* Personal H/O

- Name تلاقي
- age عمر
- married? for how long?
- G/P
  - Gravida: # of pregnancies regardless of the outcome (سواء انتهى بولادة، اجهاض، حمل خارج الرحم، ...)
  - para: # of delivery (≥ 20 weeks) < alive / stillbirth (multiple births - twins - count as 1 para ✓)
  - Abortion: # of miscarriages before 20/24 weeks

± husband H/O infertility الـ كمان

age / occupation / ...

- living where
- occupation
- special habits of medical importance (smoking / alcohol / exercise / ...)

---

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

↳ failure of conception
↳ coming for antenatal care, حامل بأي شهر
↳ coming for mass protruding from vulva
↳ regular (menorrhagia) / irregular (metrorrhagia) vaginal bleeding
↳ severe vaginal bleeding

---

* present H/O

- Analyze of the complain (① onset, ② course, ③ duration)
  so الكامل

[① history of present complains ⊕ ② history of present pregnancy]

↳ onset, course, duration of specific complain
↳ onset, course, duration of pregnancy (LMP / EDD / GA)

- Gyne: pain / bleeding / mass

- Obs: 1st trimester (0-13) / 2nd trimester (14-27) / 3rd trimester (28-38/40) symptoms

  - 1st trimester:
    - vomitting (hyperemesis gravidarum)
    - bleeding
      دخلتي المستشفى مشانه؟
  - 2nd trimester:
    1st perception of fetal movement (بالسابيع) -Quickening-
  - 3rd trimester:
    preeclampsia (10)
    (1 headache / 2 blurry vision / 3 difficulty breathing / 4 vomitting / 5 epigastric, RUQ pain / 6 proper perception of fetal movement / 7 hyperreflexia or clonus / 8 oliguria / 9 vaginal bleeding, gush of fluid / 10 lower limp edema)

- LMP / EDD (بتزيد ٩ شهور و ٧ ايام) / GA
  (او تنقص ٣ شهور وتزيد ٧ ايام)

  40 weeks ± 2 weeks الحمل
  - if the date today near EDD:
    substract 4 weeks for each month (40)
  - if the date today near LMP:
    add 4 weeks for each month (0)

  ex: EDD 26/1, date today 29/12, GA? 36 weeks ± 2 weeks
  ex: LMP 1/10, date today 29/12, GA? 12 weeks ± 2 weeks

- investations & Tx done in the hospital for the cause

- other systems involved بتاضي دوا لدي حاجة تانية؟ ضغط، سكري، ...

لازم تكتبيه هون عشان الادوية واذا الحالة controlled or not
سمعي عشان اعرف شو اعطيها وهيك

* More & more about present Hx →

- ↳ bleeding
- ↳ prolapse
- ↳ infertility
- ↳ swelling < uterine / ovarian
- ↳ antenatal care ±
- ↳ recurrent pregnancy loss

---

① Bleeding (onset / course / duration)

Menorrhagia (heavy but regular) ← IUD (copper), fibroid (submucus), US before? تلبيف, شلف ورام ليفية من قبل؟

Metrorrhagia (irregular bleeding btw periods) ← endometrial polyp, endometrial hyperplasia, سرطانات, D&C من قبل

contact bleeding ← cervix, pap smear?

post-menopausal ← endometria CA, mets, HTN, anticoagulant, jaundice, bone pain, HRT, ..

\+ anemia symptoms (severity) (pallor, SOB, ...), # of pads (amount, color), blood clots per day

DDx طالب ذكي اكطي

Anterior wall → frequency

large → pressure sym

submucus → encroaching the uterine cavity / menorrhagia تمشي بج ال

myoma → menorrhagia

?

---

② prolapse

→ urinary symptoms (frequency, بتنشي الحمام كتير / dysuria, mass بتوجعني ال, stress urinary inco)

→ rectal symptoms

→ sexual symptoms (deficient perineum)

→ back ache (due to uterine prolapse)

---

③ infertility

- for how long?
- get pregnant before? حتى لو نزلت
- husband Hx (age, occupation, متزوج وحدة تانية؟ عندو اولاد)
- cause?

1) Male	2) Ovarian = Regularity ovulatory or not? 6 1 regularity? 2 dysmenorrhea? 3 premenstrual symptoms? 4 basal body temp changes? 5 mid-cycle pain? 6 vaginal discharge changes?

3) Tubal PID Previous abd. surgery	4) uterine = Amount of bleeding severe (menorrhagia) → submucus myoma hypo/amenorrhea → Asherman syn

- Investigations

* SFA
* هرمونات اليوم ٢/١٢ < 2: FSH/LH, 21: progesterone
* US

- Tx

---

④ swelling < ovarian (not associated with bleeding) في نوع نادر بسبب تزيين, coexechia, accedintaly found
uterine (associated with bleeding)

---

⑤ Recurrent preg. loss

* Past medical & surgical H/O : (DM , HTN , autoimmune , ...)
* Family H/O (of the same complaint)
* Menstrual H/O (past)

Menarche : age at 1st period
- Cycle pattern (after menarche)
- تفاصيل الدورة هل

بحسب من اول يوم بالدورة اللي لاول يوم بالدورة الثانية مع ايام الرزين
- every 3-5 weeks : regular period
- 1/8 ... 15/8 ... 30/8 : frequent period
- once every 3 months : infrequent period

Normal menstrual cycle
every 3-5 weeks
for 7 days or less
Quantity تقديرًا
80 atml (50-80)

menstrual index? 3/28 = تستمر ٣ ايام وبتجي كل ٢٨ يوم

menstrual flow (No clots)
if there is clots → heavy bleeding → abnormal

No intermenstrual bleeding

- Dysmenorrhea : pain during periods
  - only first day of cycle (normal)
  - longer or starts before meses (abnormal)
- vaginal discharge
  → Amount / color / odor
  → symptoms : itching / irritation / pain
  - if no odor / symptoms : usually normal (physiologic)
  - if odor / color / symptoms : abnormal consider infection

- sexual

any problems with intercourse بدون تفاصيل

وجع اثناء الجماع او infertelity

---

* Obstetric H/O (past)

FPAL

F full term / P preterm / A abortions / L living now

≥ 36 weeks ≥ 24-36 (24 age of viability, 36 age of maturity) < 24

year	GA	mode of delivery	place	complications

+ Hx of contraception

+ outcome

For example :-

- Her 1st pregnancy continued untill term & ended with a vaginal delivery. The outcome was a healthy male baby weighning 3.5 kg, who is now alive and doing well. + year, place, complications

- Her 2nd pregnancy ended at term by C-section because of (fetal distress) لازم يكون في سبب شي رفعة الجنين . The outcome .....

---

* DDx

examples:

pelvic organ prolapse most probably cystocele without stress urinary incontinance for further investigations & Tx

---

* G/P example 8-

- gravida 4 , para 3 : معناتو المريضة عندها حامل لاربع مرات وجميعهن كانت حيتانا
- gravida 3 , para 2 , (+1) abortion = miscarriage
- 28 weeks + Dead = delivery
- 28 weeks + Alive (in NICU) = delivery
- A women is pregnant now. she had:
  1 full-term birth & 1 miscarriage at 8 weeks
  G 3, P 1, +1
- A women had:
  Twins at 35 weeks
  1 abortion at 10 weeks
  No pregnant
  G2 , P1 , +1
- A women had:
  2 term deliveries
  1 preterm delivery at 28 weeks
  No miscarriages
  G3 , P3
- A women had:
  2 miscarriages (one at 9 weeks , one at 14 weeks)
  No deliveres
  G2 , P0 , +2

---

* EDD example 8-

مهم الاسم بجي بالامتحان

* Naegele's Rule → For 28 days cycle شرط

(LMP - 3 months + 7 days)

- 1st day of LMP = 20/4/2025
  EDD = 27/1/2026
- 1st day of LMP = 20/3/2025
  EDD = 27/12/2025
- 1st day of LMP = 26/5/2025
  EDD = 3/2/2026

- 1st day of LMP = 15/6/2025, but her cycle is every 35 days!

Naegle's rule ✗

Ovulation on day 21 (7 days later than normal)

35 - 14 = 21

So you add 7 extra days to the EDD calculated by Naegle's rule ✓

EDD = 22/3/2026 → 29/3/2026 (+7)

- 1st day of LMP = 15/6/2025, but her cycle is every 21 days!

Naegle's rule ✗

Ovulation on 7 (7 days earlier than normal)

So you abstract 7 days from the EDD calculated by Naegle's rule

EDD = 22/3/2026 → 15/3/2026 (-7)

Q) A pregnant woman's EDD is 10/4/2026, assuming a 28-day cycle, which of the following dates is most likely to be the start of her pregnancy?

a) 3/7/2025 - LMP
b) 3/7/2025 - Ovulation date
c) 17/7/2025 - LMP
d) 17/7/2025 - Ovulation date

* Wrong EDD reasons:

1) Delayed booking to doctor
2) Irregular menstrual cycles
3) Use of contraceptions before pregnancy
4) Lactational amenorrhea (breastfeeding)

* Vaginal bleeding during pregnancy
→ Abnormal

Note →

- Age of viability:

The gestational age at which a fetus is capable of surviving outside the uterus with medical support (24 weeks)

< 24 weeks: miscarriage

> 24 weeks: delivery

the age of viability differs depending on available medical resources (NICU, ventilators, surfactant therapy, ...)

- Age of maturity:

The gestational age at which a fetus is capable of surviving outside the uterus without medical support

(> 36 weeks)

---

* Bleeding in early pregnancy (<24 weeks)

[1] Miscarriage (10-15%)

(main symptom = vaginal bleeding, pelvic cramping)

- Miscarriage: spontaneous loss of preg. at or before age of viability
- Preterm labor: termination of preg between age of viability & age of maturity
- Labor: termination of pregnancy after age of maturity

spontaneous misscariage

- Loss of viable uterine pregnancy prior to 24 weeks
- Occurs most commonly in 1st trimester (before 12 weeks)
- Often identified by falling serial hCG levels or US findings
- Presents clinically as vaginal bleeding and pelvic cramping

* this occur during 1st or 2nd trimester → most common in 1st trimester / but due to cervical insufficiency mainly in 2nd trimester / Tx: cerclage
↳ painless cervical dilation in 2nd trimester

فلازم نطمن مريضتنا انو من رحمة ربنا البيبي بنزل
وما تخاف لانه اشي ما بتكرر بعدين
في بس مشكلة بالبويضة او الحيوان المنوي يلي
خصبوا بعض
وما رح نعمل اي اشي فوت

- Etiology:
  - Increasing maternal age
  - Obesity
  - smoking, Alcohol
  - drugs (MTX / antiepileptic drugs)
  - previous miscarriage
  - chromosomal (trisomy, monosomy, triploidy)
  - poorly controlled DM, APS, thrombophilias
  - Infection: varicella, rubella
  - Uterine abnormalities, fibroid
  - cervical injury or surgery

→ clinical classification

a) threatened < 50% يكمل / 50% ينزل

mild vaginal bleeding

mild pelvic cramping

closed cervix

US: viable pregnancy before 24 weeks (FHR is preset)

managment:

observation

bed rest, progesterone (make uterus relax → ↓ contraction)
حبوب بتثبت الحمل
خليهم دراسات

↑ water intake

---

b) inevitable/حتمي (100% miscarriage)

heavy vaginal bleeding !

heavy colicky pelvic cramping

open cervix (الفيصل بين ال (inevitable & threatened

US: viable pregnancy (FHR ✓)

managment:

correct shock (ABC..., ...)

terminate pregnancy:

- wait for spontaneous termination (if stable)
- Medically → prostaglandins (Misoprostol) (Oxytocin يعطى بس لما ما يكون الـ rec (appears by the end of 2nd trimester)
- surgically → D & C (ERC ✓)

ولو نزفت كتير بنعمل urgent surgery

already dilated

---

c) incomplete

heavy vaginal bleeding

heavy colicky pelvic cramping

product is expelled incompletely

clots + tissues ممكن او لا

غالبًا المريضة بتيجيك هلك عندها نزيف

continuous bleeding

↓

hemodynamic instability

open cervix

US:

remains part of fetus >15 mm

retained products of conception which includes placental tissue / fetal membranes/..

managment:

stop bleeding ! ما بصير اروح المريضة

surgical termination: ~~D~~ & C (ERC)

1) stabilization
2) conservative if stable
3) Medications to stimulate contractions (prostaglandin)
4) Evacuation & curttage

Complications: Renal & hepatic failure / DIC / Death
- retained product → ↑ bleeding, ↑ DIC

---

d) complete

hx of vaginal bleeding & colicky pelvic cramping

لكن حاليًا ما في

لو نزفت كتير ممكن يجو بـ signs of anemia & hemodynamically unstable

products of conception are expelled completely

clots + tissues

closed cervix (the cervix closed within 24 h) ← فتح طبيعي الـ content وكده

US: empty uterus or retained products of conception < 15 mm

managment: nothing ✓

---

e) missed

- mostly asymptomatic

(No vaginal bleeding or abd. pain)

- regression of pregnancy symp

(she had N/V → راحت)

او راحت تفحص US وما لقتو بعض و wrong date ممكن تكون عندنا repeat the scan in one week time

closed cervix

US: dead fetus

managment:

repeat

wait

< 12 weeks (no bones): D&C

dilatation اعلى which is trumatic فانا بستنى هكي يصير حتى dilatation كامل وبصير بدي العملية أنضف

> 12 weeks (bones):

PGs (misoprostol – PE1) causes:

uterine contractions & cervical ripening & dilatation

if failed → hysterotomy

---

f) septic قليل بصير هنا بس انتبه

cause: ascending infection صعد

Infection on top of any type of miscarriages

(septic incomplete, septic complete, septic missed) الاكثر

but no septic threatened or inevitable!

