

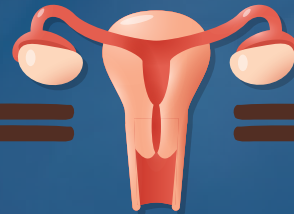


Gynecology & Obstetrics  
For 5<sup>th</sup> year medical students

هدية  
مجانية

# Notes on the Board of Dr. Nadine's Lectures

2<sup>nd</sup> Edition  
2020



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*This work is dedicated to the soul of my father,  
my beloved mother, my unique brother, and ...  
All the future doctors, whom I truly believe in  
their creativity, intentions and potentials .*

*Nadine Alaa Sherif*

## Index

### Gynecology

Physiology of menstrual cycle -----	5
Amenorrhoea -----	6
Puberty & Menopause -----	7
Anovulation , PCO , Hirsutism & Hyperprolactinemia -----	8
Infertility -----	9
Fibroid -----	10
Endometriosis & Adenomyosis -----	11
AUB -----	12
Contraception -----	13
Pelvic Organ Prolapse -----	14
Urinary Incontinence -----	15
Endometrial Carcinoma -----	16
Cancer Cervix -----	17
Benign Ovarian Tumours -----	18
Malignant Ovarian Tumours -----	19
Non neoplastic ( functional ) cysts of the ovary -----	20
Malignant vulval tumours -----	21
Malignant vaginal tumours -----	22
Lower genital tract infections -----	23
Acute PID -----	24
Chronic PID -----	25
STDs -----	26
Benign conditions of the vulva & vagina -----	27
Anatomy of female genital tract -----	28 - 31
Normal sexual development -----	32
Developmental abnormalities of female genital system -----	33
Endoscopy in Gynecology -----	34
Operative Gynecology -----	35

### Obstetrics

Abortion -----	37
Ectopic pregnancy -----	38
GTDs & Vesicular mole -----	39
Anatomy of female pelvis & fetal skull -----	40
Mechanism of Normal Labour -----	41
Management of Normal Labour -----	42
Occipito posterior -----	43
Face & Brow presentation -----	44
Breech presentation -----	45
Shoulder presentation -----	46
Multi fetal gestation -----	47
Bleeding in late pregnancy -----	48
Abnormal labour -----	49
Contracted pelvis -----	50
Algorithm of labor -----	51
Complications of 3rd stage of labour -----	52-53
Obstetric Trauma -----	54
Assessment of fetal wellbeing -----	55
SGA & LGA -----	56
Premature Rupture of Membranes -----	57
Amniotic fluid disorders -----	58
Prematurity & Postmaturity -----	59
Hypertension with pregnancy -----	60
RH isoimmunization -----	61
GIT disorders with pregnancy -----	62
UTI , Thyroid disorders & seizures with pregnancy -----	63
DM with pregnancy -----	64
Anemia , cardiac diseases & venous thromboembolism with pregnancy -----	65
Fetal & neonatal asphyxia -----	66
Fetal birth injuries -----	67
Puerperium & puerperal sepsis -----	68-69
Analgesia & Anesthesia in labour -----	70
Induction of abortion & IOL -----	71
Instrumental delivery & Episiotomy -----	72
CS -----	73
Prenatal diagnosis of congenital anomalies -----	74
Fertilization, implantation & placenta formation -----	75
Diagnosis of pregnancy , placenta , cord -----	76
Physiological changes during pregnancy -----	77
ANC -----	78
High risk pregnancy , Maternal mortality -----	79

# GYNECOLOGY

# Physiology of menstrual cycle

**Hypothalamus :** GnRH

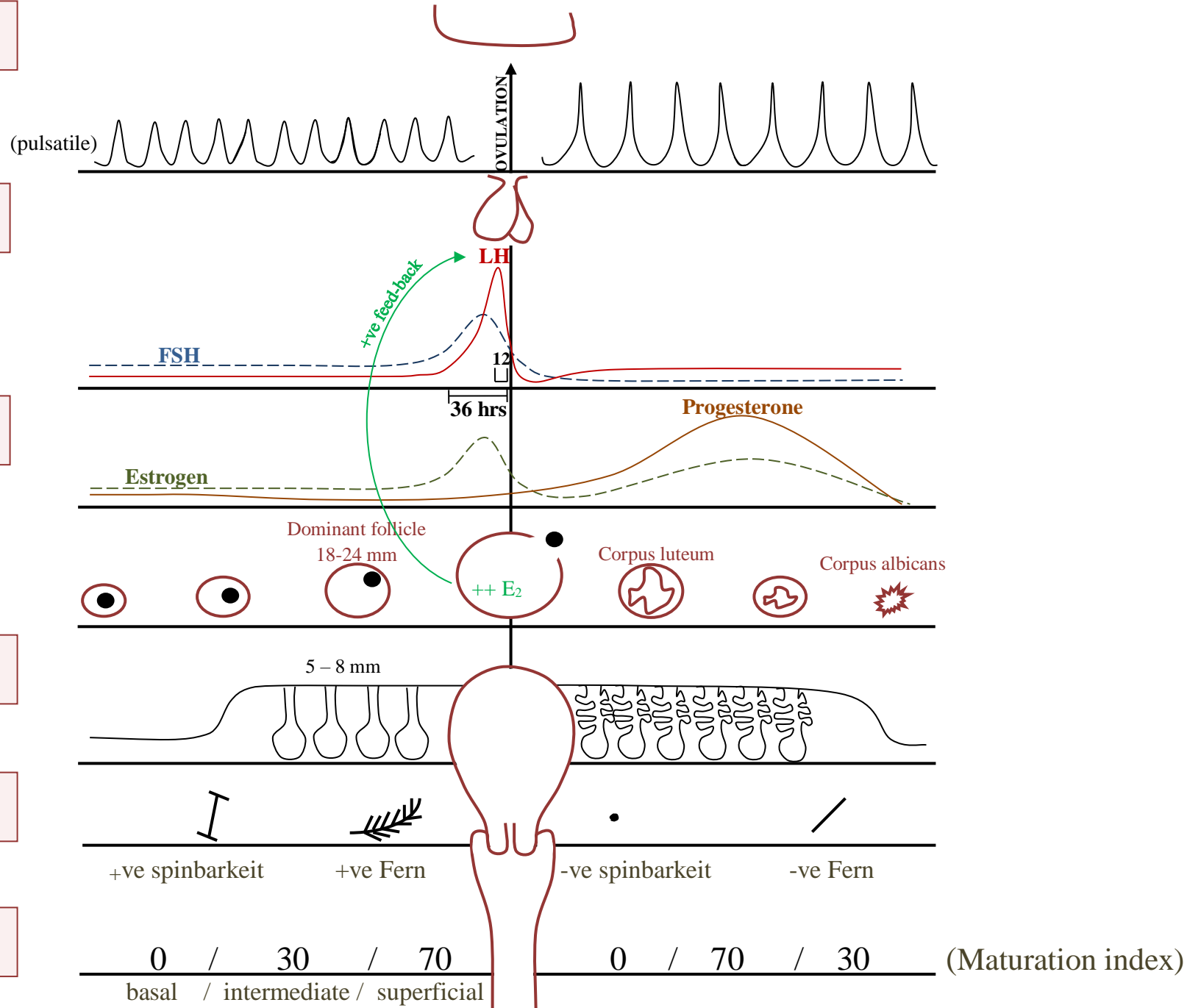
**Pituitary :** FSH / LH

**Ovary:** E<sub>2</sub> / P

**Endometrium :** Glands

**Cervix:** Mucus

**Vagina:** Cells



# Amenorrhoea

16<sup>th</sup> yrs old girl é failure of menses

Search for 2<sup>ry</sup> sexual characters

## Absent

❖ Hypothalamo-pituitary-ovarian abnormality

Do hormonal profile

+++ FSH  
ovarian cause

Ⓝ FSH  
PCO

But the 2<sup>ry</sup> sexual characters will be present

--- FSH  
hypothalamo / pituitary cause

Do TSH, ACTH for total hormone replacement

If fertility is needed  
❖ HMG / HCG induction

Do karyotyping

45 XO    46XX

### Embryology:

Mullerian → uterus

Genital ridge → ovary

XY → TDF

MDIF

Androgen receptors

✗

✗

✗

Hypothalamus

- 1) Cong.
- 2) Stress
- 3) Drugs

GnRH

Ant.

Pituitary

FSH / LH

- 1) Turner XO
- 2) POI
- 3) PCO

Ovary

E<sub>2</sub> / PRG

uterus

- Absent (MRKH)
- Asherman
- AIS

Cx

vagina

vulva

outflow tract obstruction

Cx atresia

Transverse vag septum

Imperforate hymen

## Present

❖ Ovary ( with its axis) is functioning

Basic Concept

DD (causes)

confirm diagnosis

- US
- karyotype
- hormonal

ttt → of cause / HRT

❖ DO US

Uterus present

❖ outflow tract obstruction

Uterus absent

❖ Mullerian agenesis or AIS

Do karyotyping

46 XX  
Mullerian agenesis

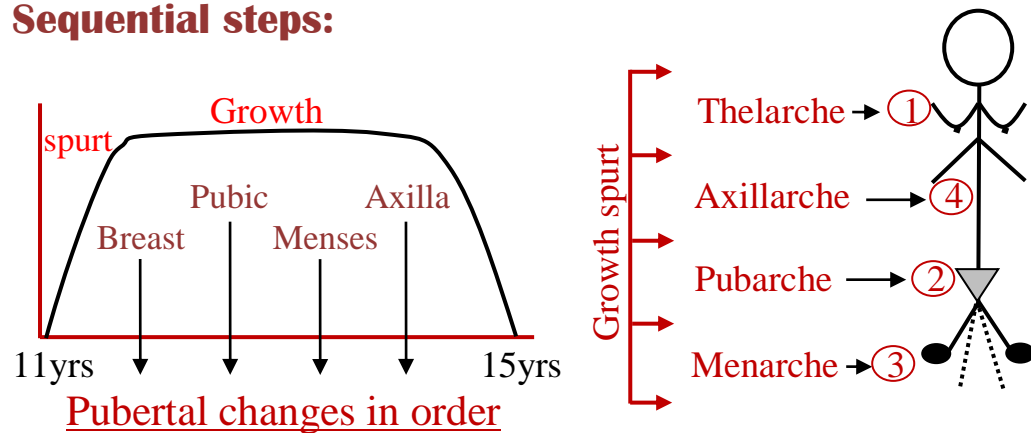
46 XY  
AIS

# Puberty

**Def :** childhood → reproductive

**Etiology:** maturation of hypothalamus → \* pulsatile GnRh

## Sequential steps:



## Abnormalities:

### A) Precocious puberty :

- **True:** Axis started early → GnRH pulses  
Mostly constitutional  
eg: Lina Medina 5 yrs
- **Pseudo:** Only E<sub>2</sub> is present without functioning axis.  
eg: E<sub>2</sub> secreting tumour  
Drug intake

### B) Delayed puberty : Same as 1<sup>st</sup> Amenorrhea.

**Ttt:** → cause (if present)  
→ GnRh agonist ( to suppress pulsatile GnRh)

# Menopause

**Def :** Cessation of menstruation due to cessation of ovarian function ie **Depletion of follicles**

**Symptoms:** ↓↓ E<sub>2</sub> → atrophy of mucosa of genital & urinary systems.  
→ laxity of ligaments , collagen & skin.  
→ mood changes.  
→ hot flushes

↓ SHBG  
↑ free androgen

Androgenic manifestations

Later on → 1) CVS complications  
→ 2) Osteoporosis

**Management:** → Life style modification (Diet / Exercise)  
→ Ca / Vit D supplement  
→ HRT / ttt of osteoporosis if needed

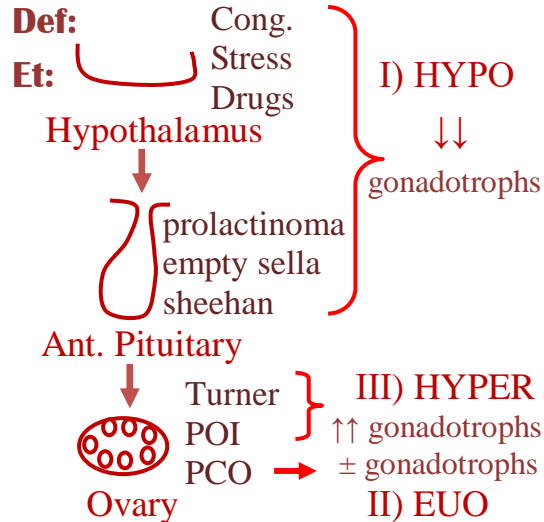
## Regular follow up for menopausal females:

- 1) Pap smear, **why ?**
- 2) TVS for ET ( if on HRT ) , **why?**
- 3) DEXA , **why?**
- 4) Mammography ( if on HRT).
- 5) Lab for lipid profile.



# Anovulation

{ = hypogonadism }



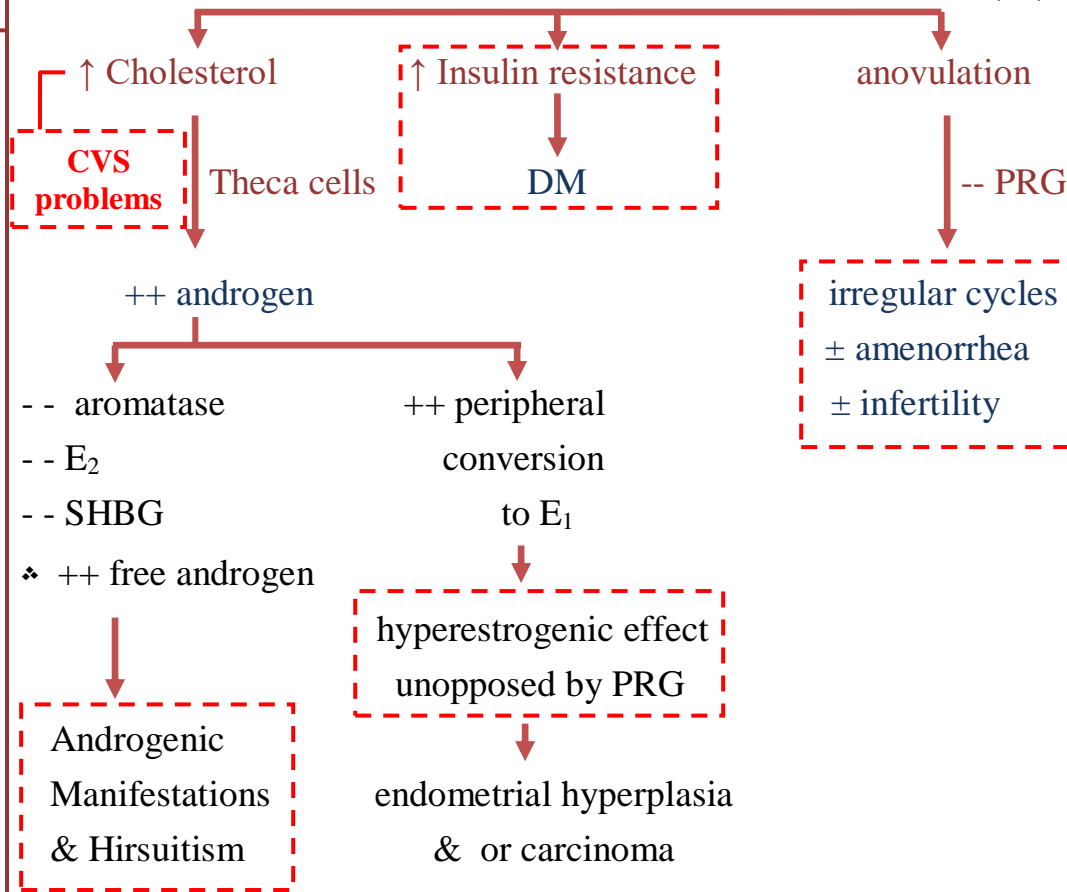
## Diagnosis:

- Symptoms
  - Regular cycles
  - Spasmodic dysmenorrhea
  - Premenstrual mastalgia
  - Midcycle pain
  - Midcycle spotting
  - Midcycle discharge
- Signs & Inv
  - BBT
  - Folliculometry
  - PRG level (D<sub>21</sub>)
  - LH urinary kits
  - PEB

- Ttt:**
- of cause
  - Induction of Ovulation
    - CC
    - HMG (FSH ± LH)
    - Ovarian drilling in PCO

# PCO (obesity)

(Leptin ++ GnRh / LH pulse & frequency maintained +++ LH)



**Diagnosis:** inverted FSH / LH ratio (D<sub>2</sub>)

## Treatment:

- weight loss / insulin sensitizing agent (metformin)
- of the complaint
  - If irregular cycles → OCPs
  - If infertility → induction of ovulation
  - If hirsutism → ttt of hirsutism

# Hirsutism

## Def:

- Et:**
- Constitutional
  - Drugs
  - Adrenal causes
  - Ovarian causes

**Inv:** Testosterone level

## Ttt:

- ttt of cause
- E<sub>2</sub> & P (= OCPs)
- 5 α reductase (spironolactone)
- Antiandrogen (cimetidine)

# Hyperprolactinemia

## Def:

- Et :**
- Physiological
  - Drugs
  - Pituitary causes
  - Hypothalamic causes
  - PRL level

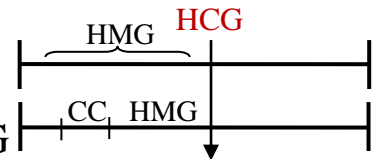
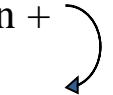
**Inv:** CT , MRI brain

## Ttt:

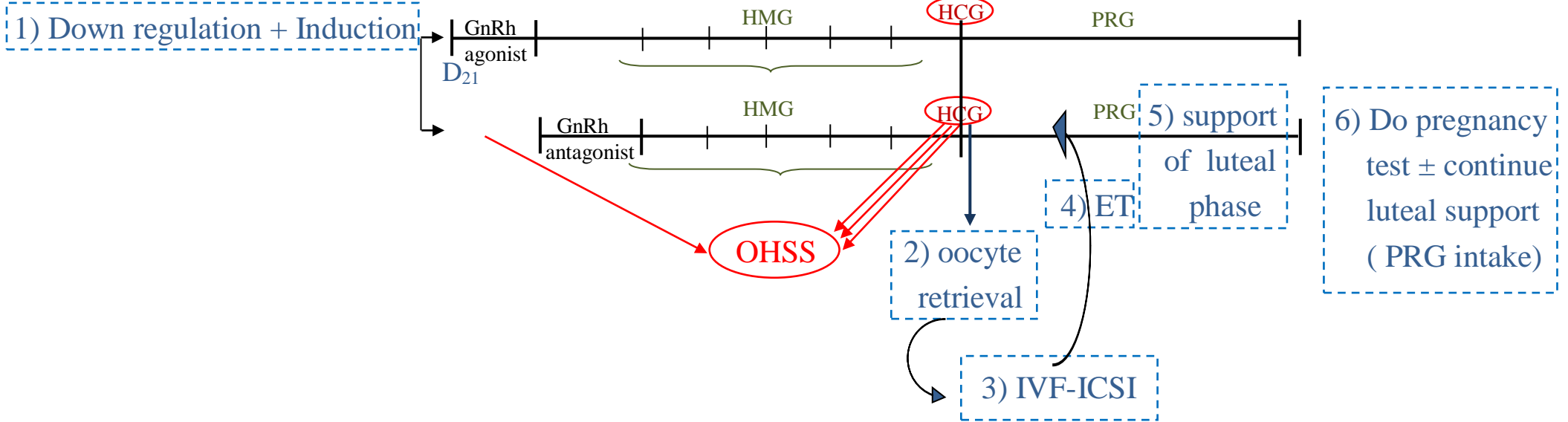
- Cause
- Drugs
  - Bromocryptine
  - Cabergoline





	<b>Ovarian (40%)</b>	<b>Tubal (30%)</b>	<b>Uterine</b>	<b>cervical</b>
<b>Et:</b>	anovulation	PID / adhesions	- - implantation	hostile
<b>Diag.</b>	Tests of ovulation	HSG / Laparoscopy	US / HSG / Hysteroscopy	PCT
<b>ttt:</b>	Induction of ovulation 1) CC 2) HMG 3) CC / HMG 	Microsurgery Tuboplasty or Tubal disconnection + IVF - ICSI 	ttt of the cause	IUI

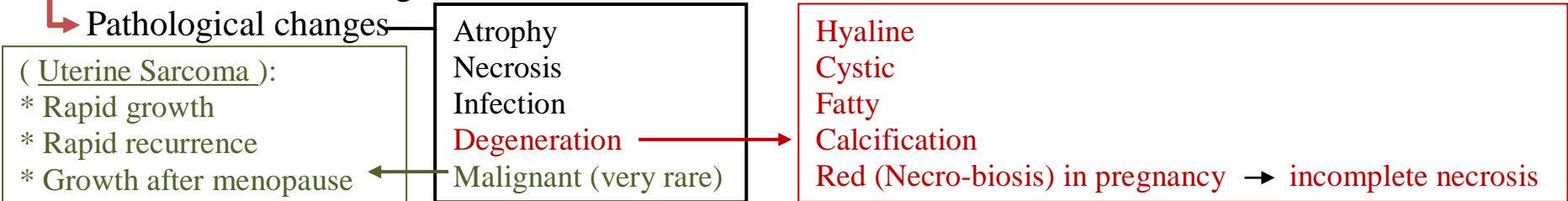
**In case of failed ttt or unexplained infertility → IVF – ICSI**



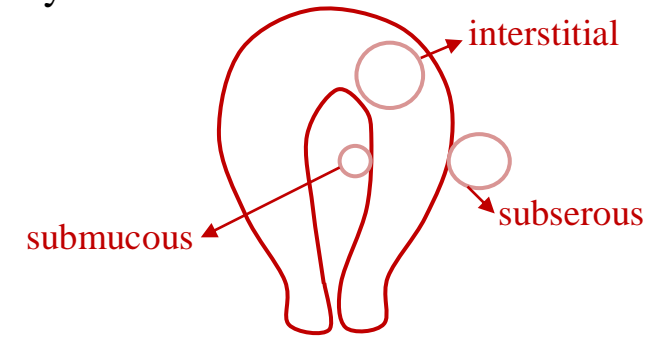
# Fibroid ( leiomyoma)



- **Definition :** Benign tumour arising from myometrium
- **Incidence :** 20-50 % in child bearing period !!! WOW 😱
- **Etiology :** ↑↑ E<sub>2</sub>
- **Pathology :**
  - Gross ( site / size / shape / consistency / cut section 🌀 / count )
  - Mic: < 10 mitotic figures / 10 HPF
  - Pathological changes



- **Clinical picture :**
  - Symptoms : Asymptomatic / Bleeding / Pain / Mass / Infertility
  - Signs
    - general → anemia
    - abdominal → mass
    - local ( PV / Bimanual)
  - DD → symmetrical / asymmetrical enlarged uterus



- **Investigations :**
  - **US**
  - Hysteroscopy / Laparoscopy
  - HSG

- **Treatment :**
  - **Conservative:** NO symptoms \* NO tt **EXCEPT** in
    - Large size
    - Rapid recurrence
    - Growth after menopause
  - **Medical:**
    - Haemostatics / Analgesics
    - Hormonal ( Gestagens / GnRh agonist )
  - **Microinvasive techniques :** UAE / myolysis / HIFU
  - **Surgical (definitive tt) :** Myomectomy / Hysterectomy (routes
    - Open laparotomy
    - Laparoscopic
    - Vaginal
    - Hysteroscopic

**NB:** Fibroid during pregnancy , Never to be removed , due to high vascularity & ++ E<sub>2</sub> EXCEPT in certain conditions

# Endometriosis

**PAIN** 😞

**Definition :** Endometrium outside uterus

❖ uterus is clean

**Incidence:** 10% of all !!! 🤔 20% of pain 30% of infertility

**Etiology:** ↑↑ E<sub>2</sub>

+ theories → Sampson (Retrograde) / Halban (Lymphatic)  
→ Meyer's metaplasia / Immunological

**Pathology:** → Pelvic → Ovary → deep → endometrioma (chocolate cyst)  
→ superficial → burnt match  
→ DP nodules  
→ Uterosacral  
→ Extrapelvic (umb / liver / brain/...)

**Clinical picture :**

→ **Symptoms** → PAIN : dysmenorrhea (crescendo-decrescendo)  
dyspareunia (deep)  
→ Infertility

→ **Signs** : Bimanual → nodules in DP → **DD:**  
→ tender ovaries → - Endometriosis  
- TB  
- Krükenberg

**Inv:** → US : Ground glass in endometrioma  
→ Laparoscopy : gold standard  
→ CA125: prognostic & follow up

**Ttt:** → **Conservative**

→ Analgesics ( NSAIDs)  
→ Hormonal: → **continuous** OCPs / gestagens  
→ GnRh agonist  
→ Laparoscopic: → laser or diathermy for lesions  
→ ovarian cystectomy if > 4cm

→ **Surgical ( definitive ):** TAH + BSO  
(No preservation of fertility)

# Adenomyosis

**Bleeding** 🩸

**Definition :** Endometrium in myometrium

❖ uterus is affected

**Etiology:** ? theory in Multipara

(invagination of endometrium in myometrium)

**Pathology:** → Localized ( but NO capsule )  
→ Diffuse

**Clinical picture :**

→ **Symptoms:** → bleeding ( menorrhagia )  
→ pain ( dysmenorrhea )

→ **Signs:** → General  
→ Abdominal  
→ Bimanual: Halban sign (enlarged tender uterus)

**Inv:** → US  
→ MRI

**Ttt:** → **Conservative** → Analgesics & Haemostatic  
→ Hormonal: **cyclic** OCPs / gestagens  
( to ↓↓ bleeding & pain )  
→ **Mirena IUD**

→ **Surgical ( definitive ):** TAH

**AUB** — **After menopause** — (most common) Atrophic, (most serious) Malignancy — **Before puberty** — mostly FB introduction, may be precocious puberty



**Child bearing period**

- Menorrhagia
- Metrorrhagia
- Postcoital bleeding

① Exclude

② Exclude

Complications of contraception (H / O taking)

Then do US

Complications of pregnancy (β-HCG)

absence of organic lesion → **COEIN** (④)  
 presence of organic lesion → **PALM** (③)  
**FIGO 2011**

**Dysfunctional**

**Structural**

Systemic

Local (anovulatory bleeding) may lead to **EH**

- Polyp
  - Adenomyosis
  - Leiomyoma
  - Malignancy
- (cervical / uterine / ovarian) } **ttt accordingly**

- \* **C**oagulation defect ( blood diseases )
- \* **I**atrogenic drugs ( as anticoagulant )
- \* **N**on specific as:
  - HTN
  - Liver troubles
  - Thyroid dysfunction

Simple → 1% é atypia → 8% (malignant transformation)  
 (Swiss cheese appearance) (Metropathia Hgica)  
 Complex → 3% é atypia → 25% (malignant transformation)  
 (back to back arrangement)

- ttt**
- Antifibrinolytics / Mefenamic (NSAID)
  - OCPs / Gestagens ( Cyclical )
  - Mirena IUD
  - D&C (therapeutic & diagnostic)
  - Endometrial Ablation
  - TAH

**\*Dysmenorrhea**

- 1<sup>ry</sup> spasmodic (NSAIDs / OCPs)
- 2<sup>ry</sup> congestive (ttt of the cause)

**\*PMS**

# Contraception



	Physiological	Barrier	IUD	Hormonal	Sterilization
	<ul style="list-style-type: none"> <li>* safe period</li> <li>* coitus interruptus</li> <li>* lactation</li> </ul>	<ul style="list-style-type: none"> <li>*Physical                             <ul style="list-style-type: none"> <li>↳ Condom ♂ / ♀</li> <li>↳ Vag diaphragm</li> <li>↳ Cx cap</li> </ul> </li> <li>*Chemical                             <ul style="list-style-type: none"> <li>↳ Nonoxynol-9</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>* Copper</li> <li>* Silver</li> <li>* LNG</li> </ul>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Oral E / P (daily) P (daily)</p> </div> <div style="text-align: center;"> <p>IM E / P (monthly) P (3months)</p> </div> <div style="text-align: center;"> <p>Implants (3 years) P</p> </div> <div style="text-align: center;"> <p>Vag ring E / P (3wks)</p> </div> <div style="text-align: center;"> <p>Patches E / P (weekly for 3wks)</p> </div> </div>	<ul style="list-style-type: none"> <li>* Female ♀ Tubal ligation (lap/open /vag)</li> <li>* Male ♂ Bilat vasectomy</li> </ul>
<b>Benefit</b>	<ul style="list-style-type: none"> <li>* Easy / Cheap</li> <li>* Available</li> <li>* No systemic side effects</li> </ul>	<ul style="list-style-type: none"> <li>* Easy / Cheap</li> <li>* Available</li> <li>* No systemic side effects</li> <li>* May protect against STDs</li> </ul>	<ul style="list-style-type: none"> <li>* Easy / Cheap</li> <li>* Available</li> <li>* Single decision</li> <li>* High efficacy</li> </ul>	<ul style="list-style-type: none"> <li>* Easy / Cheap</li> <li>* Available</li> <li>* Single decision</li> <li>* High efficacy</li> <li>* Regular cycles</li> <li>* ↓ menstrual amount</li> </ul>	<ul style="list-style-type: none"> <li>* Permanent ?</li> <li>* High efficacy</li> </ul>
<b>Side effects</b>	<ul style="list-style-type: none"> <li>↓ Efficacy</li> </ul>	<ul style="list-style-type: none"> <li>* ↓ Efficacy</li> <li>* May cause allergic reaction</li> </ul>	<ul style="list-style-type: none"> <li>* Bleeding (menorrhagia)</li> <li>* Infection / Pain</li> <li>* Leucorrhea</li> <li>* Perforation</li> <li>* Missed IUD</li> <li>* Pregnancy on Top</li> <li>* Ectopic pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>* Break through bleeding</li> <li>* DVT / HTN</li> <li>* Liver impairment</li> <li>* Breast lesion</li> <li>* Need daily compliance</li> <li>* - - lactation → (use progesterone only)</li> </ul> <p style="text-align: center;">+ minor side effects</p> <ul style="list-style-type: none"> <li>- nausea</li> <li>- vomiting</li> <li>- acne</li> <li>- pigmentation</li> <li>- weight gain?</li> </ul>	<ul style="list-style-type: none"> <li>* Post ligation syndrome</li> <li>* Permanent</li> </ul>
<b>CI</b>	<ul style="list-style-type: none"> <li>Irregular cycles</li> </ul>	<ul style="list-style-type: none"> <li>Need cultured Couple</li> </ul>	<ul style="list-style-type: none"> <li>* uterine anatomical changes</li> <li>* Infection</li> <li>* Menorrhagia → (use mirena)</li> <li>* H/O of: PID/ Ectopic</li> </ul>	<ul style="list-style-type: none"> <li>* DVT</li> <li>* Breast benign or malignancy</li> <li>* Coronary heart</li> <li>* Liver impairment</li> </ul> <p style="text-align: center;">relative</p> <ul style="list-style-type: none"> <li>- migraine</li> <li>- smoker</li> <li>- &gt;40 yrs</li> </ul>	<ul style="list-style-type: none"> <li>Future desire for fertility</li> </ul>
<p><b>* Emergency contraception:</b> IUD : till 5 days OCPs : 4 tab <math>\xrightarrow{12hrs}</math> 4 tab till 72hrs</p> <p><b>* Contraception during lactation:</b> All methods EXCEPT E content</p>			<p><b>How</b></p> <ul style="list-style-type: none"> <li>* - - implantation (create unfavorable medium ie inflammatory)</li> <li>* - - ovulation</li> </ul>	<ul style="list-style-type: none"> <li>* Atrophic endometrium</li> <li>* Thick cx mucous</li> <li>* Affect tubal motility</li> </ul> <p style="text-align: center;">} Progesterone</p>	<ul style="list-style-type: none"> <li>- - Fertilization</li> </ul>

