بسم الله الرحمن الرحيم

تتقدم **لجنة الطب والجراحة** لكم بهذه الدوسية الخاصة بمادة النسائية والتوليد/ جامعة مؤتة ..

و التي تحتوي على ملخصات لبعض مواضيع السمنارات وتعليقات الدكاترة عليها ، والتي ساهم بتلخيصها الطالبة :

مروة مبارك القريناوي

وأشرف على طباعتها وتنسيقها الطالب :

طارق نظمي أبولبدة

نسأل الله أن يكتب فيها النفع والفائدة ، ونرجو منكم تقديم التغذية الراجعة بملاحظاتكم الرامية لتحسين جودة هذه الدوسية ..

إننا نعيش لأنفسنا حياة مضاعفة حينما نعيش للآخرين ..

وبقدر ما نضاعف إحساسنا بالآخرين نضاعف إحساسنا بحياتنا ..

ونضاعف هذه الحياة ذاتها في النهاية ..

وليست الحياة بعدد السنين ولكنها بعدد المشاعر ..

لأن الحياة ليست شيئا آخر غير شعور الإنسان بالحياة ..

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Endometriosis

- **Definition :** Endometrial galnd / stroma outside Endometrial cavity / muscle (3-10) at 30-45 year .
- **Mechanism :**

  1- Retrograde menstruation
  - Outflow obstruction /physiological
  - Mechanical inside Scar
  - Lymphatic / hemato

- Metaplasia
  - Due to estrogen stimulation or prolonged
  - Irritation of coelemic membrane > endometrium

- **Risk factors**

  - Family history > first degree relationship / MZ twin
  - Immunology
  - Dioxin
  - Grossly
  - Red polyps, black lesion , white scar, clear bleb
  - Or balck, white endomerioma in ovaries

- **Histology**

  - Gland and stroma > Difentive Dx > to start management

- **Staging**
  - Stage 1:superficial, isolated, no adhesion
  - Stage 2:superficial, more <5cm, no adhesion
  - Stage 3:invasive, multiple, adhesion
  - Stage 4:invasive, multiple, dense adhesion, endometrioma,
  - Staging > predict future fertility and not correlate with pain/tenderness (severity)

- **Clinical**
  - Genital :
  - Dysmenorrhea (congestive) 60-80%
    - Deep Dysparunia
    - Heavy menses (irregular)
    - Infertitiy
    - Lower abdomial (low back pain)
  - Urinary (cyclical) :
    - Hematuria, dysuria, obstruction
  - Gi (cyclical) : Constipation, tenesmus, rectal bleeding, dyschesia , Umbilical swelling, tenderness
  - Rs : Hemoptysis, pleural effusion, pneumothorax

- **Examination**
  - Fixed retroverted uterus
  - Nodularity of pouch of doglas
  - Pelvic tenderness
  - Ovarian enlargement, tender, +/- cyst

- **Ddx**
  - Infection (PID)
  - Fibroid
  - Acute abdomen
  - Ovarian, rectal cancer
- ❖ Endometriosis increase risk of Endometrial cancer , ovarian clear cell cancer, breast cancer,and melanoma

- **Dx:**
- US for endometrium (others is poor)

- MRI, CT scan : for endometrioma (solid, cystic, mixed)
  MRI better for : adhesion, implants extraperitoneal lesions, pelvic mass, Staging, monitor of managment
- Laprascop (gold standard) : Allow dx and management
- At peritoneum > powder burn spot, kissing ovaries, endometrioma
- CA125 > not specific (increase with stage)

- **Causes of infertitiy (60%)**

1- luetenizing and rupture follicles

2-increase prolactin and estrogen > menorhagia

3-increase vaginal macrophage to sperm

4-nonfunctional tube (ectopic) (not adhesion)

###alen master: abdominal pain and cramping + spots on broad ligament, uterosacral ligament

- **Management :**
- ❖ Medical : Nsaid, Opioid

- ❖ Hormonal :
  1- Danazole (androgen) /17 hydroxytesterone
    - MOA: Anovulation(increase testosterone)
    - 400-800 mg/day for 6 months
    - Side effects : (virilization) breast atrophy, hoarseness of voice (irreversible), male type baldness, clitromegaly

  2-GNRH analog :

  - MOA: Endometrial atrophy, amenorrhea, by downregulation of FSH and LH receptors
  - Given IM, SC, nasally 2/day
  - Side effects :hot flashes, vaginal dryness, breast tenderness, osteoporosis >>> give back therapy (hormonal replacement therapy)

3-Progesterone drug (provera 'medroxyprogesterone)

- MOA: Cause Endometrial atrophy
- Side effects : Uterine bleeding, breast tenderness, depression

4-gestrinone (anti Progesterone steroid)

- MOA: Work by decrease estrogen and Progesterone
- Side effects : virilization

5- COCP : dysmenorrhea (بينعطى طول الشهر)
Side effects : weight gain, bleeding, HTN

6-IUCD (levongestril) , Mirena

Cause glandular atrophy

- **Surgical management :**
  - Laprascopy, lapratomy
  - Conservative : remove the implants
  - Radical : hysterectomy +/- BSO
  Remove endometrioma
  - For pain > nerve blocks (ablation) (uterosacral, presacral)

Adenomyosis

- **Definition :** ectopic Endometrial tissues within myometrium > respond by diffuse hypertrophy >Trapping of blood > pain
  Risk factors : parity
  Clinical : dysmenorrhea, dysparunia, menorhagia unresponsive, subfertility >>>> 35 year
  PE : large uterus (6-10) weeks, homogeneous enlargement, boggy, soft
- **Dx:** definitive diagnosis by biobsy after hysterectomy
- TVUS to differentiate it from fibroid (hypoechoic lesion, indistinct Endometrial- myoumerrial border)
- MRI (better) uniformly enlarge uterus
- CA 125
- Antiphospholipid antibodies

- **Treatment :**
  - Medical :
    - GNRH agonist by decrease uterine size, and risk of myometrial rupture(fertility)
    - Decrease blood loss during surgery
    - Mirena >decrease symptoms, and cause shrinkage of uterus

  - **Surgical** :
    - Hysterectomy
    - UAE (safe and effective) >> recurrence
    - Adenomyomectomy

Puberty

- Precocious puberty is 2.5SD from age
- **heterosexual :** different phenotypic type :

*androgen secreting tumors (ovarian /adrenal) =surgical

*congenital adrenal hyperplasia :M.C 21 hydroxylase deficiency >

1-non classical (no symptoms, no ambiguous genitalia)

2-classical (symptoms, ambiguous genitalia, surgical correction in early age)

- **isosexual :**

***complete: 2 subtypes:**

1-true (axis;HPGA) :::