ولو كان عنده نفس الاعراض بدور على سبب تاني

E. coli / strep fecalis / Klebsiella

Symptoms:

pyrexia, chills, rigors, unstability (tachycardia) → shock!

puruleat offesive vaginal discharge

managment: broad spectrum Abs & evacuate!

PE: tender uterus

complications:

renal failure, DIC (DIC cause renal failure)

Note →

D&C (Dilatation & Curettage) vs. diagnostic value احتباني

E&C (Evacuation & Curettage) cervix is opened

Hx:

- LMP (regular, length, contraception)
  ovulation might be affected
- pregnancy test (hCG, US)
- symptoms: vaginal bleeding / pelvic cramping / diarrhea / urinary symptoms / passage of tissue)
- past obs & gyne hx (R.F)
- past medical hx: DM, APL
- Medications (MTX, antiepliptic drugs)

PEx

General: vitals / LOC

Abd. exam:
palpate for mass/distention / pain

pelvic (vaginal) exam: (speculum & bimanual)

Confirm bleeding from cervix

Assess cervical os

Open os = loss of pregnancy likely

Investigation

TVS

Assess for product of conception

Assess fetal heart beat

serial hCG

serum progesterone level (<25 nmol/L)
with non viable preg.

Mx:

- expectant
- medical

(misoprostol - prostaglandin analogue)

MOA: 1) binds to myometrial cells causing strong cont. leading to expulsion of tissue

2) ripening & dilatation of the cervix

(mifepristol - progesterone rec. antagonist)

MOA: encourage trophoblast separation

- surgical

E&C if:

- persistent, excessive bleeding
- haemodynamic compromise
- infected retained products
- suspicion of gestational trophoblastic dis.
- patient prefers it

* products should be sent for histopathology to exclude EP and GTD

Risk:

uterine perforation

if happened →

- hysteroscopy & Laparoscopy
  (to assess the injury, and assess visceral damage)
- admit for observation
- IV antibiotic 24-48 hrs

Blood transfusion
Repeated evacuation
Infection
Cervical trauma (rare)

Rule →

* spontaneous miscarriage:

- > 12 weeks, anti-D should be given to all non-sensitized RhO-negative women
- < 12 weeks, Fetomaternal hemorrhage only occur after curettage, so:

- if no instrumentation: no need for Anti-D
- In curettage: Anti-D should be given

* threatened miscarriage:

- > 12 weeks, anti-D should be given to all non-sensitized RhO-negative women
- if bleeding continues → Anti-D should be given in 6 weeks intervals
- sensitization below 12 weeks is rare
  Give Anti-D where bleeding is heavy, repeated or associated with abd. pain

[250 units befor 20 weeks
[500 units after 20 weeks

Kleihaur test may be performed to assess the quantity of fetomaternal hemorrhage after 20 weeks

h) Recurrent miscarriage

(≥ 3 consecutive) أكيد في حبيب!

- antiphospholipid syndrome (mcc)
  Anti body block blood supply to babies
  Give low dose aspirin & LMWH

- chronosomal anomalies, translocation
  genetic study بنليجي يعملوا

Etiology:

Increase parental age

Increasing # of previous miscarriage

Endocrinology (DM / thyroid / PCOS)

Genetic (translocation / trisomy) → so weight loss & metformin

Immunological

Uterine anomalies

(uterus didelphys / bicornuate uterus) → recurrent 2nd trimester mis.

cervical weakness

- 2nd trimester miscarriage
- preceded by spontaneous rupture of membrane or painless cervical dilation
- if cervical length before 24 weeks 25 mm or less

Acquired Uterine anomalies

- Fibroid
- Intrauterine adhesions

APL & thrombophilias

Lupus anticoagulant

anticardiolipin

anti b2 glycoprotein-1 antibodies

thrombosis

activated protein C, antithrombin III, prothrombin

Infection

bacterial vaginosis

Investigation:

Cytogenetic analysis of POC

if abnormal → parental Karyotyping

Uterine abnormality

US

HSG (Hysterosalpingography)

Insulin resistance

TFT

NKC (Natural Killer cells)

Mx:

- APL
  Low dose aspirin & LMWH
- Genetic counselling if structural abnormalities:
  PGD (Preimplantation genetic diagnosis) & IVF
  CVS (chorionic villus sampling) & amniocentesis
- Uterine abnormalities (uterine septate)
  - open surgery might lead to post-operative infertility
  - Hysteroscopic approach
- cervical incompetence
  cervical cerclage at the end of 1st trimester ch anomalies عشان ما يكون عنا وقبل ما اعملها لازم اشيك على الـ FHR

2 Ectopic pregnancy (2-3%)

- Pregnancy outside the normal lining of the uterine cavity
(mc in fallopian tubes ampulla) site of fertilization

- Remains the leading cause of preg-related death in 1st trimester
(Rupture → internal hemorrhage → death)

Pathophysiology

1) Cilia defect by infection
↳ egg transport becomes disrupted
2) formation of pocket like pools that engulf the fertilized egg
3) Infection-related scarring & partial blockage of fallopian tubes
4) bleeding-related scarring & partial blockage of fallopian tubes

---

R.F:

- Strong →
previous ectopic preg.
previous tubal sterillization surgery
* IUD use (IUD doesn't increase risk of EP.)
لو صار حمل بوجود د يكون EP
previous genital infection
Chronic salpingitis
infertility
multiple sexual partners
smoking
- Weak →
ART
First sexual encounter
Maternal age > 35 yrs
Tubal reconstruction surgery

Clinical presentation:

Triad of:
1) Amenorrhea (LMP?)
main symp 2) Abd. pain (mimic appendicitis):
acute sharp lower abdominal pain, radiating to the shoulder/neck - ipsilateral: (suspected tubal rupture)
" " rectal → diarrhea
not crampy!
3) vaginal bleeding (can be mild or non)
quantity, passed tissue?
4) hypotension ± syncope (if ruptured) ✓

Acutely ruptured (Top surgical emergency)
Sudden, severe, sharp pain
Feeling faint and dizzy
hemorrhagic shock
diarrhea
shoulder tip pain

Approach

Hx:
- analyze the triad symptoms ✓
- ask about R.F

PEx: - Abd. exam
- Bimannual exam
- US: (TVUS) < TVS: 5 weeks: 1500-3510 BhCG
TAS: 6 weeks: 6500 BhCG

Blood test:
- CBC, serial β-hCG
blood group, cross match Rh Abs
diagnostic uterine curettage

Laparascopy
- unstable pts

Sooo →
step 1: confirm preg & ectopic preg. sym.
step 2: evaluate hemodynamic stability
step 3: assess pregnancy location
step 4: Follow with hCG & US to confirm or exclude EP
step 5: plan of management

DDx:

appendicitis
salpingitis
ruptured corpus luteum or ovarian follicle
ovarian torsion
Urinary tract disease
spontaneous or threatened abortion

Mx: (depends on < stability, site, state (rupture or not), desire of future fertility)

→ observation

(resolve on their own without the need for any intervention

when? stable vitals / acceptable pain / β-hCG < 1000)

→ Medical: MTX

* prerequisities for MTX use in ectopic pregnancy: (IM injection)

patient hemodynamically stable
Unruptured ectopic
β-hCG level < 5000
No fetal cardiac activity
Normal LFT & RFT
The size of the GS should not exceed 4 cm

S.E: N&V / diarrhea / gastric distress / dizziness / stomatitis

→ surgical

- Laparoscopy: (for Dx & Mx)

[Salpingectomy x fertility
Salpingostomy ✓ fertility

- Laparotomy: (urgent surgery due to life-threatening bleeding) unstable
x fertility

: يعني باختصار

MTX → stable
surgery → unstable

3 Gestational trophoblastic disease / Molar pregnancy

- Abnormal proliferation of trophoblastic (placental) tissue
- ↑ B-hCG

- Types:
  - Molar < complete (classic) / incomplete (partial)
  - persistent - invasive mole
    choriocarcinoma
    placental site trophoblastic tumor

- R.F of molar preg.:
  previous H/O
  extreme maternal age
  Nulliparity
  Asian women
  blood group A
  infertility
  smoking
  diet
  H/O OCP use

- Types of molar preg.:

1) Complete (2 paternal)

- 46, XX
- absent fetal tissue - fetal RBC
- both x-ch are paternally derived, either from:
- fertilization of an empty egg by a haploid sperm, then duplicates
  or
- dispermic fertilization of an empty ovum

- presentation:
  abnormal vaginal bleeding
  uterus size > NL for GA
  high B-hCG level (>100K)
  endocrine symptoms: hyperthyroidism
  hyperemesis gravidarum
  preeclampsia (before 20 wk)
  headach, visual disturbances, epigastric pain, HTN
  Ovarian-theca lutein cysts:
  bilateral, large, adnexal masses
  tender, cause abdominal distension
- higher risk for invasive mole
- Risk of choriocarcinoma
- Follow-up: 14 wks for B-hCG to become NL
- US: snowstorm appearance
  No amniotic fluid / No fetal parts / lack of fetal heart tones

---

2) partial (2 paternal + 1 maternal)

- 69, XXY (often)
  either:
- Dispermic + ovum
- tetra-ploid or mosaic conceptions
- present with a coexistent fetus
  anti-D سلبا يترم fetal tissue في يعني
- presentation:
  Missed abortions, size of uterus = GA
  slightly elevated B-hCG
  vaginal bleeding
  pelvic tenderness
- risk of invasive mole ↓
- No risk of choriocarcinoma
- follow-up 8 wks

toxemia before 24 wks

- US: fetal parts may be visualized / Fetal heart tone may be detectable / amniotic fluid is present / ↑ placental thickness

---

Q) what is the main way to differentiate btw GTD?

Not US, histopathology + genetics

+ serial B-hCG

Chest x-ray for lung mets

p57 → -ve in complete
→ +ve in partial

- Investigations:

B-hCG

TSH, CXR, brain CT

cross match, grouping, Rh
CBC, coagulation profile

- Tx:

- Suction evacuation + Curtage

- Chemotherapy

* Avoid oxytocin

- Follow-up:

B-hCG weekly until normal for 2 values, then monthly for 6-12 months

contraception for 1 yr
may require chemo

- Metastatic follow-up:

Chest x-ray, brain CT, Kidney liver, lung

labs (CBC, clotting, KFT, LFT, TFT, blood group, Rh, antibody)

* Bleeding in late pregnancy = APH

- 24 weeks ≤ Bleeding < delivery

- Causes:

Obstetric:

placenta →

Placental abruption

Placenta previa (low-lying placenta) ← low-lying, marginal, partial, complete

fetal →

Vasa previa

uterine rupture →

non-Obstetric:

bleeding from lower genital tract →

↳ cervical bleeding: cervicitis / cervical neoplasm / cervical polyp

↳ vaginal bleeding: trauma / neoplasm

bleeding that may be confused with vaginal bleeding →

GI bleed: hemorrhoids / IBS

Urinary tract bleed: stone / cystitis / UTI

bleeding disorders →

congenital: von willbrand dis.

acquired: DIC

---

spotting < minor hemorrhage < major hemorrhage < massive hemorrhage

---

- Hx: spontaneous bleeding or traumatic, fetal movement, abd. pain, bleeding analysis

Gestational age, onset, amount, color, clots, associated symptoms (pain, labor contractions)

→ placenta previa: painless, causless, recurrent

→ placental abruption: painful, tense tender uterus, ↓ fetal movement

---

- Examination:

General look (signs of shock / anemia: pallor, prolonged capillary refill time, altered metal status)

Vitals (↑HR, ↓BP)

Abdominal exam

- Obstetric exam
- Fundal height
- Uterine tone (relaxed in previa vs. tense / rigid in abruption)
- abd. Tenderness (absent in previa vs. present in abruption)
- Fetal lie / presentation / engagment
- Fetal heart sound presence of contractions

speculum exam (only to rule out local cervical / vaginal causes)

No PV exam until placenta previa is excluded !

