} → 5 mg/day in megaloblastic anemia
→ Inj. Cynacobalamin can be given

NUTRITIONAL ANEMIA → IDA + Megaloblastic Anemia
DIMORPHIC ANEMIA → microcytic hypochromic + megaloblast

VOMITING IN PREGNANCY

→ aka MORNING SICKNESS
→ can happen anytime

REASON OF EXCESSIVE VOMITING

→ ↑ HCG
→ ↑ Estrogen
→ ↑ Progesterone
→ ↑ Leptins
→ ↑ Ghrelin
→ Placental growth hormone

HYPEREMESIS GRAVIDARUM

→ Severe vomiting
→ Unrelenting nausea
→ almost no intake of food & fluids
→ Environmental & psychological factors also associated

SYMPTOMS

→ dehydration
→ Weight loss
→ ↓ Hcl [Alkalosis]
→ hypokalemia
→ Starvation ketosis
→ mild liver dysfunction [in severe cases]

DISORDERS TO BE RULED OUT

1. GASTROENTERITIS
2. HEPATITIS
3 PANCREATITIS
4. ACUTE CHOLECYSTITIS
5. HYDRONEPHROSIS
6. PEPTIC ULCER DISEASE

LATE PREGNANCY VOMITING TO BE RULED OUT

1. PRE ECLAMPTIC TOXEMIA
2. FATTY LIVER

PROBLEMS IN MOTHER DUE TO EXCESSIVE VOMITING

1. Esophageal tear - BOERHAAVE SYNDROME
2. MALLORY WEISS TEARS
3. DIAPHRAGMATIC TEARS
4. ACUTE KIDNEY INJURY
5. DEPRESSION
6. VITAMIN K DEFICIENCY [Hypoprothrombinemia]
7. VITAMIN B1 [thiamine] DEFICIENCY [WERNICKE ENCEPHALOPATHY]

OBSTETRIC OUTCOME

→ Preterm labour
→ Abruption
→ Pre eclamptic toxemia

TREATMENT

1. MILD VOMITING

A. DIET MODIFICATION

→ Frequent small foods
→ Dry biscuits in the morning i empty stomach
→ Stop short of satiety

B. MEDICATION → Doxylamine + B6 [Tab]

2. MODERATE VOMITING

A. MEDICATION

- → Prochlorperazine
- → Promethazine
- → Metoclopramide

} Oral

- → Ondansetron → Rectal / oral

3. SEVERE VOMITING

A. IV HYDRATION [normal saline, Ringer lactate, ??? Dextrose (Serum/urine Ketones to be monitored)]

B. IV Promethazine
   Iv Prochlorperazine
   Iv Ondansetron
   Iv Metoclopramide

C. ADD 100 mg Thiamine

4. INTRACTABLE VOMITING

A. Parentral Nutrition
B. Enteral nutrition

FROM THE ONSET OF PREGNANCY UNTIL 16 WEEKS THE VOMITING CONTINUES, AFTER THAT IT WILL SUBSIDE

ECTOPIC PREGNANCY

LOCATION

① FALLOPIAN TUBE [mc]
- Ampulla [mc site - 70%.]
- Isthmus
- fimbrial area

② OVARY

③ ABDOMEN

PRIMARY OVARIAN ECTOPIC
→ SPIEGELBERG'S CRITERIA
→ No evidence of attachment
→ Ovarian tissues seen in the periphery of Ectopic
→ Tube should be intact

PRIMARY ABDOMINAL ECTOPIC
→ STUDDIFORD CRITERIA
→ No evidence of attachment to the tube or uterus
→ Primary abdominal nidation is present

TERM ABDOMENAL PREGNANCY IS VERY RARE → Delivered by LAPAROTOMY

④ CESAREAN SCAR ECTOPIC

⑤ CERVICAL ECTOPIC

TIME OF RUPTURE
→ Isthmic Ectopic → 4-6 wks
→ Ampullary Ectopic → 6-8 wks
→ Interstial / Cornual Ectopic → 12-16 wks

CAUSES
① PELVIC INFLAMMATORY DISEASES → Salpingitis Isthmica Nodosa
- mc cause
- microdiverticulas are present

② TUBAL SURGERIES
- Recanalizat^{n}
- Previous Tuboplasty
- fimbriostomy

③ ABDOMINAL / PELVIC SURGERIES
④ ENDOMETRIOSIS
⑤ TUBERCULOSIS

⑥ PREVIOUS ECTOPIC
- 15% chance, if previous pregnancy is ectopic

⑦ INFERTILITY TREATMENT

⑧ USE of IUCD

⑨ USE of POP

If a Normal woman concieves
- 98-99% are uterine Pregnancies
- 1-2% are Ectopic Pregnancies

If a women under contraceptⁿ [IUCD/POP] Concieves
- Actual Possibility of conception ↓ses → No. of Pregnancies ↓↓
  → No. of Ectopic Pregnancies ↓↓
- But in those pregnancies → 95% are uterine Pregnancies
  → 5% are ectopic pregnancies

MANAGEMENT OF PREGNANCY ĩ IUCD INSITU

→ Remove the IUCD
- If can't locate
  - USG, xRay Pelvis, hysteroscopy can be done
  - Laparoscopy may be required

→ IF Women,
- Wants the child → continue the Pregnancy [Risk of abortⁿ is 25%.]
- Donot want baby → MTP

PRESENTATION

SYMPTOMS

→ Pain abdomen [mc]

→ Amenorrhea

→ Bleeding d/t shedding of decidua
- FATE OF ECTOPIC [Fallopian Tube]
  → vascular Insufficiency [mc]
  → Tubal abortion
  → Rupture of Tube [Rare]

VASCULar Insufficiency → Death of fetus → ⊗ HCG productⁿ
Bleeding from vagina ← Shedding of Decidua ← ⊗ Progesteron by corpus luteum

→ Syncopal attacks

SIGNS

- → shock
- → Lower abdominal tenderness
- → CULLEN SIGN → Bruising around the umbilicus } d/t Intraperitoneal collectⁿ of blood
  TURNER SIGN → Bruising at flanks }
- → On P/V Examinatⁿ → Cervical motion tenderness
  → Bogginess / fullness in Pouch of Douglas
  – can aspirate POD → Non clotting blood d/t Peritoneal fibrinolysins

MANAGEMENT

RUPTURED ECTOPIC

① Resuscitation
- → 2 IV line of 14 Guage
- → Colloids, IVF
- → Arrange for Blood [Think of O -ve]
- → Plan the surgery

② SURGICAL MANAGEMENT
- → can be done by Laparotomy
  Laparoscopy [Not done in shock]
- → TOTAL SALPINGECTOMY

UNRUPTURED ECTOPIC → SAVE THE TUBE

① MEDICAL MANAGEMENT
- → METHOTREXATE [Local / systemic]
- → ACTINOMYCIN
- → KCL
- → MIFEPRISTONE

② SURGICAL MANAGEMENT
- → LINEAR SALPINGOSTOMY [SxOC] [kept open]
- → LINEAR SALPINGOTOMY
- → RESECTⁿ ANASTOMOSIS
- → MILKING OF TUBE [↑ses Risk of Ectopic Pregnancy – OUTDATED]

CRITERIA FOR Sx CONSERVATIVE MANAGEMENT

- → Size of Ectopic → > 3.5 cm [4 cm]
- → HCG → > 5000 IU
- → Cardiac Activity → Present

DIAGNOSIS OF PREGNANCY

CASE 1 → LMP 16th August & Missed period & on 16th September Dx of Pregnancy

→ Urine Pregnancy Test → ⊕ in 60-70%.

→ β HCG → ⊕ in > 95%.

→ Radio Immune Assay → ⊕ in 100%.

CASE 2 → LMP - 16th August & Missed Period. Period of gestatⁿ on 16th September?

→ **PERIOD OF GESTATⁿ IS CALCULATED FROM 1st DAY OF LMP**

→ 4 weeks & 3 Days of POG

→ Dx of Pregnancy on 4 wks 3 Days POG by

→

	Gestational Sac	Cardiac Activity
TVS [Transvaginal Sonography] [Preferred]	→ 4 + weeks	→ 5 + weeks
TAS [Transabdominal Sonography]	→ 5 + weeks	→ 6 + weeks

→ MRI → Trouble Solver

→ Laparoscopy [Best]

→ HCG

- Doubling in 48 Hrs → Intrauterine Pregnancy
- Doubling in 5-7 Days → Ectopic Pregnancy
- DISCRIMINATORY ZONE
  - HCG level beyond which we must see a sac
  - TVS → > 1500 IU
  - TAS → > 6500 IU

→ Serum Progesteron

- > 25 ng/ml → Intra uterine Pregnancy
- < 5 ng/ml → Ectopic Pregnancy or Missed abortⁿ

ABORTIONS

→ Age of ABOrtus in
- India → < 28 wks
- UK → < 24 wks
- USA → < 20 wks

→ MTP can be done upto
- India → ⩽ 20 wks
- UK → till 24 wks
- USA → till 20 wks

SPONTANEOUS ABORTIONS

→ 50% of all human pregnancies

TYPES
→ Embryonic [50%]
→ Anembryonic [Blighted ovum [50%]

EMBRYONIC ABORTIONS

Causes

① CHROMOSOMAL → usually present during Ist Trimester
- Trisomies 16/18/21
- monosomies 45 XO

mcc of Embryonic abortions	→	Chromosomal
mc chromosomal cause of abortn	→	Trisomies
- mc cause of abortn in Trisomies	→	Trisomy 16
mc chromosomal defect in Pregnancies	→	Monosomy 45xo

② ANATOMICAL → usually present during IInd Trimester
- Septate Uterus
- Bicornuate uterus
- Incompetent OS [Short cervix]

③ MATERNAL → usually present during any of the trimester
- Syphilis
- SLE
- APLA Syndrome
- DM
- TORCH
- TB
- Cancers
- celiac Disease
- hypothyroidism

RECURRENT PREGNANCY LOSS

→ Loss of ≥ 2 Pregnancy loss

Causes

→ chromosomal [mc]
→ Anatomical
→ Maternal [TORCH infectⁿ does not cause Recurrent Pregnancy loss]

ANATOMICAL CAUSES

① SEPTATE UTERUS

→ mc mullerian defect
→ causes 2nd Trimester abortⁿ
→ Mx → Hysteroscopic Resectⁿ

② BICORNUATE UTERUS

→ STRASSMAN'S METROPLASTY
- Unificatⁿ Sx
- only indicated in Recurrent Pregnancy Loss

③ INCOMPETENT OS [SHORT CERVIX [<2.5cm]]

→ Mx by Encerclage → applied >12 wks, removed ≥37 wks
→ mc → Mc Donald's cerclage

THROMBOPHILIAS

① INHERITED

→ factor V Leiden mutation
→ Methyl Tetra Hydro folate reductase Gene mutatⁿ
→ Prothrombin Gene mutatⁿ
→ Protein C, S deficiency
→ Antithrombin III deficiency

② AQUIRED

ANTI PHOSPHOLIPID ANTIBODY SYNDROME

→ APL Antibodies
- Lupus Anticoagulants
- Anti cardiolipin Antibodies
- Anti β_2 Glycoprotein Antibodies

→ Hyper Homocystenemia
→ Criteria
- Clinical
  - ≥ 1 venous / Arterial Thrombosis
  - ≥ 1 morphologically normal baby lost after 10 wks
  - ≥ 1 morphologically (N) baby lost before 34 wks completed
  - ≥ 3 Abortions before 10 wks
- Lab
  - Anticardiolipin Antibodies / IgG / IgM ⊕
  - Lupus Anti coagulant ⊕

→ Management
- LMW Heparin
- Anti Platelet Drugs

TORCH INFECTIONS

CYTOMEGALOVIRUS

→ MC mother to child Transmitted infection → CMV
→ IF CMV transmitted before 15 wks → 5-6% babies are affected
- Features
  - microcephaly
  - Intra Ventricular Haemorrhage
  - Mental Retardat^{n}
  - Periventricular calcificat^{n}

→ Assessed by → AVIDITY TEST [Best]
→ Viral culture of Amniotic Fluid

RUBELLA

→ MTCT in 1st trimester → Upto 80-85%.
in 2nd trimester → Upto 60-65%.
at end of 2nd Trimester → Upto 25%.

→ IF Rubella vaccine is given → Pregnancy avoided at least for 1 month

TOXOPLASMA

→ MTCT in 1st trimester → Upto 10%. [↑↑ Anomalies]
in 3rd trimester → Upto 60%. [Congenital Toxoplasmosis Syn]

→ congenital Toxoplasmosis Syndrome
- Features
  - Intracerebral calcification
  - chorioretinitis
  - Microcephaly
- R_x - SPIRAMYCIN 1gm, 2-3 times|Day ; 3 weeks on, 1 week OFF

CHICKEN POX

→ congenital varicella Syndrome
- max chance of transmission → 13-20 wks
- Features
  - Microcephaly
  - cerebral calcificat^{n}
  - IUGR
  - Limb hypoplasia
  - cortical atrophy

- IF transmitted around delivery time
  - ī in 5 days before delivery or ī in 2 days after delivery } Upto 30% Neonatal mortality
  - Rx ī varicella zoster Immunoglobulin

- Diagnosed by
  - TZANK SMEAR
  - Direct floroscent Antibody
  - Nucleic Acid Amplificatⁿ Test

HIV

→ MTCT Rate → 25 - 30%.
- If breast feeding ⊕ → 10 - 15% more chance
- Breast Feeding contraindicated Except in developing countries [NEVIRAPIN SYRUP recommended]

→ Management during Pregnancy
- ZUDOVUDINE or TENOFOVIR
- LAMIVUDINE [3TC]
- NEVIRAPINE or EFFAVIRENZ

→ METHOD OF DELIVERY
- Normal vaginal Delivery
- Cesarean Sectⁿ only in Obstestric indicatⁿ

HEPATITIS B

→ MTCT Rate
- Antigen ⊕ → 90%.
- Antibody ⊕ → 10%.
- Chronic carrier → 40%.

- At birth, Active & Passive Immunizatⁿ should be done

PRESENTATION

→ Pain abdomen
→ Bleeding P/V
→ PV Examinatⁿ
- OS closed, Uterine Size = POG → THREATENED ABORTION
- OS Open, Products are bulging → INEVITABLE ABORTION
- OS Open, Products are Prolapse & H/O Passage → INCOMPLETE
- OS closed, H/O Passage, Normal Uterine Size → COMPLETE

→ on USG,
- cardiac Activity + at 9 wks
- Crumbled mass
- NO Pain & NO bleeding

} 12 wks → MISSED ABORTION

→ BLIGHTED OVUM / ANEMBRYONIC GESTATION
- Normally around 7 wks of gestat^{n}, Yolk Sac is Pinched out
- Pregnancy not gone beyond the stage of Sac → BLIGHTED OVUM

MEDICAL TERMINATION OF PREGNANCY [MTP]

→ MTP can be done, < 20 wks in India by
- Gynecologist
- Doctor who trained for 6 months in gynecology
- Doctor who performed at least 25 MTPs under supervision

→ IN 1st TRIMESTER, done by

MEDICAL ABORTION
- 99% Successful → IF done in 1st 7 wks
- 95% Successful → IF done in 1st 9 wks
- DRUGS

  MIFEPRISTONE
  - Antiprogestin
  - Kills the fetus
  - can be given orally
  - 200 - 600 mg

  ↓ 24 - 72 Hrs later

  MISOPROSTOL [PGE1]
  - vaginally
  - 800 mg
  - Expels the fetus

Do USG → to confirm the location
↓
IF Intrauterine Pregnancy → Administer DRUGS
↓
Wait for Bleeding to get over
↓
Do a check Sonography → to check complet^{n}

MENSTRUAL REGULATION SYRINGE → can be done upto 45 Days
SUCTION EVACUATION → can be done upto 8-10 wks
DILATATION & CURRETAGE → can be done upto 8-12 wks

→ >12 WKS , PROCEDURE OF CHOICE → PROSTAGLANDINS

PROSTAGLANDINS

→ MISOPROSTAL [PGE1]
  - Orally, rectally or vaginally

→ DINOPROSTONE [PGE2]
  - Gel form
  - vaginally

→ CARBOPROST [$PGF_2\alpha$]
  - IM Only

→ INTRA AMNIOTIC PGs
  EXTRA AMNIOTIC ETHACRIDINE LACTATE
  EXTRA AMNIOTIC HYPERTONIC SALINE
  EXTRA AMNIOTIC HYPER OSMOLAR UREA
  } OUTDATED

LAMINARIA TENTS

→ Dried sea weeds
→ Imbibe fluids & Swell up
→ Hygroscopic Action

SURGICAL METHOD → Hysterotomy

→ In case of failure of above procedures

PRE TERM LABOUR

→ Labour starting before 37 weeks

→ 37 - 42 wks → TERM

40 wks → EDD [Expected Date of Delivery] → 4% of total Deliveries

> 42 wks → POST TERM

> 40 - 42wks → PAST DATES

> 37 wks → PRE TERM LABOUR

< 32 wks → SEVERE PTL

32 - 34 wks → USUAL PTL

> 34 - 36 [+6D] wk → LATE PRE TERM LABOUR

DIAGNOSIS

→ Uterine contractions
- 4 times in 20 min
- 8 times in an hour

→ On PV Examinat^{n}, if cervix
- ≥ 1cm dilated
- > 80% effaced
- > 3cm dilated, > 80% effaced → Advanced Pre Term Labour

  < 3 cm dilated, < 80% effaced → Early Pre term Labour

  1 cm dilated, < 80% effaced → Do Cervical Examinat^{n}

  TVS Cx → > 2.5 cm → False labour

  TVS Cx → < 2.5 cm → Threatned labour

→ INCIDENCE of PTL → 6 - 15% [~ 10%] of ALL Pregnancies

CAUSES

① Infections [20 - 40%] → Pelvic Inflammatory Disease, UTI

Causative organisms

Chlamydia	Bacteriods
Gonorrhea	Gardenella Vaginalis
Ureaplasma	E. Coli
Mycoplasma	Streptococcus

CHORIOAMNIONITIS DIAGNOSIS

Any 2 of following
- ↑ Total Leucocyte Count
- ↑ C Reactive Protein → > 2.7 mg/dL
- Uterine tenderness
- ↑ Pulse Rate
- Foul smelling discharge

IF SUB CLINICAL [CRP > 1.6] → DO Amniocentesis & Culture Sensitivity testing

② UTERINE OVER DISTENTION

Polyhydramnious

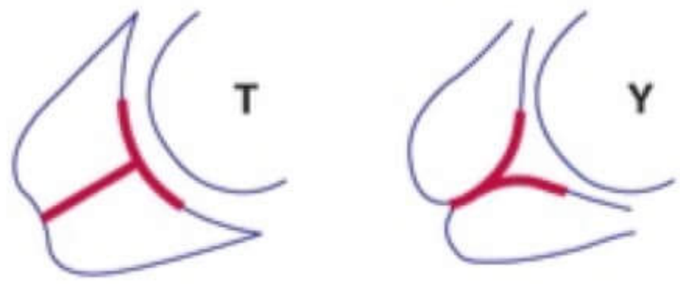
Twins

Large Baby

③ UTERINE ANOMALIES

Septate uterus

Bi Cornuate Uterus



FUNNELING OF CERVIX

④ BLEEDING IN CHORID RESIDUAL SPACE

⑤ MATERNO FETAL STRESS

⑥ CERVICAL ABNORMALITIES

Incompetent cervix

Cervical lacerations

PREDICTION OF PTL

1 USG

- at 12-13 WKS → Short cervix → <2.5cm
- around 29 WKS → Funneling of cervix

2 FETAL FIBRONECTIN

- Presence is Normal → <22 WKS & >37 WKS
- If Seen b/w 22-37W → Predictive OF PTL
  - 30% PTL in 1 week
  - 41% PTL in 2 weeks

NEW BORN COMPLICATIONS

- Respirative Distress Syndrome [Hyaline Membrane Disease]
- Intra ventricular Haemorrhage
- Bronchopulmonary Displasia
- Necrotising Enterocolitis
- Neonatal Deaths

MATERNAL COMPLICATIONS

- Endometritis
- Peurperal Sepsis

MANAGEMENT

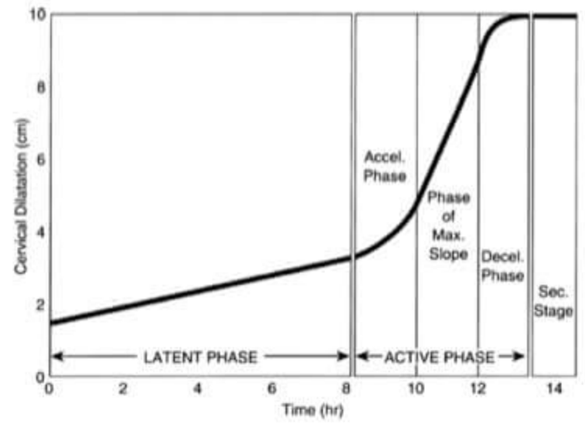
① FOR LUNG MATURITY

a. STEROIDS
- DEXAMETHASONE 6 mg 12 hourly 4 Doses
- BETAMETHASONE 12 mg 24 hourly 2 DOSES

b. ARTIFICIAL SURFACTANTS
- Post natally & by intra tracheal routi route
- SURVATA [Bovine]
  AXOSURF
  ALEC

② TOCOLYSIS

- Tocolytics acts only in latent Phase
- TIMING → <3cm & < 34 wks
- PURPOSE → To get time for lung maturity



LABOUR - PHASES

DRUGS

a. β Agonists

SALBUTAMOL

RITODRINE

ISOXSUPRINE

Side Effects

Glycogenolysis, Lipolysis } → ↑ Sugar

Pulmonary edema

b. Calcium channel Blockers

NIFEDEPINE

- First line & Safest drug
- Start 30 mg orally & maintain ī 20 mg

c. Calcium Antagonists

$MgSO_4$

- Side Effects → Neonatal hypotonia, hypocalcemia
- Benefits → Neuroprotective

ABOVE 3 CLASSES OF DRUGS CAN CAUSE PULMONARY EDEMA. Safest is NIFEDEPINE

d. OXYTOCIN Antagonist

ATOSIBAN

- Neonatal morbidity & Neonatal mortality shows NO BENEFIT ī it

e. PROSTAGLANDIN SYNTHETASE INHIBITORS

NSAIDS : INDOMETHACIN

25 -50mg , once or twice a day

S/E - Premature closure OF Ductus Arteriosus

Not give beyond 32 weeks

F. PROGESTERONE

Smooth muscle Relaxants

Used for Prophylaxis

Transvaginal route is preferred

g NO DONARS : NITROGLYCERINE PATCH

0.2 mg/hr to 0.4 mg/hr

f. DIZOXIDE

Smooth Muscle Relaxant

SIE → hypotension in Mother

Fetal Distress

→ Prevented by Pre loading mother ī 500 - 1000ml Ringer Lactate

LUNG MATURITY ASSESMENT

→ Lung matured when

- Lecithin Spingomylein Ratio → > 2:1
- Phosphotidyl glycerol tnt in Amniotic fluid
- Phosphotidyl choline tnt in Amniotic fluid
- Best part of surfactant
- ~ 70% of surfactant
- Starts forming at 24 wks
- Formed by Type II Alveolar Pneumocytes
- After Adequati formatⁿ → GLYCEROL starts producing

PHOSPHOTIDYL GLYCEROL IS THE FINAL INDICATOR OF PULMONARY MATURITY
PHOSPHOTIDYL GLYCEROL PRESENT ONLY IN AMNIOTIC FLUID

- choline present in
  - Amniotic Fluid
  - Maternal serum
  - Febal Serum

→ SHAKE TEST → Bubbles formed

→ TAP TEST → Bubbles formed

→ NILE BLUE PHOSPHATE TEST

- Sediment of Amniotic Fluid centrifuge is taken → contain skin cells
- Skin cells are plated on a slide

↓

Add Nile Blue Agent

Skin cells ī lipids → ORANGE colour

if >50% are oragnge → indicates MATURED LUNG

BASIC CONCEPT OF SHAKE TEST, TAP TEST & NILE BLUE PHOSPHATE TEST
Amniotic Fluid is assessed for skin fats
IF skin cells positive for skin fats, it also indicates the Lung fat Production
Both skin fat Production & Lung fat productⁿ are simultaneous Processess.

NILE BLUE TEST → Lung maturity Assessment
NITAZINE PAPER TEST → PROM Assessment

PREMATURE RUPTURE OF MEMBRANES ASSESSMENT

a. NITRAZINE PAPER TEST – Done for PROM [Pre Mature Rupture Of Membranes]
   - PROM – ROM Prior to Onset of Labour
     - If ROM is before 37 wks → PRETERM PROM
   - Blue – if Amniotic fluid [Alkaline] in vagina
     Red – if Vaginitis [Acidic]

b. FETAL FIBRONECTIN

c. ↑ ALPHA FETO PROTEIN

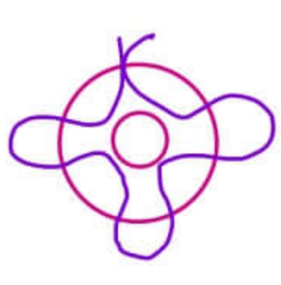
d. FERNING OF THE FLUID FROM VAGINA

e. INDIGOCARMINE DYE TEST

PREVENTION OF PRE TERM LABOUR

1. Prophylactic Antibiotics
2. Prophylactic Progesterone
3. CERCLAGE
   - Applied when cervix is < 2.5cm
   - Applied > 12 wks
   - Removed ≥ 37 wks

   METHODS
   -



MC DONALD'S CERCLAGE [MC]

WORM'S STICH

- SHIRODKAR STICH
  - For very short or mutilated stich
  - mode of delivery → Cesarean sect^{n} mostly
  - can be done transvaginally or transabdominal

PHYSIOLOGICAL CHANGES OF PREGNANCY

UTERUS

Non Pregnant Uterus → 70 grams
Pregnant Uterus at term → 1100 gms

Uterine Hypertropy is dlt → Estrogens [mainly]
Progesterone

Uteroplacental Blood Flow → ↑ Progressively in pregnancy
Range → 450ml to 650ml/min near the term

Uterine artery flow/min → 500ml [each]

elemental Iron required → 1000 mg
- 500 mg for Hb expansion
- 300 mg for fetus & placenta
- 200 mg is wasted

CERVIX

- **ESTRDIOL** Stimulate growth of columnar epithelium of the cervical canal so it becomes violet & is called **ECTROPION**
- **CHADWICK SIGN [JACQUEMIER'S SIGN]** is bluish discoloration of vagina & cervix, 6-8 weeks
- **OSLANDER [VAGINAL SIGN]**, pulsatality in the lateral fornices, around 8th Week
- **GOODELL SIGN**, softening of the cervix, 6-8 weeks
- **HEGART SIGN**: on a PIV, the abdominal & vaginal fingers seems to oppose below the body of uterus, 6th week
- **HARTMANS SIGN**: Implantation bleeding
- **PALMERS SIGN**: Rhythmic uterine contractions Felt in early pregnancy
- **BRAXTON HICKS** contractions around 16 - 18 Weeks

BREAST

Breast ductal growth → Estrogens
Breast alveolar cells & Sebaceous glands → Progesterones

Prolactin leads to → Active secretn of milk after birth
→ Levels ↑↑↑ in pregnancy
Ⓝ in puerperium

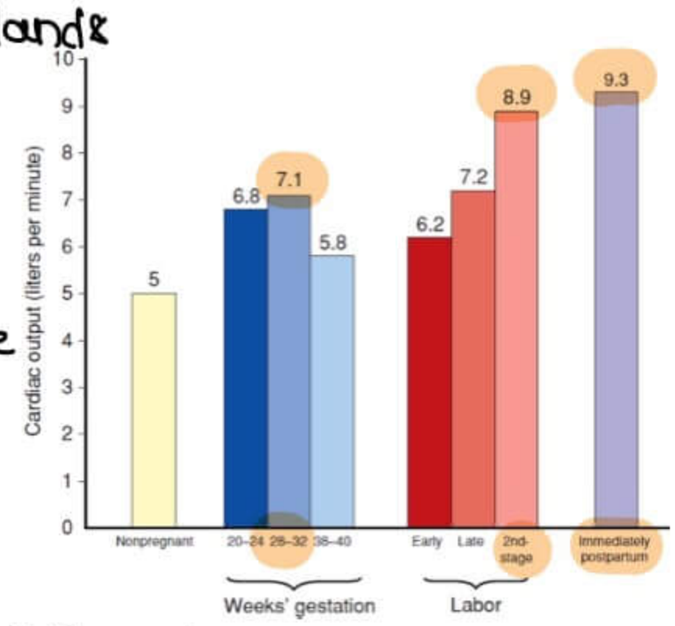
Breast tenderness & paresthesias ↑ses

Nipples → larger, more deeply pigmented & more erectile
→ COLOSTRUM [yellowish fluid] expressed by gentle massage in few months

Areola → Become broader
→ GLANDS OF MONTGOMERY
- no. of small elevations
- Hypertrophic sebaceous glands

CARDIO VASCULAR SYSTEM

Heart → moves upwards
Hypertrophy of cardiac muscle



Apical impulse → Lateralized

cardiac output → Starts ↑ing by as early as 5th week
increases by 30%. [6 ltr/min]
Reaches to peak at 32nd - 34th week

BLOOD PRESSURE

Early or mid pregnancy BP → ↓
Late pregnancy BP → ↑
Heart Rate → ↑ [10-20%.]
Stroke volume → ↑ [10%.]
Mean Arterial Blood pressure → ↓ [10%.]
[DBP + 1/3 Pulse pressure (SBP - DBP)]

Peripheral Resistance → ↓ [35%.]

Supine hypotensive syndrome

In approx. 10%, Supine compression of great vessels by uterus causes significant arterial hypotension

HEART SOUNDS

1st Heart Sound → Exaggerated Splitting of 1st Heart Sound
↑ed loudness of Both components

3rd Heart sound → Loud & easily heard

MURMURS

Systolic murmur → >95% develop it, disappears after delivery
Transient Diastolic murmur → 20% develops it
continuous murmur → 10% develops it, dlt ↑ in mammary blood flow

HEMATOLOGY

Blood volume → ↑ by 30 - 45% at 32nd - 34th wk [Peak]
→ Relatively Diluted Blood since RBC ↑ is only 20-30%.
→ contributing factors
- ↑ Na retentn
- ↓ thirst threshold
- ↓ Plasma oncotic pressure

Red cells	→	↓
Hb	→	From 130 - 110 g/L
HCT	→	From 38 - 31 %
Albumin	→	↓ 35 g/L

Decrease in	Increase in
Red cell concentration	White cell count
Hb concentrat^{n}	ESR
Haematocrit	Fibrinogen concentrat^{n}
Plasma folate concentrat^{n}	

CLOTTING FACTORS IN PREGNANCY

→ In pregnancy, there is increased concentrations of all clotting factors except factors XI & XIII

→ In Non - Pregnant : Plasma fibrinogen [F-I] is 300 [200 - 400 mg/dl]

→ In Pregnancy :
- ↳ Plasma fibrinogen ↑ 50 %.
- ↳ In late pregnancy Avg 450 [300 to 600 mg/dl]

RESPIRATORY SYSTEM

Diaphragm	→	rises about 4 cm
The sub costal	→	68° - 104°
Respiratory Rate	→	No change
Vital capacity	→	No change
Tidal volume	→	↑ [40 %.]
FRC	→	↓ [20 - 30 %.] [400 - 700 ml]
Inspiratory capacity	→	↑ [5 - 10 %.]
Total lung capacity	→	Unchanged [FRC + Inspiratory capacity]
O_2 consumpt^{n}	→	↑ [20 %.]

URINARY SYSTEM

Kidney size	→	↑ by 1.5 cm
GFR	→	↑ [50 %.]
		d/t Hemodilut^{n}
		– ↓ protein & ↓ oncotic pressure
		↑ renal plasma flow
Glucosuria	→	may not be abnormal
Proteinuria	→	300 mg/day or more in 24 hr urine
Serum creatinine levels	→	↓ [0.7 to 0.5 mg/dL]
Creatine clearance	→	↑ 30 %, from 100 to 115 ml/min
Ureter	→	Dilated [Gravid uterus pressure & progesterone]
Bladder	→	frequent micturit^{n} [↑ pressure & ↑ urethral length]

GASTRO INTESTINAL SYSTEM

Pyrosis (Heart burn) → ↑

Gastric emptying time → unchanged

The motility of large Bowel → diminished → constipat^{n}, Hemorrhoids ↑

Liver funct^{n} → Alkaline Phosphatis doubled

→ SGPT, OT, GGT all reduced

Sr. Albumin concentrat^{n} → ↓

Total Albumin → ↑

Gall bladder contractility → ↓ : ↑ Residual volume

→ Progesterone impairs GB contract^{n} by inhibiting cholecystokinin - mediated smooth muscle stimulat^{n}

→ Intrahepatic cholestasis & Pruritis gravidarum : Retained Bile salts

ENDOCRINE SYSTEM

→ PITUITARY [HYPERTROPHY] → Enlarges by approximately 135 percent

→ Sr. PRL : 10 fold of normal, around 150 ng/ml

→ Gonadotrophs decline in number
corticotrophs & Thyrotrophs remain constant

→ Somatotrophs are generally suppressed : Placental GH

→ **THYROID**

→ TRH levels are normal, transferred across the placenta
Helps fetal pituitary to make TSH]

→ TSH reduces in 1st trimester : in 80% women

→ TBG increases, zenith at 20th week

→ free T_3 T_4 unchanged

PSYCHIATRIC DISORDERS

Blues	→ in 1st 2 weeks	[50-60%]	[d/t sudden loss of Progesterone]
Psychosis	→ in 1st 2-3 months	[<1%]	
Depression	→ in 1st 3-6 months	[10-15%]	

DIAGNOSIS OF PREGNANCY

Pregnancy tests detect HCG in mother urine or Serum

URINE PREGNANCY TEST → 60 - 70% Sensitive

RADIO IMMUNE ASSAY [RIA] → 100% Sensitive
Sensitivity to 2 mIU
positive since day 7th of ovulatn

USG

	SAC	CARDIAC ACTIVITY
TVS	4 + wks	5 + wks
TAS	5 + wks	6 + wks

> 12wks FHS heard ī fetal Doppler
> 24 wks FHS heard ī Stethoscope
Palpatn of fetal parts from 24th week
Fetal movement may feel during palpatn

BRAXTON HICK SIGN → Irregular painless contractn palpable after 20th week

PUERPERIUM

1 week → Uterus weighs approx. 500gms
2 weeks → about 300gms
4 weeks → 100gms
Involutn is complete

LOCHIA

LOCHIA RUBRA → First few days of delivery, sufficient blood ⊕ → RED
LOCHIA SEROSA → After 3 to 4 days, progressively become PALE
LOCHIA ALBA → After approx. 10th day
d/t mix of leukocytes → WHITE or YELLOW WHITE

INVOLUTION

At Delivery → uterus is at the level of umbilicus [20-22 wks]
At 2 wks → in pelvis
At 6 wks → Normal organ

Rate of descent → 1-2 cm / Day

SUB INVOLUTION - CAUSES
→ Infectn
→ Retained Intrauterine Products
→ Fibroids

DIAGNOSIS OF PREGNANCY

CASE 1 → LMP 16th August & Missed period & on 16th September Dx of Pregnancy

① Urine Pregnancy Test → ⊕ in 60-70%. [Sensitive to 150 mIU of HCG]

② Sr βHCG by ELISA → ⊕ in >95%. [Sensitive to 5 mIU of HCG]

③ Radio Immune Assay → ⊕ in 100%. [Sensitive to 1-2 mIU of HCG]
→ can Dx pregnancy on 7th day of ovulatn

④ ImmunoRadiometric Assay → ⊕ in 100% [Sensitive to 0.5 mIU of HCG]
→ can Dx from 7th to 10th Day of ovulatn

CASE 2 → LMP - 16th August & Missed Period. Period of gestatn on 16th September?

→ **PERIOD OF GESTATN IS CALCULATED FROM 1ST DAY OF LMP**

→ 4 weeks & 3 Days of POG

→ Dx of Pregnancy on 4 wks 3 Days POG by

⑤ USG

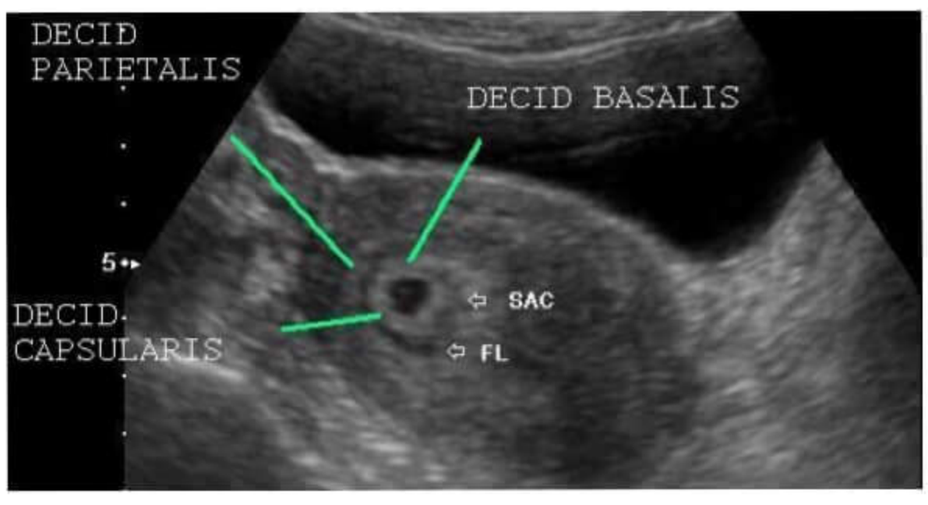
	Gestational Sac	Cardiac Activity
TVS [Transvaginal Sonography] [Preferred]	→ 4 + weeks	→ 5 + weeks
TAS [Transabdominal Sonography]	→ 5 + weeks	→ 6 + weeks

⑥ MRI → Trouble Solver

⑦ Laparoscopy [Best]

⑧ HCG
- Doubling in 48 Hrs → Intrauterine Pregnancy
- Doubling in 5-7 Days → Ectopic Pregnancy
- DISCRIMINATORY ZONE
  - HCG level beyond which we must see a sac
  - TVS → > 1500 IU
    TAS → > 6500 IU

→ DOUBLE DECIDUAL SAC SIGN ON USG
- → Intrauterine sac [Eccentrically placed]
- → outer layer → Decidua parietalis
- → inner layer → Decidua Capsularis
- → indicates → Intrauterine Pregnancy



SYMPTOMS
- → Bloating
- → Morning Sickness
  - Nausea
  - vomiting
- → ↑ Urinary frequency
- → constipatn

SIGNS

BREAST CHANGES

Breast ductal growth → Estrogens

Breast alveolar cells & Sebaceous glands → Progesterones

Prolactin leads to → Active secretn of milk after birth

→ Levels ↑↑↑ in pregnancy

Ⓝ in puerperium

Breast tenderness & paresthesias ↑ses

Nipples → larger, more deeply pigmented & more erectile

→ COLOSTRUM [yellowish fluid] expressed by gentle massage in few months

Areola → Become broader

→ GLANDS OF MONTGOMERY

- no. of small elevations
- Hypertrophic sebaceous glands

In 2nd trimester

Quickening [22-24 wks in Primi]

Uterine Souffle } around 24 wks

Funic [umbilical] Souffle }

Internal Ballotment → around 16-18 wks

External Ballotment → around 22-24 wks

In 3rd Trimester (> 28 wks)

Fetal Heart sound by fetoscope / Stethoscope

Fetal parts can be felt

Fetal movements can be felt

DIAGNOSTIC SIGNS OF A NON VIABLE PREGNANCY BY TVS

① Gestational sac → ⩾ 25 mm Size

② Crown Rump length → ⩾ 7 mm

③ No cardiac Activity

④ G. Sac Present → ⩾ 2 wks later → No embryo, no cardiac activity

⑤ G. Sac + Yolk Sac tnt → ⩾ 11 days later → No embryo, no cardiac activity

⑥ Yolksac → ⩾ 7 mm

PRENATAL DIAGNOSIS

USG

1 St TRIMESTER [upto 12 weeks]

→ can assess formation of normal fetus & presence of gross fetal structure

→ only NTDs can be detected are → Anencephaly & Acrania

2nd TRIMESTER

→ TARGETTED SCANING for specific defects can be done

→ SOFT MARKERS FOR DOWN SYNDROME

- ↳ Brachycephaly
- ↳ clinodactyly [short 5th digit]
- ↳ Short femur
- ↳ short humerus
- ↳ Echogenic focus in ventricle
- ↳ Nasal bone absence
- ↳ Nuchal fold thickness
- ↳ Flat Facies
- ↳ Echogenic bowel
- ↳ Sandal gap

→ MARKERS FOR SPINA BIFIDA

- ↳ scalloping of frontal bones → LEMON SIGN
- ↳ Forward curvature of cerebellum → BANANA SIGN

→ Nuchal translucency > 3mm → Suggestive of DOWN SYNDROME

→ > 14 weeks → Nuchal fold > 6 mm → Suggestive of Down Syndrome

BIOCHEMICAL MARKERS FOR DOWN SYNDROME

UPTO 12 WEEKS

HCG → ↑

PAPP-A → ↓

FROM 16 th WEEK ONWARDS

TRIPLE MARKER

→

	Median values	Measured values
HCG	x	↑
UE_3	y	↓
α FP	z	↑

→ Expressed in MOM [multiples of median] units

→ 60 - 70% sensitive

QUADRAPLE MARKER

Triple marker + Inhibin ↑

80% sensitive

1st Trimester Screening [HCG, PAPP-A] + Nuchal translucency → 80% sensitive

INTEGRATED SCREENING [1st + 2nd trimester screening]

→ 94-96% Sensitive

→ Best screening test

CONFIRMATORY TEST

1st Trimester → Chorionic villus sampling

2nd Trimester → Amniocentesis

Cell free Fetal DNA assessment / Non - invasive fetal trisomy / non invasive pre natal testing

→ After 12 weeks → Fetal DNA may be seen in maternal circulation
  ↳ > 98% sensitive
  ↳ it is not still diagnostic test

METHOD OF CHORIONIC VILLUS SAMPLING

→ done at 1st Trimester [10 - 13 ⅚ Week]

put a needle by Trans abdominal method [transvaginal is mc used]
↓
Take out Fetal villi [chorionic frondosum] & discard maternal villi
↓
run the Karyotype on the fetal cells & genetic analysis done
↓
Gives early diagnosis, but abortion chance is 2%.