- Mostly Idiopathic
- Dx by GNRH stimulation test > increase LH
- GNRH agonist > 12 yr (injectable implants)
- Hamaratoma in posterior hypothalamus(history of headache) > MRI, CT for head > medical, surgical treatment

2-pseudo: rapid progression >estrogen exposure

- Ddx:

1. estrogen secreting tumors
2. ovarian cyst (follicular) M.C > laprascopic removal
3. mccune Albright syndrome :cafe aluate :
    - skull and bone cyst
    - hyperthyroidism sign
    - recurrent follicular cyst (Precocious puberty)
    - Polystonic fibro dysplasia (acromegaly, deformity)

- Rx by testolacton

4. hypothyrodism > increase TSH(increase PRL, GNRH, ovarian cyst) And decrease bone age (الوحيد)
5. adrenal adenoma
6. F-petz juger syndrome :

- mucocutanous Pigmentation
- Polyposis
- Tumor (Sertoli lyeding dysgermenoma>estrogen)

***incomplete :**

- Thelarch <4yrs (transient estradiol)
- Adrenarch <7yrs(androgen by adrenal)
- Pubarch <8yrs
  ما بيحتاج علاج لانو ممكن بكون السبب nonclassical CAH, pcos

Dr. Malek : normal development :

- Thelarch (10y) after 6m adrenarch then menarch after 2 years
- Affected by genetic /environment

- **Cases** :
  - Newborn (1w) :period > maternal hormones
  - 8 years > central

    >Peripheral always pathological
  - Bone age :short height (لما يكون صغار :طول / كبار :بقصرو)

 # Investigation :FSH, LH, GNRH stimulation test, Xray, MRI, US

- 16 years with menorhagia : anovulatory, hematological

Birth injury

- **Risk factors :**
  - Macrosomia
  - Malpresentation
  - Maternal shortness, Obesity, pelvic abnormalities
  - Vaccum, forceps, episiotomy
  - Prolonged IUL

##-maternal :

1-bony

2-soft tissue :

perineal tears (spontaneous) same risk factors

- **Stages :**
  - -skin (vaginal opening)
  - perineal muscles

    - 1+2 treated by suturing
  - anal sphincter (primigravida) :
- 3a:EAS(50%)
- 3b:EAS >50%
- 3c: EAS +IAS (E : urgency / I: incontinence)

  * EAS : external anal sphincter
  *IAS : internal anal sphincter

  - rectal mucosa (complete)

    -3+4 treated by surgery (local, general anaesthesia)

** symptomatic, abnormal endoanal us >> CS in later pregnancy

#uterine rupture :

- Complete : CS
- Incomplete : dehiscinece only muscle (serosa and peritonium is intact) , No bleeding
- Dx by prenatal US or by CS next labor
- Major risk factors : CS 52% Other : trauma, cs, D and C, weak uterine collagen, old, interpregnancy interval less than a year, hyperstimulation uterus , increase precontraction, obstructed labor, ICV
- Specific features :
  - Pain, tenderness
  - Loss of station
  - Shock
  - Bandle sign
  - Vaginal bleeding

- Lapratomy (الاكيد) : emergency CS (hemorrage, fetal instability) > hysterectomy (ممكن لا اذا الام م بدها بشرط :stable, not sever, skilled)

- Recurrence :
  - lower segment < upper
  - Ineterpregnancy interval < 18 months
  - Another vaginal delivery

#hematoma: after forceps delivery
Rx by antibiotics, incision and drainage, foleys catheter

- Fetal birth injury :
  - Erbs palsy (c5, 6)> prone, internal rotation, addiction, loss of monro and biceps radial reflex
  - Grasp +
  - Klumpke paralysis :(c7, 8)> grasp -

Hyperprolactinemia

- **Clinical** : amenorrhea, oligo, infertitiy
  Galactorhea, visula field defect, headache

- **Causes** :

1- **hypothyrodism**

2-**drug** : dopamine receptor antagonist : TCA, dopamine depleting agents : cemitidine, verapemil

3-**prolactinoma** :(MRI)

<100 : drug

250-500: micradenoma

>500 macroadenma

Microadenoma < 10 mm and premenopaus

Macroadenoma >10mm and postmenopaus

4-thoracotomy

5-renal

- **Treatment** :
- Asymptomatic
- Symptomatic :
  - Bromocribtin : SE : nasua, headache, gi bleeding, hyporesion
  - Cabergolin : less side effects(no gi bleeding)
  - Treat hypothyrodism
  - Prolactinoma : medical if fail the surgical
  - Surgery (transsphenoidal) when : Large, hemorrhagic, visual field defects, resistance
  - Treat osteoporosis (due to hypogonadism) by estrogen

PCOS

- **Definition** : endocrine syndrome : ovulatory dysfunction, increase androgen, insulin resistance, hyperlipidemia

- **Pathology** : insulin resistance >increase insulin > theca cell proliferation > increase androgen + estriol > pcos Also increase insulin cause decrease SHBG formation from liver

- **Risk factors :** family history 1st degree
- **Diagnostic criteria :**

1-NIH :

- Menstrual irregularity (anovulatory or oligo)
- Clinical or biochemical hyperandogenism
- Exclude of CAH, tumor, hyperprolactinemia

2-Rotterdam neds :

- Menstrual irregularity (anovulatory or oligo)
- Clinical or biochemical hyperandogenism
- US : 12 or more follicles measures 2-9 mm or increase ovarian volume

3-AES the same as NIH

❖ Clinical features :

1-hyperandogen state

- Hirsutism (male type pattern) : 9 body parts : Upper lip, chin, chest, upper/lower back, upler/lower abdomen, upper arm, thigh
- Modified ferriman Galloway score >6 body parts
- Acne 15-25%
- Androgenic alopecia 50%

2-ovarian abnormalities 80%:

- US multiple follicles at periphery
- Thickened sclerotic cortex
- Polycystic ovary : non pathological in 40%, normal Change in ovary
  Polycystic ovarian syndrome cause infertility in 25%

3-central obesity 30-75% بس مش شرط

4-insulin resistance and acanthosis nigricans

- **Ddx :**

1- hyperprolactinemia : ovulatory dysfunction and decrease hyperandogenism

2-CAH : we test morning serum 17-HO Progesterone > 200 ng /dl

3-tumors (ovarian, adrenal) :testosterone >150

DHEAS>800

And decrease LH

4-cushing

5-drug : Danazole, ocp whit high androgenisty

Lap:::
-HCG :
Primary :testosterone, insulin, glucose, lipids, US

Ddx: prolactin, DHEAS, TFT, 17-OH Progesterone

General : FSH, LH, estrogen

- **Treatment :**

1-weight loss 5-10kg > restore ovulation, increase response to induction, improve pregnancy outcomes

2-hirsutism :
- Mechanical removal

- Hormonal > spironolactone (androgen +aldosterone antagonist, K+ sparing)