S&S →

Vaginal bleeding

abdominal and / or uterine pain

Fetal bradycardia or decelerations

Maternal hypotension

Maternal tachycardia

- Dx:

- Clinical & US confirmation
- Defferentiate:

previa → painless, causless, recurrent, bright, non-tender uterus (soft)

abruption → painful, dark, rigid uterus, fetal distress

- Investigations:

CBC, blood group & crossmatch,

Coagulation profile, LFT, RFT, Urine analysis

US (to localize placenta, check viability, GA, amount of liquor)

NST / CTG for fetal wellbeing

- Management:

General

call for help !
ABC resuscitation
Admit to hospital
} ادخال

check vitals
2 large-bore IV lines, fluids.
Urine output (catheter)
} تعويض ومراقبة

CBC, blood group, KFT, coagulation factors.
cross match
} فحوصات

تخطيط ما بعد الاستقرار

① placenta previa (low-lying placenta)

- Insertion of the placenta (partially or fully) in the lower segment of the uterus

---

- Grades:

1 → the placental edges is in LUS, but not reach internal OS (low implantation)

2 → the placental edges reaches internal OS, but not cover it

3 → the placenta covers the internal os, but asymmetrically (partial)

4 → the placenta covers the internal os and is centrally situated (complete)

- R.F:

previous placenta previa

deficient endometrium due to presence or h/o of:

uterine scar / endometritis / manual removal of placental curettage / sub-mucus fibroid

Multiparity

Increasing maternal age > 40 yrs

Multiple gestation

smoking

uterine anomaly

assisted conception

previous pelvic surgery / abortions / abnormal fetal presentation

---

- Clinical presentation:

bleeding (painless / causeless / recurrent)

- Dx:

bleeding with soft uterus

high presenting part

Fetal malpresentation

normal FHR

US < TAS 95% accurate, TVS 100% accurate

MRI

Exam in the theatre

vaginal exam is contraindicated

- Maternal & fetal complications:

preterm delivery

PROM

IUGR

Malpresentation

Fetal abnormalities

Maternal death due to < complications of CS, uncontrolled hemorrhage from placental bed

DIC due to < massive bleeding, associated abruption

Morbidly adherent placenta (placenta acreta / increta / percreta) → deliver & hysterectomy

PPH

MX:

if bleeding is mild & preterm (< 37 weeks):

conservative: bed rest, monitor, give dexa for lung maturity, tocolytic

if bleeding is severe & preterm:

emergent CS

if bleeding is severe or term (> 37 weeks):

Delivery, usually C-section

---

② placental abruption

- separation of the placenta from its site of implantation before delivery of the fetus after 24 week GA

- Types:

Total / partial

Concealed (hidden blood) / revealed (visible blood)

- R.F:

previous abruption previous abortion

preeclampsia

polyhydramnios

↑ maternal age

multiparity

low BMI

Fetal growth restriction

non-vertex presentation

drug misuse (cocaine / amphitamine)

smoking
Intrauterine infection
ART
pROM
abd. trauma
1st trimester bleeding & especially if scan showed hematoma
maternal thrombophilia
Folate deficiency

- Maternal & fetal complications:

Maternal →

maternal shock
anemia
infection
renal tubular necrosis
consumptive coagulopathy
PPH
prolonged hospital stay
psychological sequelae
sheehan syndrome
complications of blood transfusion

Fetal →

fetal hypoxia
small for GA
Fetal growth restriction
prematurity
fetal death

- Clinical presentation:

painful vaginal bleeding
uterine tenderness or back pain
Fetal distress (↓ fetal movement)
high frequency contractions
hypertonic uterus
IUFD
if mild and mother + fetus stable: monitor closly, consider VD

- DDx

→ Revealed:

may present like placenta previa or local causes

→ Concealed:

Intraperitoneal hemorrhage
ruptured uterus
acute polyhydraminos
degenerated fibroid or complicated ovarian cyst
abd. preg.
volvolus & peritonitis

Dx

Clinical
US (confirm fetal viability / assess fetal growth & normality / measure liqor / do umbilical artery doppler velocities)

Mx:
mild < 36 weeks: expectant
mild > 36 weeks: deliver (vaginal)
moderate: deliver (vaginal)
severe: most probably the baby is dead, stabilize mom, deliver by CS if baby is alive

---

③ vasa previa

- when the fetal vessles from umbilical cord attach to the membranes instead of the placenta, and those vessles traverse the membranes in the lower uterine segment in advance of the presenting part

---

- Rupture of these vessles → fetal demise

- R.F:
Low-lying placenta
Multiple gestations
Hx of vaginal bleeding
Hx of prior surgical delivery
Pregnancy after ART

- Diagnosed by Apt test

Apt test : The blood is mixed with a small amount of sterile water to cause hemolysis of the RBCs, yielding free hemoglobin. The sample is next centrifuged for several minutes. The pink hemoglobin-containing supernatant is then mixed with 1 mL of 1% NaOH for each 5 mL of supernatant. The color of the fluid is assessed after 2 minutes. Fetal hemoglobin will stay pink and adult hemoglobin will turn yellow-brown since adult hemoglobin is less stable and will convert to hematin which has a hydroxide ligan.

- Associated conditions:

Low-lying placenta

Bi-lobed placenta

Multi-lobed placenta

succenturiate-lobed placenta

Multiple pregnancies

ART

- Dx:

think of it if vaginal bleeding occurs upon rupture of membranes
concomitant fetal heart rate abnormalities
ideally, diagnosed antenatally by US with color flow doppler

Mx:

antenatal Mx →

hospitilization in 3rd trimester
fetal surveillance to detect compression of vessles
Antenatal corticosteroids
elective C-S at 35-36 weeks GA
* the mother is the priority

Assessment:

Hx (pain / bleeding / CVS
condition of mother / fetal wellbeing

Maternal investigation:

vitals (pulse & BP)
abd. palpation
US
speculum exam
PV
CBC, blood group, Rh, cross match, coagulation profile
LFT / KFT
Kleihaur test

Fetal investigation

US
CTG

ⓐ uterine rupture

R.F:

previous uterine incision
(higher rate with classical & T-shape uterine incision than low-vertical & transverse incision & repeated CS)
high parity
labor complications: CPD / abnormal presentation / unusual fetal enlargement (hydrocephalus)
Trauma
Delivery complications:

{ difficult forceps
breech extraction
internal podalic version

- clinical presentation:

sudden onset of acute severe abd. pain with some vaginal bleeding
Absence / deterioration of fetal HR
Loss of station of the fetal head from the birth canal
cessation of contraceptions
easily palpable fetal parts
profound maternal tachycardia & hypotension

Mx:

Stabilization
prompt CS with < repair of uterine defect / hysterectomy
Antibiotics

---

3 PPH → Incidence 5%

→ 1° PPH: blood loss > 500 ml after vaginal delivery or > 1000 ml after CS within 24 h of delivery

USA / ISSVI

mcc: uterine atony / 2nd mcc: infection

→ 2° PPH: vaginal bleeding occurring 24 h – 6 weeks postpartum.

mcc: infection

- predisposing factors:

* Antepartum:

previous PPH
manual removal of the placenta
apruptio placenta / placenta previa
fetal demise
gestational HTN
overdisteded uterus ← polyhydramnios, macrosomia, multiple gestation
bleeding disorder

* Intrapartum:

Operative delivery
prolonged or rapid labor
induction or augmentation
chorioamnionitis
shoulder dystocia
internal podalic version
coagulopathy

* Post partum:

lacerations or episiotomy
retained placenta
uterine rupture / inversion
coagulopathy

- Causes: 4 T's

Tone → uterine atony (mcc)

Tissue → Retained placenta and clots

retained placenta → prevents contractions → uterine atony

Trauma → vaginal, cervical, or perineal laceration; uterine rupture or inversion

Thrombin → Coagulation disorders (Obstetric DIC)

---

a) uterine atony

- R.F:

- overdisteded uterus ←
- overworked uterus: prolonged / rapid labor, increased oxytocin
- relaxed uterus (drugs): GA (halothane)
- Infected uterus: chorioamnionitis

+

APH
multiparity
precipitate labor

- Clinical presentation:

doughy uterus

- Mx:

Call for help
Stabilization (ABC)
admission
2 large IV cannulas

uterine massage
uterotonics: (oxytocin / ergometrine - HTN
hemabate (carboprost / PGF2α) - asthma / cytotec (misoprostol))

B-lynch suture → if massage & drugs failed

- Bakri balloon
- Embolization
- hysterectomy

---

b) Trauma (laceration / rupture / inversion)

- R.F:

traumatic or operative vaginal delivery

- Clinical presentation:

Lacerations & contracted uterus

- Mx:

mannual pressure & surgical repair (suturing)

c) Retained product of conception

- R.F:

accessory placental lobe / placenta accreta

- Clinical presentation:

missing (part of placenta) cotyledons & contracted uterus

- Mx:

Mannual removal of placenta
or curettage by US guidance

---

d) Coagulopathy (Obstetric DIC)

- R.F:

abruptio placenta
severe PET
amniotic fluid embolus
fetal demise

- Clinical presentation:

generalized oozing & petechiae

labs: CBC, plt, PT, PTT, INR

- Mx:

Remove POC, ICU, blood products

- Complication:

- ↑ maternal mortality & morbidity
  (mcc of maternal mortality in developing countaries)
- Renal failure
- Sheehan syndrome
  ↳ amenorrhea
  ↳ Failure to lactate
  ↳ hypothyroidism
- chronic anemia

- Management:

* Corner stone is prevention:

→ Antenatally identify patient at risk of PPH
→ Active management of 2nd stage
By:
- seperation signs: lengthening of umbilical cord, gush of blood, globular shape uterus
- R/O cephalopelvic disproportion
- avoid unnecessary instrumental delivery

→ proper management of 3rd stage
By:
- oxytocin after shoulder delivery & massage
- early cord clamping and cutting
- gentle cord traction with suprapubic pressure
- examine placenta / speculum / observe vital signs 1 hr post op

Remember:
blood loss is often underestimated!

→ ABC:
Call for help!
Stabilize (ABC)
IV access (crystaloid fluid, blood)
CBC/cross match & type
O2 mask if needed

→ assess the fundus:
bimanual massage
oxytocin
foley catheter (empty the bladder)

→ additional uterotonics:
ergometrine - HTN
hemabate (carboprost / PGF2α) - asthma
cytotec (misoprostol)

→ Manual exploration

→ if not working
- Bakri balloon
- Arterial ligation (uterin A / hypogastric A)

→ after all that

- if stable: radioconsultant for uterine a embolization
- if unstable: laparotomy / hysterectomy

• Investigation:

CBC, Hb / Hct

Blood group & crossmatch

Coagulation profile (pT, INR, ..)

LFT / KFT

US if retained tissue suspected

• Hx:

- Onset, amount of bleeding (# of pads), color, clots, tissues
- associated symptoms: dizziness, fainting, palpations, LOC, SOB (signs of anemia)
- Delivery hx: mode / duration of 2nd & 3rd stage / instrumental / anesthesia / prolonged oxy (halothen)
- previous pPH / APH
- Past surgical Hx:

  uterine surgeries, previous episiotomies
- Past medical Hx: smoking / alcohol

• pEx:

- Assess for shock & anemia

  vitals: tachycardia, hypotension, tachypnea

  skin: pallor, cold clammy skin

  Metal state: restlessness, confusion

  Urine output: Oligouria

- Abdominal exam

  uterine tone: soft, doughy → atony uterus

  Fundal height: check for retained tissue or distension

  Tenderness: usually absent unless trauma/ rupture

- Genital exam

  Inspect for lacerations, hematoma, retained placental tissue

  Check for uterine inversion (fundus palpable vaginally)

---

* AUB:

- any symptomatic variation from normal menstruation including intermenstrual bleeding (vaginal bleeding that is irregular in amount, frequency, duration, or timing outside normal menstruation.)