# Prolapse

**Def :** Descent of Cx below level of ischial spine on PV examination.

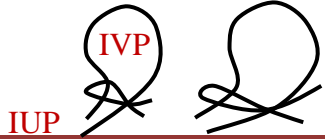
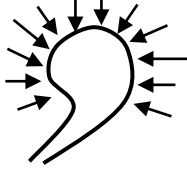


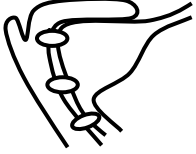
**Inc :** 30% !!! WOW 😱

**Et :** predisposing F:   
 → Repeated child birth   
 → Menopause   
 → Congenital

**ppt:**   
 → Cough & Strain   
 → ↑ intra abdominal pressure   
 → Obesity / Ascitis

Types	Vaginal			Uterine		
	Ant wall	Mid (Apical)	Post wall	1 <sup>st</sup> degree	2 <sup>nd</sup> degree	3 <sup>rd</sup> degree
	* Cystocele * Urethrocele	* Vault after hysterectomy	* Enterocele * Rectocele * deficient perineum	Cx down (below ischial spine level)	Cx out	whole uterus out (prolapsed)
Pathology	* Keratinization * Descent of bladder neck → SUI * Kink of urethra → retention * Kink of ureter → back pressure → hydroureter → hydronephrosis * Accumulation of urine → reposit to urinate (or defecate) → stasis & infection			* Decubitus ulcers * Cervicitis * Supravaginal elongation of Cx		
Cl.picture	Sensation of <b>Heaviness</b> & or <b>Mass</b> protruding from vagina			Backache		
Inv	Urinary symptoms			Sexual symptoms		
	Rectal symptoms			Urine analysis + investigations for surgery		
Ttt	* Prevention : spacing / kegel's exercises / proper management of 1 <sup>st</sup> 2 <sup>nd</sup> 3 <sup>rd</sup> stages of labor * Temporary : pessary * Permanent (surgical) : pre & post operative care Ant repair      post repair Classical repair			* Shortening of Mackenrod's Classical repair (+) * Fothergill op. (Manchester op.) + Cx amputation desire for fertility: * vaginal sacrospinous fixation * Abd sacrocolpopexy no desire for fertility: * vaginal hysterectomy * Le Fort operation		

# Urinary incontinence ( involuntary escape of urine )

	<b>SUI</b> (Urodynamic incontinence)	<b>Urge incontinence</b> (Detrusor overactivity)	<b>Retention with overflow</b>	<b>Nocturnal enuresis</b>	<b>Fistula</b> (true total incontinence)
<b>Definition:</b>	Upon cough or straining when IVP > IUP 	can't make it to toilet 	no sensation, so start dripping with full bladder 	only by night  no organic lesion	-True total incontinence ( in VVF) -Partial 
<b>Etiology:</b>	* Same as cystocele * Hypermobile urethra	* <u>I</u> diopathic * <u>I</u> rritation (eg stone) * <u>I</u> nfection	* Neuropathy é loss of sensation as in: - DM -Spinal cord injury	Psychogenic	*Obstetric trauma <span style="border: 1px solid red; padding: 2px;">developing countries</span> (obstructed labor) *Iatrogenic <span style="border: 1px solid red; padding: 2px;">developed countries</span> (surgical trauma) *Necrotic ( Irradiation)
<b>Cl.picture:</b>	* Escape upon +++ IAP * Cough test * Bonney's test } <b>signs</b> * Q – Tip test	* Frequency * Urgency * Nocturia	Dripping every now & then, when bladder is full	Wet by night	* True total * May be partial * Vulvitis & urine. odor *Sim's speculum(Position)
<b>Inv.</b>	* Urodynamics detrusal filling pressure < 15 cm H <sub>2</sub> O <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">N</span>	* Urodynamics detrusal filling pressure >15 cm H <sub>2</sub> O * Midstream urine analysis for infection * Cystoscopy for stones	* Urodynamics - no desire at 150 ml - no sensation of fullness at 600 ml	* Normal urodynamics	* Urine analysis * Cystoscopy * IVP ( if <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">N</span> KFTs) * Methylene Blue
<b>ttt :</b>	Surgical ↳ Plication (kelly's) ↳ Sling (TVT) (TOT) } <b>vaginal</b> ↳ Burch Coloposuspension <span style="border: 1px solid green; border-radius: 50%; padding: 2px;">Best</span> ( <b>abdominal</b> )	Medical (Anti cholinergic)	Intermittent self catheterization (symptomatic) till ttt of the cause	Psychological ttt	Surgical repair ( dedoublement = flap) ↳ vaginal in <b>low</b> fistula ↳ abd. in <b>high</b> fistula with pre & post operative precautions

# Endometrial carcinoma



**Def:** Tumour arising from Endometrial glands

**Incidence:** commonest & most curable tumour of ♀ genital tract

**Etiology :**

- Premalignant lesions : **EH** → simple 1% / complex 3%  
simple é atypia 8% / complex é atypia 29%
- Predisposing F: ++ **E<sub>2</sub>** → early menarche / late menopause / PCO  
Granulosa cell tumor / use ERT / obesity / Tamoxifen

**Pathology:**

- Gross
  - Localized: endometrial polyp
  - Diffuse: endometrial thickening
- Microscopy
  - Adenocarcinoma ( best prognosis ) & commonest
  - Adenoacanthoma ( + benign sq metaplasia )
  - Adenosquamous ( + malignant sq cells )
  - Clear cell ca / papillary cell ca  
(undifferentiated so poorest prognosis)
- Grading :
  - G I → < 5% malignant undiff.cells = best prognosis
  - G II → 5-50% malignant undiff.cells = intermediate prognosis
  - G III → > 50% malignant undiff.cells = poor prognosis
- Spread :
  - **Direct:** myometrium / Cx / adnexa / vagina
  - Lymphatic: para aortic / inguinal / paracervical
  - Blood : L B L B

**Cl . picture :**

- Symptoms :
  - **Post menopausal bleeding**
  - Offensive discharge (pyometra)
- Signs:

\*General: signs of metastasis / anemia / jaundice / virchow's LNs...

\*Abd: enlarged uterus ± signs of metastasis ( ascites : very rare)

\*PV & bimanual : enlarged uterus ± adnexal masses

**Inv.**

- To confirm diagnosis :
  - \* Screening:TVS ( if ET > 5mm in menopausal) / Hysteroscopy
  - \* Gold standard : FC & **endometrial biopsy**
- To detect spread:
  - \* Eg: chest x-ray / abdominal & pelvic US / bone scan
  - \* MRI for myometrial invasion
- To assess fitness of pt for surgery: ECG & Lab testing

**Staging: ( FIGO surgical 2018 )**

- Stage I : confined to the organ
  - I a < ½ myometrial invasion
  - I b > ½ myometrial invasion ± endocervical glands
- Stage II : limited local spread : Cx. stroma
- Stage III : more local spread ± LNs
  - III a : Ovaries / FT
  - III b : Vagina / Parametrium
  - III c : LNs
    - III c<sub>1</sub> : LNs other than paraaortic
    - III c<sub>2</sub> : Paraaortic LNs
- Stage IV:
  - IV a : mucosa of bladder & / or rectum
  - IV b : distant spread ( L B L B)

**Ttt:** \* Early :  Surgery \* Late :  Radiotherapy

- Stage I : TAH & BSO + cytology + sampling LNs
- Stage II : ttt as cancer Cx
- Stage III : radiotherapy
  - External beam = pelvis
  - Extended = pelvis + abdomen
- Stage IV : Palliative

- NB :**
- Young pt desiring fertility : high dose progesterone
  - Unfit pt : Radiotherapy
  - If Cx involved : ttt as Cx cancer



# Cancer Cervix

**Def:** Tumour arising from ectocx (80%), endocx (20%) starting in Reserve cells of TZ

**Incidence:** 2<sup>nd</sup> most common after endometrial Ca.

## Etiology :

### → Premalignant lesions

CIN 1: abnormal cells & stratification involve lower  $\frac{1}{3}$  of ep.

CIN 2: abnormal cells & stratification involve lower  $\frac{1}{2}$  (or  $\frac{2}{3}$ ) of ep.

CIN 3: abnormal cells & stratification involve all ep.

} without  
invasion  
of BM

→ Predisposing F: → Sexuality: early / multiple / poor hygiene / multipara / smoking  
→ Viral: HPV ( 16 , 18 ) / HSV<sub>2</sub> / HIV

**Pathology:** → Gross: Ulcer / Nodule / Friable mass (ectocx) / Barrel-shaped cx (endocx)

→ Microscopy: Sq cell Ca ( ectocx ) / Columnar ep ( endocx )

→ Grading : → G I → < 5% malignant undiff.cells ( best prognosis )  
→ G II → 5-50% malignant undiff.cells ( intermediate prognosis )  
→ G III → > 50% malignant undiff.cells ( worst prognosis )

→ Spread: → Direct: uterus / vagina / parametrium / uterosacral /bladder /rectum.  
→ Lymphatic: → 1<sup>ry</sup>: paracervical / obturator / ext iliac / int iliac  
→ 2<sup>ry</sup>: common iliac / lat. sacral / para aortic  
→ Blood : L B L B

## Cl . picture :

→ Symptoms → CIN: may be asymptomatic  
→ Contact bleeding / AUB / Offensive discharge / Back pain

→ Signs → General: Signs of metastasis ( anemia – jaundice – virchow's LNs... ) / Uraemia  
→ PV & bimanual : Nodule / Mass / Ulcer / vagina  
→ PR: uterosacral & Parametrial involvement

## → Staging ( Clinical FIGO 2018 )

→ Stage I ( confined to cx ) : → I a < 5mm depth of invasion  
→ I b > 5mm depth of invasion ( ± uterus )

→ Stage II ( local spread ) : → II a: vagina ( but not lower  $\frac{1}{3}$  )  
→ II b: parametrium ( but not to lat pelvic wall )

→ Stage III ( more local ± LNs ) → III a : vagina ( + lower  $\frac{1}{3}$  )  
→ III b : parametrium till lat pelvic wall (Uraemia & Death)  
→ III c : LNs → c<sub>1</sub> : no para aortic  
→ c<sub>2</sub> : é para aortic LNs

→ Stage IV ( distant ) : → IV a : mucosa of bladder & rectum  
→ IV b : distant spread L B L B

## Inv.

→ To confirm diagnosis :

- 1) Pap smear : screening for all population annually in \* **high risk** & / 3 yrs in **low risk**  
⊖ / ASCUS / LSIL / HSIL / Sq.cell ca/ Adeno ca  
- ASCUS in low risk → as LSIL ( CIN I )  
- ASCUS in high risk → as HSIL ( CIN II , III )

2) Colposcopy ± Biopsy

→ Acetic acid : white (lesion)

→ Shiller's iodine: don't take the brown dye (lesion)

- 3) Direct biopsy from lesion ( Knife / Cone / LEEP )
- 4) FC in endocx



→ To detect spread:

EUA / IVP / Cystoscopy / CXR / Abd & Pelvic US/...

→ To assess fitness of pt. for surgery : ECG / Lab tests

## ttt

- 1<sup>ry</sup> prevention ( HPV vaccine )
- CIN → I → regress in 3 months (FU & ttt of infection)  
→ If not regress : CO<sub>2</sub> laser / diathermy
- II , III → conization (young age) → cold knife  
→ LEEP  
→ LLETZ
- TAH (old age)

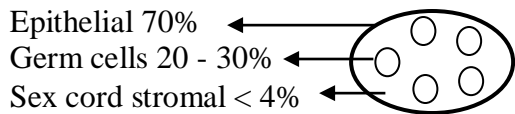
→ Cancer Cx - Early stage :  Surgery  
- Late stage :  Radiotherapy

→ Stage I a : TAH  
→ Stage I b / II a : Wertheim  
→ Stage II b / III / IV: Radiotherapy / palliative

## NB :

- NO need to remove ovaries as it's not hormone dependent & don't spread to ovaries
- Schauta operation is a vaginal hysterectomy , but difficult access LNs
- \* **High risk with HPV + ve & high sexual activity**





# Benign ovarian tumours

( premalignant ovarian lesions )

Clinical classification: Cystic / Solid  
 Pathological classification: Benign / Malignant  
 Histological classification

		Epithelial tumours (differentiated along)		Germ cell tumours (diff. along)		Sex cord stromal (diff. along)						
		(Tubal ep)	(Cx ep)	(End)	(urinary ep)	embryonic ( endoderm , meso,ectoderm )	extra embryonic villi: Yolk sac	undifferentiated germ cells & sex cord	Granulosa cells	Sertoli Leydig	Fibrous tissue	Theca cells
		Serous cystadenoma		Brenner	Dermoid ( BCT )	Yolk Sac ( Endodermal sinus tumor ) malignant		Gonadoblastoma	Sertoli - leydig cell tumour (malignant)		Fibroma	Thecoma
Gross	Size	Moderate	Huge	Small	Moderate			Small			Moderate	Small
	Site	bilateral in 50%	unilateral	bilat in 15%	bilat in 15%			bilateral in 10%			unilat in > 90%	unilateral
	Consistency	Uni/multilocular Papillary (exo/endophytic)	Multilocular	Solid	Uniloc é thick capsule & long pedicle			Solid			Solid é long pedicle	Solid
Microscopy		Cuboidal ep ( ciliated / Non )	Columnar ep é Goblet cells	Transitional ep	Stratified sq ep é sebaceous glands			Undifferentiated Germ cells & Sex cord cells			Fibrous Tissue	Theca cells
Characteristic features		Psammoma bodies (calcified cells)	Pseudo-myxoma peritonii <sup>ttt</sup> chemotherapy	Coffee bean nuclei	hair/teeth /bone - mamilla - chemical Peritonitis			In dysgenetic gonads <u>Y</u> ch . as AIS			Meig's syndrome ( + ascites & Rt pl. effusion)	Post menopausal
Secretions		CA 125	CA 19-9	± E <sub>2</sub>	Struma -ovarui (thyroxine) <sup>↑</sup>			—			—	E <sub>2</sub>
Malignant transformation		50%	5%	—	< 1%			30% Dysgerminoma			Fibrosarcoma (extremely rare)	—

### Complications:

- 1) Torsion → gangrene (rare)
- 2) Hemorrhage → acute abdomen
- 3) Rupture → nothing ( in serous )  
 → chemical peritonitis ( in dermoid )  
 → pseudo-myxoma ( in mucinous )
- 4) Infection → in puerperium
- 5) Incarceration → pressure symptoms
- 6) Malignant transformation

### cl. picture:

- symptoms:
  - asymptomatic
  - pain
  - mass ( abdominal )
  - **no bleeding** (except functioning)
- signs:
  - general : Cachexia in Mucinous
  - abd: swelling (insp. / palp. / percussion)
  - PV & Bimanual : Adnexal mass

Inv : **US** / CA 125 / Laparoscopy

- Ttt:**
- Ovarian cystectomy ( laparoscopy or open )
  - Oophorectomy ( in huge mass )
  - TAH & BSO ( in old age )

# Malignant ovarian tumours

**Def :** malignant T. arising from surface ep , germ cells & sex cord stroma of the ovary.

**Inc :** 3<sup>rd</sup> most common malignancy of ♀ genital tract after end. & Cx cancer , deaths from ovarian tumours > deaths from end. & cx cancer together

**Et :** → predisposing F : NG / induction of ovulation / genetic ( BRCA 1 & 2 , Lynch II ) , OCPs are protective as they - - ovulation

→ Premalignant : serous & mucinous cystadenoma / BCT ( dermoid ) / gonadoblastoma / fibroma

Pathology:	old age Epithelial ( 70 % )			Child bearing Germ cell T ( 20 - 30 % )				Extreme ages Sex cord stromal T (< 4 % )			*Metastatic
	Serous cystadenocarcinoma	Mucinous	Endometriod	MCT	MST	Chorio ca	EST	Dysgerminoma	Granulosa cell T	Sex cord stromal (Androblastoma)	
→ Gross	- Small to moderate in size - Mostly unilateral , but if bilateral * high malignant behaviour - Solid ( serous , mucinous , MCT are cystic) é areas of hge & necrosis ± rupture capsule										Small solid nodules in DP ( 2 <sup>ry</sup> to ca of pylorus,colon)
→ Mic	Adenocarcinoma		May be associated é Endometrial ca	undiff embryonic cells (ecto,endo,meso)	Cyto & Syncitio trophoblasts	Shiller Duval bodies	Lymphocytic infiltration	Call Exner bodies (Rosette shape)	Androgenic cells	Extremely rare	Signet ring cells
Secretion	CA 125 / CEA		CA 19-9	—	HCG	AFP	LDH	E <sub>2</sub> / Inhibin	androgen	—	—

- Grading :**
- GI : < 5% malignant undiff. Cells ( best prognosis )
  - GII : 5 - 50 % malignant undiff. Cells ( intermediate prognosis )
  - GIII : > 50% malignant undiff. Cells ( worst prognosis )

- Spread :**
- Direct: other ovary / uterus / fallopian tubes
  - Lymphatic: para aortic LNs
  - **Transcoelomic:** seedling & exfoliation of cells on surface UB, rectum , colon & omentum

Blood : L B L B

- Cl.pict :**
- Symptoms : Asymptomatic / GIT symptoms / mass / NO bleeding except in functioning T
  - Signs:
    - General : cachexia / Virchow's LNs / jaundice ...
    - Abdominal : Ascitis / mass
    - PV & Bimanual : Nodules in DP / Abdominal masses
  - Staging:
    - Stage I (confined to ovary)
      - Ia : one ovary
      - Ib : both ovaries
    - Stage II ( local spread )
      - II a :Ut / FT
    - Stage III (+LNs )
      - IIb :surface of UB / omentum / rectum
    - Stage IV (distant spread)
      - IVa : pleural effusion
      - IVb: L B L B ( parynchyma )

FIGO surgical staging 2018

- Inv :**
- To confirm diagnosis
    - US é criteria of malignancy (bilateral /solid /papillae /ascites)
    - Tumour markers (CA 125)
    - Laparoscopy
  - To detect spread: Ba meal / enema / upper & lower GI /CXR / CT abd & pelvis
  - To assess fitness of pt for surgery : ECG / Labs /...

$$RMI = \frac{U}{1 \text{ or } 3} \times \frac{M}{1 \text{ or } 3} \times CA 125 \rightarrow IF > 200 \text{ ( High risk )}$$

- Ttt:**
- Early : surgery / Late : debulking + chemotherapy
  - Stage I – Ila : TAH & BSO + omentectomy + peritoneal wash + sampling LNs
  - Stage Ia ( germ cell ): can be treated by unilat salpingo oophorectomy till completing her family
  - Stage IIb – IV: debulking ( cytoreductive ) ie remove all tumor tissue > 1cm + chemotherapy

- NB :**
- Dysgerminoma is radiosensitive ( due to lymphocytic infiltration )
  - Cancer ovary has poor prognosis due to late presentation & so diagnosis & ttt
  - \* **Metatstatic ovarian tumours are more common than 1<sup>ry</sup> ovarian tumours**

# Non Neoplastic (Functional) cysts of the ovary

**Definition :** Ovarian cysts occurring in childbearing period that may cause functional disturbances.

**Incidence :** 25% of all adnexal masses in child bearing period !!! 😬

		<b>Follicular cyst</b> (commonest)	<b>CL Cyst</b> (2 <sup>nd</sup> most common)	<b>Theca lutein cysts</b>	<b>Endometriotic cyst</b> (Endometrioma)	<b>Inflammatory cysts</b>	<b>Inclusion cyst</b>	
<b>Etiology</b>		* Fluid accumulated in atretic follicles * Unruptured dominant Follicle	* Hemorrhage in corpus luteum cyst	* Induction of ovulation drugs * MFG / GTDs	* Functioning endometrial tissue in ovaries	* PID in the form of TOC or TOA	* Invagination of germinal ep. in ovarian substance	
<b>Pathology</b>	Gross	Unilateral Unilocular Small < 7cm Filled é clear fluid	Unilateral Unilocular Small < 7cm Filled é Hgic fluid	Bilateral Multilocular Large in size Filled é clear fluid	Unilat or bilateral Unilocular é thick wall Small to large size Filled é chocolate material	Bilateral Multilocular Small to large size Filled é fluid / pus	microscopic	
	Mic	Lined by granulosa cells	Lined by luteinized granulosa cells	Lined by luteinized theca cells	Lined by functioning end. tissue → menstruates	Lined by epithelial cells	Lined by ep. cells	
	secretions	E <sub>2</sub> may be associated é (MH / PCO)	PRG	++ HCG	++ CA 125	+ CRP / ESR TLC / DLC	No, except if changes to ep.ov. tumours ±CA125	
<b>Cl. picture</b>	Symptoms	Asymptomatic Menstrual disturbances Pain if complicated (torsion / Hge)		Of original cause	Chronic pelvic pain	Fever / malaise	_____	
	Signs → G → Abd → PV	_____		Of original cause	_____	* Fever / tachycardia * Tenderness/guarding Rigid acute abdomen * Fixed bilat tender masses(jumping sign)	_____	
<b>Inv</b>		US is <b>gold standard</b> for diagnosis Laparoscopy if in doubt or complications			++ HCG	US (ground glass appearance) CA 125 ( prognostic ) Laparoscopy( <b>gold standard</b> )	Lab tests US ( <b>gold standard</b> )	_____
<b>Treatment</b>		*Regress spontaneously in few weeks *If > 7cm , or didn't regress: ± OCPs / Gestagens *If complicated : lap.ovarian cystectomy		ttt of cause	*If < 4cm : OCPs /Gestagens/ GnRha *If > 4cm : Lap. ovarian cystectomy	* Antibiotics according to CDC regimen ± * Drainage of persistent TOA	_____	

# Malignant tumours of vulva

**Def:** Malignant tumour arising from vulval epithelium & SC tissue

**Inc:** 4<sup>th</sup> most common tumour of ♀ genital tract after end , cx & ovaries

## Etiology :

- Premalignant lesions:
  - VIN (1,2,3) : VIN 1 & 2 usually regress
  - Lichen sclerosus & Atrophicus
  - Paget's disease ( adenoca. in situ )
- Predisposing F : old age / smoking / HPV infection

## Pathology:

- Gross:
  - VIN : may appear (N)
  - Invasive: Nodule / Ulcer / Mass
- Mic:
  - VIN :
  - VIN 1: atypical cells & stratifications in lower 1/3 of ep
  - VIN 2: atypical cells & stratifications in lower 1/2 or 2/3 of ep
  - VIN 3: atypical cells & stratifications in all ep.
- Invasive:
  - Squamous cell ca.(commonest)
  - Adeno ca. / Melanoma / Basal cell ca
- Grading
  - G I : < 5% malignant undiff.cells ( best prognosis )
  - G II: 5-50% malignant undiff.cells( intermediate prognosis)
  - G III : > 50% malignant undiff.cells ( worst prognosis )
- Spread :
  - Direct: vagina / urethra / anus / perineum
  - **Lymphatic:** inguinal → femoral ( LNs of Cloquet )
  - Blood : L B L B

} without invasion of BM

## Cl . picture :

- Symptoms
  - In VIN : Asymptomatic or Pruritis vulvae
  - In invasive : Pain / Mass / Contact bleeding (in addition to long standing pruritis valvae )
- Signs :
  - \*General: signs of metastasis
  - \*Abdominal : rare
  - \*Local:
    - In VIN :
      - raised rough skin / thin reddish epithelium
      - white hyperkeratinization ( leukoplakia )
    - In invasive:
      - ulcerated / pigmented mass
      - labia majora mostly then minora then clitoris
      - ± enlarged inguinal LNs

## Staging: ( FIGO surgical 2009 )

- Stage I : ( confined to vulva )
  - \* Ia: < 2cm width & < 1mm depth of invasion
  - \* Ib: > 2cm width & > 1mm depth of invasion
- Stage II: ( local spread ) : to lower vagina / lower urethra / anus
- Stage III: ( local spread + LNs ) : Inguinofemoral LNs
- Stage IV: ( distant spread )
  - \* IVa: UB mucosa / Rectal mucosa  
All urethral mucosa / All vaginal mucosa
  - \* IVb: L B L B

## Investigations:

- To confirm diagnosis: Direct excisional biopsy  
If no apparent lesion: use colposcopy or paint é acetic acid & take biopsy from the white lesions
- To detect spread :
  - Colposcopy for cervix & vagina to detect associated involvement (as all are predisposed by HPV infection)
  - CXR / CT abdomen & pelvis
- To assess fitness of pt. for surgery : ECG & Lab tests

## Treatment:

- In VIN :
  - Symptomatic ttt to relieve pruritis for 3-6 months by topical steroids (as usually regress spontaneously)
  - In small lesions : excisional biopsy
  - In wide lesions: skinning vulvectomy ± skin graft
- In invasive ca vulva
  - Early stages: 🏠 Surgery / Late stages: ☢ Radiotherapy
  - stage I : wide local excision
  - late stages : radical vulvectomy & bilateral block dissection of inguinal LNs ( butterfly incision )

causing lots of morbidities ,so separate incisions are done nowadays

# Malignant tumours of vagina

**Definition:** Primary tumours arising from vaginal epithelium or more commonly 2<sup>ty</sup> from primary tumour elsewhere

**Incidence:** least common tumour of ♀ genital tract .

**Etiology :** → Premalignant lesion: VaIN  
→ Predisposing F : old age / HPV infection

## Pathology:

- Gross: → In VaIN : may appear **(N)**  
→ Invasive ca : Nodule / Ulcer / Mass
- Microscopic:
  - VaIN:
    - VaIN 1: atypical cells & stratifications in lower 1/3 of ep.
    - VaIN 2: atypical cells & stratifications in lower 1/2 or 2/3 of ep.
    - VaIN 3: atypical cells & stratifications in all ep.
  - Invasive ca: → Squamous cell carcinoma in > 90%  
→ Clear cell / Melanoma / Rhabdomyosarcoma
- Grading
  - G I : < 5% malignant undiff.cells ( best prognosis )
  - G II : 5- 50% malignant undiff.cells (intermediate prognosis)
  - G III : > 50% malignant undiff.cells ( worst prognosis )
- Spread: → **Direct:** to nearby organs & malignant fistula may develop with urinary bladder or rectum  
→ Lymphatic: as cancer Cx  
→ Blood : L B L B

## Cl . picture :

- Symptoms
  - \* In VAIN: Asymptomatic or contact bleeding
  - \* In invasive ca vagina : contact bleeding / mass / offensive discharge
- Signs : → General: signs of metastasis  
→ Abdominal : very rare  
→ PV: Mass / Nodule / Ulcer / Contact bleeding
- Staging: → Stage I : (confined to vagina)  
→ Stage II: ( local spread ) : to Cervix , Uterus ...  
→ Stage III: ( local spread + LNs )  
→ Stage IV: ( distant spread )

## Investigations:

- To confirm diagnosis:
  - Pap smear in VaIN
  - Excisional biopsy from naked eye lesions
  - Colposcopy + acetic a staining + biopsy from white lesion
- To detect spread : US uterus / CXR / CT abdomen & pelvis
- To assess fitness of pt. for surgery : ECG & Lab tests

## Treatment:

- In VaIN :
  - Laser ablation of lesion ( under colposcopy)
  - Wide local excision
  - Topical chemotherapy : 5-Flurouracil
- In invasive ca vagina
  - Early stages: 🏠 Surgery / Late stages: ☢ Radiotherapy
  - stage I ( involving upper vagina ) :  
🏠 Wertheim operation ( radical hysterectomy)
  - stage I ( involving lower vagina ) → till stage IV:  
☢ Radiotherapy

Sarcoma Botryoides in prepubertal girls → Mass & Bleeding

# Lower Genital Tract Infections

LGT infections:

**Vaginitis**

Childhood: foreign body / worms

Menopause : -- E<sub>2</sub> Atrophic / Alkaline PH


Childbearing: protected by

Stratified squamous epithelium

++ E<sub>2</sub> \* ++ Glycogen

Lactobacilli / Lactic acid ( acidic PH )

**Cervicitis**

vaginitis			
	Bacterial vaginosis (commonest)	Candidiasis (2 <sup>nd</sup> common)	Trichomoniasis (3 <sup>rd</sup> common)
organism	Bacteria Gardnerella vaginalis	Fungus Candida albicans	Protozoal Trichomonas vaginalis
Et	++++ anaerobes	--- immunity	STD
PH	Alkaline : 4.7-7	Acidic < 4.5	Alkaline : 5-6
discharge	<b>Fishy odour</b> Profuse / non irritant greyish	<b>Extremely irritant</b> <b>Cottage cheese</b> scanty	Profuse / <b>yellowish</b> Mildly irritant <b>Strawberry Cx</b>
Mic +KOH	<b>Clue cells</b>	<b>Hyphae</b> / pseudohyphae	Flagellated protozoon 
Treatment	Metronidazole 500 mg bid / 7days ( CI in 1 <sup>st</sup> trimester, give local cream or supp only)	Fluconazole 150 mg once weekly for 2 weeks ( CI all through pregnancy & in liver troubles, give local cream or supp only)	Metronidazole 2gm single oral dose + ttt of partner

cervicitis			
	Acute	Chronic	Erosion
Etiology	Polymicrobial sp. Neisseria & Chlamydia	On top of acute	*infection (ch.cervicitis) *hormonal(preg /COCPs) *congenital
Cl.picture	*Mucopurulent discharge *Dyspareunia *Backache	*Mucous polyp *Nabothian follicles *Hypertrophic cervicitis	Contact bleeding
Inv.	C/S for discharge		<u>Pap smear</u>
Treatment	Doxycycline 100 mg bid / 7days  Or Azithromycin 1gm single oral dose		* ttt of the cause. * Residual cases: Cauterization → Diathermy → Cryo → Laser

# Acute PID

**Definition:** Salpingitis , oophoritis , peritonitis & rarely endometritis due to regular monthly shedding in childbearing period.

- Et:**
- organism: N.gonorrhea, Ch.Trachomatis (mostly both together& others)
  - route: ascending ( mainly) , local or lymphatic , blood ( rarely)
  - risk F:
    - sexually active , multiple sexual partners
    - IUD , after menses , after sexual intercourse
    - é any procedure : D&C , HSG , Hysteroscopy, ...