- Selective anti androgen > fluramide > liver dysfunction (KFT)
- OCP
- Cyproterone acetate
- Finasteride

3- resore ovulation :

- Metformin : decrease glucose and improve resistance

    Decrease fatty acid

    Induce ovulation

- Clomiphine citrat (clomide) :not more than 6 months

* Both increase live birth rate

4- OCP is first line when fertility is not desire Regular cycle

- Contraception
- Decrease androgen
- Increase SHBG

5-laprascopic ovarian drilling

- Risk for premature ovarian failure and adhesion

- **Complications of PCOS :**
  - Insulin resistance
  - Obesity (sleep apnea)
  - Endometrial cancer
  - Depression
  - Dyslipidemia(HTN, CVA)
  - Pregnancy complications (abortion, smalll for gestational age, HTN, gestational DM, IGT)

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Infertility

- **14-20%**
- **Definition : >**1yrs of unprotected intercourse, > 6 months in over 35yo women
- **Types :**
- Primary :at all
- Secondary :previous pregnancy, miscarriage, ectopic

- **Causes** :
- **Male :**

1-sperms disorder : count, amount morphology, Immunology

2-varicocele

3-radiation

4-infection (mump)

5-toxins

6-heat

7-surgery

- **Female :**

1-ovarian disorder :

  - Pcos, PLC,hypo pituitary, hypothalamic disorder, premature ovarian failure, chromosmal (absent ovaries)

2- fallopian tube :

  - Obstruction(PID)
  - Dysfunction

3-uterus

  - Obstruction
  - Absent
  - Abnormalities : bicornuate, septate, fibroid, endometriosis

4-cervical : stenosis, fibroid

5-peritonium : adhesion

- **History** : most important step
  Both couples

- Questions for both :
  - ✓ Previos pregnancy
  - ✓ Time of infertility
  - ✓ Sexual history : number /time of intercourse
  - ✓ Using lubricant (spermicide)
  - ✓ Any symptoms (impotence, dysparunia)

- Male questions : infections, surgery, heat, toxins, radiation

- Female questions :
  - ✓ Gynecological history (Menstrual irregularity, dysmenorrhea, vaginal discharge)
  - ✓ Drug history (OCP, IUCD)
  - ✓ Obstetric hx if secondary infertility (ask about ectopic)
  - ✓ Androgenic symptoms
  - ✓ Menopausal symptoms
  - ✓ Surgical history
  - ✓ Radiation
  - ✓ Stress, weight change

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PPH

1-call for help

2-IV line for fluid and blood samples for cross mach and coagulation

Foley catheter

3-explore birth canal for lacerations, placenta for any missed part, and examine for uterine atony

4-treat the cause as suturing, manual removal of placenta, uterine massage or manual compression, uterotonic agents

- **Risk factors :**
  - ✓ Previous hx of pph
  - ✓ Multiparity
  - ✓ Prolonged labor
  - ✓ Macrosomia
  - ✓ Multiple gestation
  - ✓ Polyhydramnios
  - ✓ Mismanagement of 3rd stage of labour

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PROM

- **Hx:**
- Age, parity, LMP....
- Watery discharge :amount, colorless, odorless, number of pads, بنزل لرجليك
- If associated with blood, vaginal discharge (green)
- Fetal movement
- Abdominal pain
- SOB, fever

Obstetrics :

- Previous PROM or premature baby
- previous hx of infection
- DM screening > Polyhydramnios
- Multiple gestation
- Smoking
- ❖ Take vital sign to check : pulse, fever, tachycardia, tachypnea

- **Examination :**
- Sterile speculum th show :
  - ✓ watery discharge with its color
  - ✓ Cervical dilitattion
  - ✓ Cord prolapse

- Ferning, nitrazine test
- Abdomial tenderness
- FHR

- **Investigation :** cbc with deferential, CRP

- **Management and follow up :**
- Antibiotics(erythromycin)
- Steroid (DM, infection????)
- Delivery if near term or at 34 weeks

Dysmenorrhea / dysparunia

- **PID, endometriosis, adenomyosis, fibroid**

- **Hx :** age, parity, miscarriage
- **Menstrual history :**
  - ✓ Regulatory
  - ✓ Frequency
  - ✓ Duration
  - ✓ Volume (clot, how many pads)
  - ✓ Dysmenorrhea :-prior - during
  - ✓ Vaginal discharge
  - ✓ Any other bleeding (IMB, PCB)
  - ✓ IMB: intermenstrual bleeding
  - ✓ PCB:postcoital bleeding
  - ✓ Drug :ocp, copper, HRT, anticoagulants
  - ✓ Previous surgery
  - ✓ Infection

- **Examination :**
  - ✓ Symmetrical or irregular enlargement
  - ✓ Abdominal tenderness + vaginal discharge (PID)

- **Investigation :**
  - ✓ CBC, coagulation profile, ESR, CRP
  - ✓ US (fibroid)
  - ✓ High vaginal swap (PID)
  - ✓ Laprascopy (endometriosis)
  - ✓ MRI (adenomyosis)
  - ✓ Hysterescopy / biopsy

- **Non structural causes of bleeding (HMB) :**
  - *<u>COEIN</u>*
  - ✓ C:coagulopathy(drug)
  - ✓ O:ovulatory dysfunction (TFT, PCOS, PRL, adrenal)
  - ✓ E:endometriosis
  - ✓ I:iatrogenic (drug, surgery, IUCD, trauma)
  - ✓ N:non calcified

- **Treatment :**
  - Medical :
  - ✓ COCP, POP
  - ✓ IUCD(mirena)
  - ✓ Antifibrynolytic
  - ✓ Danazole
  - ✓ Gnrh agonist
  - Surgical :
  - ✓ Hysterectomy
  - ✓ Endometrial ablation

Postpartum care

- **Period :** 6-12 weeks after placental delivery
- **Aim:** monitoring if there is :

1-blood loss

2-uterine contraction

3-infection

4-ability to void

5-Rh immunization

- **Physiological changes :**

1-Uterine involusion :

- 1000g*10-20 ضعف الطبيعي
- 2 week > pelvic
- 5 week > normal size

2-lochio :

- Blood flow for several hours : decrease reddish - brownish
- Lochio serosa : mucopurulent malodorous one (22-27 day or 6 week)
- Lochio alba : after 6 weeks (white /yellow)

3-weight loss

4-CVS :

- CO, plasma volume > 1 week
- Edema, normal BP > 6 week
- Hemoconcentration
- Decrease WBC
- Decrease GFR
- Increase PLT + clotting factor > thromboemolism

- **Complications :**

1-non serous :

- Cracked nipple
- Skin changes (cholasma/stretch marks)
- Hair loss
- Constipation
- Hemorrhoid
- Urine retention(hypotonic bladder) /incontinence (stress)