- patterns of AUB →
- heavy menstrual bleeding (menorrhagia) (excessive bleeding > 80 ml and/or prolonged meses > 7 days)
- Intermenstrual bleeding
- frequent (polymenorrhea)
- Infrequent (oligomenorrhea)

- causes:

PALM - COEIN →

polyp
Adenomyosis
Leiomyoma
Malignancy & hyperplasia

Coagulopathy
Ovulatory dysfunction
Endometrial
Iatrogenic
Not yet classified

---

a) polyps:

- localized epithelial tumors that include those in the endometrial cavity & cervical canal
- Mainly present as intermenstrual bleeding

b) adenomyosis:

- the presence of endometrial-type glands & stroma within the myometrium
- Mainly present as: dysmenorrhea, menorrhagia, enlarged boggy, globular, tender uterus

---

c) Leiomyomas

- beign neoplasm of smooth muscles (غيرة او submucus)
- Mainly present as menorrhagia

---

d) Malignancy & hyperplasia

- Endometrial hyperplasia, simple or complex or even with atypia and carcinoma
- Mainly present as menorrhagia or irregular bleeding
- usually diagnosed with endometrial sampling

---

e) Coagulopathy

von-willebrand dis (mc)
Aspirin, Anticoagulant

f) Ovulatory dysfunction

- When a women is not ovulating or has infrequent ovulation, especially in the late reproductive years or early post menarch

- Combination of irregularity of bleeding and a variable volume, which in some cases includes the symptoms of menorrhagia
  - Why?
  - related to psychological stress, weight loss or gain, excessive exercise
  - Medications that affect dopamine metabolism (antipsychotics, anti depressants, anti HTN <methyldopa verapamil
  - Endocrine abnormality that impact the hypothalamic-pit-ovarian axis, such as: hyperprolactinemia / thyroid dis / PCOS

---

g) Endometrial causes

- Mainly present with menorrhagia but can also include intermenstrual bleeding

endometritis secondary to, fo example, chlamydia trachomatis

---

h) Iatrogenic causes

gonadal steriods (estrogens, progestins, androgens)

gonadal steriod-related therapy

anticoagulants

systemic agents that contribute to disorders of ovulation

---

i) Not otherwise classified DUB dysfunctional uterine bleeding

Arteriovenus malformation

Cesarean scar defect

- Diagnosis →
- HX:
  - Bleeding pattern onset, course, duration, amount, color, clots + associated symptoms: pain, discharge, fatigue, dizziness
  - Menstrual hx
  - Obstetric hx (pregnancies / miscarriges / deliveries)
  - Symptoms of endocrine or organic disease
  - pt's background, home, marital circumstances
  - Emotional stress or psychiatric abnormality
  - contraceptive / medication use

- PEx:
  - General
    - vitals: BP, HR
    - signs of anemia
    - signs of shock
    - signs of endocrine disorder
    - signs of coagulopathy

fever / echymoses / thyroid / hyperandrogenism (hirsutism, acne, clitoromegaly, male pattern balding) acanthosis nigricans galactorrhea

Local

vulva, vagina, cervix, urethra, anus, perineum (mass / laceration / ulceration / friable area / vaginal or cervical discharge foreign body)

Uterus & adnexa
size / contur / mobility / tenderness
adnexal mass or tenderness

- Investigations

B-hCG (to exclude preg.)

CBC

cervical smear

endocrine investigations (thyroid, adrenal, pit. funnction test)

TVUS

Uterine curettage & endometrial biopsy

Coagulation profile

saline infusion

sonohysterography or diagnostic hysteroscopy

diagnostic laparoscopy

- Management:

exclude organic disease

make a positive diagnosis of the functional defect

treatment should be individualized according to:

age, parity, emotional & social background of the pt

severity, pattern, duration of bleeding

nature of underlying defect

prognosis

associated symptoms

contraceptive needs & plans for future pregnancy

medical co-morbidities

pt preference regarding, medical vs. surgical / short-term vs. long-term therapy

---

General measures

hormone therapy

anti-fibrinolytic therapy: tranexamic acid

Curettage

endometrial resection

endometrial ablation
surgery (hysterectomy)
Meds:
COC / oral POP
depot medroxy progesterone acetate
mirena
Antifibrinolytic agents:
tranexamic acid
Antiprostaglandin agents:
NSAIDs
GnRH agonists

- Management:

  stabilize

  Treat underlying cause

  pregnancy-related → miscarriage management, ectopic management

  structural → polyp removal, fibroid management

  Hormonal → regulate cycles (OCPs)

  Infection → Abs

  Coagulopathy → hematology referral

  Follow-up

4 Preterm labor / birth

- Preterm birth: delivery before completed 37 weeks of gestation.
- Preterm labor: onset of regular uterine contractions with cervical changes (dilatation ≥ 2 cm or effacement ≥ 80%) after age of viability & before 37 weeks.
- Threatened PTL: regular uterine contractions but no evidence of Cx changes

---

- Classification:

extremely preterm → < 28 weeks

very preterm → < 32 weeks

moderate preterm → 33-36 weeks

- Categories of preterm birth →

① Iatrogenic	② PPROM	③ Spontaneous
Medically indicated	Preterm premature rupture of membranes	Idiopathic
Maternal complications •severe hypertension •abruptio placentae **Endangered fetus** •IUGR •Fetal distress	• Rupture of amniotic membranes prior to the onset of labour <37 weeks' gestation • Infection usually the main cause	• Birth occurs after preterm labour • Risk factors include obstetrical history, social factors and lifestyle

---

- R.F:

→ Maternal

Age
Race (↑ in blacks)
weight (↓ BMI)
habits (smoking / alcohol / coitus)
short intervals between pregnancies

→ past reproductive Hx

previous preterm birth
Hx of abortions (2nd trimester)
uterine / cervical anomalies (short cervix, ...)
previous pregnancy bleeding

→ present pregnancy complications

Polyhydramnios
multiple gestation
APH or threatened abortion
Maternal medical conditions (HTN, DM)
congenital abnormalities

→ Genital tract infection (UTI, chorio...)

- Hx:

symptoms of preterm labor:

① regular uterine contractions (4/20 min)
② cervical changes (dilatation ≥ 2 cm, effacement > 80%)

- PEx: Keep your eyes on weight / GA / presenting part

General (vitals: BP, HR, Temp. to check for infection / shock)
+ signs of dehydration & sepsis

Abdominal exam:

uterine tenderness, tone, contraction pattern

Fundal height < date

Fetal lie / presentation

FHR

Pelvic / speculum exam:

pooling of fluid, cough sign, look for vaginal bleeding, exclude stress incontinence
exclude vaginal infection

ferning test / Nitrazine blue test / Amniosure

Cervical assessment

- cervical length (< 25 indicate high risk)
- Fetal fibronectin test
  - Never Do PV !

- Investigation:

Urine analysis / culture (rule out UTI)

vaginal / cervical swab (cervicovaginal FFN) < tve -ve

CBC

CRP

US: GA confirmation, fetal growth, amniotic fluid, cervical length (TVUS)

if membranes ruptured → amniotic fluid tests (nitrazine & fern)

- prevention:

cervical cerclage

progesterone

detection & Tx of vaginal & intrauterine infection

Non-steroidal anti-inflammatory

- Management: < 34-37 w, > 2.500 → deliver / 24-34 w, < 2.500 → wait

Stabilize

Tocolytics (to delay delivery 48 h for steroids) such as MgSO4 (neuroprotection)

Antenatal corticosteroids

Dexamethazone for lung maturity

Infection management → Abs

- complications:

→ Fetal: respiratory distress syndrome, intraventricular hemorrhage, sepsis, growth restriction

→ Maternal: infection, hemorrhage

---

* PROM

→ premature ROM: rupture of membranes before the onset of labor

→ preterm ROM: rupture of membranes before onset of uterine cont. & before 37 weeks

→ prolonged ROM: rupture of membranes that occurs > 18 hr before the onset of uterine cont. in term of preterm pregnancies (↑ risk of chorioamionitis)

- R.F: < previous H/O trauma related weak & abnormal

- previous Hx of PROM
- big uterus ←
- abnormal membrane physiology
- cervical incompetence
- APH
- infection / UTI
- smoking / nutritional def. (zinc / vit C)
- trauma / intercourse / iatrogeic

---

*Hx:

gush of fluid from the vagina

amount: sudden gush or continuous trickle

color: clear = normal amniotic fluid
green = meconium (fetal distress)
bloody = consider abruption / other pathology

smell: Normal = non-offensive
infection (chorioamnionitis) = foul / offensive

GA (≥ 37 WKS)

Obstetric history

prior PROM, preterm labor

Associated symptoms

Fever, chills, rigors
continuous abd. pain → suggest infection

Labor pain

vaginal bleeding → complication
(placental abruption, previa, trauma)

presence of fetal movement → reassurance of fetal well-being (reduced movements = warning sign)

*PEx:

vitals: tachycardia + fever

Abd exam: tenderness / fundal height < date / Lie & presentation / fetal heart

speculum: pooling of fluid, cough sign, look for vaginal bleeding, exclude stress incontinance exclude vaginal infection

PV (Avoid before labor)

*Investigation:

Nitrazine paper test

amniotic fluid pH > 7 (alkaline) blue
vaginal fluid pH 4.5-6 (acidic) red
+ve test: paper turns blue: suggest amniotic fluid ✓

Arborization or fernning test

collect vaginal fluid → view under microscope
+ve test: fern-like crystalline pattern = amniotic fluid

US (usually ↓ AFI)

Alpha feto protein

Amniosure (detect PAMG-1, a protein abundant in amniotic fluid)

Urine analysis/culture swab
CBC, WBC, CRP, ESR, ferritin
} search for infection

CTG/NST

* Don't forget to ask about:
- characteristic of the discharge: (amount / color / smell)
- sitting of fluid passage: (early morning, standing, coughing, straining)
- speculum exam (nitrazine blue)
- US
- presence of offensive discharge
- Fever, chills, rigors
- contin. abd. pain / labor pain
- vaginal bleeding
- presence of fetal movement

Mx:

- Monitor for signs of intraamniotic infx: body temp / uterine tenderness / WBC count / uterine contraction / foul smelling vaginal discharge
- perform FHR monitoring (daily NST)
- screening ⌐ urine culture
  ⌐ NAAT test
- Never Do PV !
- Unstable pt:

prompt delivery in:

- pt with signs of intra-amniotic ① infection / ② apruptio placenta / ③ cord prolapse / ④ signs of fetal distress
  ⑤ (+ve) collect cervical cultures & give empiric Abs (ampicillin & gentamicin)

- stable pt

GA ≥ 37 (term)

↳ delivery by induction of labor
↳ expectant management (bed rest, pelvic rest) for up to 12-24 hr

GA: 34 (late-preterm)

↳ expectant management & induction of labor are both reasonable options
↳ induction of fetal lung maturity: single-course of antanatal corticosteroids if there is no evidence of chorioamnionitis & delivery is anticipated in > 24 hr & < 7 days

GA: 24-33

↳ expectant management
↳ prophylactic Abs: ampicillin + erythromycin
↳ single-course of antanatal corticosteroids (betamethazone or dexamethazone)
↳ tocolysis
↳ magnesium sulfate

GA: < 23-24

↳ fetal outcome is generally poor
↳ expectant management
↳ same approach as for pregnant women at 24-33 wks

Tocolysis

- Allow for lung maturity
- Reduces the risk of complications associated with preterm delivery
- Those needing to transfer to a hospital with NICU

* Contraindications:
Chorioamnionitis
advanced labor (cervical dilation > 4 cm)
non-reassuring fetal signs
Apruptio placenta or risk of cord prolapse

Tocolytic agents:
beta-adrenergic agonist ✗
$MgSO_4$ (antidote: Ca gluconate)
prostaglandin synthase inhibitor
oxytocin antagonist ··· Atosiban
C^{++} channel blocker

• complications:
- Oligohydraminos
- Chorioamnionitis
- Abruptio of placenta
- Malpresentation
- Umbilical cord prolapse or injury
- pulmonary hypertension, pulmonary hypoplasia, ARDS
- Postpartum infection
- endometritis
- orthopedic abnormalities

• DDx:
- Urinary incontinance
- vaginal discharge

- When to deliver ?
- Chorioamnionitis
- Fetal compromised (fetal distress)
- Complete 34 - 36 wks
- Moderate to severe abruptio
- Fetal major malformations

* PCOS →

A common endocrine disorder in women of reproductive age.

at least 2 out of 3 →

1) Hyperandrogenism (male hormone) < lab tests / physical sign (acne / hirsutism / baldness)
2) Ovulatory dysfunction (oligo/amenorrhea)
3) Polycystic ovarian morphology on US → ≥12

- R.F:

Obesity / insulin resistance
DM Type 1, 2
Fx of PCOS
sedentary lifestyle
Irregular cycle
Anti-epliptic drugs (valproic acid)

- Hx:

Menstrual irregularities (oligo/amenorrhea)

Infertility / difficulty conceiving

Hirsutism: upper lip, chin, chest, abd.
Acne
Weight gain / central obesity
Thyroid symptoms
Galactorrhea
Metabolic syndrome, ↑ sleep apnea

Anxiety / depression / psychosexual dysfunction / eating disorder

Fx, Drug hx, social hx

- PEx:

Vitals (BMI, BP)

Skin (hirsutism, acne, ..)