**NB : OCPs & barrier contraception ↓ risk ( ie are protective )**

## Pathology:

- Endosalpingitis / interstitial salpingitis / perisalpingitis ( acute catarrhal or acute suppurative )
- Oophoritis : é microabscesses on the surface
- Pelvic peritonitis

## Clinical picture:

- Symptoms:
  - fever , malaise , headache ,
  - H/O of recent OBGYN procedure
  - Acute lower abdominal pain
  - Foul smelling purulent vag. discharge
- Signs:
  - Fever > 38.3° , tachycardia
  - Lower abdominal tenderness & rebound tenderness
  - Cx Motion tenderness , discharge
- Complications :
  - chronic PID ( if inadequately treated)
  - Tubal obstruction & infertility
  - ++ risk of ectopic pregnancy

## Inv:

- Blood tests: ++TLC , ++DLC , shift to Lt , ++ESR , ++ CRP
- US to exclude DD : ectopic , complicated ovarian , appendicular mass , degenerated myoma
- Laparoscopy: if diagnosis is doubtful

**NB: exam of discharge to detect causative organism & do C/S ( not clinically needed)**

## Treatment:

- Mild PID ( é mild symptoms) → **Outpatient**
  - Ceftriaxone 250mg single IM dose
  - + doxycycline 100mg /12hrs/14days
  - ± Metronidazole 500mg oral bid / 14days
- Severe PID ( é severe symptoms ) → **Hospitalization**
  - IV fluids / IV analgesics / IV antipyretics
  - IV antibiotics :
    - Cefotetan 2g IV/12hrs **or** cefoxitine 2gm IV/6hrs
    - ⊕ Doxycycline 100 mg orally / 12hrs for 1-2 days till symptoms become milder then continue previous oral regimen of mild cases for 2weeks

## NB:

- 1) **IF IUD present** → remove
- 2) **In case of TOA** → give clindamycin 900mg IV / 8hrs or Metronidazole 500 mg IV / 8hrs in addition to the 2 mentioned above drugs of severe PID
- 3) **IF TOA doesn't resolve by medical ttt :**
  - drainage through laparoscopy / laparotomy or colpotomy ( vaginal drainage)



# Chronic PID

## Sequelae of acute

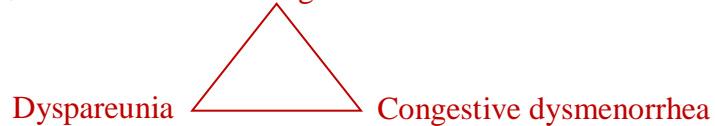
### Pathology:

- Hydrosalpinx :  
sequelae of inadequately treated acute catarrhal salpingitis
- Pyosalpinx :  
sequelae of inadequately treated acute suppurative salpingitis
- TOC
- TOA
- Chronic Interstitial salpingitis

### Clinical picture :

#### Symptoms :

- \* history of acute PID
- \* dull aching lower abdominal pain
- \* pelvic congestion      **Menorrhagia / leucorrhea**



- \* backache
- \* infertility from tubal obstruction & peritoneal adhesions

#### Signs:

- \* adnexal tenderness/ fullness / cyst
- \* fixed RVF in case of extensive adhesions

### investigations:

- US for adnexal masses
- HSG for hydrosalpinx
- Laparoscopy is the gold standard

### Treatment :

#### Symptomatic ttt

- eg : → infertility ttt → ( TD + IVF )
- pain & congestion in old age → ( TAH & BSO )  
( antibiotics only in acute exacerbations )

## TB ( chronic from the start )

### TB is a chronic granulomatous disease

#### Etiology:

- Mycobacterium tuberculosis
- Blood spread from lungs ( most common )

#### Pathology :

- FT: \***Endosalpingitis**: caseous material inside thick , tortuous , tobacco pouch appearance ( open everted fimbrial end )
- \***Interstitial salpingitis** : thick , beaded , salpingitis ithmica nodosa
- \***Perisalpingitis**: é multiple tubercles on the surface & on surrounding peritoneum
- Endometrium : affection of basal layer → IU adhesions or Asherman syndrome ( PEB is diagnostic)
- Oophoritis : with microtubercles
- Rarely : vulval ulceration / cervical ulceration ( DD of cancer cx)

### Clinical picture :

#### Symptoms:

- Asymptomatic
- Low grade fever/ loss of wt / loss of appetite
- 5-10% of infertility cases are due to TB salpingitis
- Amenorrhea / oligomenorrhea

#### Signs:

- Mostly normal
- Genital serpiginous ulcers é undermined edges


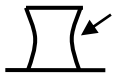

### Investigations :

- X-ray chest (& pelvis for calcified LNs)
- HSG ( not in active TB ) : retort shape tube , IU adhesions
- PEB
- Laparoscopy ± biopsies from suspicious lesion ( serosal tubercles to be stained by Ziel –Nielsen to show the acid fast , alcohol fast bacilli)
- Tuberculin is a good –ve test

#### Ttt:

- General ttt for anemia , proper nutrition
- Anti TB ( Rifampicin , INH , Pyrazinamide , Ethambutol)
- Surgical ttt in case of tubal mass or endometrial TB & post operative anti-TB ttt

# STDs

	♂	Chlamydia Trachomatis	chancroid	Donovanosis (GI)	LGV	viral			♀
						HSV <sub>2</sub>	HPV	HIV	
Organism	Neisseria gonorrhoea (columnar & transitional)	Chlamydia Trachomatis (columnar epithelium)	Hemophilus Ducreyi	Klebsiella granulomatis	Chlamydia L <sub>1,2,3</sub>	HSV <sub>2</sub>	HPV 6 / 11	AIDS	Treponema Pallidum
Cl. picture	PID		Vulval lesions				Vulval + Systemic manifestations		
	<ul style="list-style-type: none"> <li>▶ Mucopurulent discharge</li> <li>▶ Lower abdominal pain</li> <li>▶ Bartholin</li> <li>▶ Urethritis</li> <li>▶ Systemic (IP 3-5 days)</li> </ul>	<ul style="list-style-type: none"> <li>▶ Subclinical</li> <li>▶ Mucopurulent discharge</li> <li>▶ PID (silent)</li> <li>▶ Squelae</li> </ul>	<p><u>Painful</u> papule ↓ Ulcerate</p> <p>LN+++</p> <p>(IP 3-5 days)</p>	<p><u>Painless</u> papule ↓ Ulcerate</p> <p>××× NO ××× ××× LN×××</p> <p>(IP 3 weeks)</p>	<p>Destructive lesion ↓ Ulcerate</p> <p>LN+++</p> <p>(IP 3 weeks)</p>	<p><u>Painful</u> Vesicles ↓ Ulcerate</p> <p>(IP 3 weeks)</p>	<p><u>Painless</u> warts (condyloma acuminata)</p>  <p>(IP 3 months)</p>	<p>Asymptomatic ↓ Severe form</p> <p>Kaposi sarcoma</p> <p>(IP 3 years)</p>	<ul style="list-style-type: none"> <li>▶ 1<sup>ry</sup> (chancere) <u>Painless</u></li> <li>▶ 2<sup>ry</sup> (condyloma latum) </li> <li>▶ 3<sup>ry</sup> (systemic) (tabes dorsalis)</li> <li>▶ Congenital</li> </ul>
Inv.	<ul style="list-style-type: none"> <li>▶ Gram -ve diplococci</li> <li>▶ Culture: Thayer Martin</li> <li>▶ NAAT</li> </ul>	<ul style="list-style-type: none"> <li>▶ Obligatory intracellular</li> <li>▶ Culture : expensive</li> <li>▶ NAAT</li> </ul>	<ul style="list-style-type: none"> <li>▶ Coccobacilli</li> <li>▶ Cl. picture is enough</li> </ul>	<p>Gram -ve</p>  <p>Donovan Bodies</p> <p>India/Africa</p>	<p>CF</p> <p>India/Africa</p>	<ul style="list-style-type: none"> <li>▶ Culture of serum collected from vesicles</li> <li>▶ Ab</li> </ul>	<ul style="list-style-type: none"> <li>▶ Pap smear (koilocytes)</li> <li>▶ Colposcopy</li> </ul>	<ul style="list-style-type: none"> <li>▶ Western blot</li> <li>▶ Eliza</li> </ul>	<ul style="list-style-type: none"> <li>▶ Dark field Mic (spirochetes)</li> <li>▶ Non-specific VDRL / RPR</li> <li>▶ Specific: TPH/TPI</li> <li>In 1<sup>ry</sup> \$ ▶ Ag present</li> <li>In 2<sup>ry</sup> \$ ▶ Ag &amp; Ab</li> <li>In 3<sup>ry</sup> \$ ▶ Ab present</li> </ul>
Ttt	<p>Ceftriaxone 250mg (IM) + Doxycycline 100mg / bid / (7days)</p>	<p>Doxycycline 100mg / bid / (7days)</p>	<p>Ceftriaxone 250mg (IM)</p>	<p>Doxycycline 100mg / bid / (3 weeks)</p>	<p>Doxycycline 100mg / bid / (3 weeks)</p>	<p>Acyclovir 400mg 10 days</p>	<p>Vaccine</p> <ul style="list-style-type: none"> <li>▶ Cryo</li> <li>▶ Diathermy</li> <li>▶ Podophyllin</li> <li>▶ Podofilox</li> </ul>	<p>Antiretroviral ttt</p> <p>Vaccine ?</p>	<p>Penicillin desensitization</p>

- Other STDs
  - ▶ Trichomoniasis (protozoan) → infecting lower genital tract
  - ▶ Pediculosis pubis & scabies ( Ecto parasites)

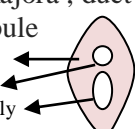
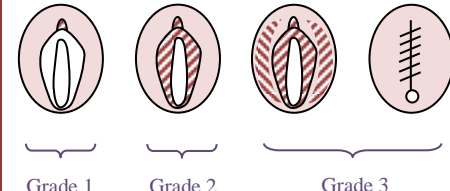
# Pruritis vulvae

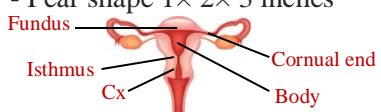
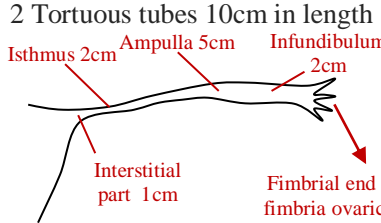
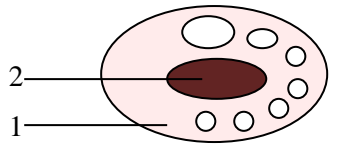
With vaginal discharge (80%)	Without vaginal discharge (20%)
<p>Candida albicans</p> <p>Trichomonas vaginalis</p>	<p>Generalized disease</p> <p>Allergy</p> <p>Scabies , seborrhea</p> <p>Lichen sclerosus</p> <p>Psychogenic</p> <p>Urinary or rectal incontinence</p>

# Vulval swellings

Cystic swellings	Solid swellings
<p>Bartholin's duct</p> <ul style="list-style-type: none"> <li>→ Cyst → ttt: marsupialization</li> <li>→ Infected cyst → ttt: antibiotics</li> <li>→ Abscess → ttt: drainage</li> </ul> <p>Inclusion dermoid → ttt: excision &amp; biopsy</p> <p>Sebaceous → ttt: excision &amp; biopsy</p> <p>Hydrocele of canal of Nuck → ttt: surgical excision ( as hernia repair )</p> <p>Endometrioma → medical / surgical depending on size</p> <p>Hematoma → incision &amp; drainage</p> <p>Varicosities → medical ttt: sclerosing material or ligation of the veins ( if not pregnant )</p>	<p>Lipoma</p> <p>Fibroma</p> <p>Nevus</p> <p>Caruncle</p> <p>Papilloma / warts</p> <p>Hydradenoma</p> <p style="text-align: right;">} ttt: excision &amp; biopsy</p>

# Anatomy of female genital organs

	Gross	Histology	Blood supply	n. supply	Lymphatics	Applied anatomy
<b>Vulva</b>	<ul style="list-style-type: none"> <li>- Mons veneris (hairy pad of fat over SP)</li> <li>- Clitoris: midline erectile organ</li> <li>- 2 labia majora: lat hairy é fat, sweat &amp; sebaceous glands</li> <li>- 2 labia minora: med é non hairy skin, no sweat or sebaceous glands</li> <li>- Hymen: memb 2 cm deep to vulval opening (vestibule) é opening to allow menses</li> <li>- Bartholin glands on posterolat aspect of labia majora, duct opening in vestibule</li> </ul>  <p>Vestibule Urethral opening Vaginal opening, partially closed by hymen in virgins</p>	<ul style="list-style-type: none"> <li>- Stratified squamous epithelium (keratinized hairy &amp; non hairy)</li> <li>- Transitional ep. For Bartholin gland</li> </ul>	<p>(A)</p> <ul style="list-style-type: none"> <li>- Int pudendal artery (one of 2 terminal branches of ant division of IIA)</li> <li>- Branches from femoral a (Ext iliac a)</li> <li>- Superficial &amp; deep external pudendal arteries</li> </ul> <p>(V)</p> <p>Venous plexuses that accompany arteries</p>	<ul style="list-style-type: none"> <li>- Pudendal n. (S<sub>2,3,4</sub>)</li> <li>- Sensory: Ilioinguinal n. (L<sub>1</sub>)</li> <li>- Genital branch of genito-femoral n. (L<sub>1,2</sub>)</li> <li>- Post cutaneous n. of the thigh</li> </ul>	<p>Superficial inguinal LNs → deep inguinal LNs &amp; femoral LNs</p>	<ul style="list-style-type: none"> <li>- <b>FGM</b> é 3 grades with early (bleeding, infection) &amp; late (loss of satisfaction, sexual problems &amp; frigidity) complications.</li> </ul>  <p>Grade 1      Grade 2      Grade 3</p> <ul style="list-style-type: none"> <li>- <b>Clitoridal cyst</b>: post circumcision</li> <li>- <b>Cryptomenorrhea</b>: in imperforate hymen</li> <li>- <b>Bartholin cyst</b>: in obstructed duct</li> </ul>
<b>Vagina</b>	<ul style="list-style-type: none"> <li>- Fibromuscular tube é rugae inside</li> <li>- 7 – 9 cm anterior wall related to UB &amp; urethra</li> <li>- 10 – 11 cm posterior wall related to DP, rectum, perineal body</li> <li>- Lat borders related to:             <ol style="list-style-type: none"> <li>1) ureter 1cm</li> <li>2) cardinal (Mackenrodt's) lig</li> <li>3) levator ani (deep perineal ms)</li> <li>4) bulbo cavernous (superficial perineal ms)</li> </ol> </li> </ul>	<p>Non keratinized stratified squamous epithelium forming the distensible mucosal lining (Rugae)</p>	<p>(A)</p> <p>Vaginal a from IIA + middle rectal a + inferior rectal a</p> <p>(V)</p> <p>Vaginal plexus to IIV</p>	<p>Pudendal n. (S<sub>2,3,4</sub>)</p>	<p>Upper third: as Cx</p> <p>Lower third: to Inguinal LNs</p> <p>Middle third: II LNs</p>	<ul style="list-style-type: none"> <li>- <b>Septum</b>: longitudinal / transverse</li> <li>- <b>Ant. wall prolapse</b>: Cystocele, urethrocele</li> <li>- <b>Post wall prolapse</b>: Enterocele, rectocele, deficient perineum</li> <li>- <b>Support</b>:             <ul style="list-style-type: none"> <li>post (Uterosacral lig)</li> <li>lat (Mackenrodt's lig)</li> <li>ant (Pubocervical lig)</li> </ul> </li> <li>- <b>Episiotomy</b>: cut post or posterolat vag wall in addition to perineal ms &amp; skin</li> <li>- <b>Post colpotomy or culdocentesis</b>: for drainage of pelvic abscess in DP</li> <li>- <b>US guided oocyte retrieval</b> in IVF through post fornix</li> <li>- <b>Ureter may be injured</b> at lat fornix while clamping the vag angles in TAH</li> <li>- <b>Pudendal n block</b>: done at level of ischial spines</li> </ul>

	Gross	Histology	Blood supply	n. supply	Lymphatics	Applied anatomy
<b>Uterus</b>	<p>- Pear shape 1× 2× 3 inches</p>  <p>- AVF or RVF ( in 15 % )</p> <p>- Ant : UB / Pubocervical lig</p> <p>- Post : DP / Uterosacral lig</p> <p>- Lat: Broad lig &amp; inside it :</p> <ul style="list-style-type: none"> <li>- Fallopian tubes</li> <li>- Remnants of Wolffian ducts</li> <li>- Uterine artery</li> <li>- Ureter</li> </ul> <p>&amp; Mackenrodt's lig</p>	<p>- Endometrium ( modified mucosa é glands &amp; stroma )</p> <p>- Myometrium of body of ut formed of 3 ms layers :</p> <ul style="list-style-type: none"> <li>- Outer longitudinal</li> <li>- Middle criss-cross</li> <li>- Inner circular</li> </ul> <p>While Cx is formed of outer &amp; inner layers only</p> <p>- Perimetrium : peritoneal covering which is adherent to the body but loose at Cx</p>	<p>(A)</p> <p>- Uterine a ( tortuous course on lat borders) from ant division of IIA</p> <p>- At Cx , it crosses ½ an inch lat <u>above</u> ureter (water under the bridge)</p> <p>- Branches from ovarian a anastomosis at cornu with uterine a</p> <p>(V)</p> <p>- Pampiniform plexus in broad lig that follow the arteries.</p>	<p>-Inf hypogastric plexus</p> <p>PS : S<sub>2,3,4</sub></p> <p>S:</p> <p>T<sub>5, T6</sub> ( motor )</p> <p>T<sub>10, T11, T12</sub> , L<sub>1</sub> (sensory)</p>	<p>- Fundus : paraaortic LNs</p> <p>- Cornu : é round lig to superficial inguinal LNs</p> <p>- Body : II LNs</p> <p>- Cx : 1<sup>ry</sup> → paracervical parametrial , obturator , II LNs &amp; EILNs</p> <p>2<sup>ry</sup> → CI LNs , Lat. sacral &amp; paraaortic LNs</p>	<p>- <u>Ut prolapse</u> : 1<sup>st</sup> , 2<sup>nd</sup> &amp; 3<sup>rd</sup> degrees</p> <p>- <u>Ut. support</u> : lat , post &amp; ant</p> <p>- <u>MRKH Syndrome</u> in case of 1<sup>ry</sup> amenorrhea é presence of secondary sexual characters</p> <p>- <u>Cong anomalies</u> : as septate / bicornuate / didelphys with RPL , PTL</p> <p>- <u>Cx is sensitive only to dilatation</u> ( Cx dilatation should be done under anesthesia )</p>
<b>Fallopian tubes</b>	<p>2 Tortuous tubes 10cm in length</p>  <p>- Runs in upper part of broad lig related to loops of intestine above é ovaries posterior &amp; inferior to them</p> <p>- For ovum pick up , transport &amp; nutrition for ovum &amp; sperm</p>	<p>- Mucosa ( endosalpinx ) cubical or columnar partially ciliated</p> <p>- Musculosa: 2 ms layers ( outer long &amp; inner circular )</p> <p>- Serosa or peritoneal covering</p>	<p>(A)</p> <p>Branches from uterine &amp; ovarian arteries</p> <p>(V)</p> <p>Rt ovarian v . → IVC</p> <p>Lt ovarian v. → Lt renal v.</p>	<p>S ( T<sub>11</sub> , T<sub>12</sub> ) &amp; PS</p>	<p>Paraaortic LNs through ovarian lymphatics</p>	<p>- <u>Tubal point</u> ( ½ inch above mid inguinal point ) in cases of pain , PID , ectopic .</p> <p>- <u>Commonest site for ectopic pregnancy</u> ( ampullary part )</p> <p>- <u>Hydrosalpinx &amp; pyosalpinx</u> ( ch . PID )</p> <p>- <u>Commonest permanent method of contraception</u> ( tubal ligation )</p> <p>- <u>TD</u> in cases of hydrosalpinx prior to IVF</p>
<b>Ovaries</b>	<p>- Almond shape 1×2×3cm in fossa ovarica on lat. Pelvic wall</p> <p>- On ureter &amp; bifurcation of II vessels</p> <p>- Not covered by peritoneum</p> <p>- Corrugated surface due to repeated stigma of ovulation</p> <p>- Attached to ut by ovarian ligament , to lat pelvic wall by infundibulopelvic lig , to the back of the BL by mesovarium</p>	 <p>1) Outer cortex é follicles at different stages of development covered by single layer of cuboidal ep .</p> <p>2) Inner medulla</p> <p>3) Hilum ( site of attachment of mesovarium , carries blood vessels , nerves &amp; lymphatics while leaving the ovary )</p>	<p>(A)</p> <p>- Ovarian arteries from abdominal aorta</p> <p>- Branches from uterine artery that anastomose é ovarian vessels</p> <p>(V)</p> <p>- Rt ovarian vein → IVC</p> <p>- Lt ovarian vein → Lt renal vein</p>	<p>S ( T<sub>10</sub> , T<sub>11</sub> ) &amp; PS</p>	<p>Paraaortic LNs</p>	<p>- <u>In ovariectomy</u> : 6 clamps needed 2 on each pedicle (ovarian , infundibulopelvic &amp; mesovarium) ligaments.</p> <p>- <u>Streak gonads</u> in absence of sex cord cells covering the germ cells , forming Turner syndrome ( XO )</p> <p>- <u>Responsible for</u></p> <ol style="list-style-type: none"> <li>1) ova production ( ie ovulation )</li> <li>2) hormone formation ( E<sub>2</sub> , PRG ) by granulosa &amp; theca cells of oocytes</li> </ol>

Ureter	Pelvic floor	Perineum
<p><b>Gross :</b> 25 cm in length , retroperitoneal</p> <ul style="list-style-type: none"> <li>- Enters pelvis in ovarian fossa above the bifurcation of CIA</li> <li>- Runs downwards in the base of BL Runs downwards in the base of BL <u>below</u> uterine artery .</li> <li>- crosses forward related to lateral vaginal wall to enter trigone of the urinary bladder.</li> </ul> <p><b>Histology :</b> Lined by transitional epithelium</p> <p><b>Blood supply :</b></p> <p>(A) Branches from IIA , uterine artery , Inf. vesical artery , vaginal artery</p> <p>(V) Follow the arteries</p> <p><b>Lymphatic drainage :</b> Iliac LNs</p> <p><b>Applied anatomy :</b></p> <ul style="list-style-type: none"> <li>- Injury at <ul style="list-style-type: none"> <li>-Clamping infundibulopelvic ligament</li> <li>-Clamping Uterine artery 1 cm lateral to Cx</li> <li>-Clamping Vaginal angles</li> </ul> </li> <li>- Avascular necrosis in meticulous dissection → uretro vaginal fistula , symptoms manifest few days post – operatively</li> </ul>	<div data-bbox="869 129 1279 456" data-label="Image"> </div> <ol style="list-style-type: none"> <li>1) Peritoneum of DP with extra peritoneal fat &amp; cellular tissue</li> <li>2) Levator ani ms ( deep perineal ms ) , ( urogenital diaphragm ) with : <ul style="list-style-type: none"> <li>- ischiococcygeus</li> <li>- ileococcygeus</li> <li>- pubococcygeus <ul style="list-style-type: none"> <li>( part mostly affected in child birth )</li> <li>→ pubourethralis</li> <li>→ pubovaginalis</li> <li>→ Puborectalis</li> </ul> </li> </ul> </li> <li>3) Perineal ms ( superficial ) ( ischiocavernosus , bulbocavernosus &amp; transverse perineii ms ) Fat &amp; skin of vulva</li> </ol> <p><b>* The midline is pierced by urethra , vagina &amp; anal canal</b></p>	<p>Area of 5 cm between vaginal orifice &amp; anus covered by less hairy skin &amp; less SC tissue</p> <p><b>Perineal body :</b> - a triangular structure between posterior vaginal wall ( lower <math>\frac{1}{3}</math> ) &amp; anterior wall of anal canal</p> <div data-bbox="1563 435 2123 722" data-label="Image"> </div> <ul style="list-style-type: none"> <li>- It is the point of insertion of superficial perineal ms &amp; above it passes the levator ani muscle</li> </ul>

## Uterine & cervical ligaments

Support ( to prevent prolapse )	Protect important structures
<p><b>1) Lateral cervical = Mackenrodt's ligament = Cardinal ligament</b> From uterus to lateral pelvic wall</p> <p><b>2) Uterosacral ( posterior ) :</b> From uterus &amp; Cx to periosteum of sacrum</p> <p><b>3) Pubocervical ( anterior ) :</b> From Cx to back of SP</p>	<p><b>1) Broad ligament:</b> ( lateral from uterus to lateral pelvic wall ) Contents :</p> <ul style="list-style-type: none"> <li>- Fallopian tube</li> <li>- Ovarian &amp; uterine vessels</li> <li>- Parametrial lymphatics &amp; LNs</li> <li>- S &amp; PS nerves</li> <li>- Ureter</li> <li>- Remnants of Wolffian duct: <ul style="list-style-type: none"> <li>→ Hydatid cyst of Morgagni at fimbrial end of FT</li> <li>→ Epoophoron</li> <li>→ Paroophoron</li> <li>→ Gartner duct : lateral to tube &amp; downward to anterolateral wall of vagina</li> <li>→ Paraovarian cyst : in case of cystic dilatation of remnants of Wolffian duct</li> </ul> </li> </ul> <p><b>2) Round ligament :</b> Gubernaculum that attaches cornual end of uterus to labia majora passing through inguinal canal , it protects Sampson artery</p> <p><b>3) Ovarian ligament:</b> Protects ovarian vessels</p> <p><b><u>NB :</u></b> Infundibulopelvic ligament is not attached to uterus or Cx , it is between ovary &amp; lateral pelvic wall &amp; protect ovarian vessels</p>

# Sexual differentiation

## Timing:

At moment of fertilization , whether the ovum is fertilized by X or Y sperm

**Y chromosome carries** → TDF : For Testicular differentiation ( through H-Y Ag )  
 → MDIF : which inhibits Mullerian duct

## ♂ Male phenotype development needs :

- 1) Y chromosome : → for testicular differentiation , hormone formation & spermatogenesis  
 → Mullerian duct inhibition
- 2) Responsive endorgans ( Receptors )

## ♀ Female phenotype development needs :

Absence of Y chromosome ( not presence of extra X chromosome )

**Proof :** Turner XO has female phenotype

## Normal Female Sexual Differentiation

Internal organs	External genitalia
<p><b>1) Genital ridge ( abdominal origin ):</b> give rise to Ovaries</p> <p><b>2) Wolffian duct undergoes atrophy</b></p> <p><b>3) Mullerian duct develops to give rise to :</b></p> <ul style="list-style-type: none"> <li>→ Fallopian tubes</li> <li>→ Uterus</li> <li>→ Cx</li> <li>→ Upper vagina</li> </ul> <p><b>4) Fusion of 2 Mullerian ducts ( paramesonephric ducts ) occur <u>from below upwards</u> followed by canalization :</b> resulting in single vagina , single Cx , single uterus but 2 Fallopian tubes</p>	<p><b>Urogenital sinus (sinovaginal bulb):</b> gives rise to lower vagina &amp; vulva</p> <ul style="list-style-type: none"> <li>- <b>Genital swellings :</b> Labia majora ( eq to scrotum in ♂ )</li> <li>- <b>Genital folds :</b> Labia minora ( eq to penile urethra in ♂ )</li> <li>- <b>Genital Tubercle :</b> Clitoris ( eq to penis in ♂ )</li> </ul>



# Abnormalities in female sexual development





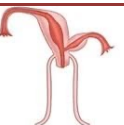



## \* Ovaries :

Aplasia / streak gonads (as Turner Syndrome) : → 1<sup>st</sup> amenorrhea with absent 2<sup>nd</sup> sexual characters ( NO hormone production )

## \* Fallopian Tubes :

Aplasia / accessory ostia / diverticulum : → Ectopic pregnancy

## \* Uterus :

	Aplasia ( MRKH Syndrome ) :	1 <sup>st</sup> amenorrhea & presence of 2 <sup>nd</sup> sexual characters
	Unicornuate ut ( only 1 Mullerian duct developed ) :	PTL
	Bicornuate ut ( Failure of fusion of 2 Mullerian ducts ) :	PTL
	Septate ut ( failure of complete canalization of the 2 fused Mullerian ducts ) :	Failure of implantation * infertility , RPL , missed abortion
	Communicating functioning rudimentary horn :	Ectopic pregnancy
	Non-communicating functioning rudimentary horn :	Hematometra / Endometriosis
	Uterus didelphys ( failure of fusion of the 2 Mullerian ducts ) : 2 uteri , 2 cervices , 2 vaginae	Dyspareunia from longitudinal vaginal septum / PTL from small sized ut
	Arcuate ut ( depressed fundus ) :	Of no clinical significance

## \* Cervix :

Atresia ( failure of canalization ) : → cryptomenorrhea ( hematometra , hematosalpinx , endometriosis ) & sometimes TAH is the only possible ttt .