2-pain

- Lower abdominal
- Perineal (episiotomy, tear, AVD assisted vaginal delivery)
- CS pain
- NSAID (ibuprofen =safe in breastfeeding)

3-psychological complications :

A-blue :

- ✓ 2 weeks (not pathological)
- ✓ 85%
- ✓ Anxiety
- ✓ No treatment

B-depression :

- ❖ Risk factors :
- ✓ Previous history
- ✓ Stressful conditions
- ✓ Unintended pregnancy
- ✓ Misbehavioral therapy

- ❖ In severe cases :
- ✓ hospitalization
- ✓ SSRI
- ✓ TCA
- ✓ ECT

C-psychosis :

- ✓ Emergency
- ✓ Hx of psychosis and bipolar
- ✓ Delusion and auditory hallucinations (تؤذي نفسها او الطفل)

Rx :

- hospitalization and mood stabilizer
- Antipsychotic
- Benzadiazepine

Postpartum fever :

1-breast engorgment, cellulitis :

Lactating mastitis, breast abscess

Symptoms : fever, tenderness, tachycardia

Rx:

- bedrest, antibiotics (antistaph)
- Breastfeeding (better to continue)
- Ice bags

2-UTI :

Hypotonic bladder

Risk factors :

- asymptomatic bacteruria or chronic UTI
- Abnormalities in GU system
- Prolonged labor
- Internal fetal monitoring

Rx : same

3-wound infection

4-endometritis :

Decidua, myometrium, parametrium

Symptoms : fever, pain, foul smelling vaginal discharge
May complicated by abscess

Rx > combination of IV clindamycin and gentamycin

***Postpartum pre-eclampsia/eclampsia : بتعامل معها نفس الشي أثناء الحمل

Postpartum contraception :

Breastfeeding

POP + breastfeeding after delivery

OCP after 3 months > decrease DVT

IUCD after 6 weeks

Emergency : IUCD, OCP

Permenant

VTE: increase risk in first week + CS

Risk factors :

- Previous hx
- Thrompophilia
- Prolonged instability

Breast engorgment : 2 day /tense painful

Mastitis :7-21 days after delivery

tender, painful, redness

Wedge shape (lobule)

Antibiotics

Abscess : localized

Incision and drainage + IV antibiotics

كلهم لازم نحفز الlactation

Polyhydramnios

- **Sources of amniotic fluid:**
- 1st trimester > placenta
- 2nd, 3rd > fetal urine, lung, oral and nasal secretion

Breathing, swallowing, urine output 800-100ml

Intramembrane 200-500 ml

- **Function :**

1-movement

2-growth and prevent deformities

3-kidney,lung, GI maturity

4-umbilical cord

5-temperature

6-circulation

7-cushing

- **Volume :**

Increase 25-400 ml >>>>>>>>at 34 week (800-100ml)

After that > 400ml at 42 week

- **Measurement :** AFI
- **Polyhydramnios** 1-2% :
- AFI>25
- Deepest vertical pocket>8
- Increase large gestational age and size

- **Clinical :**
- Large abdomen
- Respiratory dyspnea (SOB)
- Contraction
- Lower limb edema

- **Examination :**
- Large size abdomen
- Difficult to palpate fetal part and heart rate

- **Causes :**
  - DM >polyuria in fetus
  - Multiple gestation
  - Chromosmal abnormalities (21/18 trisomy)
  - Respiratory (CAML)
  - GI any obstruction (atresia, large kidney)
  - CNS (anencephaly, hydrocephalus)
  - Infection
  - Bartter syndrome (renal T alkalosis, polyuria)
  - Increase CO in baby with RH alloimunization, FMH, Thalassemia
  - Any interference with swallowing (clef palat, lip, neck mass, NMj disorder)

- **Complications :**
  - Preterm
  - PROM
  - Cord prolapse
  - Abruptio placenta
  - PPH (atony)
  - Macrosomia
  - Malpresentation
  - Stillbirth /perinatal mortality
  - Increase CS

- **Diagnosis :**

US :

- ✓ AFI, DVP
- ✓ dye dilution
- ✓ Karyotype
- ✓ Blood group Rh
- ✓ Infection survey
- ✓ FBS, or OGTT
- ✓ NST
- ✓ Detailed US for fetal anomalies

- Follow up by NST, BPP

- **Management :**

1-treat the cause :

- DM > control blood sugar
- Anemia >transfusion
- TTTS >laser

2-aminoreduction if severe, Symptomatic

3-indomethacin

- Side effects :
- DA closure (احتماليتها تزيد مع زياده ال GA)
- NEC
- PVL

Before 32 weeks:

- Steroid, aminoreduction, indomethacin

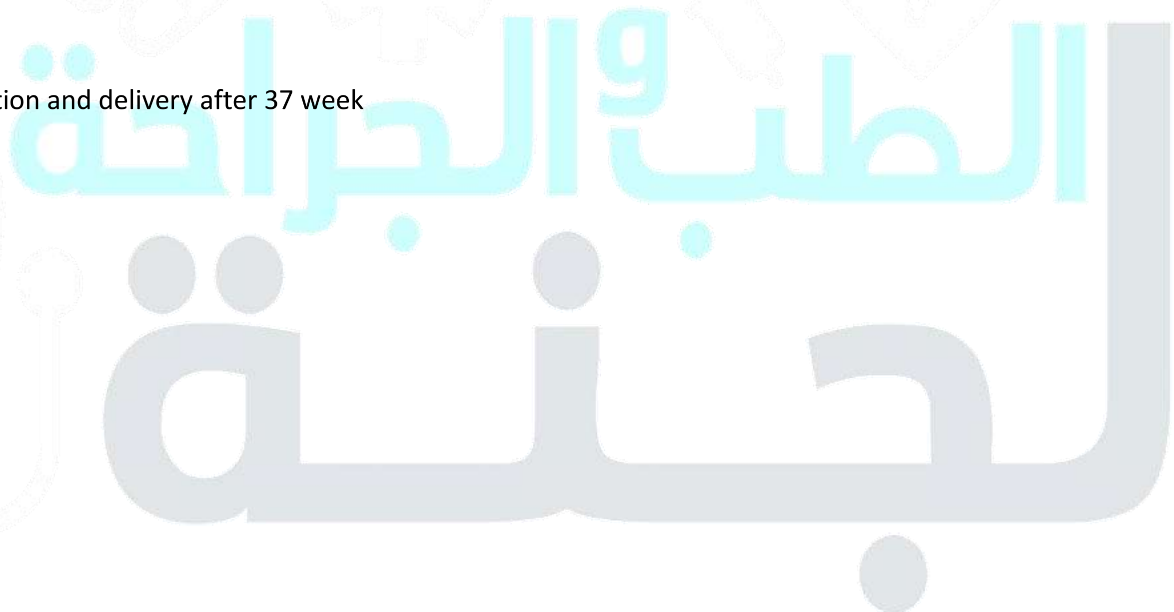
ما في خطر كبير بهاي الفتره

32-34 week

- Aminoreduction, steroid, indomethacin
- We do echo/doppler and if there constriction stop it

