Obstetrics

Final year case templates

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Contents

Abnormal presentation

Breech presentation

Brow presentation

Face presentation

Shoulder presentation

Cord presentation

History

Presenting complaint

- Breach presentation can be admitted for ECV around 35 – 37 weeks of POA.
- Most mal-presentations are diagnosed at the labour.
- APH due to placenta previa

HPC

- POA
- EDD
- Parity (high parity →Lax uterus →increased space for fetal movements)
- Dating scan done
  - Single or multiple fetuses
- Anomaly scan
  - Fetal anomalies (anencephaly, hydrocephalus)
  - Placental location
- Growth scan
  - IUGR
  - Polyhydramnios, oligohydramnios
- History of antepartum haemorrhage
- Maternal problems (Anaemia, GDM, PIH)
- Fetal wellbeing (fetal movements)

Past Obs . Hx

- Children –age, mode of delivery, complications at labour,
- Past history of abnormal presentation
- Past history of multiple pregnancies
- Any abnormal babies
- Previous pelvic assessment (unfavorable for NVD)

Past Gyn Hx

- Uterine anomalies (septum, bicornuate uterus)
- Fibroid uterus
- Uterine surgery

PMHx

- HT, DM, epilepsy, heart diseases
- Allergies

Social Hx

- Occupation
- Family support

Examination

- Height
- Weight
- Abdominal examination

Breech presentation	• Head (round ballotable mass) is in the upper pole • Soft, broad irregular mass (breech)is in the lower pole • Back is on one side and limbs are on the other side. • Usually not engaged at term
Face presentation (mento-anterior)	• Not usually detected abdominally • Prominent occiput felt at the same side of the back. • Limbs are felt on the opposite side • FHS is best heard through the fetal chest on the same side as the limbs. • VE : palpation of the nose, mouth,malar eminences, supra-orbital ridges on VE
Face presentation (mento-posterior)	• Back is felt to the front • Groove between the head and the back is prominent • FHS is difficult to hear because the fetal chest is in contact with the maternal spine
Brow presentation	• Head feels very big and not engaged • Anterior fontenelle and supra-orbital ridges are palpable.
Shoulder presentation	• Usually in transverse lie • Uterus is broad and asymetrical. • SFH is less than expected for the period of gestation • Upper pole : not palpable • Lower pole : uterus is empty • Lateral : breech is on one side and head is on the other side • FHS : Heard clearly much below the umbilicus in dorso anterior position • Late pregnancy : presenting part maynot be felt • Labour : soft irregular mass(palpation of acromian process, scapula, clavicle, axilla • Occationally the arm can be prolapsed
Cord presentation	• Feel the pulsation of the cord through the intact membranes.

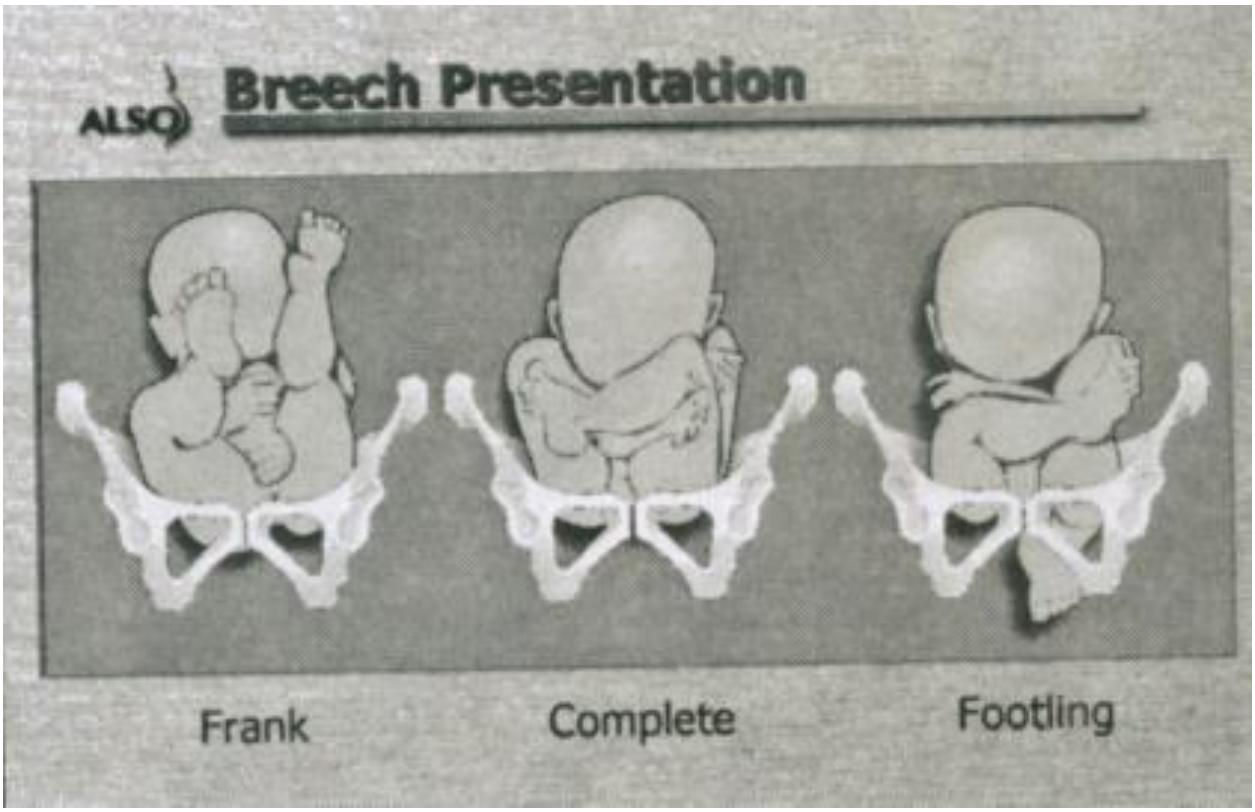
Discussion

Investigations

USS abdomen

- confirm the clinical diagnosis
- Can detect congenital abnormalities

What are the types of breech presentation?



Complete breech

- Both legs are fully flexed at hips and knees

Frank breech

- Extended breech
- Lower limbs are flexed at hips and extended at knees.

Footling breech

- Extended hips and extended knees.
- At risk of cord & foot prolapse.

What are the risk factors for breech presentation?

- Fetal abnormalities : prematurity, fetal anomalies (anencephaly, hydrocephalus)
- Uterine abnormalities : uterine septum, bicornuate uterus, fibroids, placenta previa
- Polyhydramnios
- Oligohydramnios
- Previous breech

Female comes to the ward with breech presentation at 30 weeks of POA .How do you manage this patient?

- Exclude low lying fibroids, placenta previa, and above risk factors
- Reassure the patient.

Again she comes at 34 wks of POA, still in breech presentation. How do you manage?

- Wait until term 36-37 weeks of POA.
- Then the breech is diagnosed.

How will you manage breech presentation at term (36 weeks)?

There are three management options

1) Assisted vaginal breech delivery
2) ECV
3) EL-LSCS

❖ **If there are no contraindications, every woman should undergo ECV.**

Contraindications for ECV

- Instances where vaginal delivery is contraindicated (major degree placenta previa, inadequate pelvis)
- Multiple pregnancy
- Previous LSCS, scarred uterus, myomectomy
- IUGR
- Polyhydramnios
- Active PPH

Timing of ECV

1) **Early ECV**
   - Easy to perform
   - