OBG

Anatomy

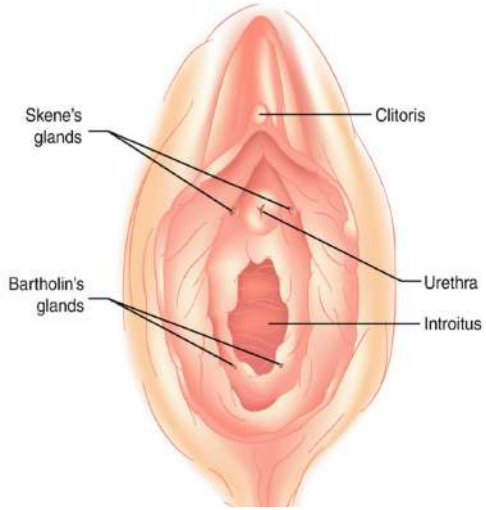
Ovarian ligaments
Round ligament Tube Ovarian ligament Suspensory/infundibulopelvic ligament

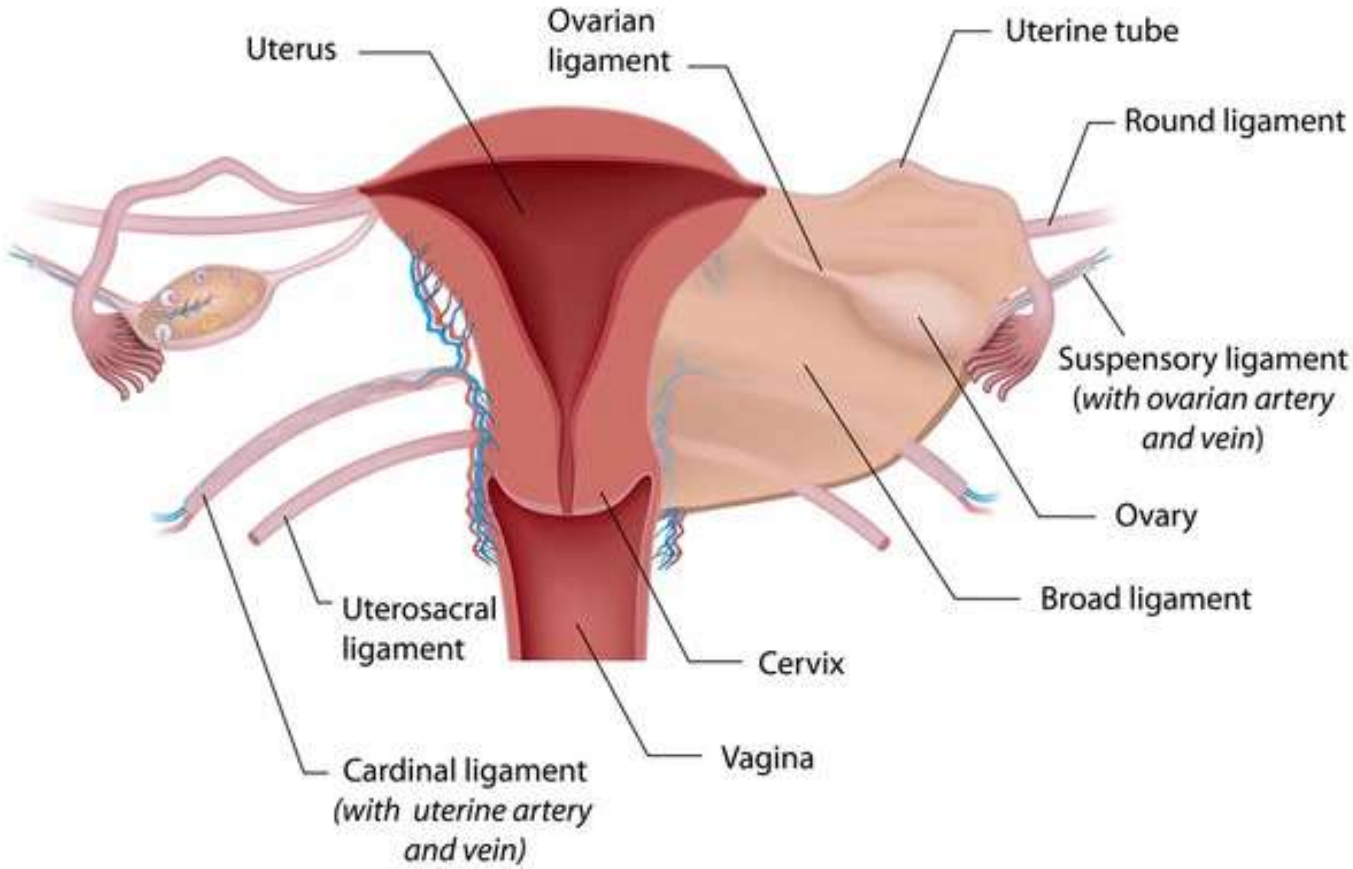
Uterine support
True ligamentous supports:
- **Mackenrodts's ligaments/ Cardinal / transverse cervical**
- **Uterosacral ligament**
- **Pubocervical ligament**

True muscular supports:
- **Pelvic diaphragm**
- **Perineal body**

Fallopian tube
MC site of ligation:
MC site of fertilization/ TB / Ectopic:

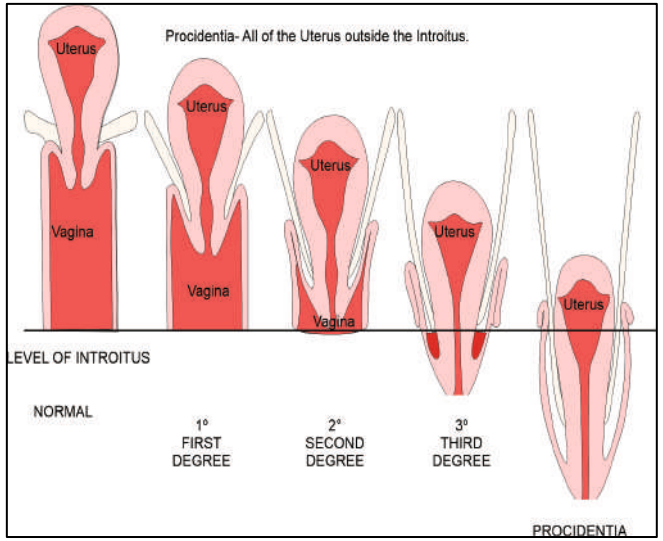
Normal uterocervical length:
Anteflexion:
Anteversion:
Nerve supply of Uterus: **Cervix:**
Cervix: corpus **Vaginal pH**
Before puberty
At puberty
Reproductive
Menopause

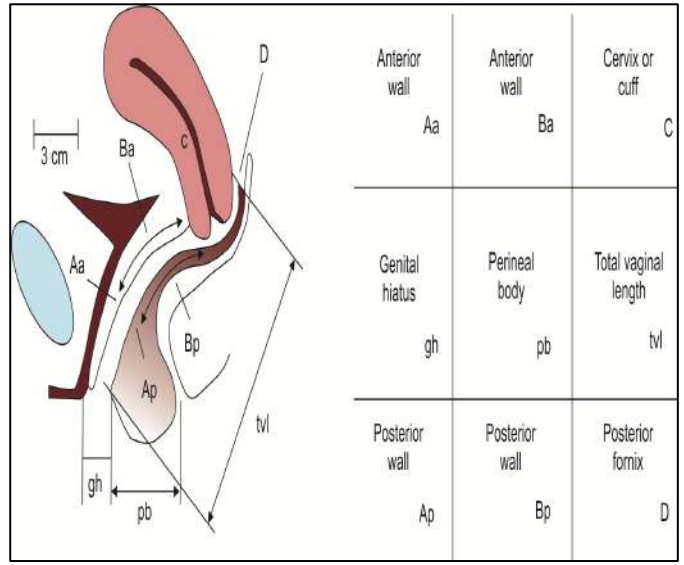



Uterus
Ovarian ligament
Uterine tube
Round ligament
Suspensory ligament (with ovarian artery and vein)
Ovary
Broad ligament
Uterosacral ligament
Cervix
Vagina
Cardinal ligament (with uterine artery and vein)

Prolapse

Level	Support Structures
Level I	Uterosacral ligaments and cardinal ligaments support the uterus and vaginal vault
Level II	Pelvic fascia and paracolpos which connect the vagina to the white line on the lateral pelvic wall through arcus tendinous
Level III	Levator ani muscles support the lower one-third of vagina





Decubitus ulcer-venous stasis

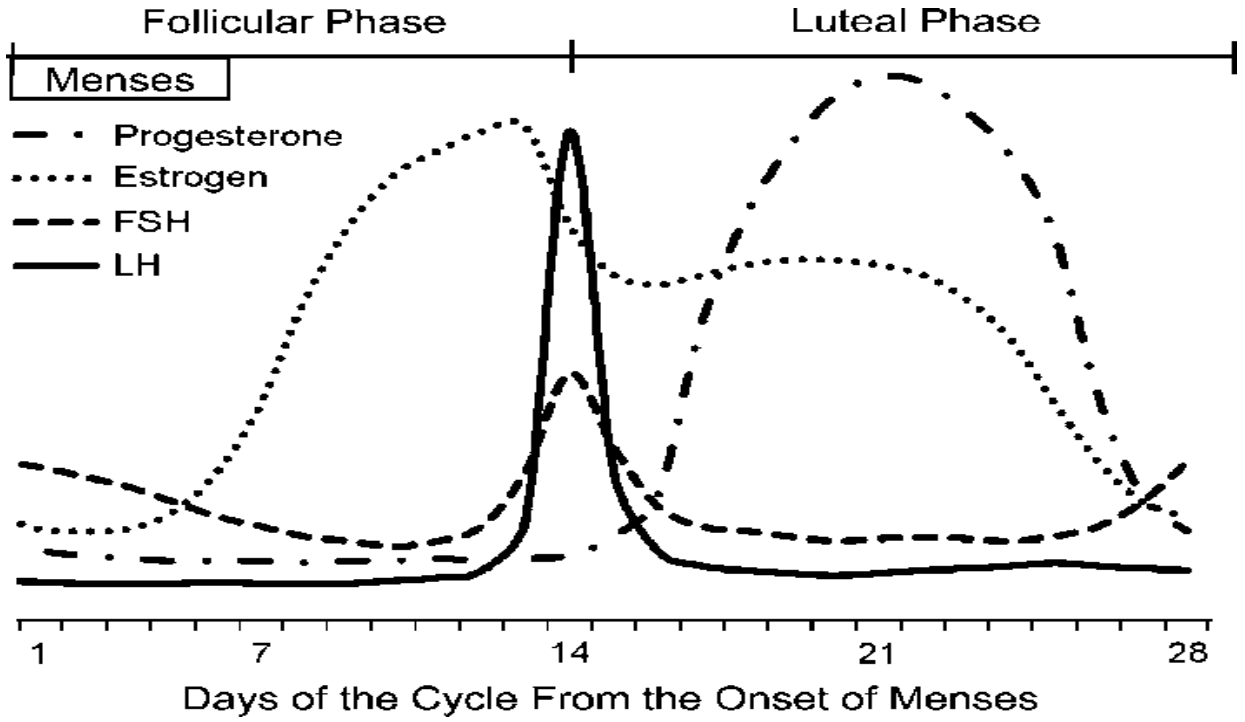
Stage	Definition
Stage I	Most distal point is >1 cm above hymen
Stage II	within 1 cm above or below hymen
Stage III	> 1 cm below hymen
Stage IV	Complete vaginal eversion

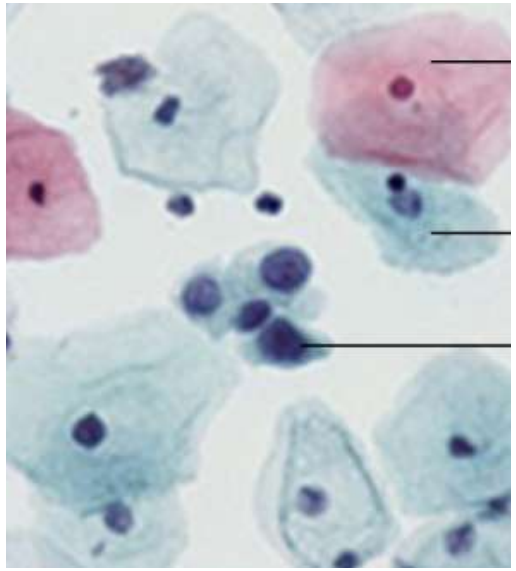
Staging:
Reference:
Taken during Valsalva except:
Not after TAH:

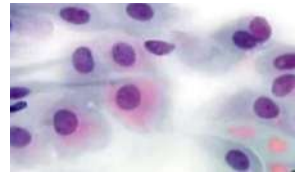
Management of prolapse:
-Pregnancy / Extreme elderly:
-Poor surgical candidate: Obliterative (Colpocleisis) –Le Fort
-Ideal TOC: Reconstructive
Anterior colporrhaphy + Hysterectomy +Colpoperinorrhaphy

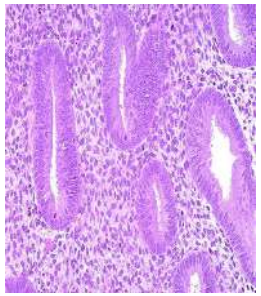
Enterocele: McCall culdoplasty
Vault prolapse: Sacrocolpopexy
Fertility preserving: Sling surgeries -Shirodkar/ Purandare/ Khanna
Uterus preserving with UCL >12cm: Fothergill/Manchester–Cervical amputation

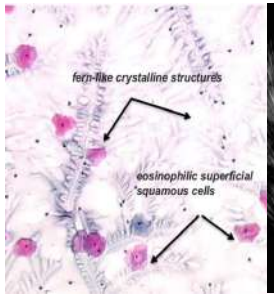
Menstrual Physiology

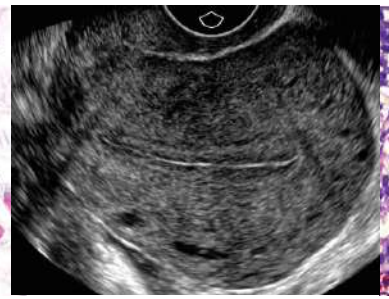


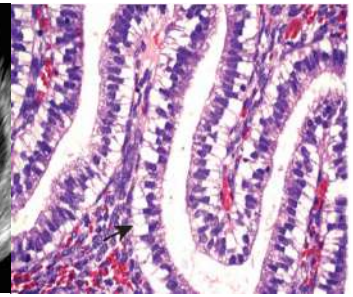


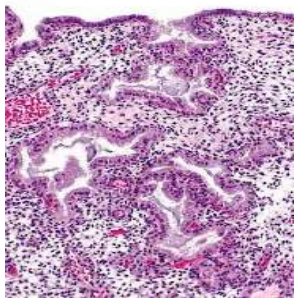












Maturation index:

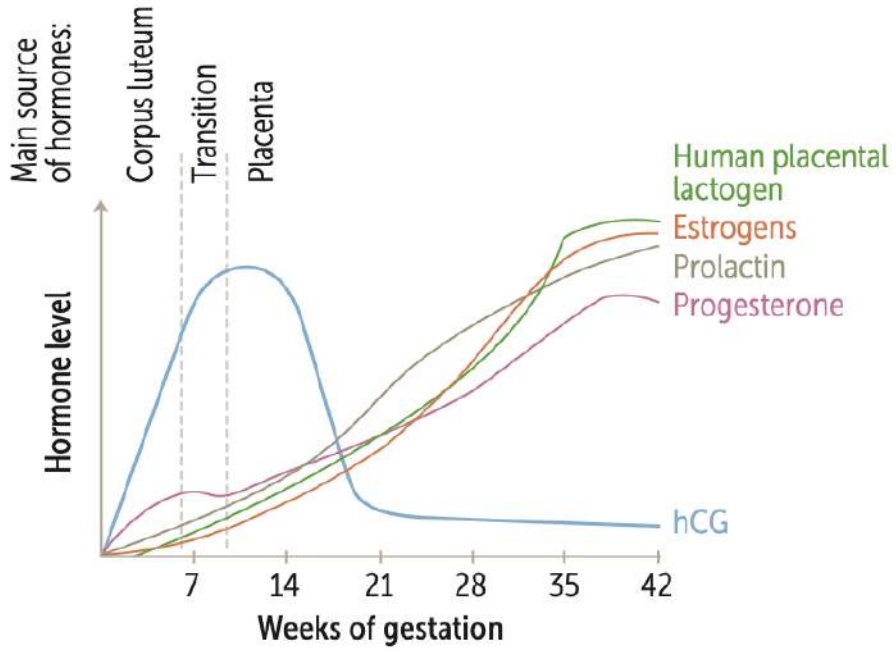
LH surge-Ovulation:
LH peak-Ovulation:
Estrogen peak-LH peak:
Mid-cycle abdominal pain:

Effect of hormones

Organ	Oestrogen	Progesterone
Breasts	Ductal/stromal growth	Alveolar growth
Cervix	Thin, viscous mucous Spinnbarkeit	Thick, tenacious mucus
Endometrium	Proliferation of glands	Thickening of stroma
Others	Increased bone mass Increased coagulation factors Salt water retention Low LDL, High HDL	• Natriuresis • Increased body temperature

Menopause:
MC C/F:
Osteoporosis
CAD
Senile vaginitis
Only indication of HRT:
HRT and risk of:
- Ca colon
- Ca endometrium
- Ca ovary / cervix
- Ca breast
- DVT/ CAD

Only approved non-hormonal drug for hot flashes:



Syncytiotrophoblast
Fetal growth
Insulin resistance

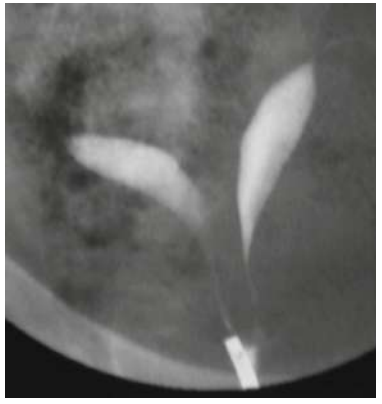
↓ uterine contractions

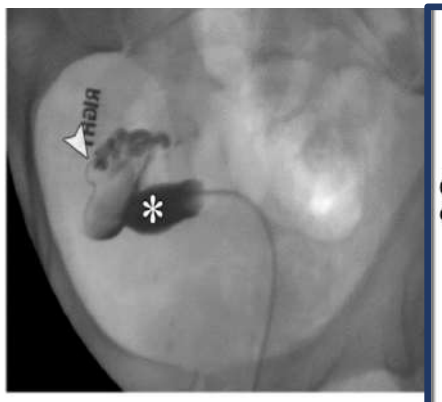
Syncytiotrophoblast
Maintains CL till 10 weeks
a subunit: LH, FSH, TSH

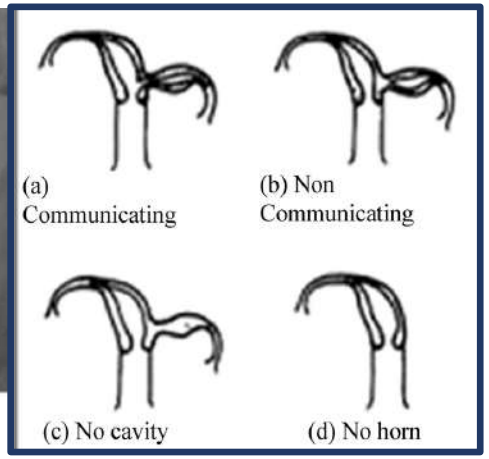
Mullerian Anomalies

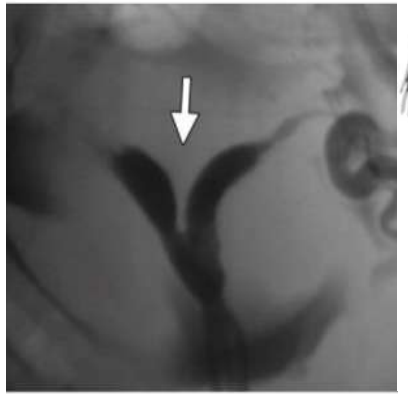
I- II- III-
IV- V- VI-
VII-
DES Most specific- Most common-
Malignancy- Males-

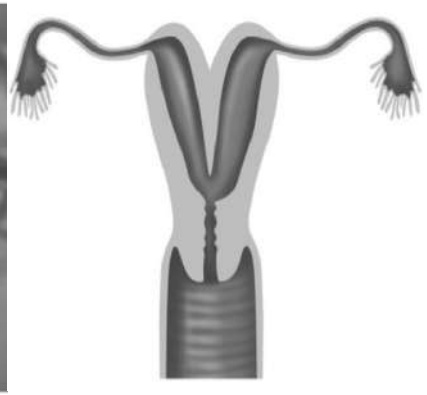
- IOC:
- GOLD STD:
- MC C/F:
- MC Mullerian anomaly:
- Infertility/ Worst reproductive outcome:
- Best reproductive outcome:
- Uncommon lie in didelphys:
- OHVIRA:
- Max association with renal anomaly:
- Management of septate:
- Management of bicornuate:

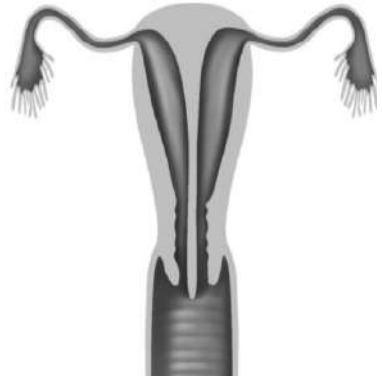


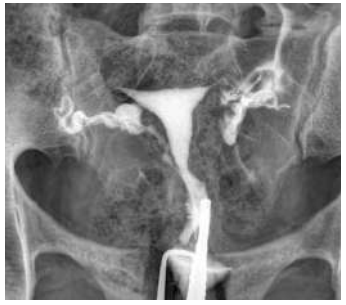












INFERTILITY

- Begin Ix after: Age >35yrs:
- Female factor: Male factor: Both: Idiopathic:
- Initial Investigation: Abstinence:

APPROACH TO AZOOSPERMIA:

Rx:
10-15 million/ml:
5-10 million/ml:
<5 million/ml:
TESE: TESA: MESE:

Semen parameters	WHO 2020
Semen volume	1.4 ml
Sperm concentration	16 million/ ml
Total motility	42%
Progressive motility	30%
Viability	54%
Morphology	4%

Female infertility

MCC of female factor-

WHO grade-

OVULATION:

MC- **Best-** **Gold standard-**

OVARIAN RESERVE

MC- **Best-**

TUBAL FACTOR:

Initial- **Best-**

PID

MCC:
MCC before sexual activity onset:

CDC Criteria for Diagnosis of PID:

Minimum criteria:

Lower abdominal pain with any of the following:

- Uterine tenderness
- Adnexal tenderness
- Cervical movement tenderness

Additional criteria:

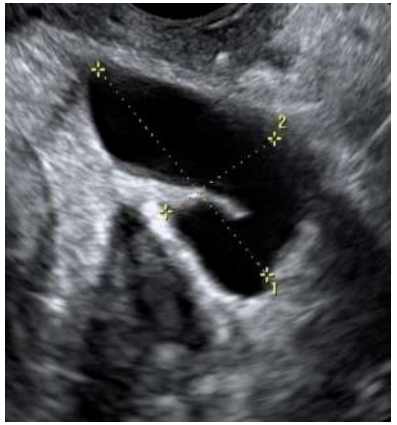
- Fever
- Mucopurulent discharge
- Microscopy of discharge: shows abundant WBC
- Raised ESR / CRP
- Lab test positive for Chlamydia/Gonorrhea

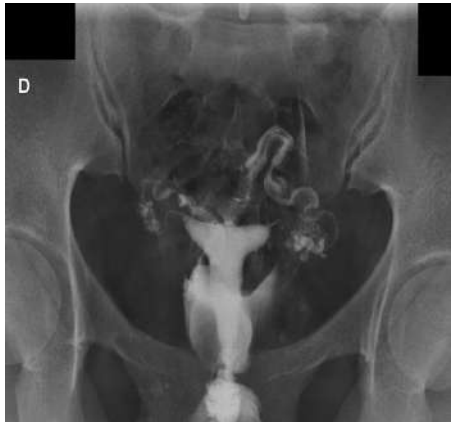
Specific criteria:

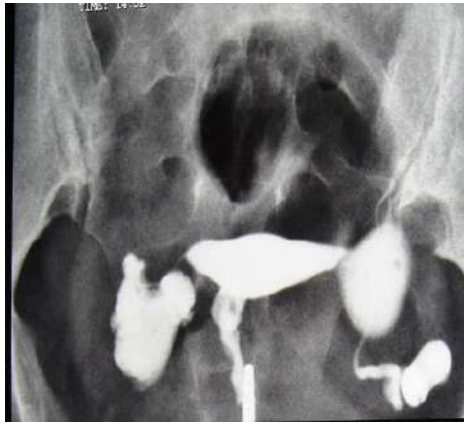
- Endometrial biopsy: endometritis
- TVS / MRI
- Laparoscopy

Staging of PID (Gainesville staging):

- Stage 1: No peritonitis
- Stage 2: Peritonitis present
- Stage 3: Tubo-ovarian mass/abscess
- Stage 4: Ruptured tubo-ovarian mass

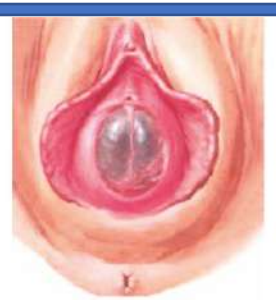






Approach to amenorrhea and DSD

Primary amenorrhea:
Without sec sexual characters:
With sec sexual characters:
No bleed for 3yrs since thelarche
Secondary amenorrhea:



Amenorrhea approach 1st step

Cyclical pain abdomen

Pelvic examination or ultrasonogram

External exam normal

Uterus present

Uterus absent

FSH, PRL, TSH

Serum FSH

Increased

Decreased

Normal

Karyotype-XY
Testosterone-male
Axillary/public hair-absent
Breast-present

Karyotype-XX
Testosterone-Female
Axillary/public hair-normal
Breast-present

46 XY
Testes present
Male internal genitalia
Virilisation at puberty:
Acne, male axillary and pubic hair, clitoromegaly

Karyotyping

Premature ovarian failure

Progesterone challenge test

E+ P challenge test

GONADAL DYSGENESIS
Secondary sexual characteristics:
45XO 46XY 46XX

CAH	MC	Testosterone
21- hydroxylase deficiency Screening-		
11- hydroxylase deficiency		
17- hydroxylase deficiency		
3BHSD deficicency		

Disorders of sexual differentiation:

Male pseudohermaphrodite

- No uterus

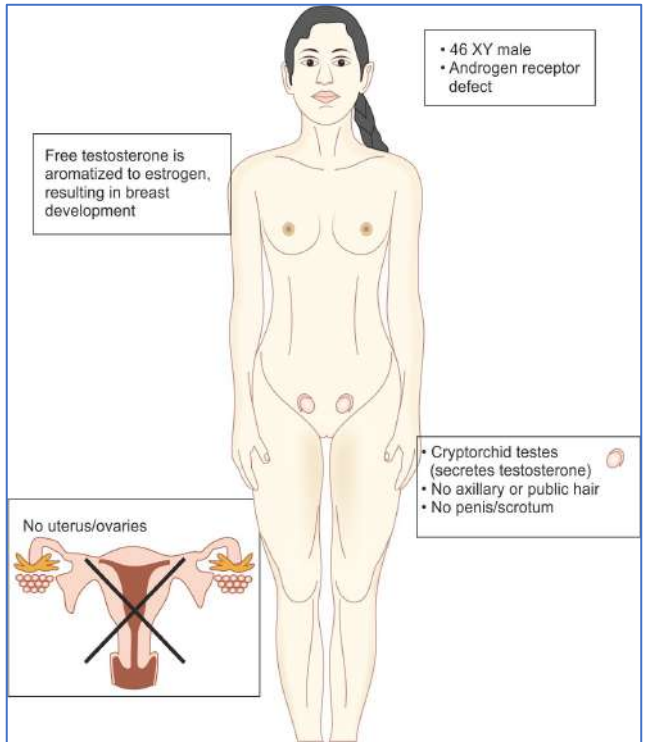
1.Breast + / Hair-

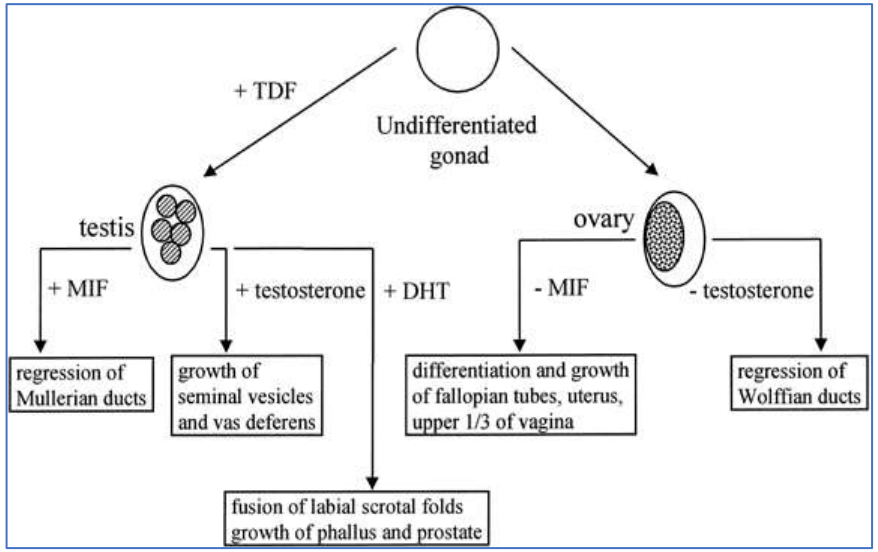
2.Breast- / Virilisation at puberty+

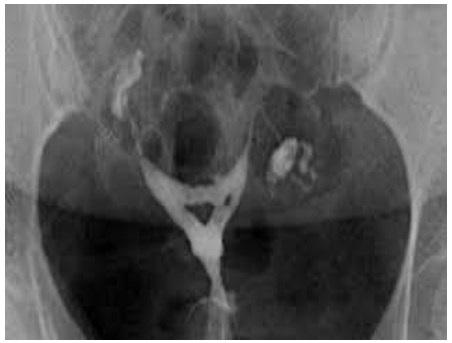
- Uterus present + Breast-
- BP high at birth
- BP low at birth
- Skeletal anomaly

Female pseudohermaphrodite

- BP low at birth
- BP high at birth
- Mother virilization at pregnancy
- Skeletal anomaly







An 18-year-old girl with primary amenorrhea presents to the OPD. She has Tanner stage IV secondary sexual characters. Her karyotype is 46XX. FSH is 5 and LH is 13. What is the likely diagnosis? (INICET MAY 2024)

A. Gonadal dysgenesis
B. Mullerian agenesis
C. Kallmann syndrome
D. Androgen insensitivity syndrome

A 16-year-old presents with absent menses. Examination shows widely spaced nipples, webbed neck, and Tanner grade 1 breast development. USG shows streak ovaries. Investigation shows raised FSH, raised LH, and reduced estradiol. What is the diagnosis?

A. Turner syndrome
B. Kallmann syndrome
C. Androgen insensitivity syndrome
D. Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome

An 18-year-old woman comes to the OPD due to primary amenorrhea. The patient had ambiguous external genitalia noted at birth, and laparotomy performed at 17 months of age revealed a normal uterus and fallopian tubes. Ovarian biopsy performed at that time revealed normal-appearing primordial follicles. Blood pressure is 120/78 mm Hg and height is 160 cm (5 ft 3 in). The patient has nodulocystic acne over the chest and back. No breast development, normal pubic and axillary hair, and marked clitoromegaly are present. Laboratory results show a normal female karyotype and normal glucose and serum electrolytes. Serum FSH, LH, testosterone, and androstenedione concentrations are high. Pelvic imaging reveals multiple ovarian cysts. Which of the following is the most likely diagnosis in this patient?

A. Aromatase deficiency

B. Congenital adrenal hyperplasia

C. Kallmann syndrome

D. Swyer James syndrome

Abnormal uterine bleeding

Polyp
Adenomyosis
Leiomyoma
Malignancy and hyperplasia
Coagulopathy
Ovulatory dysfunction
Endometrial
Iatrogenic
Non classified

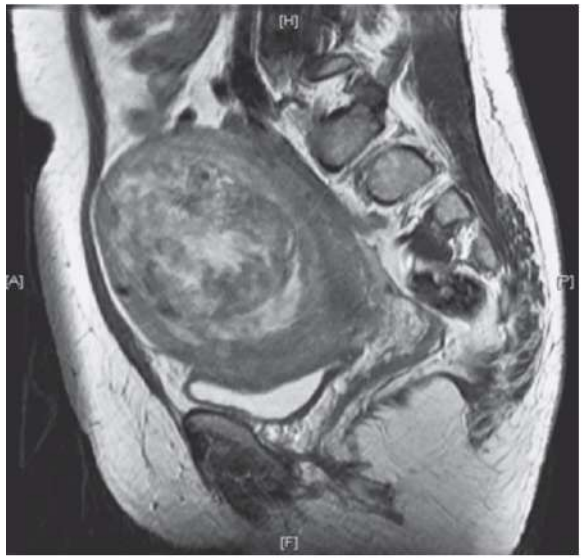
Primary dysmenorrhea:
Since menarche
Generalised suprapubic
Just before or at menstruation
Relieved in 72hrs
Normal examination

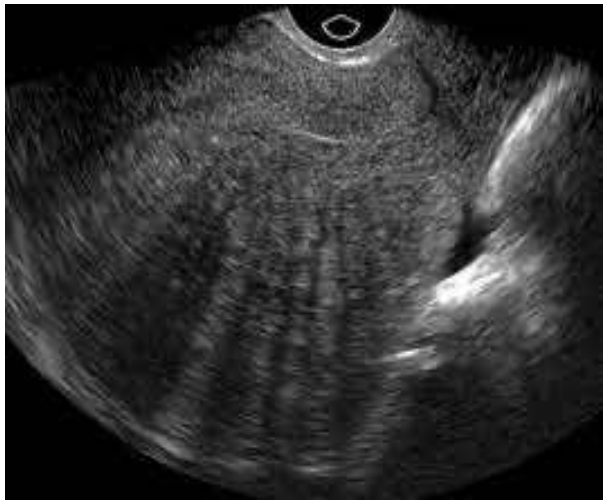
Normal: 24-38d
Cycle: 2-8d
Volume: 20-80ml
MCC of AUB in adolescents:
Metropathia hemorrhagica:
Next step:
Reproductive age group:
Postmenopausal:
Indication of endometrial aspiration/biopsy :
Reproductive age group:
Post-menopausal:
On tamoxifen:
Gold standard Ix:

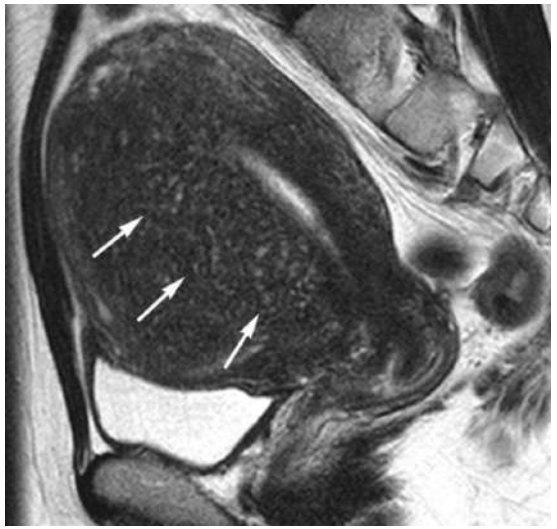
Endometrial hyperplasia- R/o cancer:
Simple **Complex**

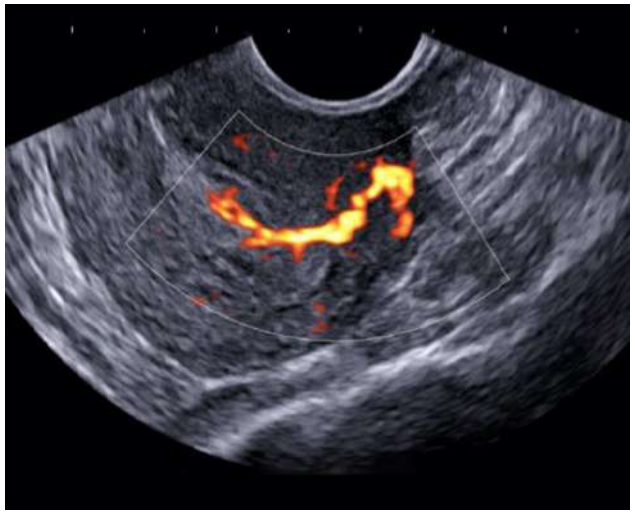
Rx of AUB:

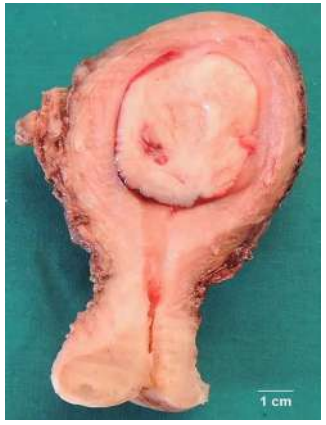
Fibroid and D/D

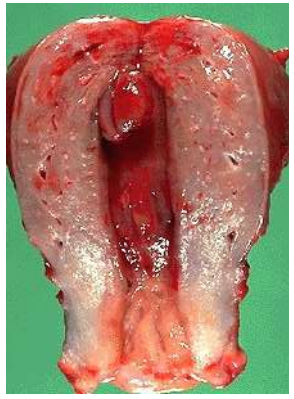




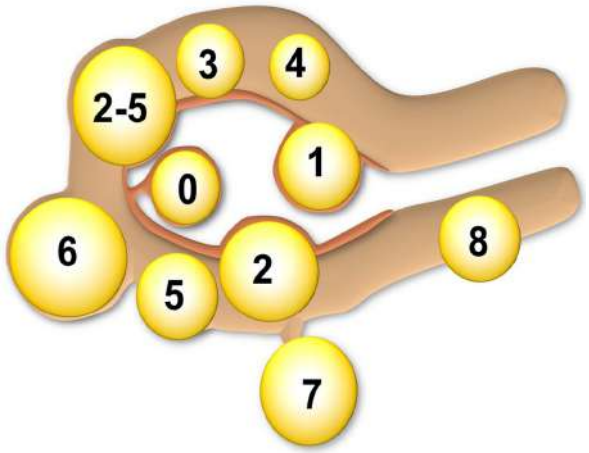






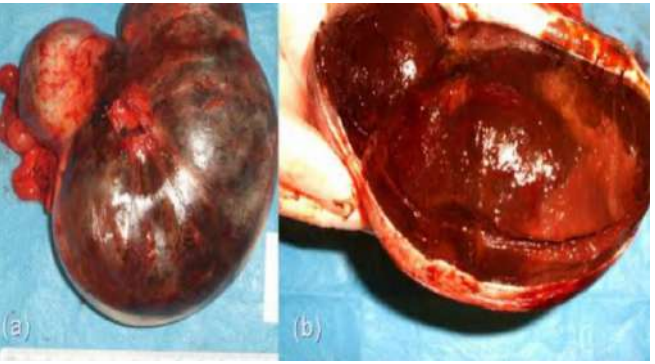


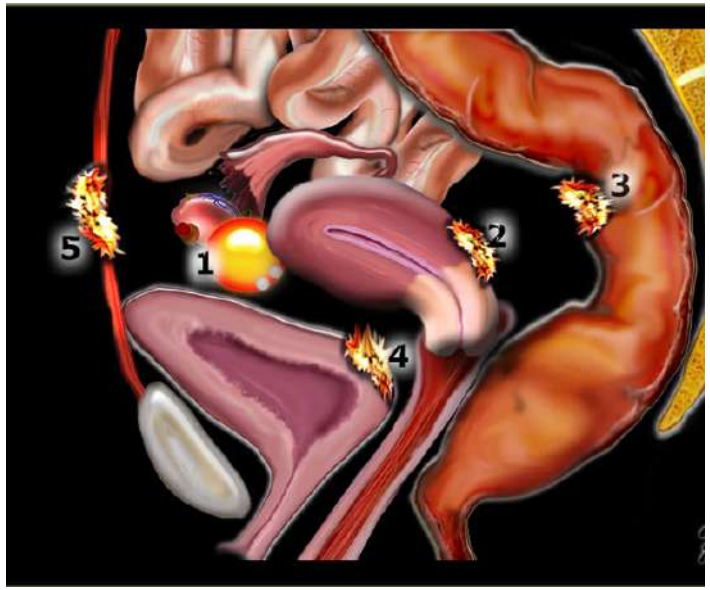
MC fibroid:
MC to cause infertility/ RPL/ AUB:
MC to cause torsion:
Pseudocapsule
MC degeneration:
Pregnant (T2) + Acute pain + WBC high
Aseptic thrombosis
Diagnosis:
No hysterectomy / TOP/ myomectomy
Management:

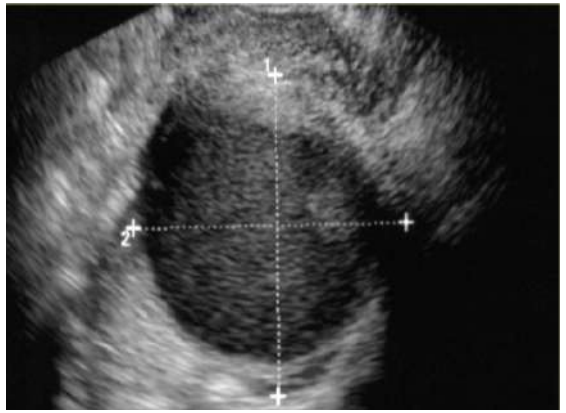


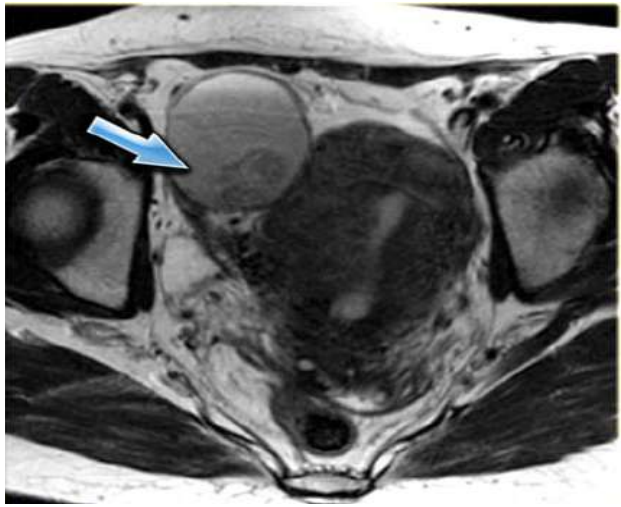
Type	Description
SM – Submucous	
0	Pedunculated intracavitary
1	<50% intramural
2	≥50% intramural
3	Contacts endometrium; 100% intramural
Other	
4	Intramural
5	Subserous ≥50% intramural
6	Subserous <50% intramural
7	Subserous pedunculated
8	Other (specify e.g., cervical, parasitic)

Endometriosis

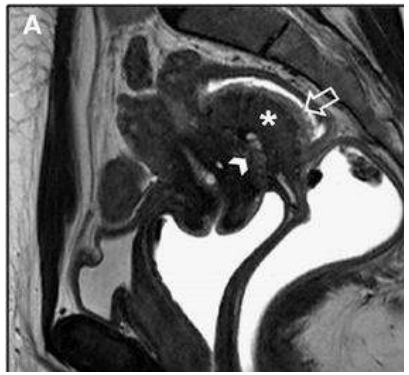


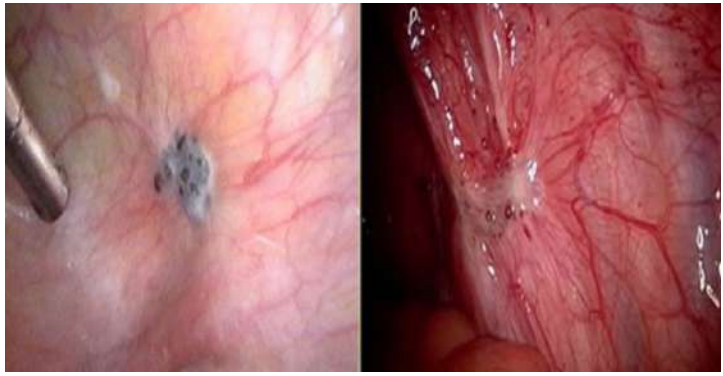






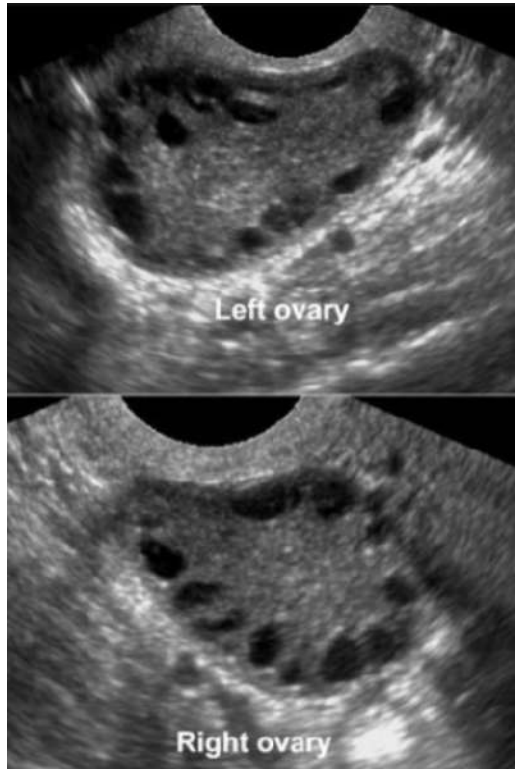
Chronic pelvic pain / dysmenorrhea/ dyspareunia
"Fixed retroverted" "Nodularity in POD"
MC site:
Radiological IOC:
Overall IOC:
Sampson theory:

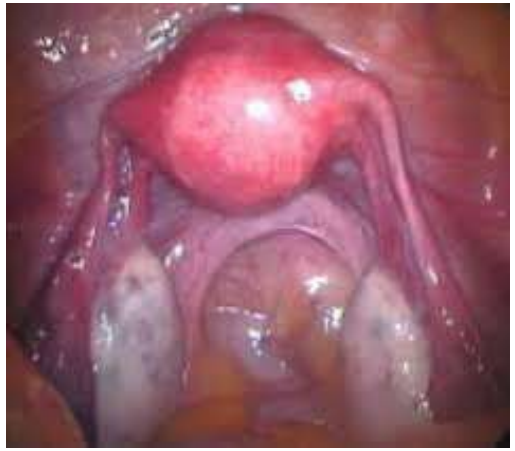




Rx: OCP/ NSAIDs
Progesterone
GnRH continuous/ antagonists
Danazol
Letrozole

PCOD/ Stein-Leventhal syndrome





Rotterdam Criteria for Diagnosis of PCOD (2 of 3):

1. Oligomenorrhea / hirsutism

Ferriman-Gallwey score:

2. Biochemical: Total testosterone raised
3. Polycystic Ovaries:
   - ➢ >12 follicles (2-9mm diameter) in each ovary
   - ➢ Ovarian volume > 10cc

Not in criteria: insulin R, necklace pattern, obesity

Approach to raised testosterone:

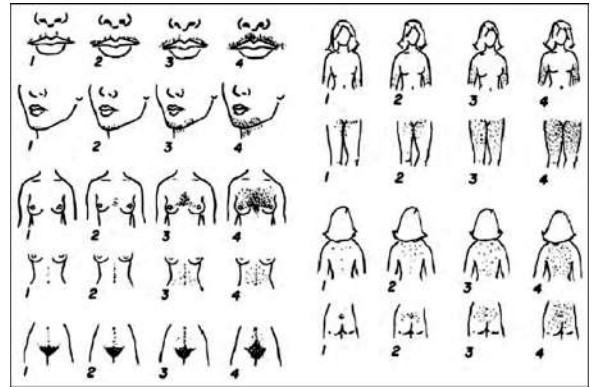
Rx: 1st line:

DOC for irregular cycles/ hirsuitism:

Drospirenone: anti-androgen, anti-MC

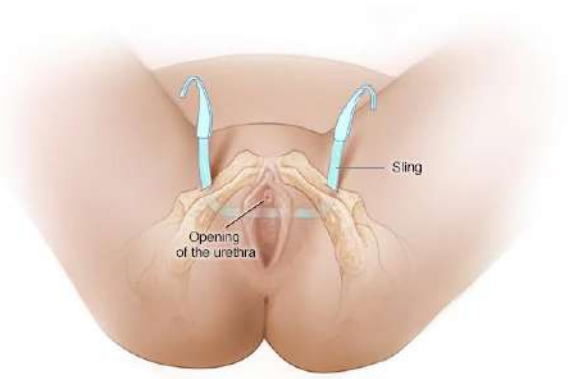
DOC for infertility:

- •<u>LEVELS</u>:
- •Estrone
- •Estradiol
- •Progesterone
- •LH
- •FSH
- •Testosterone
- •SHBG
- •PRL:
- •LDL:
- •AMH:
- •Ca ovary?
- •Ca endometrium?
- •Osteoporosis?
- •CV risk?



Uro-gynecology

Continuous dribbling + normal bladder:
Continuous dribbling only:
Vaginal urine only during micturition:
Dribbling on increasing intra-abdominal pressure:
Cause:
Rx of SUI:
Gold standard:



IOC for VVF-
Gold standard-
VVF repair:
Post-VVF repair: Sexual abstinence:
Pregnancy avoid:

Ca cervix screening and Pap smear

Site of ca cervix:
Screening:
-Start at:
-Pap smear: Yearly
-Co-testing: Yearly (Age>30yr)
-Immunocompromised:
-Stop when:
WHO: 2030-90:70:90

R/F:

HPV: Low-risk High-risk

Gardasil-9 Cervavac
HPV linked cancers (6):

No PV examination prior to pap

Eosin Y
Orange G6
Hematoxylin
Light green SF
Fixative:

E6:
E7:
L1:

WHO SAGE PROTOCOL:
9-14yrs:
14-21yrs:
>21yrs:
HIV :

WHO Screening (Used by countries with limited resources)
Start: 30 years Stop: 50 years
<u>See & Treat Approach:</u>
HPV DNA testing → If positive → Rx: LLETZ
VIA test → If positive → Rx: LLETZ
<u>See, Triage & Treat Approach (Better):</u>
HPV DNA → If positive → VIA → If positive → Rx: LLETZ

Abnormal Pap smear approach

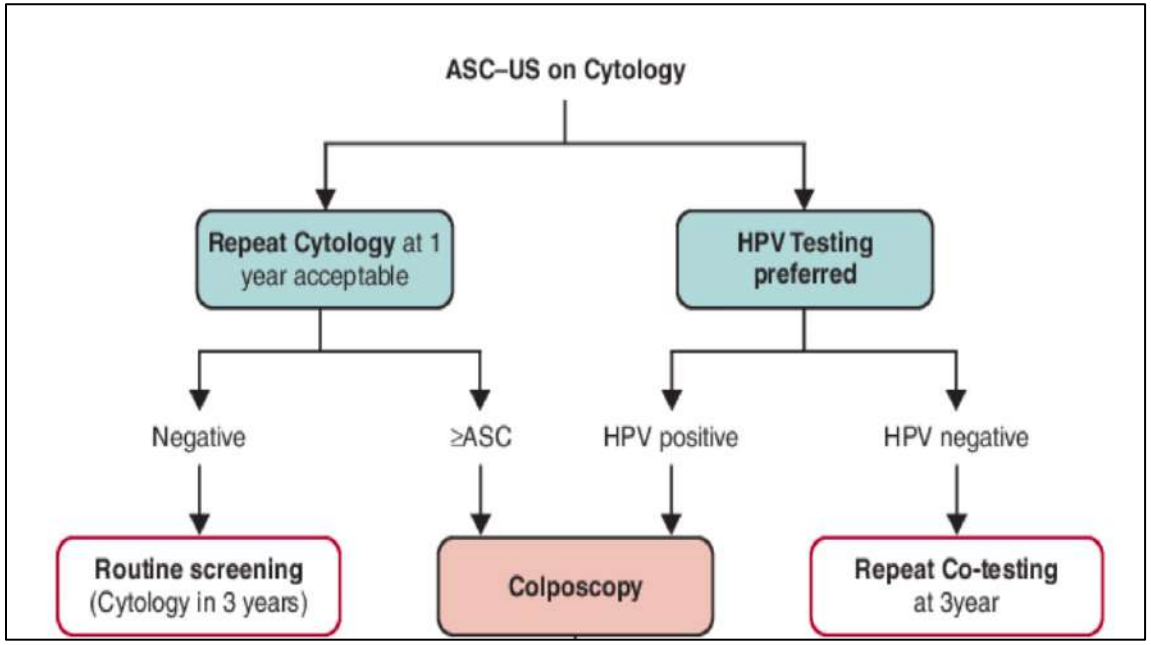
- ASC-US
- AGC
- LSIL
- HSIL

Colposcopy results:

CIN-1

CIN-2/3

Micro-invasive
Discrepancy

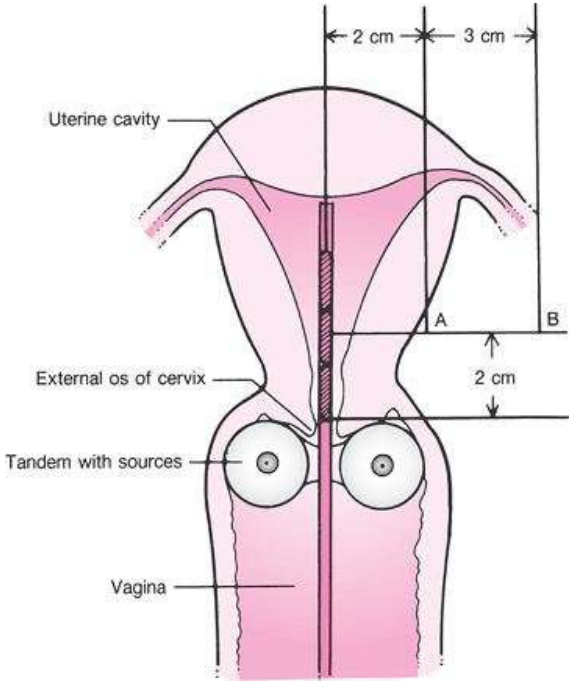


CA Cervix

Stage	Description
IA IA1 IA2	Invasive carcinoma that can be diagnosed only by microscopy Measured stromal Invasion <3mm in depth Measured stromal Invasion ≥3mm and <5mm in depth
IB1 IB2 IB3	Invasive carcinoma < 2cm Invasive carcinoma ≥2cm and < 4cm Invasive carcinoma ≥4cm
IIA IIA1 IIA2 IIB	Involvement limited to the upper two-thirds of the vagina Invasive carcinoma < 4cm Invasive carcinoma ≥4cm With parametrial involvement but not to the pelvic wall
IIIA IIIB IIIC1 IIIC2	The carcinoma involves the lower third of the vagina Extension to the pelvic wall and/or hydronephrosis or nonfunctioning kidney Pelvic lymph node metastasis only Para-aortic lymph node metastasis
IVA IVB	Spread to adjacent pelvic organs Spread to distant organs

Types of Hysterectomy and RT

Take out covering fascia of uterus	Parametrium removed up to level of ureter	Parametrium removed lateral to the ureter also
Uterine vessels ligated close to uterus	At the level of ureter Max r/o injury	At the origin from internal iliac vessels
Uterosacrals ligated close to uterus	Midway to rectum	Near rectum
Vaginal cuff not removed	1-2cm of vagina removed	>2cm vagina removed



CA Endometrium

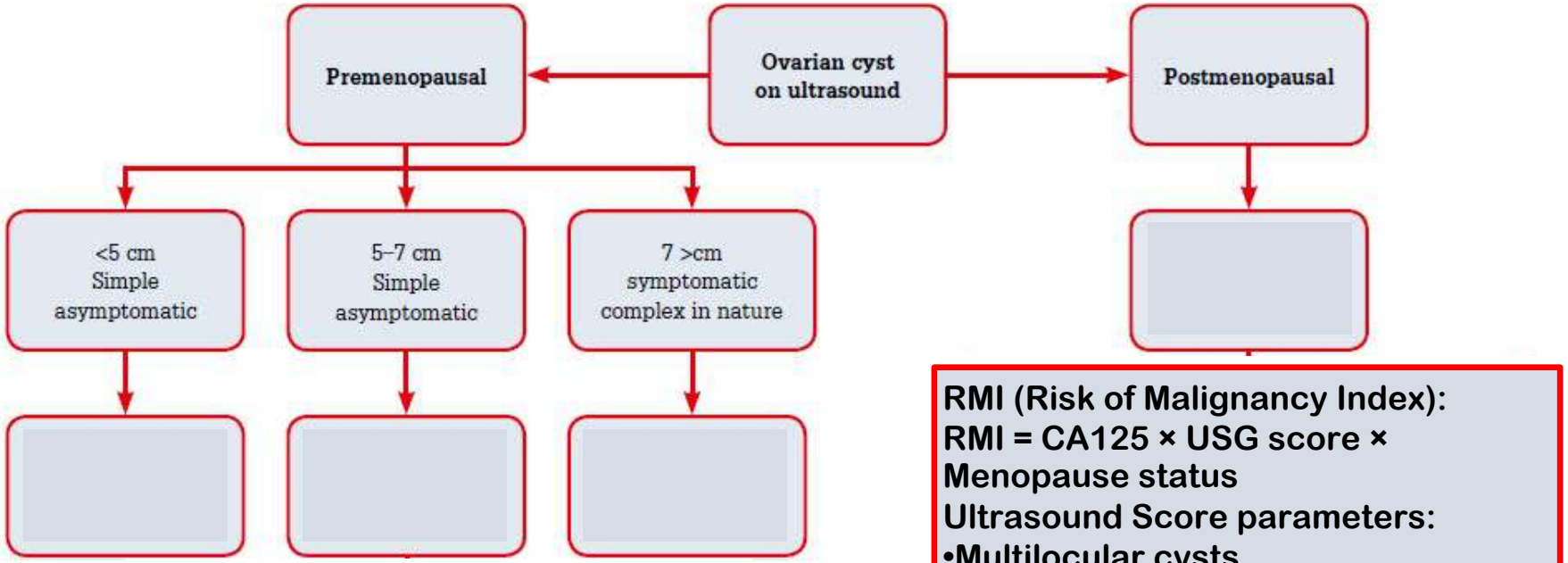
Stage	Description
I	Tumor confined to the uterus
Ia Ib	<50% invasion of the myometrium ≥50% invasion of the myometrium
II	Tumor invades the cervical stroma but does not extend beyond the uterus
IIIA IIIB IIIC	Serosal or adnexal invasion Vaginal or parametrial involvement Pelvic/ Paraaortic lymph node involvement
IV	Extension to the pelvic wall, lower one-third of the vagina, or hydro-nephrosis or nonfunctioning kidney
IVA IVB	Invasion of bladder or bowel mucosa Distant metastases, including involvement of inguinal lymph nodes

Type 1	Type 2
55–65 years	65–75 years Aggressive
Unopposed estrogen, obesity, HTN, DM	Atrophy, thin physique
Endometrioid	Serous, clear cell, mixed Müllerian tumor
PTEN, ARID1A, PIK3CA, KRAS, MSI	TP53, PIK3CA

Rx:
Except:
Endometrioid adenocarcinoma
Grade 1 or 2 Stage 1A Size <2cm

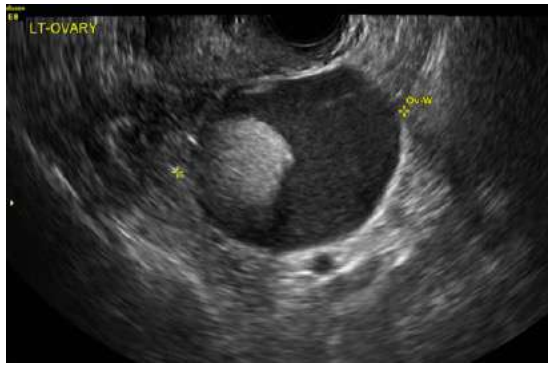
2023 updated staging
POLE-mutated tumors
p53-abnormal tumors

Approach to adnexal mass



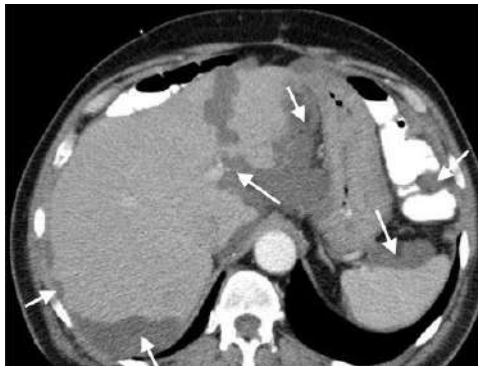
RMI (Risk of Malignancy Index):
RMI = CA125 × USG score × Menopause status
Ultrasound Score parameters:
- **Multilocular cysts**
- **Solid areas**
- **Bilateral lesions**
- **Ascites**
- **Metastases**

Acute pain+ Reticular appearance:
Dot & dash/tip of iceberg appearance:
T1 hyperintense cyst:



CA Ovary Pathology-WHO classification

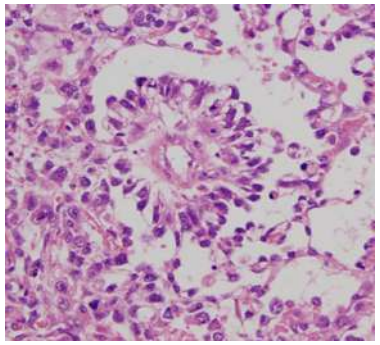
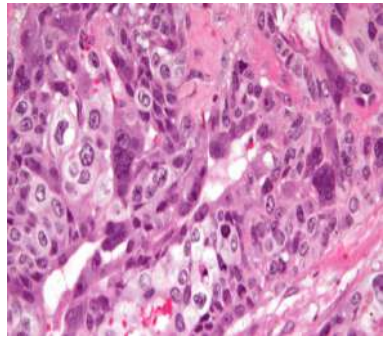
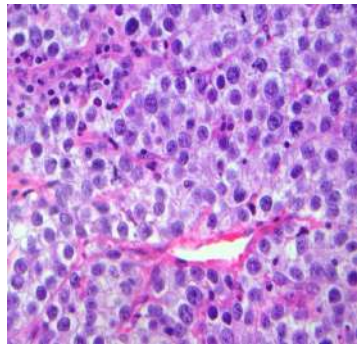
Epithelial
- Serous tumor-
- Mucinous tumor-
- Brenner tumor-
- Endometrioid tumor
- Clear cell carcinoma



Germ cell tumors
- Teratoma
- Dysgerminoma

LDH, PLAP, HCG, OCT3/4, NANOG

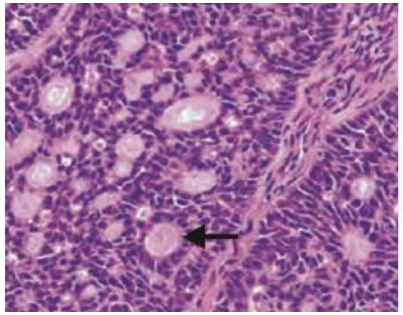
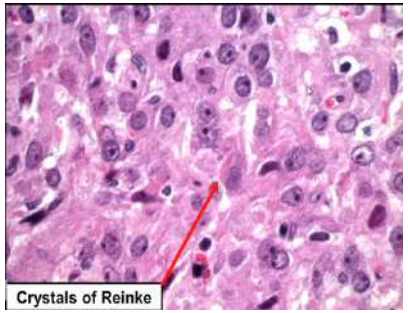
- Yolk sac tumor
- Choriocarcinoma
- Embryonal cancer

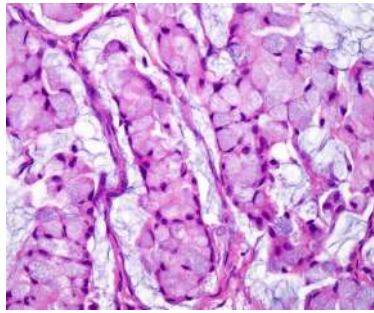




Sex cord stromal tumors
- Granulosa cell tumor

Call-Exner bodies, FOXFL2, Inhibin B, Calretinin

- Androblastoma / Arrhenoblastoma
- Sertoli cell/ Leydig cell/ Hilus cell
- Stromal tumors: Fibroma/ Thecoma



Krukenberg tumor

CA Ovary

I A	Tumor limited to one ovary (capsule intact) or fallopian tube
I B	Tumor limited to both ovaries (capsules intact) or fallopian tubes
I C	Tumor limited to one or both ovaries or fallopian tubes, with any of the following: Stage IC1: Surgical spill Stage IC2: Capsule ruptured before surgery, or tumor on ovarian or FT surface Stage IC3: Malignant cells in the ascites or peritoneal washings
II A	Extension and/or implants on the uterus and/or ovaries and/or fallopian tubes.
II B	Extension to other pelvic intraperitoneal tissues
III A	Positive (cytologically or histologically proven) retroperitoneal lymph nodes only
III B	Macroscopic peritoneal metastasis beyond the pelvis up to 2 cm in greatest dimension, with or without metastasis to the retroperitoneal lymph nodes
III C	• Macroscopic peritoneal metastasis beyond the pelvis more than 2 cm in greatest dimension • Tumor to the capsule of liver and spleen without parenchymal involvement
Iv A	Pleural effusion with positive cytology
Iv B	Parenchymal metastases and metastases to extra-abdominal organs (including inguinal lymph nodes)

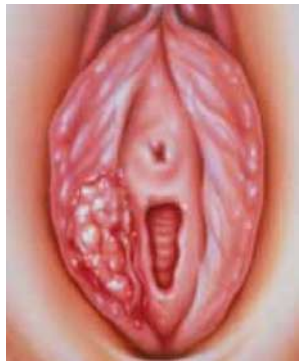
1. Peritoneal wash
2. TAH + BSO
3. Peritoneal biopsy
4. Infracolic omentectomy
5. Pelvic/para-aortic LN

Recurrence within 6 months of chemotherapy : DOC : Paclitaxel + bevacizumab

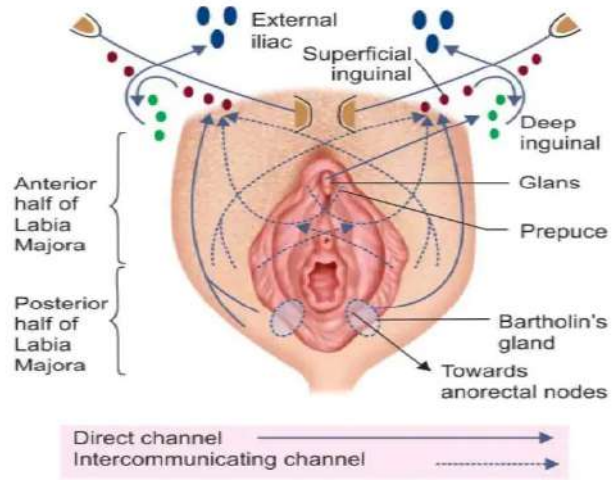
Recurrence occurs after 6 months of chemotherapy : DOC : Carboplatin + paclitaxel

Progression during treatment :

Ca vulva



R/F:
HPV Warts, Paget's, Atrophy, smoking, Lichen sclerosus
Not Condyloma Lata, HSV, Parity, Hamartoma



FIGO	Definition
IA	Lesions <2 cm, with stromal invasion <1.0 mm
IB	Lesions >2 cm size or with stromal invasion >1.0 mm
II	Extension to lower 1/3 urethra, vagina, anal involvement
IIIA	One or two node metastases, each 5 mm or less One lymph node metastasis 5 mm or greater
IIIB	Three or more lymph node metastases each less than 5 mm Two or more lymph node metastases 5 mm or greater
IIIC	Lymph node metastasis with extracapsular spread
IVA	• Extension to any of the following: upper 2/3 urethra or vagina, bladder mucosa, rectal mucosa or fixed to pelvic bone • Fixed or ulcerated regional lymph node metastasis
IVB	Distant metastasis (including pelvic lymph node metastasis)

Contraceptives

Main MOA: Inhibition of fertilization (Cu) > implantation
CI: Unexplained AUB, Active PID, Uterine mass, Wilsons
Post partum IUD:
Interval IUD :

Prevent STDs
Best in with heart disease

Missed pill concept:

1/2 pills missed

3 or more pills missed

Main MOA: Inhibition of ovulation
CI in CAD, Stroke, Hytn, DM with vasculopathy, Ca breast, Migraine, DVT, SLE, smoker >35yrs

Liver adenoma, Ca cervix, Ca breast

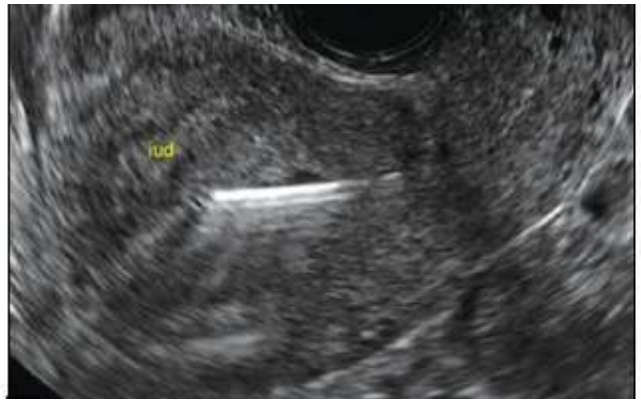
Endometrial, Ovarian, Colon ca, PID

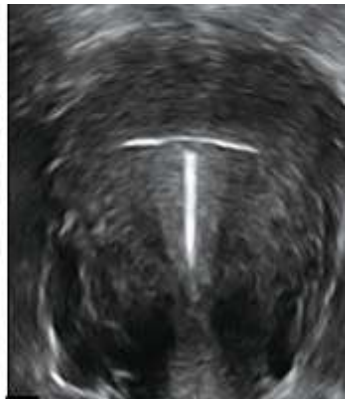
IUD scenarios

Case of Missed Threads
1.Step 1:
2.If IUCD not visible →

In UTERUS:
If patient wants to continue:
If patient wants removal:

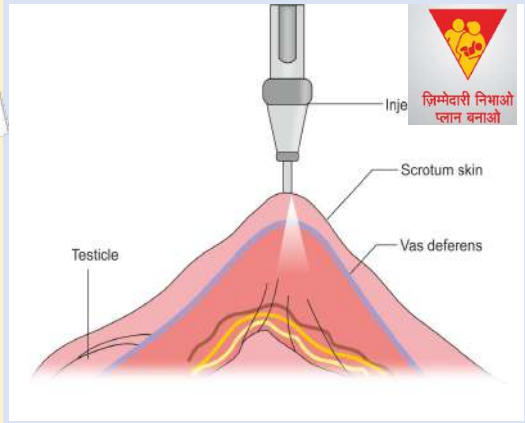
If perforation is detected:

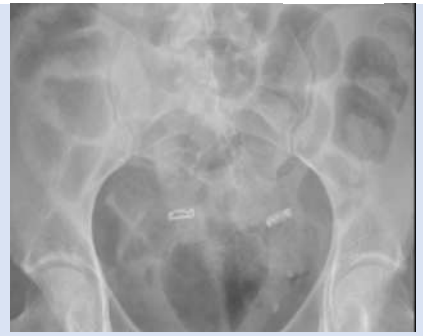




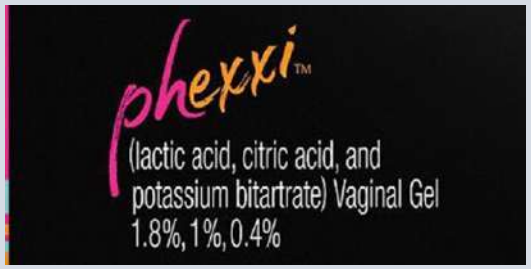
CuT + UPT positive
1.If the patient does not wish to continue the pregnancy:
2.If the patient wishes to continue the pregnancy:
1. **If thread is visible:**
2. **If thread is not visible:**

Contraceptives

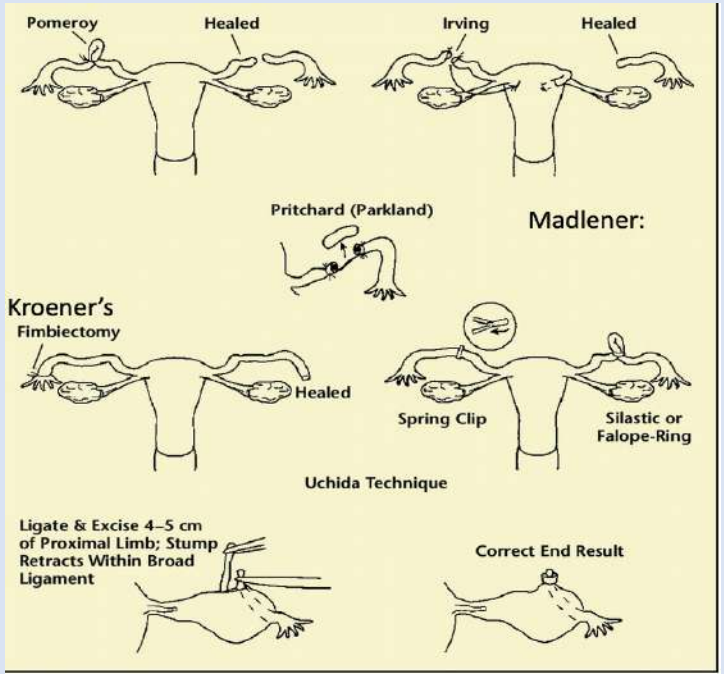




MOA: Inhibits implantation
CI: PCOD



MOA: Inhibit ovulation, cervical mucous
Can be given upto 2 weeks early and 4weeks delay

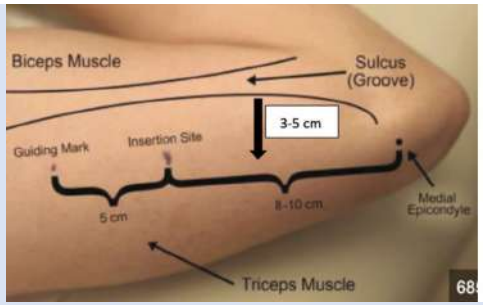


MCC of failure:
Interval:
Post-partum:
MTP:

Consent of spouse:
22-49yrs, At least one living child

Contraceptives

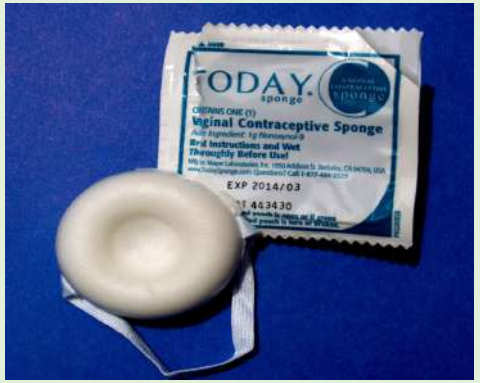
Norelgestromin + Ethinyl Estradiol



Single rod- Etonogestrel
MOA: Inhibit ovulation, cervical mucous

6 Silicone capsules
LNG

MOA: Alter cervical mucous
No change in ovulation
Minipill: within 3hrs
Cerazette: within 12hrs



Etonogestrel + Ethinyl Estradiol

Miscellaneous

Emergency contraceptives:

CuT
OCP-Yuzpee regimen:

Mifepristone
Centrochroman

Contraceptive of choice:
Woman on anticoagulation for DVT/ ca breast:
Molar pregnancy:
Ca cervix:
Post-partum:
3weeks
3months

Pearl Index:

Life-table analysis

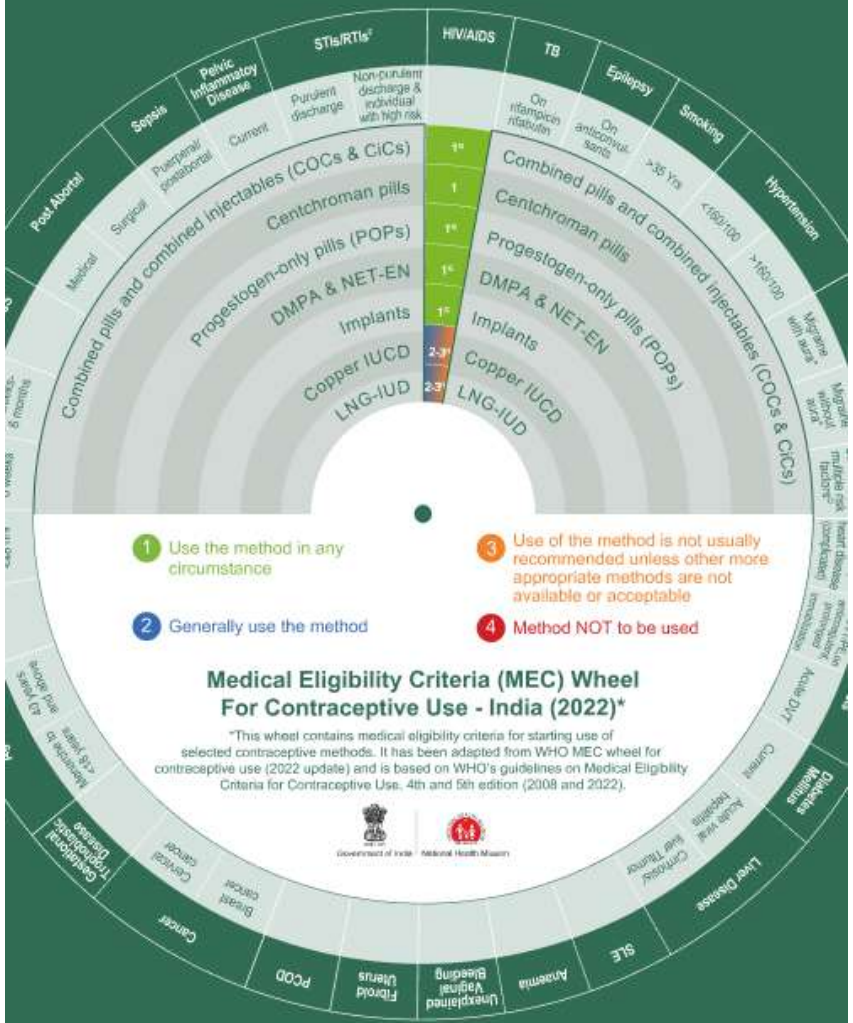
	Pearl Index
Calendar Method	
Female Condom Vaginal Sponge	
Male condom	
IUCD	
OCP	
Sterilization	

Bellagio criteria:

World Health Organization
India

Medical Eligibility Criteria for Contraceptive Use

(India-adapted WHO MEC Wheel)



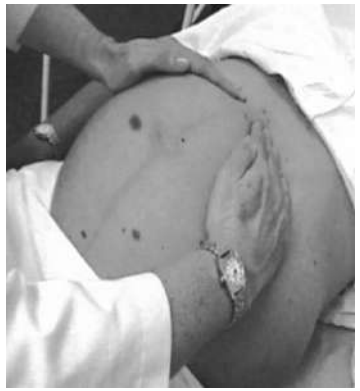
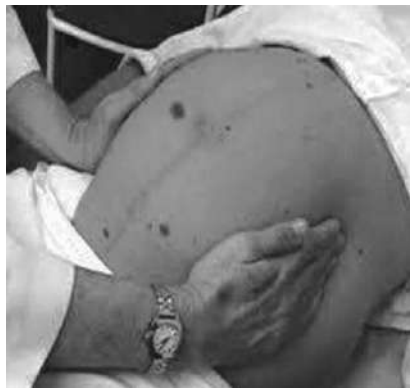
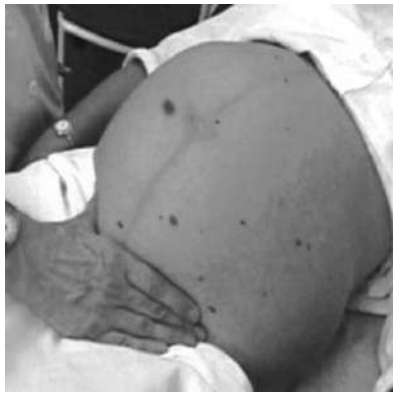
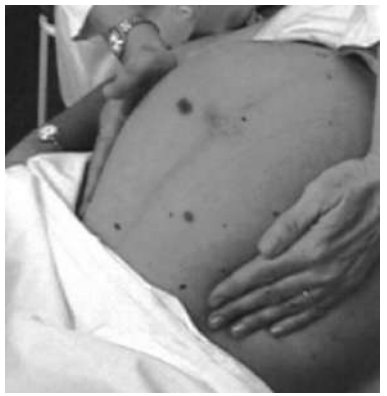
Basic obstetrics

Presumptive: Felt by patient- Amenorrhea, nausea, fatigue, breast changes, Quickening
Probable: Seen by doctor – UPT +
Positive : Definitive-USG, Doppler
Ballotment:
Lightening:

Naegeles formula:
Best for GA in irregular/ OCP:
Oocyte retrieval: +266d
D3 ET: +263d
D5 ET: +261d

G-No. of conceptions
P-No. of past pregnancies >28wks
TPAL:

Probable Signs	Description
Goodell's sign	Soft cervix
Jacquemier's Chadwick's sign	Bluish hue of ant vaginal wall
Osiander's sign	Increased pulsation felt through the lateral fornices
Piscacek's sign	Asymmetrical uterine enlargement in lateral implantation
Hegar's sign	On bimanual exam, the abdominal and vaginal finger appose below the body of the uterus
Palmer's sign	Rhythmic uterine contractions elicited on bimanual exam

A 28-year-old pregnant woman presents for her antenatal check-up at 34 weeks gestation with a twin pregnancy. Her obstetric history includes an abortion at 12 weeks of gestation and a term delivery of healthy twins three years ago. Which of the following correctly represents her current obstetric score?

a) G3P2A1L2
b) G5P2A1L2
c) G3P1A1L2
d) G3P1A1L1

Antenatal care

ANC VISITS
Min WHO:
Min GOI:
Ideal GOI/WHO:

1st visit: ABO, Rh, Hb (at least 4 times)
FBS/ RBS/ HbA1c
HIV, VDRL, HBsAg
Urine R/M (ASB-R/o)
TSH
Rubella

Vaccines: Td (2 doses; last 3 yrs-booster), Tdap at 27-36wks
CI LIVE: BCG, Varicella, MMR, HPV except

Calcium:
IFA tablet:

AED/ h/o NTD (4% risk)/ sickle cell anemia/Diabetics:

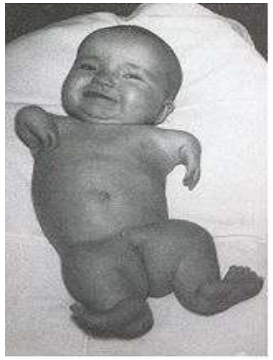
Teratogens

- ACE / ARB
- Li
- Misoprostol
- Isotretinoin
- Alcohol
- Warfarin
- Methotrexate
- Methimazole
- Indomethacin
- Tetracycline
- Thalidomide
- Sulfonamides
- Tamoxifen-3mon
- SSRI

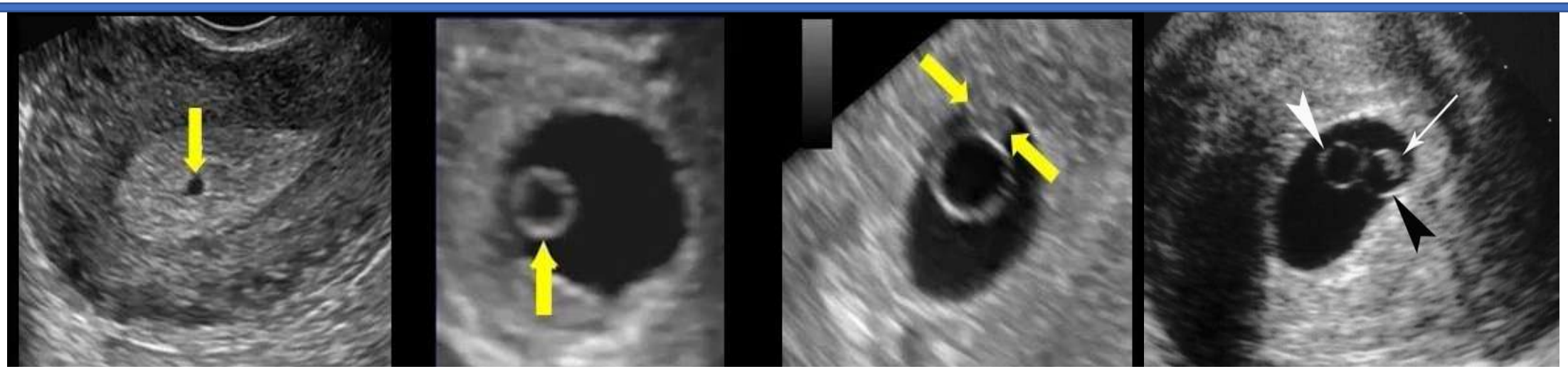
Category (BMI)	Total Weight Gain
Underweight (<18.5)	12.5–18 kg
Normal weight (BMI 18.5–24.9)	11-12.5 kg
Overweight (BMI 25–29.9)	7–11kg
Obese (BMI ≥30)	5–9 kg

Calorie Requirement increases

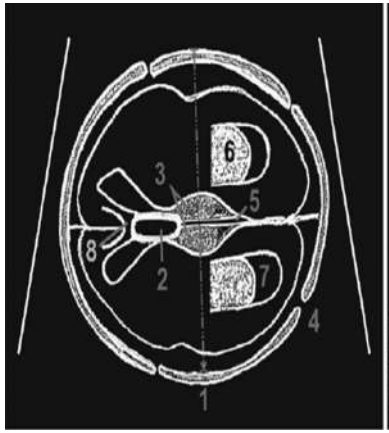
Second trimester: + Kcal/day
Thirst trimester: + Kcal/day
Lactation (0-6m): + Kcal/day
Lactation (6-12m): + Kcal/day

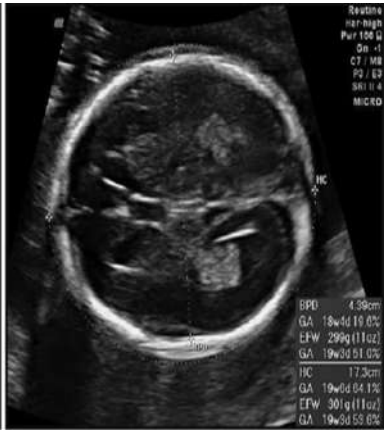


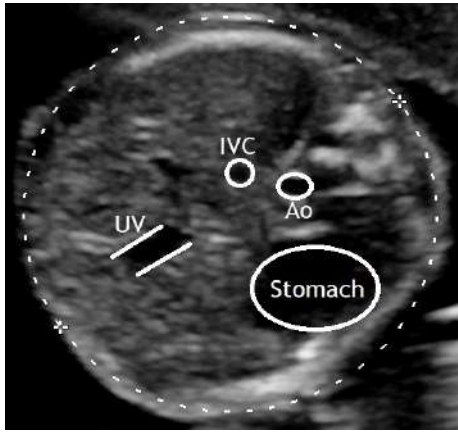
Early pregnancy USG



Single parameter best for GA overall/ T1:
T2:
T3:
Fetal growth:
NT/NB scan: Anomaly/TIFFA scan:
Fetal ECHO:







Aneuploidy screening

Nuchal translucency

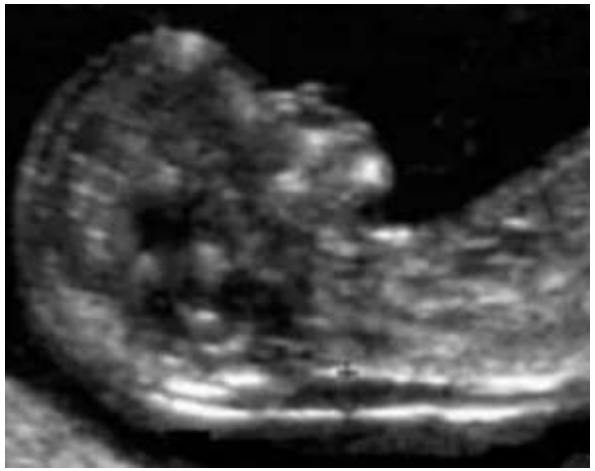
Nuchal fold thickness

Dual marker:

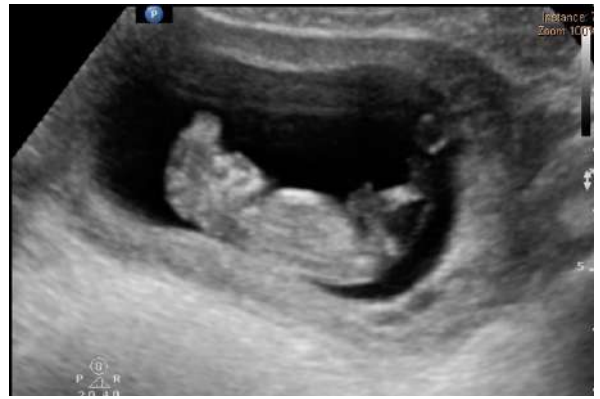
Triple marker:

Quadruple marker:

NIPT (Cell-free fetal DNA):



Chorionic Villous Sampling	Amniocentesis	Cordocentesis
10-13 wks.	15-20 wks.	18-20 wks.
Trophoblasts	Amniocytes, fetal dermal fibroblasts	Fetal blood cells
R/o fetal loss:	R/o fetal loss:	R/o fetal loss:



Raised AFP:

PHYSIOLOGICAL CHANGES IN PREGNANCY

Blood/plasma/RBC volume
Retic count
WBC count
All clotting factors
Fibrinogen
ESR
SHBG/TBG, Total protein
Total T3/T4: Free T3/T4:
TSH:
On treatment for hypothyroidism
Dose:
Transferrin, TIBC
LDL, HDL

CO
HR, SV

IC
TV
MV
2-3 DPG

RBF, GFR

Hematocrit
Hb
Platelet
F 11/13
Albumin
Protein C/S
Iron, ferritin
Serum Na, K, Ca, Mg

PVR
BP (DBP > SBP fall)

FRC
RV

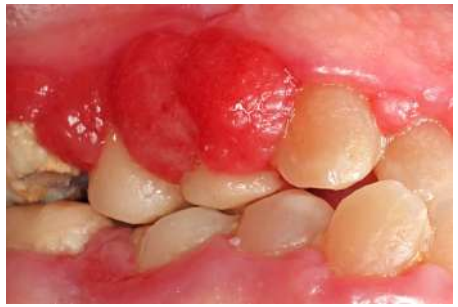
Sr Urea
Uric acid/Creatinine

Vaginal pH

BT, CT
MCHC

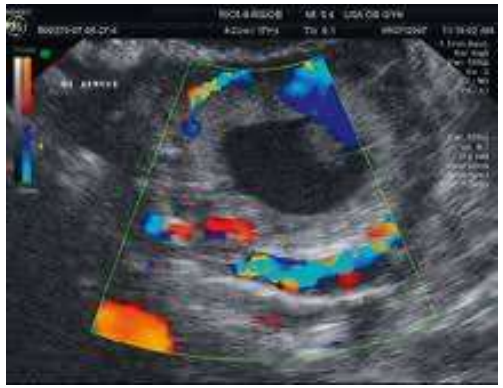
EF

IRV
RR
Vital capacity
TLC
COMPLIANCE



Ectopic pregnancy

MC site:
Duration max:
R/F: Past h/o ectopic, Tubal Sx>IUD, PID
IOC:



PUL: UPT + Empty Uterus
Next:

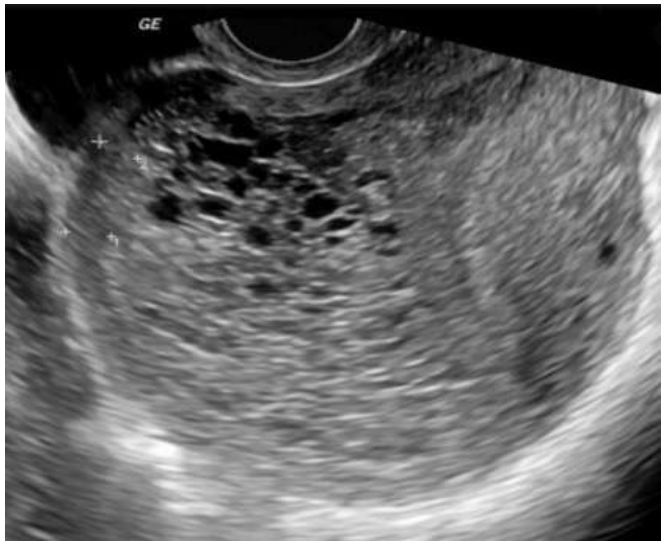
Discriminatory zone:

CRITERIA:
Cervical-
Ovarian-
Abdominal-

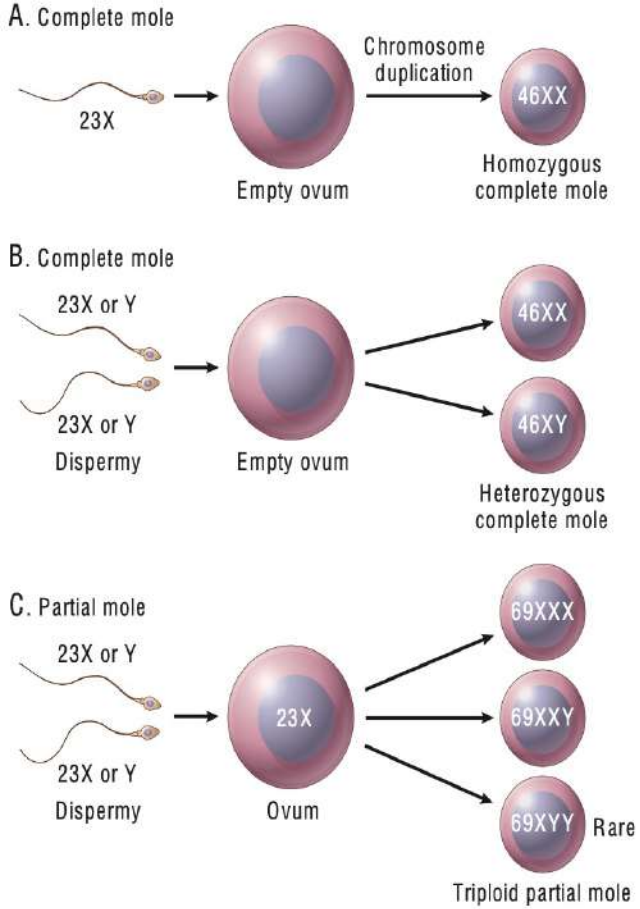
Mx –Ruptured:
- Unruptured: Medical Vs surgical
-Stable
-Motivated
-HCG :
-FCA :
-Sac:
-No CI to Mtx

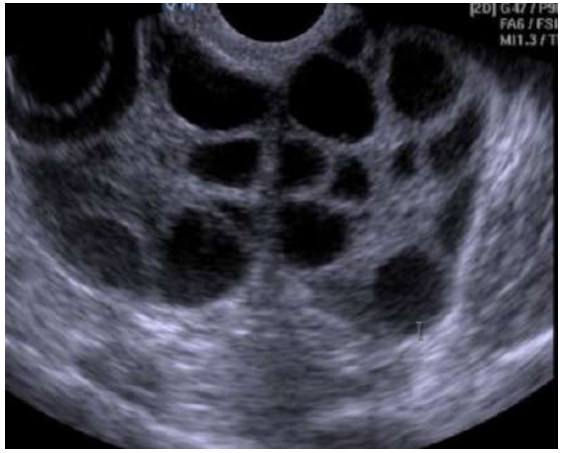
Day 1: MTX im
Day 4, 7 : B-HCG
Repeat if <15% decline
Monitor weekly till zero

Molar pregnancy



Complete	Partial
Generally diploid or tetraploid; generally all chromosomes paternal	Generally triploid; extra set of chromosomes is paternal

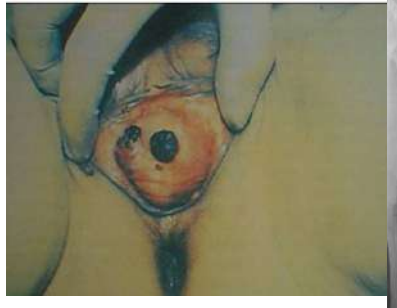


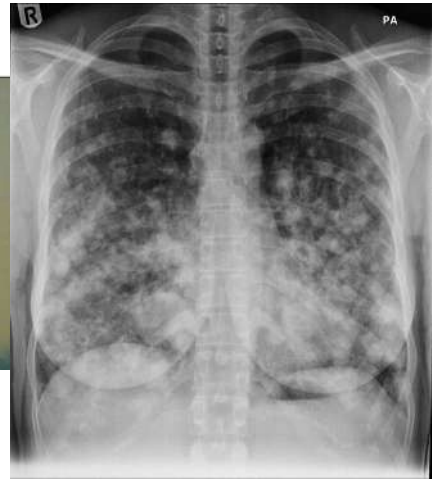


GTN

GTN: Invasive mole> CCA> PSTT>ETT
HPL:
CRITERIA:
-Persistent bleed
-Uterine subinvolution
-Shock
-Persistent TL cyst
-Mets MC:
-BHCG plateau -1,7,14,21
-BHCG rise-1,7,14
-BHCG detectable >6months
-H/P

WHO prognostic scoring				
Scores	0	1	2	4
Age in years	<40	>40	-	-
Antecedent pregnancy	H. Mole	Abortion	Term	-
Interval since last pregnancy	<4 months	4-6	7-12	>12
B-HCG	<1000	10^3-10^4	10^4-10^5	>10^5
Large size tumor	3-4	5	-	-
No of mets		1-4	5-8	>8
Site of mets		Spleen, kidney	GI	Liver, brain
Previous failed chemo			Single drug	Two or more drug





Stage I	Disease confined to uterus
Stage II	GTN extending outside uterus but limited to genital structures (adnexa, vagina, broad ligament)
Stage III	GTN extending to lungs
Stage IV	All other metastatic sites

Etoposide, Methotrexate, Actinomycin, Cyclophosphamide, Oncovin

ABORTIONS

Os open Bleeding + Pain + Uterus smaller USG: RPOC	Os open Bleeding + Pain + Uterus equal USG: Fetus, no FCA	Os closed Bleeding stopped Uterus smaller USG: Empty ET	Os closed Spotting, Pain + Uterus equal USG: Fetus, FCA +	Os closed Spotting, Pain +/- Uterus smaller USG: No FCA

Early pregnancy failure:
Gsac > 25mm with no fetal pole
CRL >7mm with no FHR

MTP

	MTP 2021
<20weeks	
20-24 weeks	
>24 weeks	Medical board:

Therapeutic-life of mother endangered
Eugenic –fetal anomaly
Humanitarian-rape/incest/minor/mentally ill/ divorce
Social – Contraception failure

Age for consent:
Consent of husband?

OBG
RMP with 6mon internship/ 1yr house job/ 25 cases MTP

Methods of MTP-First trimester

- Medical MTP:
- Suction evacuation
- Manual vacuum aspiration

Methods of MTP-Second trimester

- Medical MTP:
- Dilatation and evacuation
- Extra-amniotic ethacridine
- Intra-amniotic saline
- Oxytocin

Important instruments for MTP







Signs of complete evacuation :

- **No more products**
- **Bubbles seen in suction tube**
- **Grating sensation**
- **Gripping sensation**

Recurrent pregnancy loss

MCC in 1st trimester:
Most viable trisomy :
Most lethal trisomy :
MCC in 2nd trimester:

Tests in RPL:
TVS
TSH, OGTT
Karyotyping
APLA
Not TORCH
Kassowitz law:

Single most imp cause:

Clinical Criteria	Laboratory Criteria
• Vascular Thrombosis • Pregnancy Morbidity: a) Premature birth at ≤ 34 wks. due to preeclampsia/ UPI b) Placental insufficiency at <34wks c) ≥3 consecutive abortions at <10wks d) Death of normal fetus at >10 weeks	• Anti-Cardiolipin IgG/M • Anti-B2 glycoprotein • Lupus Anticoagulant (LAC) 2 x 12 wks apart

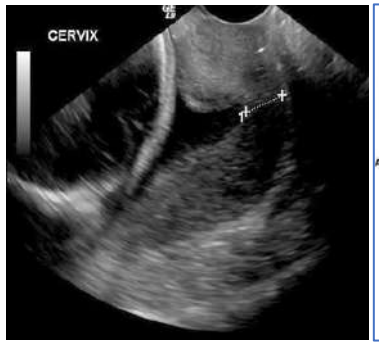
1 Clinical + 1 Lab Criteria
Rx:

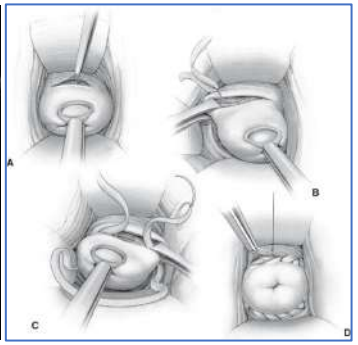
Anticoagulation in pregnancy for mechanical valves

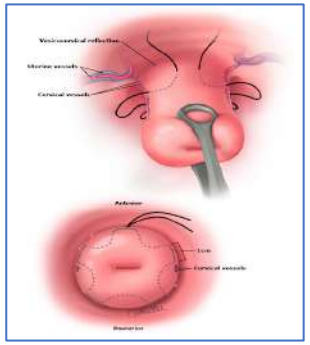
Preterm labour

Cervical incompetence:
IOC:
MANAGEMENT: 12 x 2 = 24

Trans-vaginal Cerclage:
Trans-abdominal Cerclage:
Cerclage in non-pregnant:
Absolute CI to cerclage:







PRETERM LABOUR:
Extreme: Very: Moderate: Late:
CONTRACTIONS (4 or more in 20min/ 8 or more in 60min) +
Cervical dilatation ≥2 cm/ Cervical effacement ≥80%
OR Fetal Fibronectin +ve
Management of PTL and PPROM:
<34wks: Steroids + GBS prophylaxis + TOCOLYTIC
<32wks: Add
Tocolytics: Nifedipine, Indomethacin, Ritodrine, Atosiban

Induce: Chorioamnionitis, fetal distress
Amniotic fluid: Ferning, Nitrazene blue test-alkaline, Nile blue sulfatase