After 34 :

- aminoreduction and delivery after 37 week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Early pregnancy bleeding approach

- **Ddx :** ectopic, molar, miscarriage, vaginitis, PID, UTI

- **Investigation :**
  - HCG, CBC, Urine analysis
  - US
  - Vaginal speculum exam
  - Laprascopy (ectopic)

- **Hx :**
  - Age, parity, miscarriage, LMP, blood group,

- **C.C ::** bleeding, duration
  - Bleeding : amount, severity(by clot or hydrophic vesicles)
  - Association : abdominal pain, urinary symptoms, vaginal discharge, fever, nasua, vomiting

- **Obstetric history :**
  - Previous miscarriage, molar, ectopic
  - Assisted RT, contraception
- **Past medical history :** Infection
- **Past surgical history :** D and C, pelvic surgery
- **Social :** smoking. Alcohol
- **Drug :** OCP, IUCD
- **Physical examination :** Admission
- **General examination** :vitals > resuscitation if need
- **Abdominal exam**
- **Pelvic exam :**
  - Molar : large uterine size, theca lutea, (pre-eclampsia)
  - Ectopic :abdominal tenderness, cervical motion tenderness, bleeding, adnexal mass
  - Miscarriage :bleeding, opened /closed cervix

- **Investigation :**
  - HCG, CBC, coagulation, US, TVUS
  - Maybe MRI or laprascope if ectopic

- **Treatment :**
  - Ectopic : methotrexate 50mg
    Laprascopic salpingectomy, stomy, tomy
    Follow up with HCG
  - Miscarriage : D and C (missed, incomplete) Or medical by misoprostol
  - Molar : suction curretage , Follow up with HCG
    No pregnancy

- In all cases give anti-RH if -ve

الطب والجراحة
لجنة

Bleeding in late pregnancy

- PP, AP, ruptured uterus, vasa previa, cervicitis, polyps, Ectropion, trauma
- In labor with bloody show

- **First step** : admission

1-General examination

2-Vital signs (if there problem)>>>

- IV line (2large)
- Foley catheter
- Blood samples for :
- Cross mach, CBC, KFT, LFT, RH, coagulation
- Resuscitation

3-full history

4-abdominal examination : tenderness, FHR, fundal height

5-vaginal examination :by speculum :polyp, cervicitis, ROM,.....

6-US with doppler : for fetal wellbeing, PP, Placental abruption

- **History :**
- Age, parity, LMP, blood group,
- Bleeding : amount, duration, aggrevating (PCB, spontaneous, trauma, pain)
- Association : abdominal pain, fetal movement

- **Past obstetric history** : previous CS, D and C, multiple gestation

- **Past medical history** : HTN, coagulation disease

- **Social history** : smoking, alcohol

Obstetric shock

- Special type of shock in pregnant women :
  Amniotic fluid, air, thromboembolism

- Neurogenic shock due to traction of broad ligament or ovary > bradycardia + vasodilation

- Mandlsons syndrome during anaesthesia > aspiration

- **Most common type :** hemorrhagic, septic

- **Hypovolemic shock :** cause :
  - Blood loss (M.C): early, AP, PP, trauma (PP 20%)
  - Fluid loss : hyperemesis gravidarum, diarrhea, DKA
  - Supine HS
  - Splanchnic shock : sudden drop in intra uterine pressure > all blood will go to the Splanchnic circulation

- **Drug therapy :**
  - Analgesics (Morphin)
  - Vassopressor to maintain renal perfusion (dopamine, beta agonist)
  - NAHCO3 in acidosis

- **Uterine inversion :**
  - Funds enter through the endometrium to the outside
  - Vaginal / CS
  - **Risk factors :**
    - ✓ Uterine atony, fundal implantated placenta
    - ✓ Mismanagement of 3rd stage of labour
    - ✓ Short cord
    - ✓ Dilated cervix

  - Classifications according to :
    - ✓ Severity (صوره بالسلايد)
    - ✓ Timing (less than a 24 hour > acute /
    - ✓ 24h - 4 weeks > subacute /
    - ✓ More than 4 weeks > chronic)

** constricting edematous cervical band leading to venouse - arterial obstruction > edema of prolapsed part > ischemia

- **Clinical :**

- Acute :
  - ✓ Incomplete inversion
  - ✓ Bleeding
  - ✓ Pain
  - ✓ Absence of uterine fundus
  - ✓ Mass in cervix /vagina
  - ✓ Cardiovascular collapse (Neurogenic /hemorrhagic)
- Chronic :
- **Ddx** : tumor, cervical polyps, 2nd twin, atony, rupture , laceration

- **Symptoms** :
  - ✓ Pain(lower back)
  - ✓ Bleeding
  - Increase risk of mesenteric thrombosis
- **Dx** by >US
- Surgical replacement

- **Management :**
  - ✓ ABC
  - ✓ Manual replacement(Johnson maneuver) or hydrostatic
  - ✓ Uterine relaxant (nitroglycerin (short acting), terbutaline)
  - ✓ Oxytocin >management of 3rd stage of labour :
  - ✓ Spontaneous, manual removal
  - ✓ +oxytocin another one

- **Amniotic fluid embolism ::**
  - **Content :** AF, fetal cell hair, debris
  - **Time :**any time

    CS (sudden drop in O2 sat)

    Vaginal

    3rd trimester

    During or post labor
  - **Definite diagnosis** by autopsy
  - **Causes :**
    - Increase intra uterine pressure (oxytocin, hemorrhage)
    - Opened veins : lacerated or ruptured uterus

**stress : amniotic stained with meconium >> anaphylaxis + DIC

- **Phases :**

1-pulmonary collapse > RD

2-DIC by content

Lab and Resuscitation

Post term pregnancy

- ❖ Completed 42 weeks / 6-12%
- ❖ Late term 40-41+6/7

- **Causes :**
  - Inaccurate date
  - Unknown

So we should check % :

- ✓ LMP (lactation, ocp, regularity)
- ✓ PE x = fundal height (up to 36/ weight)
- ✓ US on booking (CRL/bi parietal /femoral length)

- **Risk factors :**
  - Primigravida
  - Previous history
  - Genetic
  - Hormonal
  - Obesity

- **Complications :**

❖ (fetal) :

1-increase perinatal mortality 2-3 times due to placental calcification

2-Macrosomia : birth injury, shoulder dystosia, CPD

3-oligohydramnios : cord compression

4-meconium aspiration (respiratory)

5-hypoglycemia, seizure

6-dysmaturity syndrome :