## \* Vagina :

- Longitudinal vag septum ( failure of fusion of 2 Mullerian ducts ) :  
Dyspareunia

- Transverse vag septum ( failure of fusion & canalization of urogenital sinus below with Mullerian ducts above ) :  
Cryptomenorrhea ( ttt : excision of septum )

- Aplasia as in MRKH Syndrome ( failure of development of Mullerian ducts )  
\* only lower part of vagina develops : Dyspareunia ( ttt Mc Indoe operation & neovagina formation )

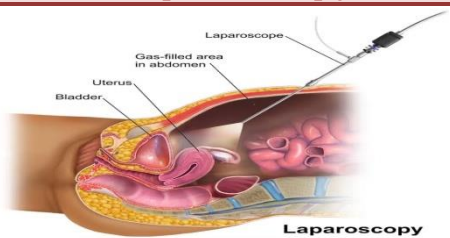
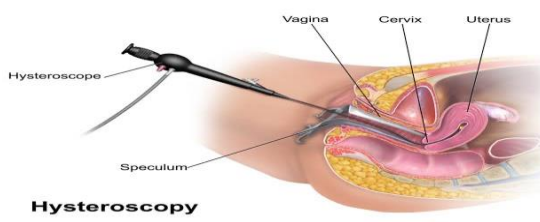
## \* Vulva :

Imperforate Hymen: Cryptomenorrhea ( ttt : Hymenotomy through cruciate incision )

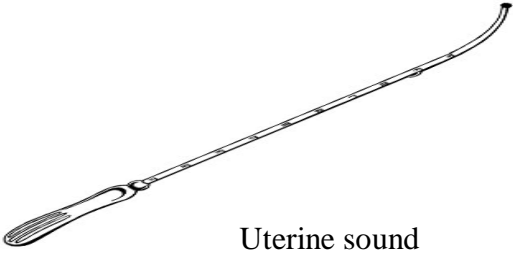

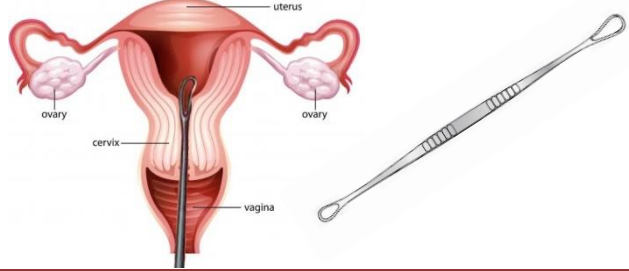
## NB:

Usually anomalies in Mullerian ducts ( Paramesonephric ducts ) are associated with anomalies of mesonephric ducts responsible for development of Kidneys , ureters & UB ( ie urinary system ) :  
\* Recommended to do IVP in case of any Mullerian anomalies

# Endoscopy in Gynecology

	Laparoscopy	Hysteroscopy
	 <p>Laparoscopy</p>	 <p>Hysteroscopy</p>
Def	Introduction of an optic lens through <u>umbilicus</u> to visualize peritoneal cavity & pelvic organs	Introduction of an optic lens through <u>cervix</u> to visualize the uterine cavity
Indications	<ul style="list-style-type: none"> <li>* Diagnostic : <ul style="list-style-type: none"> <li>→ Unexplained infertility</li> <li>→ Ch. Pelvic pain / Endometriosis</li> <li>→ Cong anomalies of uterus</li> </ul> </li> <li>* Operative : <ul style="list-style-type: none"> <li>→ Ovarian ( cystectomy / oophorectomy )</li> <li>→ Tubal ( ectopic / ligation / disconnection )</li> <li>→ Uterus ( myomectomy / hysterectomy )</li> <li>→ Endometriosis : ablation of foci</li> <li>→ Adhesiolysis</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>* Diagnostic: <ul style="list-style-type: none"> <li>→ Infertility</li> <li>→ RPL / Ut septum</li> <li>→ AUB / Polyp</li> </ul> </li> <li>* Operative : <ul style="list-style-type: none"> <li>→ Polypectomy</li> <li>→ Septum resection</li> <li>→ Myomectomy ( submucous )</li> <li>→ Division of of IU synechia</li> <li>→ Tubal occlusion</li> </ul> </li> </ul>
Technique	<ul style="list-style-type: none"> <li>- GA</li> <li>- Trendlenberg position ( head down )</li> <li>- Veress needle at umbilicus &amp; inflate 3-5 liters CO<sub>2</sub> é pressure 15 mmHg</li> <li>- Introduce lens , light source , camera &amp; manipulator</li> <li>- MB dye may be injected through Cx to visualize patency of FT</li> <li>- Irrigation , evacuation at the end of procedure</li> </ul>	<ul style="list-style-type: none"> <li>- NO anesthesia ( in office procedure ) , Local or GA in operative procedures</li> <li>- Dorsal lithotomy position</li> <li>- Dilatation of Cx in operative procedures</li> <li>- Uterine distension by CO<sub>2</sub> , glycine ( is a must in op procedures)</li> <li>- Lens , light source , camera are introduced</li> <li>- Removal of instruments at the end of procedure</li> </ul>
Comp.	<ul style="list-style-type: none"> <li>- Anesthesia complications / Cutaneous surgical emphysema</li> <li>- Electrosurgical complications to bowel , uterus , nerves</li> <li>- Injury to vessel , intestine , bladder / Infection</li> <li>- Neurological injury in poor patient positioning</li> </ul>	<ul style="list-style-type: none"> <li>- Anesthesia complications ( whenever used )</li> <li>- Uterine perforation</li> <li>- Bleeding from myometrial / vascular trauma</li> <li>- Electrolyte imbalance &amp; fluid overload in case of Glycine</li> </ul>
Adv.	<ul style="list-style-type: none"> <li>- Less hospital stay , early return to work</li> <li>- Minimal adhesions</li> <li>- Early recovery , less GIT complications ( ileus , gastric dilatation )</li> <li>- Better cosmetic</li> <li>- Rare wound complications ( dehiscence &amp; infection )</li> </ul>	<ul style="list-style-type: none"> <li>- Can be done without anesthesia as an office procedure ( no dilatation for diagnosis)</li> <li>- Proper visualization of uterine cavity</li> </ul>

# Operative Gynecology

	Sounding	Dilatation	Curettage
	NO ANESTHESIA	ANESTHESIA NEEDED	
	 <p>Uterine sound</p>		
Uses	<ol style="list-style-type: none"> <li>1) Measure <u>length</u> of uterine cavity in IUD insertion , before D&amp;C</li> <li>2) Diagnose <u>direction</u> of Ut (AVF or RVF)</li> <li>3) Diagnose supravaginal elongation of the Cx in prolapse</li> <li>4) Diagnose ut hypoplasia Cx : body , (N) → 1 : 2</li> <li>5) Diagnose Cx stenosis</li> <li>6) ttt of pyometra ( as mere sounding → drainage )</li> </ol>	<p><i>* Dilatation alone in :</i></p> <ul style="list-style-type: none"> <li>- Spasmodic dysmenorrhea</li> <li>- Cx stenosis</li> <li>- Drainage of pyometra , hematometra</li> </ul> <p><i>* Dilatation preliminary to other operation:</i></p> <ul style="list-style-type: none"> <li>- Op on Cx as Fothergill</li> <li>- Op on Ut as curettage , polypectomy</li> </ul>	<p><i>* Diagnostic :</i></p> <ul style="list-style-type: none"> <li>- PEB to detect ovulation</li> <li>- In AUB &amp; DUB to detect endometrial pattern &amp; type</li> <li>- Diagnose malignancy of Ut &amp; Cx</li> <li>- Diagnose diseases of Endometrium as TB endometritis</li> </ul> <p><i>* Therapeutic :</i></p> <ul style="list-style-type: none"> <li>- Postabortive</li> <li>- Endometrial , Cx polypi</li> <li>- DUB</li> </ul>
Comp.	<ul style="list-style-type: none"> <li>- Perforation</li> <li>- Infection</li> <li>- Bleeding</li> <li>- Abortion in case of pregnancy</li> </ul>	<ul style="list-style-type: none"> <li>- Anesthesia complications</li> <li>- Ut perforation</li> <li>- Cx laceration → incompetent isthmus</li> <li>- Infection</li> <li>- Shock in case of inadequate anesthesia</li> </ul>	<ul style="list-style-type: none"> <li>- Anesthesia complications</li> <li>- Dilatation complications</li> <li>- Asherman Syndrome</li> </ul>



**NB:** In case of uterine perforation :

- Stop procedure
- Give antibiotics
- Observe vital signs
  - If normal : Discharge the patient
  - If deteriorates or intestinal contents appear through Cx : Exploratory laparotomy

# OBSTETRICS

Pain ,

**BLEEDING** 

# Abortion

Def : bleeding &lt; 24weeks ( age of viability )

Inc: 15%

	منذر <b>Threatened</b>	مركون <b>Missed</b>	حتمي <b>Inevitable</b>	غير مكتمل <b>Incomplete</b>	مكتمل <b>Complete</b>	<b>Septic</b>	
<b>fetus</b>	Living	dead	Living or dead	Remnants only	—	dead on top of any type except threatened	
<b>symptoms</b>	bleeding	Mild	NO or Brownish discharge	+++++	+++	NO or mild	± & foul smelling discharge
	pain	NO or mild	NO	+++	++	NO	± (depends on original type)
<b>signs</b>	General	—	—	± SHOCK	± SHOCK	—	Fever ± septicemia
	abd	= to period of amenorrhea	Less than period of amenorrhea	= to period of amenorrhea	Less than period of amenorrhea	⊖ sized uterus or slightly enlarged	Tender uterus
	Cx	Closed	closed	open	open	closed	depends on original type
<b>inv</b>	US	To confirm the heart pulsations , Cx & products intrauterine					
	βHCG	⊖ level	↓↓	±	↓	-ve after 1wk	↓↓
<b>ttt</b>	* Bed rest * PRG (LPD)	* ttt of DIC if present ↓ Medical (PGs) If >12wks bones present	Evacuation ↓ Surgical (curette) if < 12wks no bones	* ttt of shock if present * Evacuation surgical	± prophylactic antibiotic  No need for evacuation	* Broad spectrum antibiotics * Improve general condition * Ecboolics * Evacuation as before	
	anti-D in Rh -ve mothers						

## RPL

≥ 3 successive spontaneous

Def

- \* anatomical uterine defect
- \* thrombophilia
- \* APS
- \* endocrine
- \* genetic
- \* incompetent os (2<sup>nd</sup> trimester)

Etiology

\*HSG

\*Hysteroscopy

\*US

\*Laboratory

→ LA

→ Anticardiolipin

→ Endocrinal

Investigations

\* ttt of cause

\* curclage for

incompetent os

→ Vaginal

→ Mc Donald

→ Shirodkar

→ Abdominal

ttt

Bleeding , **PAIN** 🤢

# Ectopic pregnancy

( Tubal ectopic in > 95% of cases )

**Def:** Pregnancy outside the normal uterine cavity.

**Inc:** 1.5%

**Et (risk factors):**

- Inflammation ( PID )
- Adhesions ( surgery or endometriosis )
- Contraception ( POP / IUD / both = Mirena )

### Pathology:

→ Tubes: abortion ( mole ) / rupture ± IPHge  
→ Uterus: decidual reaction without villi (Arias stella reaction)

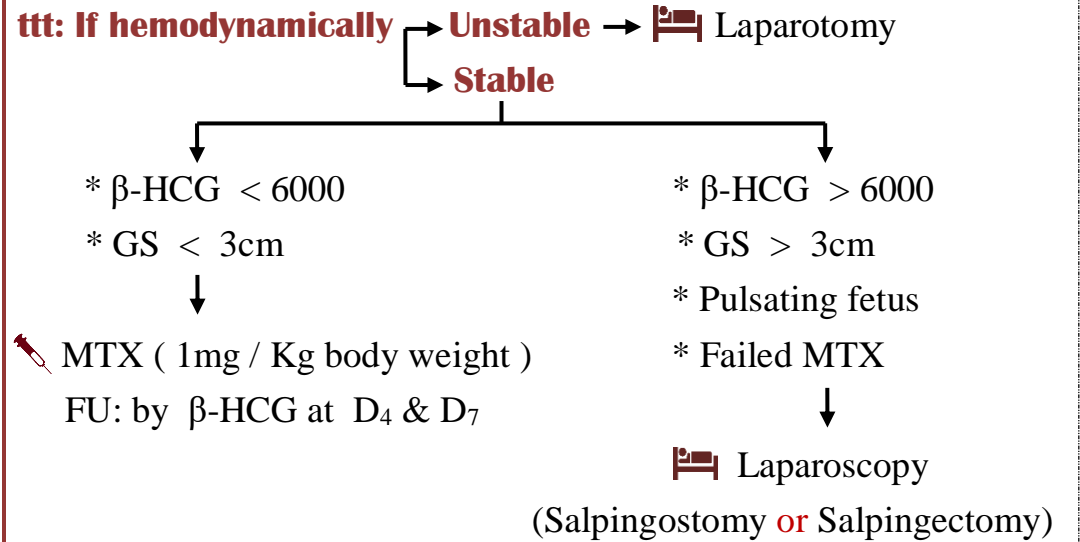
### Clinical picture:

Depends on whether pregnancy is disturbed ( ruptured é IPHge) or not.

→ Symp: → **PAIN** ( stabbing , dull aching , may be SYNCOPE )  
→ bleeding  
→ Signs: → General : BP / pulse ± signs of SHOCK  
→ Abd: surgical abdomen in case of IPHge  
→ PV: fullness / tenderness & rebound / Jumping sign  
→ Complications : Leading cause of maternal mortality in 1<sup>st</sup> Δ

### Inv:

→ β-HCG : Rising but NOT doubling ie ( ↑ by < 75% in 48hrs )  
→ US: → Empty uterus at discrimination zone → TVS : 1500 mIU  
→ At these levels IU GS should be seen , → TAS : 6500 mIU  
→ if empty ut ∴ ectopic pregnancy  
→ Fullness at adnexa ( ± GS / ± Fetal pulsations )  
→ Fluid in DP  
→ Laparoscopy: ( Gold standard in diagnosis)



**NB:** → Resuscitation in case of SHOCK  
→ Anti -D should be given in Rh -ve unsensitized patients

**NB:** → Ovarian ectopic  
→ Pregnancy of unknown location(PUL)  
→ Cervical ectopic  
→ Pregnancy on CS scar  
→ Abdominal ectopic (extremely rare )

Medical ttt ( MTX )  
Whenever possible ,  
If not:  
∴ Surgical removal  
( Oophorectomy or Hysterectomy)

• may reach late 2<sup>nd</sup> trimester  
• ttt: Laparotomy (NOT CS) & removal of fetus ,  
If placenta is attached to important structure: cut cord short & leave placenta to undergo autolysis  
( uncovered by MTX & broad spectrum antibiotics)

# GTDs ( Abnormal proliferation of villi ) Inc: 0.15%

## With villi

## Without villi ( metastatic )

GTN

### V.Mole ( benign )

### Invasive Mole ( non-metastatic )

### Chorio Ca. The tumour marker is ( HCG )

### Placental site tumour The tumour marker is ( HPL )

### Epithelioid tumour

**Et ( risk factors):** Age , Race , Diet , H/O of v.mole

**Pathology:**

- **uterus**
  - complete mole ( paternal ) 46XX or 46XY
  - partial mole 69XXX or 69XXY or 69XYY
- **ovaries:** theca lutein cysts

**Clinical picture:**

- Symptoms:
  - bleeding / prune juice discharge / passage of vesicles
  - symp of ↑ β-HCG (hyperemesis/PIH /thyrotoxicosis)
- Signs:
  - general :anemia / ↑BP / dehydration / thyrotoxicosis
  - abd : **Ut > period of amenorrhea** / **soft & Doughy**
  - PV: bleeding / vesicles/ ovaries felt enlarged in DP

- Complications: may turn to
- Invasive mole 20% } \* need FU for
  - Choriocarcinoma 5% } 1 year after ttt
- If
- Age > 40 years
  - Pre ttt β-HCG > 100.000
  - Theca lutein > 6 cm

- Inv:**
- β- HCG : very high
  - US: snow storm appearance
  - Inv. to detect metastasis ( CXR / MRI / CT brain / US abdomen)

- Ttt:**
- Suction Evacuation ( with ecbolics )
  - Hysterectomy ( in old age , not desiring fertility)

- NB:**
- FU & contraception ( OCPs ) for 1 year after negative β-HCG
  - MTX only if β-HCG is plateau or rising

Low risk	High risk
* < 4 months from preg. event * β-HCG < 40.000 * No H/O of chemotherapy * No liver or brain metastasis * Good prognosis ttt: Single agent chemotherapy ( MTX )	* > 4 months from preg. event * β-HCG > 40.000 * H/O of chemotherapy * Liver or brain metastasis * Bad prognosis ttt: Combined chemotherapy ( EMA – CO )

**Pathology :**

- Gross: friable ut. cavitory mass é areas of hge & necrosis
- Mic: undifferentiated cells with absence of villi
- Grading :
  - G1: < 5% malignant undiff.cells
  - G2: 5-50% malignant undiff.cells
  - G3: > 50% malignant undiff.cells
- Spread:
  - Direct : vagina
  - Lymphatic : very rare
  - **Blood** : Lung B L B

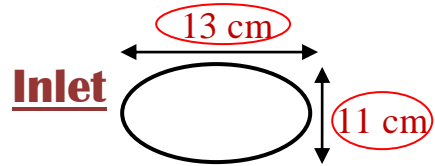
**cl.pict**

- Symptoms : vaginal bleeding
- Signs
  - General : of metastasis
  - Abdominal : enlarged soft uterus
  - PV & bimanual : enlarged ut / adnexal mass
- FIGO staging
  - Stage I : Uterus
  - Stage II : (Uterus) + Ovaries ± Vagina
  - Stage III : (Uterus + Ovaries ± Vagina) + Lungs
  - Stage IV : + distant metastasis : Liver / Brain

**Inv:** ( to detect whether low or high risk , so plan ttt )  
Chest X-ray / MRI / US abdomen / CT brain

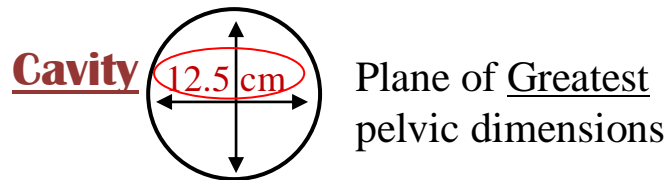
- Ttt:**
- Chemotherapy:
    - single agent chemotherapy ( in low risk)
    - combined chemotherapy ( in high risk)
  - Hysterectomy if:
    - old age ( no desire for fertility)
    - chemoresistant ( placental site & Epithelioid)

## Anatomy of ♀ Pelvis



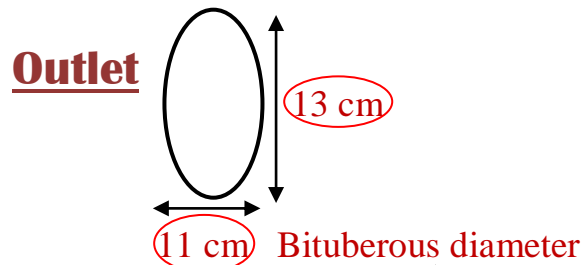
**Inlet**

Diagonal conjugate: 12.5 cm on PV exam.  
Rt oblique > Lt oblique (sigmoid colon)



**Cavity** Plane of Greatest pelvic dimensions

Obstetric outlet = Plane of Least pelvic dimensions (Bispinous 10 cm)



**Outlet**

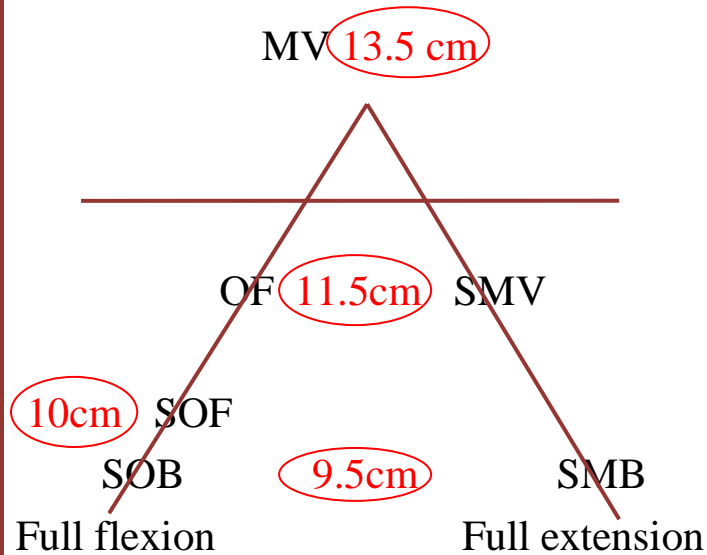
**NB:** → Obstetric Axis  
→ Plane of Ischial spines :

- 1) levator ani
- 2) External os of Cx
- 3) station 0 (when vault at it)
- 4) pudendal n. block
- 5) change of obstetric axis
- 6) forceps application at or below this level

## Anatomy of Fetal skull

### Engaging diameters

#### A / P engaging diameters:



#### Transverse engaging diameters:

- BPD ( largest ) = 9.5 cm
- BTD = 8 cm
- BMD = 7.5 cm
- Supra parietal / Sub parietal = 9 cm

## Terminologies

**Engagement:** passage of widest transverse diameter of the presenting part through plane of pelvic inlet.

**Lie:** in relation to mother.

**Attitude:** fetal parts

**Presentation:** 1<sup>st</sup> felt on PV

- **Cephalic 96%**
  - Vertex 95% → occiput
  - Face 0.5% → chin (mentum)
  - Brow 0.1% → no engagement
- **Breech 3.5%** → sacrum
- **Shoulder 0.5%** → scapula

**Denominator :** -----

Bony landmark of the presenting part

**Asynclitism (tilt) :**

(eg : ant asynclitism = post parietal bone presentation , when sagittal suture is toward ant.)

**Position:**

Rt & Lt: in relation to mother

Ant & Post: in relation to denominator

**Station:**

0 when vault at level of ischial spine



Def :

**( theories )**

↑ PGs / ↑ fetal cortisol / ↑ uterine distension  
 ↓ PRG / ↓ pl. oxytocinase

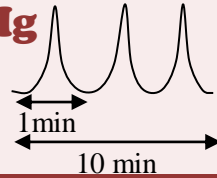
# Mechanism of Normal Labor

**Uterine contractions = True labor pains**

## 1<sup>st</sup> stage

**(cervical dilatation) 40-60 mmHg**

- PG 12-18 hrs
- MG 6-12 hrs



## 2<sup>nd</sup> stage

**(fetal delivery) 80mmHg**

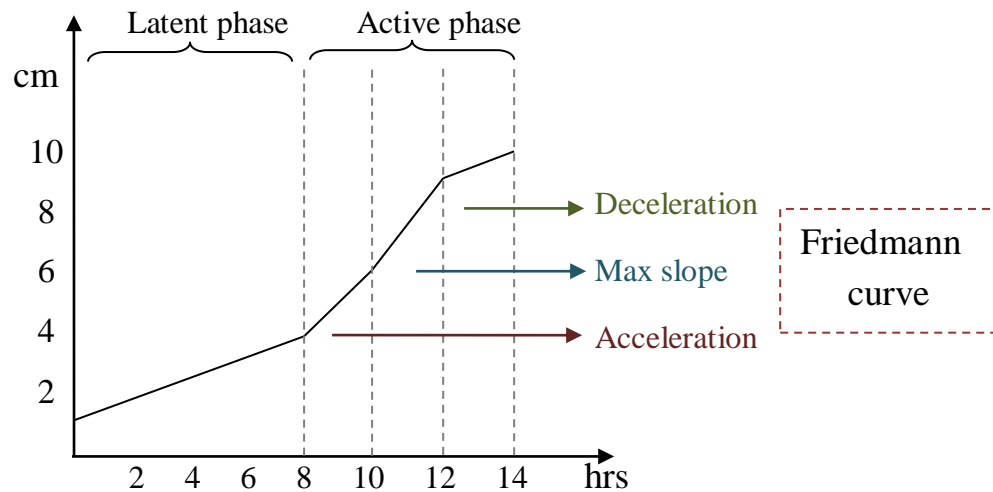
- PG 1-2 hrs
- MG 0.5-1 hr

LOA

## 3<sup>rd</sup> stage

**(Placental delivery)**

- < 30 mins



Cx dilatation { 1 cm / hr in PG  
 1.5cm /hr in MG } **Provided** that contractions are efficient  
 ( ie: 3 contractions /10 mins, each lasting 1 min )  
 é intensity of 40-60 mmHg )

**DD:**

false labor pains  
 (Braxton – Hicks  
 contractions)

True	False
* Regular * Rhythmic * ↑ frequency * ↑ strength * ↑ duration * Not relieved by analgesics or sleeping	* Braxton - Hicks

❖ **Descent**  
 ❖ **Engagement** } ( Can be In pregnancy )

❖ **↑ Flexion**  
 ( When head reaches pelvic floor )

❖ **Internal rotation**  
 ( As head now is a ball )  
 ( SOB 9.5 cm × BPD 9.5cm )

❖ **Extension** (1<sup>st</sup> step to be seen)  
 ( Delivery of head in OA )

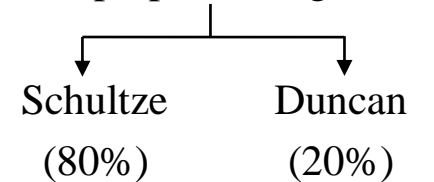
❖ **Restitution**  
 ( Correction of internal rotation )

❖ **External rotation**  
 ( Reflection of shoulder rotation internally )

❖ **Expulsion**  
 ( Of whole fetal body )

**Signs of separation:**

- 1) gush of blood
- 2) elongation of cord
- 3) suprapubic bulge



# Management of Normal Labor

<b>1<sup>st</sup> stage (cervical dilatation)</b> Admission in active phase ie > 4 cm , unless otherwise indicated	<b>2<sup>nd</sup> stage (fetal delivery)</b>	<b>3<sup>rd</sup> stage (Placental delivery)</b>
<p><b>Upon admission</b></p> <p>H/O obst <b>F P A L</b></p> <p>→ GPL</p> <p>→ LMP EDD (Naegele's F)</p> <p><b>Examination:</b></p> <p>→ Gen : BP / T / pulse</p> <p>→ Abd : Leopold M.</p> <ul style="list-style-type: none"> <li>→ FL</li> <li>→ FG</li> <li>→ UG</li> <li>→ 1<sup>st</sup> Pelvic</li> <li>or → 2<sup>nd</sup> Pelvic</li> </ul> <p>→ PV:</p> <ul style="list-style-type: none"> <li>→ Presentation / position</li> <li>→ Cx dilatation / effacement</li> <li>→ Station / ROM</li> </ul> <p>Inv → Fetal : FHS</p> <p>→ Maternal: Rh</p> <p>→ Maternal &amp; fetal : US</p> <p style="text-align: center;"><b>1) Observation:</b></p> <p style="text-align: center;">Maternal                      Fetal (FHS)</p> <div style="border: 1px dashed red; padding: 5px; margin: 10px 0;"> <p><b>1) contractions</b></p> <ul style="list-style-type: none"> <li>→ if efficient → observe</li> <li>→ if not efficient → augmentation                             <ul style="list-style-type: none"> <li>→ ROM</li> <li>→ Oxytocin</li> </ul> </li> </ul> <p><b>2) PV</b></p> <ul style="list-style-type: none"> <li>→ Presentation / position</li> <li>→ Cx dilatation / effacement</li> <li>→ Station / ROM</li> </ul> <p><b>3) BP</b></p> </div> <p style="text-align: center;"><b>2) Nutrition ( fluids )</b></p> <p style="text-align: center;"><b>3) Analgesics</b></p> <p style="text-align: center;"><b>4) Enema</b></p> <p style="text-align: center;"><b>± 5) CTG (only in high risk cases)</b></p> <p style="text-align: center; color: red; font-weight: bold; font-size: 2em;">PARTOGRAM</p>	<ul style="list-style-type: none"> <li>• Transfer to delivery room.</li> <li>• Lithotomy.</li> <li>• Drapping.</li> <li>• Evacuate UB.</li> <li>• Ask patient to bear down during contractions &amp; relax inbetween</li> <li>• Ritgen Manoeuver , Upon crowning = allow gradual extension of fetal head</li> <li style="padding-left: 20px;">* <b>SOF : 10 cm</b></li> </ul> <p><u>If head is allowed to extend ×before crowning×:</u></p> <ul style="list-style-type: none"> <li>• * distending diameter</li> <li style="padding-left: 20px;"><b>OF : 11.5cm</b></li> <li>• * Perineal tears</li> <li>• ± Episiotomy (only if indicated)</li> </ul>	<p><b>Active management:</b></p> <p>( to ↓↓ PPHge )</p> <p>ie : give ecbolics (methergine /oxytocin...)</p> <p>&amp; wait for signs of separation of placenta:</p> <ol style="list-style-type: none"> <li>1) gush of blood</li> <li>2) elongation of cord</li> <li>3) suprapubic bulge</li> </ol> <p style="text-align: center; color: red; font-weight: bold; font-size: 2em;">↓ DO</p> <div style="border: 1px dashed red; padding: 5px; margin: 10px 0;"> <p>Push fundus upward &amp; controlled cord traction</p> <p style="text-align: center;">( <u>Brandt - Andrew</u> )</p> </div> <p><b>Then Explore:</b></p> <ul style="list-style-type: none"> <li>→ Placenta &amp; memb. to make sure they are complete.</li> <li>→ Genital tract for tears</li> </ul> <p style="text-align: center; color: red; font-weight: bold; font-size: 2em;"><b>4<sup>th</sup> stage</b></p> <p>1<sup>st</sup> 2 hrs after delivery , <math>\bar{w}</math> are more liable to PPHge</p>

# Occipito – posterior Malposition

**Definition :** It's a longitudinal lie , cephalic presentation in which the fetal head is deflexed.  
(it's a malposition & not a malpresentation)

**Incidence:** 20% !!!

**Etiology:** → Maternal Android pelvis  
→ Fetal

**Position:** ROP (most common ) occupying wider ROD

**Mechanism :** → 90% long anterior rotation → deliver as OA by **Extension** \*If factors that favor long ant rotation are present  
→ 6% short posterior rotation (face to pubis) → deliver by **Flexion**  
→ 4% deep transverse arrest or persistent oblique OP → **Obstructed** labor

**Diagnosis:** → **During pregnancy** → Leopold  
→ FL → same  
→ FG → buttocks  
→ UG → back Rt  
→ 1<sup>st</sup> PG → done ( delayed engagement )  
→ 2<sup>nd</sup> PG → not done  
→ Auscultation → FHS (below umbilicus)  
→ US  
→ **During labor** → + PV

**Management :** \*Assess factors that favor long anterior rotation-

→ **If present** → 90% delivery as LOA → Extension  
→ 6% Face to pubis ( distending diameter OF 11.5cm) → DO Episiotomy → Flexion  
→ **If absent** → 4% → Instrumental for rotation & extraction (eg: Kielland forceps or Ventouse )  
→ or CS (safer)

Roomy pelvis (no CPD)  
Good uterine contractions  
Strong pelvic floor muscles  
Average liquor

**Complications:** → **Maternal** → Prolonged labor  
→ PROM  
→ PPH  
→ Puerperal sepsis  
→ **Fetal** → Birth injuries - fetal distress

## Face presentation

**Def :** head extended

**Incidence:** 1/500

**Etiology:** → Maternal  
→ Fetal

Anencephaly

**Position:** LMA ( most common as it results from extension of ROP )

**Mechanism :**

→ MA → **Flexion** in 100% of cases

→ MP → 2/3 if factors that favor long ant rotation present → as MA → **Flexion**  
→ 1/3 if absent → no or posterior rotation → Direct MP → **Obstructed**

**Diagnosis:** → During pregnancy → Leopold  
→ FHS  
→ US  
→ During labor → Leopold  
→ FHS  
→ US  
→ **PV** ( Tumefaction )

**Management :**

→ MA → 1<sup>st</sup> stage: prolonged due to delayed engagement

→ 2<sup>nd</sup> stage: **Episiotomy** as distending diameter is SMV 11.5cm → **Flexion**

→ MP → Assess factors that favor long anterior rotation

→ 2/3 ( factors are present ) → deliver as MA → **Flexion**

→ 1/3 (absent) → Instrumental Forceps ×× Never Ventouse ××  
→ Safer CS

**Complications:** → Maternal → Prolonged labor

→ PROM

→ PPH

→ Puerperal sepsis

→ Fetal → Asphyxia - Birth injuries

## Brow presentation

**Def:** head is midway between flexion & extension.

**Incidence:** 1/2000

**Etiology:** → Maternal  
→ Fetal

**Mechanism:** persistent Brow

MV=13.5cm

↓  
No mechanism 100% obstructed labor

**Diagnosis:** As Face

**Management :**

in persistent brow : CS in 100% of cases

# Breech presentation

**Def :** longitudinal lie in which buttocks with feet (complete) / without feet ( frank) / footling / knee are the presenting part.