→ If doing < 10 weeks can cause
  ↳ Limb reduction defects
  ↳ Oro mandibular defect

METHOD OF DOING AMNIOCENTESIS

→ done at 16 - 18 ⅚ weeks

Put a needle by transabdominal method
↓
Take out amniotic fluid around 20 ml, containing fetal skin cells
↓
On fetal skin cell carry Karyotype & genetic analysis

→ Abortion rate → < 1%.
→ But diagnosis gets delayed as compared to chorionic villus sampling

EARLY AMNIOCENTESIS

→ done blw 13 - 15 weeks
→ Abortion rate ≅ chorionic villus sampling

PERCUTANEOUS UMBILICAL BLOOD SAMPLING [PUBS] / CORDOCENTESIS

→ done after 18 weeks
→ usually done for
  → the assessment of fetal anemia
  → blood transfusion to the fetus
  → Fetal problems

→ invasive procedure

umbilical vein near insertion into placenta
↓
Karyotype can be done in blood lymphocytes

→ Gives result in 24 - 48 Hours
→ Assessment of MIDDLE CEREBRAL ARTERY VELOCITY is better to assess fetal anemia

α FETO PROTEIN

→ glycoprotein
→ source → Yolk sac [initially], Liver & gut [Later]
→ ↑ till 13 ½ Weeks in fetal circulation & then reduces gradually
→ in Maternal circulation α FP ↑ after 12 ½ week
→ Earlier ↑ α FP in amniocentesis is very sensitive for NTD [replaced by USG]
→ confirmatory test for NTD → Acetylcholinesterase

α FP is higher in

Duodenal atresia
esophageal atresia
Osteogenesis imperfecta
NTD
Omphalocele
Gastroschisis
Cystic hygroma

α FP is reduced in

Fetal death [IUD]
Trisomy
Over estimated maternal age
Obesity
Trophoblastic diseases

PRE IMPLANTATION GENETIC SCREENING

→ indicated for high risk cases

PRE IMPLANTATION GENETIC DIAGNOSIS

INDICATIONS

1. Previous genetic defects
2. recurrent abortion

METHODS

1. BLASTOMERE BIOPSY [mc method]
2. TROPHOECTODERM BIOPSY
   → Trophoectoderm gives rise to placenta
   → Safer method

3. POLAR BODY BIOPSY
   → only maternal component present
   → not preferred

PRE CONCEPTION & PRE NATAL DIAGNOSTIC TECHNIQUES [PCPNDT] ACT

→ previously Known as PNDT ACT
→ formulated in 1994
→ in effect on 1st Jan 1996
→ amended in 2002 & 2003
→ intended to Stop female feticide [Prohibition of Sex Selection]
→ SEX RATIO [Female : Male]

India	→	943 / 1000
Haryana	→	877 / 1000
Daman	→	618 / 1000

BASIC PURPOSE

→ prohibition of preconception & pre natal diagnostic techniques for determination of sex of fetus, leading to female feticide

→ Prohibition of advertisement of PNDT Techniques for detection or determination of sex

→ Permission & regulation of use of PNDT techniques for purpose of detection of specific genetic abnormalities or disorders

→ Permitting use of such techniques only under certain conditions by registered institutions

FEMALE FETICIDE

→ Aborting a female fetus after sex determination
→ PROBLEM OF FEMALE FETICIDE IS
  → ↑ violence against women
  → Abortion due to family pressures
  → more men in society due to sex selective abortion

THE TESTS WHICH ARE IN QUESTION

→ Ultrasonography
→ Fetoscopy
→ Taking samples of Amniotic fluid
→ Embryo, blood or any tissue or fluid of Pregnant women assessed before or after conception
→ testing samples in genetic laboratory to detect genetic disorders, abnormalities or sex linked diseases

CLINICS, MEDICAL PERSONNEL & SALE OF MACHINES : UNDER THE ACT

→ only registered genetic clinics can use prenatal diagnostic techniques
→ procedures can be done by a qualified medical practiotioner
→ prohibition on sale of ultrasound machine to unregistered laboratories, clinics & persons

ADVISORY COMMITTEE

CONSISTS OF

→ 3 MEDICAL EXPERTS
  ↳ Gynaecologists & Obstetricians
  ↳ Pediatricians
  ↳ Medical geneticist

→ 1 LEGAL EXPERT
→ 1 OFFICER to represent the DEPARTMENT dealing ī INFORMATION & PUBLICITY OF STATE GOVERNMENT
→ 3 EMINENT SOCIAL WORKERS, atleast one from the Women's Organisations

APPROPRIATE AUTHORITIES

STATE APPROPRIATE AUTHORITY

→ consist of 3 members

1. Additional Director of Health services [CHAIR PERSON]
2. 1 Officer from Law department
3. Other eminent women activist

DISTRICT & CORPORATION AUTHORITIES are also present

POWERS OF APPROPRIATE AUTHORITIES

→ Registration of Institutions
→ Seal & Seize
→ Power to Search & Seize records
→ cancellation or Suspension of registration

PNDT can be used for detection of abnormalities like

→ chromosomal abnormalities
→ Genetic metabolic Diseases
→ Haemoglobinopathies
→ Sex Linked genetic diseases
→ congenital abnormalities
→ any other abnormalities

INDICATED WHEN

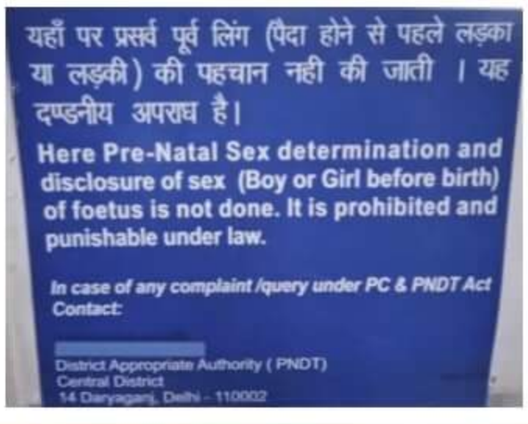
→ Age of pregnant women is above 35 years
→ 2 or more spontaneous abortions
→ Pregnant women has been exposed to drugs, radiation, infection or chemicals
→ Family history of mental retardation or Physical deformities in previous offspring

ESSENTIAL COMMUNICATIONS

→ Explanation of all Known side/after effects & test procedures
→ written consent in prescribed form & its copy given to her
→ Not to disclose sex of fetus by words, signs etc
→ display prominently in local language that disclosure of sex of fetus prohibited under law
→ Registration certificate to be displayed prominently in the clinic

AN UNDERTAKING

→ That the Genetic counselling center, Genetic clinic & Genetic laboratory shall display prominently a notice that they do not conduct any techniques, test or procedure etc by whatever name called, for detection of Sex of fetus or for selection of sex before or after conception



HUSBAND & RELATIVES can not ask or encourage pre-natal diagnostic techniques except for reasons permitted under law

FORM A → Prescribed application form which is to be filled in duplicate Affidavit assuring that the center will not indulge in sex determination

RENEWAL OF REGISTRATION

→ The certificate is valid for 5 years
→ Application for Renewal has to be made 30 days before the date of expiry in the prescribed form A

MAINTAINING PROPER DOCUMENTS

FORM G & F

→ Prescribed formats in which Genetic & Ultrasound clinics have to maintain records
→ Every center has to maintain a register of forms F & G for every patient

FORM G

→ The pregnant lady gives an undertaking that she does not want to know the sex of fetus

THE SONOLOGIST

→ also signs a declaration that he has neither detected nor disclosed the sex of the fetus to anybody

COMPLETE REPORT

→ All pregnancy related procedures information to be sent to the authorities by the 5th day of following month
→ All the records have to be preserved for a minimum period of 2 years or in the event of any legal proceeding, till the final disposal of the legal proceeding

INFORM ABOUT THE CHANGES

Genetic Laboratory, Genetic clinic / Genetic counselling center shall intimate OF CHANGE

↳ of employees
↳ places or
↳ equipment

} WITH IN 30 DAYS

VIOLATION OF THIS ACT

→ Imprisonment of 3 years & Rs 10000 [50,000] fine, but Subsequent conviction punishable ī imprisonment for 5 years & Rs 50,000 [1,00,000] fine
→ offence to be cognizable, non-bailable & non-compoundable
→ The later meaning the parties involved, can not take the case back

FETAL CIRCULATION

ADULT CIRCULATION - A RECALL

RIGHT HEART [Deoxygenated blood]

↓

LUNGS

↓

Blood gets oxygenated

↓

PULMONARY VEINS

↓

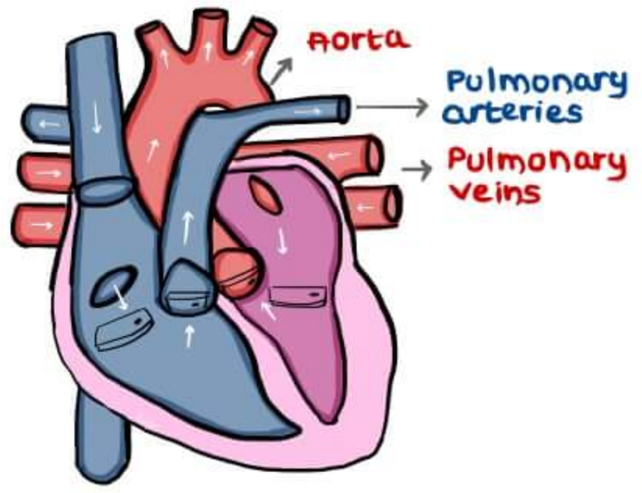
LEFT HEART [oxygenated blood]

↓

LEFT VENTRICLE

↓

Blood sent to all over the body via AORTA



ADULT HEART	→	works as SERIES
FETAL HEART	→	Works as PARALLEL

FETAL CIRCULATION

→ Oxygen exchange occurs in placenta

→ umbilical artery carries deoxygenated blood

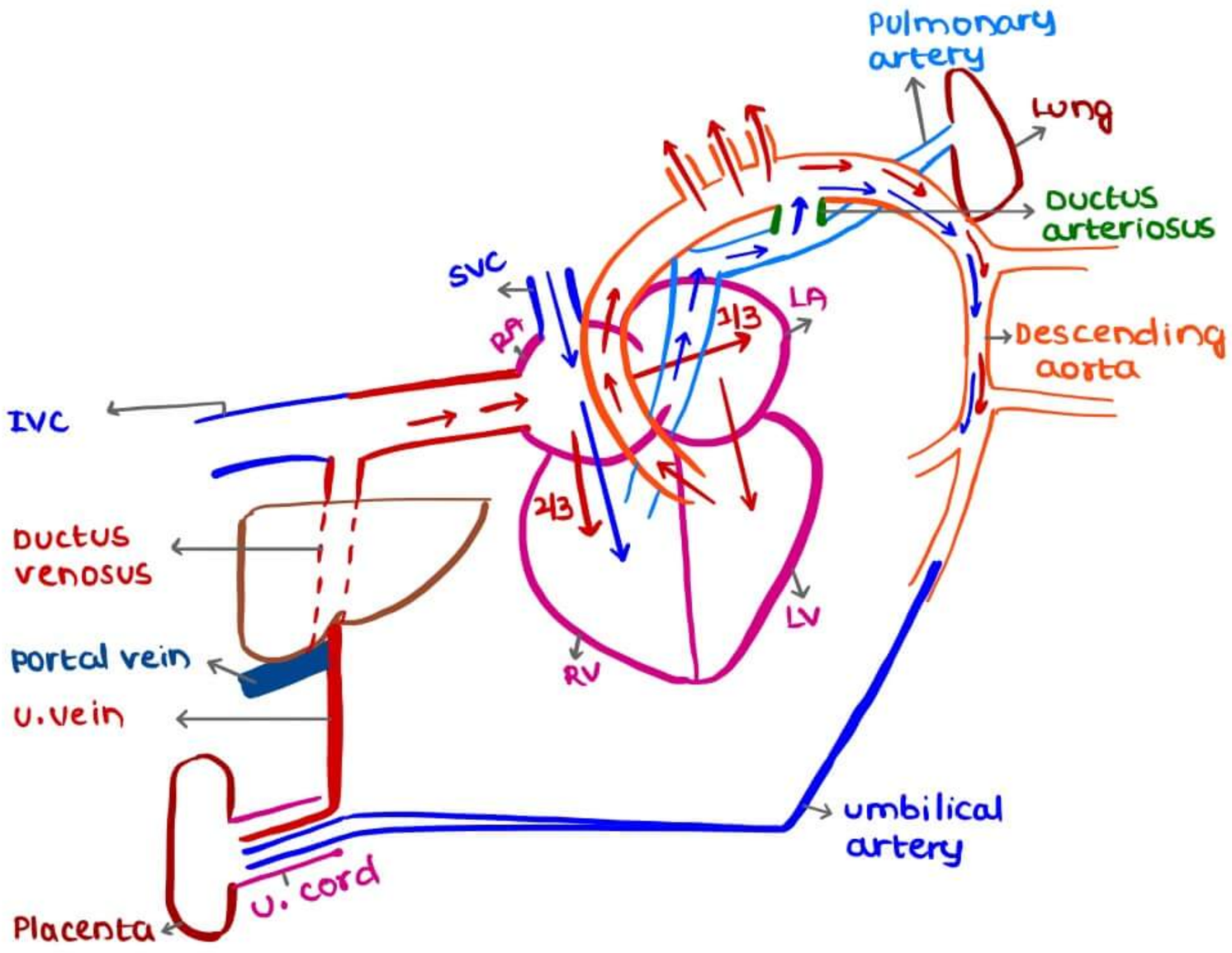
→ umbilical vein carries oxygenated blood

UMBILICAL CORD

→ contains

↳ 2 arteries

↳ 1 vein [Right vein obliterated, left vein persists; "LEFT VEIN LEFT BEHIND"]



UMBILICAL VEIN
[oxygenated blood]

→ PORTAL SINUS [10%]

→ INFERIOR VENA CAVA [90%] ← deoxygenated Blood from other parts of body
[oxygenated Blood]

↓

RIGHT ATRIUM

↓

CRISTA DIVIDENS

→ Oxygenated Blood

↓

FORAMEN OVALE

↓

LEFT ATRIUM

↓

LEFT VENTRICLE

→ Deoxygenated Blood
[some deoxygenated blood from SVC too]

↓

RIGHT VENTRICLE

↓

PULMONARY ARTERY → LUNGS
(dlt ↑ pressure, very less amount)

↓

DUCTUS ARTERIOSUS

LEFT VENTRICLE + DUCTUS ARTERIOSUS → AORTA

AORTA → Some part of Upper Limbs & Brain (via BC Artery) — Oxygenated Blood

AORTA → Rest of the Body — Partly Oxygenated Blood

↓

HYPOGASTRIC ARTERY

↓

UMBILICAL CORD

[Hypogastric Artery ≅ UMBILICAL ARTERY]

↓

OXYGENATION OF BLOOD

— OXYGENATED BLOOD
— DEOXYGENATED BLOOD
— PARTLY OXYGENATED BLOOD

EVENTS AFTER BIRTH

STRUCTURE	PHYSIOLOGIC CLOSURE	ANATOMICAL CLOSURE	REMNANT
DUCTUS VENOSUS	10 - 96 Hrs after birth	2-3 weeks	Ligamentum venosum
DUCTUS ARTERIOSUS	Within minutes of birth	3-7 days	Ligamentum arteriosus
FORAMEN OVALE	Within minutes of birth	1 yr after birth	Fossa ovalis

FATE OF

→ UMBILICAL VEIN → LIGAMENTUM TERES [Round ligament of Liver]
→ UMBILICAL ARTERIES → UMBILICAL LIGAMENTS

AMNIOTIC FLUID DYNAMICS

CONTRIBUTORS OF AMNIOTIC FLUID

MATERNAL CONTRIBUTION → in early pregnancy

FETAL CONTRIBUTORS → Fetal skin

→ Fetal urine [since 18-20 WKS onwards]

AMNIOTIC FLUID FORMATION

1. Urine → 1000 ml [+]
2. Lung secretion → 350 ml [+]
3. Fetal swallowing → 750 ml [-]
4. Intra membranous fluid transport across the blood vessels on the surface of placenta } 400 ml [-]

AMNIOTIC FLUID PROPERTIES

→ pH → Alkaline [7.4 - 7.6]

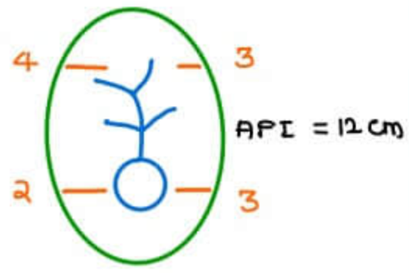
→ Specific gravity → 1.008 - 1.010

→ Colour → Straw colored

TYPES OF COLOURS OF AMNIOTIC FLUID & ASSOCIATED CONDITIONS

1. Red → Antepartum hemorrhage [Abruption]
2. Green → meconium staining liquor
3. Yellowish green → post term pregnancy
4. Tobacco juice → IUD
5. Golden yellow → Rh isoimmunization

AMNIOTIC FLUID INDEX [on USG]



Normal Amniotic Fluid Index → 10 - 15 [range 5-24] [1000 ml]

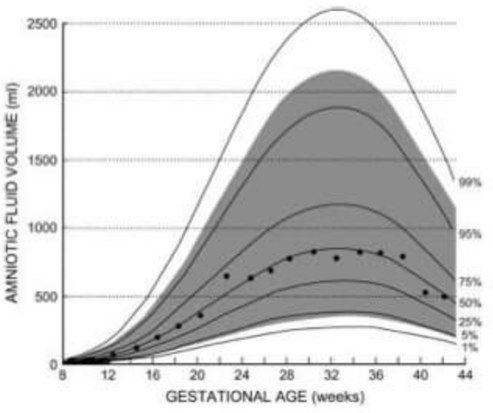
OLIGOHYDRAMNIOS → < 5 [< 500 ml]

POLYHYDRAMNIOS → > 25 [> 2000 ml]

SINGLE POCKET CRITERIA

Oligohydramnios → < 2 cm

Polyhydramnios → > 8 cm



AMNIOTIC FLUID VOLUME VS GESTATIONAL AGE

- maximum at → 32-34 Weeks [1000 ml]
- At 36 weeks, AF is less than 32 weeks → EXTERNAL CEPHALIC VERSION is possible
- Around 40 weeks → 600 ml

OLIGOHYDRAMNIOS

CAUSES

1. Renal anomalies
2. IUGR
3. Preeclampsia
4. Premature rupture of membranes
5. Amniocentesis → Leak
6. Amnion nodosum
7. Post term pregnancy
8. NSAIDs
9. ACE Inhibitors

MANAGEMENT

→ ↑ Fetal surviellance
→ wait for lung maturity → Early delivery
→ Amnion infusion

POTTER'S TRIAD

→ Pulmonary hyperplasia
→ Renal anomalies
→ contracted & malfigured limbs & Flat / compressed faces

→ Seen in severe Oligohydramnios

POTTER SEQUENCE

→ Pulmonary hyperplasia
→ contracted & malfigured limbs & Flattening of Faces

POLYHYDRAMNIOS

→ Liquor → > 25 AFI or > 2 liters of amniotic fluid
→ ACUTE POLYHYDRAMNIOS → Polyhydramnios seen < 24 weeks of gestat^{n}

→ > 25 - 30 → MILD [mc]
→ > 30 - 35 → MODERATE
→ > 35 → SEVERE [mostly a/w anomalies]

CAUSES

→ diabetes
→ twin gestation
→ cleft lip palate
→ duodenal atresia
→ esophageal atresia
→ Neural tube defects
→ gastroschisis

SYMPTOMS & SIGNS [Maternal]

→ dyspnea
→ Orthopnea
→ respiratory distress

TREATMENT

1. INDOMETHACIN [25 mg TID]
   → ↓ output of urine from fetus
   → Should not use beyond 32 weeks

2. THEURAPEUTIC AMNIOCENTESIS
   → at once 1500 ml can be aspirated in 30 min.

3. CONTROLLED ARTIFICIAL RUPTURE OF MEMBRANES IN LABOUR

LABOUR

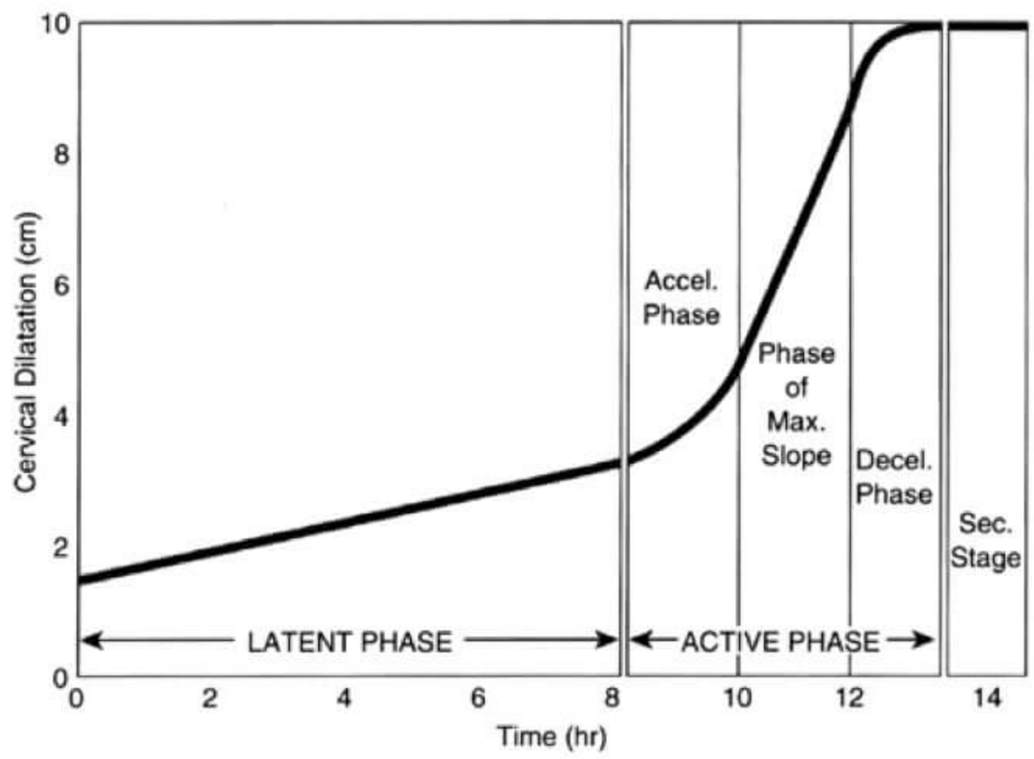
STAGES OF LABOUR

STAGE 1 → From onset of contractions to full Dilatat^{n} of cervix

STAGE 2 → From full dilatat^{n} of cervix to Delivery of baby

STAGE 3 → From Delivery of baby to removal of Placenta

STAGE 4 → Observat^{n} for 1 Hour



PHASES OF LABOUR

LATENT PHASE / PREPARATORY PHASE

→ 20 hrs in Primigravida

14 hrs in multigravida

ACTIVE PHASE / DILATATIONAL PHASE

→ 10 - 14 hrs in primigravida

6 - 8 hrs in multigravida

12 hrs is the upper limit in most cases

→ includes

Accelarat^{n} Phase

Phase of max. slope

Decelarat^{n} phase

Second stage

MONITORING OF LABOUR

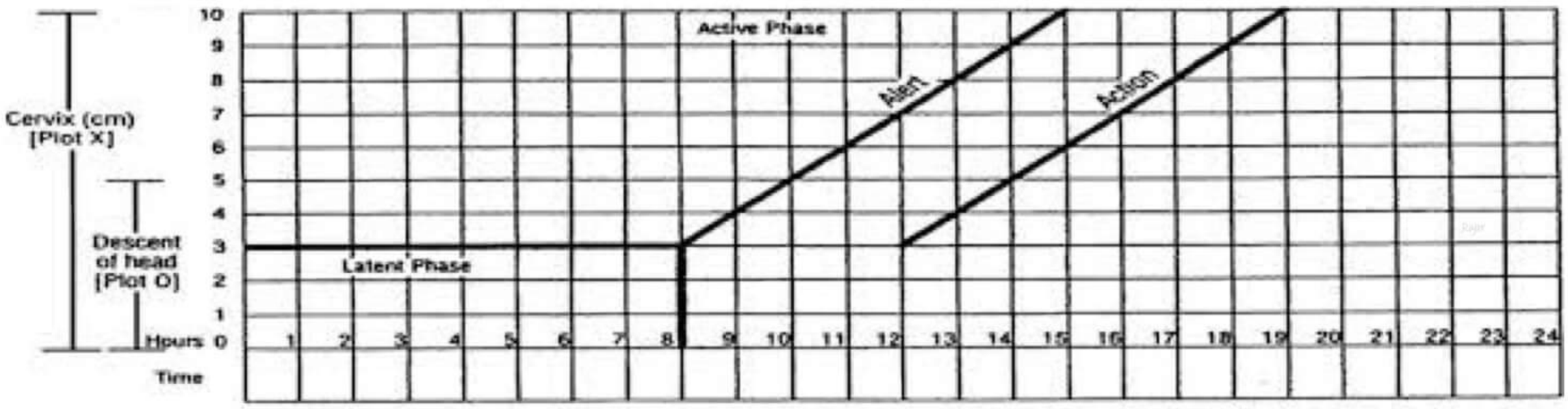
STATION OF LABOUR [Ischial spine is the reference point]

TIMING OF PER VAGINAL EXAMINATION

→ When the cervix is dilated > 4cm & regular contractions + nt

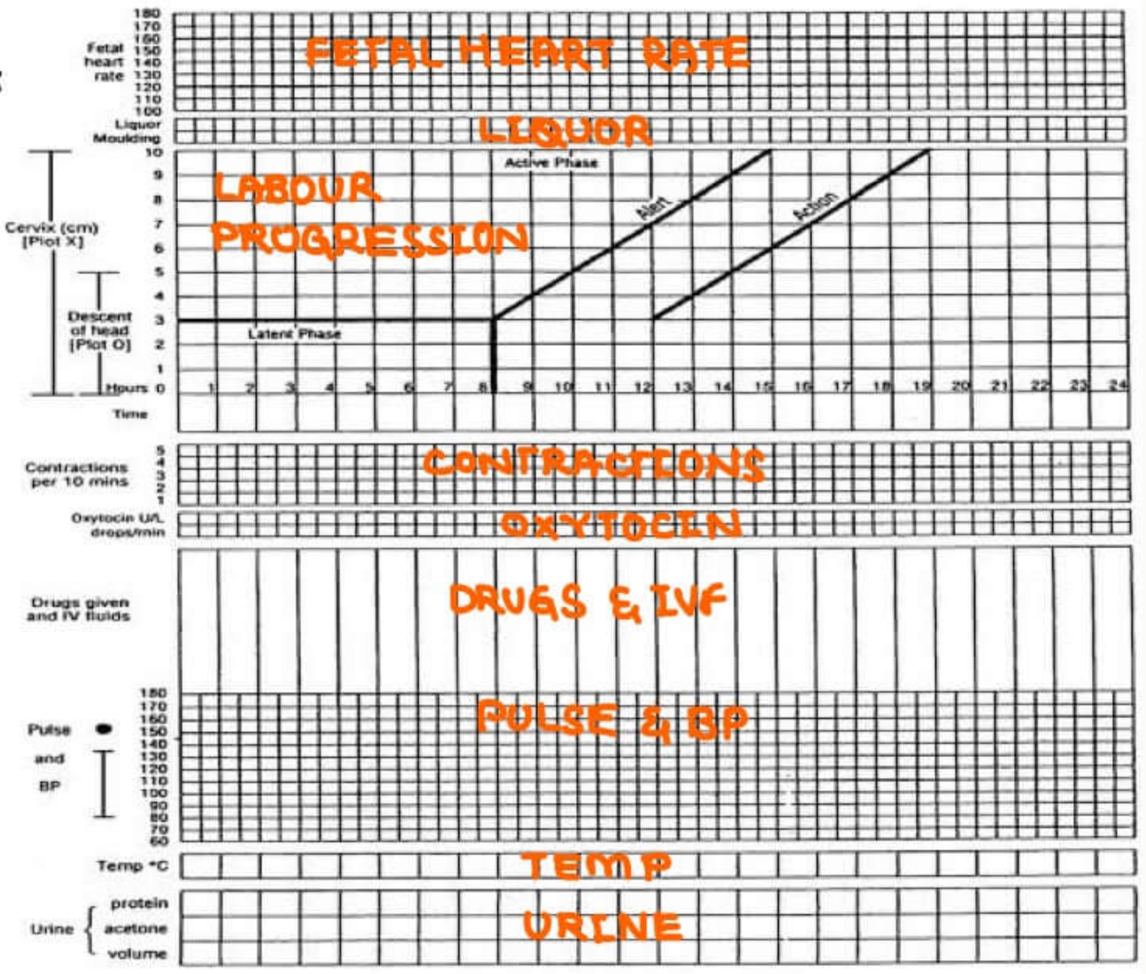
→ 2 Hourly PV exam in active phase

→ PARTOGRAM [WHO]



- Alert line, Action line } Reference lines to check the progress of labour
- ∈ partogram, we can monitor the Progress of labour

- We can monitor
  - cervical dilatations } Progession of Labour
  - Descent of head } Progession of Labour
  - Fetal Heart Rate
  - Liquor
  - contractions
  - Oxytocin administration
  - Drugs & IVF administratn
  - Pulse Rate, BP
  - Temperature
  - Urine output etc



ACTIVE PHASE DISORDERS

→ **PROTRACTION DISORDERS** [slowing down]

- Dilatation of cervix → < 1.2 cm/hr in primigravida
  → < 1.5 cm/hr in multigravida
- Descent of Head → < 1 cm/hr in primigravida
  → < 2 cm/hr in multigravida

→ **ARREST DISORDERS** [Total Stoppage]

- Dilatatn of cervix → No change in last 2 hrs
- Descent of Head → No change in last 1 hr

BISHOP SCORE

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

PRESENTATION

→ Part of fetus in the lower segment is Presentation
→ Cephalic is the mc presentation
→ Breach is the mc malpresentatn [3%]

Management

Presentid at the time of labour

Cephalic Presentation → Can be delivered normally

Breach Presentation → Trial OF (N) delivery in an institutional set up under the guidance of experienced gynecologist

Shoulder Presentation → Delivered by cesarean section

Presented at 36-37 wks

Cephalic Presentation ⟶ Normal Delivery

Breach Presentation ⟶ Ext. Cephalic version ⟶ Normal Delivery

Shoulder Presentation ⟶ Ext. cephalic version ⟶ Normal Delivery

INTERNAL PODALIC VERSION

→ Not done in transverse lie [Risk of uterine rupture] of singleton pregnancy

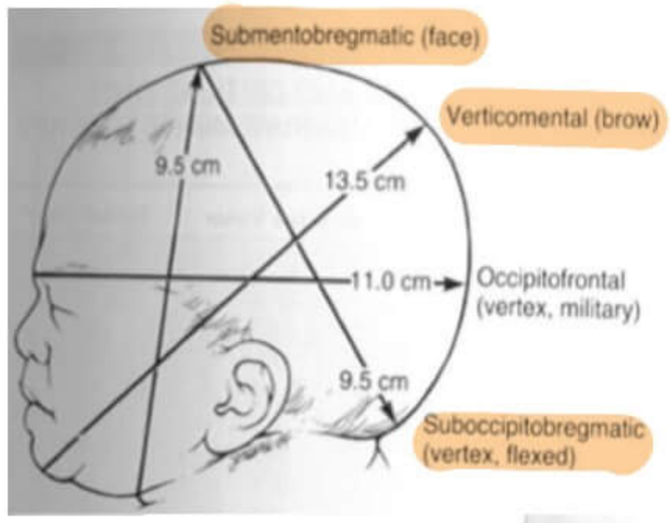
→ can be done in transverse lie of 2nd baby in twin pregnancy

- Reason → Uterus is relaxed

LIE → Relatⁿ blw the vertical axes of both mother & baby

PRESENTING PARTS

Presentation	Engaging Diamter	Mode OF Delivery
Vertex	Sub occipitobregmatic (9.5cm)	Normal
Face	Submento bregmatic (9.5cm)	Normal
Brow	Verticomental (14cm)	Cesarean sectⁿ



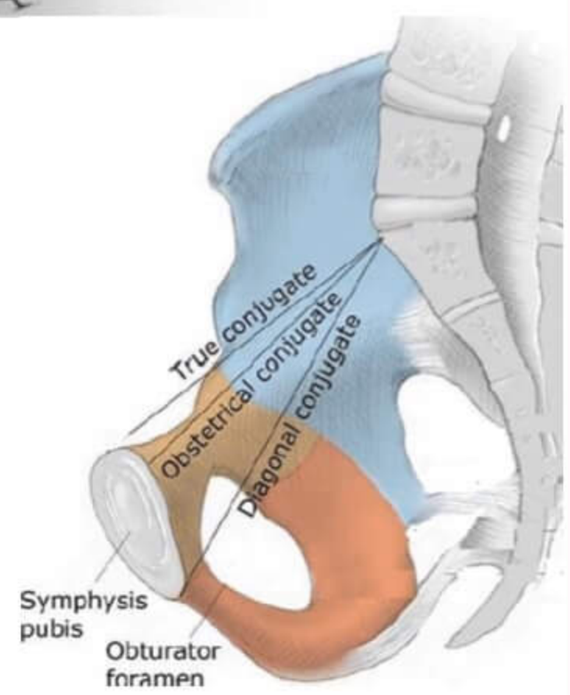
FEMALE PELVIS

→ 55° inclined ī horizontal

→ Anatomical | True conjugate → 11 cm [DC-1]

Obstetric conjugate → 10 cm [DC-1]

Diagonal conjugate → 12 cm



→ ANATOMICAL CONJUGATE → top of pubic symphysis to sacral promontory

OBSTETRIC CONJUGATE → back of pubic symphysis to sacral promontory

DIAGONAL CONJUGATE → bottom of pubic symphysis to sacral promontory

→ BISPINOUS / INTER SPINOUS DIAMETER → 10.5 cm

→ Distance blw Ischial tuberosities → 10.5 cm

→ < 8 cm → CONTRACTED OUTLET

→ POSTERIOR SAGITAL DIAMETER → 7.5 cm

→ CONTRACTED INLET / PELVIS → If obstetrical conjugate is < 10cm

→ If interspinous diameter is < 8cm

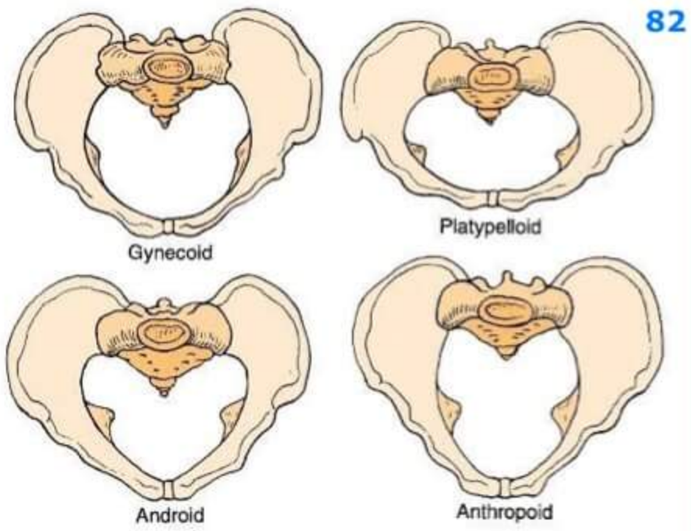
→ If the summatⁿ of posterior sagital diameter & interspinous diameter is < 15.5 cm

VERTEX PRESENTATION

→ mc position of vertex → LOT [40%] > LOA

→ mc malpositⁿ of vertex → ROP [Right occipito posterior]

OCCIPITO POSTERIOR POSITION PROBABILITIES



① 80% becomes OccipitoAnterior
→ Mode of delivery → Normal

② 15-16% becomes Persistent OccipitoPosterior
→ occurs in Anthropoid pelvis
→ Mode of delivery → face to Pubis delivery

③ 2-4% undergoes deep transverse arrest
→ occurs in android pelvis
→ Mode of delivery → Manual Rotatⁿ & forceps Extractⁿ
(Sagital suture of baby should be in AP plane of pelvis)
or
→ Cesarean Sectⁿ

BROW PRESENTATION

→ Diameter of engagement → vertico mental
→ Mode of Delivery → cesarean Section

FACE PRESENTATION

→ common PLATYPELLOID PELVIS

Lt. mento anterior Position

→ mc positⁿ of face presentatⁿ
→ Diameter of engagement → Submento bregmatic [9.5cm]
→ Delivery occurs ī flexion [Normal]