- Like chronic IUGR
- Thin wrinkled skin
- Thin body
- Long hair, nail
- Oligohydramnios
- Passage of meconium

❖ (Maternal)

1-labor dystosia (prolonged)

2-lacerations

3-assisted vaginal delivery

4-increase cesarean rate

5-anxiety

6-PPH

7-chorioamnitis

8-endometritis

** **how** to differentiate IUGR from small size baby? By **abdominal circumference**

- **Case :** Unsure date / post term

Hx : LMP, early US

Sx, medical, obstetric hx to determine indication for vaginal vs CS

Examination : Vital signs, fundoaymphatic height

US : fetal growth, amniotic fluid, NST

اذا ماشي مع ٣٨ w ? We do membrane sweeping in OPC and wait

High risk > indication for CS مباشرة

Induction of labor

- Prior spontaneous onset
- Or augmentation after the onset of contraction

- **Indication :**

1-post term (M.C)

2-PROM :chorioamnitis

3-DM, PET, twin, intra hepatic cholestasis

4-unexplained hemorrage, abruption , RH incompitability

5-IUFD, IUGR

6-abnormal fetal testing on modified BPP

- PET in Preterm : rapid deterioration and fetal compromise so >CS

- **Contraindication or IOL :**

Contraindication of vaginal delivery :

- PP
- Classical CS or 2 or more CS
- Herpes
- Cervical tumor
- Abnormal lie
- Fetal compromise
- Acute fetal distress
- Preterm
- Contracted pelvis

*cervical ripening :

Decrease collagen due to collagenate, increase water content

Bishop :

>7 : no need for ripening by prostaglandin

<7 : need for ripening by prostaglandin

- **Complications of IOL :**

1-Failure > CS

2-Uterine hyperstimulation > rupture

(uterine hyperstimulation = more than 5 contraction per 10 minutes last longer than 1 minute

More in : Polyhydramnios, multiple gestation, previous CS, grandmultipara)

3-uterine atony (fatigue) > PPH

4-infection

5-prematurity

6-painful

Before IOL :

1- confirm GA

2-Mother and fetal condition (NST for 20-30-40 minutes)

3-no contraindication for vaginal delivery

4-on 41 week > chance for other attempt

- **Non pharmacological methods :**

1- membrane sweeping :(>38 , cervix is open)

When to use?

A. In previous CS (less complication than oxytocin) (oxytocin better than PG)
B. grandmultipara (less risk of hyperstimulation)

2-mechanical foleys : 20-22 size

- **Complications**

  Amniotomy :
  - Cord prolapse
  - Placental abruption
  - Vasa previa
  - Infection
  - Descending fetal heart rate

* not engaged head > controlled ROM + assisted (لتثبيت الراس)

*oxytocin up to 32 in multipara and to 64 in primipara

Antenatal care

- ❖ Preconception : more important than antenatal to prevent fetal anomalies
- ❖ First weeks of gestation (3-10 weeks (4w))>>organogenesis

- ❖ High risk women :

1-medical condition

2-drug :warfarin, isotretenon...

3-smoking, cocain

4-previous obstetric hx

How? **Hx** :

- Obstetric history
- Gynecology (STD pap smear)
- Medical (HTN, DM, thyroid, seizure)
- Surgical (gynecological sx like fibroid)
- Drug
- Family history (Chromosmal, congenital anomalies, inherited disease, recurrent pregnancy loss)
- Social : teratogene, smoking

Weight :

- IUGR(decreased)
- Pregnancy loss (increase), HTN, DM, VTE, CS, NTD

PE::

- Thyroid, breast, gynecological exam, pap smear

Lab:

- CBC(HB), blood group, RH
- Infection profile (syphilis, rubella, hep B, HIV)

Vaccine :

- Rubella, chicken pox
  Rubella :لازم قبل الحمل + ٣ اشهر على الأقل

Genetic counseling : old women, family history

DM :HBA1C <7
Thyroid :increase dose

Antiepileptic :valproic acid > clef lip/palat

So **safe drug** : carbamazepine, lamotrigen And **lowest dose > lowest side effect**

Hepatitis B : cirrhosis, failure, CA, death

Rx :lamivudine

Rubella : cataract, microceph, PDA

STD :

1. On mother : chlamydia, gonorrhea :ectopic, PID (chronic pelvic pain), infertility

2. On baby : Death, congenital disabilities

Contraindication of pregnancy :

1-pulmonary HTN

2-cardiac disease (some)

3-cystic fibrosis

Renal (يفضل يكون بدري قبل ما يصير sever)

Folic acid :

- Preconception 4mg
- Pregnant 1mg
- High risk pregnancy 4mg

Smoking :

- Low birth weight, affect fetal heart, lung, brain
- Increase risk of PTL, PP
- Decrease risk of fibroid, Endometrial cancer - _-

Iron supplement :

- 30-60 mg elemental
- 150 mg ferrous

- **Early prenatal care :**

- 11-13 booking to determine :

1-Base line investigation (HB, RH, blood group, urine analysis)

2-determine high risk

3-gestational sac, GA

- Immunization :
  - **CI**: Rubella, varicella, MMR, BCG, yellow fever
  - **Safe**:tetanus, hepatitis, rabies
  - Tetanus : first dose at booking and second dose after 6 weeks
  - If previous vaccine within 3 months > give at 36 weeks

- US :
  - 10-13 gestational age, multiple pregnancy, down syndrome (NT at 11-14 weeks)
  - 18-24 detailed anomaly scan
  - 28-34 placenta, growth

- High risk :

1-Age > 40 y

2-Medical : DM, HTN, kidney, lung disease, STD, thyroid

Pregnancy related : PET, GDM

3-PP ,PTL , multiple gestation

Abnormal vaginal bleeding

- **Each menses :**
  - Duration :4-8 (5) days
  - Volume :<80ml (less than 5: light / more than 80 heavy)
  - Frequency :21-35, more or less : infrequent, frequent
  - Regularity : 2-20 difference, >20 irregular
    3% in premenopaus

  - Menstrual cycle with age :
    Shorten (more frequent), regular

  - HMB : subjectively affect the life :
  - Objective: alkaline hematin test, P bac chart
  - Subjective :collection of sanitary protection usage, flooding, clots, duration
- More than 80ml, more than 7 days

  - Malignancy :
  - IMB may HMB
  - PMB :pressure symptoms
  - PCB :pain
  - Pelvic mass : appetite, weight loss

- To dx dysfunctional uterine bleeding we should exclude all other structural and systemic causes

  - Causes of AUB :
  - PALMCOEIN
  - PALM : structural causes (polyps, adenomyosis, leiomyoma, malignancy)
  - COEIN : non structural causes (coagulopathy/drugs, ovulatory dysfunction, Endometrial, iatrogenic(drug, trauma, IUCD) , non specified)

  - AUB before menarche :
  - Sexual abuse, foreign body, trauma, malignancy

  - According to risk :
    - High risk :
      - age more than 45, non Menstrual bleeding
      - Pressure symptoms
      - No response to treatment (> secondary care)
      - Dysmenorrhea

    - Low risk :age less than 45,no obvious abnormalities from hx and exam

Rx : medical for 3-6 months (Mirena, COC) if fail > refer to secondary care

- Approach :
  - Acute :urgent intervention
  - Chronic :
    - general :age, blood group, Menstrual history, patient's action to bleeding
    - Specific history to the cause
    - Family history
    - Pap smear
    - Pain related to the cycle
    - Anemia

- Examination : Abdominal, bimanual...