**Incidence:** 3.5%

**Etiology:** → Maternal  
→ Fetal

**Position:** LSA

Prematurity

( 25% of cases at 28wks present by breech ) ,

Hydrocephalus

( in full term )

**Mechanism :**

for → Buttocks ( Descent / Eng / Int rotation / ant buttock hinge below SP, post buttock deliver 1<sup>st</sup> by **Lat Flexion of spine** )  
→ Shoulders ( same as buttocks )  
→ After coming head (Descent / Eng / Int rotation(opposite direction as it enters pelvis in opposite axis) / delivery by **Flexion**)

**Diagnosis :** → During pregnancy → Leopold maneuver ( FL / FG / UG / PG )  
→ FHS ( above umbilicus )  
→ US  
→ During labor + PV

**Management:**

→ During pregnancy: ECV (60% success ) , at 36 wks if not CI

Side effects:

- 1) ROM / cord prolapse
- 2) Pl. separation
- 3) Loops of cord around fetal neck
- 4) Fetal distress
- 5) ++ labor

→ During labor : → CS in 80% ( due to unpredictable hazards)  
Indications of CS: 1) Extended neck / 2) Twins 1<sup>st</sup> breech  
3) < 2 kg , > 3.5 kg / 4) breech presentation other than complete or frank / 5) other indications for CS  
→ VD: spontaneous delivery of buttocks & shoulders , BUT Assisted delivery of head

Burns-Marshall

( Leave baby hanging by its weight)

Mauriceau-Smellie-Veit ± Kristiller's manoeuvre

(Jaw flexion shoulder traction) ( supra pubic pressure on head by assistant )

Piper's forceps

• Breech extraction ONLY done in : fetal distress é fully dilated Cx / 2<sup>nd</sup> twin if breech

**Complications:** → Maternal → 4 Ps

→ Fetal → Retained after coming head  
→ Post. rotation of the head →do→ Prague manoeuvre  
→ Extension of arm →do→ Lövset manoeuvre  
→ Fetal birth injuries ( nerves / bones / viscera) and fetal distress

# Shoulder presentation

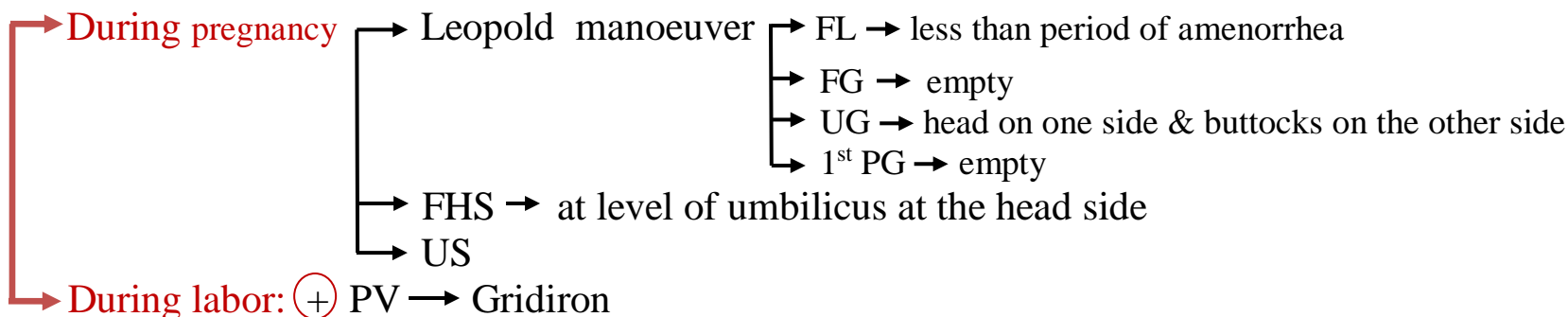
**Def :** Transverse Lie

**Incidence:** 0.5%

**Etiology:**  Maternal → Pendulous abdomen in multipara  
Fetal

**Position:**  LDA  
RDA

**Mechanism :** NO mechanism (Obstructed labor)

**Diagnosis :**   
During pregnancy → Leopold manoeuvre → FL → less than period of amenorrhea  
FG → empty  
UG → head on one side & buttocks on the other side  
1<sup>st</sup> PG → empty  
FHS → at level of umbilicus at the head side  
US  
During labor: (+) PV → Gridiron

**Management:**   
During pregnancy: ECV till 1<sup>st</sup> stage of labor  
During labor: (CS)

**NB:** IPV and breech extraction is ONLY done for 2<sup>nd</sup> twin ( if transverse )

**Complications:**   
Maternal → 4 Ps  
Fetal + neglected shoulder

Intact membranes ← **Cord presentation & Cord prolapsed** → Ruptured membranes  
CS in pulsating cord  obstetric emergency

## Complex presentation

Arm near head : → reposit the arm & proceed according to head position

## Unstable Lie

Fetus continuously changes its position & / or presentation after 34 weeks GA

# Multi fetal gestation (Twins in 97% of cases , Triplets in 1-2% )

**Definition:** Simultaneous presence of 2 or more fetuses in the uterus

**Etiology :** DZT ( due to ↑↑ use of induction of ovulation drugs) > MZT ( cleavage after fertilization of one ovum by one sperm)

- cleavage in MZT
- If < 3 days → Dichorionic Diamniotic 30%
  - If 4-8 days ( chorion formed) → Monochorionic Diamniotic 65%
  - If 9-12 days ( ch & amnion formed) → Monoch. Monoam. 5% **MOST SERIOUS**
  - If > 12 days ( parts formed) → Conjoined *Organs start to Form.*



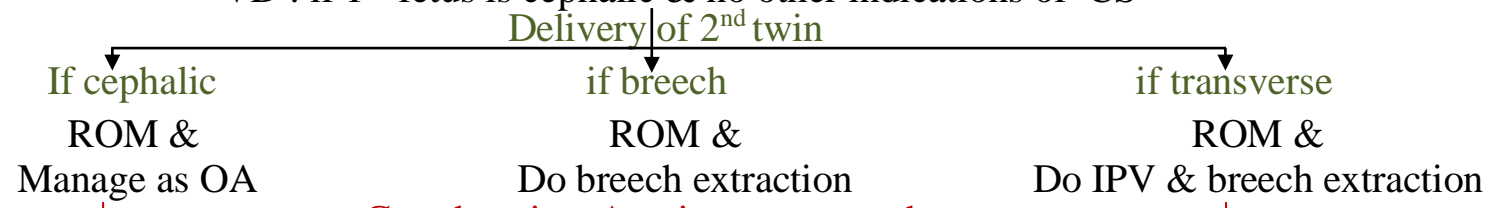
**Mechanism :** Depends on the presentation of 1<sup>st</sup> & 2<sup>nd</sup> fetuses

- Diagnosis :**
- **During pregnancy :**
    - FL : > period of amenorrhea
    - FG / 1<sup>st</sup> PG : fetal poles are small in relation to size of abdomen
    - UG : many poles are felt in addition to many limbs
    - FSH : 2 sounds of max. intensity are felt at different sites ( Galloping sign )

→ **During labor :** + PV

**Management :** → **During pregnancy :** more frequent ANC visits due to more ++ of medical disorders during pregnancy

- **During labor :**
  - CS : if 1) other indications of CS 2) > 2 fetuses 3) monoamniotic twins or conjoined twins 4) 1<sup>st</sup> fetus is non cephalic
  - VD : if 1<sup>st</sup> fetus is cephalic & no other indications of CS



Guard against Atonic postpartum hge

**Complications:**

- **Maternal :** 4 Ps + ↑↑ rate of medical disorders
- **Fetal :**
  - 1) vanishing twins ( in 1<sup>st</sup> trimester)
  - 2) discordant twins in tttt ( shared placenta )
    - One fetus LGA / polyhydraminos / polycythemia
    - Other fetus SGA / oligohydraminos / anemic
  - 3) conjoined twins (due to delayed cleavage)
  - 4) locked twins , if we allow VD when 1<sup>st</sup> fetus is breech ( which should not be done )
  - 5) death of one fetus
    - 1<sup>st</sup> trimester : Little risk
    - 3<sup>rd</sup> trimester : ++ DIC
  - 6) fetal birth injuries & fetal distress

# APHge

**Definition :** Bleeding after fetal viability ( ie > 24 weeks ) till delivery

**Etiology :** → **Maternal** → Obstetrics : Abruptio-placentae ( accidental hge ) / Placenta previa ( PL PRV )  
 → Gynecology : Vaginal lesion / Cervical lesion  
 → Systemic : Drugs ( anticoagulants ) / Diseases ( ITP )  
 → **Fetal** : vasa previa ( minimal bleeding → severe fetal distress)

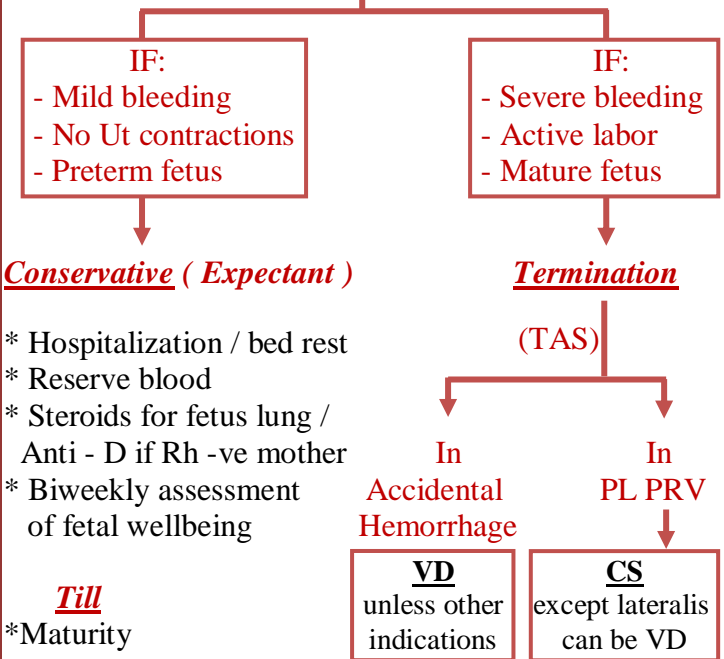
**NB: Placental migration : < 24 weeks**

Lower edge of placenta may be seen near int os , but é formation of LUS , placenta migrates upward to its normal position, away from internal os & the condition resolves in > 90% of cases

	<b>Accidental Hge ( commonest )</b>	<b>Placenta previa ( 2<sup>nd</sup> most common )</b>		
<b>Def</b>	Bleeding from <u>normally implanted</u> placenta	Bleeding from a <u>low lying</u> placenta		
<b>Risk Factors</b>	PE: <b>PG</b> External trauma Sudden ROM in polyhydramnios	Multipara / old age MFG ( Twins ) Prev CS / prev PL PRV		
<b>Types</b>	Revealed ( commonest ) Mixed ( 2 <sup>nd</sup> most common ) Concealed (least common / most dangerous)	<b>Complete centralis :</b> totally covering int os <b>Incomplete centralis :</b> partially covering int os <table border="1" style="margin-left: 20px;"> <tr> <td style="border: 1px dashed red;">minor</td> <td style="border: 1px dashed red;">major</td> </tr> </table> <b>Marginalis :</b> edge of pl < 2 cm from int os <b>Lateralis :</b> edge of pl > 2 cm from int os	minor	major
minor	major			
<b>Mechanism</b>	Retroplacental hematoma dissect myometrium till serosa → bruises ( Couvelaire ut ) → Atonic PPHge	Shearing mechanism between LUS that forms & placenta → Unavoidable bleeding		
<b>Clinical picture</b>	<b>Symptoms</b>	Vaginal bleeding / abdominal pain		
	<b>Signs</b>	Signs of PE Shock (BP may not be ↓)		
	<b>Abd</b>	Tender ut / FL > amenorrhea ( Retro pl. hematoma )		
<b>PV &amp; speculum</b>		No ut tenderness / FL = amenorrhea / malpresentations		
Contraindicated till exclusion of PL PRV				
<b>Investigations</b>	To detect the cause of APHge : <b>TAS</b> or TVS ± speculum examination <b>Maternal :</b> CBC / Rh blood group / LFTs / KFTs <b>Fetal :</b> Assessment of fetal wellbeing ( DFMC / NST / BPP / Doppler )			
<b>Complications</b>	<b>Maternal:</b> → PE (HELLP / DIC /...) → Atonic PPHge → Shock ( Sheehan )	± Shock Abnormal adhesions (accreta / increta / percreta) → diagnosis → ttt: classical hysterectomy → bleeding upon attempt of separation		
	<b>Fetal:</b> Distress / IUFD			

## Management of APHge:

- 1) Correction of shock ( if present )
- 2) APHge



**Conservative ( Expectant )**

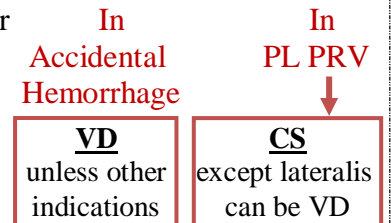
- \* Hospitalization / bed rest
- \* Reserve blood
- \* Steroids for fetus lung / Anti - D if Rh -ve mother
- \* Biweekly assessment of fetal wellbeing

**Till**

- \* Maturity
- OR
- \* Attack of severe bleeding
- OR
- \* Start of labor pains

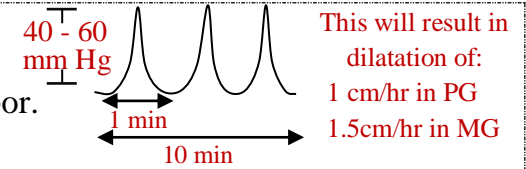
**Termination**

(TAS)





# Abnormal labor



**Def of (N) labor:** delivery through vaginal canal in a period > 4 hrs & < 12-18 hrs (PG) for active 1<sup>st</sup> stage of labor.

**Prerequisites for normal labor:**

- Passages (maternal) : NO CPD / NO soft tissue obstruction
- Passenger (fetus): NO macrosomia / NO cong anomalies or malpresentations that interfere é VD
- Power (efficient uterine contractions in active stage)

## NB: Specific Types of Abnormal Labor

	PPT labor	Prolonged labor		Obstructed labor	Constriction ring	Cx dystocia	Shoulder dystocia
		1 <sup>st</sup> stage	2 <sup>nd</sup> stage				
<b>Def</b>	Labor in < 4 hrs	PG > 12 -18hrs (active stage) <b>OR</b> no progress > 2-4 hrs	PG 2-4 hrs MG half time	Due to mechanical cause (CPD)	Due to spasm of circular muscle fibers	Due to cx causes	Due to impacted shoulder
<b>Et</b>	Roomy pelvis Small baby Strong contractions	Hypotonic inertia Hypertonic inertia CPD/Malpresentations	Exhausted mother CPD/Malpresentations	CPD Malpresentations	Abuse of oxytocin	Spasm in Cx Fibrosed Cx	Macrosomia As in DM
<b>Cl.picture</b>	*H/O of PPT labor *Strong frequent Contractions	* Maternal exhaustion * Fetal distress * PV may diagnose the cause	* Exhausted mother * Distressed fetus * Rising pathological Bandl's ring on the abdomen * PV : dry vagina oedema / hanging cx * Caput succedaneum	* Exhausted mother * Distressed fetus * Rising pathological Bandl's ring on the abdomen * PV : dry vagina oedema / hanging cx * Caput succedaneum	(N) mother (N) fetus (N) abdomen PV (diagnosis) DD: Bandl's ring	PV : fibrosed Cx or spastic Cx	Turtle sign
<b>complications</b>	*Maternal lacerations *Fetal birth injuries *PPHge *P. sepsis	* PROM * PPHge * P. sepsis	* Rupture uterus * Fetal asphyxia	* Rupture uterus * Fetal distress * Necrotic VVF * PPHge * P. sepsis	Prolonged 1 <sup>st</sup> / 2 <sup>nd</sup> / 3 <sup>rd</sup> Stages	Annular detachment of Cx	* Fetal birth Injuries * Maternal lacerations
<b>Management</b>	-If seen early : sedation / epidural -Explore birth canal -Examine baby	-Hypotonic inertia : ROM / Oxytocin -Hypertonic inertia: fluids / epidural -CPD : CS	-Exhausted mother: Instrumental -CPD: CS <b>NO OXYTOCIN</b>	CS	antispasmodic LSCS (vertical incision)	antispasmodic CS	-Mc Roberts ± suprapubic pressure -Wood's cork screw -Bring post. Arm -Zavinelli

**NB:** \* Progress of labor = progress in

- Dilatation
- Or Effacement
- Or Station

\* Arrest of labor = Arrest of **ALL**

- Dilatation
- & Effacement
- & Station

# Contracted pelvis

**Definition :** The pelvis in which one or more of its diameters are decreased so as to interfere with normal labor

**Etiology:** Developmental / Traumatic / Inflammatory / Neoplastic / Metabolic affecting :  
→ Pelvis  
→ Spine  
→ Lower Limbs

**Clinical picture:**

- H/O of difficult labor
- General examination : short stature / abnormal gait
- Abdominal : narrow subpubic angle ( not obtuse )
- PV ( internal pelvimetry )
  - Sacral concavity
  - Side walls of pelvis
  - Ischial spines
  - Subpubic angle
  - Sacrosiatic notch } **Admitting 2 fingers**
  - Diagonal conjugate
- CPD tests
  - 1) Pinard (dorsal position / **NO PV**)
  - 2) Muller-Kerr ( é PV examination for Int. pelvimetry & CPD test)
  - 3) Engagement: Head is the best pelvimeter.

**Management:** if

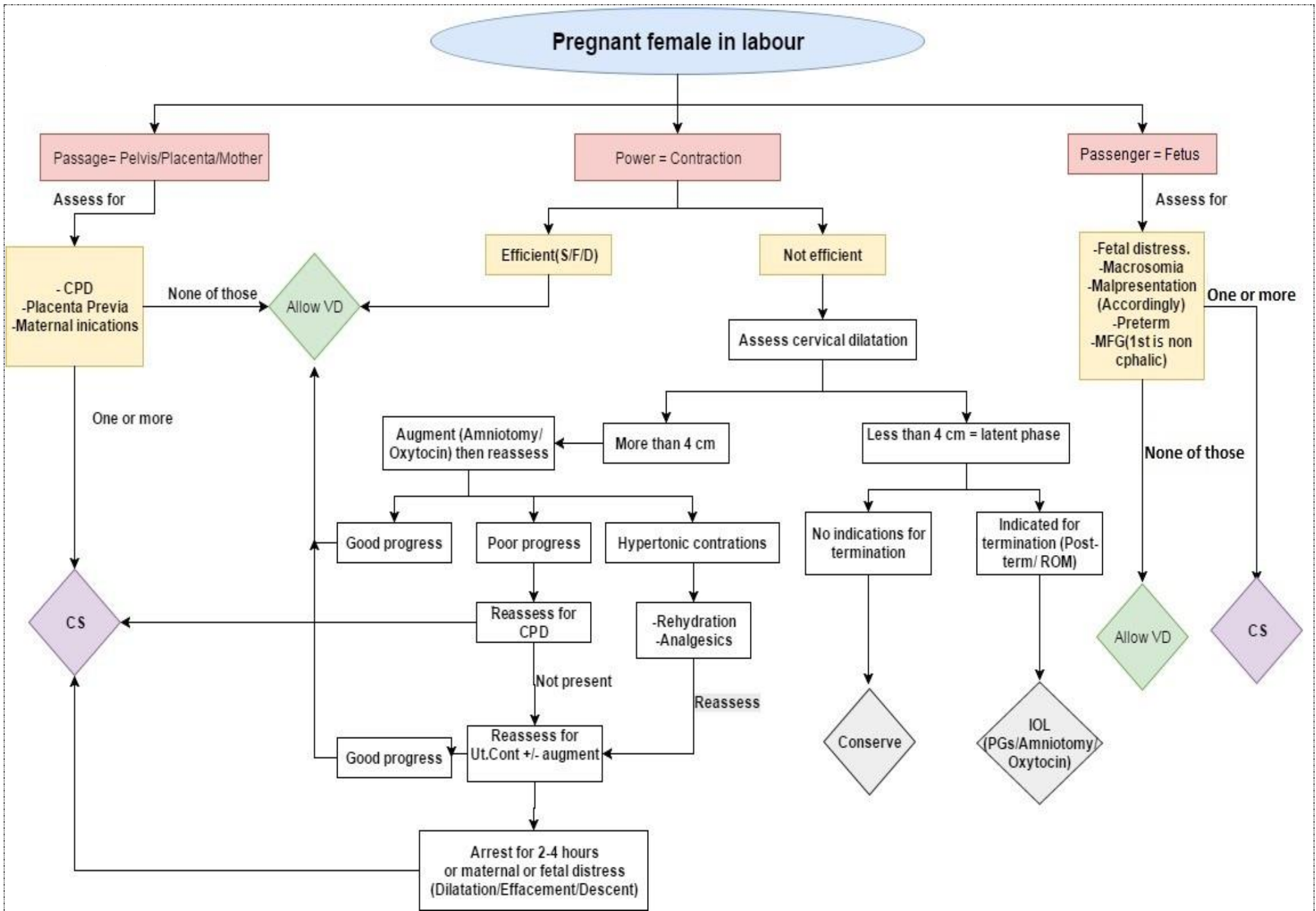
- No disproportion → Allow VD
- Moderate disproportion ( 1<sup>st</sup> degree ) → Trial of labor
- Severe disproportion ( 2<sup>nd</sup> degree ) → CS

**NB:** undetermined factors of labor ( trial of labor )

- 1) moulding of head
- 2) yielding of pelvis
- 3) uterine contractions

## Contracted Outlet

Bituberous diameter : ( should admit 4 knuckles of closed fist )



# Complications of 3<sup>rd</sup> stage

## \* PPHge \*

**Secondary**  
  
**Primary**

- After 24 hrs till end of puerperium
- Mostly due to infection, retained parts of placenta & least chorioca
- ttt: of cause

- PPHge
- Retained placenta
- Uterine inversion
- Shock

**Def :** bleeding > 500 cc in VD or 1000 cc in CS in 3<sup>rd</sup> stage & for 1<sup>st</sup> 24hrs after labor

**Inc :** leading cause of maternal mortality in Egypt

- Et:**
- Atonic > 75% of cases  
( in overdistension of ut / prolonged labor / anemia / multipara / ... )
  - Traumatic 2<sup>nd</sup> most common  
( in instrumental delivery / ... )
  - Retained placenta 3<sup>rd</sup> common & leading cause of 2<sup>ry</sup> PPHge
  - Bleeding disorders ( coagulopathy / DIC / amniotic fluid embolism )
  - Uterine inversion ( submucous myoma / forcible traction on relaxed uterus )

- \* Leading causes of maternal mortality in Egypt :**
- 1) PPHge
  - 2) PE
  - 3) Puerperal sepsis

### Cl.picture:

→ **Symptoms :** H / O of risk factors & vaginal bleeding

- **Signs:**
- **General :** shock
  - **Abd:**
    - in atonic : soft ut & subinvoluted
    - in traumatic : contracted ut / lacerations of Cx , vag , perineum
    - in inversion : cupping of the fundus ( depressed fundus )
  - **PV & Bimanual:** Uterus : contracted or not

### Complications :

- Shock / DIC
- Sheehan / Death
- Presence of lacerations ( rupture ut , Cx , vag , perineum )
- Retained parts or whole placenta
- Ut is below the level of internal os ( in inversion )

### ttt :

- **Prevention :** proper ANC / management of 1<sup>st</sup> , 2<sup>nd</sup> & active management of 3<sup>rd</sup> stage
- **Resuscitation in shock & replacement**
- **Exploration of**
  - Retained parts to be digitally removed
  - Ut / Cx / vag / perineum for any tears to be repaired
  - Including laparotomy for repair of rupture uterus
- **In atonic:**
  - **Before laparotomy**
    - External ut massage
    - Bimanual ut compression
    - Bakri ballon ( internal tamponade) } + Ecbolics
  - Radiology intervention : UAE ( bilateral )
  - **Laparotomy**
    - Bilateral uterine a. ligation / Bilateral IIA ligation
    - External tamponade ( B-Lynch suture )
    - Subtotal hysterectomy

- Oxytocin
- Methergine
- PGs

## \* Retained placenta \*

**Definition :** placenta fails to appear after 30 min from fetal delivery

### Etiology:

- Atonic ut
- Abnormally adherent placenta ( accreta / increta / percreta )
- Contraction ring

### Clinical picture :

- vaginal bleeding é atonic uterus or rupture uterus
- morbidly adherent placenta & failure to find a plane of cleavage

### Treatment:

- Ecbolics + external ut massage
- Controlled cord traction ( Brandt Andrew's maneuver )
- Manual separation of placenta
- For retained fragments  
( digital evacuation or use ovum under anesthesia )
- Deep anesthesia for contraction ring

\* In pl. accreta ( manage as before in APHge ; PL PRV )

## \* Uterine inversion \*

**Def :** uterus is turned inside out after delivery of fetus

**Incidence :** extremely rare

- Et :**
- Forcible traction on uterus while it's still relaxed
  - Submucous fundal fibroid polyp

### Cl . picture:

- Neurogenic shock
- Uterus is turned inside out & cupping of fundus

**ttt:** manual reposition or hydrostatic reposition under anesthesia

## \* Obstetric shock \*

**Definition :** State of circulatory impairment → defective tissue oxygenation → abnormal cellular function & metabolism .

**Types:** → Hypovolemic ( hemorrhagic ) **COMMONEST**

- 1<sup>st</sup> trimester as in ectopic
- APHge
- PPHge

→ Septic ( due to polymicrobial infection )

→ Neurogenic ( due to severe pain )

**Stages :** → Compensatory mechanism

→ Decompensatory mechanism ( irreversible shock ) , septic shock starts by this stage

Classes	I	II	III	IV
<b>Pulse</b>	< 100 b/min	100 - 120 b/min	120 - 140 b/min	> 140 b/min
<b>BP</b>	(N)	(N)	↓	↓↓
<b>Urine output</b>	> 30 ml / hr	15 - 30 ml/ hr	5-15 ml /hr	< 5 ml / hr
<b>% blood loss</b>	< 15 %	15 -30 %	30 -40 %	> 40%
<b>Mental state</b>	anxious	agitated	confused	drowsy or lethargic

**ttt :** → Resuscitation & replacement ( crystalloids / colloids / blood or its products

- 2 wide bore cannula
- Recumbent & legs up
- O<sub>2</sub> / warmth
- Morphia

→ Continuous patient monitoring ( vital signs / CVP / input & output )

→ ± Inotropic drugs : for cardiac contractility

→ Broad spectrum antibiotics in septic shock

- Packed RBCs
- Fresh frozen plasma
- Cryo PPT
- Platelets

## DIC

**Definition :** Consumptive coagulopathy

**Etiology :** → PE & HELLP / PI abruption

→ Massive blood loss or massive blood transfusion

→ IUFD / amniotic fluid embolism / sepsis

**Cl.picture** → bleeding from venipuncture

→ continuous oozing in surgical field

**Diagnosis** → ↓↓ fibrinogen < 100 mg/dl ( (N) 350 – 650 mg/dl in pregnancy )

→ ↑↑ FDPs ( (N) not present )

**Treatment :** → Of cause

→ Replacement

→ Never heparin

# Obstetric trauma

	<b>Rupture Uterus</b>	<b>Cervical Lacerations</b>	<b>Vaginal &amp; perineal lacerations</b>															
<b>Definition:</b>	Interruption of integrity UUS / LUS / previous scar	Anterior lip / Posterior / Lateral angles▶(most common)	1 <sup>st</sup> / 2 <sup>nd</sup> / 3 <sup>rd</sup> / 4 <sup>th</sup> degree tears															
<b>Etiology:</b>	<p style="text-align: center;">*Obstructed labor /Previous scar/ Instrumental</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><b>UUS</b></th> <th style="text-align: center;"><b>LUS</b></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">rupture</td> <td style="text-align: center;">2-9%</td> <td style="text-align: center;">0.2-0.9%</td> </tr> <tr> <td style="text-align: center;">layers</td> <td style="text-align: center;">3 layers * hematoma / infection</td> <td style="text-align: center;">2 layers * better coaptation</td> </tr> <tr> <td style="text-align: center;">Perit</td> <td style="text-align: center;">Peritone adherent * more adhesions</td> <td style="text-align: center;">Not adherent * less adhesions</td> </tr> <tr> <td></td> <td style="text-align: center;">USCS Hysterectomy myomectomy</td> <td style="text-align: center;">LSCS</td> </tr> </tbody> </table>		<b>UUS</b>	<b>LUS</b>	rupture	2-9%	0.2-0.9%	layers	3 layers * hematoma / infection	2 layers * better coaptation	Perit	Peritone adherent * more adhesions	Not adherent * less adhesions		USCS Hysterectomy myomectomy	LSCS	<ul style="list-style-type: none"> <li>* PPT labor</li> <li>* Previous scar</li> <li>* Instrumental</li> <li>* Delivery through undilated Cx</li> </ul>	<ul style="list-style-type: none"> <li>* PPT labor</li> <li>* Previous scar</li> <li>* Instrumental</li> <li>* Fetal Macrosomia</li> </ul>
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<b>Cl.picture</b>	<p style="text-align: center;"><b>symptoms</b></p> <p style="text-align: center;"><b>signs</b></p> <ul style="list-style-type: none"> <li style="margin-bottom: 5px;">G → ± shock</li> <li style="margin-bottom: 5px;">Abd → Easy palpable parts of fetus -- FHS</li> <li style="margin-bottom: 5px;">local → Receding presenting part</li> </ul>	<p style="text-align: center;"><b>bleeding</b></p> <ul style="list-style-type: none"> <li style="margin-bottom: 5px;">→ Rare shock</li> <li style="margin-bottom: 5px;">→ _____</li> <li style="margin-bottom: 5px;">→ Speculum for tears</li> <li style="margin-bottom: 5px;">→ Broad ligamentary hematoma ( that may be seen by US )</li> </ul>	<ul style="list-style-type: none"> <li style="margin-bottom: 5px;">→ _____</li> <li style="margin-bottom: 5px;">→ _____</li> <li style="margin-bottom: 5px;">→ Tears / Anal sphincter</li> </ul>															
<b>Treatment:</b>	<ul style="list-style-type: none"> <li>• Correction of shock</li> <li>• Laparotomy (for repair / hysterectomy)</li> <li>• Further deliveries (elective CS)</li> </ul>	<ul style="list-style-type: none"> <li>• Replacement</li> <li>• Repair</li> <li>• Further complications                             <ul style="list-style-type: none"> <li>↓ Incompetent isthmus</li> <li>↓ Cx stenosis</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• ± Replacement</li> <li>• Repair in <u>layers</u> (levator ani sphincter separately)</li> <li>• If un noticed → Old complete perineal tear (or) Rectovaginal fistula</li> </ul>															