DIRECT Mento Posterior

→ Rotates posteriorly [unfavourable rotatⁿ]
→ Diameter of engagement → sterno bregmatic [17.5 cm]
→ Mode of Delivery → Cesarean section

MENTO POSTERIOR

→ Becomes mento anterior by rotating 3/8 ᵐ of the circle [favourable rotatⁿ]
→ Mode of delivery → Normal ī flexion

BREECH PRESENTATION

LEFT SACRO ANTERIOR POSITION

→ mc positⁿ of breech presentation
→ Attitude – flexion
– Legs comes out first
Attitude – Extension
– Buttocks comes out first
– Deliver the extended legs by PINARD'S MANEUVER →

→ Hold the baby at pelvic bone & pull the baby down

→ FLEXED UPPER LIMBS
- hold the upper limb from cubital fossa & pull it down

→ EXTENDED UPPER LIMBS → Deliverd by LOVESET'S MANEUVER
- pull the baby as low as possible
- rotate the baby to one side
- Hold the arm & pull it out from posterior roomy vagina

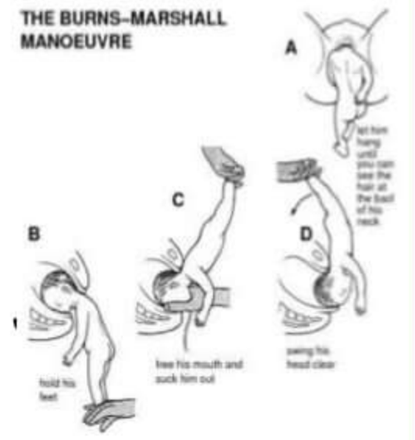
AFTER COMING HEAD DELIVERY BY

① PIPER'S FORCEPS [Safest method]

② MAURICEAU-SMELLIE-VEIT MANEUVER
- One hand
  - One finger on back of the head for Flexn
  - Others on shoulders for tractn
- Other hand
  - Two fingers on malar bones or Jaw for Flexn

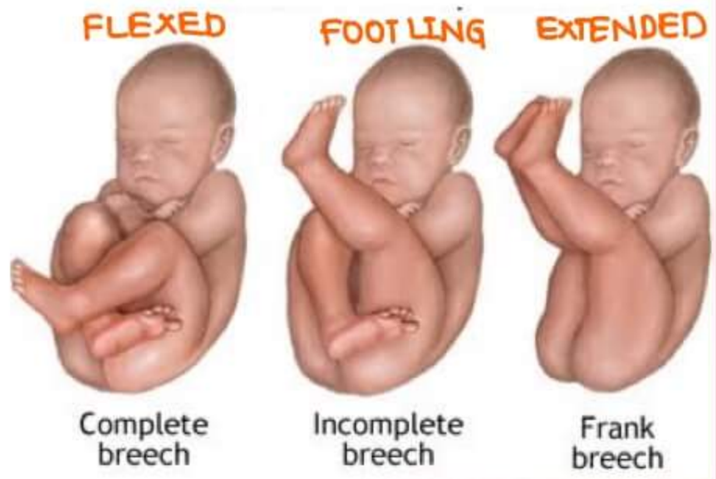
MSV MANEUVER

③ BURNS - MARSHALL MANEUVER
- Let hang the baby till the nape of neck is visible
- hold the feet
- Swing the baby head upwards [in a circle of arc] & the head pops out ī flexion



BREECH DELIVERY

VARIATIONS IN BREECH PRESENTATION
- → complete Breech [Flexed]
- → Incomplete Breech [Footling]
- → frank Breech [Extended]



- → mc breech } Frank Breech
  Best breech for vaginal Delivery }

- → complete Breech can be delivered vaginally
- → Footling Breech can be delivered by cesarean section
- → Breech ī Extended head → STARGAZING SIGN on USG
  → indicatn of cesarean sectn

STAR GAZING BREECH

BREECH VAGINAL DELIVERY

→ Always prefer the breech in anterior position

① BREECH EXTRACTION
② SPONTANEOUS BREECH DELIVERY
} done only for dead babies

③ ASSISTED BREECH VAGINAL DELIVERY

→ No touch till umbilicus delivered

→ For Extended legs → Do PINARD'S MANEUVER
for Extended arms → Do LOVESET'S MANEUVER

→ Delivery of after coming head

Ⓐ PIPER'S FORCEPS
Ⓑ MAURICEAU-SMELLIE-VEIT MANEUVER
Ⓒ BURNS-MARSHALL MANEUVER

FORCEPS DELIVERY

→ Forceps can be applied when head is fully rotated → The sagital suture of the head lies in anteroposterior axis of pelvis

→ Forceps can also be applied even if the rotatⁿ of head is partial [$\leq 45°$]

FORCEPS	VACCUM
APPLIED ON	APPLIED ON
→ fully rotated head or $< 45°$ remaining	→ Rotatid head or Non rotatid head
→ fully dilated cervix	→ > 6cm dilated cervix
→ Statⁿ → +2 & below	→ Statⁿ → +2 & below
→ membranes should be absent	→ membranes should be absent
→ Good contractions should present	→ Good contractions should present

SHOULDER DYSTOCIA

CAUSES

Large babies [$\geq$ 4kgs]
Post term pregnancies
Diabetes
Anencephaly [Net amount of oxytocin is ↓ed → Post term pregnancy]

COMPLICATIONS

Erb's Paralysis [C_5, C_6 injury]
Klumpki's Paralysis [C_8, T_1 injury]
Fetal Hypoxia
Neonatal morbidity & mortality

MANAGEMENT

→ CALL FOR HELP

MANAGEMENT

① SUPRA PUBIC PRESSURE

② Mc ROBERT'S MANEUVER

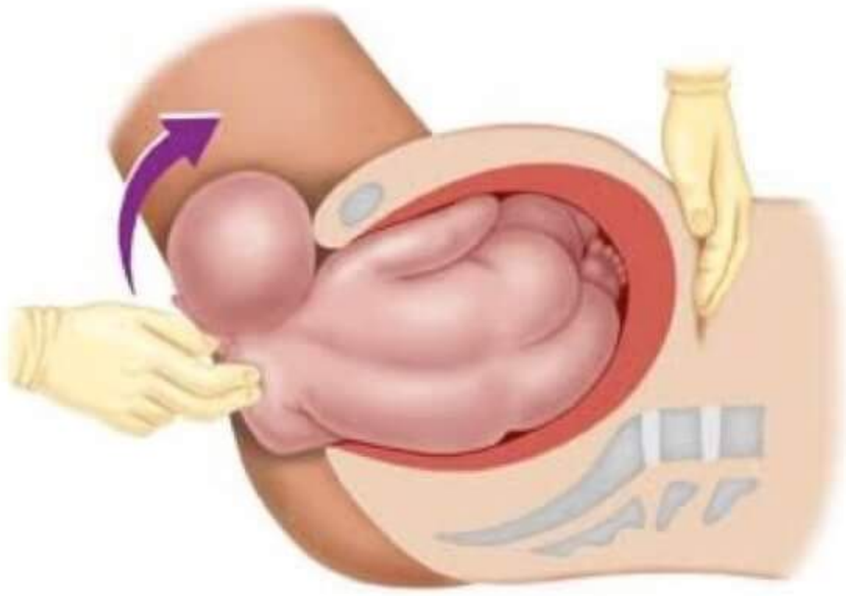
→ flex the hip joint >90°

③ WOODS CORK SCREW METHOD

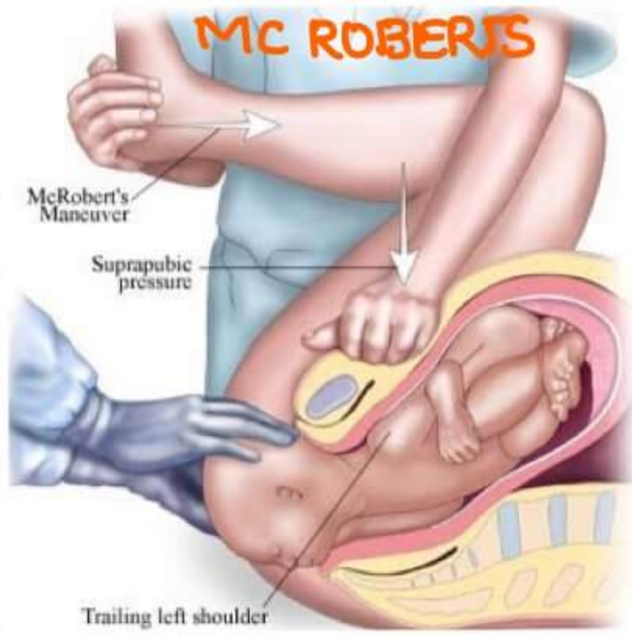
④ ZAVANELLI RESTITUTION

⑤ GASKIN MANEUVER

→ in a knee chest posit^{n}



WOODS CORK SCREW METHOD



ZAVANELLI RESTITUTN

C CESAREAN SECTION

EPISIOTOMY

INDICATIONS

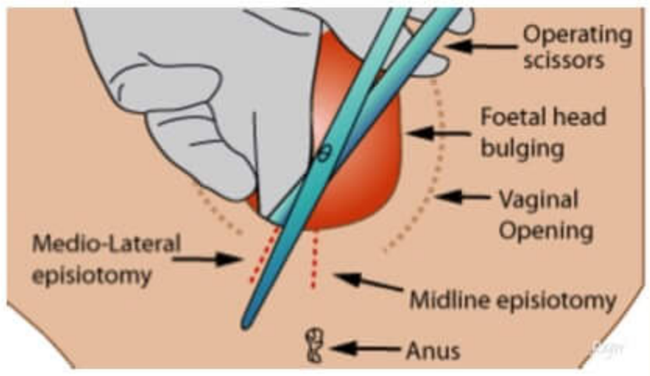
- → Breech
- → Instrumentat^{n}
- → Large baby
- → Persistent occipito posterior
- → Shoulder dystocia

COMPLICATIONS

- → Rectal incontinence
  - → Flatal incontinence
  - → Fecal incontinence

TYPES

- → MEDIAN
- → LATERAL [mostly avoided]
- → MEDIOLATERAL



STRUCTURES RESECTED

- → Skin
- → Sub cutaneous tissues
- → Superficial, Deep transverse perineal muscles
- → Bulbospongiosus, Levator ani
- → Transverse perineal branches of Pudendal nerves & vessels
- → Posterior vaginal wall

	MIDLINE EPISIOTOMY	MEDIO LATERAL EPISIOTOMY
REPAIR	more Easier	Easier
HEALING	Faster & better	Late
BLOOD LOSS	Minimal	more
SCAR WOUND	Even	Uneven
DYSPARUNIA	Rare	Occasional
POST OP PAIN	Lesser	more
WOUND EXTENS^{n}	More common	Less common

PUERPERIUM

→ from immediately after delivery to 4-6 wks of time
→ Immuno compromised state

CHANGES DURING PUERPERIUM

① REPRODUCTIVE ORGAN CHANGES
② SYSTEMIC CHANGES
③ ABNORMAL CHANGES
  → Endometritis
  → Wound infections
  → mastitis
  → Deep venous Thrombosis

REPRODUCTIVE ORGAN CHANGES

UTERUS

→ 1000gms of uterus returns to 100 to 200 gms
→ Size
  - immediately after delivery → just below the umbilicus
    Best time to do Puerperial sterilizatn → 2-3 days
  - uterus becomes a pelvic organ in → 10-14 days
    maximum time to do puerperial sterilizatn → 7-10 Days
  - Uterus becomes a normal organ in → 4-6 wks

CERVIX

→ becomes firm
→ Epithelium starts to regrow
→ Transformatn zone starts to reform [more suseptible to CA cervix]
→ Cervix closes by 3 wks

VAGINA

→ Starts shrinking
→ Rugae starts to reform from 2nd to 3rd week
→ Epithelium starts to grow from 4 to 6 wks

BREAST

→ Sudden drop of Hormones [Estrogen] } LACTOGENESIS
  Increase in Prolactin

→ COLOSTRUM
  - produced in 1st 2-3 days
  - rich in Ig A & Ig G, protein & fats

→ after 3 days, milk productn starts to increase

→ IF the women doesn't breastfeed, Breast will be normal in 3 wks

LOCHIA

LOCHIA RUBRA → 1st to 4th day , RED [mostly blood]

LOCHIA SEROSA → 5th to 9th day , YELLOW [mostly mucus , some RBC]

LOCHIA ALBA → 10th to 14th day , WHITE [mostly epithelial cells]

ABNORMAL CHANGES

PUERPERAL FEVER

→ any fever in 1st 10 days after delivery

→ Temp → > 38°C [100.4°F]

→ mc cause → Endometritis

ENDOMETRITIS

Causes

→ Enteric bacteria [mc]

→ Local commensals

→ Group A β hemolytic Streptococci [mc]

→ E.Coli, Klebsiella [Gram -ive]

→ Chlamydia [mc cause of late endometritis]

Clinical features

Symptoms

→ Fever

→ Pain abdomen

→ Dirty , foul smelling discharge

→ Fatigue , weakness

Signs

→ Lower abdomen tenderness

→ on P/V Examinath

- Uterine & adnexal tenderness
- Fullness of Pouch of Douglas

INVESTIGATIONS

→ ↑ leucocytes on CBC

→ ↑ ESR , ↑ CRP

TREATMENT

→ CLINDAMYCIN + GENTAMYCIN [Gold standard][90-97% Success Rate]

MASTITIS

→ mc cause → Staphylococcus aureus

Clinical features

→ Engorged breast

Tender breast

Fluctuant mass +nt

TREATEMENT

→ Stop breast feeding
→ express milk in moist heat
→ Oxytocin
→ Analgesics
→ Antibiotics
  Cephalosporins
  Penicilling

URINARY TRACT INFECTIONS

→ mc cause → E.coli
→ culture sensitivity should be Done

Management

→ Cephalosporins
→ Penicillins
→ Nitrofuntoin

DEEP VENOUS THROMBOSIS

→ accompanies the endometritis

Clinical features

→ Pain
  - in Abdomen or in Pelvis
  - Radiating to thigh
→ ↑Pulse Rate
  Fever

INVESTIGATIONS

→ ↑ WBC
→ ↑ ESR
→ ↑ CRP
→ DO CT Scan/ MRI → to localise the thrombus

TREATMENT

→ Bed Rest
→ Limited physiotherapy
→ IV antibiotics [clindamycin + Gentamycin]
→ Heparin 5000 IU - 10000 IU BID
  - INR Should be > 2

ENDOCRINE DISORDERS

→ Post Partum Thyroiditis
→ Graves disease
→ Sheehan Syndrome [Post Partum Pituitary Necrosis]

POSTPARTUM THYROIDITIS

→ dlt Acute destructive Lympocytic thyroiditis

→ Hyperthyroidism
- in first 1-4 months
- Rx ī PROPRONOLOL

→ hypothyroidism
- in later 4-8 months
- Rx ī Thyroxine supplementatⁿ

SUB INVOLUTION

→ Normal rate of reductⁿ of size of uterus → 1-2 cm/Day

Causes

→ Retained bits of placenta & membranes

→ infectⁿ

→ Blood clots

→ Fibroids

Clinical features

→ Bloggy or flabby uterus

→ Palpable beyond 10 days per abdomen

→ Tender

Fever + nt

TREATMENT

→ Empty the Uterus by Gentle curettage after doing USG

→ IV Antibiotics

→ Methyl Ergometrin Tablets
- 0.2 mg TID × 5-7 Days

PSYCHIATRIC DISORDERS

Blues	→	in 1st 2 weeks	[50-60%] [dlt sudden loss of Progesterone]
Psychosis	→	in 1st 2-3 months	[<1%]
Depression	→	in 1st 3-6 months	[10-15%]

POST PARTUM HAEMORRHAGE is also the part of abnormal puerperium

CAESAREAN SECTION

→ Good Rate of CS in any hospital → 18 - 25% overall
→ Most institute CS rate → 30 - 35% is acceptable

REASONS FOR INCREASED INCIDENCE OF CS

→ No. of children reducing
→ ↑ age at pregnancy
→ more use of electronic fetal monitoring
→ ↓ trial in previous CS & breach
→ CDMR [caesarean delivery on maternal request]

INDICATIONS OF CS

MATERNAL INDICATIONS	
→ Previous CS	→ permanent cerclage
→ abnormal placentation	→ reconstructive surgeries
→ Classical CS	→ Pelvic deformities
→ Scar dehiscence	→ HSV or HIV Infection
→ Full thickness myomectomy	→ cardiac & pulmonary disorders
→ Genital tract Obstructive mass	→ cerebral aneurysm
→ Invasive cervical cancer	→ Perimortem CS
→ Prior Trachelectomy	
MATERNAL - FETAL INDICATIONS	
→ cephalopelvic Disproportion	→ Placenta Previa
→ Failed Operative vaginal delivery	→ Abruption ī fetal distress
FETAL INDICATIONS	
→ Non - assuring fetal heart pattern	→ abnormal doppler studies
→ Malpresentation	→ prior fetal birth trauma
→ congenital anomalies	

CAESAREAN SECTION

→ mortality rate 7 | 100000 as compared to Normal delivery [3-4 | 1,00,000]

ADVANTAGES FOR MOTHER	
→ much less prolapse	→ much less urinary incontinence
ADVANTAGES TO BABY	
→ ↓ neonatal mortality [⩽ 1%]	→ ↓ Skull & clavicle fracture
→ ↓ Skin laceration	→ ↓ Brachial plexopathy
→ ↓ cephalohematoma	→ ↓ Facial nerve injury

PROCEDURE

1. Consent
2. Antacid 30 ml → to prevent MENDELSON SYNDROME [aspiration pneumonitis]
3. Regional anesthesia [neuraxial]
4. Sensory block should be at T_4 level & below
   [Epidural anesthesia in Normal delivery should be at T_{10} to L_1 & $S_2 - S_4$]
5. Best Position → Supine ī wedge under the right hip
6. Prophylactic ANTIBIOTCS → Cephalosporin [cefazoline] 1gm once [no routine AB]

7. PREPARATION OF ABDOMEN
   - → shaving not done
   - → clipping of pubic hair can be done

8. Check the fetal Heart sound prior to incision in OT
9. Decision to delivery should not be more than 30 minutes
10. TECHNIQUE

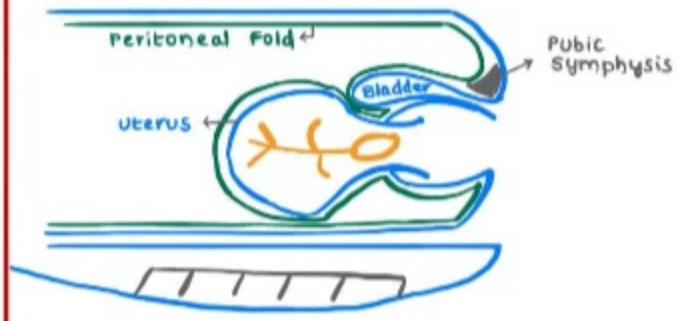
TECHNIQUE

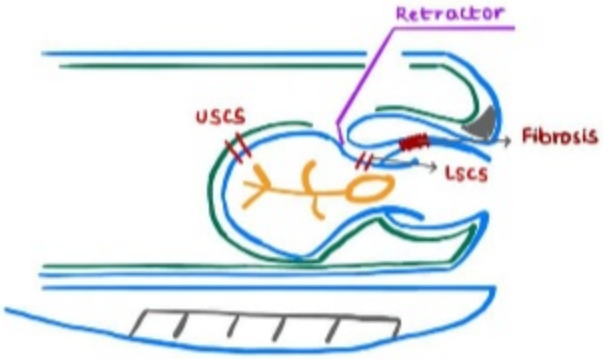
ABDOMINAL INCISION

- → Easy & fast incision → Vertical
- → Preferred incision → transverse / bikini incision / pfannenstiel incision / maylards incision

SIDE EFFECTS OF LOWER ABDOMINAL INCISION

- → Ilioinguinal nerve damage
- → Iliohypogastric nerve damage
- → Superior & inferior epigastric vessel damage





CLASSICAL CS : UPPER SEGMENT CS INDICATIONS

1. BLADDER FIBROSIS [mc indication]
2. LOWER SEGMENT TUMORS like Fibroid, ca cervix
3. POST MORTEM CS

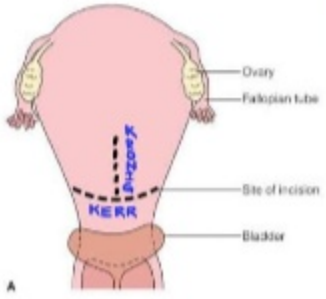
LSCS	CLASSICAL CS
→ Easy to repair	→ difficult to repair
→ Less bleeding	→ more bleeding
→ heal faster	→ slow healing
→ Passive low segment [retracts in labor]	→ no trail of ND is possible
→ trial is possible [VBAC]	→ rupture rate → 8-10%
→ rupture rate → 0.5 - 2%	

INCISION ON UTERUS

LOWER SEGMENT INCISIONS

1. KERR's Incision
   - → transverse incision
   - → MC incision on uterus

2. KRONIG Incision → Vertical incision



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CS COMPLICATIONS

- → Hemorrhage
- → Sepsis, peritonitis
- → Endometriosis
- → Thromboembolism
- → Anesthesia complication
- → visceral injuries
- → Fetal injuries
- → Hysterectomy

LATE COMPLICATIONS

- → incisional Hernia
- → Seroma formation
- → Scar rupture
- → wound break down
- → Infertility

PREVIOUS LSCS SCENARIO, TRIAL OF SCAR performed

- → VBAC [vaginal Birth After caesarean]
- → TOLAC [Trial of Labour After caesarean]

- → it should be in institutional setup
- → Should not be CPD
- → previous 1 LSCS
- → Rupture of uterus can happen
  - ↳ Partial [dehiscence]
  - ↳ Total

- → SIGNS OF RUPTURE OF UTERUS IN A VBAC / TOLAC
  - ↳ maternal tachycardia [1st sign]
  - ↳ vaginal bleeding, ↓ BP
  - ↳ fetal distress [Late sign]

CONTRACEPTION

FSH → OVARY → ESTROGEN → ENDOMETRIAL PROLIFERATION

LH → FOLLICLE [CORPUS LEUTEUM] → PROGESTERONE → ENDOMETRIUM SECRETORY

HORMONAL CONTRACEPTION

COMBINED ORAL CONTRACEPTIVE PILLS [C.OCP]

MECHANISM OF ACTION

Estrogen & Progesterone tablet } negative Feedback ⊖ → FSH release, LH release } NO Follicle development & rupture → ANOVULATORY CYCLE

Patient on C.OCP have

- → ANOVULATORY CYCLE
- → LESS DYSMENORRHEA
- → PILL PERIOD / ARTIFICIAL PERIOD
  - ↳ have menstruation dlt E/P Pill [not dlt Natural E/P]
  - ↳ have monthly periods dlt Exogenous Estrogen & progesteron which causes follicle proliferation & secretion respectively
- → REGULAR PERIODS
  - ↳ C.OCPs are given for 21 days & patient will have period on 28th day
- → LESS BLEEDING & LESS ANEMIA
  - ↳ dlt Low dose Estrogen [Ethinylestradiol 0.03 mg / 30 µg], causes minimal endometrial proliferation

BENEFITS

- → ↓ Endometrial cancer
- → ↓ ovarian cancer
- → ↓ colon cancer
- → ↓ Benign Breast Disease
- → ↓ Fibroid
- → ↓ Ovarian cyst
- → ↓ PID

ADVERSE EFFECTS

- → ↑ ADENO CARCINOMA CERVIX [not Squamous cell cancer (mc type of cervical cancer)]
- → ↑ SMOOTH TYPE GALLSTONES, not a/w GB cancer [mixed, Pigment stones a/w GB cancer]
- → ↑ HEPATIC ADENOMA [not HCC]
- → ↑ CHLAMYDIA PID [Indolent]

NO EFFECT ON BREAST CANCER INCIDENCE

USAGE

- → Started on Day 1-5 of menstrual cycle
- → QUICK START PROTOCOL
  - ↳ Start anytime of menstrual cycle
  - ↳ mainly for low socioeconomic & teenage patient

- → MISSED PILL
  - ↳ Missed 1 → take 2 on next day
  - ↳ missed ≥2 → take pill on the day + next 7 days → another method

CONTRAINDICATIONS

- → Pregnancy
- → Breast Feeding
- → Deep venous thrombosis / pulmonary embolism
- → Liver Disease : cirrhosis, hepatitis, cancer
- → HTN > 160/100 mm Hg
- → Age ≥35 yrs + smoker
- → Active breast cancer
- → Diabetics ī neuropathy or nephropathy
- → Ischemic heart disease / stroke
- → migraine ī aura

NOT A CONTRAINDICATION → STD / PID / HIV

TYPES OF OCPs

- → TYPE I → High dose
- → TYPE II → Low dose
- → TYPE III → NEWER PROGESTINS [↓↓ androgenic action]
  - → Desogestrel
  - → Norgestinate
  - → Gestodene

- → TYPE IV → DROSPIRENONE
  - → ACTIONS OF Drospirenone
    - ↳ Progestation
    - ↳ anti androgenic
    - ↳ anti mineralocorticoid

- → good for those ī pre menstrual dysphoria & acne
- → COMBINATION → 3 mg Drosperenone & 20 mg Ethenylestradiol
  - ↳ this combinat^{n} will give Regular cycle & good antiandrogenic action

- → Given via 24/4 PROTOCOL, 24 days of pills & 4 days gap

MINIPILL / PROGESTERONE ONLY PILL [POP]

→ should maintain same time consumption / within 3 hours the next day

DESOGESTREL

→ NEWER MINIPILL
→ S/E → irregular spotting
→ Excellent for lactating women

SAHELI [CENTCHROMAN]

→ developed by CDRI [Lucknow]
→ ORMILOXIFENE → makes endometrium OUT OF phase & implantation is ↓ed
→ USAGE → twice/week for 3 months, then once/week till the contraception is desired
→ SIE → delayed cycles

PERMANENT METHODS

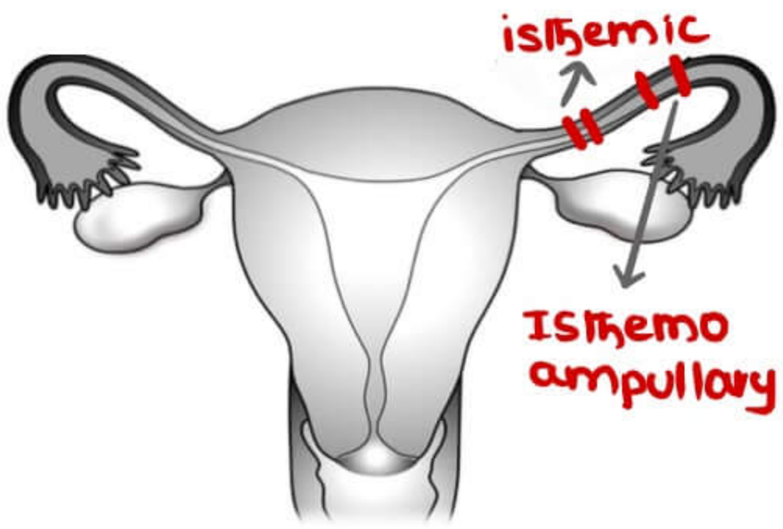
Q. WHEN TO DO : SOUND ADVICE [not a guide line]
A. For those ī 2 children atleast & last child preferably > 3 years

FEMALE STERILIZATION

SITE OF LIGATION ON FALLOPIAN TUBE

ISTHEMIC STERILIZATION

→ Isthemoisthemic reanastamosis has upto 80% success
→ prefer ligate at isthemic area



TUBECTOMY

→ MC time in India → Post partum [Puerperal]
↳ Immediately after delivery, uterus is at the level of umbilicus, as uterus is an abdominal organ, it is easy surgery

PUERPERAL STERILIZATION [PS]

→ Best done within 2-3 days after delivery
→ upper limit is 7-10 days

→ uterus becomes pelvic organ in → 10-14 days
→ becomes normal organ in → 4-6 weeks

INTERVAL STERILIZATION

→ Done after 6 wks of delivery
→ Done by Laparoscopic methods.

CONCURRENT STERILIZATION

→ Done along ī MTPs or Cesarean section

ENTRY INTO ABDOMEN is by

1. LAPAROTOMY [MINILAP (1.5 to 2 inch incisn)]
2. LAPAROSCOPY
   - → generally for interval sterilizatn
   - → Never do in Puerperium
     - ↳ can cause injury
     - ↳ failure chances is more

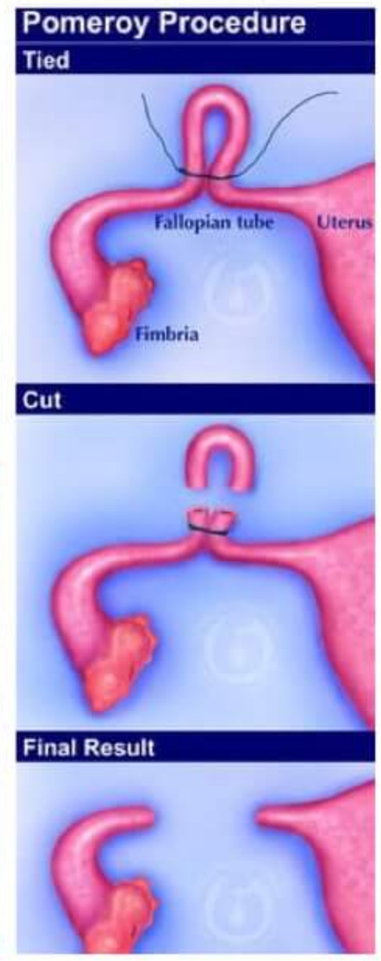
TECHNIQUES

1. POMEROY TECHNIQUE

- → mcly done
- → Single ligature is used
- → tube cut end are together
- → can lead to fistula formatn

2. PARKLAND TECHNIQUE

- → Double ligature is used
- → tubes are ligated separately

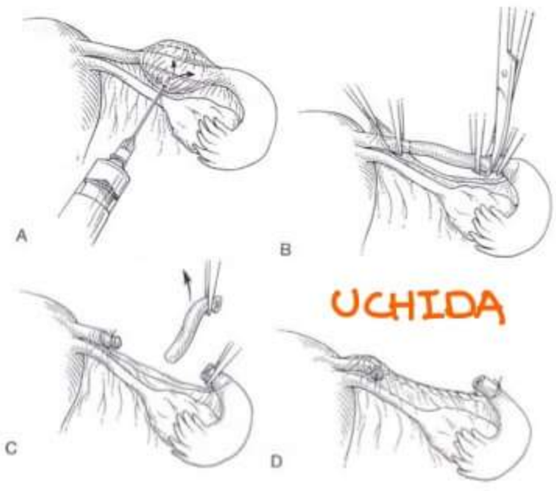


3. IRWING PROCEDURE

- → one end of tube is anastamosed into uterine musculature
- → Other end of tube is anastamosed into mesosalpinx

4. SUB MUCOSAL DISECTION OF TUBE [UCHIDA'S PROCEDURE]

- → Serosa is lifed by needle & saline is injected
- → Then serosa is incised & Tube is resected
- → Serosa is sutured again
- → Fibrosis & adhesions are very less, as cut ends are within the serosa

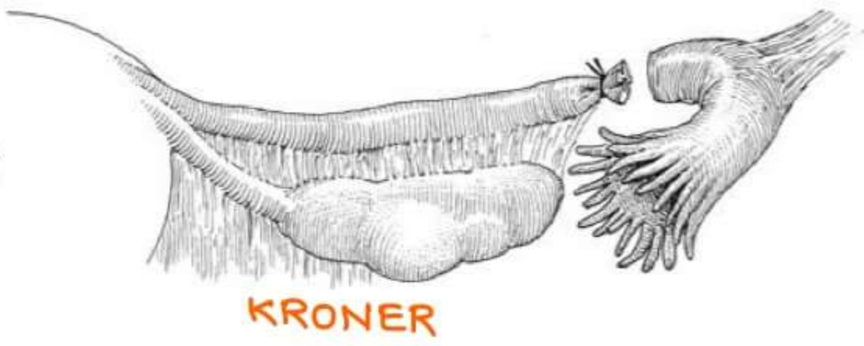


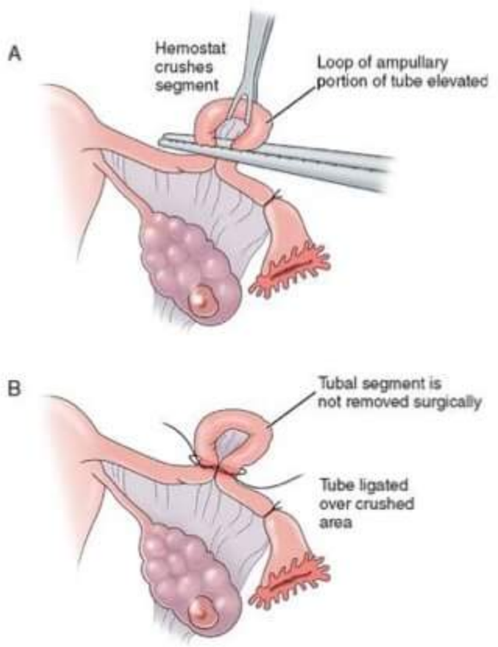
5. MADLENER'S METHOD

- → Tubes are crushed, not resected
- → High failure ratis, not done these days

6. KRONER'S FIMBRIECTOMY

- → No reversal is possible
- → not done these days





STRUCTURES LIGATED BY MISTAKE

- → Round ligament [mc]
- → Small bowel
- → Ovarian ligament
- → Appendix

- → ~~Ureter~~
- → ~~Uterine artery~~

} can't be ligated by Mistake as they are retroperitoneal

BASIC STEP TO FOLLOW TO AVOID LIGATING OTHER STRUCTURES

→ After pulling out the structures ī BABCOCK'S FORCEP [atraumatic grip], always look for fimbriae & then ligate

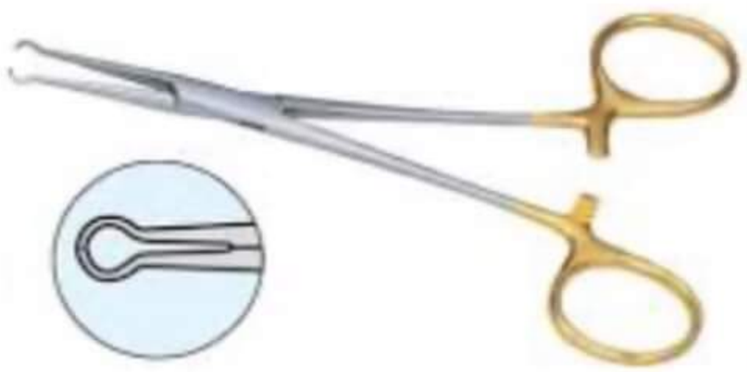
FAILURE RATE OF TUBECTOMY IS MORE THAN VASECTOMY

Babcock's forcep

VASECTOMY

→ least failure rate in permanent method
→ much easier to do vs tubectomy
→ NON SCALPEL VASECTOMY can be done
  → we stabilize ī RING FORCEP, pull out the vas deferens ī sharp artery forcep & ligate it

→ avoid heavy weight lifting



Ring forcep

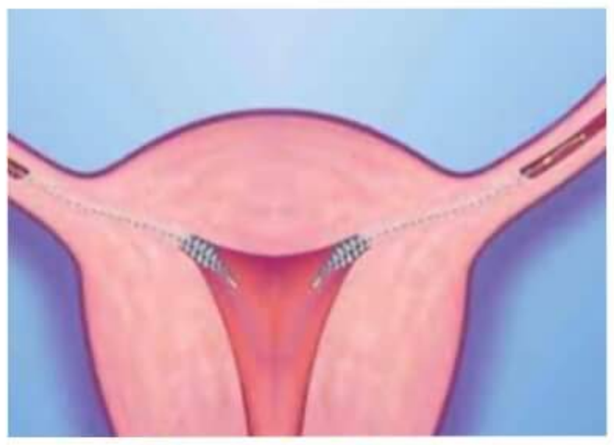
→ SIDE EFFECTS
  ↳ dragging pain
  ↳ Hematoma
  ↳ infections
  ↳ Epidydimytis
  ↳ Sperm build up
  ↳ antisperm antibody can be form

→ Sperm present in part distal to ligation can still cause pregnancy
  → for 3 months or 30 ejaculation, whichever is later → use barriers or other contraceptives

→ After 3 months, sterilization should be confirm by semen analysis. It should show azoospermia

ESSURE RING

→ Hysteroscopic implant of ESSURE RING
→ made up of NITINOL [Alloy of Nickel & Titanium]
→ causes fibrosis & blockage of tube
→ can be done under local & GA
→ takes 3 months to completely block the tube
→ Hysterosalpingography done to confirm blockage



ESSURE RING

GYNECOLOGY

MENSTRUATION, MENOPAUSE, CONCEPTION, CONTRACEPTION, INFERTILITY

MENSTRUATION

PRIMORDIAL FOLLICLES

→ 6-7 millions at 20 weeks of IU Life
→ 1-2 millions at birth
→ 3-4 Lakhs at Puberty
→ 400-450 utilized

CASE 1 → Women in whom fertilizat^{n} occurs

→ FIMBRIA OVARICA → Extra long fimbria which takes up oocyte
→ Life of oocyte → 24 hrs to 48 hrs [Best answer → 24 hrs]
→ Sperms fertilize oocyte in ampulla
→ Embryo reaches the uterine cavity on 3rd day of ovulat^{n}
→ IMPLANTATION WINDOW
  ↳ Implantat^{n} on Secretory or ripened endometrium on 6th to 9th day or 20th to 24th day of the menstrual cycle
  ↳ Progesterone is responsible for Secretory endometrium
    ↳ source → corpus luteum [follicle]
→ Estrogen is responsible for Proliferatory endometrium [Source → follicle]

CASE 2 → Women in Whom fertilizat^{n} does not takes place

CORPUS LUTEUM

→ start to degenerates [max funct^{n}] at → 9th to 10th Day
→ Complete degenat^{n} at 14th to 15th Day → SHEDDING OF ENDOMETRIUM
→ Progesterone withdrawal is responsible for shedding of endometrium

→ Length of cervix → 3.5 to 4cm
  Short cervix → ≤ 2.5 cm

MITTLESHMERZ / MID CYCLE PAIN → dlt blood & debris [from follicle] collected into POD AT THE TIME OF OVULATION

DYSMENORRHEA [pain of menstruat^{n}] → dlt uterine contractions
Prostaglandins are responsible

CASE 3 → ANOVULATORY CYCLES

→ No MITTLESHMERZ / mid cycle pain
→ Irregular [dlt intermittent recoil of uterus]
→ Painless [dlt No / less Prostaglandins]

→ OVULATORY CYCLES ARE REGULAR & PAINFUL

DYSMENORRHEA

TYPES

PRIMARY / SPASMODIC DYSMENORRHEA

→ Pain starts 30 min before onset of periods & Stays 10 hrs post onset

→ Seen in Normal woman

CONGESTIVE / SECONDARY DYSMENORRHEA

→ Pain starts 3-4 days prior and stays throughout menses

→ Seen in PID & endometriosis

MEMBRANOUS DYSMENORRHEA

→ Fibrinolytic system in uterus is responsible for less / non clumping of blood

→ Total absence of Fibrinolytic system → endometrium shed like CAST of ENDOMETRIAL CAVITY