STEROIDS
DOC-
GOI-
Reduce RDS, NEC, IVH, neonatal mortality
Neonatal jaundice-

PIH

Uterine artery → Arcuate artery → Radial artery → Basilar artery → Spiral artery
Pathophysiology: Failure of invasion of spiral artery by extra-villious cytotrophoblasts
TxA2, sFlt-1, TNF-A, Thromboxane A2
R/F: Primi, Twins, DM, Molar pregnancy
Prediction of Eary onset preclampsia:

Condition	Criteria
Chronic hypertension	BP ≥140/90 mm Hg on 2 occasions 4 hours apart / Persisting for >12weeks postpartum
Gestational hypertension	BP ≥140/90 mm Hg on 2 occasions 4 hours apart
Preeclampsia	Hypertension PLUS PROTEINURIA (Congo red urine test) ≥300 mg/24 h or Urine protein: creatinine ratio ≥ 0.3, or Dipstick 1+ persistent
Severe Preeclampsia HELLP/ Impending eclampsia	• BP ≥ 160/110 mmHg • S.creatinine ≥ 1.1 mg/dl • Hemolytic anemia • Platelet count < 1 lakh • Liver enzymes raised ≥ 2 times its N value • Pulmonary edema • Visual symptoms/Headache • Epigastric pain
Eclampsia	

TOP:
Mild preclampsia-
Severe preclampsia-
Eclampsia/ HELLP-

Antihypertensives in pregnancy:
Labetalol
Max IV dose:
Methyldopa
Nifedipine-Nitroprusside- Nitroglycerine
Hydralazine
Betablockers, ARB/ACE, Diuretics,
Diazoxide CI

Eclampsia: DOC:
MOA:
REGIMEN

MAINTAINENCE: 5g (50%) every 4hrly im-24hrs after last convusion/ delivery whichever is later

Therapeutic level-
Monitoring-

GDM

Guidelines	Fasting mg/dl (mmol/L)	Glucose Challenge	1-hour mg/dL (mmol/L)	2-hour mg/dL(mmol/L)
IADPSG	≥ 92	75 g OGTT	≥ 180	≥ 153
DIPSI		75 g OGTT		≥ 140

Congenital anomalies
CVS: MC: Most specific:
-Most common reversible cardiac finding
-Most specific overall
Macrosomia
Liquor:
Neonatal:

Priscilla White Classification:
Timing of delivery:

Goals of Rx:
FBS: <95
1 hour PP: 140mg/dl
2 hour PP: 120mg/dl
HbA1C: <6

Insulin Management for Labour
- Given evening dose, withhold morning dose of insulin
- Monitor sugar hourly
- Glucose > 100 mg/dl, infuse regular insulin + NS
- Glucose <70 mg/dl-5% dextrose

Liver diseases in pregnancy

HELLP

AFLP

ICP

Viral Hepatitis

Anemia and Heart disorders in pregnancy

Anemia:
MC:
Deworming:
Management of anemia:
>7g/dl:
<34wks:
>34wks/noncompliant:
<7g/dl:
<34wks:
>34wks or <5g/dl or Heart failure:

Parenteral iron:

Ganzoni formula: 2.4 X Pre-pregnancy weight X Hb deficit + 500mg

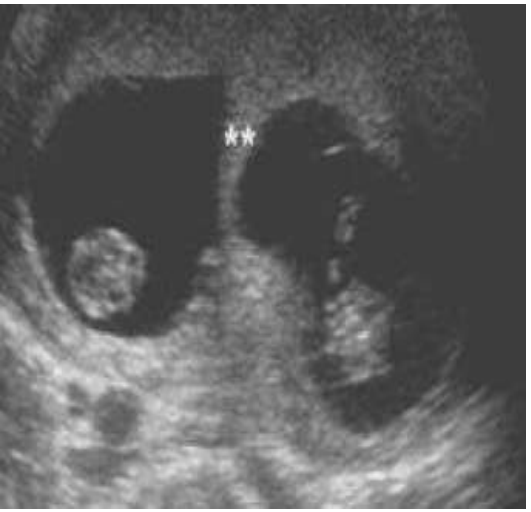
Indications of Aspirin:
APLA
Past h/o PIH/chronic Hytn
Multifetal pregnancy
Overt DM
CKD

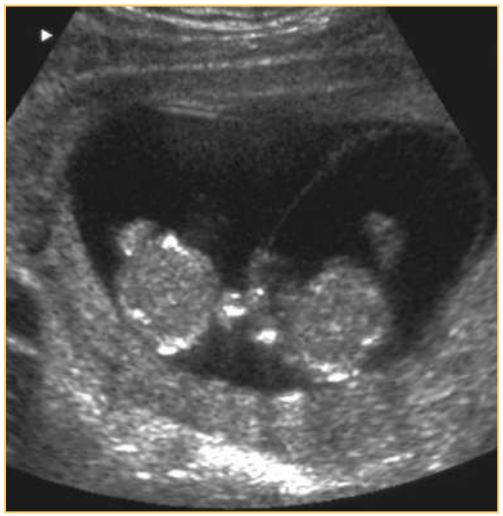
Not physiological: Pansystolic/diastolic murmur
2^{nd}-4^{th} ics high-pitch pansystolic:
S3:
MC heart disease:
MC time for heart failure:

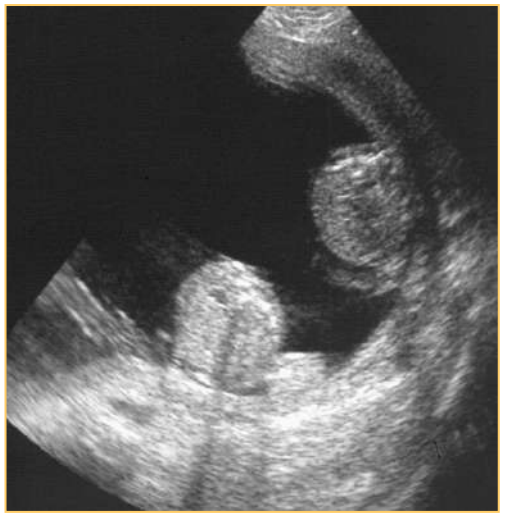
Delivery mode:
CI:
Peripartum CMP:
Twin, Preclampsia, Obese

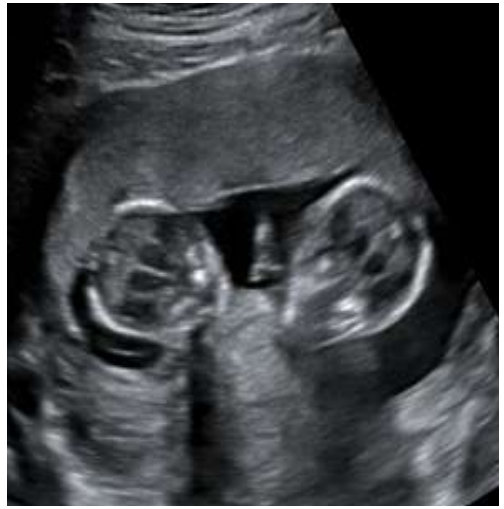
WHO IV: pregnancy not recommended
Pulmonary arterial hypertension
Severe ventricular dysfunction (EF<35%)
Severe mitral stenosis
Severe aortic stenosis
Marfans with Severe aortic dilatation
Vascular Ehlers-Danlos
Severe coarctation
Fontan with any complication
Peripartum CMP with residual defect
Eisenmenger syndrome

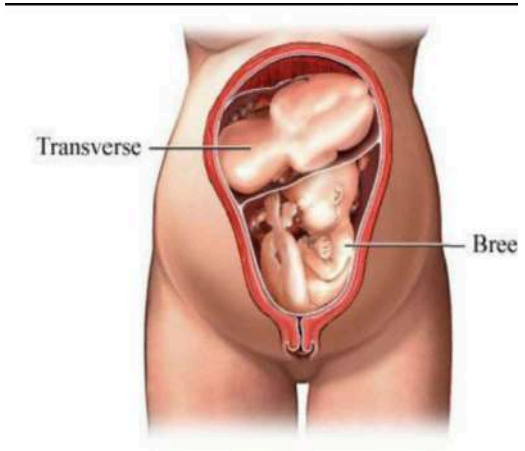
Twin pregnancy

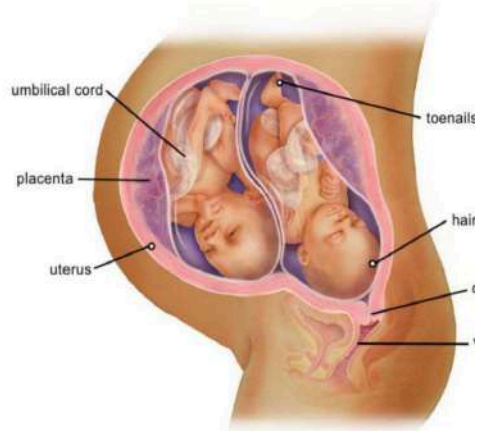










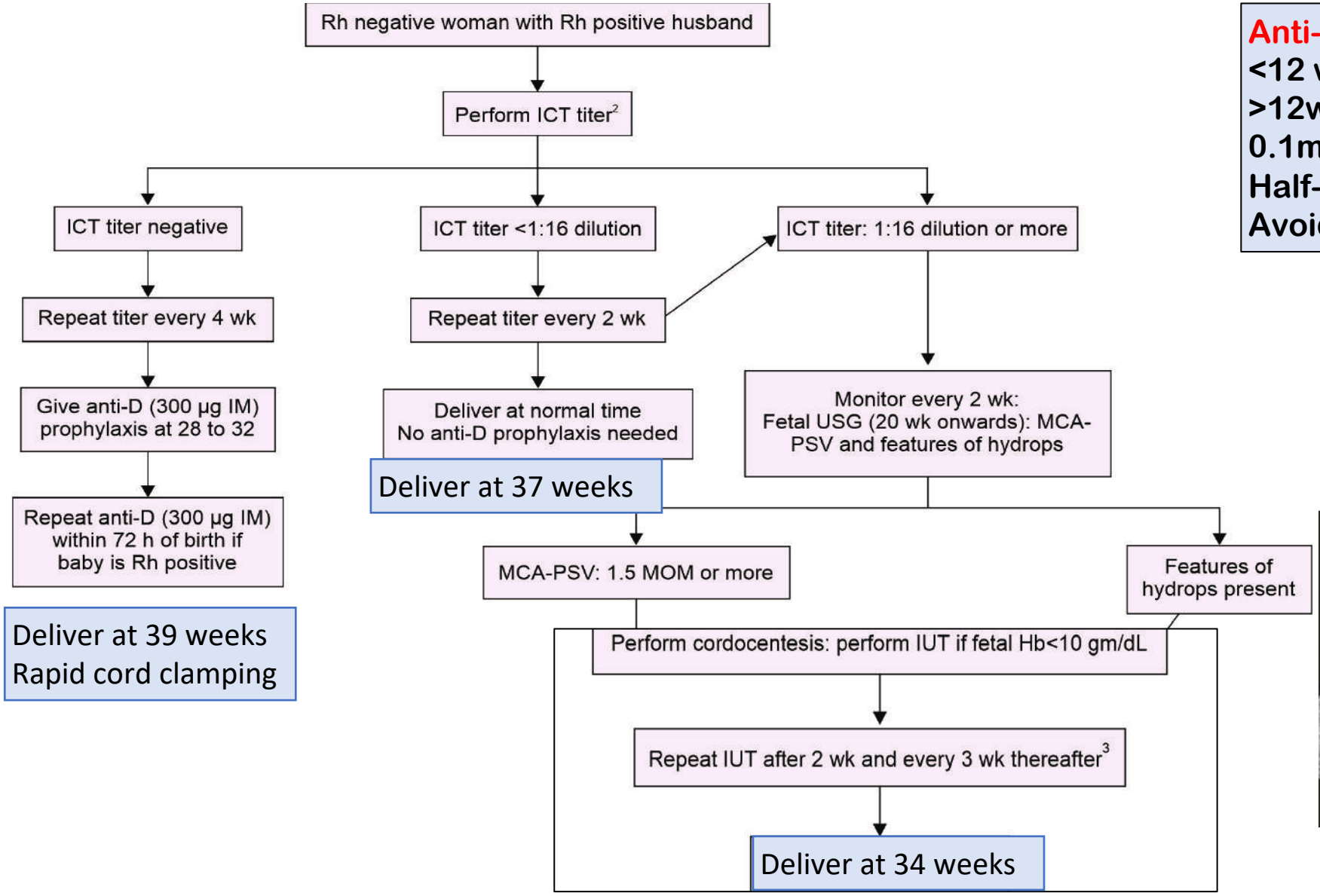


Most important prognostic factor:
TTTS
TAPS
TRAP
QUINTERO STAGING
Stage 1: Oligohydramnios-Polyhydramnios
Stage 2-: Absent UB in donor
Stage 3: Doppler abnormalities
Stage 4: Fetal hydrops
Rx:

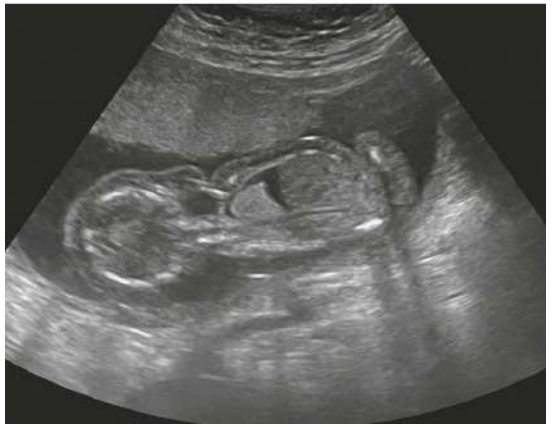
Timing of delivery:
DCDA-
MCDA-
MAMC/
Conjoined/Triplets-
(LSCS only)

Second twin in transverse lie, no previous LSCS:

Rh iso-immunisation

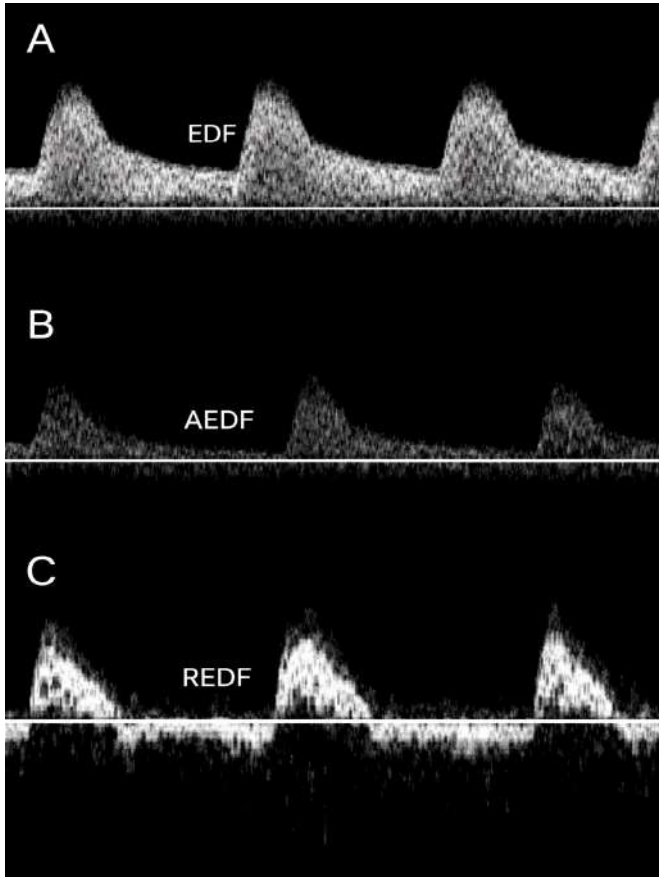


Anti-D:
<12 weeks: 50 ug
>12weeks: 300ug (30ml fetal blood)
0.1ml-Alloimmunization
Half-life:
Avoid methylergometrine



IUGR and abnormal amniotic fluid

IUGR: EFW <10th centile + AbN Doppler
Umbilical artery doppler



Ductus venosus reversal:
Cerebro-placental ratio <5th centile:

AMNIOTIC FLUID
Maximum amniotic fluid:
Major contributor:
Golden-
Tobacco-
Green-
AFI:
SDP:

Uteroplacental insufficiency:
Renal agenesis:
Barter syndrome in fetus:
PUV:
Esophageal atresia:
Cleft lip/palate:
NTD:
Omphalocele:
Fetal anemia:
GDM:
Twins:
Trisomy:
Anencephaly:

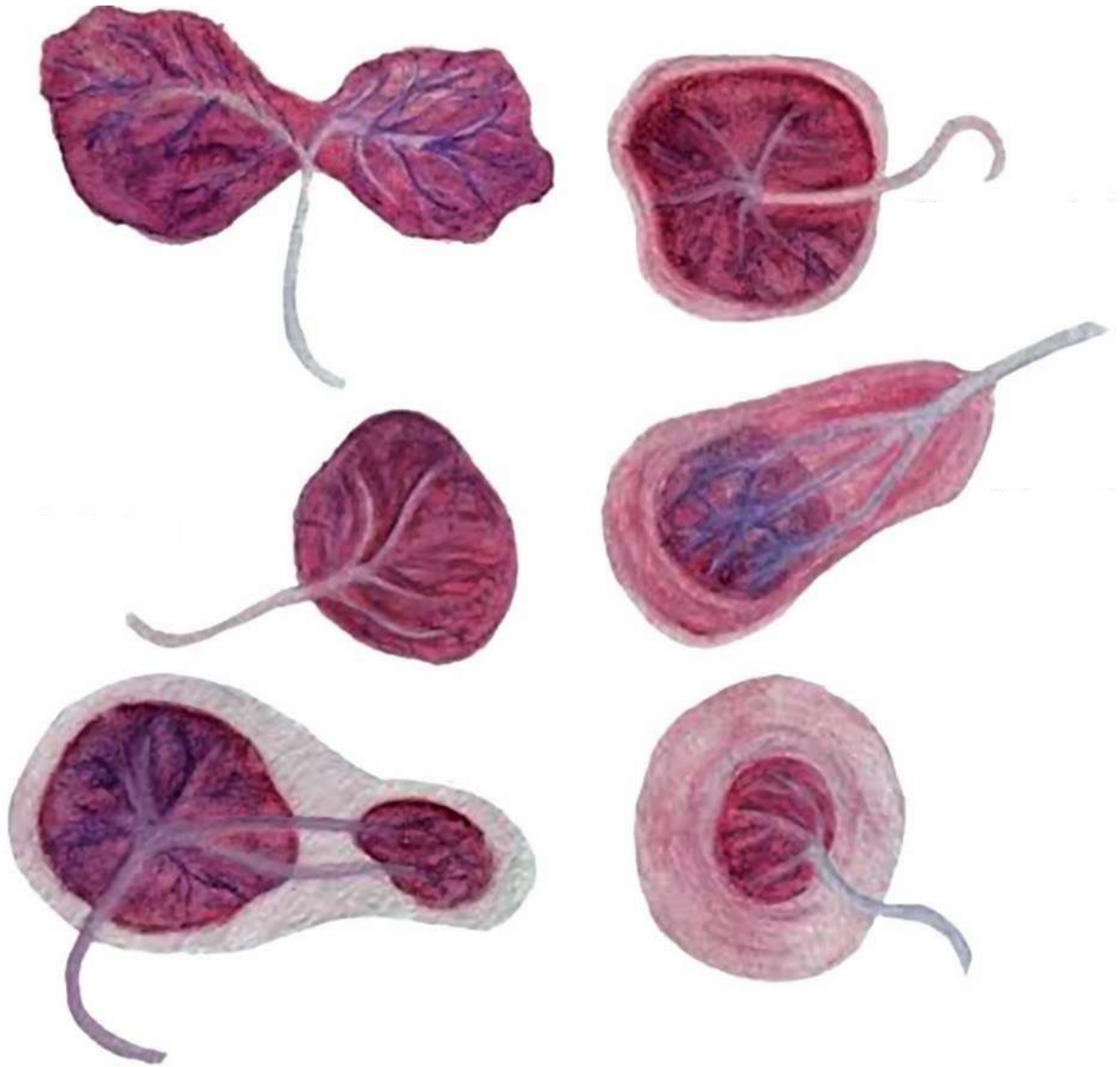
Potter sequence:
Cord compression
Amniotic band Sx/ Streeter Sx

Preterm labour and PROM
Postpartum Hemorrhage (PPH)
Cord prolapse
Malpresentations

PLACENTA / CORD ABNORMALITIES

Normal: Weight: 500 g, Diameter 20 cm
Placentomegaly:
Decidua basalis:
Chorion frondosum:
Discoidal
Deciduate
Hemochorional
Umbilical cord: 30-70cm
Coiling index: Coils/ total length (N-0.2)
SINGLE umbilical artery:

Cord prolapse “Bag of worms”
Max risk in:
Next:
-Prepare for urgent LSCS
-Tredelenburg position
-Fill UB
-Relieve pressure off cord: Lift presenting part
-Don’t touch cord
Cord presentation:



Antepartum hemorrhage

- R/F: LSCS/ Multiparity/ smoking
- Warning bleed
- Painless, bright red bleed with soft uterus
- FHS-normal
- Fundal height=POG
- Malpresentations common:

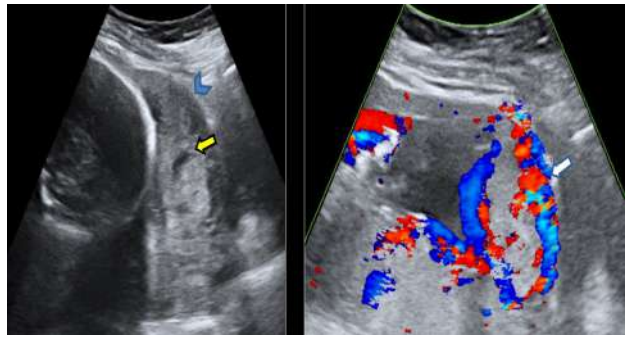
- Apt test negative
- Stallworthy sign-posterior

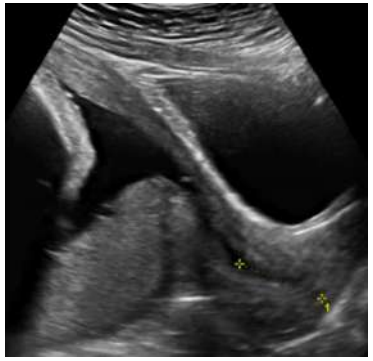
- Painless, bright red bleed with soft uterus
- Fetal distress ++
- Fundal height=POG
- CTG: Sinusoidal
- Apt test +

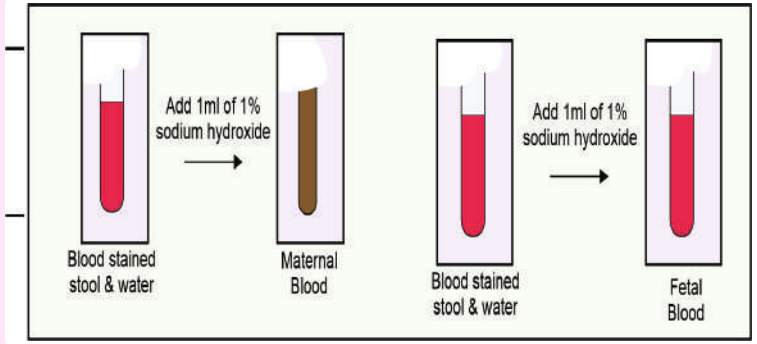
- Trauma/PIH
- Painful, dark red bleed with tense tender uterus
- Fetal distress +
- Fundal height >POG
- DIC
- Page classification
- Concealed/ Revealed/ Mixed

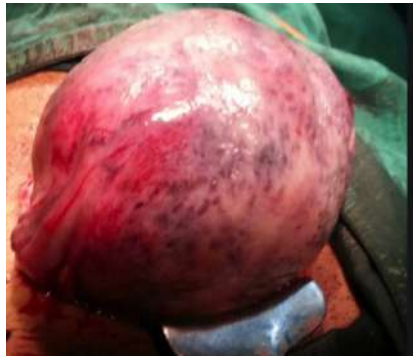
R/F: H/o LSCS, PP

- Accreta:
- Increta:
- Percreta:
- IOC:
- TOC:







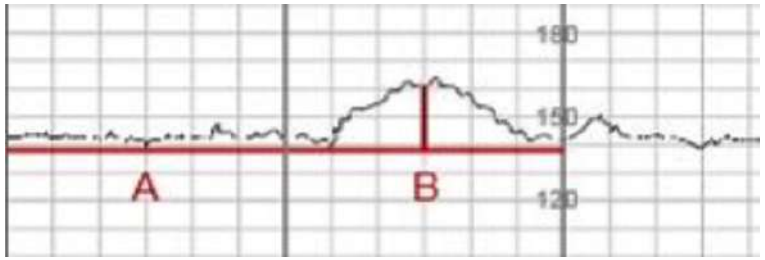


A pregnant woman at 30 weeks presents with painful bleeding PV, reduced fetal movement, increased uterine tone, and absent FHR. BP is 166/98 mmHg, and the cervix is 6cm dilated, 70% effaced with intact membranes. What is the next best step?

A. Emergency LSCS
B. Start Antihypertensives and emergency LSCS
C. Start Antihypertensives and ARM
D. Tocolysis

Antepartum fetal monitoring

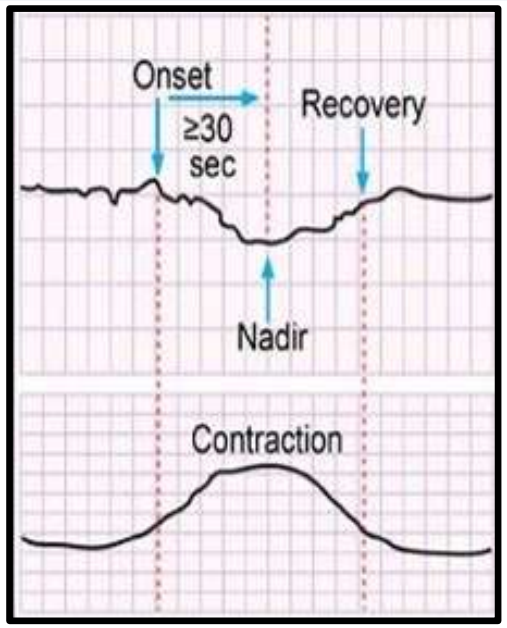
Decreased fetal count:
Next:

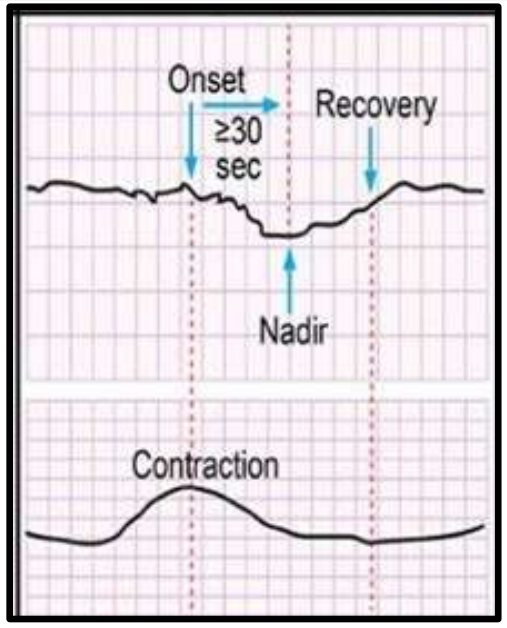


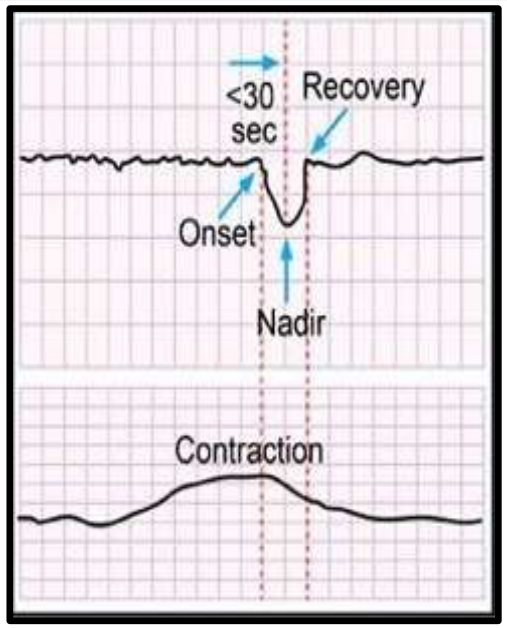
Biophysical Parameter	Normal (2)	Abnormal (0)
Qualitative AFI	AFI between 10 and 20	AFI less than 10 or more than 20
Reactive FHR	Two episodes of FHR acceleration of ≥ 15 beats/minute and of ate least 15 sec	Less than two episodes
Fetal tone	At least 1 episode of active extension with return to flexion of fetal limb (s) or trunk	Either slow or absent fetal movement
Fetal breathing	At least 1 episode of fetal breathing in 30min	Absent
Gross body movement	At least 3 discrete body/limb movement in 30 minutes	2 or fewer episodes of body /limb movements in 30 minutes

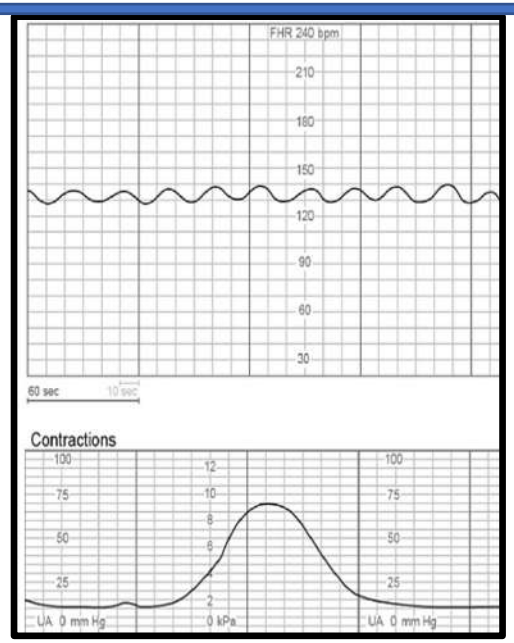
Modified BPP:

Intrapartum fetal monitoring





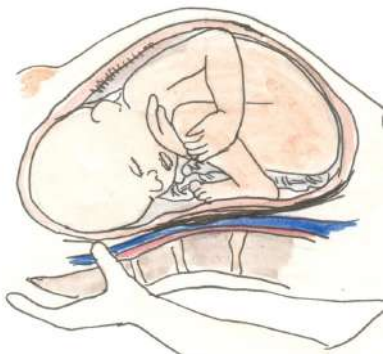




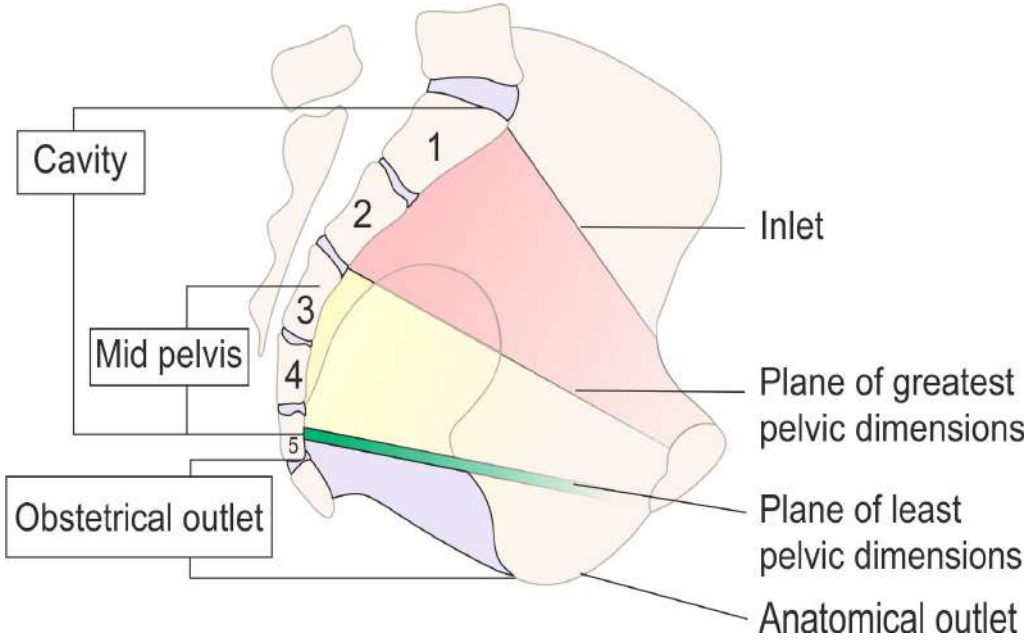
Category 3 CTG :

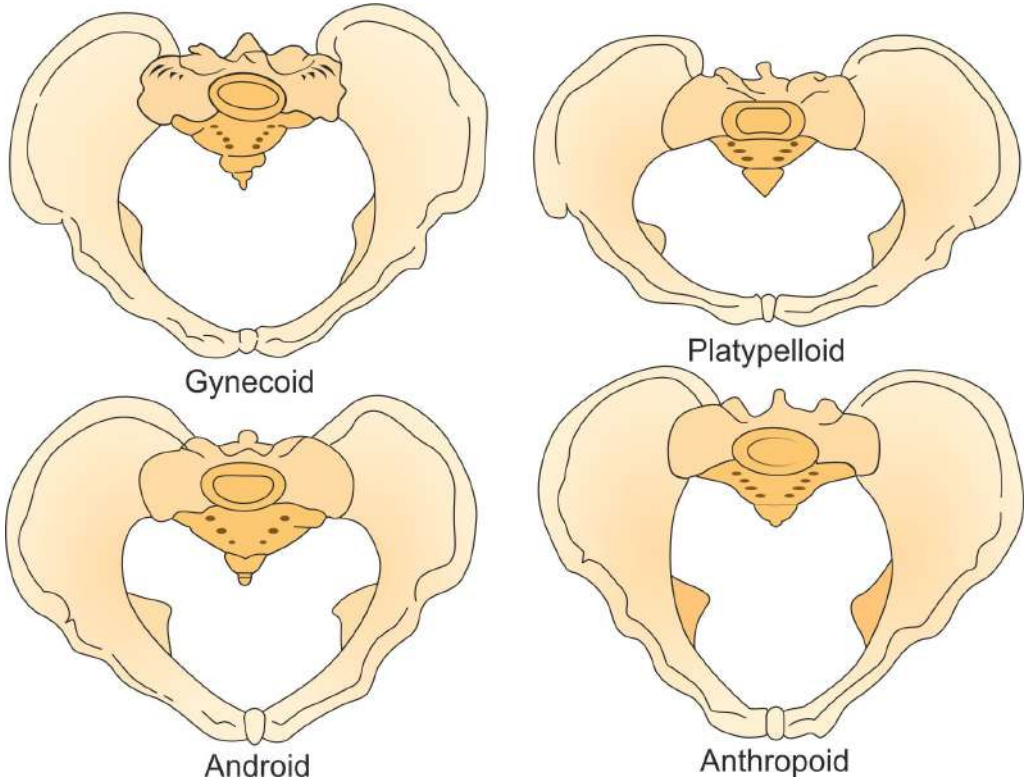
1. **Sinusoidal heart rate pattern**
2. **Absent variability with any of the following :**

- **Persistent bradycardia**
- **Persistent late deceleration**
- **Persistent variable deceleration**

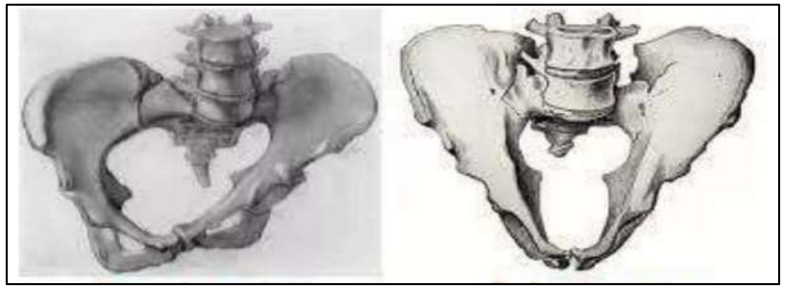


Maternal pelvis





Contracted pelvis:
Obstetric conjugate-
Interischial diameter-
Bituberous diameter-



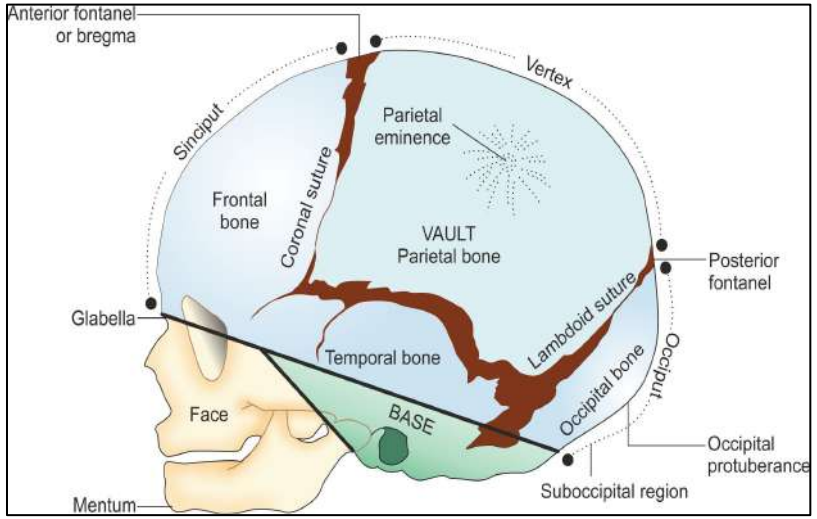
MC:
Least common:
AP > transverse:
Face to pubis:
Persistent OP:
DTA:

Infra-umbilical flattening and FHS in flank:
Management:

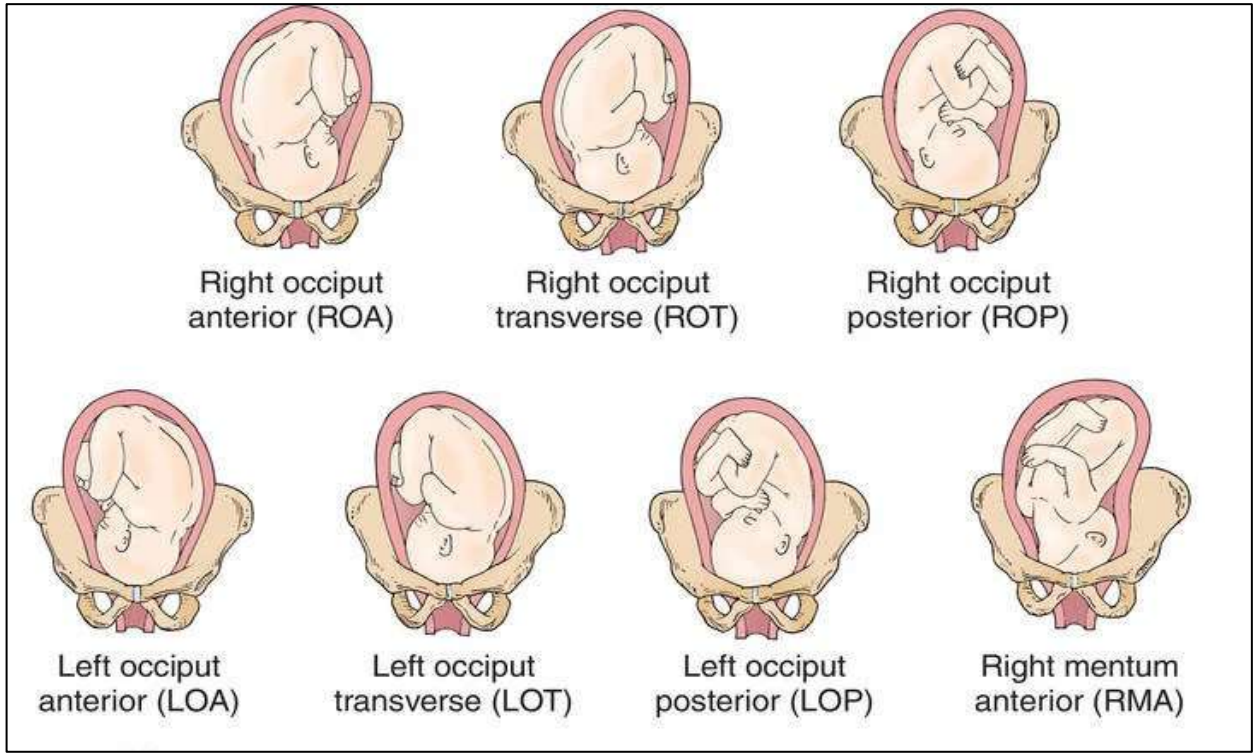
Fetal skull diameters

Lie: Orientation of the long axis of the fetus relative to the long axis of the uterus (Longitudinal/ Transverse/ Oblique)
Presentation: Part of the fetus that will be delivered first (Cephalic/ Breech/ Shoulder)
Presenting part: Part of the presentation felt by the examining finger through the cervical opening. (Vertex/Face/Brow)
Attitude: Relation of different parts of the fetus to one another
Denominator: Bony point of reference on the presenting part (Occiput/ Sacrum/ Mentum)

Diameter	Attitude of the head	Presentation
Suboccipitobregmatic 9.5 cm	Complete flexion	Vertex
Suboccipitofrontal 10 cm	Incomplete flexion	Vertex
Occipitofrontal 11.5cm	Marked deflexion	Vertex
Mentovertical 14 cm	Partial extension	Brow
Submentobregmatic 9.5 cm	Complete extension	Face MC in Anencephaly