Hair (androgenic alopecia)

Abdominal (central obesity / metabolic syndrome features)

- Investigations: 1) B-hCG (exclude preg!)

US: ≥ 12 small follicles per ovary, increased ovarian volume.

pituitary hormones: FSH, LH, TSH, prolactin, Insulin-like GF-1

Metabolic screening: lipid profile,
2hr 75 g OGTT if BMI > 28

Androgens (DHEA, Free Testosterone, 17-hydroxy progesterone)

- DDx:

congenital adrenal hyperplasia
Cushing's syndrome
androgen-secreting tumors
hyperprolactinemia
thyroid disorders

- Complications

Future infertility
Anovulation & menstrual irregularities
↑ risk of endometrial CA
↑ risk of DM
Obesity
Cardiovascular diseases

- Management:

1) Lifestyle modification:
weight reduction (diet & exercise)

2) Metformin (treat insulin resistance)
wt reduction, improve fertility

3) Ovulation induction

1st line

anti-estrogen medication

① Letrozole, Clomiphene citrate

SE: vaginal bleeding / headach / N&V / breast tenderness / diarrhea / flushing / blurry vision or other visual disturbances

2nd line

gonadotrophins (FSH, LH)

3rd line

IVF

4) OCP for endometrial protection, regularization of menses, improvement of hirsutism & acne

(regulate periods, ↓ hair growth, minimize endometrial hyperplasia)

5) Anti-androgens like spironolactone

6) if medical tx fails → laparoscopic ovarian diathermy

* Uterine fibroids (Leiomyomas)

- Beign smooth muscle tumors of the uterus
- Common in women of reproductive age. (30-40 yrs)
- Can be submucosal, intramural, subserosal, parasitic, cervical

---

- R.F:

age (30-40)
Nulliparity
Obesity
Fx
Early menarche & Late menopause
(high estrogen exposure)

- Hx:

- often asymptomatic

- if symptomatic, mc symptom is bleeding, so ask about:

a) Gyne: bleeding (menorrhagia / postcoital / metrorrhagia / dyspareunia)

b) Abd. pain SOCRATES
acute infarct
dysmenorrhea

c) Pressure symptoms

GUT: frequency / retention / hydronephrosis
GI: bloating / constipation / rectal pressure

d) Obstetric problems:

Infertility, recurrent abortions, preterm labor, placenta previa, abruptio, malpresentation, IUGR, APH, PPH, C/S

- PEx:

General: pallor / tachycardia

Abdominal exam:

↑ fundal height, mass

PV / bimanual:

localized, non-tender, irregular mass or uterus with cobble stone

---

- Investigations:

CBC, blood group, coagulation profile

Saline infusion sonography, US.

HSG (doesn't differentiate btw fibroid & bicornuate uterus)

MRI (differentiate fibroid from adenomyosis)

D&C, biopsy, hysteroscopic

* mc diagnostic method: US
* mc definitive diagnosis: biopsy

- Management:

→ Asymptomatic / small:
observation, follow-up

→ symptomatic
Uterine artery embolization
GnRH analogues
Tranexamic acid (heavy menstrual bleeding)
NSAIDs (pain relief)
Hormonal therapy
OCPs / IUD
Surgical management
Myomectomy
Hysterectomy — last resort

- Indications for surgical Tx ?

  pressure symptoms

  symptoms limit lifestyle

  emergency (torsion)

  rapid increase in size

  growth after menopause

- Degenerative fibroids:

  Hylaine (mc)

  Red / haemorrhagic (mc in preg.)

  Cystic

  Fat

- Mx during preg.

  Bed rest, analgesia, No surgery

- Types →

1) Submucosal fibroid →

mc symptom: intermenstrual bleeding, Menorrhagia, Metromenorrhagia

if it was pedunculated → abortion & infertility

Tx: hysteroscopic resection

2) Intramural fibroid →

mc symptom: menorrhagia, but mainly asymptomatic

Tx: myomectomy

3) serosal fibroid →

mc symptom: pelvic pain
frequency & urgency
constipation

Tx: laparoscopic myomectomy

[8] Amenorrhea →

- physiological : before puberty, after menopause, during pregnancy or lactation

vs.

pathological

- It is the absence of menstruation in a women of childbearing age
- 1° → Failure to establish menstruation by < 15 y with scc / 13 y with no scc
- 2° → Absence of menstruation for
  - at least 6 consecutive months in women with previously normal & regular menses
  - 12 months in women with prior oligomenorrhea

- cause :

- uterus or outflow tract (cervix, vagina, hymen)
- ovary
- pituitary
- hypothalamus
- endocrine system

- Investigations : 1) primary

- if No scc → us for ovaries & karyotype
- if scc is present → us for uterus & karyotype

- mcc of 1° amenorrhea : gonadal dysgenesis, such as in Turner syndrome (14 yrs, no scc)
- 2nd mcc of 1° amenorrhea : Mullerian agenesis (16 yrs, with scc)

- Hx :

- sexual hx, exclude pregnancy (even if 1°)
- cyclical lower abd. pain, haematocolpos (genital tract malformation) [think about imperforate hymen / vaginal septum]
- stress, depression, weight loss, chronic systemic illness (hypothalamic dysfunction)
- headache, visual disturbances, or galactorrhea (prolactinoma)
- Fx of late menarche (constitutional delay)
- Fx of autoimmune disorders, premature menopause
- Medications (antipsychotic)

- pEx :

BMI (mainly if low FSH/LH) hypothalamic / pit failure

BP (cushing's syndrome, hyperthyroidism)

SCC (Tanner staging)

Breast development, pubic or axillary hair

External genetalia, clitoromegaly

Features of chromosomal abnormalities (Turner syndrome)

Hirsutism, Virilization, galactorrhea (mc Dx: 1) PCOS 2) congenital adrenal hyperplasia)

Signs of thyroid or other endocrine disease

Abd. exam (may reveal a suprapubic mass, preg > 12 wks)

Pelvic exam X

speculum or vaginoscopy X

تنظير مهبلي تحت under anesthesia

- Investigations:

US (TAUS) → to assess pelvic anatomy;
✓scc ✗scc
uterus, ovaries

Karyotype

Hormonal profile (FSH, LH, prolactin, TSH, testosterone)

---

1 Outflow tract obstruction →

a) Imperforate hymen

Normal scc
cyclical lower abd. pain
purple / blue bulging
Tx: surgery.. simple cruciate incision of the hymen

b) Transverse vaginal septum

Normal scc
cyclical lower abd. pain
pink bulging
Tx: surgery (septoplasty)

---

2 Mullerian agenesis [scc ✓ ovaries ✓ uterus ✗]

46, XX, NL Female phenotype
Mutation in (GALT) gene
ovarian tissue function normally, normal hormones. therefore Normal scc (there is ovaries, but no uterus, fallopian tubes, upper 2/3 of vagina)
No uterus
external genetalia NL

Investigations:
Karyotyping pelvic US MRI Laparoscopy

Tx:
creation of a functional vagina (sexual function)
fertility - oocyte retrival & surrogacy
Uterine transplant

---

3 AIS [uterus ✗ ovaries ✗ abd. testes ✓]

46, XY,
gonadal sex (male) / phenotype (female)
testes is present (intraabdominal)
→ testosteron & AMH

female genetalia (short & blind end vagina)
height above average
At puberty, breasts develop
pubic & axillary hair don't develop

Mx:
- creation of a functional vagina
- Gonadectomy
- hormone therapy (16-18 yrs)

---

4 Swyer syndrome [streak gonad < AMH ✗ Androgen ✗]

46, XY, female phenotype
vagina / cervix / uterus / fallopian tubes develop normally, but internal & external genitalia fail (NO AMH like AIS)

presence of pubic hair (rule out complete AIS)
Gonadectomy

AIS → pubic hair ✗, ↑ AMH, ↑ scc (breast), ↓ risk of CA, AR on long X

Sweyr → pubic hair ✓, ✗ AMH, ↓ scc (breast), ↑ risk of CA, SRY on short Y

5 Turner [ovaries ✗ scc ✗ uterus ✓]

mcc of gonadal dysgenesis

45, XO Classic features:

قصر القامة / short stature / webbing of the neck / cubitus valgus / widely spaced nipples / cardic & renal abnormalities, autoimmune hypothyroidism

Mosaicism نقص الصبغيات

Streak gonads

Tx: HRT, egg donation

(ovaries ✗ No ovaries, but there is uterus)

---

6 Anorexia nervosa

absent scc

assoiated features:

constipation, hypothermia, cold intolerance, bradycardia, hypotension

↓ FSH, LH, E2, anemia, ECG abnormality, abnormal GTT

Mx:

- Dietary therapy, psycotherapy, Antidepressants
- Oestrogen replacement

---

7 Kallman's syndrome

congenital gonadotrophin defficiency (GNRH), anosmia

---

2) secondary

Hx:

- hx of infertility, contraceptive use
- menstrual, obstetric, surgical hx such as D&C → intrauterine adhesions → Asherman syn.
- headache, visual disturbances, or galactorrhea - pituitary tumor
- Acne & hirsutism - PCOS
- weigh loss or gain - stress-related hypothalamic amenorrhea
- Exercise level - exercise-associated hypothalamic amenorrhea
- symptoms of thyroid & other endocrine disease
- Hot flushes & vaginal dryness - POI Medical hx; chemotherapy, pelvic radiotherapy - POI
- DM - associated with PCOS
- Autoimmune disorders - associated with POI
- Cranial radiopathy, head injury, major obstetric haemorrhge - hypopituitarism
- Medications (antipsychotics) & ilicit drug use (cocaine & opiates)
- Fx of cessation of menses before 40 yrs - POI

- PEx:
- Exclude pregnancy
- BMI
- galactorrhea

- Signs of excess androgens (hirsutism, acne) or virilization (hirsutism, acne, deep voice, temporal balding, ↑ muscle bulk, breast atrophy, clitoromegaly)
- Acanthosis nigricans (associated with PCOS)
- signs of thyroid disease
- Signs of cushing syndrome (striae, buffalo hump, central obesity, easy bruising, HTN, proximal muscle weakness)
- Fundoscopy to assess visual field if a pituitary tumor is suspected

---

- Investigation:

FSH, LH, prolactin, TSH

Total testosterone & sex-hormone-binding globulin

US, images, pregnancy test

---

[1] Asherman syndrome

results from intrauterine adhesions due to over curretage for example amenorrhea, dysmenorrhea, RPL, hypomenorrhea, infertility

Dx:

- TVUS or TAUS
- saline infusion sonogram or hysterosalpingeography
- Hysteroscopy

Tx: removal of adhesions & estrogen to promote growth of endometrium

---

[2] sheehan

Acute infarction & ischemic necrosis of pituitary due to PPH

symptoms: failed lactation after delivery, lethargy, anorexia, wt loss, 2° amenorrhea, loss of sexual hair

↓ GH, prolactin, gonadotropins

↓ ACTH, TSH

Q) mcc of 2° amenorrhea?

pregnancy (physiological cause not pathological)

---

* Medications cause amenorrhea?

→ Meds that stimulate prolactin secretions bcs prolactin has inhibitory effect on GnRH secretions

→ Dopamine antagonist, bcs dopamine is a -ve feedback inhibitor of prolactin release, so these meds lead to ↑ prolactin

→ Antidepressants (tricyclic)

→ Antipsychotics (risperidone & haloperidol)

→ some antiemetics (metoclopramide)

→ SSRI & MAOIs (cause hyperprolactinemia)

→ histamine rec. antagonist, reserpine, methyldopa, opiates, benzos, ...