TREATMENT

① NSAIDS
- → IBUPROFEN
- → NAPROXEN
- → MEFENAMIC ACID

② Antispasmodics
- → DICYCLOMIN
- → DROTAVARINE
- → HYOSCINE

③ Combined Oral Contraceptives

④ Surgical Dilatation of cervix [Parous women has lesser spasmodic dysmenorrhea]

⑤ Pre Sacral Nerve ablation → Laser or thermal resectn of Hypogastric plexus

⑥ GnRH Analogues → will stop the periods

BASIC DEFINITIONS OF MENSTRUAL CYCLE

→ Length of menstrual cycle → 28 ± 7 Days
- → Polymenorrhea → < 21 Days
- Oligomenorrhea → > 35 Days

→ Duration → 2-7 Days
- Hypomenorrhea → < 2 days
- Menorrhagia > 7 days

→ Amount → 30 - 50 ml per cycle
- Excessive blood loss → > 80 ml [menorrhagia]

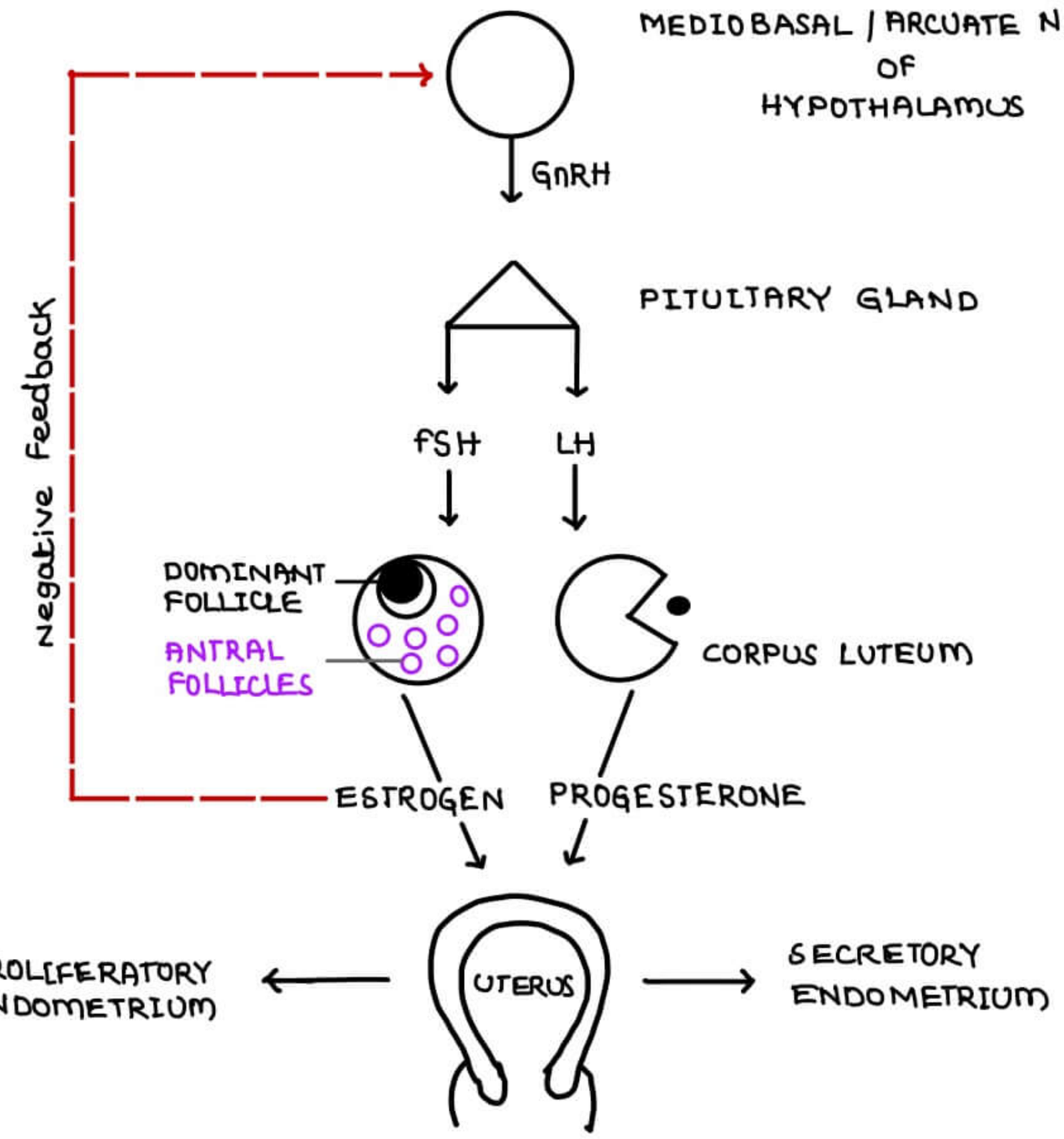
→ POLYMENORRHAGIA → < 21 days & > 80 ml of blood loss

→ METORRHAGIA → Irregular cycles superimposed on Regular cycles
→ Intermenstrual bleeding [Spotting]

→ MENOMETORRHAGIA → Irregular acyclical bleeding

→ METEROPATHIA HEMORRHAGICA
- Prolonged amenorrhea followed by heavy withdrawal
- amenorrhea → 2 1/2 - 3 months
- in a women > 40 yrs
- Anovulatory cycle, irregular
- Hyperplasia of endometrial glands ⊕nt
- Non Secretory Endometrium
- Diagnosed by curettage & microscopic Examinat^{n}
  - Cystic glandular Hyperplasia [SWISS CHEESE ENDOMETRIUM]
  - very less Stroma
- Self limited condition
- curettage is also curative

PHYSIOLOGY

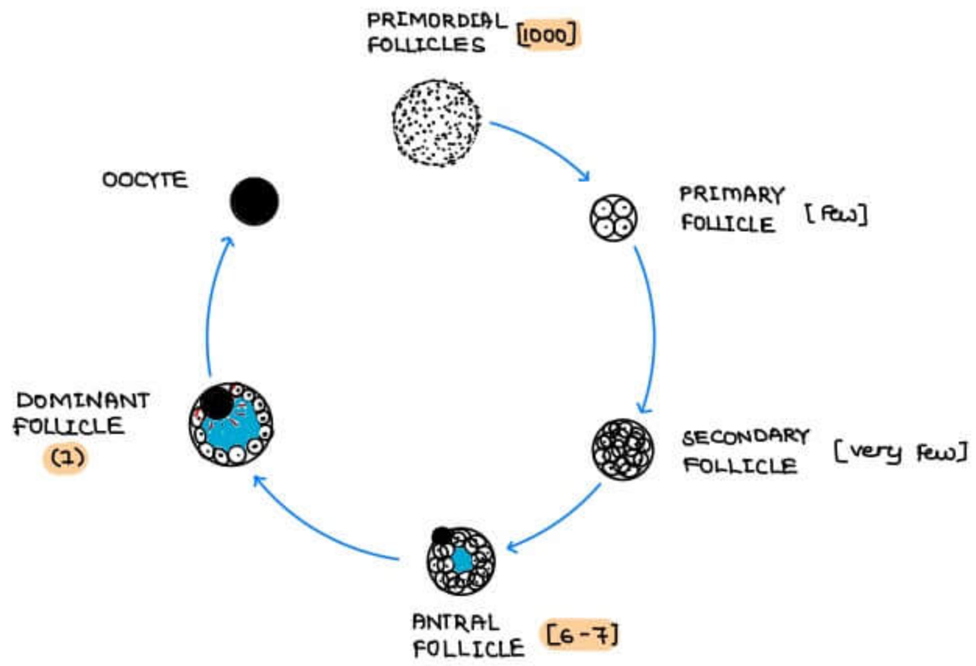


→ GnRH Releases in pulsatile fashion
- 60 minutes in follicular Phase [Faster [60 min] in follicular phase]
- 90 minutes in Luteal Phase [Longer [90 min] in Luteal phase]

→ GRANULOSA CELL OF FOLLICLE
- Sex cord cells
- produce estrogen

→ ANTRAL FOLLICLES

- Fluid filled follicles
- 6-7 made every month



→ Perimenopausal women have irregular cycles d/t OLD follicles

Fate of reproduct^{n} during perimenopausal period

1. Anovulatory cycle
2. poor oocytes
3. No fertilizat^{n}
4. Poor embryos
5. Abort^{n} [40% after 40 years]

→ > 35yrs Pregnancies → ELDERLY GRAVIDAS

indicated for

- Level II scaning
- Triple markers, dual markers
- Amniocentesis

OVARIAN RESERVE

QUANTIFICATION

OVARIAN RESERVE

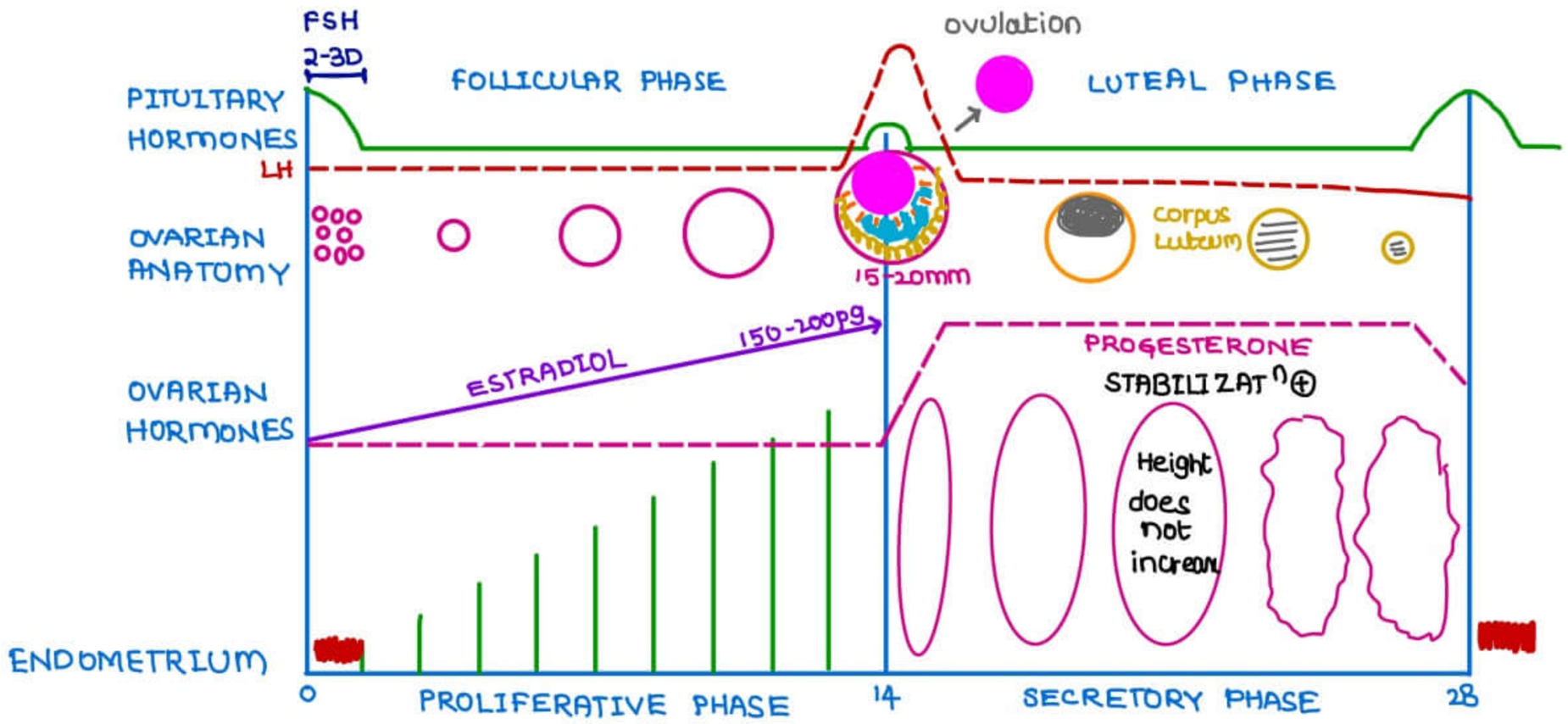
① ↓ ANTRAL FOLLICULAR COUNT [young - 6 to 7, older - 1] → ↓
② ↓ OVARIN VOLUME [young - 3.5 x 2.5 x 3 cm, older - 1 x 1.5 x 1 cm] → ↓
③ ↑ AGE → ↓
④ ↓ ESTROGEN → ↓
⑤ ↑ FSH → [younger - 2 to 6 IU, Older - > 15 IU] → ↓
⑥ ↓ ANTI MULLERIAN HORMONE → made from granulosa cells of ovary → ↓

Purpose of FSH → Estrogen Product^{n}
Purpose of LH → Progesteron Product^{n}

GOOD INDICATORS OF OVARIAN RESERVE

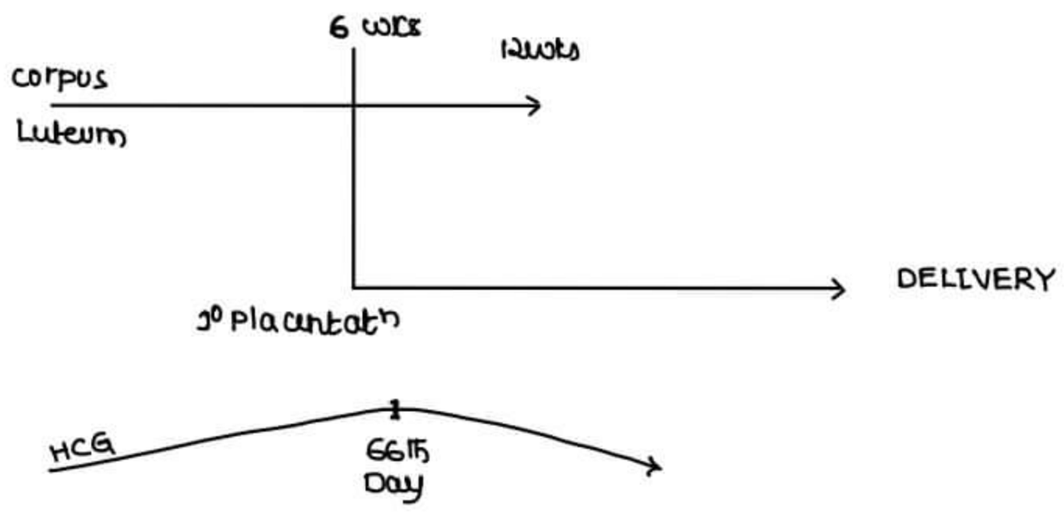
→ AFC
→ FSH
→ AMH [single best for assessment]

→ Ⓝ FSH → 2-6 IU
>10 IU → Suggestive of Menopausal women
>40 IU → Diagnostic of Menopause

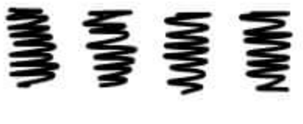


MAINTAINANCE OF PREGNANCY

→ Exclusively maintained by CORPUS LUTEUM upto 6 wks
  - corpus Luteum remains upto 12 wks in pregnancy
→ By corpus luteum & placenta → from 6-12 weeks
→ only by placenta → after 12 weeks
→ Luteo-Placental shift occurs at 6 wks



→ Hyperemesis is maximum at 66 th day [9 Weeks + 3 days]
→ Abortn can be Rx by → Progesterones
  HCG
→ SPINBARKIET STRECHABILITY [Cervical mucus strechability] [max. at 14th day]
  ↓
  on drying
  ↓
  FERNING / ARBORISING PATTERN [Nacl crystals]



→ FERTILE PERIOD → 11th to 16th day
  - Life span of sperm → 72 hrs
    Life span of ovum → 24-48 hrs

CASE → On 24 th day of cycle
→ Cervical mucus is thick } fertilizatn doesn't occur
→ NO OOcyte
→ SAFE PERIOD → Before 11 th day & after 16 th day

BILLING METHOD
→ Natural method of contracptn
→ Based on cervical mucus physiology

PROGESTERONE ONLY PILLS [POP]
Mechanism of Action
→ Cx mucus on 14 th day → thick & viscid
→ Anovulation [No OOcyte]
→ Unfarouble for implantation → Hyper secretory Endometrium
[OUT OF PHASE ENDOMETRIUM - Pinopods are Internalized]
→ failure Rate → 1 to 2 %.

→ 1 St line hormonal management of abnormal uterine bleeding → PROGESTERONE
- stabilizes endometrium in a physiological way
→ Next line of management → ESTROGEN
→ First line of Drug in Acute SEVERE Menorrhagia → ESTROGEN

IVF
→ CONTROLLED OVARIAN HYPERSTIMULATION
→ Give FSH injections [multiple] from begining of the cycle, many follicles will be recruited

→ on 14 th day, under General Anesthesia & take all OOcytes from the follicles i the help of TVS
→ Take few of best OOcytes & put them into test tube
→ Fertilize i sperm in test tube → Embryo formed
→ Put the Embryo back in the uterus
→ Excess embryos are stored in liquid N_2 [-196°c] [FROZEN EMBRYO TRANSFER]

→ 1St IVF Baby → LOUISE BROWN [1978]
→ 1St IVF done by → STEPTOE & EDWARDS
→ In 2010, Noble prize given to EDWARDS

OVARIAN HYPERSTIMULATION SYNDROME

CONTROLED OVARIN HYPER STIMULATION

→ 200 x 15 eggs → 3000 pg of Estradiol
200 x 40 eggs → 8000 pg of Estradiol

→ > 3500 pg of Estradiol leads to
→ Vascular Endothelial Growth factor
Renin, Pro renin
Angiotensin
} ↑ VASCULAR PERMEABILITY

↑ VASCULAR PERMEABILITY
↓
Fluid shifts
↓
Third space collections
- Ascitis
- Pleural effusⁿ
- Pericardial effusⁿ
- edema
} Death

→ Haemoconcentration → > 45 or > 55
Ⓝ Packed cell volume [HCT] - 33
↓
Thrombo embolic phenomenon
↓
Renal Emboli
Cerebral Emboli
Hepatic Emboli
Limb Emboli
} Death

→ Torsion
Rupture of ovary
Haemorrhage
} Death

→ COH —may lead to→ OVARIAN HYPERSTIMULATION SYNDROME

OVARIN HYPERSTIMULATION SYNDROME

PRE DISPOSING FACTORS

→ Inj HCG [Initiating factor] [used for rupturing the follicle]
→ Vascular Endothelial Growth factor
→ Renin, Pro renin
→ Angiotensin

MATHUR CLASSIFICATION

→	MILD	< 8cm	NO Ascitis	
→	MODERATE	8 - 12	USG Ascitis	
→	SEVERE	> 12cm	Clinical Ascitis	HCT → > 45
→	CRITICAL		Tense Ascitis	HCT → > 55

→ No pregnancy is advised in severe & critical OHSS

→ frozen embryos are transferred on 6th day of ovulatn

MANAGEMENT

1 Rx of OHSS

- Avoid pregnancy in severe & critical forms
- Remove fluids → Tap Ascites & effusion
- Give Oral fluids [mild, moderate forms]

IVF → Nacl, DNS [crystalloids]

→ Albumin, Dextran, Starch [colloids]

→ mcl4 → 13-15% of Pts on CLOMIPHENE CITRATE

Severe forms → GONADOTROPINS

- Inj HMG [Human menopausal Gonadotropins]
- Inj FSH Recombinant

→ COMBINED ORAL CONTRACEPTIVE PILLS

→ Tab Estradiol + Tab. Progesterone

→ Painless 'Regular' anovulatory cycles

→ Tab ESTRADIOL & Tab. PROGESTERONE are responsibe for menses

ARTIFICIAL PERIODS

→ ETHINYL ESTRADIOL → 0.03 mg → 30 µg

→ ADVANTAGES OF COCPs

↓ Bleeding
↓ Anemia
↓ Ca Endometrium
↓ Ca ovary
↓ Ca colon
↓ Fibroids
↓ Benign Breast Disease
↓ Ovarian cysts
↓ PID

→ DISADVANTAGES OF COCPS

↑ Ca cervix [Adeno carcinoma type]
↑ Chlamydia PID [Quite / Indolent]
↑ Gallstones

→ NO EFFECT on incidence on CA BREAST

→ ↑ GALL STONES ⟶ GALL BLADDER CANCER ???

→ COCP causes Smooth type of Gall stones [Not predisposed for CA]
→ Gall Bladder cancer is caused by mixed & pigment gall stones

→ HEPATIC ADENOMA caused by COCPs
HEPATOCELLULAR CARCINOMA is not caused by COCPs

→ Generally COCPs are started on the 1st day of menstrual cycle
can be started at any time of menstrual cycle → QUICK START

→ CONTRA INDICATIONS

- Breast feeding
- Post Partum
- Uncontrolled HTN [>160/100]
- Active Breast cancer
- Uncontrolled Diabetes mellitus
- Severe Cirrhosis
- Active hepatitis
- on Anticonvulsants
- Hyperlipidemia
- Earlier DVT
- Earlier Pulmonary embolism

TESTS OF OVULATION

TESTS OF OVULATION

① BBT → ↑ 0.5°F

② Sr LH → > 15 IU

③ Sr Progesterone on day 21 [>3ng/ml]

④ Serial USG → follicular monitoring [OPD - usual]

⑤ Premenstrual Endometrial Biopsy on day 21

- to check secretory changes

- When the difference b/w observed & expected changes is ≥ 2 days
  → LUTEAL PHASE DEFECTS

⑥ CERVICAL MUCUS STUDIES

- Spinbarkeit & ferning is d/t estrogen
- Serial cervical mucus studies
- Loss of SPINBARKIET & FERNING → OVULATION

⑦ DIAGNOSTIC LAPAROSCOPY

ENDOMETRIOSIS

ETIOLOGY

RETROGRADE MENSTRUATION

→ Proposed by SAMPSONS [SAMPSONS IMPLANTATION THEORY]
→ 70-80% of all women have retrograde menses
→ among them 5-10% of all women have poor immunity & ↑ estrogenecity & develop Endometriosis

AGE OF PRESENTATION → 3rd to 4th decade [25 - 35 yrs of age]

DIAGNOSIS

→ ↑ CA125
→ USG, MRI
→ Laparoscopy [Best]

SITES OF PREDILICTION

→ mc site → ovary
→ 2nd mc site → POD
→ Bowel
→ Lung [periodic hemoptysis] } VICARIOUS MENSTRUATION
→ Nose [periodic epistaxis] } VICARIOUS MENSTRUATION
→ Eyes [periodic subconjunctival Hemorrhage] } VICARIOUS MENSTRUATION

PATHOLOGY

→ POWDER BURN LESIONS / BLUE SPOTS
→ CHOCOLATE CYST OF OVARY
→ Scarring & Adhesions ↓ fallopian tube → INFERTILITY

SYMPTOMS

→ Chronic pain
→ Acute monthly exacerbation → Severe congestive dysmenorrhea
→ Deep dyspareunia
→ Menorrhagia
→ Infertility [↓↓ altered tubo ovarian relat^{n} by adhesions]
  - ↓↓ intercourse
  - Poor ovulation
  - EMBRYOTOXIC ENDOMETRIOTIC DEPOSITS
    ↳ poor quality embryos
    ↳ ↓ implantation
    ↳ ↑ abortion

TREATMENT

SURGICAL Rx

→ ADHESIDLYSIS for adhes^{n}
→ CYSTECTOMY for chocolate cysts
→ ABLAT^{n} for deposits → FULGRATION OF DEPOSITS
  - Thermal or laser

→ 60 - 70% RECURRENCE

① Inj Depo Medroxy Progesterone Acetate 150mg Once in 3 months
- → creats Pseudo pregnancy State
- → Atrophy of endometrium in 3-4 months of Rx

② Tab Danazol
- → Androgen → Anti estrogenic action
- → Faster atrophy
- → S/E → Hirsutism
  Virilizatn
  - ↳ Breast atrophy
  - ↳ Hoarseness of voice
  - ↳ Clitromegaly

  } Irreversible

- → 1st sign to stop Rx ī Danazol → Hoarseness of voice

③ Combined oral Contraceptive Pills
- → Anovulatory cycles → Painless
- → Limits endometriosis

④ GnRH ANALOGUES → DEPOT or CONTINUOUS FORM
- → LEUPROLIN
  NAFERELIN
  GOSERLIN
- → down regulatn / Desensitizatn of pituitary Receptors
- → Atrophy of endometrium

MEDICAL MANAGEMENT AIMS AT STOPPING THE PERIODS

Q 25yrs ī chocolate cyst. Sx Rx done → what nxt → Medical Management
A Medical Management till conception

→ Pregnancy
→ COCPs
- → 21 × 4 Packs → 84 Days continuously
  Periods ≅ once in 90 days

→ GnRH Analogues
- → > 6months → Estrogen dependent osteoblastic actn will stop
  → Estrogen independent osteoclastic actn will continue

  } OSTEOPOROSIS

- → ADD BACK REGIME
  Low dose Estrogens
  RALOXIFINE [selective Estrogen Receptor Modulator]

ADENOMYOSIS / ENDOMETRIOSIS INTERNA

SEEN IN

- → multiparous women
- → > 40 yrs
- → 30% of hysterectomy specimens

ENDOMETRIOSIS INTERNA → Endometriosis within uterus

ASSOCIATED WITH

- → Menorrhagia
- → Progressive dysmenorrhea
- → Infertility in young women [Rare]

UTERUS → Uniformly enlarged & ≤ 14 weeks size of pregnant uterus [14cm]

DIAGNOSIS

1. USG, MRI
   - → Sub endometrial halo ⊕
   - → Hetero echoic deposits in uterine myometrium
   - → Ill defined hypoechoic areas → LAKES OF ENDOMETRIAL BLOOD
   - → Junctional zone b/w Endometrium & myometrium
     - ↳ Normal → 5-8 mm
     - ↳ Adenomyosis → > 12 mm [Diagnostic]

2. UTERINE BIOPSY / POST HYSTERECTOMY UTERINE ANALYSIS
   - → ENDOMETRIAL GLANDS in Uterine muscles → Pathognomonic
   - → DIFFUSE LOCALIZED ADENOMYSIS

TREATMENT

1. Menorrhagia → NSAIDs, Hormones
2. Young women → Hormones
   - COCPs for longer duration
   - IUCD's ↑ progesterone [mirena]
   - Localized excision
3. Surgical Mx of Menorrhagia → D & C
4. Overall Best Rx → Hysterectomy

HORMONAL REPLACEMENT THERAPY

EFFECTS OF ESTROGENS

1 SKIN → SIC collagen ↓ → Lax - Loose skin

2 HAIR → ↓ Vellous hair → soft thin & light in color
↑ Terminal hair → Hard , thick & Dark in color

3 VOICE → Hoarseness of voice

4 BONES → ↑ fractures
- vertebral compression fractures [mc]
- wrist fractures
- femur fractures

5 BRAIN → Mood swings
- Depression
- Anger threshold ↓
- Anxiety

→ Insomnia

→ Hot flushes [coincides i LH flush]

6 HEART → Coronary Artery Diseases ↑

7 PELVIS → ↑ fractures

→ Ⓝ PH of vagina → Acidic
Glycogen $\xrightarrow{\text{Lactobacillus}}$ monosaccharides

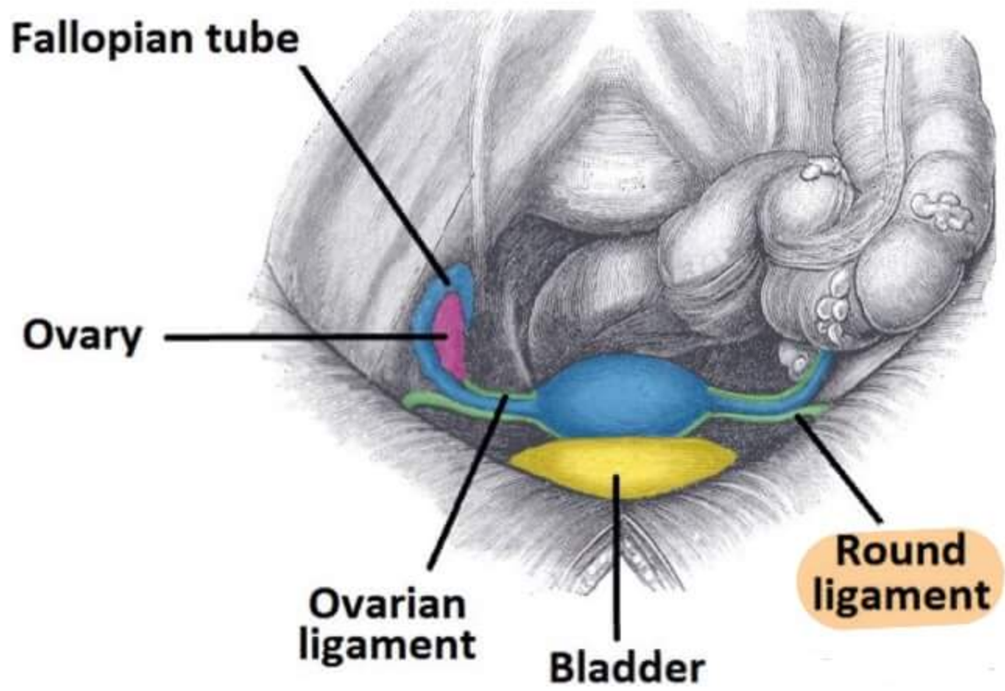
ESTROGENS → pH → Alkaline → ↓ Lactobacillus → ↑ Anaerobes
↑ Infections
- Vaginitis
- Vulvitis
- Urethritis
- PID [Pelvic Inflammatory Diseases]

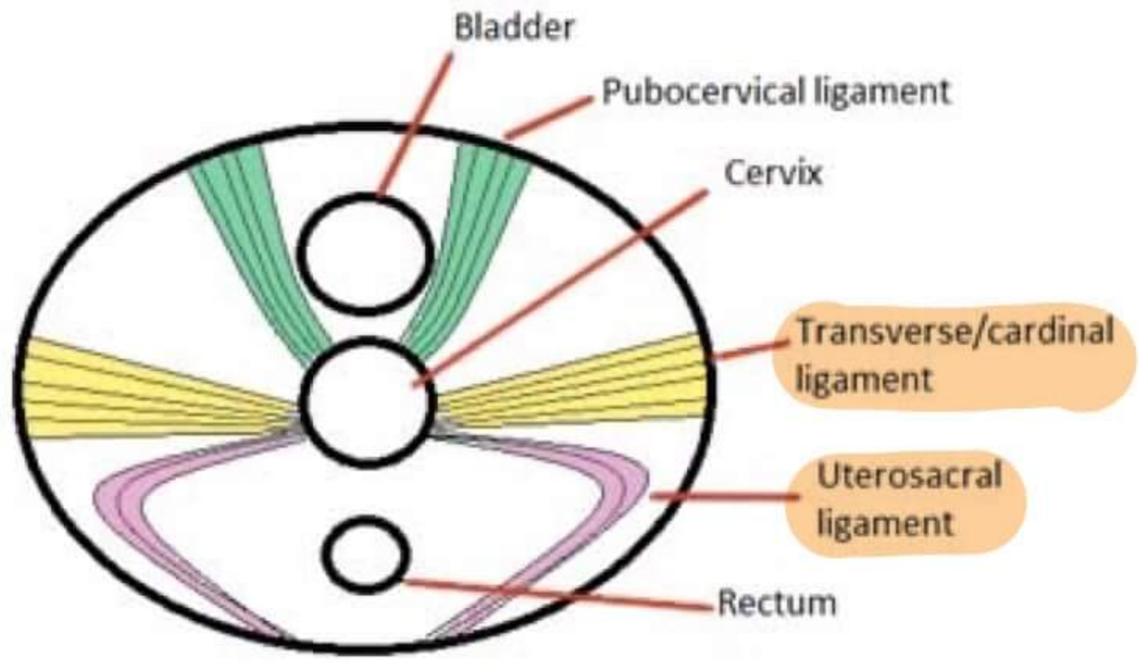
→ Dry vagina → ↓ Intercourse

→ Pelvic Organ Prolapse
- Abnormal conduct of labour is the main reason

SUPPORTS OF UTERUS

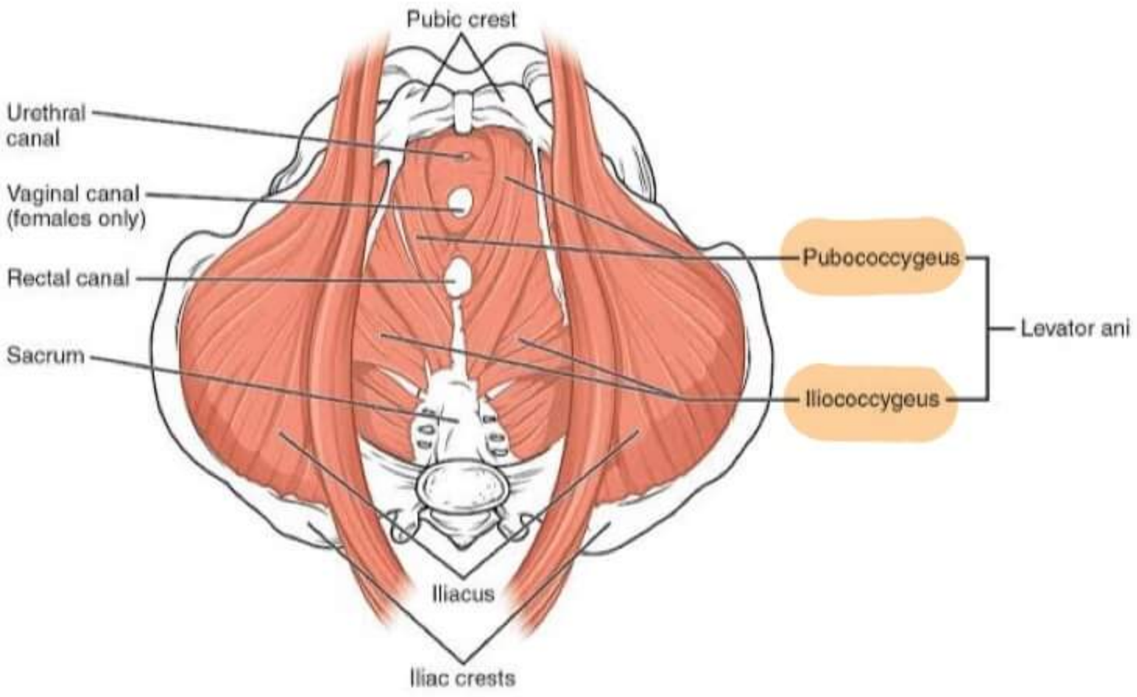
LIGAMENT SUPPORT

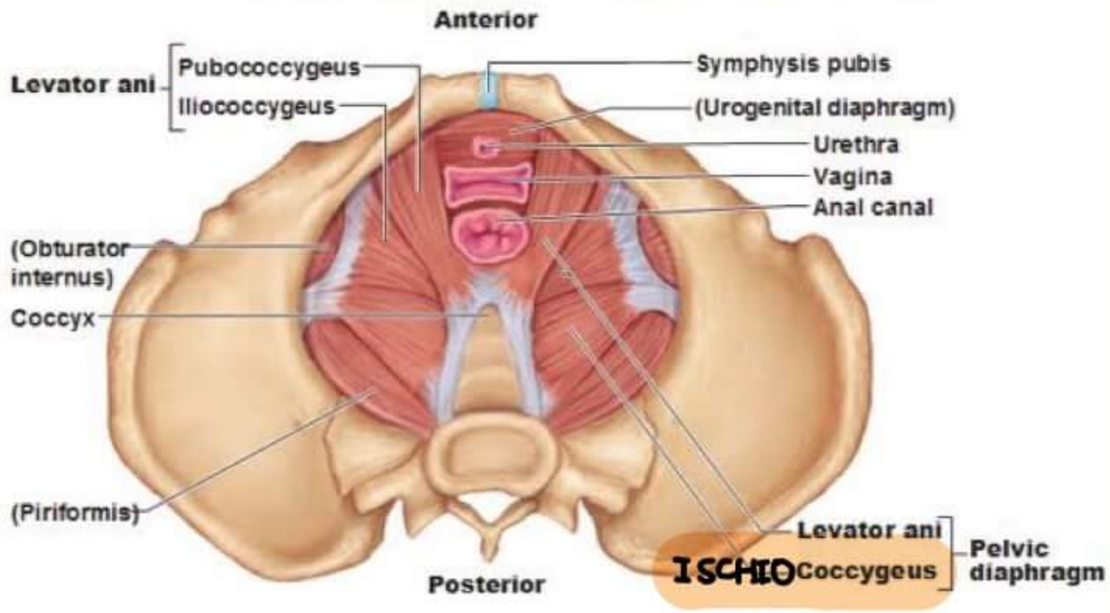




TRANSVERSE | CARDINAL LIGAMENT | MACKENRODT'S LIGAMENT → most important among Ligaments

MUSCULAR SUPPORT





INVESTIGATIONS

- → CBC
- → mammography
- → Pap Smear
- → USG → Endometrium → ⩽ 4mm
- → LFT [Liver functⁿ Tests]
- → F/PP Sugars
- → Lipid Profile
- → Serum FSH → To diagnose menopause
  to monitor HRT [if given to younger women (Premature ovarian failure)]
- → ECG

HORMONE REPLACEMENT THERAPY

① Tab ESTRADIOL 1-2 mg / Day

② Tab CONJUGATED EQUINE ESTROGENS 0.625 to 1.25 mg / Day

} Add Progesteron

③ Tab TIBOLONE

- Synthetic estrogen
- Progestational metabolite + nt
- 2.5 mg / Day

④ SERS [Selective Estrogen Receptor Modulators]

RALOXIFENE

- 60 mg / Day
- Estrogenic on bone
- Anti estrogenic on brain [CI for hot flushes]

⑤ PLANT ESTROGENS

→ Safer

→ ↓ Effective

⑥ BISPHOSPHONATES

→ non hormonal Rx of osteoporosis

→ ALENDRONATE Daily

→ RISEDRONATE Weekly

→ IBANDRONATE Monthly

⑦ CALCITONIN

→ ↓ Osteoclastic Action

PARATHORMONE EXTRACT

TERIPARATIDE

induces new bone formatⁿ

CONTRA INDICATIONS

→ undiagnosed vaginal bleeding

→ H/O Breast cancer

→ H/O Endometrial cancer

→ Liver Dysfunctⁿ

→ Thrombo embolic Diseases

→ Endometriosis

→ Fibroids

→ Porphyrias

Rx of HOT FLUSHES

→ DOC → ESTROGENS

takes 20 - 25 Days to act

→ CLONIDINE HYDRO CHLORIDE

Acute Relief

100µg OD / BD

↓ vasomotor flushing

→ ALPRAZOLAM

0.25 mg

For Acute Relief

→ SSRI [Selective Serotonin Reuptake Inhibitors]

FLUOXETINE

Takes 6-7 Days

Coronary Artery Disease

→ Estrogens are cardioprotective

→ HRT IS NOT CARDIO PROTECTIVE

- initial few years → cardioprotective
- Long term → Detrimental to heart

→ Local Estrogens are better

ENDOMETRIAL CARCINOMA

RISK FACTORS

→ ↑ ESTROGENS

→ HRT

→ TAMOXIFEN

→ Anovulatory conditions → PCOD

→ Estrogen Producing ovarian cancers → Granulosa cell tumor

→ Early menarache

→ Late menopause

→ Abnormal Liver Funct^{n} Tests

→ Obesity → Fats { Androgens ↓ Aromatase ↓ Estrogens }

→ corpus cancer syndrome
DM – HTN – Obesity

→ Familial Predisposition ★
Ca Breast
Ca Endometrium
Ca ovary
1st degree female relatives can have either of these