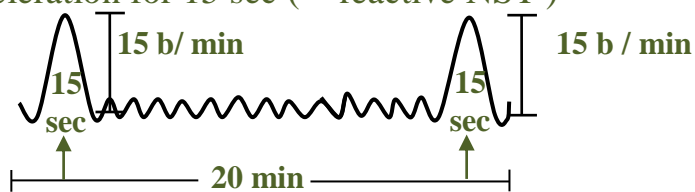
# Assessment of fetal wellbeing

## Antepartum

( from viability till labor )

- 1) **DFMC** : (N) 10 movements / 12 hrs
- 2) **NST** : fetal heart acceleration in relation to its movements ( for 20 min )

(N) 15 b/min acceleration for 15 sec (= reactive NST )



- If non reassuring NST → Repeat for another 20 min
  - If non reactive NST → \* Do BPP
- 3) **BPP** : US to detect ( movement / tone / breathing / AFI / NST )

Each item → 0 if not present  
→ 2 if present

\* Total score = 10

- If < 8 / 10 \* do doppler ( NB: Modified BPP = NST + AFI )

4) **Doppler study**: for umbilical artery , MCA

- If ++ resistance ( low flow ) \* placental insufficiency
- If NO flow \* Alert sign
- If reversed flow \* Action should be taken

**NB : If high risk cases \* assessment of fetal wellbeing**

DFMC → done daily

NST / BPP → done biweekly

Doppler → done weekly

## Intrapartum

( in 1<sup>st</sup> & 2<sup>nd</sup> stages of labor )

1) **Passage of Meconium ( in cephalic presentation )** :

indicates fetal distress

2) **CTG** : relation of FHR to uterine contractions

- (N) FHR = 110 – 160 b / min

- If < 100 bradycardia
  - If > 160 tachycardia
- } = fetal distress

CTG ONLY FOR HIGH RISK

-Loss of beat to beat variability = fetal acidosis

-Early deceleration = head compression (N)

-Variable deceleration = cord compression ( exclude cord prolapse )

-Late deceleration = fetal distress ( sp if persistent late deceleration)

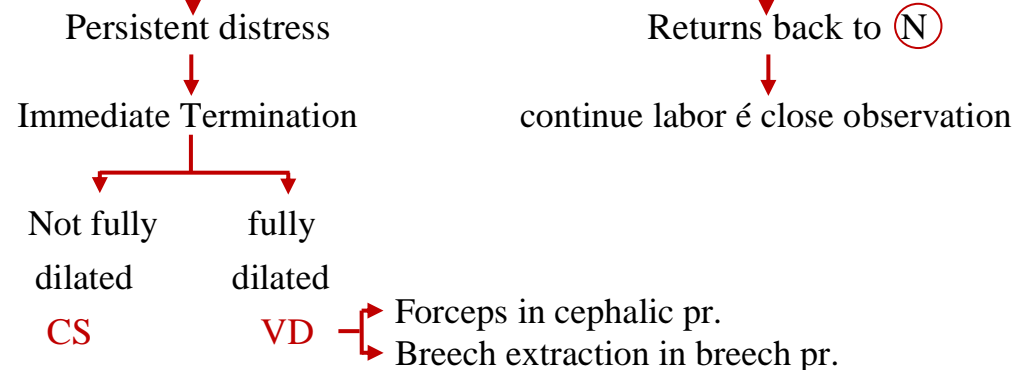
3) **fetal scalp PH** (N) PH = 7.25 – 7.35

- If 7.2 – 7.35 → \* mild acidosis
- If < 7.2 → \* severe acidosis

### Management of Intrapartum distress ( asphyxia )

\* Stop oxytocin / give IV fluids

\* mask O<sub>2</sub> / put pt in Lt lateral position



# Fetal growth disorders

## SGA

(< 10<sup>th</sup> percentile for their GA)

### Types

Constitutionally small

As in small mothers

♣ **N** fetus

IUGR

**Symmetrical**

20%

(fetal intrinsic cause)

**NO brain sparing**

♣ Bad prognosis

**Asymmetrical**

80%

(maternal placental insufficiency cause)

**✓✓ brain sparing**

♣ Good prognosis

**Cl.picture :**

Symptoms : small sized abdomen (< period of amenorrhea)

Signs: General : of cause  
Abdominal : ↓↓ FL / ↓↓ SFH (24 - 32 wks)

**Inv :** US + Doppler : (to detect cause & to assess fetal wellbeing)

**ttt:** If constitutionally small : leave  
If ch.anomalies : terminate at any GA  
If IUGR

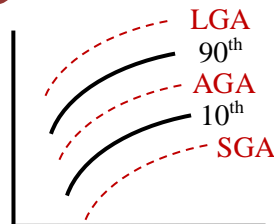
**Preterm**

Assess fetal wellbeing & Terminate if :

- Reaches maturity
- Or signs of distress upon assessment of fetal wellbeing
- Or maternal condition necessitate termination

**Term**

Terminate (VD or CS)



## LGA ( Macrosomia )

(> 90<sup>th</sup> percentile for their GA)

### Types

Constitutionally large in big mothers / multipara

♣ **N** fetus

DM sp uncontrolled  
Past date

**Cl.picture:** Symptoms : of the cause / oversized abdomen

Signs: General : of cause  
Abdominal : ++ FL / ++ SFH

**Inv :** Of cause , eg: DM  
US

**ttt:** Of cause as control DM  
Consider CS if > 4.5 kg  
×× Instrumental deliveries

## IUFD

**Definition:** Death in utero after fetal viability

**Etiology:** Idiopathic in 50%  
Maternal as in placental insufficiency  
Fetal anomalies / infections

**Cl.picture:** ↓ or NO fetal movements  
↓↓ FL < period of amenorrhea

**Complications :** DIC if retained for weeks

**ttt:** Wait for spontaneous labor pains  
If anxious or start complication :  
Terminate VD OR CS according to obstetric condition



# PROM

**Definition :** ROM after fetal viability & before onset of labor

**Incidence :** 10%

- Etiology:**
- Idiopathic
  - Infection ( commonest ) : GTI , UTI
  - Cx incompetence
  - Polyhydramnios
  - Local membrane defect / smoking

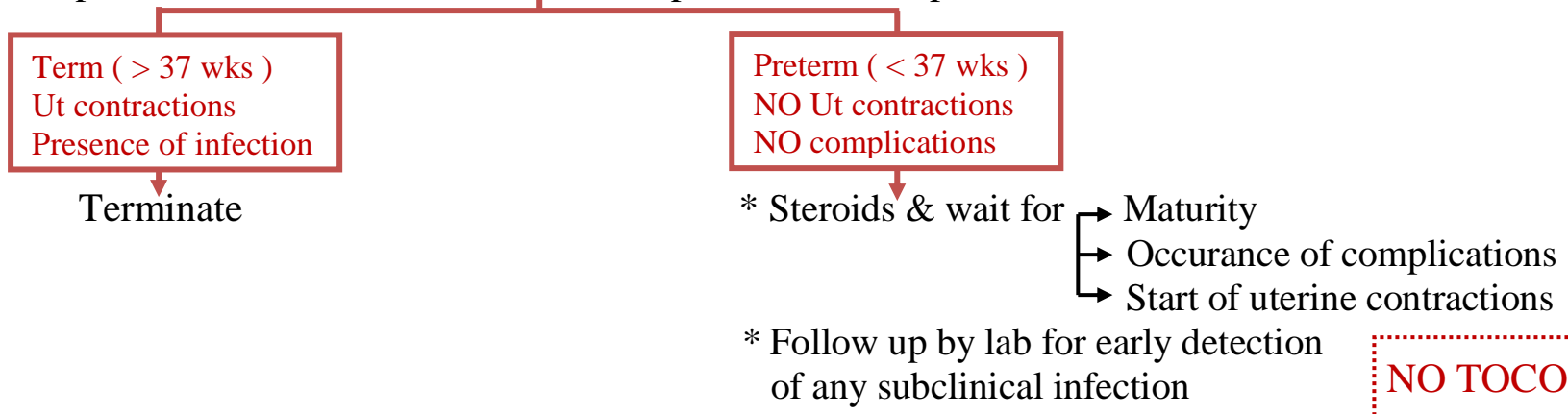


- Complications :**
- Preterm labor ( commonest ) within 24-48 hrs
  - Chorioamnionitis ( most serious )
  - Placental abruption
  - If ch. oligohydramnios : lung hypoplasia , limb deformity , amniotic band

- Clinical picture :**
- Symptoms : gush of fluid
  - Signs :
    - General : fever ( in case of infection )
    - Abdominal : FL < period of amenorrhea / tender uterus in chorioamnionitis
    - PV : speculum for fluid pooling in posterior fornix

- Investigations :**
- Confirm diagnosis : Speculum / Nitrazine paper / +ve fern / Amniosure
  - Detect complications ( infection ) : CRP / TLC / DLC / ESR
  - US for AFI : If < 5 \* oligohydramnios

- Management :**
- Antibiotics
  - Depends on GA / Uterine contractions / presence of complications



**NO TOCOLYSIS**

# Amniotic fluid disorders

	<b>Oligohydramnios</b>	<b>Polyhydramnios ( hydramnios)</b>
<b>Definition</b>	↓ liquor < 500cc AFI < 5 <b>or</b> deepest pocket < 4cm	↑ liquor > 2liters AFI > 20 <b>or</b> deepest pocket > 8cm
<b>Incidence</b>	5%	0.5%
<b>Etiology</b>	( ↓ production by fetus or placenta) * H/O of ROM * Renal agenesis * Pl.insufficiency * Indomethacin	( ↓ swallowing by fetus or ↑ production ) * Idiopathic * DM ( uncontrolled ) * Anencephaly / oesophageal or duodenal atresia * Placenta tumours
<b>Cl.picture</b>	* Small size abdomen < amenorrhea * Picture of the cause ( eg : PE )	* Oversize abdomen > amenorrhea * Pressure symptoms ( as resp. embarrassment ) * Picture of the cause ( eg : DM )
<b>Investigations</b>	US for volume / AFI / Deepest pocket	
<b>Complications</b>	* Of cause ( placental insufficiency ) * Limb deformity / lung hypoplasia / amniotic band syndrome * Cord compression / fetal distress	* Of cause ( uncontrolled DM ) * Pressure symptoms * Sudden ROM , Placental abruption , Cord prolapse * Malpresentations , Dysfunctional labor , Atonic PPHge
<b>Treatment</b>	* ttt of cause * Termination whenever weekly or biweekly assessment of fetal wellbeing indicates * Amnio-infusion ( rarely done )	
		* Amniocentesis (to relieve pressure symptoms)

**NB :** \* Amniotic fluid functions : limb movements / nutrition / lung expansion / regulate temperature / protect from infection  
\* Amniotic fluid composition : mainly water / mainly fetal contribution

## Preterm labor

**Definition:** start of labor pains after fetal viability & < 36 wks

**Incidence:** 5-10%

**Etiology:**

- Idiopathic / miscalculation .
- Cx incompetence / septate or bicornuate uterus
- Over distended ut ( polyhydramnios / MFG / fibroid ut )
- Medical / obstetric indication for termination.
- PROM / GTI / UTI / smoking / excessive physical activity

### Clinical picture:

→ **Symptoms** : true labor pains < 36 wks

→ **Signs:**

- General : of cause or risk factor
- Abd : true ut contractions / cause
- PV: start cx changes (dilatation / effacement)

### Complications ( ALL FETAL ) :

→ RDS / Retinopathy of prematurity / Cerebral hge

→ Neonatal sepsis / Necrotising enterocolitis

### Investigations :

→ CTG to confirm PTL

→ US : short cervical canal < 2.5 cm

→ FFN (Fetal fibronectin): from 24-32 wks

Ⓝ absent , if present ( by vag swab ) \* 50% PTL within 2 wks

### Management:

\* Prophylactic against RDS: steroids 24mg IM

& delivery 24hrs after last dose :

Betamethasone ( long acting) 12mg  $\xrightarrow{24h}$  12mg

Dexamethasone ( short acting) 6mg  $\xrightarrow{12h}$  6mg  $\xrightarrow{12h}$  6mg  $\xrightarrow{12h}$  6mg

\* IF still in latent phase (Cx < 4cm dilatation & < 50% effacement) can use Tocolysis to delay labor till Steroids work / NICU transfer:

- 1) Ca channel Blocker ( Nifedipine)
- 2)  $\beta_2$  agonist ( Ritodrine)
- 3) PGs synthetase inhibitor ( Indomethacin ) < 32wks
- 4) oxytocin inhibitor ( Atosiban )
- 5) MgSO<sub>4</sub> if < 28wks to prevent CP
- 6) Progesterone IM weekly

## Post term pregnancy

**Definition:** pregnancy continue after 42 weeks

**Incidence:** 5-10%

**Etiology:**

- Miscalculation.
- Idiopathic.
- Anomalies as Anencephaly.
- Placental cause

### Clinical picture:

→ **Symptoms** : of cause / may be oversized abdomen ( 80%)

→ **Signs** : may be normal or oversized abdomen ( 80%)

### Complications:

→ 80% LGA (in normally functioning placenta)

→ 20% IUGR with its sequelae (in placental aging)

→ ↓ liquor / meconium stained liquor & meconium aspiration

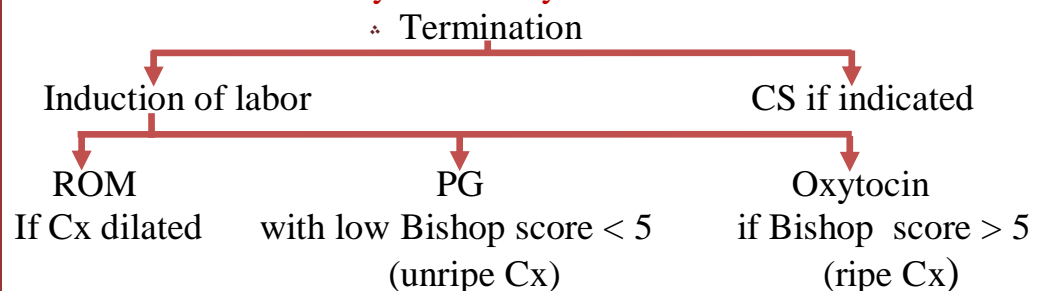
### Investigations:

→ US : for AFI / placental grading

→ Growth curves

### Management:

\* IF date is confirmed by CRL or by accurate LMP



\* IF date not confirmed → \*Assessment of fetal wellbeing

**Till**

- 42 wks
- occurrence of labor pains
- occurrence of complications

- Daily
- Biweekly
- Weekly

**PE**

# Hypertensive disorders with pregnancy

**Definition:** HTN  $\geq 140/90$  ( mild ) or  $\geq 160/100$  ( severe )  
+ proteinuria  $> 0.3$  gm/ 24hrs after 20 wks GA

**Incidence:** 4-7 % of pregnancies/ leading cause of maternal mortality in developed countries

**Et:** genetic / vascular / immunological ... Theories **Risk F:** **PG** / ++ HCG / kidney troubles / SLE

**Pathology :**

**Ⓝ Trophoblastic invasion of spiral arterioles of myometrium**  
↓  
**Wider vessels & ++ uteroplacental perfusion**

**In PE** Failure of Trophoblastic invasion in spiral arterioles

**Narrower vessels with ++ vascular resistance**

**( Vascular endothelial cell damage)**

**in placenta**

**Release of mediators**

**↓ uteroplacental perfusion**

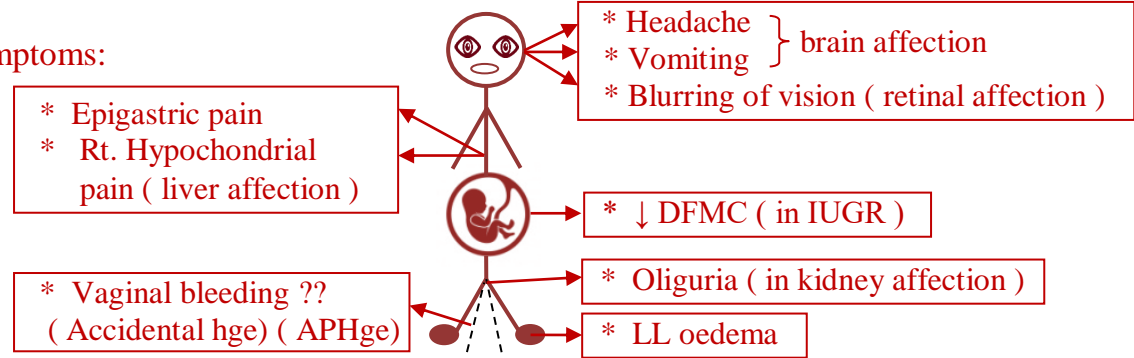
<b>Kidneys</b>	<b>Liver</b>	<b>BVs</b>	<b>Brain</b>	<b>Retina</b>
* Affection of kidney functions * ptnuria & oliguria	*Affection of liver functions *Subcapsular Hge	 *Oedema *DIC *HELLP	* Edema * ± convulsions	* Edema * Hge * Visual affection

**IUGR & Oligohydramnios**

**Clinical picture:** disease of signs (& symptoms appear when complications occur )

- Signs :**
- BP  $\geq 140/90$  ( mild )  $\geq 160/100$  ( severe )
  - A/C in urine  $> 0.3$  ( albumin / creatinine ratio )  
or ptn  $> 0.3$  gm/24hrs urine collection
  - ± Oedema

**Symptoms:**



- \* Preeclampsia : HTN + Ptnuria  $> 20$  wks GA
- \* Gestational HTN : HTN  $> 20$  wks GA
- \* Chronic HTN :HTN  $< 20$  wks GA
- \* Superimposed PE : chronic HTN + PE
- \* ECLAMPSIA : PE + Seizures

**Inv :**

- **Maternal :** laboratory / fundus exam / neurological exam
- **Fetal :** DFMC / NST / BPP /Doppler ( assessment of fetal wellbeing )

**Treatment:**

\* Mild PE é NO fetal or maternal compromise:  
FU ( NO medical or obstetric intervention needed)

\* Severe PE é fetal or maternal compromise ( not responding to medical ttt):

Termination whether VD or CS After

- Stabilisation by
- MgSO<sub>4</sub>
  - IV drugs hydralazine
  - Steroids for lung maturity

\* Severe PE é NO fetal or maternal compromise:

Medical ttt & FU till maturity or occurrence of complications ( whichever happens first )

- Labetalol : drug of choice
- $\alpha$  methyl dopa : may cause PP depression
- Ca channel blocker: as Epilat

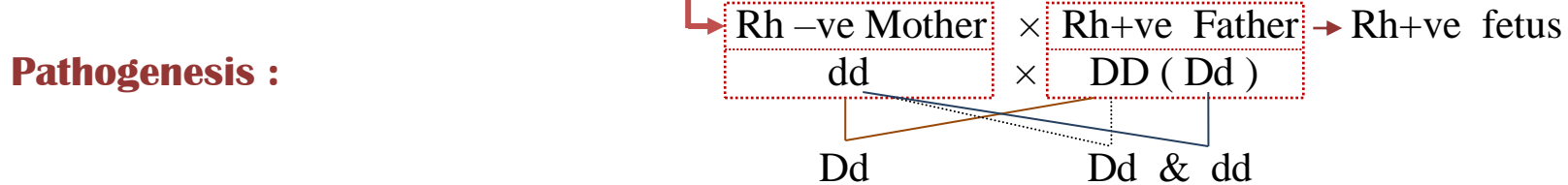
**NB:**

- \* ACE inhibitors are CI as they are teratogenic
- \* LDA ( Aspirin ) is given prophylactically in high risk patients
- \* Diuretics are CI as pt has hemoconcentration
- \* In ECLAMPSIA: give Diazepam ( valium ) to control convulsions then ttt as severe uncontrolled cases

# RH isoimmunization

**Definition:** hemolysis of fetal RBCs by maternal Ab

**Etiology :** sensitization of the mother by Rh -ve Mother received Rh+ve blood transfusion



**Effect:** depends upon

- Immune system of the mother
- Associated ABO incompatibility
- She may marry Rh -ve or heterozygous Rh+ve man

**Complications: ( FETAL )**

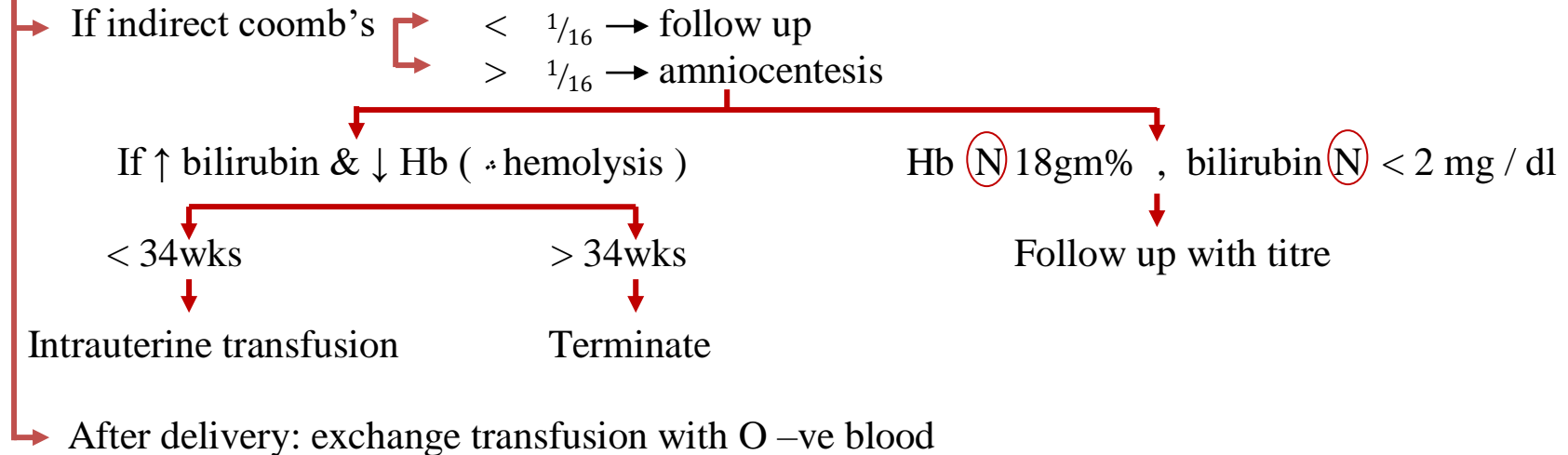
- Hemolytic anemia ( mild form )
- Neonatal jaundice ( commonest & moderate form ) ± kernicterus
- Hydrops fetalis ( severe form ) → generalized edema ( Budda attitude )

**Investigations:**

- Rh blood group
- Indirect coomb's test
- US for fetal anomalies ( HSM / Ascites )

**Treatment:**

- Prevention: Anti D ( only for non sensitized Rh -ve mothers ) within 72hrs of delivery of Rh+ve fetus & at 28wks GA & immediately after any procedure done during pregnancy ( Abortion , Ectopic , Amniocentesis , ... )



# GIT disorders with pregnancy

1) Hyperemesis gravidarum	4) AFLP ( acute & may be fatal )		
<p><b>Def:</b> Excessive vomiting in 1<sup>st</sup> trimester that affects general condition</p> <p><b>Etiology ( theories )</b></p> <ul style="list-style-type: none"> <li>→ ++ HCG</li> <li>→ -- Vit B<sub>1</sub> ( Thiamine )</li> <li>→ Psychogenic</li> </ul> <p><b>Pathogenesis :</b></p> <ul style="list-style-type: none"> <li>→ Dehydration / hemoconcentration</li> <li>→ Electrolyte disturbance</li> </ul> <p><b>Complications</b></p> <ul style="list-style-type: none"> <li>→ Starvation ketosis</li> <li>→ ↓ liver glycogen &amp; ++ AST , ALT</li> <li>→ Mallory Weiss Syndrome</li> <li>→ Wernicke's encephalopathy</li> </ul> <p><b>Treatment:</b></p> <ul style="list-style-type: none"> <li>→ Hospitalization / NPO</li> <li>→ IV fluids &amp; correct electrolytes</li> <li>→ IV Antiemetics</li> <li>→ Rarely termination ( in severe cases of encephalopathy)</li> </ul>	<p><b>Definition:</b> fat deposition within liver cells in 3<sup>rd</sup> trimester * affection of function +++AST &amp; ALT</p> <p><b>Incidence :</b> extremely rare</p> <p><b>Etiology :</b> unknown ?! error of metabolism ( enzymatic )</p> <p><b>Cl.picture :</b></p> <ul style="list-style-type: none"> <li>→ nausea , vomiting , abdominal pain , jaundice</li> <li>→ hypoglycemia , HTN</li> <li>→ coagulopathy , DIC</li> </ul> <p><b>Inv:</b> ++PT , PC , INR , Bilirubin , AST , ALT , hypoglycemia</p> <p><b>ttt:</b> prompt delivery ( serious condition ) &amp; ICU admission to support general condition</p>		
2) GERD	5) HBV	6) HCV	
<p><b>Definition:</b> epigastric discomfort after meals</p> <p><b>ttt:</b></p> <ul style="list-style-type: none"> <li>→ Small frequent meals &amp; avoid recumbency after meals</li> <li>→ Antacids 1hr after meal</li> <li>→ H<sub>2</sub> receptor antagonist ( Cimitidine , Ranitidine = Zantac)</li> <li>→ Proton pump inhibitor ( Omeprazole = Controloc )</li> </ul>	<p>virus</p> <p style="font-size: small;">DNA virus</p>	<p>RNA virus</p>	
<p><b>3) Intrahepatic cholestasis</b></p> <p><b>Def :</b> cholestasis &amp; pruritis &gt; 20 wks GA</p> <p><b>Inc :</b> 1-4 % , <b>Etiology :</b> unknown ?! genetic</p> <p><b>Diagnosis :</b></p> <ul style="list-style-type: none"> <li>→ <b>Cl.picture :</b> <ul style="list-style-type: none"> <li>→ Itching éout rash , sp. palms &amp; soles</li> <li>→ Jaundice ( rare )</li> </ul> </li> <li>→ <b>Inv:</b> <ul style="list-style-type: none"> <li>→ ++ bile acids</li> <li>→ Mild + AST, ALT , Bilirubin</li> </ul> </li> </ul> <p><b>Ttt:</b></p> <ul style="list-style-type: none"> <li>→ Symptomatic : cold baths , antihistaminics</li> <li>→ Ursodeoxycholic acid tab</li> <li>→ Uncontrolled cases &gt; 37 wks <b>or</b> if fetus is compromised ( as detected by methods of assessment of fetal wellbeing) → Termination</li> </ul>	<p>Vertical transmission</p>	<ul style="list-style-type: none"> <li>* Rare during pregnancy Mostly in 3<sup>rd</sup> trimester</li> <li>* during labor from infected maternal secretion</li> </ul>	
	<p>Treatment</p>	<ul style="list-style-type: none"> <li>* Duing pregnancy: Antiviral ttt in 3<sup>rd</sup> △</li> <li>* VD is safe</li> <li>* Neonate <b>immediately</b> receives:                             <ul style="list-style-type: none"> <li>→ HBIG ( passive )</li> <li>→ HB vaccine (active immunization)</li> </ul> </li> <li>* Breast feeding is allowed</li> </ul>	
		<ul style="list-style-type: none"> <li>* &lt; 5% risk</li> <li>* during labor if instrumental delivery é abrasions of baby</li> <li>* ttt is CI during pregnancy (teratogenic )</li> <li>* Breast feeding is allowed ( except in cracked , bleeding nipples)</li> </ul>	

<b>UTI é pregnancy</b>	<b>Thyroid disorders é pregnancy</b>
<p><b>1) Asymptomatic bacteruria</b></p> <p>Def : &gt; 100.000 CFU            Inc: 6% of pregnant females            Diagnosis : → urine analysis                              → urine culture &amp; sensitivity            Ttt is a must as 30 – 45 % → pyelonephritis : out pt antibiotics</p>	<p><b>1) physiological Goiter</b></p> <p>Due to → ++ blood supply                      → - - iodine                      → ++ total T<sub>3</sub> &amp; T<sub>4</sub> due to ↑ TBG                      ( free T<sub>3</sub> &amp; T<sub>4</sub> unchanged)</p>
<p><b>2) Acute cystitis ( lower UTI )</b></p> <p>As asymptomatic bacteruria + frequency , dysuria            NO systemic manifestations</p>	<p><b>2) Hyperthyroidism</b></p> <p>* Grave’s disease : autoimmune            * Thyroid storm : hypermetabolic            * Complications: abortion , PTL , IUGR            * Ttt: propylthiouracil ± βB / steroids            * NO radioactive iodine</p>
<p><b>3) Acute pyelonephritis</b></p> <p>Def : upper UTI with systemic manifestations            Complications:            → Maternal: pulmonary dysfunction from sepsis &amp; anemia            → Fetal : PROM , PTL , Morbidity &amp; Mortality            Ttt: <u>Hospitalization</u> + IV fluids , antipyretics ,            Start IV antibiotics then modify according to C/S</p>	<p><b>3) Hypothyroidism</b></p> <p>Rare in pregnancy as it causes infertility &amp; anovulation            Ttt : Eltroxine</p>
<p><b>Seizures ( convulsions , Epilepsy ) é pregnancy</b></p>	
<p>75% remain same , 25% worsen due to metabolism of anticonvulsants            Effect of anticonvulsants on fetus : FCA , CP/MR , -- VitK (é phenytoin)            Management :            → Maternal : → Extra folic since before pregnancy 800µg daily                              → Monotherapy is better é least possible dose to control seizures            → Fetal : anomaly scan</p>	

# DM with pregnancy

**Def :** hyperglycemia / glucosuria / microangiopathy

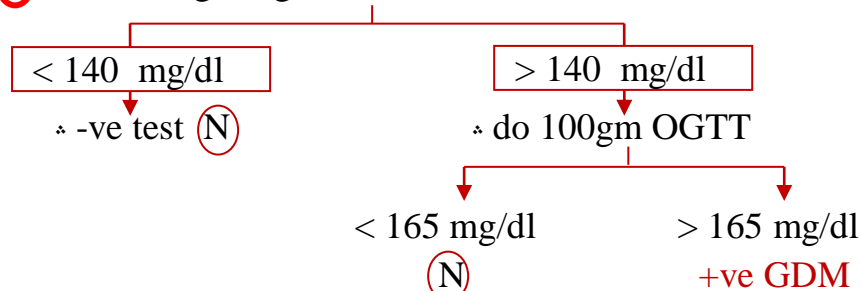
**Etiology :** pregnancy is diabetogenic due to placental anti insulin hormones (PRG , Cortisol , HPL ) & insulinase enzyme

## Effect :

- **Maternal:**
  - ↑ infection ( vulvovaginitis )
  - Abortion / PTL / PROM / Puerperal sepsis
  - Instrumental deliveries
  - ++ DKA / PE
- **Fetal :**
  - Macrosomia / polyhydramnios
  - FCA :VSD ( most common ) , NTD ( most specific )
  - Sudden IUFD
  - Fetal birth injuries & shoulder dystocia
- **Neonatal :**
  - Hypoglycemia / Hypocalcemia
  - Polycythemia / hyperbilirubinemia
  - RDS

## Diagnosis :

→ **Maternal ①** (screening 50 gm OGTT for ALL at 24 – 28 wks)



- ② FBS > 95mg/dl , 1h PPBS > 200mg/dl
- ③ HbA1c for FU for past 3 months

- **Fetal**
  - 1<sup>st</sup> trimesteric US for NTD , Anencephaly
  - 2<sup>nd</sup> trimesteric US for FCA
  - 3<sup>rd</sup> trimesteric US for Macrosomia , Polyhydramnios
  - + Assessment of fetal wellbeing

- \* GDM : Only during pregnancy
- \* Overt DM :
  - Type I : insulin dependent
  - Type II : non insulin dependent

## Treatment:

- From 165-200mg/dl → \* diet control
- If > 200mg/dl or on oral hypoglycemics → \* change to insulin (only metformin can be continued)
- Dose : insulin units ( eg:90 units ) = pt weight in kg ( eg: 90 kg )
  - $\frac{2}{3}$  morning ( 60 units )       $\frac{1}{3}$  night ( 30 units )
  - $\frac{1}{2}$  NPH :  $\frac{1}{2}$  regular (30 units) : (30 units)       $\frac{1}{2}$  NPH :  $\frac{1}{2}$  regular (15 units) : (15 units)
- **Delivery :** depends on glycemic control
  - \* good control → \* till 40 wks.
  - \* mild uncontrolled → \* terminate at 37 wks.
  - \* severe uncontrolled cases → \* terminate before 37 wks after giving steroids for lung maturity.