→ preeclampsia / eclampsia
→ chronic HTN
→ chronic HTN with superimposed preeclampsia
→ Gestational HTN

---

* preeclampsia ⟶ (occurs after 20 weeks of gestation)

① HTN (mild) [Systolic ≥140 mmHg and/or diastolic ≥90 mmHg]

② proteinurea [24-h urine collection ≥300 mg protein / urine protein : creatinine ratio > 0.3]

③ end-organ dysfunction [Renal failure, CNS (headache, visual changes, confusion), Liver failure]

that resolves with delivery (placental removal)

- within 6 weeks post partum -

* if BP 160/110 + proteinuria > 5 g → (severe PET)

• physical exam ⟶

→ asymptomatic

→ symptomatic : 10

headach
papilledema, visiual disturbance (blurry vision)
difficulty breathing
epigastric / RUQ pain
generalized edema (LL edema)
Oliguria
hyperreflexia & clonus
proper perception of fetal movement
vaginal bleeding or gush of fluid

---

* General look (ill-looking)
* vitals :
- BP ≥140/90 mmHg, severe if ≥160/110

note :
(position : lying 45° / arm should be supported at the level of the heart, relaxed / use appropriate cuff size / at least 2 readings, 4 hrs apart / both arms)

- RR (tachypnea if pulmonary edema)

* Face :

periorbital edema
puffy face
pallor

* Head & Neck

- Fundoscopy : retinal edema, papilledema
- Raised JVP

* Chest

- Basal crackles
- Gallop rhythm (S3)

* Abdomen

- Epigastric or RUQ tenderness
- Fundal height
- Fetal parts may feel small for gestational age

* Extremities

- pitting edema
- hyperreflexia

• R.F ⟶

prior preeclampsia
Family history
1st pregnancy
Multiple gestations
Maternal DM / HTN / obesity / CKD / APL
age 40 yrs or more
10 yrs or more since last baby

• pregnancy complications →

- placental insufficiency
  ↳ Growth restriction (IUGR)
  ↳ Oligohydraminos
  ↳ hypoxia
- placental abruption

• Maternal complications →

- Eclampsia
- End-organ failure
- HF
- LF (HELP)
- DIC
- RF, pulmonary edema
- Stroke, intracranial hemorrhage
- RF & Dialysis

+ Maternal/fetal death

• Investigations →

Maternal

Urine testes:

- 24-h urine protein (≥ 300 mg/24 h)
- spot urine protein/creatnine ratio (>0.3)

KFT:

- serum creatinine
- blood urea
- uric acid

Liver function:

AST, ALT

Hematology:

CBC (high RBC & HCT, but low HB & plt)

Coagulation profile: pt/ptt/INR/

fibrinogen) risk of DIC

Fetal

- US (to look for oligohydraminos & assessment of fetal growth)
- Doppler (to assess placental perfusion)
- Fetal heart monitoring
- Fundus exam (to assess growth)

• Managment →

1) stabilize by anti hypertensive meds
2) start MgSO4
3) plan delivery

Admit to floor, if severe call for help!
Monitor BP
Medications:
labetolol / Nifidipine / Hydralazine / Methyldopa
Don't use ACEI or ARBs (teratogenic)
Fetal monitoring
Lasix & ergometrine
corticosteroid (dexamethazone) for lung maturation
IV magnesium sulfate for seizure prophylaxis at delivery

• screening & prevention:
low-dose aspirin / Ca^{++} supplements

Note:
How to monitor a patient on MgSO4?
check: Deep tendon reflexes (toxicity if absent)
RR (toxicity if < 12 breaths/min)
UO (toxicity if < 30 ml/hr)
serum level of MgSO4 (therapeutic range: 4.8 - 8.4 mg/dl)
antidote → Calcium gluconate

HELP syndrome

• a complication of preeclampsia
• Hemolysis / Elevated liver enzymes / Low plt count
• Clinical features:
- symptoms of preeclampsia (headache, hypertension, proteinuria, visual disturbances)
- Epigastric / RUQ pain
- N & V
- Malaise / fatigue
- Jaundice

• Liver necrosis / hematoma / thrombi
Microangiopathic hemolytic anemia
Thrombocytopenia (consumption)
• Tx: Delivery of baby ✓

Delivery:

a) No severe features:

vaginal delivery

< 36 wks: expectant management

> 37 wks: deliver

b) Severe features: delivery considered at 34 weeks

> 34 wks: deliver after stabilization

< 34 wks: stabilize, monitor, deliver when 34 wks

تهبيطة

* Pelvic Organ Prolapse :- ≈ hernia

- protrusion of the pelvic organs into the vaginal canal or beyond the vaginal opening.

- The pelvic organs (bladder / uterus / rectum) are kept in their place by levator ani muscle & endopelvic fascia
  - * supplied by pudendal N

- R.F:

previous hx

Family hx

* Multiple vaginal deliveries (احم عالي)
  - ↳ (more than 3)

* Macrosomia

* forceps

Weaning of pelvis: ↓ in CT (type 1 collagen)

Age, menopause, HRT (ال estrogen بعطي قوة لل CT inside the pelvis)

(lack of estrogen → loss of fascia → prolapse)

hysterectomy → (vault prolapse)

obesity

Chronic cough

smoking

constipation

heavy lifting

pelvic surgery & previous vaginal repair

- P.F:

C/S & Kegel exercise

- Classification:

→ Level 1

* any defect in apical support of vagina (cardinal ligament & uterosacral ligament) ⇒ uterine prolapse

→ Level 2

- any defect of ant. support (pubocervical fascia) ⇒ cystocele

- any defect of post. support (rectovaginal fascia) ⇒ rectocele

- any defect of (upper) post. support (pouch of Douglas) ⇒ enterocele (has a sac)

→ Level 3

any defect in perineal membrane & body ⇒ deficient perineum

- presenting symptoms:

1) Local (pelvic) symptoms

- feeling of vaginal fullness / heaviness
  ① progress over the day & ② most noticable after prolonged standing
- back ach (due to uterine prolapse)
- vaginal dryness or irritation
- bleeding

2) Urinary symptoms

- stress urinary incontinance / urge incont. / hesitancy
- urgency / frequency / Nocturia
- difficulty in initiation of urinatio
- Need to push the prolapse during voiding
- recurrent UTI, slow stream
- feeling of incomplete emptying of bladder

3) bowel symptoms

- incomplete bowel emptying
- obstructed defecation
- constipation
- need to manually splint for complete bowel elimination
- soiling
- fecal incontinance

4) Sexual symptoms

- Widening of vagina
- Dyspareunia
- Unsatisfactory sexual life
- coital incon.

lack of sensation & embarrassment

- Grading system

- Our landmark is: hymeral ring

(hymen plane 0 / above hymen -ve / below +ve)

- Grade 1: (half way to the hymen)

more than 1 cm above the hymen (> -1 cm)

- Grade 2: (to the hymen)

1 cm above or below hymen (-1cm - +1 cm)

- Grade 3: (outside / beyond the hymen)

More than 1 cm below the level of the hymen but no further 2 cm less than total vaginal length (+1cm to TVL - 2 cm)

- Grade 4:

complete eversion of vagina & uterus is outside, called procidentia & it's the most advanced stage

---

Q1) A lady presenting with mass protruding to 3 cm beyond the hymen, she is stage 3

Q2) The cervix protruding 3 cm inside the vagina, she is stage 1

Q3) To the level of the hymen, stage 2

Q4) To one cm beyond the hymen, stage 3

Q5) To 3cm inside the vagina, stage 1

- Hx:

- patient profile (age / # vaginal deliveries)
- Mass (size / consistancy / is it out all the time? or in & out, increase the size during the day?)
- Symptoms:

general / urinary / bowel / sexual

- Dx:

by vaginal examination

بنشوف الـ prolapse عن طريق الـ

inspection

- Mx:

→ Asymptomatic: No treatment

→ Symptomatic:

- conservative management ما تزيد قهوة وسوائل خيشر بالليل

Kegel exercise for SUI

Estrogen replacement therapy

Vaginal pessaries - تحاميل مهبلية

- Surgical management

Anterior colporrhaphy for cystocele

posterior colpoperineorrhaphy for rectocele

vaginal hysterectomy for uterine pro.

sacrocolpopexy for vaginal vault prolapse

* After repair, if the pt wants to get pregnant, we usually plan for elective CIS

POP can cause

- stress urinary incontience → kegel exercise
- urge incontince (overactive bladder) → antimuscarinic
- overflow incontince → treat the cause

medical Tx for incontinence:

• CTG →

* Intrapartum fetal surveillance:

1) FHR monitoring

→ Intermittent
(structured intermittent auscultation)

→ Continuous
(continuous electronic fetal monitoring)
1) External
2) Internal

2) Fetal scalp pH

vaginal exam needs to be performed prior to the procedure to assess the nature & position of the presenting part

- contraindications: maternal infection, women seropositive to Heb. B, C or HIV, suspected fetal blood disorders, uncertainty about the presenting part, preterm fetus

3) scalp stimulation
4) Fetal pulse oximetry
5) Fetal electrocardiogram analysis

• CTG: FHR monitoring during labor to assess fetal well-being

• NST: FHR monitoring when the mother is not in labor to assess fetal well-being

- NST correlate FHR to fetal movement without uterine contractions

- Indications:

* Maternal medical condition:
(gestational DM, preeclampsia)
Old age / post term

* Fetal conditions:
FH defects
Fetal growth restriction
that ↑ risk of fetal hypoxia / injury / death
↓ fetal movement / ↓ amniotic fluid

* CTG has 2 components:
1) Fetal heart 2) contractions

* How to read a CTG?
(Name of the pt, date, paper speed), then

DR C BR VADO

DR: Define risk

C: contractions (frequency & duration)

BR: Baseline rate (110 – 160 bpm)

V: variability (beat to beat variation) تغاطعات وتزيد

A: Accelerations (present or absent)

D: Decelerations (early / late / variable)

O: Overall impression
(reassuring / suspicious / abnormal)

+ Assessment & plan of Mx

---

① Uterine contractions

- Resting tone: the lowest intrauterine pressure btw contractions.
→ Normal resting tone = 5-10 mmHg
→ During labor = 10-15 mmHg

- Pressure during contractions rises to ~ 25-100 mmHg

- A resting pressure above 20 mmHg causes ↓ uterine perfusion

- Number & Duration in 10-min period is recorded

- Hyperstimulation: > 5 contractions in 10-min

- Hyperstimulation can cause:
hypoxia / acidosis / abnormal FHR (fetal bradycardia)

② HR

→ Baseline rate (110 - 160 bpm)

→ Tachycardia (> 160 bpm, for > 10 min)

- Causes:

Maternal pyrexia (infection, chorioamnionitis)
Medications:
beta-agonist (tocolytics): ritodrine / terbutaline
Atropine (sympathomimetic drug = parasympatholetic drug)
Fetal arrhythmias (SVT)
Fetal / maternal anemia
Fetal hypoxia (to compensate)
Hyperthyroidism
Prematurity

→ Bradycardia (< 110 bpm, for > 10 min)

- Causes:

Maternal hypothermia, hypotension, hypoglycemia
adminstration of beta-blockers
fetal arrythmias (atrioventricular block)
SSA-RO +ve pregnancies (SLE & sjögren's syndrome associated with heart block)
fetal metabolic acidosis (caused by prolonged hypoxia)

---

③ variability = fluctuations in the baseline FHR (5 - 25 bpm)

* Normal variability → intact neurological system in the fetus
* persistently minimal or absent FHR variability → Fetal compromise
* Absent variability → Fetal distress

- Causes of reduced variability:

Fetal sleeping
Fetal acidosis (due to hypoxia)
Fetal tachycardia
Drugs:
opiates / benzodiazepines / methyldopa / dexamethasone / $MgSO_4$
prematurity
congenital heart abnormalities

Sinusoidal pattern

- regular, smooth, wave-like pattern
- frequency of around 2 - 5 cycles a minute
- stable baseline rate around 120 - 160 bpm
- no beat to beat variability
- Causes:

severe fetal hypoxi
severe fetal anemia
fetal / maternal haemorrhage
ruptured vasa previa

---

④ Accelerations

- ≥ 15 BPM above baseline for ≥ 15 sec.
- presence of acceleration is reassuring ⇒ intact neurological system of the fetus (without hypoxia / acidosis)
- Absence of acceleration with an otherwise normal CTG is of uncertain significance
- Adequate accelerations:

< 32 WKs: ≥ 10 BPM above baseline for ≥ 10 sec

> 32 WKs: ≥ 15 BPM above baseline for ≥ 15 sec.