→ Nulliparous women

→ 80% of this Etiology associated ī CA Endometrium → TYPE 1
20% of this etiology NO association → TYPE 2

→ ETIOLOGY → HYPERPLASIAS → CANCER

→ Age group → 45 - 55 yrs

→ HYPERPLASIAS [Premalignant]

Simple Hyperplasia without atypia	→	1%	} Give PROGESTERONE THERAPY
Complex Hyperplasia without atypia	→	3%	
Simple Hyperplasia with atypia	→	8%	} DO SIMPLE HYSTRECTOMY
Complex Hyperplasia with atypia	→	29%	

SYMPTOMS

→ Irregular Acyclical Bleeding [mc]

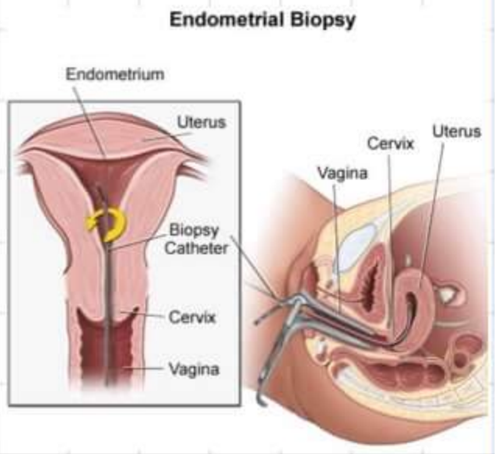
→ Post menopausal bleeding

→ Pyometra → Dirty foul smelling vaginal Discharge

~~Loss of Weight~~
Loss of appetite
~~CA~~ cachexia
~~CA Pain~~ → Late presentation

HISTOPATHOLOGY

→ Endometroid Adenocarcinoma [mc] [80%]
→ Papillary / villoglandular
→ Squamous
→ Secretory



DIAGNOSIS

→ 1st Management

PIPELLE ENDOMETRIAL BIOPSY [in OPD]

Paracervical block may be required in few cases
90-95% sensitive
Biopsy taken from anterior wall

→ FRACTIONAL CURRETTAGE [DNC]

95 - 99% Sensitive
Done in OT

→ HYSTEROSCOPIC BIOPSY

100% Sensitive

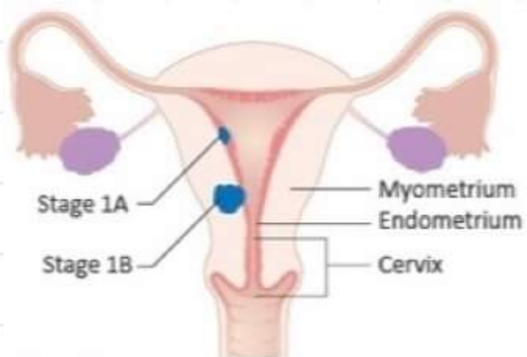
→ TVS is an helpful adjunctive procedure but not the best
→ E.T should be ≤ 4mm to be called normal

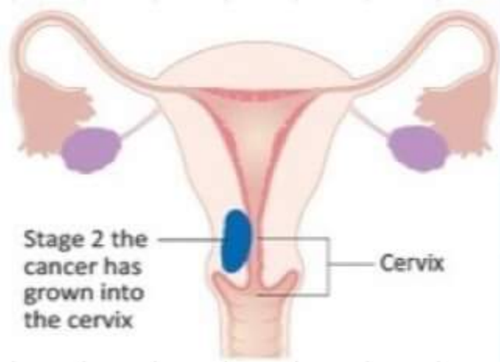
STAGING OF CA ENDOMETRIUM

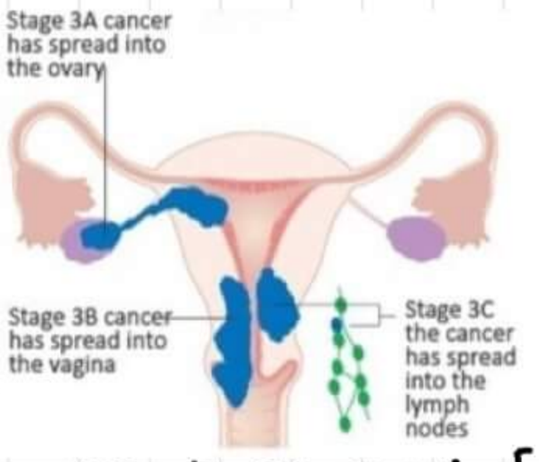
Table 1: 2009 FIGO staging system for carcinoma of the endometrium

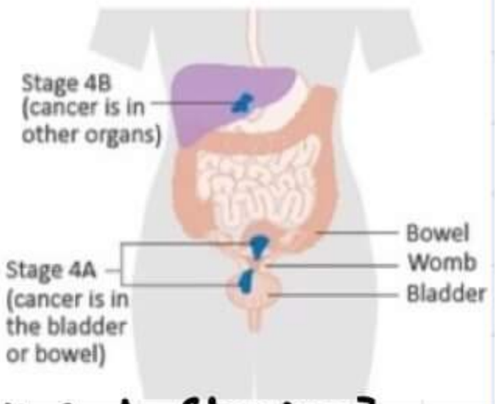
Stage I[a]	Tumor contained to the corpus uteri	
	IA	No or less than half myometrial invasion
	IB	Invasion equal to or more than half of the myometrium
Stage II		Tumor invades the cervical stroma but does not extend beyond the uterus[b]
Stage III[a]		Local and/or regional spread of tumor[c]
	IIIA	Tumor invades the serosa of the corpus uteri and/or adnexas
	IIIB	Vaginal and/or parametrial involvement
	IIIC	Metastases to pelvis and/or para-aortic lymph nodes
		IIIC1 Positive pelvic nodes
		IIIC2 Positive para-aortic lymph nodes with or without positive pelvic lymph nodes
Stage IV[b]		Tumor invades bladder and/or bowel mucosa and/or distant metastases
	IVA	Tumor invasion of bladder and/or bowel mucosa
	IVB	Disant metastases, including intra-abdominal metastases and or inguinal lymph nodes

FIGO = International Federation of Gynecology and Obstetrics
[a] Includes grades 1, 2, or 3
[b] Endocervical glandular involvement only should be considered as stage I and no longer as stage II.
[c] Positive cytology has to be reported separately without changing the stage.









All cancers in Gynecology staged surgically except CA cervix [clinical staging]

PROGNOSTIC FACTORS

→ Hysterectomy → Staging

→ Pelvic lymphadenectomy

→ Grading → Solid areas on histopathology slides

- Grade I → < 5% solid areas
- Grade II → 5 - 50% Solid areas
- Grade III → > 50% Solid areas

Single best Prognostic marker → staging > Grading

→ Age

→ Type

→ Estrogen Receptor & Progesterone receptor status

→ Previous Rx taken

TREATMENT

→ Hysterectomy is already Done

→ Stage I / II

- Grade I, myometrium < 1/2 involved → Nothing required
- Grade II, myometrium > 1/2 involved → vaginal Irradiat^{n}
- Grade III → Pelvic irradiat^{n}
- Adnexal or cervical involved → Whole abdomenal irradiat^{n}

→ Stage III / Stage IV

Radiotherapy
Surgical Therapy
chemotherapy
Hormonal Therapy
} INDIVIDUALIZED

→ VAULT OF THE VAGINA

- Left over vagina after hysterectomy
- 1st site of recurrence
- 1st line mx of recurrence → HIGH PROGESTERONE [200-250 mg/Day]
- Prevent^{n} of recurrence → VAGINAL IRRADIATION

POST MENOPAUSAL BLEEDING [> 1yr of menopause]

→ mcc in India → CA cervix

→ mc cause → CA cervix

→ mcc in western hemisphere → Endometrial Atrophy [60-70%]

- CA endometrium → 10%
- Hyperplasia → 10%
- Polyps → 10% - 12%
- HRT → 30%

→ Post menopausal women → No Estrogens [No Immunity]

↑ vaginitis → Endometritis

Atrophic Endometrium

↓

Endometritis [Senile Endometritis]

↓

Bleeding

OVARIAN TUMORS

→ 3 x 3.5 x 2.5 cm

→ Almond shaped

→ Rough surface dlt SCARS by ovulatⁿ

- Nulliparous
- Ovulation induction
- Early menarche
- Late menopause
- Perineal talc
- Asbestosis exposure

} ↑ SCARS

ETIOLOGY

① Scars → Epithelium → Healing

↑ Scars → Epithelium → over Healing → Epithelial ovarian CA

② Association ī

→ BRCA 1 [on chromosome 17]

→ BRCA 2 [on chromosome 13]

③ Familial Predisposition

→ ② 1st degree Relatives ī cancers → 35 - 40% chance OF

→ ① 1st degree Relative } 2 to 10 times chances

→ ① 2nd degree Relative }

→ 70% of all ovarian cancers → Surface Epithelial ovarian cancers

→ Age group → 6ᵗʰ 7ᵗʰ decades

→ mostly bilateral

→ Associated ī ↑ CA 125

Significant values in a postmenopausal women → > 35

premenopausal women → > 200

CLINICAL FEATURES

→ BIG Abdominal mass → mostly benign

DIAGNOSIS

→ USG features of malignancy TVS > TAS

- Bilateral
- Surface irregularities
- Cystic + solid areas together
- Septated tumors - irregular, Septate
- Ascites +nt

TREATMENT

→ STAGING LAPAROTOMY + OPTIMAL DEBULKING

→ STEPS OF STAGING LAPARATOMY

① Midline Incision / Paramedian incision
② Acces Pelvis, Abdominal Organs
③ Washings / Ascites → for cytology [malignant cells]
④ Infra colic Omentectomy
⑤ Peritoneal Biopsies
⑥ Retroperitoneal lymph node Sampling

→ OPTIMAL DEBULKING

→ < 1.5 cm is what maximum amount can be left

OVRIAN CANCER STAGING

STAGE I → OVARY INVOLVEMENT
- IA → One ovary involved
- IB → Both ovaries involved
- Ic → A/B ±
  - C_1 → Surgical Spill
  - C_2 → Surface growth
  - C_3 → Malignant Ascites / washings

STAGE II → PELVIS INVOLVEMENT
- IIA → Uterus, fallopean tubes
- IIB → Other Pelvic Organs

STAGE III → ABDOMINAL VISCERAL INVOLVEMENT
- III A_1 Retroperitoneal lymph node involvement
  - A_1(i) → < 10mm
  - A_1(ii) → > 10mm
- III A_2 microscopic Abdominal involvement
- IIIB macroscopic involvement < 2cm } Superficial Liver & Spleen involvement
- IIIC macroscopic involvement > 2cm }

STAGE IV
- IVA Malignant pleural Effusion
- IVB Deep liver & spleen deposits
  Inguinal lymphnode involvement

CHEMOTHERAPY → PLATINUM BASED

① Epithelial Ovarian Tumor

@ Cyclophosphomide
Adreomycin
Platins → cis / Carbo

ⓑ Platins
Toxol
} Better choice

② GERM CELL TUMORS

@ VINCRISTINE
BLEOMYCIN
PLATINS

ⓑ BLEOMYCIN
ETOPSIDE
PLATINS
} Better choice

③ SEx CORD TUMORS

→ Surgery alone will suffice mostly

RADIOTHERAPY

→ Normal ovary radiosensitive
Ovarian tumors radioresistant
– EXCEPTION → DYSGERMINOMA

EPITHELIAL OVARIAN TUMORS

→ mc [75%]
→ older age group
→ Bilateral
→ TYPES

① SEROUS CYSTADENOMA [mc type]
→ Uniloculated
→ B/L in > 50%
→ mostly malignant
→ Surface growth + nt
→ Psammoma Bodies + nt in 40 – 45 %
→ cells are like fallopean tube

② MUCINOUS CYSTADENOMA
→ Less malignant
→ B|L in 10%
→ multilocular


SEROUS CYSTADENOMA


PSAMMOMA BODY

→ Pseudomyxoma Peritonei → Severe hypoproteinumia
→ mc cause in ovarian tumor → mucinous cystadenoma
→ mc cause → Appendiceal cancer
→ cells are like cervix

③ BRENNER TUMOR

→ made of Transitional cells
→ NESTS → WALTHARD INCLUSIONS
→ PUFFED WHEAT TYPE
→ Benign
→ Rubbery in consistency
→ cells are like bladder
→ associated ī post menopausal bleeding
→ associated ī Pseudomeig Syndrome
→ Pseudomeig syndrome is mcly dlt Brenner Tumor

MEIG SYNDROME
Fibroma ovary
Ascites
Pleural effusion

④ ENDOMETROID TUMOR

→ Endometrial type of collections
→ 6-8% of epithelial ovarian tumors

GERM CELL TUMORS

→ younger age group
→ Unilateral

① TERATOMAS [mc]

→ Malignant [10% of teratomas]
→ Dermoid / Benign cystic Teratoma [90% of teratomas]
→ All 3 germoid layers +nt

Endoderm	Bone, Teeth
Mesoderm	Sebaceous Secretions
Ectoderm	Hair, Endocrine glands

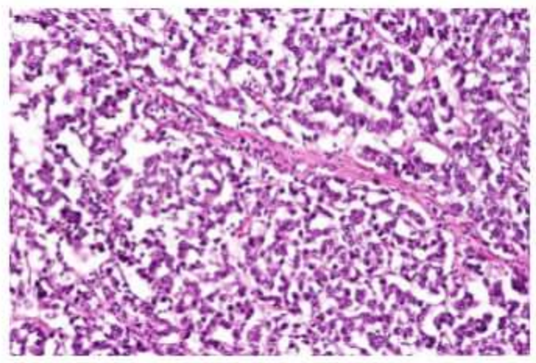
→ 10-15% are bilateral
→ Dermoids can have malignant transformat^{n} → Sq. cell carcinoma
→ Dermoids are mc tumors of pregnancy
→ Dermoids are mc tumors of torsion

② DYSGERMINOMA

→ mc Germ cell malignancy [40-45%]
→ only BIL germ cell malignancy
→ associated ī Dysgemic gonds
→ Large fleshy tumor
→ mostly malignant → Poor prognosis

DERMOID

→ SEMINOMA TYPE CELLS

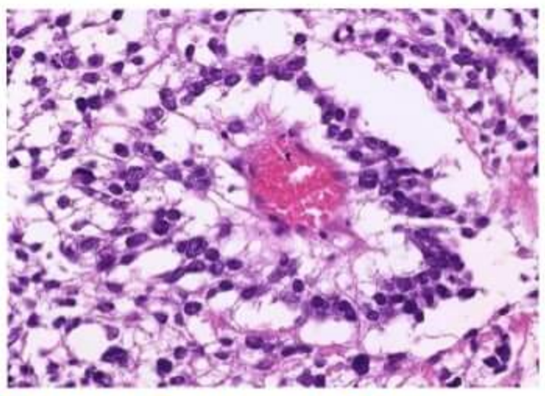


→ Large polygonal cells ī
→ clear cytoplasm & Dark stained nucleoli ī
→ back to back arrangement

→ Associated ī
→ ↑ LDH
→ ↑ Placental Alkaline PO_4
→ Alpha feto protein → Not increased

③ YOLK SAC / ENDODERMAL SINUS TUMOR & EMBRYONAL TUMORS

COMMON FEATURES
- Young women & girls
- Poor Prognosis
- ↑ Alpha feto protein



SCHILLER DUVAL BODY

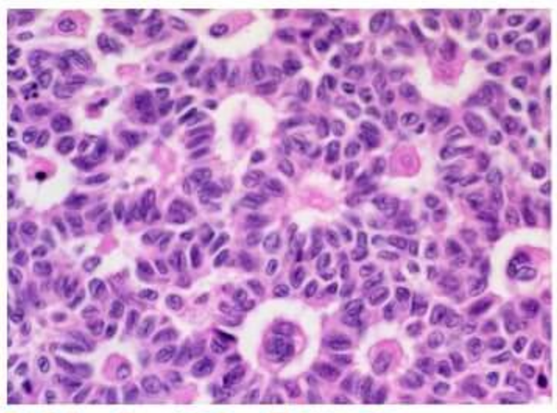
SPICIFIC FEATURES

YOLK SAC TUMOR → α_1 anti trypsin
→ SCHILLER DUVAL BODIES

EMBRYONAL TUMORS → HCG

SEX CORD TUMORS

① GRANULOSA CELL TUMORS [mc]



CARL EXNER BODIES

→ ↑ Estrogens
- Precocious Puberty
- Menorrhagia
- Endometrial cancer

→ Marker → Inhibin
→ CARL EXNER BODIES
→ Contralateral Ovarian Secondaries prior to systemic deliveries

② SERTOLI LEYDIG TUMORS / ARRHENOBLASTOMAS
→ Hirsutism → male pattern baldness
→ Virilization → Permanent changes
- Hoarseness
- Breast Atrophy
- Clitoromegaly

→ Oligomenorrhea to amenorrhea
→ Benign
→ Rapid onset hirsutism

HIRSUTISM	→	RAPID ONSET	→	Seen in	ovarian or adrenal tumors
		PUBERTY ONSET	→	Seen in	Congenital Adrenal Hyperplasia
		ADULT ONSET	→	seen in	PCOS
	→	CAUSES	→	25%	→ Idiopathic
			→	75%	→ 2° [mc → PCOS]
		MC CAUSE OF HIRSUTISM		→	PCOS

NON NEOPLASTIC OVARIAN CYSTS

→ FOLLICULAR CYST
CORPUS LUTEAL CYST
THECA LUTEIN CYST → dlt ↑HCG → Seen in Molar pregnancy, twin preg
HEMORRHAGIC CYST
→ Resolve by themselves → CONSERVATIVE MANAGEMENT

➡ mc ovarian tumor of pregnancy → Dermoid > Serous cyst
IF it is small [<5cm] & asymptomatic → NO Rx required
IF it is large [>10cm] & asymptomatic → Remove it in 2nd trimester
IF Diagnosed in 3rd trimester → Remove 6 wks after delivery
IF doing a cesarean Section → Remove at the time of C.Sectn

Secondary to ovary
mcly from CA stomach > CA Breast

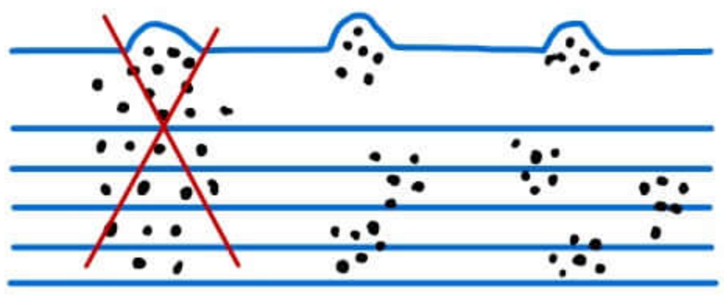
KRUKENBERG TUMOR

→ Secondary of ovary from CA stomach
→ Bilateral
→ Firm to Solid
→ Signet Ring cells
→ may have cystic degenerations
→ ovary retains it's shape

BORDERLINE EPITHELIAL OVARIAN TUMORS

Features

→ Epithelial hyperplasia
→ mitotic activity +nt
→ Nuclear atypia +nt
→ detached cell clusters +nt
→ No destructive stromal invasion



POLYCYSTIC OVARIAN SYNDROME

→ aka STEIN LEVINTHAL SYNDROME

HEADINGS

FEATURES

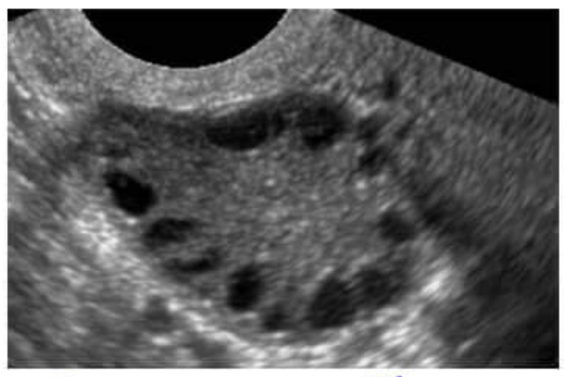
- → Anovulation
- → Hirsutism
- → Obese
- → Oligomenorrhea
- → Amenorrhea
- → Infertility
- → d/t Hyperandrogenesim
- → d/t insulin resistance

LAB PARAMETERS

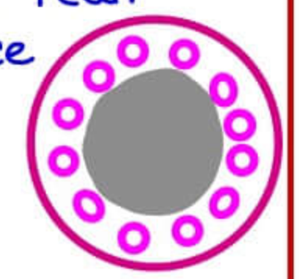
- → LH : FSH
- → Serum Testosterone
- → Serum Androstenedione
- → SHBG [Sex Hormone Binding Globulin]
- → Serum Insulin

APPEARANCE → MISNOMER

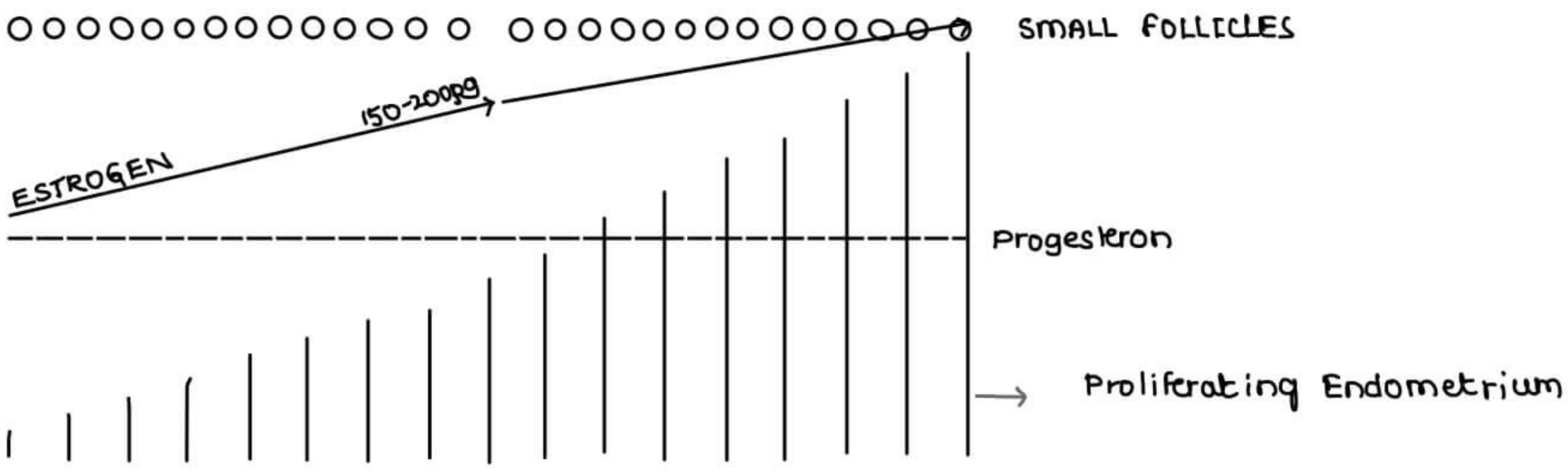
- → MULTIPLE SMALL FOLLICLES around the periphery of ovary
  - 2 - 6 mm [≤ 9mm]
  - 10 - 12 per each ovary



Ring of Pearl/
Necklace of Pearl
Appearance



- → THICK STROMA
- → ovary is 2-5 times larger than Normal



SHEDDING OF ENDOMETRIUM IS DUE TO ISCHEMIC WITHDRAWAL

HIRSUTISM & ↑ Serum Testosterone & Androstenedione

→ dlt Hyperandrogenesim

→ Androgen ⟶ Estrogens [Irreversible React ⁿ]
Aromatase

→ ↑ ESTROGEN

↓

↓ FSH & ↑ LH

→ LH : FSH → 1:1 Normal
→ 3:1 > 2:1 in PCOD

– LH ⟶ STROMA ⟶ ANDROGENS → NORMAL
– ↑LH ⟶ THICK STROMA ⟶ ↑ ANDROGENS → HIRSUTISM

→ ↑ Androgens
- ↑ Serum Testosterone
- ↑ serum Androsterodrone

↓

↓ Sex Hormone Binding Globulins

↓

↑ Free ANDROGENS

↓

HIRSUTISM

INSULIN RESISTANCE → Less glucose uptake in ovary

↓

Less energy

↓

Follicles do not grow

→ ↑ serum insulins
→ Obesity α IR

→ Dark
Shiny
Velvety
Crural Deposits
} ACANTHOSIS NIGRICANS
- Cutaneous marker of Insulin Resistance

→ HA IR AN Syndrome
HA → Hyper Androgenesim
IR → Insulin Resistance
AN → Acanthosis Nigricans

→ METABOLIC SYNDROME
→ Waist → ≥ 35 inches [≥ 89 cm]
→ Tri Glycerides → > 150 mg/dl
→ HDL → < 50 mg/dl
→ BP → > 130/85 mm Hg
→ fasting glucose → 110 - 126
→ 75 gms OGTT 2hr values → > 140 - 199

→ At Least 3 or more → metabolic syndrome

TREATMENT

ANOVULATION TREATMENT

① ↓ Weight → ovulation [in 30% cases]
② Insulin sensitizers [metformin] → Ovulate [in 30% cases]
③ CLOMIPHENE CITRATE → Ovulate [in 80% cases]
→ Pregnant [in 40% cases]

④ Inj Recombinant FSH
⑤ Inj Human Gonadotropins

⑥ Aromatase Inhibitor → LETROZOLE [1st Line Drug]

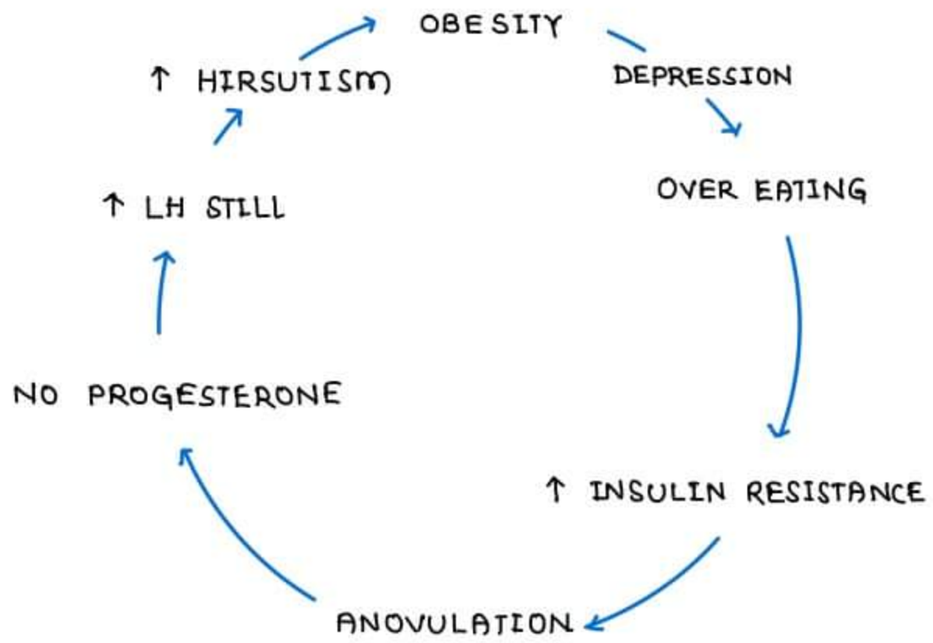
IRREGULAR CYCLES TREATMENT

① COMBINED ORAL CONTRACEPTIVE PILLS
② PROGESTERONE ONLY PILLS
for 10 days [from 14th day/mid cycle]
for 5 days [from 20th day]

HIRSUTISM TREATMENT

① ANTI ANDROGENS
- CYPROTERONE ACETATE
- FINASTERIDE
- FLUTAMIDE
- SPIRANOLACTONE [1st line drug]

② COSMETIC TREATMENT for hair → Prevents Depression



15 - 20% Women in world have PCOS [1 in 5 females]
mc endocrinological disorder of reproductive age group → PCOS
mc cause of Hirsutism → PCOS

ROTTERDAM / ESHRE / ANDROGEN EXCESS SOCIETY / ASRM CRITERIA

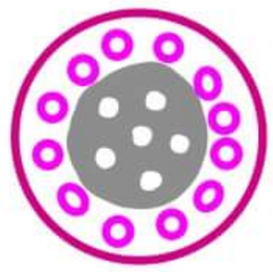
DIAGNOSTIC REQUISITES → Any 2 of the 3

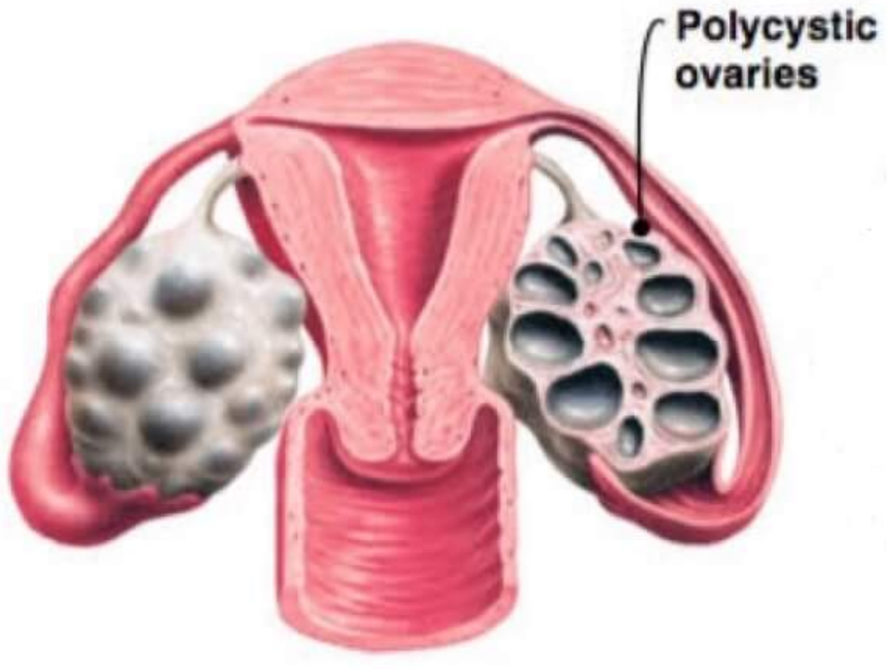
① Anovulation
② Hyperandrogenesim → Clinical / Lab
③ +/- PCO Look on USG

SURGICAL TREATMENT

① LAPAROSCOPIC OVARIAN DRILLING
- → THICK STROMA → ↑ Local Androgens → Harder Follicles
- → PURPOSE → ↓ Androgenic Stroma → Better follicular growth

LAPAROSCOPIC OVARIAN DRILLING





CERVICAL CARCINOMA

→ mc cancer of women in India → CA Cervix

SCREENING

PAP SMEAR

→ by Iyer's Spatula

→ Sensitivity → 47 to 62%.

- ⊕ Cytobrush → ↑ Sensitivity upto 90%.

→ SITE → Transformatⁿ zone (Squamo Columnar Junction]

- Endometrium → columnar
- Vagina & cervix → Squamous

- Located at 1.7 to 2.3 cm from the External OS
  changes locatⁿ ĩ age group

ETIOLOGY

→ HPV
- 16 → mc
- 18 → most malignant

→ HSV 1 & 2

→ HIV 1 & 2

→ Commercial sex worker
→ Women ĩ many partners
→ Partner ĩ STD
→ Early intercourse [< 16 yrs]
→ Smokers
→ Low Socio Economic status

→ Time to do pap smear
- → Any women > 21yrs of age
- → Any women 3 yrs after 1St Sexual exposure in India
- → From 21 to 29 years, Sexually active women should have cytology every 3 years
- → From 30 - 65 yrs : CO-TEST [PAP + HPV] : if negative then 5 yearly
  if only cytology done, then once in 3 years if cytology is negative
- → After 65 yrs : No more PAP, if 3 cytology are negative or
  2 CO-TEST are negative

→ SUSCEPTIBLE TIMINGS
- → at puberty
- → after delivery

→ SCREENING TEST → done on women at risk

DYSPLASIA CLASSIFICATION

CIN I	→	1/3 rd abnormal	→ LOW GRADE LESION
CIN II	→	>1/3 rd to <2/3 rd abnormal	} HIGH GRADE LESIONS
CIN III	→	>2/3 rd abnormal	
CIS	→	all cells are abnormal	

MANAGEMENT

CIN1 MANAGEMENT

→ CIN I —5yrs→ CIN III —10yrs→ CA CERVIX

→ 6 monthly pap smear
Antivirals & Anti biotics given
HPV DNA is done

→ CIN I & CIN II → 65-80% regress spontaneously

CIN III MANAGEMENT

→ conizath not done
Problems ī conizath
→ short cx → incomptence → abortions
→ Stenosed → infertility

→ COLPOSCOPIC [vaginoscopic] BIOPSY DONE
→ Acetic Acid used
coagulati the proteins → make the area ACETOWHITE
Biopsy is taken from Acetowhite areas

→ Schiller Iodine [LUGOL IODINE] Can be used
stains the glycogen rich areas → MAHOGANY BROWN
Biopsy taken from Schiller NEGATIVE AREAS

→ VIAA → Visual Inspectn under Acetic Acid
VILI → Visual Inspectn under Lugol's iodine
} also be done

→ Results of colposcopic Biopsy
1. Invasive cancer Cx → Rx by Radical hysterectomy
2. Biopsy Proven CIN III → Rx by LLETZ [LEEP]
LLETZ – Large loop excisn of transmisn zone
LEEP – Loop electro surgical excisn Procedure
} BEST Rx

→ Rx LASER CONIZATn
– expensive & Difficult

→ S_X CONIZATION [if > 35 yrs]
HYSTERECTOMY [if > 40 yrs]

SYMPTOMS OF CA CERVIX

→ Abnormal bleeding
- Post coital bleeding [mc]
- Post menopausal bleeding

→ foul smelling discharge
→ Cancer cachexia
→ Cancer pain
→ Pyometra → Dirty vaginal discharge
→ Uremic symptoms

Mx of POST COITAL BLEEDING

DO COLPOSCOPIC BIOPSY
→ done in Post coital bleeding
CIN III [cervical Intra epithelial Neoplasia]
CIS [Carcinoma in Situ]

STAGING

CLINICAL STAGING DONE WITH

→ P/ vaginal Examination
→ P/ Speculum Examination ⊕ PET CT / MRI
→ P/ rectal Examination [for Parametrium]
→ Proctosigmoidoscopy
→ cystoscopy [for bladder]

STAGE I → LIMITED TO CERVIX
IA → MICROSCOPIC CANCER
A_1 → < 3 mm depth
A_2 → 3-5 mm depth
} Transverse spread < 7 mm → ⊗ REMOVED

IB → CLINICAL / OBVIOUS CANCER
B_1 → < 2 cm
B_2 → 2 - 4 cm
B_3 → > 4 cm

STAGE II A → UPPER VAGINA INVOLVED [III A1 → < 4 cm ; III A2 → > 4 cm]
II B → PARAMETRIAL INVOLVEMENT BUT SHORT OF PELVIC SIDE WALL

STAGE III A → LOWER 1/3 rd VAGINAL INVOLVEMENT
III B → PARAMETRIAL INVOLVEMENT TILL THE PELVIC SIDE WALL [HYDRONEPHROSIS+]

MC STAGE OF CA CERVIX PRESENTATION IN INDIA → STAGE III B

III C1	→	Pelvic Lymphnodes involved
C2	→	Para Aortic Lymphnodes involved

} IMAGING [PET CT / MRI / USG] REQUIRED

STAGE IV A → BLADDER & BOWEL INVOLVEMENT

IV B → DISTANT METASTASIS

* PINK COLOUR INDICATES NEW CHANGES

→ Cervix doesn't drain into inguinal group of lymph nodes
inguinal group of lymph nodes are not involved

→ cervical cancer spreading to endometrium does not change staging

TREATMENT

STAGE I - IIA → Radical hysterectomy

STAGE ≥ IIB → chemo Radiation

Radiotherapy alone is effective Rx in all stages

Maximum radiatn given at

POINT A

→ 2 cm above & 2cm lateral to external os

→ ureter crosses the uterine artery [bridge over water] here
ureter is under the uterine artery

→ Parametrium seen here

→ upto 7500 to 8000 RADs given here

POINT B

→ 3 cm Lateral To point A

→ obturator lymph nodes at the pelvic side walls
Obturator LN → Sentinel group of LN

→ upto 6000 RADs given here

HISTOPATHOLOGY

1 Squamous cell carcinoma
- a Large cell Keratinising variant [mc]
- b Large cell Non Keratinising variant
- c Small cell variant

→ mc cause of death in CA cervix → uremia
2nd mc cause of death → Haemorrhage
3rd mc cause of death → infectn

→ most common site of begining of cancer → Anterior Lip

VACCINES

1 GUARDASIL

→ quadrivalent

16, 18, 6, 11

→ Non valent vaccine

6, 11, 16, 18, 31, 33, 45, 52, 58

2 CERVARIX

Bivalent

16, 18

→ Chance of prevent^{n} if given before exposure → upto 90%.
Chance of prevent^{n} if given after exposure → upto 40%.

→ Given after 9 yrs, upto 25 yrs

POST MENOPAUSAL BLEEDING

→ Any bleeding after 1 year of menopause

SYMPTOMS OF CA CERVIX & CA ENDOMETRIUM

CA CERVIX	CA ENDOMETRIUM
→ Post coital bleeding [mc]	→ Post menopausal bleeding
→ Post menopausal bleeding	→ Irregular vaginal bleeding
→ Irregular vaginal Bleeding	→ Pyometra
→ Foul smell discharge	→
→ Pyometra	
→ Cancer cachexia	
→ Uremia, pelvic pain	

CAUSES OF POST MENOPAUSAL BLEEDING

→ MC cause in India → CA cervix

→ MC cause of post menopausal bleeding → CA cervix

→ MC cause of post menopausal bleeding [Western]

1. Endometrial Atrophy [60-80%]
2. HRT [30%]
3. CA Endometrium [10%]
4. Endometrial Hyperplasia [10%]
5. Polyps [10%]

ENDOMETRIAL ATROPHY → SENILE ENDOMETRITIS → BLEED

VULVAR CARCINOMA

→ Age group → ≅ 65 yrs

PRESENTATION

→ Pruritis [mc]
→ mass in perineum
→ Lump in perineum
→ Cancer cachexia
→ Cancer pain

PREDISPOSING FACTORS

→ HPV 6
→ VIN [Vulval Intraepithelial neoplasia]
→ CIN
→ Lichen sclerosis
→ Smoking
→ Alcoholics
→ Immuno suppressants
→ Squamous hyperplasia

TYPES

→ Squamous cell carcinoma [92%] → mc
→ Melanoma [2-4%] → 2nd mc
→ Basal cell carcinoma [2-3%] → 3rd mc

SQUAMOUS CELL CARCINOMA

BASALOID [WARTY]	KERATINIZING
→ younger age group → multifocal → Predisposing factors HPV VIN Smoking	→ older age group → unifocal → Predisposing factors No a/w HPV a/w Lichen sclerosis a/w squamous hyperplasia

5 YEAR SURVIVAL

→ Ca vulva ī out Inguino femoral LN involvement → > 90%.
→ Ca vulva ī Inguino femoral LN involvement → ⩽ 50%.

→ Groin recurrence → POOR PROGNOSIS

DIAGNOSIS

→ Labia majora involved in 60%.