- Investigation :
    - CBC(HB, WBC, PLT)
    - LFT
    - coagulation
    - Imaging :US
    - Hysteroscopy + biobsy, SIS, MRI
    - sawb (infection)

    - Uterine /Endometrium
    - US/SIS
    - Hysteroscopy +biobsy
    - Infection screening
    (افضل اعملهم مع بعض)

- When to do Endometrial biobsy?
  Based on Endometrial thickness :
  > 4 perimenopaus
  >16 premenopaus
  < 4 postmenopaus + history + US risk factors

- **Postmenopausal bleeding :**
- Abnormal /increase risk for cancer
- We must test Endometrial thickness :
  < 4 mm atrophy : 1-2 CA
  > 4 mm (50% false positive), so : biobsy guided by hysteroscopy

❖ Causes of PMB :

1-Endometrial atrophy

2-fibroid

3-polyps

4-hyperplasia

5-Endometrial cancer

6-other cancer

❖ Relationship between PMB and HRT :
- Normal bleeding occur (3 months) after administration or change preparation, otherwise is abnormal
- Tamoxifen increase risk of bleeding but may cause subendomtrial cyst > increase thickness, so SIS مشان نتأكد

- **Intermenstrual bleeding :**

❖ Largely benign include PCB, more in perimenipause

❖ **Causes :**
- Ovarian : ovulation, estrogen secreting tumor(PMB)
- Uterine :
  - ✓ medical :COC, POP, mirena, SSRI, anticoagulants
  - ✓ Endometritis
  - ✓ Benign :polyps, adenomyosis, fibroid
  - ✓ Malignancy
- Cervical :
  - ✓ polyps, Ectropion (pregnancy /OCP > increase estrogen)
  - ✓ Malignancy
  - ✓ Infection (C, G)
- Vaginal : infection, adenosis(anything from cervix, uterus), malignancy
- Infection, cancer, polyps

❖ **Rx :**

1-medical

2-minimally invasive :

- hysteroscopic fibroid resection
- Endometrial ablation
- transcervical resection of endometrium
- myomectomy by laprascope

3-major :

- hysterectomy (major symptoms /no response)
- Abdominal myomectomy
- Uterine artery embolization

Amenorrhea

- **Primary** :-(0.3%)
  - 14yo without secondary sexual characteristics
  - 16yo with secondary sexual characteristics

- **Secondary** :-(3%)
  - For 3 months if regular
  - For 6 months if irregular

- **Risk factors** : runners (50%),ballet dancer(44%)

- Oligo : >35 days, infrequent periods

- Puberty : thelarche>pubarche>menarche

- <40 yo premature menopause
- 40-47 yo early menopause
- 47-52 menopause

- **Primary amenorrhea :**

A-with secondary sexual characteristics :

1-Constitutional delay/Pregnancy (child abuse):

- Normal anatomiacl and endocrine results
- FSH+, long statur
- Delayed bone age(wrist joint xray)
- Immature pulsatile relase of GnRH
- Spontaneous maturation

2-genitourinary malformation :

- Imporforated hymen
  - Asymptomatic
  - Collection of blood within vagina and uterus > abdominal /back pain

  Rx : cruciate ligament on hymen
  Followed by IVP (r/o renal track abnormalities)

- uterovaginal agenesis MRKH syndrome
  - Normal ovarian and hormones level but no uterus and upper Vagina
  - 46XX, associated with skeletal, renal, middle ear abnormalities

  Rx : vaginal creation, uterine transplant

3- androgen insensitivity : 46XY

- No sexual hair, but normal female looking external genitalia
- Male range testosterone level > resistance
- Testes (present)
- No uterus or vagina (upper)

Rx : should be removed (trauma, torsion, dysgermynoma(cancer))
HRT

B-without secondary sexual characteristics :

1-hypothalamic dysfunction : decrease GnRH :

- **Causes** :
  - Chronic illnesses, stress, anorexia nervosa (may cause primary, secondary)
  - BMI<17
- Increase risk of osteoporosis (decrease estradiol)
- Rx by psychotherapy, increase weight

2-gonadotropin deficiency (decrease FSH, LH) :

- Kallman syndrome :
  - Normal height
  - Infentile genitalia
  - Anosmia
  - Rx by HRT

3-hypothyrodism, hypopitutarism, hyperprolactinemia
4-gonadal failure :

- Turner syndrome (45XO,or non-functional XY)
  - ✓ Mosiac, classical
  - ✓ Short statur
  - ✓ Webed neck
  - ✓ Wide space nipples
  - ✓ Shield chest
  - ✓ Short metacarpal
  - ✓ Wide carrying angle
  - ✓ Coaractation of aort
  - ✓ Renal abnormalities
  - ✓ No gonads
  - ✓ Increase LH, FSH

- **Rx** by HRT

❖ Secondary amenorrhea :

A-with androgenic features :

- PCOS increase LH
- CAH
- Tumor (ovarian or adrenal)
- Cushing

B-without androgenic features :

- physiological :lactation, pregnancy, menopause
- hypothalamic causes (stress, weight, illness)
- pituitary : hyperprolactinemia, Sheehan syndrome
- premature ovarian failure (before 40yo)

- Causes :
  A. auto antibodies, test for thyroid, parathyroid, adrenal antibodies
  B. radiotherapy, chemotherapy, surgeries
  C. Chromosmal (turner mosiac, androgen insensitivity)
  ☒ No need for ovarian biobsy *

- <40 y premature menopause
- 40-47 early menopause
- 47-52 menopause
- >52 late menopause

- structural : asher man syndrome
- Intrauterine adhesion due to over currettage
- Dx by hysteroscopy
- Rx by :
- breaking down the adhesion by hysteroscope
- IUCD or Foley catheter
- Estradiol + Progesterone (Endometrial growth)

- Iatrogenic (drugs) :
  A. Depot medroxy progesterone acetate
     No FSH, LH > no ovulation after one year of use (80%)
  B. POP
  C. Mirena

❖ Approach :

1-rule out pregnancy

2-lactation

3-premature ovarian failure (hot flashes, radiation, surgery)