⑤ Decelerations

- ≥ 15 BPM below baseline for ≥ 15 sec.
- Types:

a) Early deceleration

- cause: head compression
- This type is not pathological & don't indicate fetal hypoxia/acidosis

b) Late deceleration

- Cause: uteroplacental insufficiency
- Why?

uterine tachysystole (hyperstimulation)
maternal hypotension
epidural or spinal anesthesia
IUGR
intraamniotic infection
placental abruption

- severe, repetitive late decelerations usually indicate fetal metabolic acidosis
- Mx:

Maternal Lt Lateral position (to improve uterine blood flow)
IV fluid (to correct hypotension)
Oxygenation
stop oxytocin
consider tocolytic drugs (to slow down or stop contractions that are provoking dece.)
vaginal exam (to rule out cord prolapse & to determine method of delivery)
↳ 1st stage: CS
↳ 2nd stage: assisted vaginal delivery
if persistant →
perform fetal scalp pH
consider immediate delivery

c) variable deceleration

- Cause: cord compression
- have an abrupt onset & rapid recovry
- Mx:

Maternal Lt Lateral position (to improve uterine blood flow)
IV fluid (to correct hypotension)
Oxygenation
stop oxytocin
consider tocolytic drugs (to slow down or stop contractions that are provoking dece.)
vaginal exam (to rule out cord prolapse & to determine method of delivery)
(extra)
we may consider amnioinfusion to improve oligohydraminos
digital evaluation of the fetal head out of maternal pelvis to ease pressure on the umbilical cord
if persistant →
perform fetal scalp pH
consider immediate delivery

---

d) prolonged deceleration

- Usually lasting > 3 min
- if associated with ↓ variability it indicate acute fetal hypoxia/acidosis and require emergent intervention
- Causes:

* Transient
  - supine hypotension
  - paracervical block
  - epidural & spinal anesthesia

* other:
  - prolonged cord compression
  - cord prolapse
  - Maternal seizures
  - apruptio placenta
  - rupture uterus
  - vasa previa

} Vaginal bleeding

* Infertility

- Inability of a couple to conceive after 12 months of regular intercourse without use of contraception in women < 35 yrs

  or

- Inability of a couple to conceive after 6 months of regular intercourse without use of contraception in women ≥ 35 yrs

- Fecundability: probability of achieving a pregnancy in one menstrual cycle (20%)
- 85% of couples achieve a preg. within 1 year
- 95% of couples achieve a preg. within 2 year
- 1° vs 2° Infertility

- causes →

[1] Ovarian

1) Ovulatory dysfunction (oligoovulation / anovulation) →

1 regularity?
2 dysmenorrhea?
3 premenstrual symptoms?
4 basal body temp changes?
5 mid-cycle pain?
6 vaginal discharge changes?

a) PCOS

b) Thyroid disorders

c) Hyperprolactinemia

d) Obesity

2) Oocyte disorders →

a) Ovarian failure

b) Oocyte aging (~~reserve~~)

* Who classification:

Class I: central problem (hypogonadotropic hypogonadal anovulation)

Class II: PCOS (Normogonadotropic Normoestrogeic anovulation)

Class III: Ovarian failure (hypergonadotropic hypoestrogeic anovulation)

hyperprolactinemic anovulation

---

[2] Tubal

PID
Adhesions from previous surgery & nontubal infections
severe endometriosis
pelvic TB
pseudo-obstruction: mucus plug, tubal spasm

---

[3] Uterine < heavy bleeding (menorrhagia) → submucosal fibroid; hypo/amenorrhea → Asherman syn

Uterine anomalies (Mullerian anomalies)
submucosal fibroids
endometrial polyps
Intrauterine adhesions (Asherman syndrome)

---

[4] cervical

congenital malformations
cervical injury

---

[5] Male

→ pre-testicular

congenital / aquired hypogonadotropic hypogonadism

drugs
systemic disease

→ testicular

idiopathic dysspermatogenesis
genetic causes
congenital & developmental disorders
acuired testicular disorders

→ post-testicular

abnormalities of the epididymis, vas deferens, ejaculatory duct, seminal vesicles, and prostate
sexual dysfunction

- Dx :

1) Hx →

- General :

Age
Living together ?
Hx of frequency of sexual intercourse & last date of intercourse (معهم اسأل على طريقة الـ intercourse صحيحة ام خاطئة)
proper timing intercourse (ovulation time)
Leagth of time without preg. (duration of infertility)
Any previous attempts for assissted reproduction
Any regular medications, allergy

- Male Hx :

Hx of infection (mumps) or excessive heat
Hx of testicular CA
Drugs or radiation exposure
Smoking / alcohol / diet

- Femal Hx :

Past obs hx (1° or 2°)
Cycle details (duration / regularity / dysmenorrhea)
signs & symptoms of thyroid dis.
PCOS ? galactorrhea, hirsutism
PID ? mid-cycle pain &/or spotting
endometriosis
fibroid
pelvic disease, intra-uterine device insertion
Fx

- For both :

previous surgery
previous investigations
previous Tx

---

2) PEx for both

---

3) Investigations →

[a] husband →

- SFA :

volume
concentration
total count
PH
Motility
Morphology

- Testicular US
- Hormonal profile
- Karyotyping

[b] wife →

- TVUS (Antrial follicle count)
- Tubal disease ,D&C

hysterosalpingogram (HSG), if abnormal:
laparoscopy, hysteroscopy, dye test, D&C

- tupoplasty: reconstruct damaged oviducts
- salpingectomy & IVF if severely damaged

- Hormonal profile

FSH / LH / TSH / Tu / prolactin / midluteal proges. / anti-mullarian hormone (to measure the ovarian reserve) / E2

→ correct the cause if low Tu or high prolactin
→ uncorrectable → PCOS → induction of ovulation
↓
clomiphene citrate

- Karyotyping

---

* if you want to do diagnostic laparascopy, hysteroscopy, D&C:

Admission
Consent signature
the time of the procedure to be in the 2nd half of the cycle
Do blood sensitive preg. test (rule out preg.)
the procedure is under GA
via 2 holes in the abdomen
expect some pain at the shoulders that relieved by simple pain killer

+ve:

visualization of any uterine abnormality

visualization of any tubal abnormality

visualization of any ovarian abnormality

check patency of the tube by methylen blue dye test

diagnosis of endometriosis or infection

-ve:

Laceration of vessles
perforation of the uterus
Cardio-respiratory problems from the pneumoperitoneum
Injury to the bowel
Injury to the bladder

- Main management for infertility:
  - Induction of ovulation & time intercourse
  - IUI
  - IVF

- Indications for IVF:
  - Oligospermia
  - Irreparable tubes
  - Unexplained infertility

* DM →

- pre-gestational DM:

diabetes present before preg. (type 1 or 2)

- gestational DM:

glucose intolerance with onset after 20 wks of preg.

- Diagnostic hormones

(4 p + cortisol)

- HPL (secreted from the placenta in the 2nd half of preg.)
- placental insulinase
- progesterone
- prolactin
- cortisol

- R.F:

* previous Hx

Fx of GDM / DM

previous hx of GDM / macrosomia / polyhydraminos

Hx of unexplained fetal death / Neonatal death / congenital anomalies / IUGR

* Recent pregnancy

Recurrent infection

HTN / PET

Current preg. polyhydraminos / macrosomia

* Maternal charactaristic

age (< 25 yrs)

obesity

PCOS

- complications:

→ Maternal (before / during / after labor)

- Difficulty in controlling DM due to ↑ body weight / ↑ volume distribution / hyperemesis gravidarum
- Recurrent hospitalization due to recurrent hypo/hyperglycemia & UTI
- ↑ risk of PET
- ↑ risk of abortion
- ↑ risk of PTL and PROM
- ↑ risk of traumatic delivery. obstructed labor, use of forceps or vacum.
- ↑ risk of developing DM-2, metabolic syndrome, obesity, CVS disease, retinopathy, nephropathy
- ↑ risk of vascular or end-organ involvement or deterioration

→ Fetal (before / during / after birth)

- congenital anomalies (only in pre-gestational DM
  - ↳ most common: cardiac anomalies: (VSD / ASD / TOF)
  - ↳ most specific & pathognomonic for DM: caudal regression
- polyhydraminos
- IUGR
- Intrauterine fetal death
- Macrosomia & traumatic delivery
- Neonatal hypoglycemia / hypocalcemia / hypomagnesemia
- ↑ risk of developing DM, HTN, CVS disease, jaundice, RDS

• Diagnostic (one-step) protocol:

→ perfor FBS test for all pt at booking

FBG > 126 : preexisting DM

FBG 92-126 : 75g OGTT immediately

FBG <92 : 75g OGTT at 24-28 wks

• Screening (Two-steps) protocol:

- screen all pregnancies at 24-28 wks

- Initial screening → OGTT 50 g.

1 hr → blood glucose should be < 135 mg/dl

- confirmation test → 100 g, 3 hr

OGTT > 140 mg/dl

• Baseline investigations: (after Dx)

1) Hb AIC < 6.5 % (good control)

Normal range (4 - 5.7 %)
prediabitic (5.7 - 6.4 %)
diabetic (> 6.4 %)

Q) if the HbAIC is 10, what to do?

- Effective contraception untill the glycemic control is achieved.
- Folic acid supplementation

2) Blood sugar profile (Fasting / postprandial), KFT, 24-h urine collection, opthalmoscopy

3) Assess pre-existing complications:

Nephropathy / Neuropathy / Retinopathy

• consultation of < opthalmology, Nephrology, cardiology

• Mg:

- preconception counsling →

- Acknowledge the importance of tight glycemic control to achieve the best HbAIC (ضبط السكر قبل ما تحمل من الأول) (to avoid fetal abnormalities ✓)

- Administration of 5 mg folic acid prior to conception and for 12 weeks (to prevent spina bifida)

- Ensure all routine meds are safe for preg. and eliminating all hazardous drugs (ACEI / ARBs / statins)

- Assessment of the presence of DM-complications:

HTN / Nephropathy / retinopathy

control glucose levels 3 months prior to conception

diet & exercise

pharmacological therapy: insulin & metformin

Antepartum care: opthalmology, cardiac, endocrine, nephrology consultant

Timing of delivery:

• The aim is to ↓ incidence of still birth & fetal complications related to DM ✓

Uncomplicated, well-controlled, Normal growth → delivery at 40 wks

Bad obstetric history → 38 wks

Mode of delivery → vaginal (risk of shoulder dystocia)
C/S is not indicated

if unfavorable cervix → PG

if favorable cervix → ARM & oxytocin

Aim → delivery within 12 hrs

insulin → 1/2 the usual dose

hourly Blood glucose

Well-controlled GDM without complications → wait for spontaneous delivery

Earlier intervention is indicated → if complications arise or GDM is no longer controlled

if the fetus weighs more than 4500 g → C/S

if there isn't an indication for C/S, normal vaginal delivery

* Expectation of large-sized baby should be in mind!

* NICU

* Booking →

* Methods of diagnosing pregnancy :-

1) Hx :

Hx of amenorrhea

presence of morning sickness, N&V

breast tenderness

2) PEx :

Chadwick's sign → bluish discoloration of vulva & vagina

Goodell's sign → softening of the cervix

Hegar's sign → softening of the uterus

Skin changes → spider angiomas / palmar erythema / ...

3) Investigation :

Urine pregnancy test (detects hCG)

Blood test (detects hCG)

US (The presence of gestational sac via TVUS)

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* If she is pregnant, then →

1) Hx

- patient profile

occupation (exposure to toxins, radiations, medications)

GP

LMP

- HPI

any compliant related to this preg. ; bleeding, pain

Allergy, immunization

- obs hx

modes of previous deliveries

lactating or not

- Gyne hx

Regularity

Any contraception methods used before

- Medical & surgical hx
- Drugs
- Fx, Gaetic hx
- Social hx

smoking, alcohol

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2) PEx

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3) Investigations

- CBC / Hb
- blood group / Rh / Antibody screen (inderct coombs test)
- pap smear
- Gonorrhea & clamydia culture & PCR
- Infection screen : Rubella / syphilis / HBV / HIV / TB / hepatitis
- blood sugar level
- TSH
- her weight / height
- her BP
- US

- Antenatal care: healthcare that women recieve during preg.