→ Clitoris involved in 15%

→ IF lesion is

≤ 1cm → excisional Biopsy

> 1cm → Keys punch Biopsy

KEYS PUNCH

STAGING

STAGE I		Limited to vulva
	IA	Size → < 2cm , Invasion → < 1mm
	IB	Size → > 2 cm , Invasion → > 1mm
STAGE II		Adjacent Organ involvement
		Lower 1/3 rd vagina
		Lower 1/3 rd of urethra , anus
STAGE III		Inguinal femoral LN involvement
	IIIAi	One LN → > 5mm
	Aii	One or two LN → < 5m
	IIIBi	two LN → > 5mm
	Bii	more than 3 LN → < 5 mm
	IIIC	LN involvement ⊕ , ī extra capsular spread
STAGE IV		
	IVAi	Upper urethra , Upper vagina , rectal involvement
		growth stuck to pelvic bone
	Aii	fixed or ulcerated LN
	IVB	Distant metastasis
		Pelvic LN

→ STAGE I, STAGE II } NO LN INVOLVEMENT

TREATMENT

STAGE I & II → Radical vulvectomy
Sentinel LN Biopsy
Superficial Inguinal
Deep inguinal
Femoral

if negative → Radical vulvectomy alone
if positive → Radical vulvectomy + LN removal

STAGE III & IV → chemotherapy ⟶ follow ĩ surgery
Mitomycin
5FU

Radiotherapy ⟶ follow ĩ surgery

STAGE IA → WIDE EXCISION

FIBROIDS

→ monoclonal tumors
→ Pseudo capsule may be present
→ always starts in intramural area → Pushes fibroid either Submucosal or Subserosal

ETIOLOGY

→ incidence
  → 30% of women
  → >50 yrs → 80%

→ 2.5 times of more chance if female relative has one
→ a/w chromosomal abnormality [40%]
  - 12 - 14 Translocatn
  - 12 Trisomy
  - 7 deletion

→ obese women
→ red meat eater
→ nulliparous women
→ Estrogens & progesterons
→ Growth factors
  - Transforming growth factor β
  - Platelet derived growth factor
  - Epidermal growth factor

CLINICAL FEATURES

SYMPTOMS

→ PAIN
- dlt contraction
  compression
  compaction
  degeneration

→ INFERTILITY
- dlt compression
  FB action

→ BLEEDING
- dlt ↑ endometrial recruitment
  poor contractility
  ↑ vasodilator Prostaglandins

→ BOWEL & BLADDER SYMPTOMS
↑ frequency [mc]
retentn of urine also present

DIAGNOSIS

→ USG → also used for mapping
→ MRI [Best]

Rx OF FIBROIDS

→ Small [<5cm] ĩ NO pain / bleeding / infertility → NO Rx required
→ Small [<5cm] ĩ pain / bleeding / infertility → Rx given
→ Large [>10cm] → Rx given
→ Large [>10cm] ĩ NO pain / bleeding / infertility → Rx given

→ Larger the fibroid ∝ DEGENERATIVE CHANGES
- Hyaline degeneratn
- Red degeneratn
  in pregnancy, in 2nd trimester
  mostly conservative Rx
  never operate
- Lipoid degeneratn
- calcific degeneratn → WOMB STONE
- sarcomatous degeneratn [<0.5%, rarest]

MEDICAL MANAGEMENT

→ ↓ Bleeding
↓ Size

① NSAIDs
② GnRH Analogues by Depot form → Down regulates pituitary
③ GnRH Antagonists [CETROTIDE]
④ MIFEPRISTONE → antiprogestin → ↓ Size
⑤ PROGESTERONE [IUCD Levonorgestrol] → ↓ Bleeding

⑥ UTERINE ARTERY EMBOLIZATION

- uses Poly vinyl Alcohol particles
- upto 80% reductⁿ in pain & bleeding

⑦ HIGH FREQUENCY USG

- HiFU → High Frequency focussed USG
- MRGFUS → MR Guided focussed USG

SURGICAL MANAGEMENT

PRE REQUISITES

→ Hb → > 10gm%

→ arrange blood

→ minimize incisⁿ on uterus
avoid posterior wall incision [S/E → Retroversion]

→ Technique to ↓ blood loss
- torniquet usage
- vasopressin usage

→ ↓ handling of fallopian tube

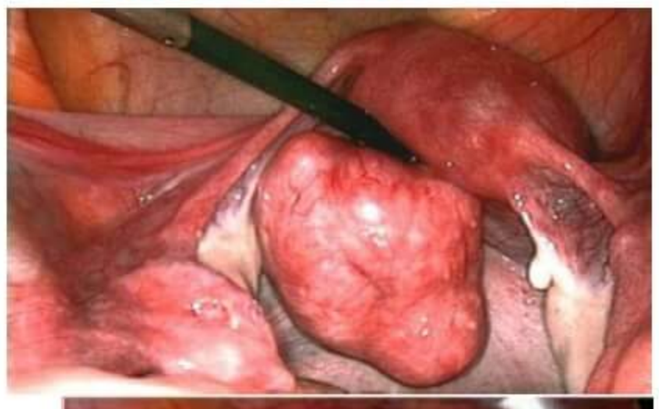
→ Semen Analysis

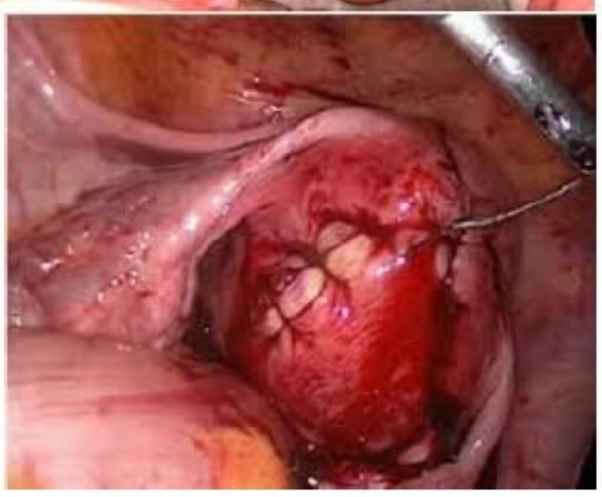
→ FIBROID IN PREGNANCY → Rx is CONSERVATIVE

→ in younger women → MYOMECTOMY

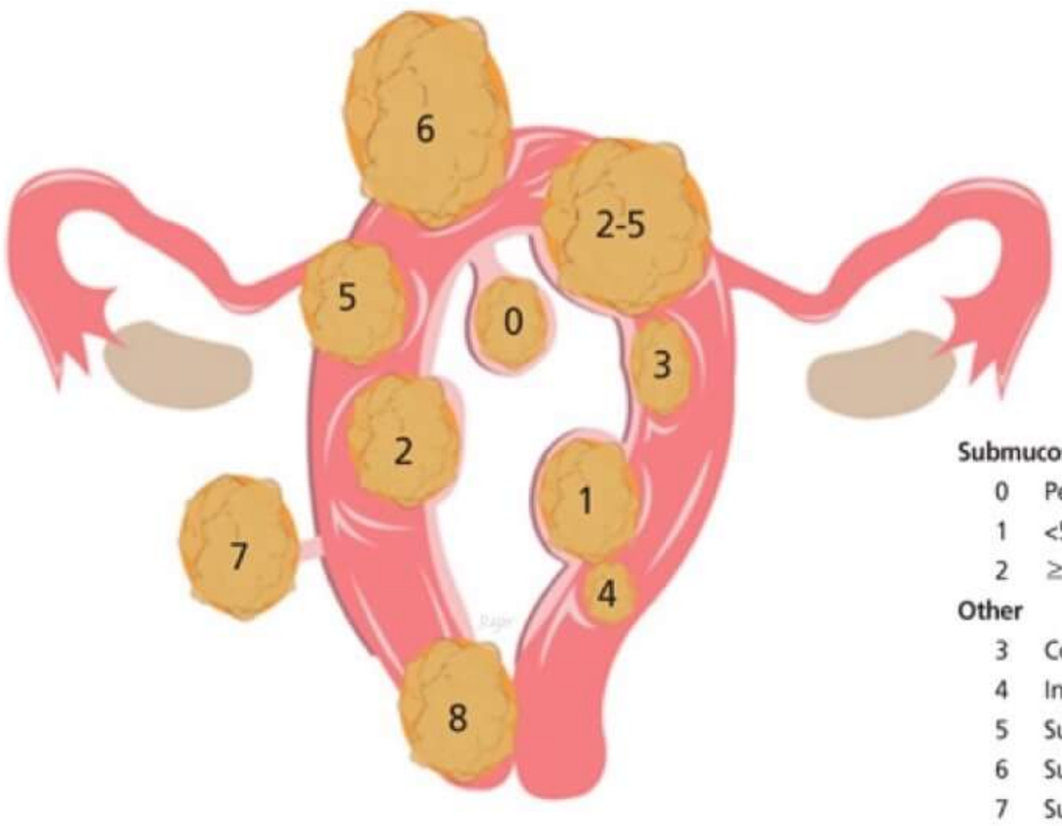
→ in older women → HYSTERECTOMY

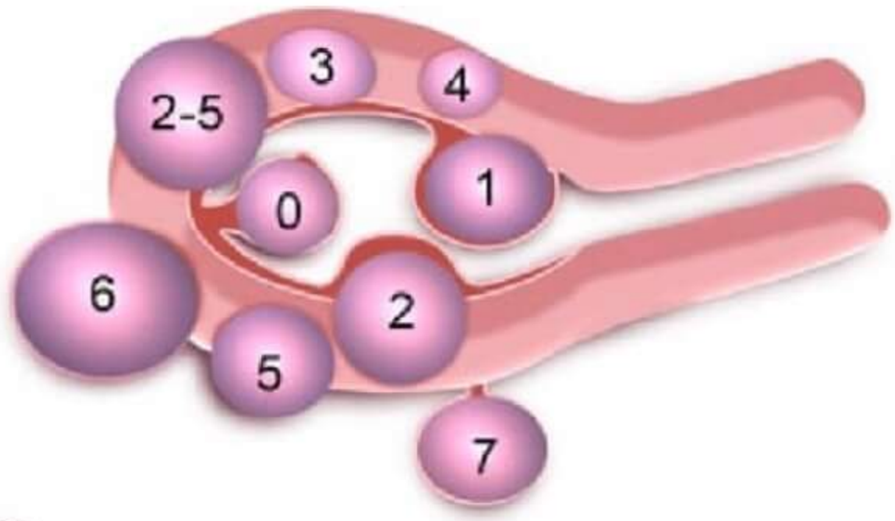
MYOMECTOMY





FIGO CLASSIFICATION





Leiomyoma subclassification system

Submucosal
- 0 Pedunculated intracavitary
- 1 <50% intramural
- 2 ≥50% intramural

Other
- 3 Contacts endometrium 100% intramural
- 4 Intramural
- 5 Subserosal ≥50% intramural
- 6 Subserosal <50% intramural
- 7 Subserosal pedunculated
- 8 Other (specify e.g., cervical parasitic)

→ if a fibroid is impinging on 2 locations at once, then the mucosal relatⁿ should mention first

MYOMECTOMY

HYSTEROSCOPIC MYOMECTOMY

→ indicated for Type 0, Type 1 Fibroids [some Surgeons do it for Type II fibroids]

→ Size should be < 3 cm

→ The fibroid is ⩽ 50% intramural

→ The FLUID which distends the uterus have different criteria

→ DEFICIT OF MEDIA TO BE CONSIDERED

	WARNED	STOP SURGERY
NON ELECTROLYTE MEDIA Glycine	750 ml	1500 ml
ELECTROLYTE MEDIA Saline	1000 ml	2500 ml

unipolar current can't be used ī electrolyte media

→ PROBLEMS OF EXCESS OF FLUID

- → Pulmonary Edema
- → cerebral edema
- → cardiac failure
- → Hyperammonemia
- → Hyponatremia
- → Death

LAPAROSCOPIC MYOMECTOMY

→ Type 5, 6, 7 fibroids are easily removed by this procedure

→ Subserous fibroids are easily removed

→ SALIENT FEATURES

- ↳ Blood loss ↓
- ↳ Earlier recovery

→ CRITERIA

- → 3-4 fibroids of 5 cm size or lesser
- → 1 fibroid of 15 cm or smaller

HYSTERECTOMY

CLASSIFICATION

- → Total
- → Sub total
- → Abdominal
- → vaginal
- → $\bar{t}$ or $\bar{t}$ out B/L Salpingo oophorectomy
- → $\bar{t}$ or $\bar{t}$ out U/L Salpingo Oophorectomy
- → Emergency
- → Planned
- → Obstetric indication
- → Gynecological indications
- → Laparoscopic
- → open
- → robotic

INDICATIONS

- → Fibroid uterus [40-45%] [mc]
- → Endometriosis [15-20%]
- → Prolapse [15%]
- → Dysfunctional uterine bleeding
- → Pelvic inflammatory Disease
- → Chronic Pelvic Pain

PRE REQUISITES

- → consent
- → rule out pregnancy
- → Pap smear examinat^{n}
- → arrange blood
- → Precautious measures for Venous thrombo embolism
- → INDUCTIVE Antibiotics [$\bar{t}$ in 1 hr]

COMPLICATIONS

INTRA OP INJURIES to Bowel, Bladder & Vessels

URETER INJURY

- → in a hysterectomy, mc site of injury → at the site of crossing the uterine artery
- → Overall, mc site of injury → at the Pelvic Brim

POST OP COMPLICATIONS

HEMORRHAGE

- → Immediate → visualized
  if retroperitoneal [Look for signs - ↑PR, Shock]
- → Reactionary → in 1st 24hrs d/t slippage of ligature
- → secondary → >24hrs uptill 2-3 weeks d/t infections

WOUND INFECTIONS [4-6% cases]

CUFF CELLULITIS [vaginal cuff]

URINARY RETENTION - dlt bladder hypotonia

URITERIC INJURY

- Post op flank pain
- do USG/CT for Dx
- do cystoscopy to localise the block

BLADDER INJURY

- Vesico vaginal fistula
- Uretero vaginal fistula

PROLAPSE OF FALLOPIAN TUBE through the vault

CUFF DEHISCENCE

- advice not to have intercourse for 6 weeks

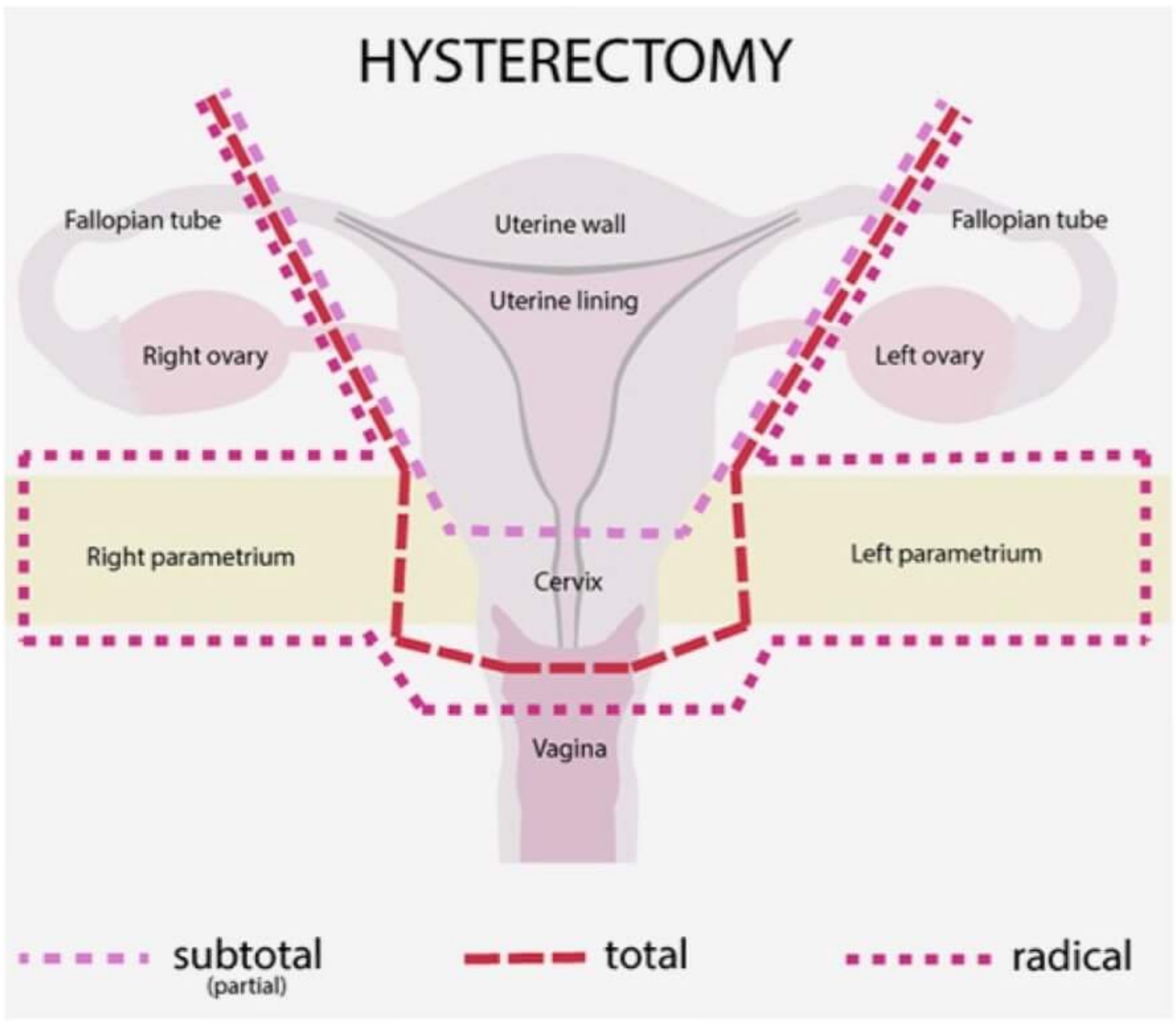
LAPAROSCOPIC HYSTERECTOMY

① LAVH [Laparoscopic Assisted vaginal Hysterectomy]

- Diagnostic Laparoscopy + Vaginal Hysterectomy
- Adhesiolysis + Vaginal Hysterec. ny
- Resection of Adnexae
- Uterines Resected after bladder mobilization

② Total Laparoscopic Hysterectomy

METHODS



OVARIES

→ Conserve ovaries at least till 50 yrs

→ if Surgical OOphorectomy done < 50 yrs, more chances of Coronary Artery Disease by 65 yrs

PROPHYLACTIC OOPHORECTOMY

→ BRCA I & BRCA II

→ 1° female relatives having CA Breast, CA Ovary → 10-50% Risk

ABNORMAL UTERINE BLEEDING

MANAGEMENT

1 NSAIDs

→ inhibits vasodilator prostaglandins

→ ↓ Pain

↓ bleeding in uterine blood vessels

→ 1st Line drug

2 TRANEXEMIC ACID

→ Bleeding

↓

Fibrin Plug

↓

Fibrinolysis ← Plasmin ← Plasminogen

TRANEXEMIC ACID

↓

Rebleeding

→ 1st Line drug

3 HORMONAL MANAGEMENT

→ PROGESTERONE → Stabilizes the endometrium

→ ESTROGEN → forms new endometrial glands

ESTROGEN WITHDRAWAL > PROGESTERONE WITHDRAWL

→ COMBINED ORAL CONTRACEPTIVE PILLS

→ DANAZOL | ANDROGENS → Leads to Endometrial atrophy

→ GnRH ANALOGUES → down regulatn of Pituitary

→ IUCD LEVONORGESTROL [MIRENA]

4 SURGICAL MANAGEMENT

→ THERAPEUTIC CURRETTAGE /
HEMOSTATIC CURRETTAGE /
DILATATION & CURRETTAGE [DNC]

→ B/L UTERINE ARTERY EMBOLIZATION by PVA [poly Vinyl Alcohol] Particles

→ TRANS CERVICAL RESECTION of ENDOMETRIUM [TCRE]

→ MICRO WAVE METHOD

→ THERMAL METHOD → 87°C x 8 min

→ HYSTERECTOMY

CAUSES

1 Tumors

2 Infections

3 Pregnancy related causes ; for Example :

- 28th July → Last menstrual Period

↓

11th August → Ovulatid

↓

Embryo implanted on fallopean tube on 17th August

↓

28th August missed her period

↓

30th August bleeding occurs

→ mc fate of ectopic pregnancy → vascular inefficiency

- embryo degeneratn
- ↓ Progesterone
- SHEDDING OF DECIDUA

→ other outcomes of ectopic pregnancy → Tubal abortn
Rupture

4 Systemic Disorder

- Hypothyroidism
- Liver disorder

5 Coagulatn defects → von villebrand disease , ITP

6 Drugs → Heparin, warfarin , COCP, IUCD

7 Dysfunctional Uterine bleeding → Diagnosis of exclusion

DUB [DYSFUNCTIONAL UTERINE BLEEDING]

CONDITIONS

ANOVULATORY DUB

1 Pubertal Girls

2 Perimenopausal women

3 Metropathia Haemorrhagica

→ ANOVULATORY DUB → mc

in 65% c anovulatory DUB , the Endometrium is Hyperplastic

OVULATORY DUB

1 Corpus luteal ↓ed function

↓

Irregular ripening

↓

Premenstrual Spotting / Bleeding

2 Corpus Luteum ↑ed function

↓

irregular shedding

↓

Post menstrual spotting / Bleeding

MULLERIAN ABNORMALITIES

EMBRYOLOGICAL DEVELOPMENT & IT'S ABNORMALITIES

→ Female internal genitalia derived from MULLARIAN/ PARA MESONEPHRIC DUCT
→ male internal genitalia derived from WOLFIAN / MESONEPHRIC /GARTNER DUCT

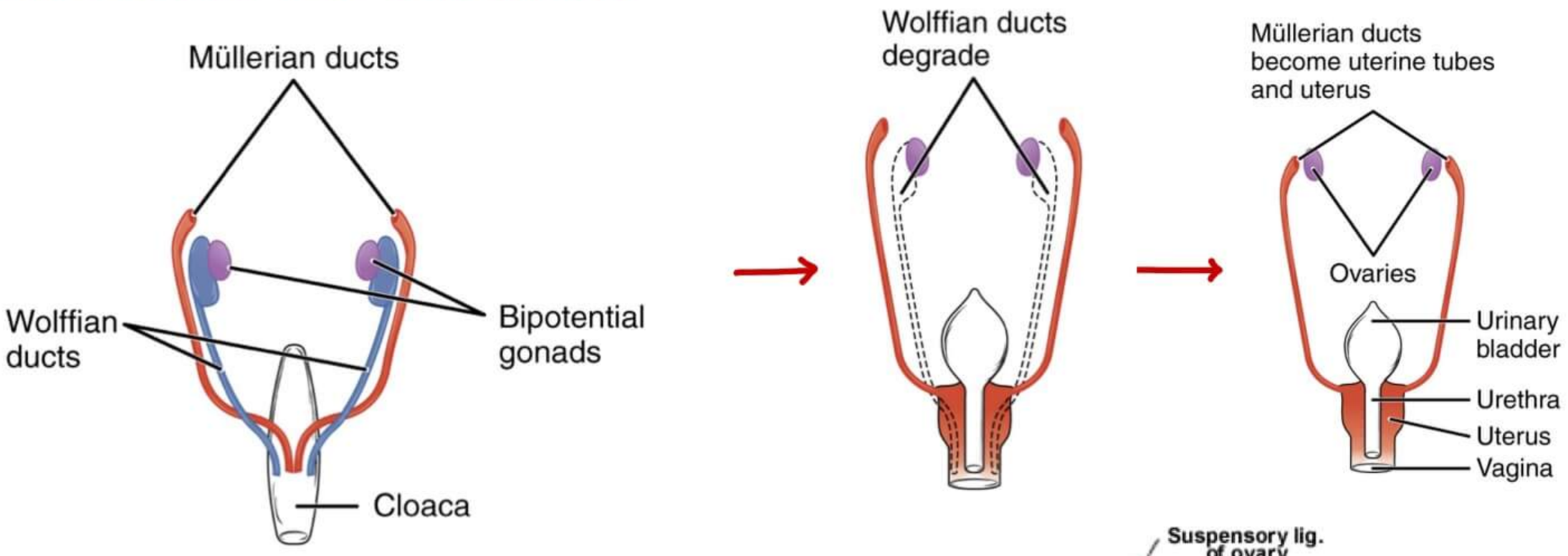
MULLARIN DUCT DERIVATIVES

→ Uterus
cervix
fallopean tubes
4/5 th OF vagina
- Lower 1/5 th derived from UROGENITAL SINUS
- ovaries are derived from GENITAL RIDGE

WOLFIAN DUCT DERIVATIVES

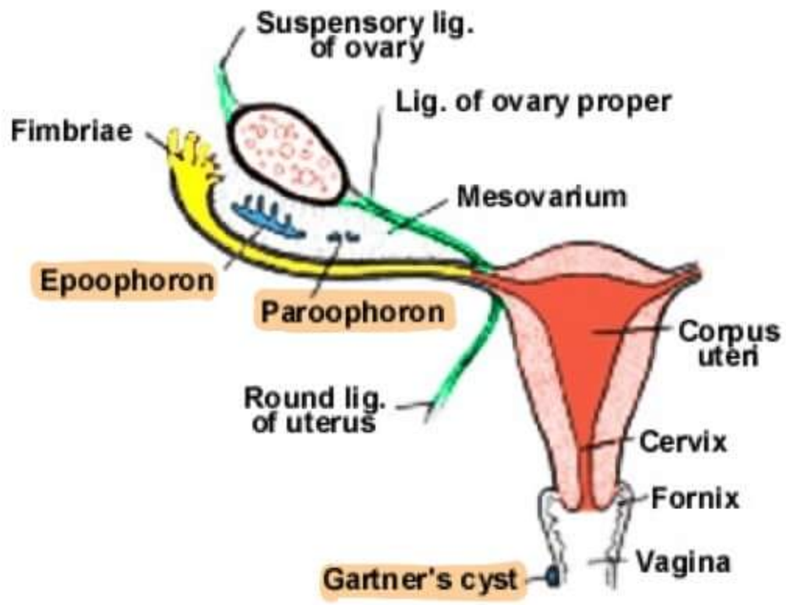
→ Epididymus
→ vas deferens
→ Seminiferous tubules
→ Prostatic urethra

FEMALE GENITAL TRACT DEVELOPMENT



FATE OF WOLFIAN DUCT IN FEMALES

→ Remanents of wolfian duct
- Epoophoron → above the ovary
- Paraoophoron → beside the ovary



→ obliterated male duct at upper lateral vaginal wall → may lead to

GARTNER CYST

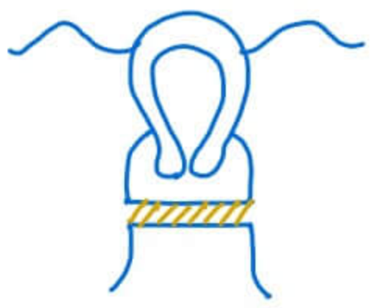
- mostly asymptomatic
- Rx by SIMPLE EXCISION

BARTHOLIN ABCESS

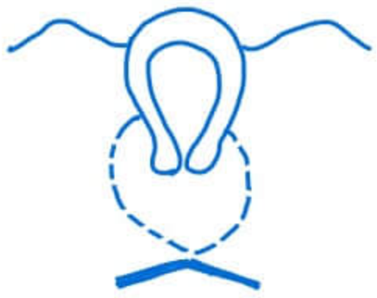
- gland present at anterior 2/3 rd & posterior 1/3 rd of vulva
- Rx by MARSUPILIZATION [Exteriorizat^{n} OF cavity]

MULLARIAN DUCT ANOMALIES

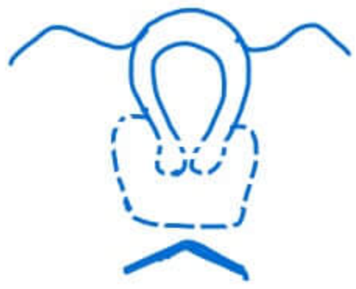
VERTICAL FUSION DEFECTS



TRANSVERSE VAGINAL SEPTUM



VAGINAL ATRESIA

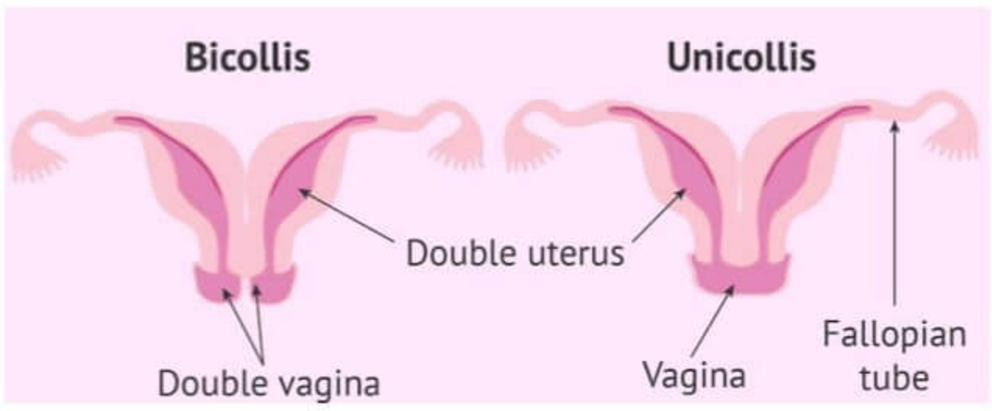


CERVICAL VAGINAL ATRESIA

COMPLETE MULLERIAN AGENESIS

LATERAL FUSION DEFECTS

1 DIDELPHYS



2 UNICORNUATE

3 SEPTATE

4. BICORNUATE

SEPTATE VS BICORNUATE UTERUS

→ On Hysterosalpingography, both septate & bicornuate uterus looks similar

- Angle between 2 cavities
  - $< 90°$ [Acute] → Septate Uterus
  - $> 90°$ [obtuse] → Bicornuate uterus

- Distance b/w 2 cavities
  - $< 4cm$ → Septate Uterus
  - $> 4cm$ → Bicornuate uterus

- Fundus
  - Broad → Septate Uterus
  - indented/bimpling → Bicornuate uterus

SEPTATE UTERUS IS THE SINGLE MOST COMMON MULLERIAN DEFECT

→ Best way to distinguish b/w Septate & bicornuate uterus
  → DIAGNOSTIC LAPAROSCOPY + HYSTEROSCOPY
  → MRI [Best imaging method]

→ TREATMENT
  → Septate uterus → removal of septum through hysteroscopy
  → Bicornuate uterus → Unification surgery [STRASSMAN'S or JONE'S]

→ Only indicatⁿ of unifying the uterus in bicornuate uterus → Recurrent Abortions

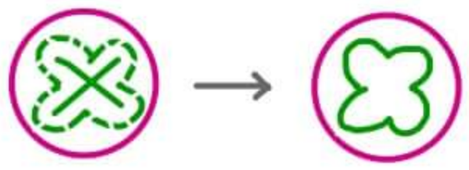
CRYPTOMENORRHEA

→ Menstruatⁿ present [Hematometra - blood in uterus ; Hematocolpos - blood in vagina] but menstrual blood not coming out
  → Transverse vaginal septum
  → Vaginal atresia
  → Cervical vaginal atresia
  → Imperforate hymen


IMPERFORATE HYMEN

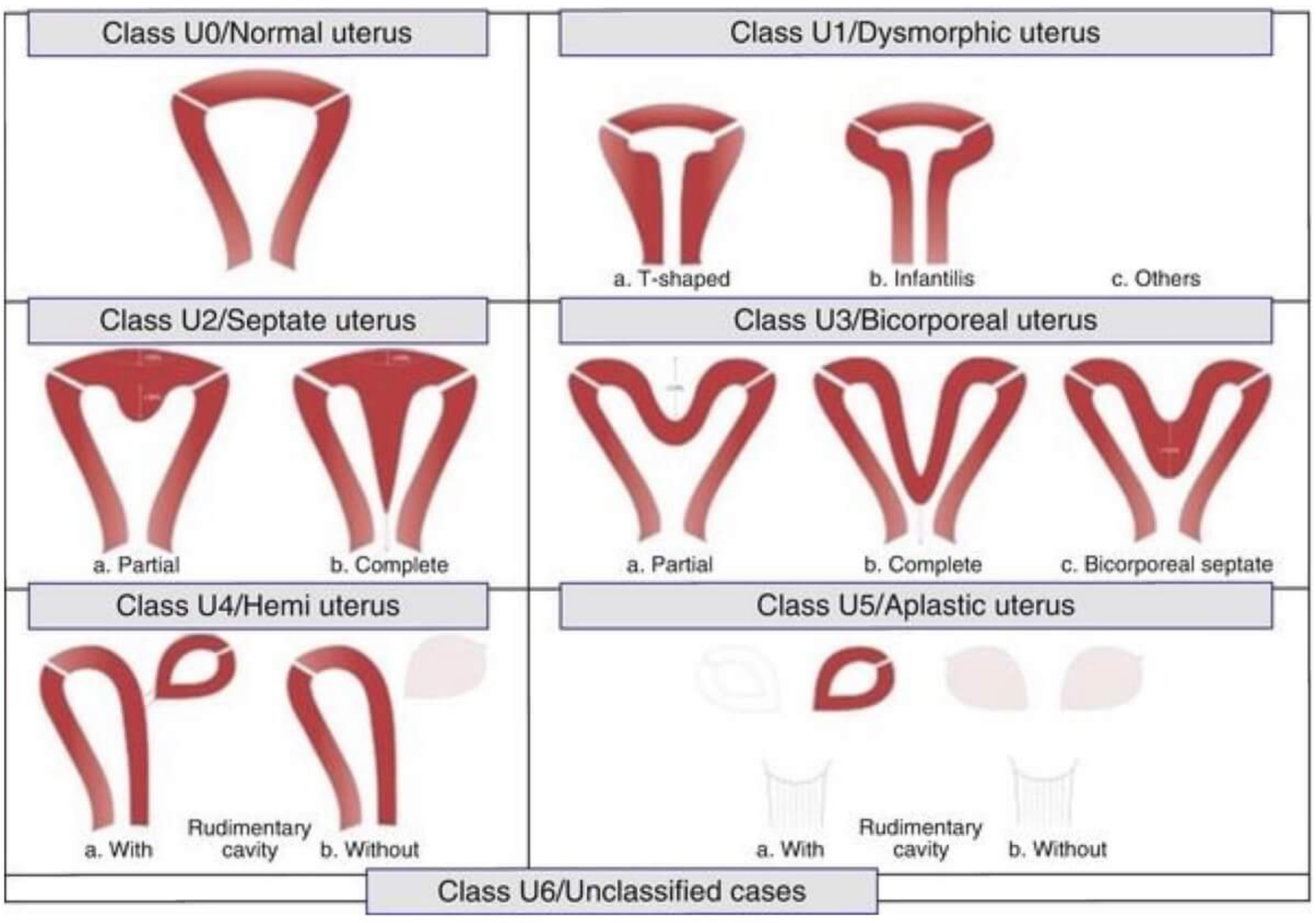
IMPERFORATE HYMEN

→ Not a mullerian anomaly
→ It is a cannulatⁿ defect
→ Rx → 1 cruciate incisⁿ given
  2 cut along the incision



ESHRE CLASSIFICATION

→ European Society for Human Reproduction & Embryology



INTERSEX

STRUCTURES	DERIVED FROM
Uterus	Mullerian / Paramesonephric ducts
cervix	
fallopean tubes	
upper 4/5th OF vagina	Genital ridge
OVARIES	
LOWER 1/5 th OF VAGINA	urogenital sinus

FORMATION OF EXTERNAL GENITALIA

→ After 6 wks of intrauterine life, Sexual differentiatn begins

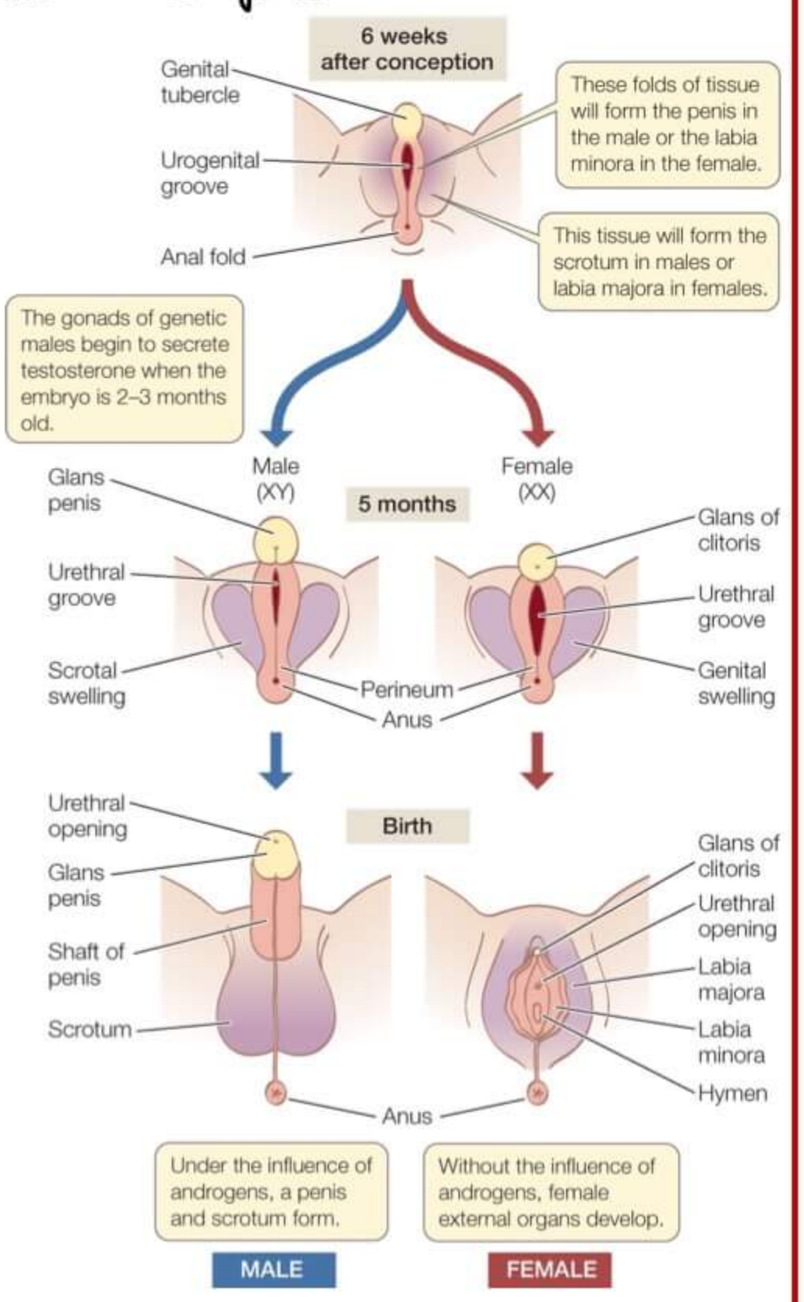
→ Sexual differentiatn is based on

- Genetic Sex [46 xx or 46 xY]
- Gonadal Sex [ovary or testes]
- Phenotype [vulva or Phallus]

→ Y chromosome has

- Sex determining Region Y [SRY]
- Testes Determining Factor [TDF]

→ Ext. genital formatn is under the influnce OF ANDROGENS



>6 WKS	>6 WKS
↓	↓
MALE	FEMALE
TESTES	OVARIES
↓	↓
ANDROGENS	NO ANDROGENS
↓	↓
Descent of testes	Labia majora
Formatn of Scrotum	Labia minora
Formatn OF Penis	clitoris
	Lower 1/5 th of vagina by urogenital sinus