Face VS Breech on PV:



Most common OA position:
Most common OP position:

MC engaging transverse diameter:

MODIFIED BISHOP SCORE

Cervical Feature	0	1	2	3
Cervical dilatation	< 1cm	1-2 cm	2-4 cm	> 4cm
Cervical length	4 cm	2-4 cm	1-2 cm	< 1 cm
Effacement*				
Station of presenting part	-3 cm	-2 cm	-1/0 cm	+1/+2 cm
Consistency of cervix	Firm	Average	Soft	
Position of cervix	Posterior	Mid position	Anterior	

Induction of labour:
Dinoprostone:
Misoprostol / Mifepristone/ Oxytocin
Laminaria tents/ Foley's with extra-amniotic saline/
Stripping of membranes/ ARM
No medical IOL if h/o LSCS

>36wks, singleton with breech/transverse (not in knee or footling), adequate liquor, membranes intact, normal FHR, no placenta previa (OPD based):
Zatuchni-Andros score :

INDICATIONS OF LSCS:
Contracted pelvis/ Deep transverse arrest
Placenta previa
Previous Classical Caesarean/ VVF repair
Active HSV
Ca cervix
Cord prolapse
Vasa previa
Malpresentations:

Stages of Labour

Stage 1:

Latent phase –Active phase

Original (Friedmann):

Modified WHO Partogram:

WHO definition:

Definition of Labour (ACOG):

Prolonged latent phase:
Protraction of dilatation:
Active Phase Arrest

Adequate contractions:
Second stage Arrest:
Prolonged 3rd stage:

Stage 2

Stage 3

Stage 4

Second stage of labour:
-Ritgen manouever
-Warm compress perineum
-Fundal pressure / Routine episiotomy/ Lithotomy

- **Carbetocin (100 ug IM/IV)**
- **Misoprostol (400ug PO)**
- **Methylergometrine 0.2mg**
- **Oxytocin and ergometrine fixed-dose**
- **combination (5 IU/500 µg, IM)**

AMTSL:
-Check for another fetus
10IU oxytocin within 1min of shoulder
-Controlled cord traction (presence of SBA)
-Delayed cord clamping
-Intermittent assessment of uterine tone/ Uterine massage

Engagement
Descent
Flexion
Internal rotation
Crowning
Extension
Restitution
External rotation
Expulsion of rest of the body

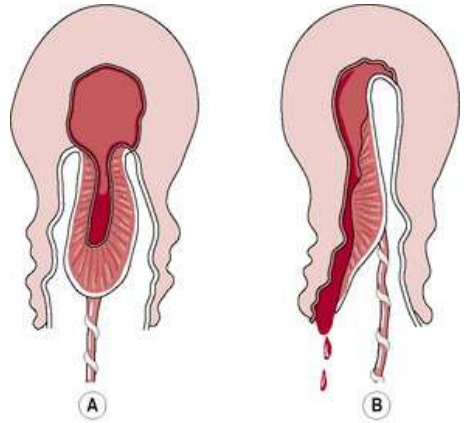
- Origin of Levator ani
- Carrus curve
- Pudendal nerve block
- Deep Transverse Arrest
- Internal Rotation
- Station

Intra-uterine fetal demise:

Puerperal pyrexia: >100.4 F
Septic Pelvic Thrombophlebitis :

Placental separation: Schultze:

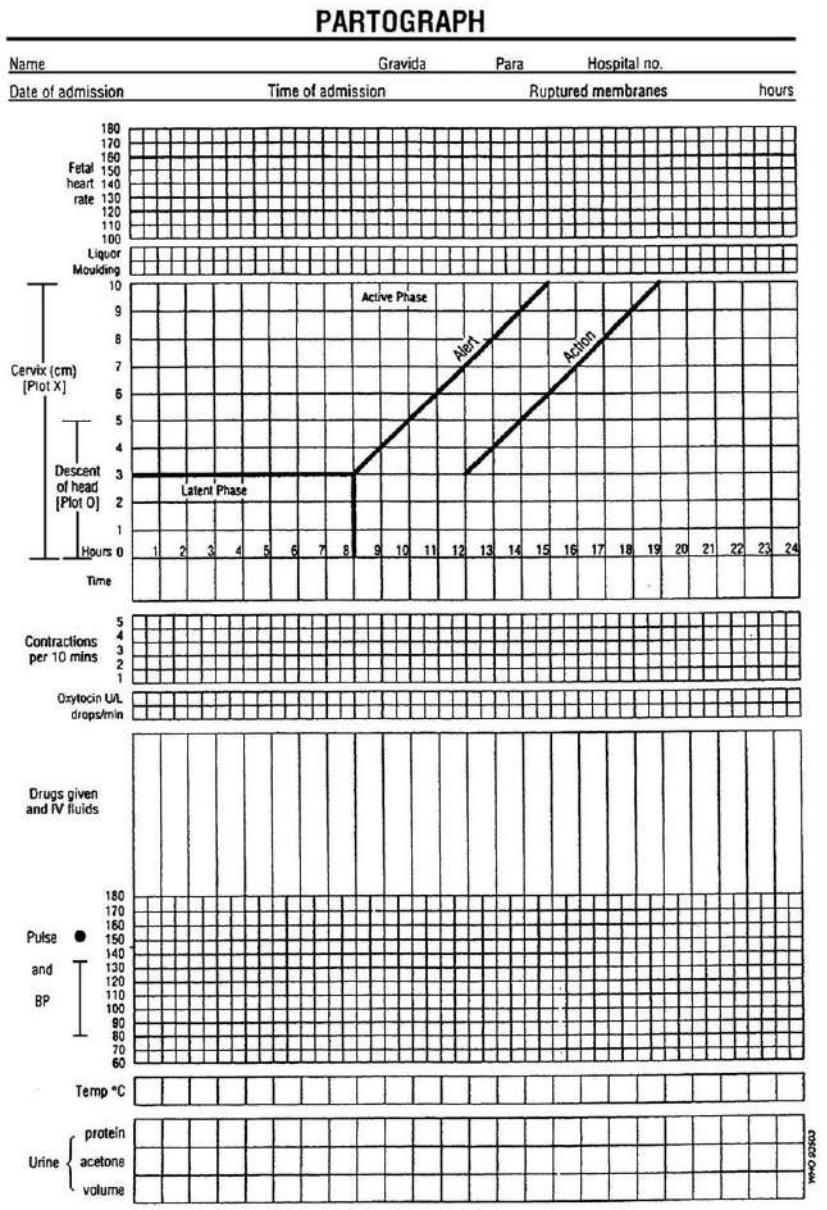
Duncan:



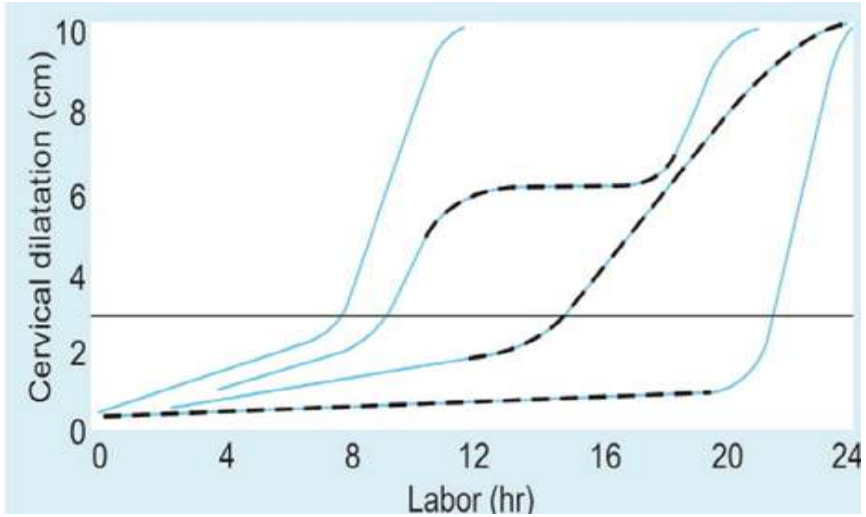
Constriction / Schroeder's Ring	Retraction / Bandl's Ring
Excess oxytocin	Obstructed labor
At junction of upper and lower segment; does not change	At junction of upper and lower segment; moves upward
Felt on PV	Felt on Per abdomen

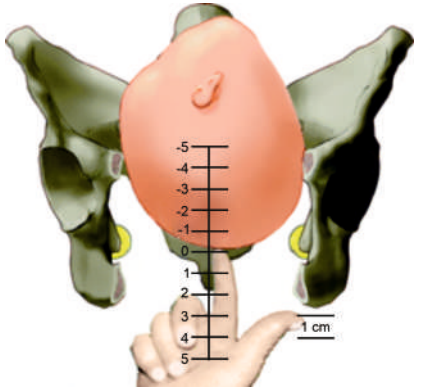
Time period	Uterine position
Immediately after delivery	Uterus is at the lower border of the umbilicus (≈20 weeks size)
Day 1	1 finger breadth below the umbilicus
Day 2	2 finger breadths below the umbilicus
At the end of 2 weeks	No longer palpable abdominally (becomes a pelvic organ)
At the end of 6–8 weeks	Pre-pregnant sized uterus

Partogram and Labour care guide



0	Bones separated
+	Bones touching but can be separated
++	Bone overlapping
+++	Bones overlapping severely



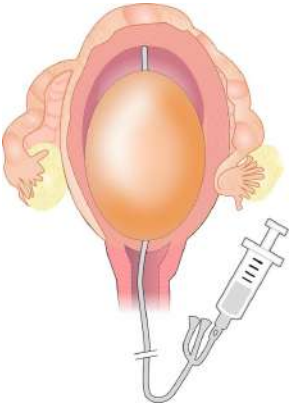


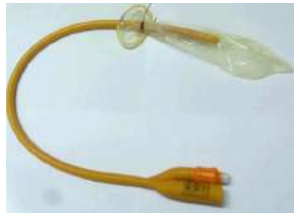
I-
C-
B-
M-
A-

Cervix [Plot X]	10								
	9	≥ 2h							
	8	≥ 2.5h							
	7	≥ 3h							
	6	≥ 5h							
	5	≥ 6h							

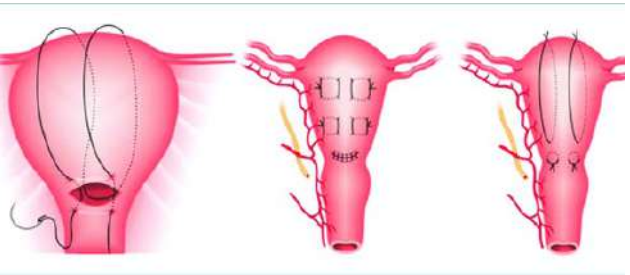
PPH

Definition:
MCC of primary PPH:
MCC of secondary PPH:



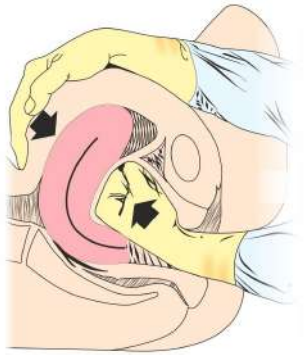


CI: Hypertension, PAD, Rh immunization, Heart disease, After 1st twin



Postpartum haemorrhage

Immediate steps
1. Call for help.
2. Resuscitation



Abdominal palpation

Uterus atonic (Atonic PPH)

1. Uterine massage
2. Oxytocin infusion 40 units in 500ml NS
3. Inj. Methergine 0.2 mg I.V. every 2-4 hours
4. Blood transfusion

Uterus still atonic

CI: Asthma

CI: Previous LSCS

1. Give 250 µg of Carboprost I.M every 15 minute for 8 doses.
2. Give 800 µg misoprostol rectally

Uterine tamponade → SURGERY-Devascularisation → SURGERY-Hysterectomy

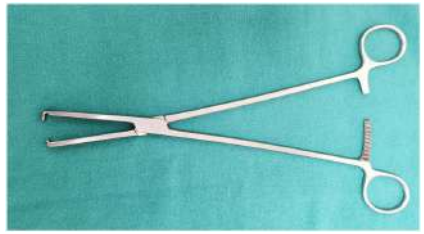
Uterus hard and well contracted (Traumatic PPH)

Exploration (cervicovaginal inspection)

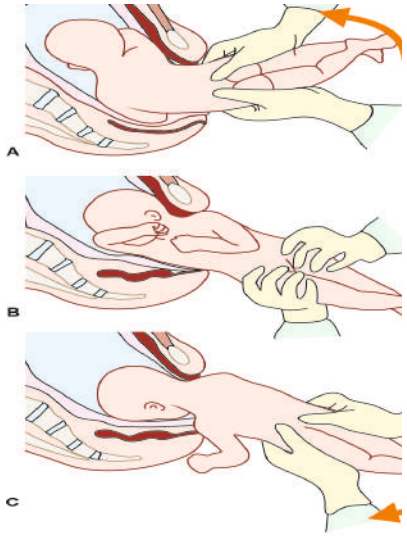
Suspicion of uterine rupture

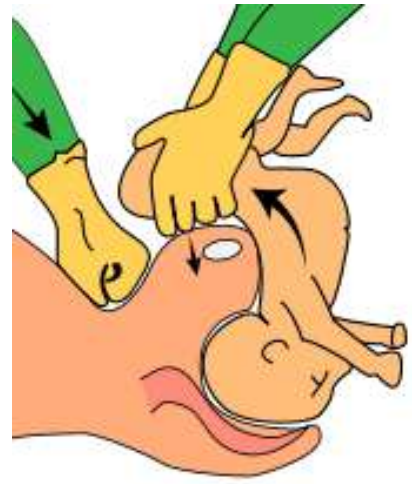
Haemostatic sutures on the tear sites (stitching of perineal, vaginal, and cervical tears)

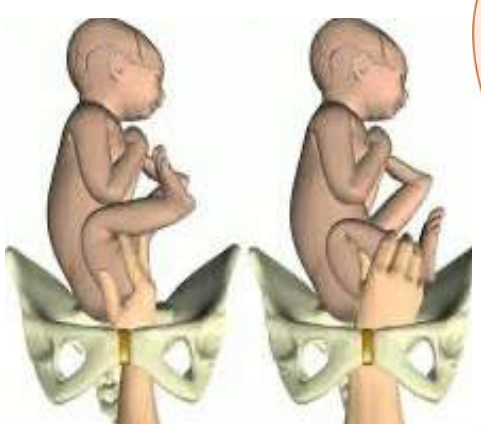
Emergency laparotomy

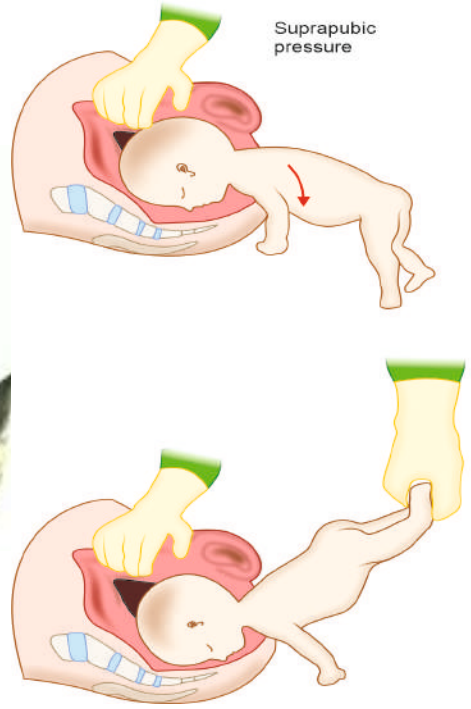


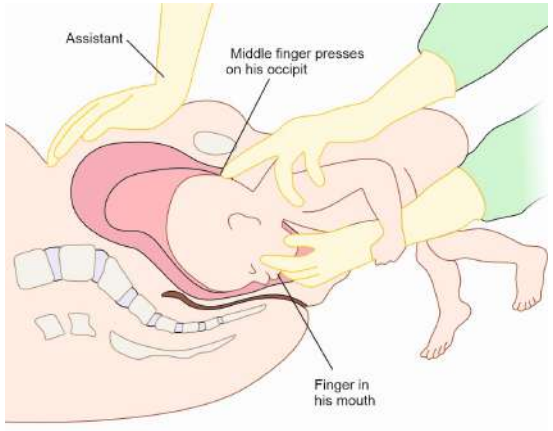
Breech delivery

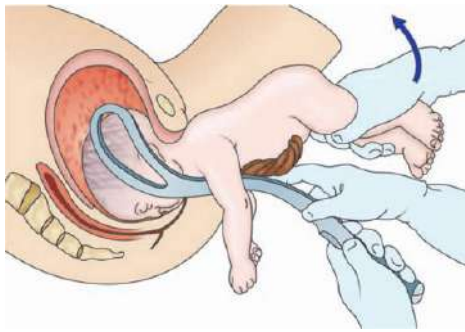








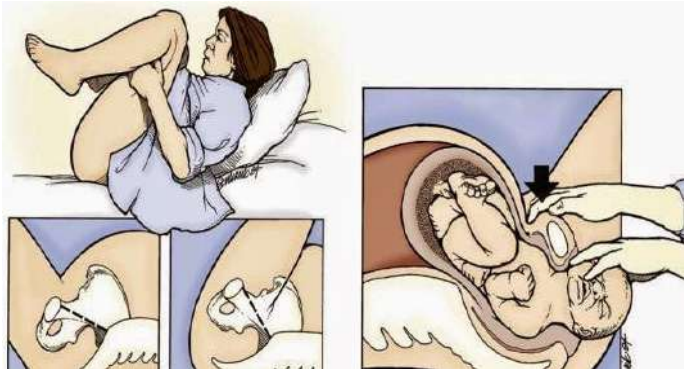




Other complications

Shoulder >1min after head
Turtle sign

Call for help
Evaluate for episiotomy
McRoberts position
Suprapubic pressure
Push anterior shoulder towards fetal chest
Rotate posterior shoulder
Roll the patient on to all fours
Put baby back -> LSCS



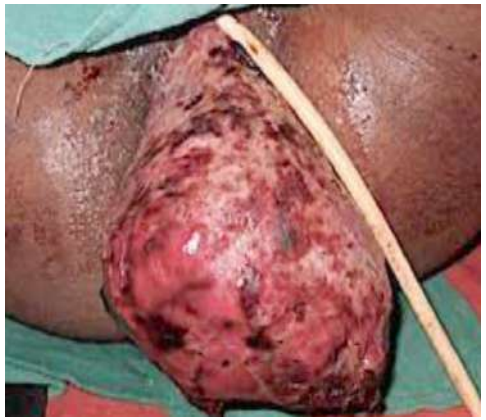
Sudden severe pain abdomen + Shock + Uterine fundus not palpable at umbilicus

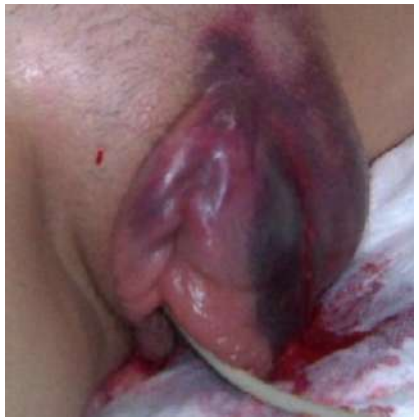
STOP oxytocin
Manual replacement: Johnson's technique

Unexplained shock + Difficulty breathing within 30min of delivery + DIC +No fever

- Intense pain
- H/o C-sec / myomectomy/
- obstructed labour
- Fetal parts palpable superficially
- Loss of station

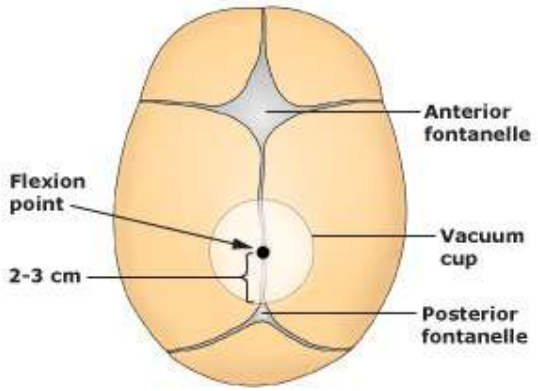
VS Scar dehiscence:





Instrumental delivery

Indications:
Pre-requisites: Full dilatation + Ruptured membranes + Station ≥ +2



Rotation – OP

Prematurity,
Heart disease
Face, Breach

Episiotomy
Timing:
Order:
Type of perineal tear:
Muscles cut: Bulbospongiosus, Levator ani,
Superficial and deep transverse perinii
Not cut: Ischiocavernosus, obturator