- Frequency of visits:

< 28 WKs → monthly

> 28 - 36 WKs → every 2 WKs

36 - birth → weekly

* In high-risk preg., frequent visits are usually warranted

- Trimesters:

- 1st (0-12 WKs)
- 2nd (13-27 WKs)
- 3rd (28 - birth)

1st trimester ⇒

a) personal & family hx, previous preg., PEx, BP, wt

b) Labs:

- CBC / Hb
- blood group / Rh / Antibody screen (inderct coombs test)
- pap smear
- Gonorrhea & clamydia culture & PCR
- Infection screen: Rubella / syphilis / HBV / HIV / TB / hepatitis
- blood sugar level
- TSH
- Urinalaysis

c) US (1st scan 11-14 WKs)

- To confirm preg. & viability of preg.
- Determine # of fetuses
- Evaluate presence & location of preg. < intrauterine / ectopic
- Localization of placenta
- amount of liquor
- Confirm GA (due date)
- Document crown-Rump length & cardiac activity (significant only for 1st trimester)
- Fetal heart monitoring
- screen for abnormalities of the cervix, uterus, placenta (uterine fibroids / ovarian cysts)
- NT at 11 WKs, NL < 3 mm, abnormal > 3 mm

2nd trimester ⇒

a) Labs

- GDM screening:

• Screening (Two-steps) protocol:

- screen all pregnancies at 24-28 WKs الرقم صحيح جدًا

- Initial screening → OGTT 50 g. 1 hr → blood glucose should be < 135 mg/dL

- confirmation test → 100 g, 3 hr OGTT > 140 mg/dL

- Repeat Hb, CBC, ...
- Triple marker test: MS-AFP, hCG, estriol OR
- Quadruple marker test: MS-AFP, hCG, estriol OR, inhibin-A

DDx for ↑ MS-AFp (>2.5)

1) Wrong date (mc)
2) multiple preg.
3) Neural tube defect
4) ventral wall defects: gastro schisis or omphalocele
5) Renal disease
6) sacrococcygeal teratoma

DDx for ↓ MS-AFp (<0.75-0.85)

1) wrong date
2) Trisomy
3) Fetal demise

b) US

Rule out congenital anomalies by detailed US btw 18-22 wks (typically at the 20th wk)
Amniotic fluid index (AFI)
Cervical length & changes
Cervical incompetance (Funneling)

c) PEx

Fundal height and position of the fetus (Leopold maneuver)

Q) When to start doing Leopold maneuver? at 2nd trimester

Leopold's maneuvurs (4 classic steps)

1) Fundal grip

To identify fetal pole in the fundus (head or buttocks)

2) Lateral grip

To locate fetal back to determine the position & Lie

3) Pawlik's grip (pelvic ① grip)

To determine presenting part (head or breech) at pelvic inlet

4) second pelvic grip

To assess head engagment and attitude

* Notes →

EDD = LMP + 9 months + 7 days
or LMP - 3 months + 7 days

GA → CRL (1st trimester)
GA → Abdominal exam → by fundal height

- from symphasis pubis-umbilicus: 20 wks
- above it, every 1cm = 1 week
- after 36 wks the fetus descet into the pelvis

so fundal height is useful to predict GA from 20-36 wks

3rd trimester ⇒

a) Labs

CBC

OGTT (GDM)

BP & urine dipstick (PET)

Indirect coomb test (atypical antibody screen AAT)

↳ if -ve : give anti-D at 28 WKs

screen for Group B streptococcus btw 36-37 WKs (vaginal & rectal swab) bcs colonization by this bacteria may cause chorioamnionitis & neonatal infection

b) US

placental location in relation to internal os

presentation

Biophysical profile

Postmature placental sign (calcification)

Fetal weight

Biometric measurements in relation to GA to rule out IUGR

↳ 1) head circumference
↳ 2) Biparietal diameter
↳ 3) Abdominal circumference
↳ 4) Femoral length

- Antepartum fetal surveillance :

1) BPP (in 3rd trimester)

5 components

* US exam →
Fetal movement
Fetal tone
Fetal breathing
Amniotic fluid volume
+ NST

* NST (usually in 3rd trimester)

- FHR monitoring when the mother is not in labor to assess fetal well-being

- NST correlate FHR to fetal movement without uterine contractions

- Indications :

* Maternal medical condition :
(gestational DM, preeclampsia)
Old age / post term

* Fetal conditions :
FH defects
Fetal growth restriction
that ↑ risk of fetal hypoxia / injury / death
↓ fetal movement / ↓ amniotic fluid

2) Kick count method

3) contraction stress test (CST)

4) CTG

* If the mother blood group is -ve, then ask about:

- her husband blood group
- if she recieved anti-D in previous pregnancies
- Order inderct coomb test
  ↳ if -ve → give anti-D at 28 wks

- Routine medications:

Folic acid, 500 µgm daily from day 1 to time of delivery

vit D 5000 IU every other day from day 1 to time of delivery

Iron supplements from week 16 to time of delivery

Calcium 500 mg daily from week 26 to time of delivery

- Nausea meds →
  Folic acid
  Anti-emetic

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* How to screen for aneuploidy (Down syndrome)

1) NT
2) first trimester biochemistry
3) Triple test
4) Quadruple test

* if the screening for Down syndrome was +ve, how to confirm?

1) chorionic villous sampling
2) amniocenthesis

* PID: Inflammation of ♀ upper genital tract (uterus, tubes, ovaries, ligaments) caused mostly by ascending infection from the vagina & cervix

- ↑ adhesions → Infertility
- PID → ↑ ectopic preg.

- Organisms:

sexually transmitted microorganisms (rarely single organism)

- R.F:

- age < 35 yrs
- multiple sexual partners
- unprotected intercourse
- IUCD (only one)
- Nulliparity
- Hx of STD

- Acute PID

bilateral abd. tenderness
cervical motion tenderness
mucopurulent discharge
↑ WBC / ESR
+ve culture
NL urine analysis

- Dx:

Mainly clinical

⚠: 1) pelvic pain
2) cervical motion tenderness
3) adnexl tenderness

other: lower abd. pain
excessive vaginal discharge
chills
direct or rebound abd. tenderness

- Mx:

- ceftriaxone IM & Doxycyclin orally for 14 days
- hospitilization if:

surgical emergincies (appendicitis) not ruled out

failed oral Tx

severe illness (toxicity: N&V, high fever)

Tubo-ovarian abscess demonstrated on US or suspected clinically

pregnancy

- sexual partners of ♀ with PID should be evaluated & treated for urethral infx caused by chlamydia or gonorrhea
  ↳ Treat with Doxycycline if sexual contact with partner in the last 6 days

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* Tubo-ovarian abscess

- end-stage process of acute PID
- symptoms:
  severe bilateral pain
  septic patients
  high fever
  ↑ HR
  ↓ BP
  peritoneal signs

adnexal masses
On CT: bilateral complex pelvic masses

- Mx: Admit, IV Clindamycin + Gentamycin, if failed → drainage of the abscess

---

- **Chronic PID**

Chronic bilateral pain, infertility, dysparennia, ectopic preg., abnormal bleeding cervical motion tenderness & bilateral adnexal tenderness

No discharge
No fever
No tachycardia

- investigations: NL WBCs & ESR
  -ve culture
  on US → hydrosalpinx

- Dx:

Laparoscopy

- Mx:

Analgesia, adhesion lysis (help in infertility)

---

* Fitz-Hugh Curtis syndrome

RUQ pain with chronic PID

perihepatitis with adhesions

seen at the liver capsule

- Complications of PID:

Infertility
Abortions (recurrent)
Abnormal bleeding
Ectopic preg.
Dysparunea
Adhesions
Chronic pelvic pain
Recurrent infx

- Hx:

1) patient profile

age, married? for how long?,...

2) Chief complaint + duration

3) HPI

Bleeding:
onset, course, duration
amount
color
only after intercourse?
First time?

Associated symptoms:
Dysparennia
Discharge (amount, color, smell)
Urinary symptoms (dysuria)
Weight loss

4) Menstrual hx

LMP
Menarche, regularity, frequency
contraception
Last pap smear
Menopause symptoms? HRT?

5) Obs. hx:

Past preg: delivery, weight, complications

Any ectopic preg. or stillbirth

6) Past medical hx

DM, HTN, STD, PID, IUCD

7) social hx

smoking & alcohol

8) Drugs & allergies

9) Fx of CA or similar problem

- Investigation:

- Gyne exam
- TVUS
- Laparoscopic evalnation
- PV
- HVS, endocervical swab & culture for chlamydia & gonorrhea
- speculum:

red looking cervix

yellowish vaginal discharge

raw area 1×2 cm, bled to touch

- lab:

presence of leukocytosis

↑ ESR

↑ CRP

- Pap smear -ve for neoplasia
- cervical biobsy showed cervicitis
- Refer to colposcopy
- other:

Urine sample

preg. test (possible ectopic preg.)

- Therapeutic goals:

1) Elimination of reproductive tract infection & inflammation

2) Improvement of symptom & physical findings

3) prevention or minimizing of long term sequelae

4) Eradication of the infection from the pt & her sexual partner

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- DDx of post-coital bleeding:

Infection
CA
Atrophic vaginitis
HRT
Abuse
other

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*some notes:

*acute PID Triad: pelvic pain/adenexal pain/cervical motion tenderness
*acute treatment: ceftriaxone + Doxycyclin for 14day
*tubo ovarian abscess treated by: Gentamycin + clindamycin
*acute PID diagnosed: clinically
* severe form tubo ovarian abscess

Chronic

*normal Lab
*diagnosed by-US: hydrosalpinx -laparoscomy
* (+) present with bleeding (+)
* severe form: fitz Hugh Syndrome

1] Natural
- periodic abstinanance of intercourse during fertile periods + ovulation assessment method: ovulation prediction kits, basal body temp, cervical mucus evaluation - effictivness: 50-80%
  - Fertile period: 5 days before ovulation, the day of ovulation, 1 day after ovulation
  - # cycle - 14 = ovulation; 28 - 14 = 14
- Coitus Inheritus: effectiveness: 27% (male withdraw his penis from the vagina before ejaculation)
- lactational amneorhea: - effective for 6month only (amenorrhoeic) (Fully breast feeding)
  (Prolactin → inhibit GnRH → ↓ ovulation)

2] barrier (Mechanical) — interruption of progression of sperm in the ♀ reproductive tract
- 1] male condom: - effectiveness: 85-90% Ø contraindicated in latex allergy
- 2] female condom: - effectiveness: 80%
  - removed after 6-8h
- 3] Diaphragm: - effectiveness: 80% (occlusive pessaries)
  - removed after 6-8h
- 4] cervical cap: - effectiveness: 80%

protect against STDs

3] IUD:
- 1] Cupper: - effectiveness: 99,1%
  - Longofuse: 10years
  - MOA: cause sterile inflammatory reaction / prevent implantation / ↓ tubal motility / ↑ cervical mucus thickning
  - Ø contraindications:
    - Hx of malignant trophoblastic dis.
    - Endometrial & cervical CA
    - pelvic TB
    - current STI or PID
    - unexplained vaginal bleeding
    - distorted cavity; may make insertion difficult
    - Cupper allergy
- 2] Mirena: - effectiveness: 99,9% (progesterone only)
  - Longofuse: 5years
  - used for Mx of heavy menstrual bleeding

Examination: 1) PV 2) US 3) X-ray

4] surgical: (permenant, irreversible; can be reversed, preg = 5%)
- 1] Tubal Ligation: Immediate affective, doesn't affect menstrual pattern
  - if preg occur, why?
    - preg before procedure
    - recanalization of tubes
    - ligation of another structure
- 2] vasectomy: - need 6-8weeks (3month) / 20 ejaculation (not effective immediately)
  - complication: scrotal bruising, haematoma, wound infx, ...

5] Hormonal (take it at day 1)
Ø: breastfeed, smoking, age, CVS risk factors, TIA, liver disease, ...

1] combined contraceptive
- effictivness: 99,8%
- MOA →
  - inhibits FSH, supress follicular development
  - inhibits LH, prevent ovulation
- A- OCP
- B- Transdermal patch:
  - Ethinyl estradiol + progesterone
  - effectiveness > 99%
  - 1 batch per 3week + 1 week stop
- C- vaginal ring:
  - Ethinyl estradiol + progesterone
  - effectiveness: 98%
  - one ring per 3week + 1 week stop

2] progesterone only
MOA: cervical mucus modification, endometrial modification, suppression of ovulation
Ø current breast CA
- A] minipill: - ↑ failur rate, effectiveness: 92% (for Lactating)
- B] Injection (Depo-Provera): - IM every 3 month
  - effectiveness: 99,7%
  - delay Fertility
  - cause weight gain
- C] Implant: - effective after 24hr for 3years
- D] Subdermal implants

* Emergency contraception: inhibits & delay ovulation if taken several days before ovulation (if immediately before ovulation not effictive)

- back-up method
- After unprotected intercourse & before implantation
- After failure of barrier method, missed pills

- Options:

1) pill containing a progesterone rec. modulator

2) progesterone

3) Cupper IUD within 5 days

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