- 📌 **NB:**
  - IV glucose for neonate
  - Guard against puerperal sepsis

- WHITE classification for DM :**
- A : GDM
    - A 1: no need for insulin
    - A 2: with need for insulin
  - B : overt DM started > 20yrs age for duration of < 10yrs
  - C : overt DM started 10- 20yrs age for duration of 10-20yrs
  - D : overt DM started < 10 yrs age for duration of > 20yrs
  - E : overt DM with calcified pelvic vessels
  - F : overt DM with nephropathy
  - R : overt DM with retinopathy



## Anemia é pregnancy

**Def:** ↓ Hb less than 11gm%

or less than 10.5gm% in 2<sup>nd</sup> trimester

**Inc:** commonest medical disorder during pregnancy

### Etiology :

\* Physiological ( dilutional anemia)  
( ++ plasma > + RBCs )

\* Nutritional ( iron deficiency anemia)

**COMMONEST** ←

\* Megaloblastic  
( folic A. & Vit B<sub>12</sub> deficiency )

\* Hemorrhagic

( bleeding in early, late pregnancy & PPHge)

\* Hemolytic ( congenital or acquired)

\* Hereditary (thalassemia , sickle cell anemia)

\* Aplastic

### Effect (complications):

→ **Maternal:** easy fatiguability / PTL / PPH / Puerpural sepsis

→ **Fetal :** IUGR / LBW/ PTL/ Neonatal sepsis

### Inv:

→ **M ( for iron deficiency anemia):** CBC / serum ferritin / TIBC

→ **F :** assessment of fetal wellbeing

### Ttt:

→ **Mild (10-11gm/dl) :** oral iron

→ **Moderate ( 7-10gm/dl) :**parentral iron

→ **Severe ( 4-7gm/dl) / Decompensated (< 4gm/dl) :** blood or packed RBCs

→ Guard against PPH / P.sepsis

→ Continue iron in puerperium

## Cardiac diseases é pregnancy

**Def:** RHDs(developing ), CHDs(developed)

### Physiological cardiac changes in pregnancy:

→ ± BP =  $\uparrow\uparrow\text{CO}$  ×  $\downarrow\downarrow\text{TPR}$

$\uparrow\uparrow\text{SV} \times \uparrow\uparrow\text{HR}$  (hyperdynamic circulation)

→ Waterhammer pulse: ( ++ S / D) difference

→ Apex :shifted to 4<sup>th</sup> intercostal space outside MCL

→ Split S<sub>1</sub> / S<sub>3</sub> / Systolic murmur

### NYHA classification:

I : Dyspnea on > effort

II : Dyspnea at ordinary effort

III : Dyspnea on < effort

VI : Dyspnea at rest

### Effect (complications):

→ **M:**worsen NYHA classification by 1 grade

→ **F:** LBW / IUGR / Fetal anemia

### Management:

\* **In pregnancy**

→ More frequent ANC

→ Guard against anemia / infection / HTN / Hyperthyroidism

→ Digitalis to be continued or started whenever needed

\* **In Labor:**

→ Semisitting / O<sub>2</sub> mask / Analgesics

→ Avoid fluid overload / Care é oxytocin ( has ADH like action)

→ Shorten 2<sup>nd</sup> stage by forceps

→ CS if obstetrically indicated

→ Lasix to ↓ VR & heart load

\* **In puerperium :**

→ Breast feeding CI in HF

→ Proper selection of contraception

**NO Ergometrine**

## Venous thromboembolism

### Pregnancy is a hypercoagulable state:

→ + fibrinogen / + f VII , VIII , IX , XI

→ ++ platelets activation

→ - - Ptn S & antithrombin III

→ Venous stasis due to pressure by gravid ut.

**The Risk F:** >35 yrs , obese , VV, H/O of DVT , thrombophilia , CS, sepsis sp . pelvic

**Cl.pict of DVT:** red, hot ,tender ,swollen calf ms

**Inv:** → DopplerUS

→ Venography CI during pregnancy

### Ttt:

→ **Prophylactic:**

\* for all pregnant females: hydration / ambulation

\* in presence of risk F : aspirin/ elastic stockings(for VV)

\* in patients é history of DVT or Thrombophilia:

Prophylactic dose of anticoagulants

Heparin (SC) / Warfarin ( oral) / Heparin (SC)

or Heparin / Heparin / Heparin or (clexane)

→ **If established DVT :**

Bed rest / therapeutic IV dose of anticoagulant

**NB:** → Warfarin is CI in 1<sup>st</sup> trimester ( teratogenic ) & in 3<sup>rd</sup> trimester ( fetal ICHge)

→ Prophylactic anticoagulants are given from beginning of pregnancy till end of puerperium

### When to stop anticoagulants before delivery?

- Aspirin 1 week before delivery

- Clexane 24hrs before delivery

### Proper selection of contraceptives

## Pulmonary Embolism

**Cl.pict:** Breathlessness / Hypoxia / Tachycardia

**Inv:** → ECG changes

→ Ventilation / perfusion scan

→ Pulmonary angiography

**Ttt:** IV Anticoagulants ( therapeutic dose), O<sub>2</sub> Therapy , ICU support

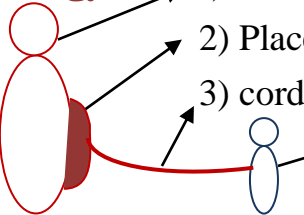
# Fetal asphyxia

( In utero )

**Def:** ↓O<sub>2</sub> & ↓ elimination of CO<sub>2</sub> \* ↑ CO<sub>2</sub> → acidosis ( PH < 7.2 )

**Etiology:**

- 1) Maternal : uncontrolled medical disorders
- 2) Placenta : separation / insufficiency
- 3) cord: prolapsed / loops around the neck
- 4) fetus: anomalies / instrumental deliveries



**Cl. Picture:** ( FETAL )

1) Abnormal CTG in assessment of fetal wellbeing:

- Loss of beat to beat variability
- Sinusoidal rhythm
- Late deceleration (sp.persistent)
- Brady < 100 **OR** Tachy >160 b/min

2) Meconium stained liquor in cephalic presentation

3) Fetal scalp PH < 7.25

**Management:**

- 1) Stop oxytocin + IV fluid rehydration
- 2) Turn mother to Lt lateral position + O<sub>2</sub> mask
- 3) Atropine

\* if distress

- **Relieved** : continue VD é continous CTG monitoring
- **Not relieved** : immediate delivery
  - If fully dilated: Forceps **OR** Breech extraction
  - If not fully dilated: CS

# Neonatal asphyxia

( Post natal )

**Def:** ↓O<sub>2</sub> & ↓ elimination of CO<sub>2</sub> \* ↑ CO<sub>2</sub> → acidosis in neonate

**Etiology:**

- persistent fetal asphyxia
- morphine given to the mother 2 – 4 hrs before delivery
- meconium aspiration
- cong anomalies of respiratory , circulatory systems
- prematurity
- birth injuries

**Cl. Picture:** APGAR score at

- 1min for need of resuscitation
- 5min for prognosis

	0	1	2
<u>Appearance</u> ( color )	Blue	Trunk → pink Extremities → blue	Pink
<u>Pulse</u>	—	< 100 b/min	> 100b/min
<u>Grimace</u> ( reflexes )	—	Grimace	Active cough & sneeze
<u>Activity</u> ( movement )	Limp	Some flexion	Active movement
<u>Respiration</u>	—	Slow , irregular	Active cry

**Ttt:**

- ▶ Prevention
    - proper ANC & control of maternal diseases
    - proper intranatal care
  - ▶ ttt : A ( Airway & suction )  
B ( Breathing & O<sub>2</sub> mask )  
C ( Circulation CPR & warmth )  
D ( Drugs: Naloxone , NaHCO<sub>3</sub> , Adrenaline , Antibiotics )
- \* Proper use of Instrumental delivery
  - \* Episiotomy whenever needed
  - \* Proper use of morphine
  - \* Care during delivery of after coming head

# Fetal birth injuries



**Definition:** Injuries of fetus at birth (iatrogenic)

**Etiology:** (Instrumental / prematurity / CPD .....)

**Types:**




1) Bone injuries:


- Skull : ± ICHge\*


	Subperiosteal Hge (cephalhematoma)	Caput succedaneum (chignon)
<b>Causes</b>	Wrong application of forceps / * Depressed fracture or fissure fracture	Normal ventouse application Prolonged / obstructed labor
<b>When</b>	After few hours	At birth
<b>Shape</b>	Overlie a certain bone Never crosses suture line Skin over it is Normal	Any area of the scalp May cross the suture line Skin over it is echymotic
<b>Fate</b>	May be infected Calcification Hyperbilirubinemia ttt:  Expectant ttt (Antibiotics & follow up)  Measures to ↓ ICT (in cases of ICHge)	Subside spontaneously in 1-2 days

- Other bones : humerus / clavicle / spine injuries / shoulder dislocation → ttt: Splint / slab ( for long bones injury )

2) Muscle : as sternomastoid → ttt: Passive traction

3) Nerves :  Brachial plexus  C5,6 : Erb's palsy ( Policeman tip position )  
 C8,T1: Klumpke's palsy ( Ape hand )

 Facial nerve injury ( flat nasolabial fold )

 ttt: Physiotherapy  
( will resolve if oedema )

4) Organs : liver / spleen / anus / hymen ( as in breech delivery ) → ttt: Prevention

# Puerperium

**Definition :** period of 6 wks following delivery during which all changes that occurred during pregnancy , will return back to normal.

## Changes:

**Uterus:**

- Lochia(endometrium) : rubra → serosa → alba
- Myolysis
- Size at umbilicus on day of delivery then SP ( 2wks later ) then prepregnancy size ( 4wks later )
- Cx & lig back to normal (4wks later )

**Vagina / Vulva :**

- Reformation of rugae
- Gapping of vulva disappears

**Breast :**

- PRL for milk formation
- Oxytocin for milk expression
- Colostrum ( ++Ptns , ++ Ig , -- CHO , -- Fat ) first 3 days , then milk expressed
- lactational amenorrhea in 50% of females
- pigmentation of areola remains

**vital signs :**

- BP back to normal
- ++ T° , but < 38 in 1<sup>st</sup> 24hrs after labor
- Transient ++ pulse
- Diuresis ( retention only with painful episiotomy )
- Constipation ( due to lax muscles)
- Emotional liability
- Post partum blues are common ( needs support & reassurance) but rarely depression ( needs ttt) & psychosis (needs hospitalization )

**PPC Program :** 1week after labor , then 4-5 weeks later  
**to check :**

- \* vital signs returned back to normal
- \* breast feeding & no milk engorgement
- \* uterus back to normal & lochia
- \* abdominal & pelvic floor excercises
- \* wounds : CS or episiotomy wound
- \* care for bladder & bowel by normal evacuation
- \* contraceptive counselling

## Puerpural pyrexia

**Definition:** ++ T° ≥ 38° after 1<sup>st</sup> 24hrs of delivery , persisting for 24hrs or recurring within 24hrs

## Etiology :

- 1) Mastitis ( most common )
- 2) P. sepsis ( most serious )
- 3) UTI
- 4) Wound infection
- 5) Respiratory tract infections
- 6) DVT , Thrombophlebitis
- 7) other causes of fever as typhoid , malaria

“ Any case of puepural pyrexia should be considered p.sepsis until proved otherwise ”

# Puerperal sepsis ( 3<sup>rd</sup> cause of maternal mortality in Egypt )

**Definition :** wound infection of genital tract after labor till end of puerperium

## Etiology :

- **Predisposing F :**
  - General : ↓ immunity/ anemia / DM
  - Local : tears / septic conditions / instrumental delivery
  - Prolonged labor & prolonged PROM
  - Retained parts of placenta or membranes
- **Organism :** Polymicrobial ( Gram -ve / +ve / anaerobes )
- **Route of infection :**
  - Ascending from vagina
  - Autogenous from elsewhere in body
  - Exogenous from attendees

## Pathology :

- **1<sup>ry</sup> site ( symptoms immediately after delivery )**
  - \* Uterus , Cx , Vagina , Perineal lacerations
- **2<sup>ry</sup> site ( late symptoms after 7-10 days )**
  - \* Parametritis , salpingo oophoritis , peritonitis , pelvic thrombophlebitis ( after 14 days )

## Cl.picture:

- **Symptoms:**
  - \* Fever/ foul smelling discharge / lower abdominal pain / ± oedematous white swollen limbs ( phlegmasia alba dollens )
- **Signs:**
  - \* General :Fever / tachycardia / toxic facies / dehydration
  - \* Abdominal : tenderness / guarding / rebound tenderness
  - \* PV: jumping sign / horse-shoe induration around Cx
  - \* ± LL affection : swollen white painful limbs
  - \* Septicemia in severe untreated cases

## Investigations :

- \* **To exclude other DD :**
  - Breast exam / Chest X-Ray ( for chest infections )
  - Urine analysis ( for UTI ) / Doppler US ( for DVT )
- \* **To confirm diagnosis :**
  - Culture & sensitivity from discharge
  - Blood test ( ++CRP , ++ESR , ++TLC , ++DLC (shift to the left) , ++ staff / segmented ratio )
  - Pelvic US

## Treatment :

- \* **Prevention :**
  - by proper ANC ( control anemia , DM )
  - 1<sup>st</sup> stage of labor :
    - Avoid prolonged labor
    - Give antibiotics in PROM
  - 2<sup>nd</sup> stage:
    - Avoid instrumental deliveries
    - Proper aseptic techniques while doing episiotomy
  - 3<sup>rd</sup> stage:
    - Explore placenta & memb. for any missing parts
    - Repair of any laceration under aseptic technique
- \* **Active ttt :**
  - Hospitalization
  - IV fluids / IV analgesics / IV antipyretics
  - IV antibiotics
    - Cephalosporins for Gram +ve
    - Gentamycin for Gram -ve
    - Metronidazole for anaerobes
- \* **Special situations :** ( in addition to above mentioned ttt )
  - Abscess : drainage
  - In retained parts : Ergometrine ± D&C
  - Infected wound : remove suture& drainage
  - Septic thrombophlebitis : anticoagulants& immobilization
  - Pelvic abscess: Fowler position , drainage by colpotomy

# Analgesia & Anesthesia →

**Spinal of choice :**  
 ( hypotension , \* IV preload is needed )  
**Epidural :**  
 ( hypotension , \* IV preload is needed )  
**General :** ( affect fetus & mother )

## I ) Pharmacological

General	Local
<p><b>1) Narcotics:</b>                      *Pethidine ↪ × 10                      *Morphine ↪                      *Butorphanol ↪ × 5                      Side effect: fetal RDS                      Antidote : naloxone ( Narcan )</p> <p><b>2) Non- Narcotics :</b>                      * Benzodiazepines ( Valium )</p> <p><b>3) Inhalation :</b>                      * N<sub>2</sub>O + O<sub>2</sub> → 50:50                      * Trilene ( obsolete )</p>	<p><b>1) Epidural :</b>                      Side effects :                      * block motor too ( not just sensory )                      * loss of urge of straining                      * accidental puncture of dura : headache</p> <p><b>2) Local infiltration anesthesia ( é lidocane )</b>                      Most commonly used ( for episiotomy or tears )</p> <p><b>3) Pudental nerve block</b>                      At level of ischial spine</p> <p><b>4) Paracervical block</b>                      At lateral fornix                      Side effect : fetal bradycardia ( * rarely used )</p>



## II ) Non-Pharmacological

- 1) ANC classes ( how to relax / breathing excercises / abdominal & pelvic floor ms excercises )
- 2) TENS ( Gate theory of pain )
- 3) Acupuncture ( Gate theory of pain )
- 4) underwater birth

## Induction of labor

\* **1<sup>st</sup> Do Bishop score:**

	0	1	2	3
Dilatation	closed	1-2 cm	3-4 cm	>5 cm
Effacement	< 30%	30-50%	50-80%	>80%
Position	posterior	mid	anterior	
Consistency	firm	mid	soft	
Station	-3	-2	-1 / 0	+1 / +2

\* **If Bishop score < 5**    \* **Ripening of Cx is needed by PGs**

	PGs	Amniotomy	Oxytocin
Use	For Cx ripening ( IOL )	For induction or augmentation of labor by release of endogenous PGs	For augmentation of labor or induction if Bishop score > 5
Route	PGE <sub>1</sub> 25µg vaginal tab	Stipping followed by ROM by amniohook	IV drip ( titrated)
Complications	*GIT upset (vomiting ,diarrhea) *Cardiac symptoms ( palpitations ) *Rupture Ut or Cx sp in mutlipara	* Cord prolapse * Placental separation * Introduction of infection * Failed induction	* Dysfunctional labor * Fetal distress * Rupture Ut sp in multipara & scarred Ut * Rarely fluid overload (ADH like action)
CI	* Grand multipara * Scarred Ut * For augmentation of labor		

## Induction of abortion

### 1<sup>st</sup> Trimester

( no bones )

#### A) Srgical is preferred

#### (D&C or SE):

complications :

- \* Cervical lacerations
- \* Uterine perforation
- \* Infection
- \* Anesthesia complications
- \* Remote :incompetent isthmus

#### B) Medical:

( PGE<sub>1</sub> oral or vaginal tab  
Misoprostol / 4-6hrs for  
24hrs )

Complications :

- \* Incomplete evacuation
- \* GIT complications
- \* Cardiac complications

### 2<sup>nd</sup> Trimester

( presence of fetal bones )

#### A) Medical induction of

#### Abortion:

by Misoprostol PGE<sub>1</sub> ,  
rarely Oxytocin as receptors  
present in late 2<sup>nd</sup> trimester



#### B) Surgical (Hysterotomy):

if medical induction failed or  
is CI

Delivery of fetus before  
viability through an  
abdominal & uterine  
incisions

**NB : if after viability**  
\* name is CS

# Instrumental delivery

	Forceps 	Ventouse 
Start	By Chamberlen family ( 1 <sup>st</sup> to use forceps on <u>living</u> fetus ) in year 1560-1730	By Malmstrom in 1954
Indications	<ul style="list-style-type: none"> <li>* In modern obstetric , only <u>low</u> ( outlet ) forceps is used <u>for extraction only</u></li> <li>* Kieland long forceps is rarely used for rotation &amp; extraction in OP</li> <li>* in fetal distress to shorten 2<sup>nd</sup> stage</li> <li>* In Face presentation &amp; PTL</li> <li>* Aftercoming head of Breech ( Piper's forceps )</li> <li>* Dead fetus</li> </ul>	<ul style="list-style-type: none"> <li>* For rotation &amp; extraction in OA or OP positions</li> <li>* Less encroachment on maternal pelvic space</li> <li>* Time consuming ( need 20minutes to induce -ve pressure)</li> <li>* not used in fetal distress</li> <li>* CI in face or preterm (only used in <u>vertex</u> presentation)</li> <li>* Only used on <u>living</u> fetus</li> </ul>
Prerequisites	Fully dilated Cx / Engaged head NO CPD / Membranes ruptured Presence of uterine contractions Empty bladder & rectum Antiseptic techniques / Anesthesia	
Complications	<b>Maternal ( mainly ) :</b> <ul style="list-style-type: none"> <li>- lacerations &amp; tears ( perineal / vaginal / cervical &amp; even rupture uterus )</li> <li>- PPHge ( traumatic or atonic )</li> </ul> <b>Fetal :</b> <ul style="list-style-type: none"> <li>- if wrong application : head compression , skull fracture &amp; ICHge</li> <li>- cephalhematoma ( bone fracture or fissure )</li> <li>- facial nerve injury</li> </ul>	<b>Fetal ( mainly ) :</b> <ul style="list-style-type: none"> <li>- cephalhematoma</li> <li>- scalp lacerations</li> <li>- ICHge if excessive -ve pressure in preterm fetus with fragile BVs</li> </ul> <b>Maternal :</b> <ul style="list-style-type: none"> <li>- If wrong application ( includes cervical tissue in the ventouse cup ) → lacerations</li> </ul>

# Episiotomy

**Definition :** an incision in post vaginal wall , perineum & skin done during vaginal delivery to widen the vulval introitus for the fetus

**Indications:**

**Maternal :** → rigid perineum  
→ instrumental delivery

**Fetal :** → macrosomia  
→ malpresentations or malposition  
→ prematurity ( to avoid sudden compression & decompression of fetal head )

**Timing :** Just before crowning

**Types :**

	Median	Mediolateral
Benefit	More anatomical More cosmetic Less dyspareunia Less pain Less blood loss Easier repair Better healing	No extension to anal sphincter & rectum so avoid damage of anal sphincter ( ONLY advantage over median episiotomy)

**Complications :**

- extension to anal sphincter in median type
- hematoma → Infection
- later dyspareunia



# Cesarean Section



**Def :** Delivery of a viable ( ie > 24wks gestation ) fetus through an abdominal ( usually Pfannensteil skin incision ) & uterine (usually transverse lower segment) incision , irrespective the fetus was living or dead .

**NB:** if this delivery is before viability ( ie before 24wks ) this is called “ Hysterotomy ”

**Types of CS :** → **LSCS** : Transverse ( more common ) or vertical incision performed in the lower segment of the uterus.  
→ **USCS ( Classical CS )** : vertical incision in **US** of the uterus performed in certain situations as placenta accreta.

## Indications:

- **Maternal** : CPD / Medical disorders with failed IOL or if CI / HPV warts in vulva
- **Fetal** : Distress ( while Cx is not fully dilated ) / Macrosomia / Multiple gestations or twins with 1<sup>st</sup> non – cephalic
- **Obstetric** : → Previous more than 1 CS ( ie ≥ 2CS )  
→ Placenta previa / Malpresentations that CI vaginal delivery ( ie MP, brow , transverse lie , persistent oblique OP or DTA)

## Techniques:

	LSCS	USCS
Uses	More commonly used	Used in certain situations
Rupture	0.2 – 0.9 %	×10 times ( 2-9 % )
Scar	Formed of 2 ms layers * less Hge / better coaptation / less hematoma * better healing ( strong scar )	Formed of 3 ms layers * more Hge / less coaptation / more hematoma * worse in healing ( weaker scar )
Peritoneum & subsequent adhesions	Presence of visceral peritoneum * suturing it covers the scar ; less ileus , less infection due to peritonization & less adhesion formation	Visceral peritoneum is attached ( not separate ) * more adhesions later

## Complications of CS :

- **Intraoperative** : → Anesthesia complications  
→ Injury to bladder/ intestine / BVs
- **Early post operative**: → Reactionary Hge ( when BP increases & returns back to normal due to slipped ligature )  
→ Ureteric injury symptoms
- **Late post operative** : → Wound infection  
→ Paralytic ileus , acute gastric dilatation  
→ Thromboembolic complications  
→ Adhesions & subsequent tubal & peritoneal factors of infertility  
→ Placenta accreta if implanted on the scar site

**NB : VBAC ( Vaginal Birth After CS ) or TOLAC ( Trial Of Labor After CS )**

- Prerequisites previous only one CS
- This CS should be LSCS with NO post operative complications ( infection , proper spacing )
- No indications for CS in current pregnancies
- **Complications of VBAC** : rupture uterus

“ Previous normal VD followed by CS improves the chance of a safe and successful VBAC ”

# Prenatal diagnosis of congenital anomalies

**Definition :** In utero identification of congenital or chromosomal anomalies in the fetus for early management ( ie early induction of abortion if needed , counselling of the parents to be prepared )

**Indications:** High risk cases needing screening

- 1) Maternal age > 35 yrs ( more risky for Down syndrome )
- 2) Early exposure to teratogens ( drugs , radiation , infection )
- 3) Previous H/O of anomalies in babies or family H/O of genetic disorders

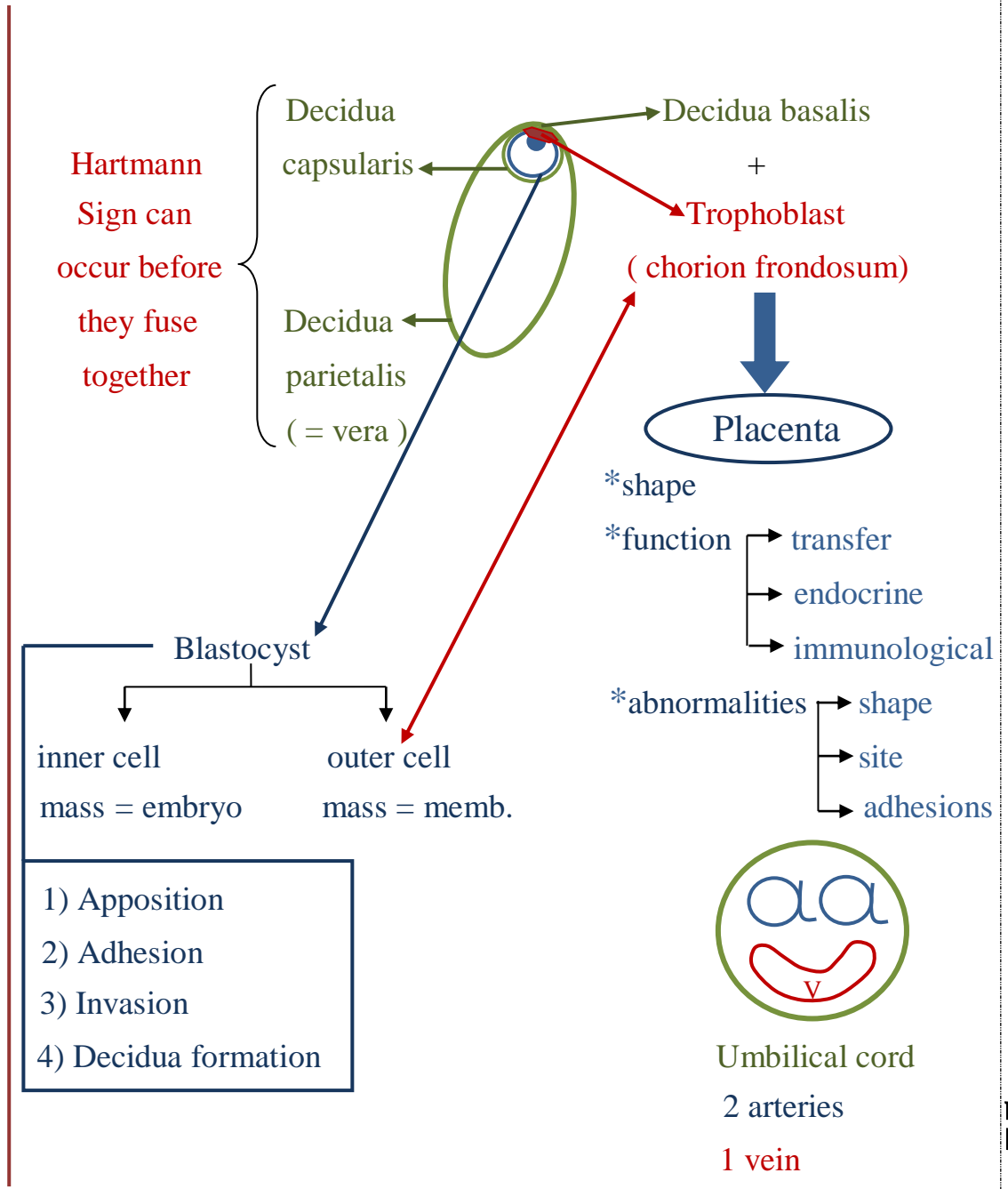
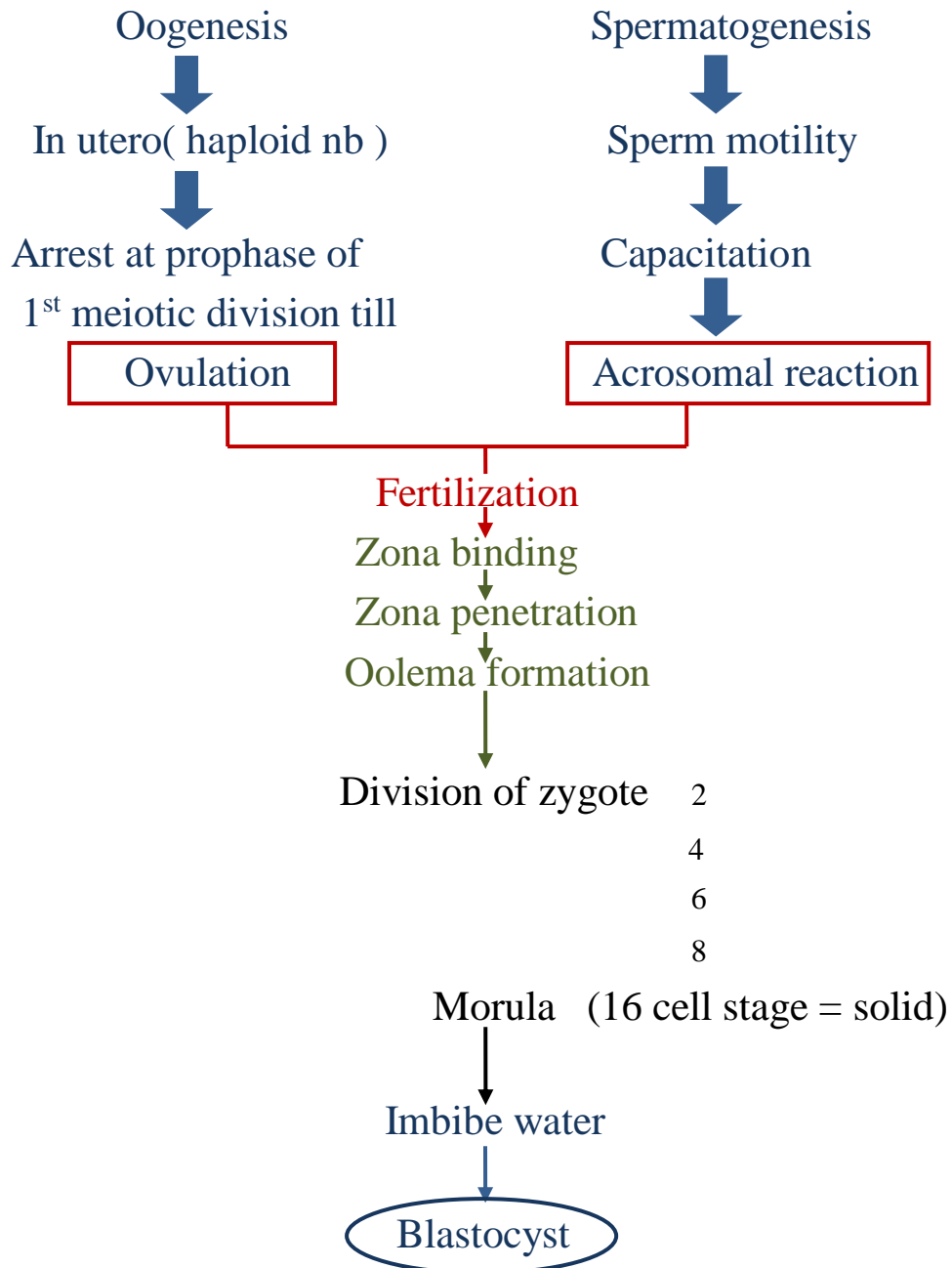
**NB :** If screening test is positive → a confirmatory test is needed