4-OCP

5-PPH > Sheehan syndrome

6-PCOS(androgenic features)

7-PLC (visual field defect, Galactorhea)

❖ Hormon profile:

1-FSH : 2nd day of menses

- Normal up to 20
- Increased in premature ovarian failure
- Decreased in hypothalamic, pituitary disorder

o Because she is in amenorrhea give Progesterone then stop it, to have withdrawal bleeding

2-LH : 21 day of menses

- Normal or increase in PCOS (androgenic effect)

4-thyroid

5-prolactin

6-Estradiol, Progesterone

❖ AMH : ovarian reserve

- In PCOS : increase with induction may lead to hyperstimulation
- If we give injection >> decrease the dose

Infertility / amenorrhea

- **Turner syndrome Investigation :**
  - Chromosmal studies
  - Hormonal assay LH, FSH
  - Us, laprascopy

- **Imporforated hymen** : cryptomenorrhea

- **Primary infertility :**
  - Semen
  - Ovulation
  - Hormonal assay : TFT, PRL, FSH, LH, 21 Progesterone
  - US, HSG, hysteroscopy, laprascopy

- **Infertility :**
  - Age
  - 1ry vs 2ry
  - Hx of pregnancy
  - Marriage
  - Menstrual hx : regulatury, Frequency, duration, dysmenorrhea, menarche
  - Intercourse, dysparunia, PCB
  - Vaginal discharge, fever
  - Surgery
  - Drug (ocp)
  - IUCD
  - If irregular cycle > TFT, PRL, pcos

- **Amenorrhea:**
  - Age
  - Primary : sexual characterestic development
  - Family history
  - Secondary :pregnancy symptoms (N/V, LMP, Breast changes)
  - Lactation
  - Menopause :hot flashes, vaginal dryness
  - Thyroid : heat/cold intolerance
  - PRL:Galactorhea, headache, blurred vision
  - Pcos : hirsutism, acne, weight gain/loss
  - Hypothalamus : stress, exercise
  - Sheehan syndrome : PPH
  - IUCD, OCP
  - Surgery, D and C
  - Infection, discharge
  - Family history of early menopause or previous similar conditions

- Examination : Height, weight, pelvic examination, breast, thyroid, virilization symptoms
- Investigation :
  - Semen
  - HCG
  - PRL
  - FSH
  - LH
  - TFT
  - US
  - HSG
  - Laprascopy
  - Hysteroscopy
  - Brain MRI for pituitary adenoma (prolactinoma)

Physiology of pregnancy

- Nutritional demand increases (300k cal /d)>increase appetite due to increase HCG/estrogen

- Endocrine :
  - Placenta :
    - HCG
    - Human placental lactogen = growth hormon increase in multiple
    - CRH
    - GnRH
    - GH
    - Oxytocin /prolactin

  - **HCG** : peak at 10 weeks
    - Increase in twin, molar, choriocarcinoma
    - Decrease in ectopic, miscarriage (missed, threatened)

  - Pituitary :increase vascularity, increase in size 100-130% (Sheehan syndrome)

  - Thyroid :15% enlarged
    - (HCG ~TSH)
    - Decrease TSH in first trimester
    - Decrease iodine
    - Decrease cross placenta

  - Adrenal : increase ACTH + cortisone

- Genital :
  - Uterus : increase in size (hypertrophy of the fundus (estrogen, progesterone))
    Pear shaped > more globular > spherical (12 weeks) >oviod (end of 12 weeks) >dextroverted (left rectosegomid)

  - Cervix : swolw, softer, bluish (increase vascularity)
    Ectropion
    Collagen soften at the end of the pregnancy (PG, collagenate from VOBC)

  - Ovary : Not work
    Corpus luteum until 6 weeks

  - Vagina, perineum :
    - Increase vascularity (hyperemia)
    - Increase thickness of mucus
    - Increase smooth muscle
    - Change PH 3.5-6

❖ Breast

- Increase size, tenderness
- Arreola :deeply pigmented
- Nipple :hypertrophic sebaceous gland
- Histology : increase fat, glandular alveoli > Progesterone, HPL
- Increase glandular duct > estrogen
- Rarely gynocomastia

❖ Cardiovascular :

- Plasma 50%,RBC 30%> hemodilution, increase WBC, mild thrombocytopenia
- Increase CO, stroke volume, mild hypertrophy of the heart
- Heart rate (15-20), third heart sound, left axis deviation on ECG (shifted to the left and upward)
- Vasodilation > decrease BP
- Increase DVT : fibrinogen, clotting factor (7,8,10,12)
- Decrease fibeinolysis
- Decrease PTT
- Normal PT ***

❖ Respiratory :

- Increase pulmonary blood flow
- Increase tidal volume > decrease CO_2
- Decrease FRC > increase O_2
- Decrease vital capacity (lung compromised by uterus) > increase 2,3 DPG > fetal HB not bind it so shifting the curve to the left

❖ Progesterone :

- bronchodilator (decrease asthma)
- Increase sensitivity to CO_2 by center

❖ Skin/integmatery changes :

- Hyperpigmentation
- Stria gravidarum (pink)
- Linea alpa
- Chadwick : bluish discoloration (vagina, cervix)
- Spider nevi
- Palmar erythema
- Mild hirsutism
- Anagen phase of hair > growth (postpartum telogen phase >loss)

❖ Eye :

- Corneal changes
- Decrease IOP > glaucoma
- Decrease visual field (mild)

❖ Skeletal :

- Ca: decrease albumin > decrease total calcium and normal ionized
- Increase vitamin D > absorption of calcium then actively transported across the placenta
- Increase calcitonin
- Normal PTH
- Increase lordosis (symphesis pubuc, SIJ loosen due to relaxation)

❖ GIT :

- Mouth :
  - decrease PH > tooth decay
  - Decrease vitamin c > gum bleeding, tenderness
- Gum :
  - hypertrophic, hyperemic (estrogen)
  - Pyogenic granuloma
  - Epulis gravidarum
- Esophagus : decrease motility
- Stomach :
  - Increase gastrin, volume, decrease PH
  - Increase transient time
  - Decrease PUD (increased mucus, PG)
- Cardiac sphincter relaxation > GERD
- Large, small bowel :
  - Increase transient time, absorption
  - Decrease motility
- Increase Portal hypertension : varicose
- gallstones :
  - decrease emptying
  - Increase saturation by cholesterol > gallstones > bile stasis
- Liver :
  - decrease albumin
  - AP increase
- Renal :
  - Hypertrophy resolved 3 months after delivery
  - GFR 20 w

❖ Metabolic :

- Weight gain 12.5 kg
- Protien 1kg :(50% placenta, fetus / 50% mother uterus, breast)
- Increase fat
- Water retention (2 L)
- Hyponatremia