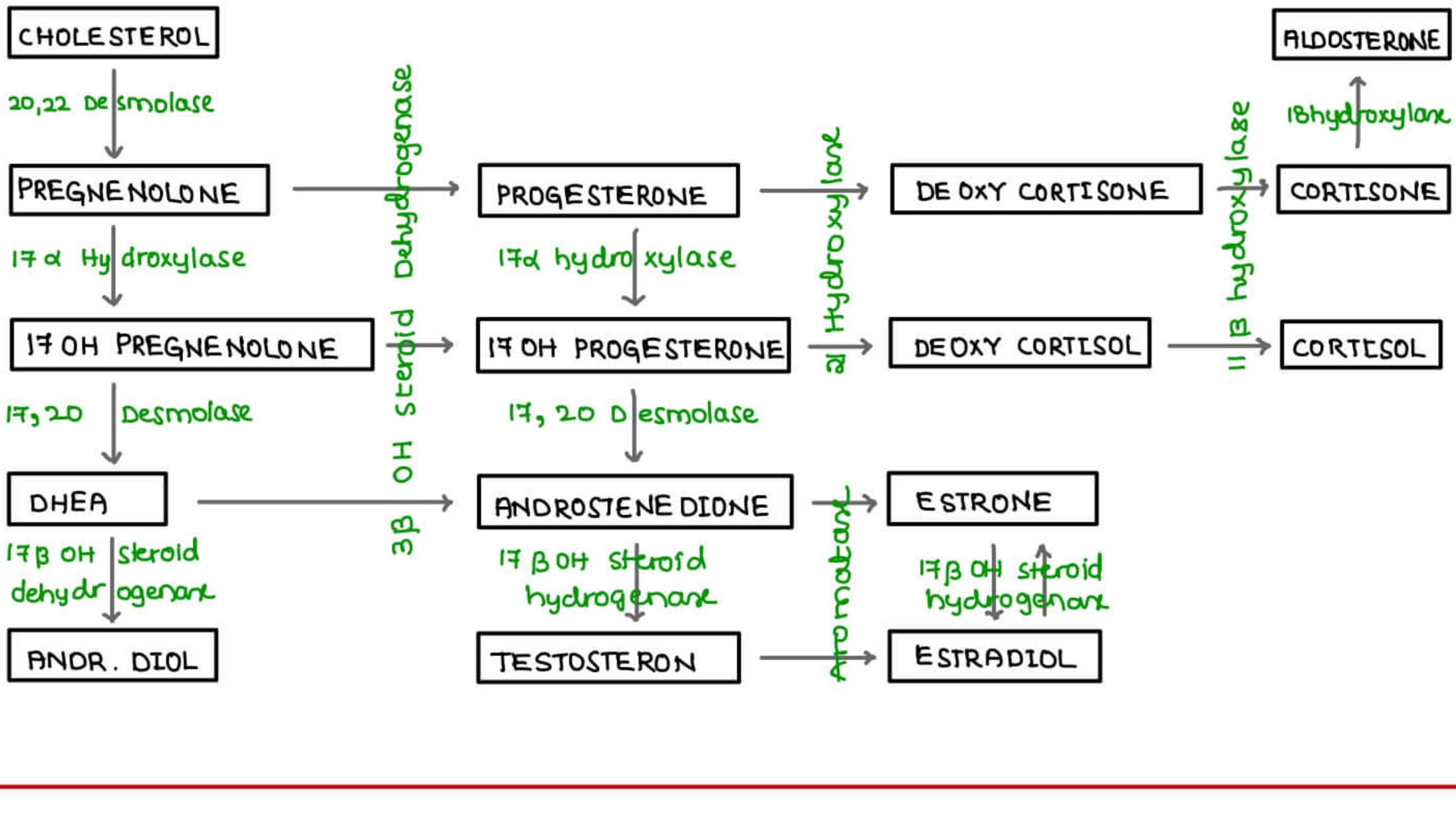
DEFAULT / BASIC HUMAN SEXUALITY → FEMALE

	MULLERIAN AGENESIS	TESTICULAR FEMINIZATION SYNDROME/ ANDROGEN INSENSITIVITY SYNDROME
KARYOTYPE	→ 46 xx	→ 46 XY
GONAD	→ Ovary	→ Testes
UTERUS, TUBES	→ Absent	→ Absent
VAGINA	→ Shallow blind	→ Shallow blind
VULVA	→ Normal	→ Normal
BREAST	→ Feminine	→ Large feminine
PERIODS	→ Absent	→ Absent
ANDROGENS	→ 20-80 ng/dl	→ 200 - 800 ng/dL
PUBIC/AXILLARY HAIR	→ Present	→ Absent

→ In Testicular feminizat^{n} syndrome,
- In periphery, ANDROGENS $\xrightarrow{\text{Aromatase}}$ ESTROGENS
- ESTROGENS → Large feminine breasts
  Pubic & axillary hair absent

→ TFS is distinguished from Mullerian Agenesis by
- Absent axillary & pubic hair [clinical suspicion]
- Karyotyping → 46 XY
- USG reveals undescended testes [mostly in abdomen / occasionally in inguinal canal]

→ undescended testes removed in TFS at the time of puberty



→ 21 Hydroxylase Deficiency ,

↓

↓ Steroid Hormones

↓

× Negative feedback to Hypothalamus

↓

↑ ACTH

↓

↑ SEX HORMONES

CONGENITAL ADRENAL HYPERPLASIA

→ dlt deficiency of 21 Hydroxylase enzyme

① classical variety

→ Boy → Precocious puberty

→ In Girl

- penis & scrotum + nt
- NO testes

} AMBIGUOUS GENITALIA

② Sn Salt Loosing variety

- ↓ Na^+
  ↓ H_2O
  ↑ K^+
- Fatal to the baby [boy or girl]

③ Late onset / Adult onset Adrenal Hyperplasia

→ Rx by Long term steroids

→ mc cause of CAH → 21 β hydroxylase deficiency
2nd mc cause of CAH → 11 β hydroxylase deficiency

→ PREVENTION

- Start the steroids at the time of Dx of next pregnancy

→ GENETIC MALE & PHENOTYPIC FEMALE → MALE PSEUDOHERMAPHRODITE

GENETIC FEMALE & PHENOTYPIC MALE → FEMALE PSEUDOHERMAPHRODITE

EXAMPLES OF

MALE PSEUDOHERMAPHRODITE → TFS

FEMALE PSEUDOHERMAPHRODITE → CAH

→ TRUE HERMAPHRODITE

- MALE + FEMALE KARYOTYPE &
- MALE + FEMALE GONADS → OVOTESTIS &
- MALE + FEMALE EXTERNAL GENITALIA

GONADAL DYSGENESIS

SWYER SYNDROME

→ 46 XY Female

TURNER SYNDROME

Streak gonads

↓ Estrogens

Small uterus

Primary amenorrhea

MIXED GONADAL DYSGENESIS

→ Male + female karyotype

Male + female Gonads

- U/L undescended testes → not working
- Contralateral streak ovary → not working

→ External genitalia → female

→ 1/3 rd of mixed gonadal dysgenesis have Turner phenotype

IN GONADAL DYSGENESIS, THE EXTERNAL GENITALIA IS ALWAYS OF FEMALE

→ MC cause of 1° Amenorrhea → Gonadal Dysgenesis

MC type of gonadal dysgenesis → Turner syndrome

Q Short stature
1° amenorrhea
Streak gonad
on USG → hypoplastic uterus

} **TURNER SYNDROME**

→ 46 xx → 1 Barr body [Normal female]

→ 46 xo → No Barr body → TURNER SYNDROME

Short stature

Shield chest

Low set hair line

Lymphedema

Normal Intellegence

→ 46 XY → No Barr Body [Normal male]

→ 47 XXY → KLINEFELTER SYNDROME

Tall stature

Gynecomastia

Obesity

azoospermia

infertility

Mental Retardath

Q Which one has the best clinical prognosis ?

A CAH

B TFS

C MIXED GONADAL DYSGENESIS

D TRUE HERMAPHRODITES

GAMETOGENESIS

SPERMATOGENESIS

SPERMATOGONIA —75 Days→ SPERMATOZOA

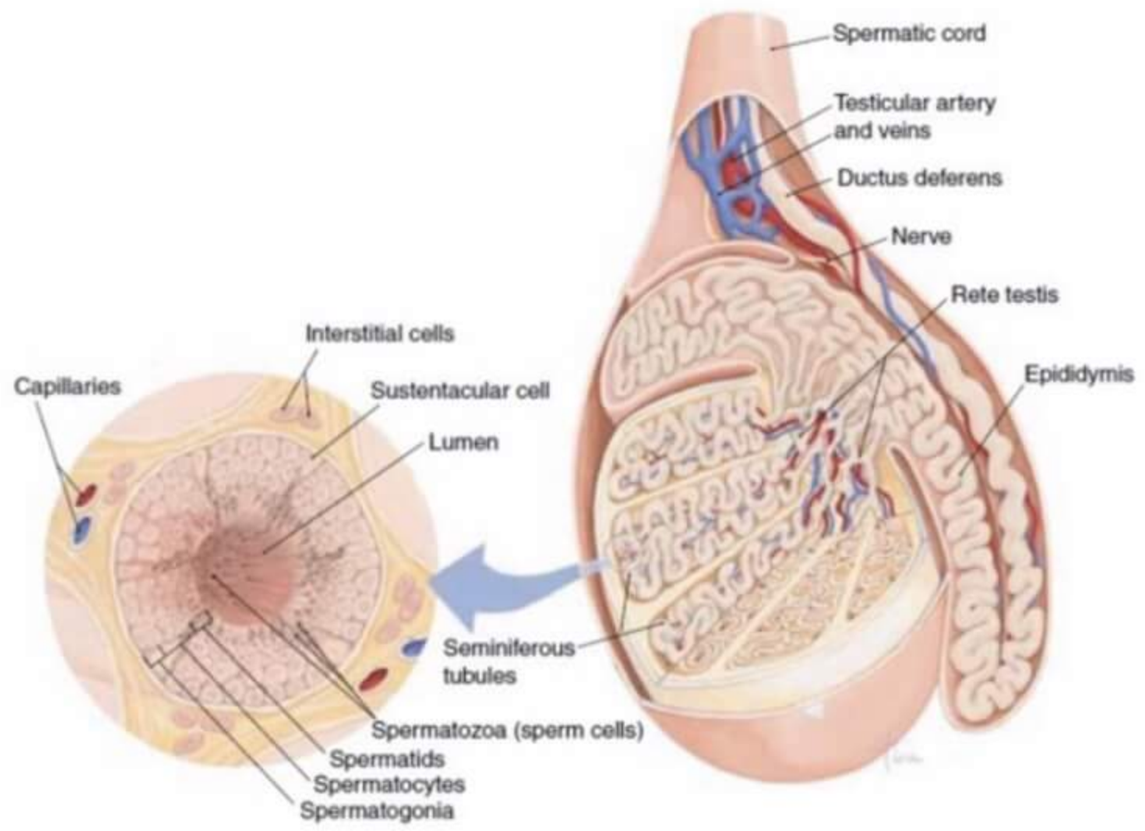
IN TESTIS

LH —acts on→ Leydig cells —produce→ TESTOSTERONE

FSH —acts on→ Sertoli cells [lining the Seminiferous tubules] —→ SPERMS

SPERM PATHWAY

TESTIS [250-290 lobules ⊕nt]
↓
SEMINIFEROUS TUBULES
↓
RETE TESTIS
↓
EPIDIDYMUS [Sperms are stored]
↓ 2-6 Days
VAS DEFERENS [more motile sperms
↓
EJACULATORY DUCT
↓
URETHRA
↓
PENIS

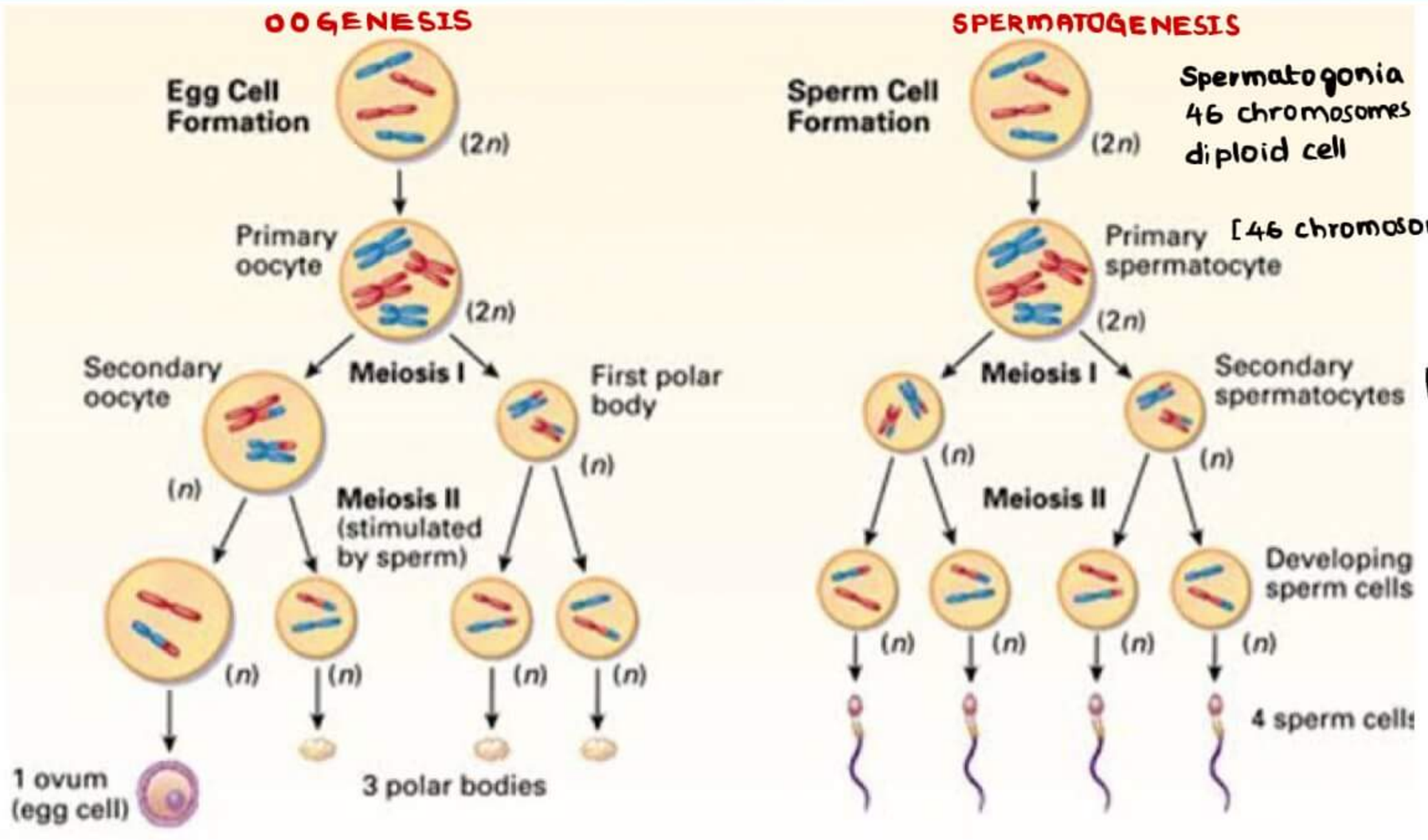


SPERMATOGENESIS

→ 1 Spermatogonia gives rise to 4 Sperms

→ SPERMATID —48 hrs→ SPERMATOZOA
[non-motile] [motile]

→ Formation of Spermatozoa From Spermatid include
  ↳ condensation of nucleus occur
  ↳ Formation of tail occur
  ↳ motility
  ↳ Acrosomal cap [Golgi apparatus]



OOGENESIS

- → 1 oogonium gives rise to 1 ovum & 3 polar bodies [extra genetic material
- → oogonia starts forming from 8 wks of IUL
- → PRIMARY OOCYTES
  - → maximum at 20 wks of IUL [6-7 wks]
  - → present at birth
  - → Rest in Prophase I [meiotic division] at the time of birth
  - → Meiosis I completed at the time of ovulation [Puberty]

- → Secondary oocyte & 1 polar body released [at the time of ovulation]
- → secondary oocyte is arrested in Metaphase [meiosis II]
- → After fertization, 2nd polar body & ovum are released

AFTER EJACULATION, Sperms reach posterior fornix of vagina $\xrightarrow{2\ min}$ ampulla

CAPACITATION OF SPERMS

- → the potential to fertilize oocyte
- → takes place in cervical mucus
- → steps responsible for capacitation
  - ↳ removal of inhibitory mediator [cholesterol]
  - ↳ Tyrosine phosphorylation
  - ↳ influx of ca^{2+} ions

ACROSOMAL REACTION

Acrosomal cap
[Golgi apparatus]
↓ Acrosome breakdown

Release Acrosin to fertilize oocyte
[Penetrate zona pellucida of oocyte]
↓
Acrosin [Hyaluronidase] will soften the zona pellucida [Acrosome reaction]

CORTICAL REACTION

one sperm gets inside
↓
cortical granules released in perivitelline space of oocyte
↓
This reaction makes the oocyte impermeable again

PUBERTAL CHANGES

First event of puberty → Growthspurt

SPECIFIC EVENTS OF PUBERTY IN GIRLS

Breast	→	Thelarche [T]
Pubic axillary hair	→	Pubarche [P]
Height	→	Linear growth spurt
Periods	→	Menarche

→ Time taken for the above specific events → 4.5 yrs

TIMING

→ TIMING to start of Periods → 10 - 12 yrs
→ if periods start at 9 - 10 yrs → EARLY PERIODS
→ if periods start at < 8 yrs → PRECOCIOUS PUBERTY

→ mc cause of precocious puberty → Idiopathic
→ Rx of precocious puberty → GnRH analogues

DELAYED PUBERTY

→ no periods till 13 yrs of age
→ Pubarche + nt, no periods till 15 yrs

TANNER STAGING [For breast & pubic hair development]

STAGE I → NO growth, no mound, no development of breast

STAGE II → Significant amount of growth ⊕ nt

STAGE III → much developed breast
→ nipple is above the midplane of breast mound

STAGE IV → much more developed breast
secondary mound present

STAGE V → Bigger breast [mature breast]
no secondary mound
nipple is below the midplane

→ Girls Starts development of puberty → 10 - 12 yrs [10.5 yrs]
→ Boys starts his pubertal develop → 11.5 yrs
→ SPECIFIC EVENTS OF PUBERTY IN BOYS
  → Testicular size [T]
  → Penile length [P]
  → Pubic hair
  → Growth Spurt

→ SEQUENCE OF PUBERTY ONSET : Obese girls → Normal girls → Low weight → Anorexic
→ After attaining 23.5% Fat, girl period starts
→ Estrogen mostly responsible for events of puberty in girls like breast development, uterine development, periods
→ For Boys androgens mostly responsible for pubertal develop

INFERTILITY

→ 15 - 20% couples are infertile

→ INFERTILE → AFTER 1YR OF UNPROTECTED INTERCOURSE

→ CHANCE OF CONCEPTION ↕ UNPROTECTED INTERCOURSE

90% couple	→	1 yr
80% couple	→	1st 6 months
10% couple	→	next 6 month

→ 1 Act of intercourse at 14th day , chance of conceptn → 4 - 8%.

→ chance of conceptn ↕ many acts in one month → 25%.

CAUSES

→ % of Distribution of causes responsible for infertility

MALE	→	20 - 30%
FEMALE	→	30 - 40%
MALE + FEMALE	→	10 - 40%
UNEXPLAINED	→	10 - 20%

MALE CAUSES

→ oligospermia

→ Azoospermia

FEMALE CAUSES

→ Anovulatory factors > Tubal factors

WHO CLASSIFICATION OF ANOVULATION

TYPE I	→	Hypogonadotropic Hypogonadism	
TYPE II		Normogonadotropic Hypogonadism	→ PCOS
TYPE III		Hypergonadotropic Hypogonadism	→ Premature Ovarian fail.
TYPE IV		Hyperprolactinemia	

HISTORY TAKING

MALE SPECIFIC HISTORY

→ Act of intercourse

→ Infections → mumps , TB , Filariasis , STDs

→ Previous Sx → Orchidopexy / undescended testes

→ Hernia Sx , Varicocele Sx , Hydrocele Sx

→ Alcoholic , smoker

FEMALE SPECIFIC HISTORY

→ Infections → Recurrent PID , Endometriosis , TB pelvis

→ MTP / Abortions

→ Alcohol , smoking

INVESTIGATIONS

1 SEMEN ANALYSIS

→ 1st investigation to be done

→ 2010 WHO SEMEN ANALYSIS

PH	→	> 7.2
volume	→	> 1.5 ml
concentration	→	> 15 million/ml
Count	→	> 39 million [36-42 million]
motility	→	> 40% [32% must be actively motile]
Morphology	→	> 4% should be (N) [KRUGER'S STRICT CRITERIA]
Vitality	→	> 58% should be Normal
Leucocyte count	→	< 1×10^6 / ml

2 WOMEN

P/V Examination

TVS

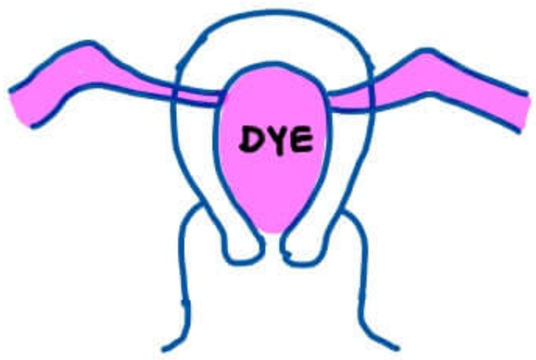
Ovulation Tests

- Basal Body Temperature [>0.5°F]
- USG - Follicular Monitoring
- LH → > 15 IU
- Sr. Progesterone → > 3ng/ml on day 21
- Endometrial Biopsy

Hystero Salpingo graphy

- Tells about Uterine cavity
- Tells about Tubal patency

HYSTERO SALPINGOGRAPHY



Laparo Hystero Scopy

- Better investigatⁿ to know anatomy
- Diagnostic
- Therapeutic

TREATMENT

1 OVULATION INDUCTION

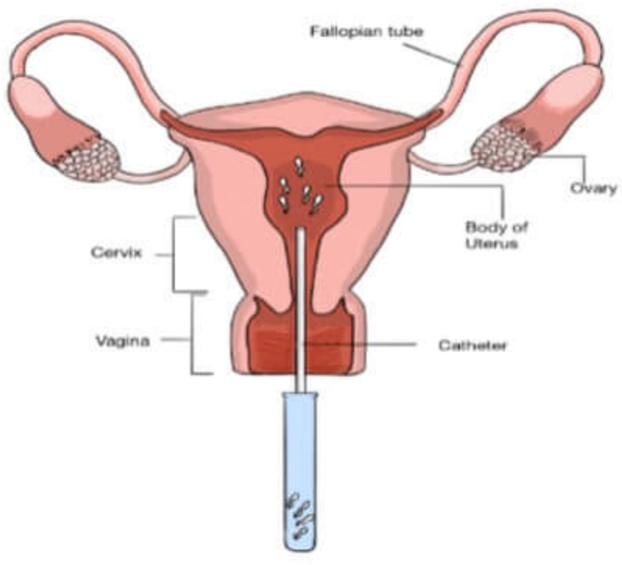
→ Indicated for anovulation

→ Clomiphene citrate

Letrozole

HMG

FSH



Intra Uterine insemination

2 INTRA UTERINE INSEMINATION by Washed Sperms

→ Indicated for Low count sperms, Endometriosis, Cervical factor infertility

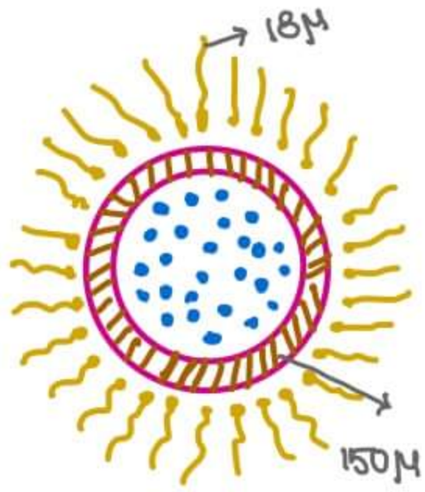
→ successful in 15 - 20% of cases

3 IN VITRO FERTILIZATION

→ indicated for tubal blockage, Low count sperms, Endometriosis, Cervical factor infertility

→ 2 or 3 Day 3 [8 cell] embryos are transfered or
1 or 2 Day 5 [Blastocysts] embryos are transfered

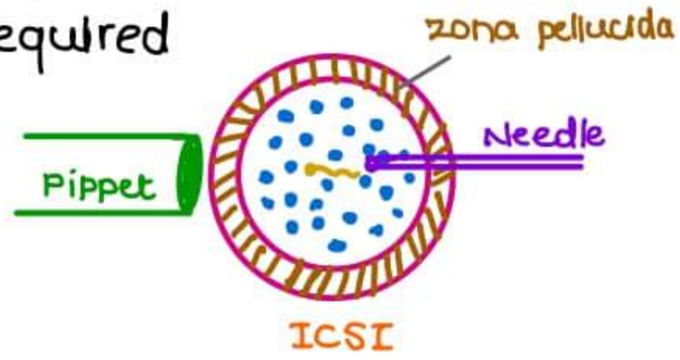
→ Success rate → 40 - 45 % [pregnancy]
Takehome baby rate → 25 - 30 %.



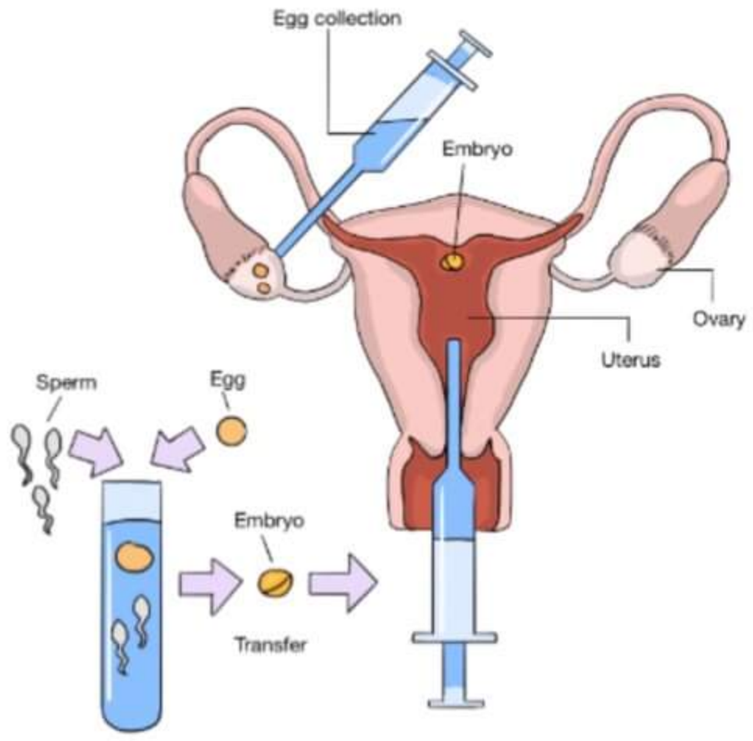
→ IN VIVO,
1/5th of Semen will reach the site of fertilizatn
1 Lakh sperms collide ī Ovum & release ACROSIN
Acrosin soften the ZONA PELLUCIDA → ACROSOME REACTION
Fertilizatn occurs & followed by ZONA REACTn, which hardens zona again

→ IVF requires 1 Lakh Sperms to fertilize a oocyte
So, for IVF atleast 3-5 million Sperms required
for IUI atleast 5-10 million Sperms required

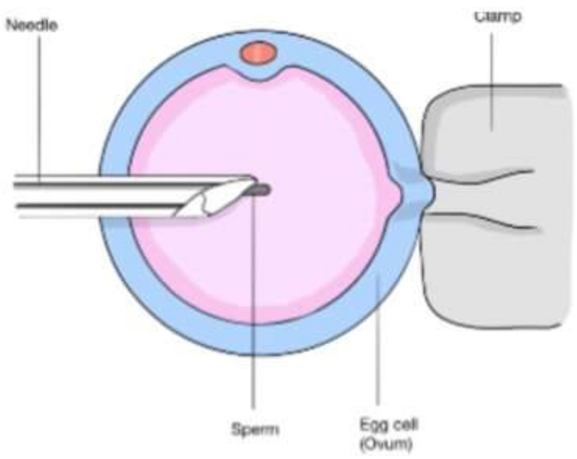
4 INTRA CYTOPLASMIC SPERM INJECTION



→ indicated for very very Low Sperm count



INVITRO FERTILIZATION



INTRA CYTOPLASMIC SPERM INJECTION

AZOOSPERMIA [obstructive Azoospermia]

→ Normal FSH & Azoospermia → obstructive Azoospermia

→ SPERM EXTRACTION TECHNIQUES

PESA [Percutaneous Epididymal Sperm Aspiration]

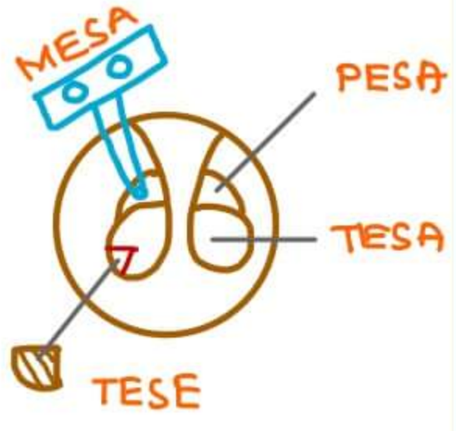
TESA [TEsticular Sperm Aspiration]

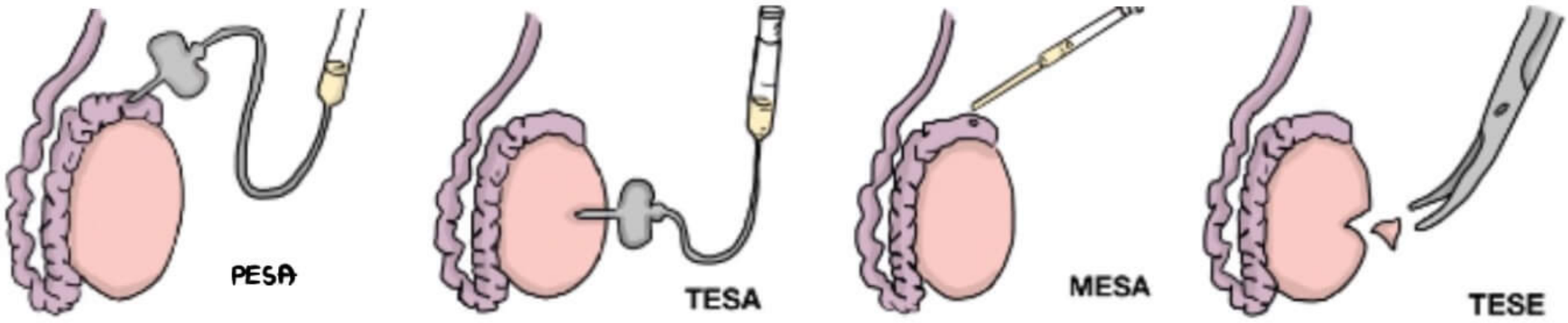
- Both can be done under Local anesthesia
- Both are Simple techniques [Needle Aspiration]

MESA [Microsurgical Epididymal Sperm Aspiratn]

TESE [TEsticular Sperm Extractn]

- Both are done under GA
- Both are complicated Techniques





Q Best technique to get quality sperms ?

A PESA

B TESA

C MESA

D TESE

Q controlled ovarian Hyperstimulat^{n} was given for IVF

Pre trigger [HCG], Estradiol levels → 800 pg

What is the next step in management

Ⓐ cancel the cycle

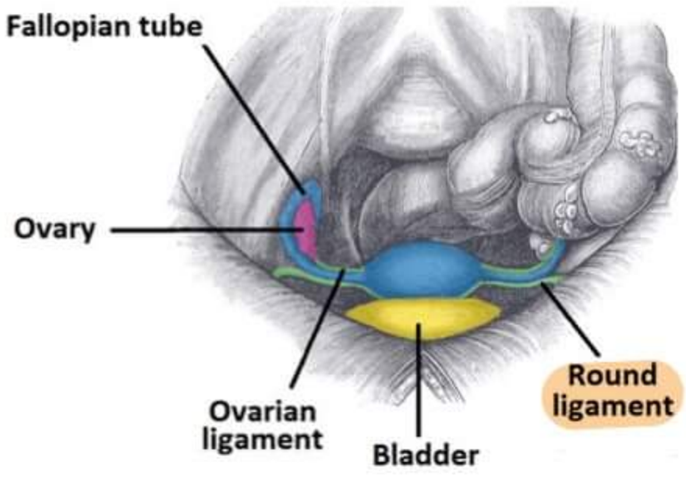
Ⓑ continue stimulat^{n} for 1 to 2 days & check estradiol

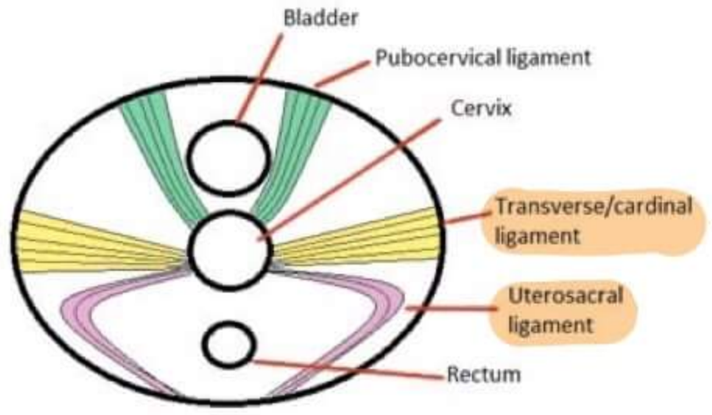
→ IDEAL TEMPERATURE FOR SPERMATOGENESIS → 35 - 35.5°C

GENITAL PROLAPSE

SUPPORTS OF UTERUS

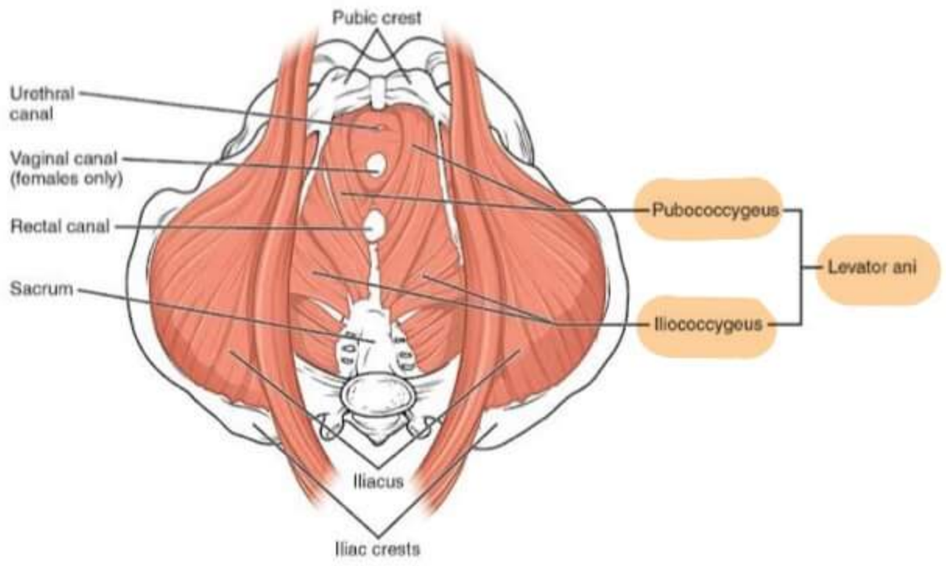
LIGAMENT SUPPORT



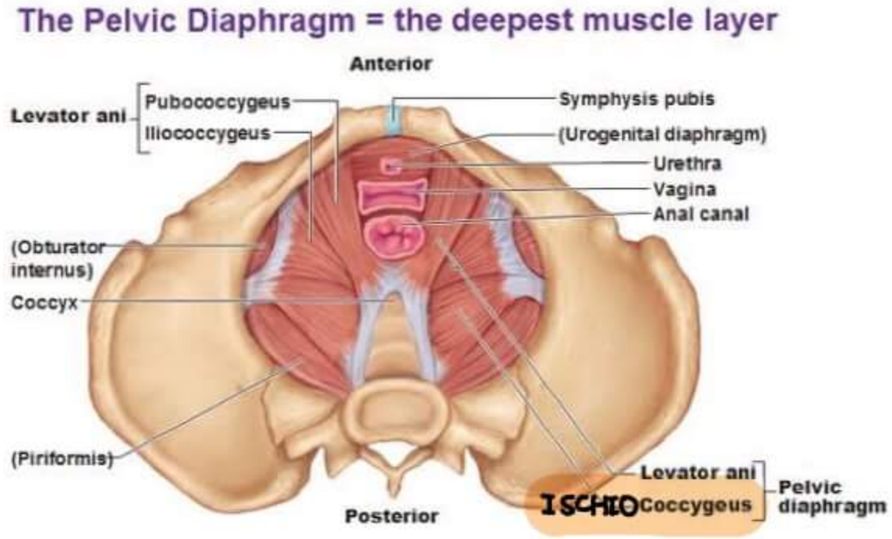


/ Mackenrodt's ligament ← most important among ligaments

MUSCULAR SUPPORT



The Pelvic Diaphragm = the deepest muscle layer



→ Muscles are the best supports of the uterus

CAUSES

→ Abnormal conduct of labour → most important cause

- Early bearing down
- prolong 2nd stage
- faulty instrumentatn
- early resumptn of work
- multiparity

→ connective tissue disorders

→ Spina bifida

→ ↑ abdominal pressure

- ascites
- chronic cough
- abdominal mass

EARLY BEARING DOWN [against the partly dilated [3cm or 5cm] cervix]

→ Leads to cervical streching / enlongation & cervical descent

→ In PAROUS PROLAPSE, usually cervical elongatn is present

PROLONGED 2nd STAGE OF LABOUR

→ in Primi → ≈ 1hr ; Upper limit is 2hr
in multi → ≈ ½ hr ; Upper limit is 1 hr

→ Ischemic damage of nerves causing Neuronal injury

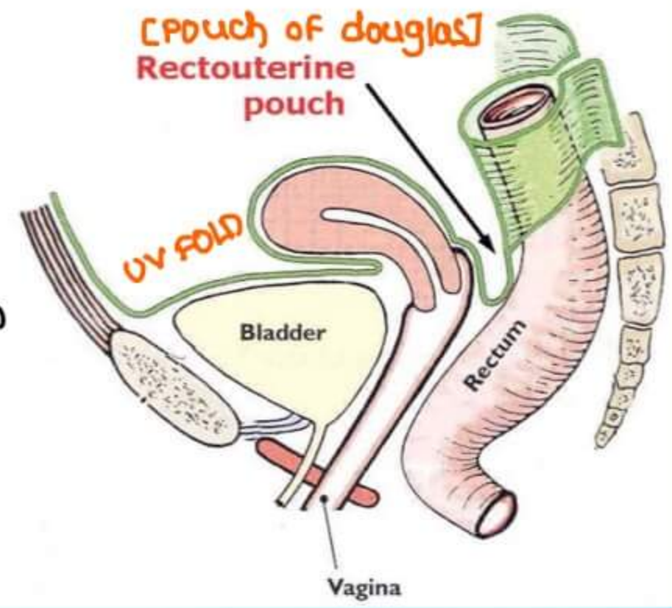
- Single most important injury predisposing to prolapse