Screening Tests ( cheap / non invasive / low false -ve )	Diagnostic (confirmatory) Tests ( accurate / invasive / low false positive )
<p><b>1) Maternal serum biochemical markers :</b></p> <ul style="list-style-type: none"> <li>- DMT : <math>\beta</math> HCG + PAPPA ( 11 – 13 wks )</li> <li>- TMT : <math>\beta</math> HCG + MSAFP + uE<sub>3</sub> ( 14-16 wks )</li> </ul> <p>NB : <u>in Down syndrome</u> all markers ↓↓↓ EXCEPT <math>\beta</math> HCG ↑↑↑</p>	<p><b>1) Advanced US ( level 2 )</b></p> <ul style="list-style-type: none"> <li>- anencephaly , cystic hygroma , skeletal anomalies ( 11-13 wks )</li> <li>- major anomalies : NTDs , skeletal , cardiac , renal &amp; GIT anomalies , diaphragmatic &amp; ventral hernias ( 18-22 wks )</li> </ul>
<p><b>2) US :</b></p> <ul style="list-style-type: none"> <li>- NT , presence of nasal bone ( 11-13 wks ) ( NT &gt; 3mm , hypoplastic nasal bone <u>in Down</u> )</li> <li>- Other soft markers : as cardiac echogenic focus , pelvicalyceal dilatation , short femur , Tricuspid regurge ( as <u>in Down</u> ) ( 18-22wks )</li> </ul>	<p><b>2) CVS : ( trophoblastic tissue biopsy )</b></p> <ul style="list-style-type: none"> <li>- vaginal ( at 11wks ) / abdominal ( at 14 wks )</li> <li>- both TAS guided / abortion risk 2 %</li> </ul>
<p><b>3) Cell free Fetal DNA : ( 10 wks )</b></p> <ul style="list-style-type: none"> <li>- used as screening &amp; confirmatory</li> <li>- non invasive but expensive &amp; not available in all centers</li> <li>- diagnostic only for 5 -12 chromosomes ( including ch. 21, 13 , 18 ) , but not the whole 23pairs of ch. as other diagnostic tests as CVS &amp; amniocentesis</li> </ul>	<p><b>3) Amniocentesis: ( Amniotic fluid &amp; cells shedded obtained by needle US guided)</b></p> <ul style="list-style-type: none"> <li>- abdominal at 14-16 wks</li> <li>- risk of abortion 1% , infection , ROM , Pl.separation</li> </ul>
<p><b>4) Cordocentesis : ( Fetal blood sample , US guided)</b></p> <ul style="list-style-type: none"> <li>- diagnostic &amp; therapeutic in exchange transfusion in Rh isosensitization</li> <li>- abdominal at 20wks</li> </ul>	<p><b>5) Cell free Fetal DNA: ( as before )</b></p>

**NB : PGD ( Pre implantation genetic diagnosis ):** Done in association with IVF procedure  
Single cell at 8 cell stage or dozen cells in blastocyst stage → stage can be taken with no damage to fetus , to provide DNA for PCR analysis for inherited genetic disorders. “ for diagnosis of anomalies before doing the embryo transfer ”

# Fertilization , Implantation & Placenta formation



# Diagnosis of pregnancy

- 1) **Symptoms** : missed period / nausea & vomiting
- 2) **Signs** : amenorrhea / ( Naegle's formula ) EDD : LMP + 9months + 7days
- 3) **Investigations** :
  - Quantitative blood test  $\beta$ HCG ( on day of missed period )
  - Qualitative blood pregnancy test (+ve / -ve) ( 2-3 days after missed period )
  - Urinary pregnancy test  $\beta$ HCG ( 3-5 days after missed period )
  - US ( TVS ) at **5wks GS** → GS + yolk sac → **CRL 6wks ( fetus ) with pulsations**

Sequence of diagnosis ↓

## Placenta

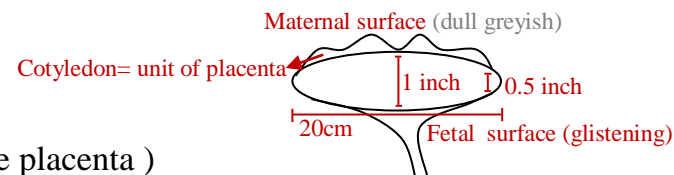
**Definition** : interface between mother & fetus

**Formation** : Chorion frondosum + decidua basalis

**Gross**: 20 cm diameter ( discoid ), 500gm weight , formed of 10-38 cotyledons ( unit of the placenta )

**Functions**:

- 1) **Transfer** :
  - **Simple diffusion** : é conc gradient as  $H_2O$  ,  $O_2$  ,  $CO_2$
  - **Facilitated diffusion** : é carrier as glucose , ketones , FA
  - **Active transport** : against conc. gradient as aa ,  $Ca^{++}$  , Fe
  - **Pinocytosis** : for large molecules as LATS , Ig
- 2) **Endocrine** :
  - **HCG** : glycoptn to maintain CL of pregnancy in 1<sup>st</sup>△
  - **HPL** : ptn , main metabolic hormone , provide glucose , aa , FA to fetus
  - **Estrogen** : steroid for hyperplasia of ut ms , breast **duct** ↑PRL , ++ Oxytocin receptors
  - **PRG** : steroid for hypertrophy of myometrium , decidua, Breast **alveoli** , oedema , immunological
- 5) **Immunological** : for fetal acceptance



**Abnormalities** :

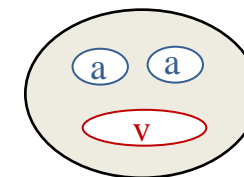
- 1) **In shape** :
  - **Membranacea** ( diffuse / large ) placenta ( Circumvellate )
  - **Bilobate** : 2 lobes é tissue inbetween
  - **Bipartite** : 2 parts é membranes inbetween
  - **Succenturiate** : one large part & another small accessory lobe ( may be missed & retained in delivery )
- 2) **In size & weight** : ++ in \$ , hydrops fetalis , DM ( > 600gm & > 5cm thickness )
- 3) **In adhesions** : accreta / increta / percreta
- 4) **In implantation** : on LUS = pl.previa
- 5) **Pl.infarcts**:
  - White : fibrin deposition / calcium deposition
  - Red: hge as in HTN
- 6) **Calcification**: with advanced aging of placenta

## Umbilical cord

**Definition** : develops from the ventral ( connecting ) stalk ,measures 50cm , 1-2 cm diameter

**Abnormalities** :

- 1) **Insertion** :
  - Marginal ( battledore )
  - Velamentous ( in membranes )
- 2) **Knots** :
  - False: accumulated Wharton's jelly ( no complications )
  - True :→ fetal asphyxia
- 3) **Length** :
  - Too long ( > 60 cm )→ cord prolapsed & true knots , loops around neck
  - Too short ( < 35 cm )→ prolonged 2<sup>nd</sup> stage of labor
- 4) **Vasa previa** : Vessels crossing Cx . connecting placenta to another lobe as in velamentous insertion ( **If bleeding→ severe fetal distress ± death** )



# Physiological changes during pregnancy

## 1) Genital :

- Uterus : height 7.5 → 35 cm / weight 50gm → 1kg
- Cx :
  - LUS is formed from isthmus starting from 2<sup>nd</sup> trimester & reach 10 cm at full term
  - Congested ( Goodell sign )
  - Bluish ( Chadwick sign )
  - Mucus plug
- Vulva , vagina , ovaries:( ↑ vascularity )

## 2) Breast :

- ++ Size / vascularity / pigmentation of nipple & areola
- Secondary areola appearance
- Montgomery tubercles ( dilated sebaceous glands on areola )
- Colostrum at 4<sup>th</sup> month

## 3) Skin :

- Pigmentation ( ++MSH )
  - ↳ Linea Nigra
  - ↳ Chloasma gravidarum ( Butterfly pigmentation on face)
- Striae gravidarum ( stretch marks )

## 4) Metabolic:

- Anabolic (ptn)
- Diabetogenic (CHO)
- ++FFA
- ++ Requirements for Ca / Fe / minerals
- Salt & water retention
- ++ weight 12-14 kg ( mostly in 3<sup>rd</sup> trimester)

## 5) Cardiac :

- Apex position changes to be in 4<sup>th</sup> IC space , outside MCL
- ± BP = ↑CO ( ↑SV× HR↑ ) × ↓TPR

## 6) Urinary:

- Dilated ureter (sp. Rt side )
- Frequency sp 1<sup>st</sup> & 3<sup>rd</sup> trimester

## 7) GIT:

- Emesis gravidarum ( morning sickness )
- Ptyalism ( ++ Salivation )
- Reflux esophagitis  
(Heart burn due to relaxation of stomach cardiac sphincter)
- Constipation ( reduced GIT motility )

## 8) Blood :

- ++ Volume sp at 32<sup>th</sup> wk ( plasma > RBCs \* dilutional anemia)
- Hyperdynamic circulation ( \* functional systolic murmur )
- ++ Fibrinogen & WBCs

## 9) Respiratory :

- Hyperventilation ( ++PRG )

## 10) Skeletal :

- Lumbar lordosis / Backache
- Relaxation of ligaments

## 11) Endocrinal :

- Pituitary
  - Thyroid
  - Parathyroid
  - Adrenal
- } ++ Size / Vascularity / Activity  
} ++ Total forms of hormones due to ++ binding  
( but active free form is unchanged )

# ANC Program

**Definition :** program of preventive obstetrics to ensure safe mother & fetus.

**Schedule :** 1<sup>st</sup> visit ( **booking visit** ) , then return visits monthly till 7<sup>th</sup> month , then biweekly in 7<sup>th</sup> & 8<sup>th</sup> moths , then weekly in 9<sup>th</sup> month.

## What to do ??

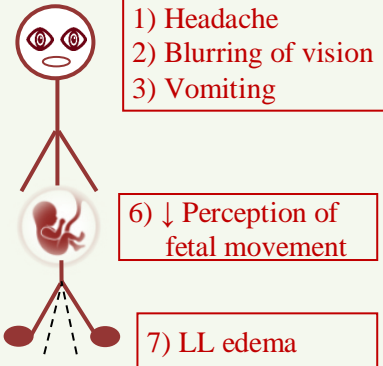
### A) Booking visit

- 1) **H/O** :
  - LMP / EDD , GA calculation
  - Medical , surgical, family H/O
  - Previous obstetric H/O
- 2) **General Exam** : vital signs / weight
- 3) **Inv** :
  - Labs: blood group Rh / CBC / RBS / LFTs / KFTs / PT , PC , INR / HBsAg / TSH / urine analysis
  - US: gestational sac ( ± intrauterine / ± living / ± single )
- 4) **Instructions:**
  - **Diet** : Small frequent meals / supplementations : Folic acid 1<sup>st</sup> trimester  
Ca / Fe / multivitamins 2<sup>nd</sup> & 3<sup>rd</sup> trimester
  - **Excercise** : mild to moderate with rest whenever fatigued.
  - **Sleep** : 8 hrs night & 2 hrs nap.
  - **Stop active or passive smoking to avoid SIDS.**
  - **Teeth** : care & avoid caries.
  - **Bowel** : +++ vegetables to avoid constipation.
  - **Breast** : use creams in last trimester to avoid nipple cracks.
  - **Intercourse**: allowed except in bleeding or severe pain  
( PGs in semen ++ uterine contractions )
  - **Travelling** : in comfortable way , long flights : aspirin is needed  
( as pregnancy is hypercoagulable state)
  - **Vaccination** :  
Live attenuated are CI , only dead vaccines ( as tetanus / polio / rabies /Influenza/ cholera / typhoid ) or Ig as hepatitis B & A can be given
  - **Drugs** :safe drugs as per FDA category / classification :
 

A ) safe : as L- thyroxine	✓
B ) Risky in animals , no data in humans: as penecillin	✓
C ) Risk in human is not ruled out : as NSAIDs , Steroids	✓
D ) Risky in human , but benefit > risk : as Tetracycline	±
X ) Teratogenic , CI in pregnancy as risk > benefit : as chemotherapy , warfarin in 1 <sup>st</sup> trimester	× × ×

### B) Return visits

- 1) **H/O of any complain ± reassurance** :  
emesis , heart burn , constipation , mild headache ( give paracetamol ) , breast tenderness , Braxton Hicks in late pregnancy , leg cramps ( give Ca / Mg ) , Backache ( more rest ) , vaginal discharge ( leucorrhoea is normal ) , heat sensation ( PRG effect )
- 2) **Ask about warning symptoms** : ⚠️
  - 1<sup>st</sup> trimester: ( hyperemesis / bleeding )
  - 2<sup>nd</sup> trimester ( quickening )
  - 3<sup>rd</sup> trimester →


- 3) **Exam** :
  - General** :
    - Vital signs
    - Weight
  - Obstetric**:
    - Leopold maneuvers in 3<sup>rd</sup> trimester  
( FL / FG / UG / 1<sup>st</sup> PG / ± 2<sup>nd</sup> PG )
    - Doppler stethoscope for FHS
- 4) **US** :
  - one in 2<sup>nd</sup> trimester ( anomaly scan)
  - one in 3<sup>rd</sup> trimester ( fetal growth /liquor amount / pl.location )
- 5) **Routine labs** :
  - \* In each visit :
    - CBC ( to detect & ttt anemia )
    - Urine analysis ( for asymptomatic bacteruria)
  - \* 50gm OGTT at 24-28 wks  
( screening for gestational DM in all pregnant females)
- 6) **At 36wks** : PV for primi ( if unengaged head ) to assess pelvimetry & do CPD tests
- 7) **Identify high risk pregnancies to be managed accordingly.**

## High risk pregnancies

\* **Definition :** pregnancy that endangers health of mother / fetus or newborn

\* **Examples :**

- 1) Elderly primi ( > 35yrs ) , pregnancy > 40 yrs old , grand multipara (  $\geq 5$  deliveries )
- 2) Maternal medical condition : uncontrolled DM , HTN , cardiac , SLE, ...
- 3) Obstetric problems: H/O of RPL, current APHge , ROM , PTL , ...
- 4) Fetal problems : anomalies , IUGR , Multiple pregnancies , ...

\* **Management :**

- More frequent ANC visits
- Delivery in specialized equiped place
- Management in pregnancy & labor accordingly

## Maternal mortality in Egypt

\* **Incidence :** 52 /100.000 deliveries as per year 2013 ( number of maternal deaths due to Obstetric causes )

\* **Common causes:**

- 1) obstetric hemorrhage : as PPHge 30%
- 2) PE & Eclampsia : 15%
- 3) puerpural sepsis : 3.5%
- 4) others as pulmonary embolism , DIC , Cardiac problems ,...

# Clinical History Taking



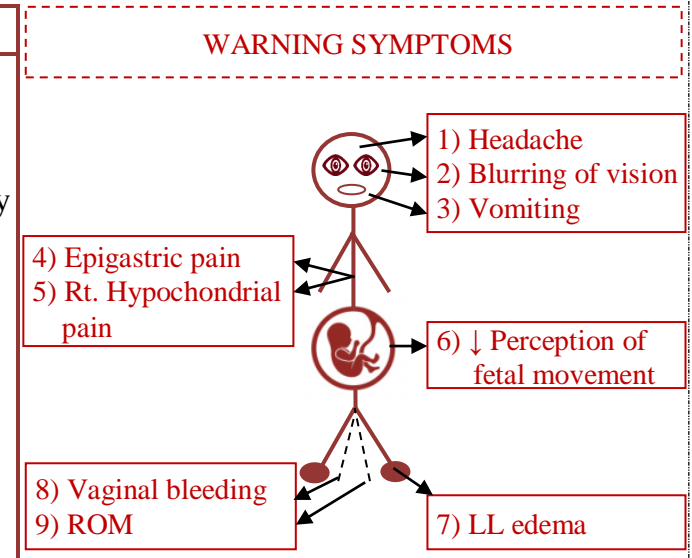
# General sheet

**Personal H/O :** Name / Age / Marital status / Parity / Occupation / Residency / Special habits

**C/O :** in patient's own words ( + duration )

**Present H/O :**

Gynecological sheet	Obstetric sheet
<ol style="list-style-type: none"> <li>1) Analysis of complaint ( onset / course / duration )</li> <li>2) Analysis of Pain / Bleeding / Mass</li> <li>3) Ask about <u>etiological</u> F , symptoms &amp; complications of your <u>DD</u> to reach a provisional diagnosis</li> <li>4) Investigations &amp; ttt done for this patient</li> <li>5) Review of other systems involvement</li> </ol>	<ol style="list-style-type: none"> <li>1) LMP EDD ± GA</li> <li>2) Analysis of 1<sup>st</sup> trimesteric symptoms                             <ul style="list-style-type: none"> <li>↳ Vomiting</li> <li>↳ Bleeding</li> <li>↳ Frequency</li> </ul> </li> <li>3) Analysis of 2<sup>nd</sup> trimesteric symptoms                             <ul style="list-style-type: none"> <li>↳ quickening</li> <li>↳ relieve of 1<sup>st</sup> trimesteric symptoms</li> </ul> </li> <li>4) Analysis of 3<sup>rd</sup> trimesteric symptoms:                             <ul style="list-style-type: none"> <li>⚠ ( warning symptoms ) ⚠</li> </ul> </li> <li>5) Analysis of C /O ( <u>if present</u> )</li> <li>6) Investigations &amp; ttt done</li> <li>7) Review of other systems</li> </ol>



**Past H/O:**

- ↳ Medical : medical disorders prior to C/O
- ↳ Surgical : operations done prior to C/O

**Family H/O :** of similar condition / consanguinity

**Menstrual H/O :** menarche / menstrual index eg :  $\frac{3}{28}$  / dysmenorrhea / intermenstrual bleeding

**Obstetric H/O :**

F	P	A	L
> 36 wks	24-36	< 24	now

 / GPL / history of contraceptions

eg:

Year of pregnancy	GA at termination / delivery	Outcome	Mode of delivery / termination	place	Pregnancy complications	Postpartum complications	lactation
1999	± 8 wks	abortion	SE	KA	NO		
2003	± FT	L ♀	VD	home			Failure of lactation
2007	± 28wks	SB ♂	CS	Private clinic		Wound sepsis	

↳ IUD  
 ↳ OCPs

**Provisional diagnosis :** patient's name / Age / GPL / complaint in medical terms ( + duration ) / provisional diagnosis / relevant medical problems / relevant surgical operations

# I. General Gynecological sheet

## 1) Personal History: (NAM PORSH)

Name , age, marital status,

gravidity and parity, occupation, residence, special habits, husband data (in infertility sheet)

## 2) Complaint:

- The most distressing symptom (why she is admitted in the hospital)
- Written in the patient's own words
- Mention the duration

## 3) Present history:

- *Analysis of the complaint* (onset, course, duration)
- *Analysis of other gynecological complaints* (bleeding, mass, pain, discharge)
- *Analysis of causes and consequences of this complain*
- *Analysis of treatment and investigations*
- *Review of other systems*

## 4) Menstrual history:

- Menarche , Rhythm,
- Duration/ Frequency (menstrual index)
- Amount of menstrual blood (change how many pads per day)
- Dysmenorrhea, PMS
- Intermenstrual pain bleeding, discharge

**NB: L.M.P** (unacceptable to forget it, *in some sheets as bleeding, infertility, obstetric sheet.... it needs to start within the present history even*)

### 5) Obstetric history:

- 4-Digit Code: *F P A L*

Full term	Preterm	Abortion	Living
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- *For each pregnancy (whether term, preterm, abortion, ectopic, v.mole)*

Year of pregnancy	GA at termination / delivery	Outcome	Mode of delivery/ termination	place	Pregnancy complications	Postpartum complications	lactation

- *Contraception:*

method, duration , complications

### 6) Past history:

- Past Medical disorders e.g. HTN, DM, BA, TB, RHD, RF, bilharziasis.
- Past Surgical
- Allergy

### 7) Family history:

- Similar condition
- Medical disorders e.g. HTN, DM
- Twins

### 8) Provisional Diagnosis:

*Name, Age, Gravidity and parity, Complain and its duration in medical terms, Most probable DD, relevant medical problems, relevant surgical procedures done*

## II. Obstetric sheet

### 1) Personal history : (NAM PORSH)

- Name            - Age                            - Marital state
- Gravidity and parity  
    e.g. 4th gravida para 3 with 3 living offsprings  
    (don't say G4 P3 )
- Occupation            -Residence                            - special habits of medical importance

### 2) Complaint:

She is pregnant in the .... Month and coming for antenatal care due to .....

### 3) Present history:

- She is pregnant .... Weeks as calculated from the 1st day of her L.M.P. which was on.....
- Review of the 1<sup>st</sup> trimester:
  - nausea
  - vomiting
  - bleeding
- Review of the 2nd trimester:
  - perception of fetal movement (quickening)
  - relieve of first trimesteric symptoms
- Review of the 3<sup>rd</sup> trimester: Warning symptoms :
  - headache , blurring of vision, vomiting
  - epigastric pain, Rt hypochondrial pain
  - number of fetal movement
  - vaginal bleeding , gush of fluid
  - LL oedema
- Analysis of the complaint
- Analysis of investigations and treatment
- Review of other system

### 4) 5) 6) 7) 8) Menstrual history, Obstetric history , Past history, Family history, Diagnosis:

All as general sheet

### **III. Bleeding sheet**

1) **Personal history** : as general sheet

2) **Complaint**: Excessive or Irregular or Excessive irregular vaginal bleeding for how long

3) **Present history**:

- Analysis of the complaint:(menorrhagia, metrorrhagia, menometrorrhagia)
  - onset, course ,duration , amount of bleeding (number of pads, clots)
- Analysis of other related gynecological complaints :
  - pain (type,site,radiation,severity,.....)
  - mass (onset, course, duration,site,..)
  - discharge (amount, colour, odour ,itching)
- Analysis of the causes :
  - preceding event e.g. period of amenorrhea, I.U.D. insertion, injectables
  - contact bleeding
  - bleeding from other body orifices, ecchymosis
  - thyroid disorders
  - heart disease (dyspnea ,palpitation ,L.L.O. ,....)
  - hypertension
- Analysis of the Consequences: anemia ( dyspnea, easy fatigability, blurring of vision)
- Analysis of investigations and treatment : U/S, D&C, CBC, coagulation profile
- Review of other systems.

4) 5) 6) 7) 8) ***Menstrual, Obstetric, Past, Family history, Diagnosis: as general sheet***

### **Modifications in a case of postmenopausal bleeding**

1) **Personal History**: if widow or divorced should be stated

2) **Complaint**: vaginal bleeding after ..... years of cessation of menstruation.

3) **Present history**:

- Duration of menopause
- Symptoms suggestive of distant metastasis:
  - Lung (cough , hemoptysis,..)      Liver ( rt hypochondrial pain , jaundice )
  - Bone ( aches and pathological fractures )      Brain ( projectile vomiting , headache,...)
  - G.I.T. symptoms ( vomiting , constipation , bleeding per rectum)

## IV. Genital prolapse sheet

1) Personal history: as general sheet

2) Complaint: mass protruding from the vulva , sense of heaviness + duration

3) Present history:

- *Analysis of the complaint:*
  - Onset , course , duration,
  - effect of straining and lying down, (mention if the onset was following delivery)
- *Analysis of other gynecological symptoms:*
  - bleeding( menorrhagia)
  - pain ( congestive dysmenorrhea)
  - discharge (leucorrhea)

N.B. these are the triad of pelvic congestion due to prolapse.
- *Analysis of the consequences :*
  - urinary symptoms: frequency, nocturia, dysuria, sense of incomplete evacuation, urine retention, loin pain, pyelonephritis, stress incontinence, inability to complete micturition except after digital reduction of the mass.
  - rectal symptoms: inability to complete defecation except after digital reduction of the mass , constipation , incontinence to flatus or stools ( if associated with complete perineal tear)
  - sexual troubles: dyspareunia
  - backache (traction on uterosacral ligaments in uterine prolapsed)
- *Analysis of the Causes:*
  - precipitating factors: chronic cough , chronic constipation, obesity
  - predisposing factors: symptoms suggestive of weak mesenchyme e.g. hernia, flat foot, varicose v.
- *Analysis of investigations and treatment:* previous repair , use of pessary
- *Review of Other systems:*

4) 6) 7) 8) Menstrual, Past, Family history, Diagnosis: the same as general sheet

5) in Obstetric history: It is important to ask whether her deliveries were difficult and prolonged ended with use of forceps or ventouse, delivery of macrosomic baby

## **V. Infertility sheet**

### **1) Personal history As general sheet plus**

- ask about previous marriage
- children from previous marriage
- the age of the youngest child
- husband personal history: age/ occupation/ smoking/ another marriage and the age of the youngest child from the other marriage.

### **2) Complaint: Failure of conception for ..... years despite of regular marital life**

### **3) Present history:**

- *Duration of her current marriage:*
- *Analysis of the causes:*
  - **Male factor of infertility:**
    - semen analysis ( results, time) - treatment (nature, duration, result)
    - previous operations (hernia, varicocele) - medical disorders and drugs.
  - **Ovarian factor:**
    - symptoms suggestive of ovulation (regular cycles ,spasmodic dysmenorrhea, premenstrual mastalgia, intermenstrual bleeding ,pain and discharge)
    - hirsutism , oligomenorrhea ,hypomenorrhea (P.C.O.)
    - symptoms suggestive of ovarian failure (hot flushes , nervousness , bony aches)
  - **Tubal factor:**
    - symptoms suggestive of salpingitis ( bilateral lower abdominal pain associated with offensive vaginal discharge, fever and chills)
    - previous abdominal operations that may lead to adhesions
  - **Uterine factor :**
    - previous dilatation and curettage followed by decrease in the amount of menstrual flow ( suggestive Asherman syndrome)
  - **Cervical factor:** vaginal discharge + backache, erosion, cautery, cervical amputation
  - **Sexual factor:** Fequency per week, Dyspareunia ( superficial or deep ), vaginismus, effluvium seminis
- *Analysis of investigations and treatment :*
  - Investigations as: hormonal profile, hystrosalpingography , sonohystrography, premenstrual endometrial biopsy, folliculometry, laparoscopy ( mention the results )
  - Induction of ovulation : tablets, injections, how long,
  - History of Tuboplasty
  - Previous ART (IUI, ICSI)
- *Review of other systems:* General or Endocrine as thyroid dysfunction, DM, TB, Hyperprolactenemia

### **4) 5) 6) 7) 8) Menstrual, Obstetric, Past, Family histories and Diagnosis: as General Sheet.**

## **VI. Primary Amenorrhea sheet**

**1) Personal history:** As general sheet

**2) Complaint:** Non occurrence of menstruation Or Absence of menstruation

**3) Present history:**

- *Analysis of the complaint* a case of primary amenorrhea till age of ....
- *Development of secondary sexual characters :* breast development, pubic hair, axillary hair
- *Analysis of the cause:*
  - Hypothalamic cause: psychological disorders, stress, anosmia, head trauma, drugs
  - Pituitary causes: galactorrhea , symptoms suggestive of increased intra cranial tension, visual field changes
  - Ovarian causes: hirsutism, deepening of voice , pelvi-abdominal mass
  - Uterine causes: History suggestive of T.B.( night fever ,night sweat, loss of weight, loss of appetite)
  - Out flow obstruction (cryptomenorrhea): cyclic lower abdominal pain , progressive abdominal swelling, if +ve ask about urine retention .
  - General causes: thyroid dysfunction, DM, severe debilitating disease
- *Analysis of investigations and treatment:*
  - Hormonal profile, ultrasound, IVP, MRI
  - Progesterone withdrawal
  - E .+P. withdrawal
- *Review of other systems*

**4) 5) No menstrual or obstetric history**

**7) Family history:** ask about similar condition in the family (her sisters)

**6) 8) Past history and Diagnosis:** as general Sheet



## Modifications in case of 2ry amenorrhea

1)Personal history: as above

2)Complaint: cessation of menstruation for .....(how long)

3)Present history:

- *Exclusion of pregnancy:*
  - pregnancy symptoms (nausea, vomiting, abdominal enlargement)
  - pregnancy test
  
- *Analysis of the last pregnancy event:*
  - post partum hemorrhage ( amount , cause, blood transfusion )
  - puerperal sepsis ( fever , offensive lochia)
  - in case of abortion ask about ( fever , D&C, offensive discharge )
  
- *Hormonal treatment:* e.g. injectable contraception
  
- *Hypothalamic cause:* psychological troubles
  
- *Pituitary cause:*
  - galactorrhea
  - symptoms suggestive of pituitary adenoma ( increased I.C.T. , visual field changes)
  
- *Ovarian cause :*
  - hirsutism , deepening of voice , pelvi-abdominal mass
  - hot flushes , nervousness, bony aches
  
- *Uterine cause:*
  - Symptoms suggestive of T.B.
  - history of D&C (over curettage suggestive of Asherman syndrome)
  
- *General cause:*
  - As 1ry amenorrhea

***N.B. menstrual history*** taken about menstrual condition before amenorrhea



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