FAULTY INSTRUMENTATION

→ Good instrumentatn prevents prolapse

→ Faulty instrumentatn causes prolapse

EARLY RESUMPTION OF WORK → < 6 wks of puerperium



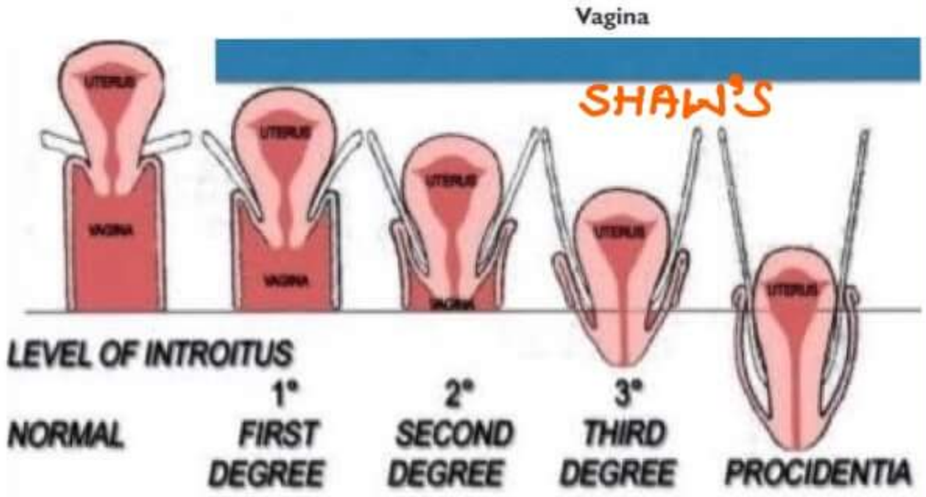
SHAW'S CLASSIFICATION

STAGE I → Cervix is just below the N level

STAGE II → Cervix is at introitus

STAGE III → Cervix is outside

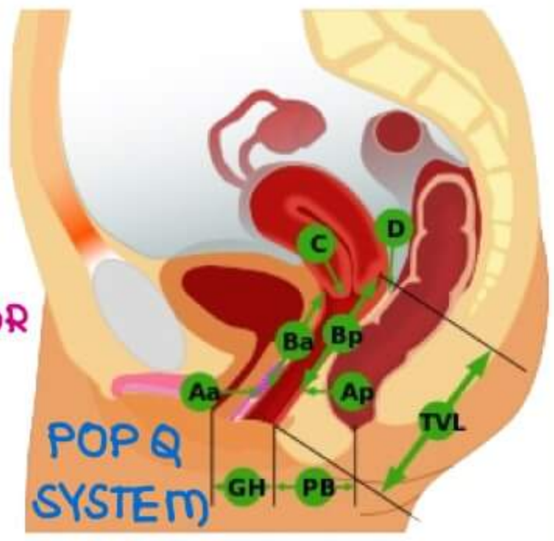
STAGE IV → PROCIDENTIA
[Full uterus has prolapsed]



POP Q SYSTEM

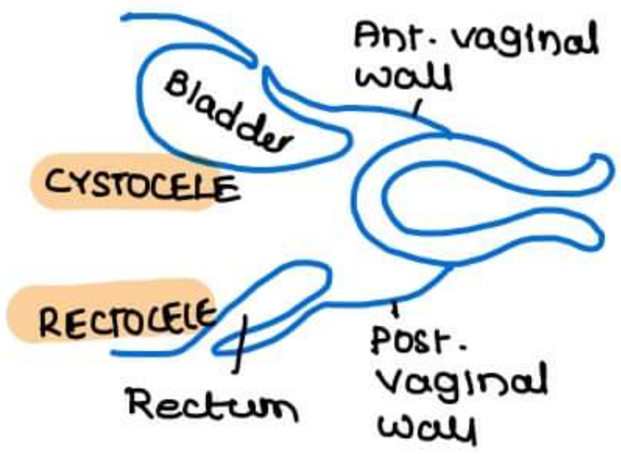
→ Pelvic Organ Prolapse Quantification System

→ Reproducibility is good & good for comparision



PARTS OF PROLAPSE WHEN YOU GO FROM ANTERIOR TO POSTERIOR

→ Anterior vaginal wall
Urethrocele
Cystocele
Uterus
Rectocele
Posterior vaginal wall



CYSTOCELE - COMPLICATIONS

→ Difficult in initiatn of micturition

→ Retention of urine

→ Infection

→ Stone formatn

RECTOCELE - COMPLICATIONS

→ Difficult initiatn

→ Fecolith formatn

REPOSITn by PESSARY

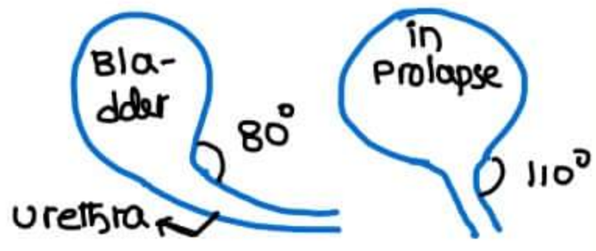
OTHER COMPLICATIONS

→ Venous congestn dlt vaginal band → DEOXYGENATED UTERUS

→ DECUBITOUS / DEPENDENT ULCER [dlt venous congestn]
- Rx → Repositioning ī Pessary

→ STRESS URINARY INCONTINENCE

→ Dragging sensatn
Something coming out of vagina
} mc presentatn
Sense of insecurity in the vagina / Perineum



PREVENTION OF PROLAPSE

→ Physiotherapy
- antenatal
- post natal

TREATMENT

→ Rx for elderly women [mc age group]

1 VAGINAL HYSTERECTOMY ī PELVIC FLOOR REPAIR
- → aka WARD & MAYO'S OPERATION
- → Hysterectomy done
- → Repositioned bladder & rectum
- → vault closure done
- → Anterior colporraphy done
- → Posterior Colpo perineorraphy done

} PELVIC FLOOR REPAIR

- → VAULT PROLAPSE
  - present in 3-4 months of surgery of WARD & MAYO'S OPERATⁿ
  - dlt pressure by enterocele through peritoneal defects
  - mc cause → neglected enterocele
  - Prevented by High ligatⁿ or closure of peritoneal defect
  - Rx by SACROSPINOPEXY / SACROPEXY
    - Repositⁿ the vault physically
    - tie the vault to ischial spines or uterosacral ligament

- → STRESS URINARY INCONTINENCE
  - present by 2-3 weeks of Sx [hysterectomy]
  - dlt improper anterior wall repair

→ Rx for younger women

FOTHERGIL REPAIR / MANCHESTER REPAIR
- → Reposit the uterus
- → DNC [Dilatation & curettage] to be done
- → DO cervical amputatⁿ for the lax / elogated cervix
- → ī Fothergil stich, support the uterus ī Mackenrodt' ligament
- → Pelvic floor repair done along ī fothergil stich
- → Reposit the bladder & rectum
- → Pioneered by DONALD in Manchester city Hospital

→ Rx for NULLIPAROUS PROLAPSE of very young women

SLING SURGERIES

→ Tie a sling to the posterior part of cervix & pull in & tie inside

→ SHIRODKAR SLING → tie to Anterior Longitudinal ligment
KHANNA'S SLING tie to Anterior Superior iliac spine
PURANDARE'S SLING rectus sheath

STRESS URINARY INCONTINENCE

→ d/t improper anterior colporraphy

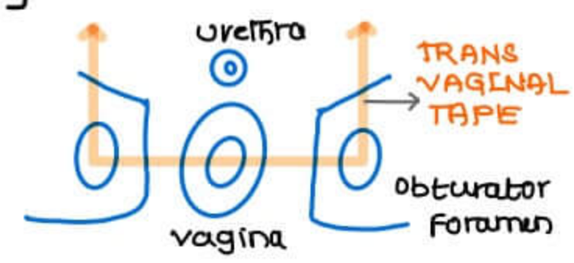
→ can be a complication in 2-3 wks after hysterectomy

→ Surgical Management

1 PEYRERA'S } - Needle suspenpension procedure
2 STAMEY'S } - uplifting of urethra

3 MMK'S COLPOSUSPENSION } uplifting of ant. vaginal wall
4 BURCH COLPOSUSPENSION }

5 TRANS VAGINAL TAPE
6 KELLY'S STITCH



- Plicate the paravesicle tissues under the bladder neck

→ BEST LONG LASTING RESULTS GIVEN BY COLPOSUSPENSION [upto 95%]

URINARY FISTULA IN OBSTETRICS

OBSTRUCTED LABOUR

→ No progress of labour inspite of GOOD UTERINE CONTRACTIONS
→ Rx by Cesarean Section
→ In the case of ischemic injury to vagina & bladder
  — 5-7 days later, Vesico vaginal Fistula presents
  — Prevented by urinary Catheterizatn from 14-21 Days

URINARY FISTULAS IN OBSTETRICS

CAUSES OF VESICO VAGINAL FISTULA

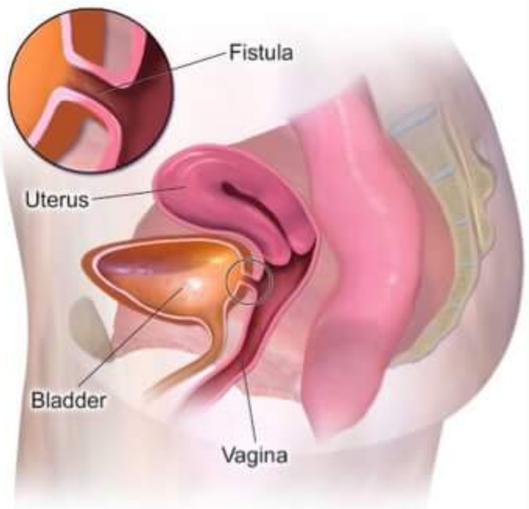
① OBSTETRIC CAUSES
- Obstructed labour
- Faulty instrumentatn
- Destructive operations

② GYNECOLOGICAL CAUSES
- Hysterectomy
- WERTHEIM → ureteric dissections

③ RADIATION INJURIES → painful fistula

PRESENTATION

→ constant dribling of urine
→ Vulva & thighs are excoriated
→ Splash dysuria
→ UTI



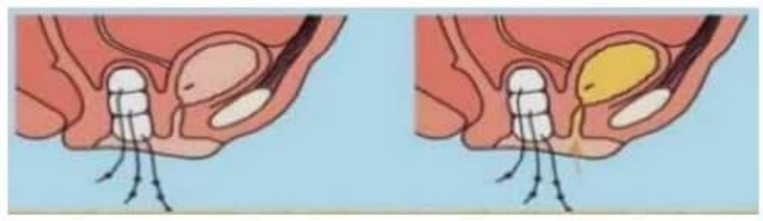
Vesicovaginal Fistula

TREATMENT

1 DIVERT THE STREAM → Ī Catheter
2 ZINC CREAM ON THIGH → works as Emollient
3 ANTIBIOTICS
4 REPAIR
  - Do not repair immediately
  - wait for scarring to happen
  - Wait for 2 ½ - 3 months

DIAGNOSIS

① 3 SWAB TEST
→ Methylene blue is injected into the bladder

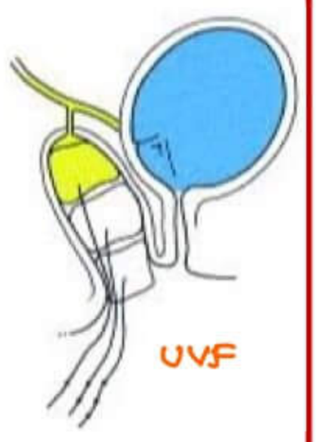

3 SWAB TEST

② Mid vaginal fistula
- mc in our country
- dlt obstructed labour

⑥ HIGH VAGINAL FISTULA
- d/t forceps
  vaginal hysterectomy

© LOW VAGINAL FISTULA
- d/t urethro vaginal fistula or
  Low vaginal fistula d/t radiatⁿ injury

→ Destructive operations can cause any type of fistula



CASE → Top most cotton ball is not blue in color but it is colourless but WET
- urinary source is not bladder
- Source is ureter → URETERO VAGINAL FISTULA
  - Leaking + continence +nt

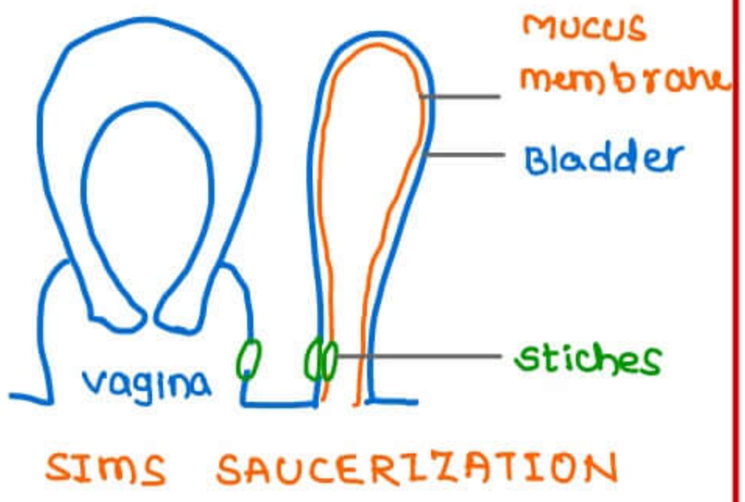
② DOUBLE DYE TEST
- Cotton balls in vagina
- Methylene blue in the bladder
- Pyridium tablets given orally → impart RED colour to urine
- Helps to Dx uretero vaginal fistula

③ Best diagnostic test for vesico vaginal fistula → CYSTOSCOPY
Best diagnostic test for uretero vaginal fistula → INTRA VENOUS UROGRAPHY

YUSSUF'S SYNDROME
→ Vesico uterine fistula
→ presents ↓ menouria

REPAIR

① SIMS SAUCERIZATION for VVF
- done under General anesthesia
- 3 circular stiches on
  - mucus membrane of bladder
  - Bladder
  - Vagina
- Done in KNEE CHEST POSITION



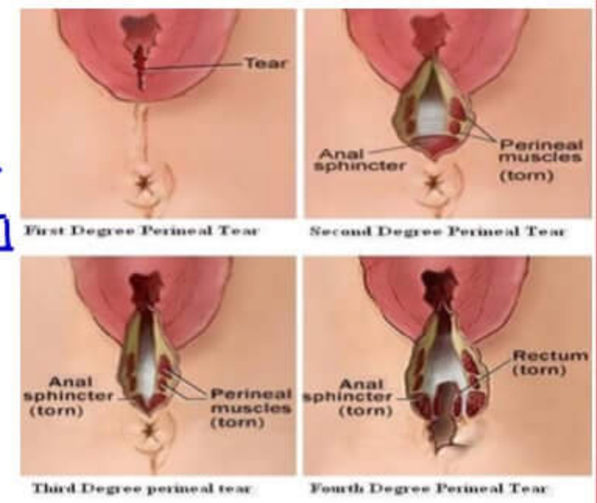
SIMS SAUCERIZATION

② LOW RECTO VAGINAL FISTULA REPAIR
- make it a complete Perineal Tear & repair

③ HIGH RECTO VAGINAL FISTULA REPAIR
- Divert the bowel → Colostomy
- Repair in layers

PERINEAL TEARS

- → Mucosal layer tear of vagina → TYPE I
- → mucosa + muscle tear → TYPE II
- → mucosa + muscle + Anal tear → TYPE III
  - <50% External anal Sphincter tear – III a
  - >50% External anal Sphincter tear – III b
  - Internal anal Sphincter tear – III c
- → mucosa + muscle + Anus + Rectal tear → TYPE IV



COMPLETE PERINEAL TEAR

- → TYPE III, TYPE IV } COMPLETE PERINEAL TEAR → Repair immediately

- → After 24 hrs in a Complete tear, there is colonizatn of cut ends
- → Will breakdown if repair
- → Wait for 2 1/2 – 3 months [atleast 6 wks]

EMERGENCY CONTRACEPTIVES

INTERCEPTION / EMERGENCY CONTRACEPTION / POST COITAL CONTRACEPTION

→ contraception within 72 hrs of unprotected intercourse

→ implantation of embryo takes place during 6 th day after intercourse. so, abortion cannot be done for these cases. Emergency contraceptives are preferred

→ ABORTION IS NOT A METHOD OF EMERGENCY CONTRACEPTION

DRUGS USED IN EMERGENCY CONTRACEPTION

1. LEVONORGESTREL

→ contains Progesterone

→ Dosage → 0.75 mg x 2 tablets
→ 1.5 mg of 1 tablet available now

→ MOA

1. ↓ LH → ↓ Ovulation → NO pregnancy

2. Progesterone → ↑↑ Endometrial secretion → TOO FLUFFY / OUT OF PHASE
ENDOMETRIUM → Difficult for embryo implantation

3. Progesterone → ↓ tubal motility → Late arrival of embryo into uterus → NO IMPLANTATION

↳ Thickening of cervical mucus [This mechanism CAN NOT used for emergency contraception as the sperms have already crossed the cervix after intercourse

2. YUZPEE REGIME [COCP]

→ 2 pills given at morning, after 12 hrs of time other 2 pills are given

→ MOA

↳ COCP reduces ovulation

↳ COCP reduces chances of implantation by altering endometrium

→ S|E → ↑ vomiting

3. MIFEPRISTONE / RU 486 / ANTI PROGESTIN

→ MOA → reduces implantation

→ Dosage → 10 - 50 mg for emergency contraception

4. ULIPRISTAL ACETATE

→ Selective progesterone receptor modulator [SPRM]

→ Dosage → 30 mg , 1 tablet

→ ELLA → Brand name

→ Better than Levonorgestrel [as it is effective upto 5 days]

→ Not the DOC of emergency contraception dlt non regular availability in India

Imarsiff@
+1438600

5. INTRAUTERINE CONTRACEPTIVE DEVICE [IUCD]

→ IUCD reduces implantation
→ useful upto 5 days [uniformly effective]
→ most effective method among emergency contraceptives, but not the best method as it requires insertion of device [not a comfortable procedure]

CRITERIA FOR DRUG OF CHOICE FOR EMERGENCY CONTRACEPTIVES

→ over the counter available drug
→ no prescription required
→ Easy to use

Best method of emergency contraception → Levonorgestrel
DOC of emergency contraception → Levonorgestrel
Brand name of Levonorgestrel → i - PILL

TYPES OF ORAL CONTRACEPTIVE PILLS

1. MONOPHASIC PILLS

→ Fixed dosage of Estrogen & Progesterone ↑ good control of cyclicity but not ↑ side effects
→ Eg. Oestrogen → upto 50 µg / day ; Progesterone → upto 1 mg/day

2. BIPHASIC PILLS

→ Fixed amount of estrogen while the amount of Progesterone is increased after mid cycle
→ Eg. Oestrogen → constant
Progesterone → 11 days at 50 µg, rest 10 days at 125 µg

3. TRIPHASIC PILLS

→ amount of Progesterone is constantly increased in 3 phases, while amount of estrogen may be fixed or variable by increasing little and back to original dosage

→ Eg. Estrogen → 30 µg | 40 µg | 30 µg
Progesterone → 50 µg | 75 µg | 125 µg

→ Triphasic pills are for better cyclic control & fewer side effects

LAPAROSCOPIC STERILIZATION

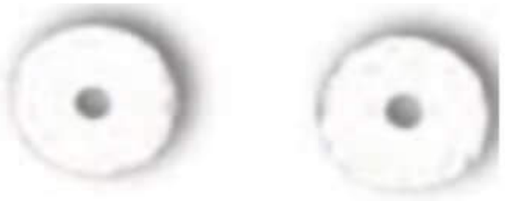
Laparoscopic sterilization done by using

1. LAPAROSCOPIC CLIPS

FILSCHE CLIPS (clips ↑out serrations)

HULKA CLEMENS CLIPS (clips ↑ Serrations)

2. LAPAROSCOPIC RINGS



FALLOPE RINGS

→ FALLOPE RINGS are silastic rings that are forced over the tube using Laprocator
→ Isthmus of fallopian tube is the area to be ligated for sterilization
→ A loop is made at the fallopian tube [near isthmus] & falope ring are forced at the base of the loop. They provide tight grip & cause ischemic necrosis of fallopian tube instataneously & the loop fall off

3. CAUTERIZATION

→ TYPES OF CAUTERY
  1. mono polar cautery
  2. Bipolar cautery

→ Fallopean tube is held b|w the prongs of cautery & high voltage current is passed which burn the tube at isthmus & also lateral side of tube [which makes it the last priority]

→ not recommended now - a - days
→ it has worst chances of reversibility

BEST RE-ANASTOMOSIS OF ANY TUBECTOMY PROCEDURE → LAPAROSCOPIC CLIPS
WORST RE-ANASTOMOSIS OF ANY TUBECTOMY PROCEDURE → CAUTERY

MONOPOLAR CAUTERY IS WORSE THAN BIPOLAR CAUTERY

BIPOLAR CAUTERY

→ current goes from one prongs to the fallopian tube & goes to the other prong & goes back to machine [generating to current]

MONOPOLAR CAUTERY

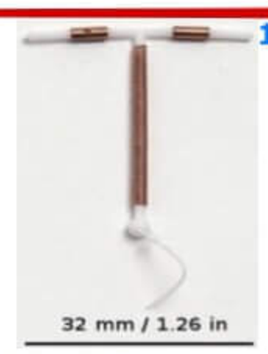
→ current flows through the instrument into the fallopean tube & into the earthling attached to patient
→ current dissipation is more in monopolar cautery

IUCDs [intra uterine contraceptive Devices]

→ FUNCTION → to induce foreign body action
→ uterus will contract to expel the FB [IUCD], thus the FB action will expel the embryo

→ 1st Generation IUCD → LIPPES LOOP [Inert]
→ 2nd Generation IUCD → COPPER DEVICES [multiload]
→ 3rd Generation IUCD → PROGESTERONE CONTAINING IUCDs

COPPER DEVICES | 2nd GENERATION IUCDs | CU 380 A



CU 380 A

- → A → Arms [contain copper]
- → 380 → amount of Cu in CU 380 A → 380 mm^2
- → Gold | Silver is impregnated in copper
- → can be used upto 10 yrs

MOA

- → Foreign body action & Aseptic inflammation of endometrium causing reduced chance of implantation & reduction of sperm motility & fertilization, sperm destruction

HORMONE CONTAINING IUCDs | 3rd GENERATION IUCDs

1. PROGESTASERT

- → contains 38 mg Progesterone
- → 65 Mg of progesterone is released per day
- → can be used for 18 months

MOA

- → Foreign Body action to prevent pregnancy
- → cervical mucus thickening [major action]
- → Non receptive endometrium [↑ progesterone causes atropic endometrium]
- → Anovulation [40% of patients only]

2. LEVONORGESTREL CONTAINING IUC DEVICES [MIRENA]

- → contains 52 mg of progesterone
- → 20 µg of progesterone is released per day
- → can be used upto 5 years

USES

- → contraception
- → ↑ bleeding control

MOA

- → Foreign Body action to prevent pregnancy
- → cervical mucus thickening
- → Non receptive endometrium [major action]
- → Anovulation

SIDE EFFECTS OF IUCD

1. Bleeding
   - → mc side effect [3 times more common than Pain]
   - → Tranexamic acid & NSAIDs are given for 1st 3 cycles during periods
   - → Best time of insertion of IUCD → within last days of periods
2. Pain [2nd mc SIE]
3. Infection
4. PIDs [should be ruled out before inserting IUCDs]
5. Perforation [rare]

ECTOPIC PREGNANCY & IUCDs

→ CHANCE OF ECTOPIC PREGNANCY IF A NORMAL WOMEN CONCEIVES → 1-2%.

→ % OF TYPE OF PREGNANCY IF A WOMEN ī IUCD CONCEIVES

a. Intra uterine pregnancy → 95-96%

b. Ectopic pregnancy → 4-5%

→ CATCH POINT

→ incidence of pregnancy is less for women ī IUCD when compared ī Ⓝ women

→ therefore, incidence of ectopic pregnancy is also less for women ī IUCD when compared to Ⓝ women ī out IUCD

→ If a women ī IUCD is pregnant → Rule out Ectopic pregnancy

MANAGEMENT OF IUCD ī PREGNANCY

1. REMOVE IUCD → IUCD + Pregnancy → > 50% chances of abortion

2. MANAGE AS PATIENTS WISH

Wants to continue pregnancy	does not Wants to continue pregnancy
↓	↓
continue pregnancy	offer medical termination of pregnancy

3. IF THREAD NOT SEEN i.e. IUCD CAN NOT BE REMOVED

Wants to continue pregnancy	does not Wants to continue pregnancy
↓	↓
continue pregnancy ī IUCD with advise of risk of abortion being 50% & risk of premature rupture of membranes Anomalies can not happened ī IUCD	offer medical terminatⁿ of pregnancy

4. MISSING IUCD

→ Advise patient that IUCD will expel spontaneously & ask them to feel for IUCD thread over vagina for the 1st 3 cycles.

→ If she can not feel for thread, in OPD, IUCD is removed ī the help of IUCD hook

→ Even if IUCD can not be removed using hook, use ultrasound | x-Ray of pelvis to locate IUCD.

→ some times, IF IUCD is perforated,

↳ First AP view of x-Ray is preferred to check whether IUCD is inside the body of patient.

↳ if IUCD present, then do lateral view of x-Ray to see wether IUCD is inside the uterus / outside the uterus

CONTRAINDICATIONS OF IUCDS

1. Pregnancy
2. Puerperal Sepsis
3. STD / PID
4. undiagnosed vaginal bleeding
5. Uterine anomalies
6. cancer of cervix
7. Cancer of Uterus

IMPLANTS


SUB DERMAL IMPLANTS

→ Progesterone containing devices
→ SUB DERMAL IMPLANTS
  ↳ inserted into arm of women
  ↳ very good control as contraceptive
  ↳ failure rate of implants is very low even when compared to vasectomy & tubectomy

NORPLANT

→ contains 36 mg of Progesterone & 6 rods [total → 216 mgs of Progesterone]
→ can be used for 5 years

NORPLANT II | JADELLE

→ contains only 2 rods → lesser discomfort for patients
→ contains 75 mg x 2 → 150 mg of Progesterone
→ can be used for 3 years
→ should be removed after 3 years surgically under Local anesthesia

IMPLANON

→ contains 68 mg of Etonogestrel
→ Etonogestrel is biological metabolite of Desogestrel
→ can be used for 3 years
→ has only one rod [less discomfort]
→ easy insertion & easy removal

NEXPLANON

→ Advance of implanon
→ has Barium Sulphate coated arm
→ Localization can be easier

COMMON SIDE EFFECTS OF IMPLANTS

→ Headache
→ Weight gain
→ vaginitis
→ irregular bleeding
→ Breast pain
→ Abdominal fullness, pain

COMMON SIE OF IMPLANTS → BREAK THROUGH BLEEDING

NUVA RING / VAGINAL RING


NUVA RING

→ contain Etonogestrel + Ethynyl Estradiol
→ can be inserted just before intercourse
→ Etonogestrel → 0.120 mg/day
  Ethynyl Estradiol → 0.015 mg/day
  } are released through the ring
→ works for 3 weeks
→ After removal, within a gap of 1 week, women will get her periods & then reinsertion can be done
→ conveniently used as they don't have to remember

SPONGE / TODAY


sponge | today

→ can be inserted first before intercourse into vagina
→ works for 24 hrs
→ contain Nonoxynol – 9 [spermicidal]
→ has band attached to it which makes it easy for removal

INJECTABLE PROGESTERONE

1. DMPA [DEPOT MEDROXYPROGESTERONE ACETATE]

→ contains 150 mg of Progesterone
→ Given once in 3 months

2. NET - EN [NOR ETHISTERONE ENANTHATE]

→ contains 200 µg of Progesterone
→ given once in 2 months.

MOA OF DMPA & NET - EN

continuous injection OF DMPA & NET-EN
↓
Endometrium becomes atrophic
↓
Reduces implantation
increases cervical mucus thickening
causes anovulation

EVRA PATCH

→ size of 4 cm approx. applied over the arm, abdomen
→ contains E. Estradiol & NOrelgestromin
→ Ethynyl Estradiol of 20 µg & NOrelgestromin of 150 µg per day are relased
→ has to be changed every week & the 4 th week is given as break & patient will have periods

BARRIER

→ most convenient contraceptives
→ Eg. condoms, Diaphragms

CONDOMS

→ not used as ideal method all the time
→ conveniently used for people having multiple partners
→ interferes ī pleasures
→ high failure rate

DIAPHRAGM / DUTCH CAP

→ convex part is facing outside ; hollow part fixes into the cervix
→ always used ī spermicidal cream| jelly [nonoxynol-9]
→ can be used during intercourse
→ for best effectivity → insert atleast 4 hrs prior to intercourse
→ should be removed within 6 hrs of intercourse
→ if not removed → TOxic shock Syndrome [dlt Staph. aureus (mc), Streptococcus [rarely] may occur

NATURAL METHODS OF PREVENTING PREGNANCIES

1. ABSTINENCE [no sex]
2. WITHDRAWAL TECHNIQUE
   - → pulling out before ejaculation
   - → DISADVANTAGES
     - ↳ pre - ejaculate can have sperms that can lead to pregnancy
     - ↳ high failure rate

3. RHYTHM METHOD / FERTILE PERIOD METHOD / SAFE PERIOD METHOD / CALENDAR METHOD
4. CERVICAL MUCUS METHOD / BILLING'S METHOD
   - → Thin cervical mucus / wet days → avoid intercourse
   - → Dry days [cervical mucus thick, very little → can have intercourse

5. BASED ON BASAL BODY TEMPERATURE
   - → Progesterone is a thermogenic hormone
   - → After ovulation, Progesterone cause rise in temperature by 0.5°F
   - → This alarms when to avoid intercourse ī partner
   - → ↑ failure rates → require lot of commitment & accuracy is less
   - → Pearl index → 60/100 women years

PEARL INDEX [Failure rates are described]

$$\text{PEARL INDEX} = \frac{\text{Total no. of accidental pregnancies}}{\text{Total months of exposure}} \times 1200$$

METHODS OF CONTRACEPTION	PEARL INDEX
IMPLANTS	0.05
VASECTOMY	0.1
TUBECTOMY	0.2
IUCD	0.5
COCP	0.5 - 0.6
LEVONORGESTREL	0.2
POP	1 - 2
BARRIERS [CONDOMES]	
→ Ideal usage	9
→ Typical usage	14 - 21

LONG ACTING REVERSIBLE CONTRACEPTIVES [LARC]

- → Levonorgestrel
- → Implant

- → Now-a-days, these are preferred over permanent sterilization procedures

BARRIERS

- → For making barriers more effective, spermicidal jellies are used

PROPER CONDOM USAGE

- → should be used on fully erect penis
- → Reservoir not to be pushed over the glans & not to be checked for patency
- → After intercourse, withdraw penis in fully erect state

IN FOLLOW UP OF MOLAR PREGNANCY

→ should not conceive for next 6 months atleast

→ HCG from pregnancy & HCG from trophoblastic disease will be hard to differentiate. so, contraceptives are given for 6 months

→ contraceptive of choice → combined oral contraceptives

→ IUCDs not used as they can cause perforat^{n}

FOR PATIENTS ī HEART DISEASE

→ IUCDs are used [shorter threads]

↳ monofilaments are used now

↳ polyfilaments used earlier [↑ risk of ascending infection]

→ COCP, POP are not given [cause water retention]

FOR DIABETIC PATIENTS

→ COCP

→ IUCDs [preferred]

In UNCONTROLLED DIABETES

→ contraceptives can^{o}t be used

↳ Both Estrogen & Sugars are metabolized in liver

↳ ↑ sugar levels can disturb contraceptive usage

→ Barriers ī spermicidal jellies are preferred

IN STDs | HIV PATIENTS

→ Barriers ī spermicidal jellies are preferred

→ double barrier → both partner to wear condoms

FOR NEWLY MARRIED COUPLE → COCP

FOR COUPLES STAYING IN DIFFERENT CITIES

→ Barriers, emergency contraceptives, COCPs are not preferred

→ IUCDs [fill it, forget it] are most preferred

FOR POST NATAL / LACTATIONAL AMENORRHEA [within 6 wks of delivery]

→ COCPs are not preferred as they can cause lactational failure

↳ Estrogen will cause glandular proliferat^{n} → block Lactiferous ducts]

→ Progesterone only pills are preferred

→ Patients after 6 wks of delivery → IUCD is preferred

→ UNSAFE BELIEF → LACTATION ITSELF IS PROTECTION AGAINST PREGNANCY

↳ Prolactin → inhibits GnRH → FSH & LH not released → no ovulation

↳ But continous breastfeeding can only prevent ovulation, which is not possible

POST PLACENTAL IUCD

→ IUCD inserted in uterus after removal of placenta during delivery

→ During uterus contract^{n} after delivery [uterus involution], it may expel copper out.

→ But the expulsion rate is not found to be > 12% [WHO]

ASHERMAN SYNDROME

ETIOLOGY

1. OVERZEALOUS CURRETTAGE done for
   - → AUB (Abnormal Uterine bleeding)
   - → MTP
   - → 2° PPH [dlt retained bits of Placenta]

   - → causes Scarring & Fibrosis of endometrium [no gland development further]
   - → Leads to 2° amennorrhea → ASHERMAN SYNDROME

2. ENDOMETRIAL TB → also causes ASHERMAN SYNDROME

CURRETTAGE DONE FOR 2° PPH IS MORE LIKELY TO CAUSE ASHERMAN SYNDROME

TREATMENT

1. Hysteroscopic Adhesiolysis
2. Follow ĩ High Dose Estrogens & Progestrones

TUBERCULAR PID

→ Incidence → 20-25% of women in India

PATHOGENESIS

→ Endometritis → Menorrhagia [initially]
↓
Endometrial destruct^{n}
↓
ASHERMAN SYNDROME → oligomenorrhea
Hypomenorrhea
Amenorrhea [mc]

→ Fallopian Tube
- ↳ Calcific, beaded, rigid tube
- ↳ Hydrosalpinx → TOBACCO POUCH HYDROSALPINX
- ↳ RETORT SHAPED HYDROSALPINX

TREATMENT

→ 4 Drugs for 2 months &
3 Drugs for 4 months

→ Do not stop the Rx in 1st trimester

PELVIC INFLAMMATORY DISEASE

CAUSES

- → Chlamydia → most prevalent ; Indolent
- → Gonorrhea → most common in OPD
- → Mycoplasma
- → TB
- → Ureaplasma
- → Bacteroide
- → Pepto streptococcus
- → **Bacterial vaginosis** [important cause]
- → Streptococcus

CLINICAL FEATURES

SYMPTOMS

- → Pain abdomen
- → congestive dysmenorrhea
- → Dysparunia
- → Fever

SIGNS

- → Febrile
  - ↳ ADMIT IF
    - → temp > 38°C / 100.4°F
    - → Severe symptoms
    - → Suspicious pelvic abscess
    - → Unreliable
    - → uncertain diagnosis
- → ↑ CRP
- → Leucocytosis
- → On P/V
  - ↳ cervical motⁿ tenderness
  - ↳ Uterine tenderness
  - ↳ Adnexal tenderness

} CLINICAL TRIAD helps in Diagnosis

CERVICAL MOTION TENDERNESS ALSO BE SEEN IN RUPTURED ECTOPIC PREGNANCY

DIAGNOSIS

ADDITIONAL CRITERIA

1. CULTURE & SENSITIVITY OF
   - → Endometrical Biopsy
   - → vaginal swab
   - → Cervical Swab

   - → CULTURE MEDIAS FOR
     1. GONORRHEA → Thayer martin media
     2. CHLAMYDIA → Mc Coy cell Lines [PCR Preferred]

2. ↑ ESR / CRP
3. ↑ TLC
4. FEVER > 100.4° F [38°C]

ELABORATE CRITERIA

5. DIAGNOSTIC LAPAROSCOPY
   - → gives direct evidence
   - → Laparoscopy "IF DONE" is the best way to diagnose PID

6. USG → documents Pelvic / tubo ovarian abscess

DISCHARGE CRITERIA → Temperature < 99.5°F

TREATMENT

→ CENTRE FOR DISEASE CONTROL OF ATLANTA
- → IN PATIENT REGIMES
- → OUT PATIENT REGIMES

→ Broad spectrum antibiotics

OPD REGIME

→ CEFOXITINE 2gm iv or
CEFOTAXIME 1gm iv } 1 shot for gonorrhea

→ DOXYCYCLINE 100gm BD x 14 days → for chlamydia

→ METRONIDAZOLE 500mg BD x 14Days → for anaerobes
for Bacterial vaginosis

→ AZITHROMYCIN can be given instead OF DOXYCYCLINE
→ CLINDAMYCIN can be given instead of METRONIDAZOLE

VAGINITIS

PH of vagina → 4.5 [candidiasis can occur in acidic pH]

Bacterial vaginosis
Trichomoniasis } can occur in Alkaline PH [>7]
Alkalinity shift also predispose [5.5 or 6...]

AMSEL'S CRITERIA

→ useful in Dx of Bacterial vaginosis
→ ≥ 3 out of 4 are required

1. creamy discharge
2. WHIFF TEST ⊕
3. Fishy odour
4. CLUE CELLS

CANDIDIASIS

→ DIMORPHIC FUNGI
  Blastospores [Spread]
  Mycelia [invasⁿ & adherence]

→ curdy white discharge
  plaques on vaginal wall
  on removal → Petechiae

→ out of proportⁿ PRURITIS

→ complicated / uncomplicated

uncomplicated
- seen in (N) women
- Good prognosis
- a/w albicans

complicated
- in immunocompromised [in DM, TB, pregnancy etc]
- Recurrent, Severe
- a/w non-albicans

→ TREATMENT
- AZOLES
- oral FLUCONAZOLE
- Rx both ♂ & ♀

BACTERIAL VAGINOSIS

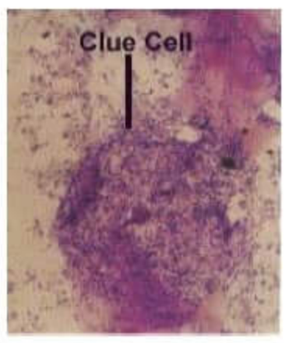
→ Hemophilus vaginalis
  aka Gardenella vaginalis

→ creamy discharge

→ WHIFF TEST → +ve
  - Secretⁿ + 10% KOH → amines

→ Fishy odour

→ CLUE CELLS - vaginal epithelium ī embeded bacteria



→ NO PRURITIS

→ TREATMENT
- METRONIDAZOLE
- Rx the women [no sexual transmission]

TRICHOMONIASIS

→ by Trichomonas vaginalis
  flagellate protozoan
  motile organism
  causes severe irritatⁿ
  Causes Severe pruritis

→ COLPITIS MACULARIS [STRAWBERRY VAGINA]

→ Greenish yellow, frothy discharge

→ TREATMENT
- METRONIDAZOLE
- Rx both man & woman

→ MC VAGINITIS → BACTERIAL VAGINOSIS

BACTERIAL VAGINOSIS can cause
- → PID
- → Relapse of PID
- → chorioamnionitis [PID in pregnancy] → Abortion, IU Death, Puerperal sepsis
- → vault cellulitis

→ WHIFF TEST CAN ALSO BE POSITIVE IN TRICHOMONIASIS
- As both Bacterial vaginosis & Trichomoniasis CO-EXISTS
- Classical for Bacterial vaginosis

→ Rx the male partner also in Trichomoniasis

→ Rx the male partner also in candidiasis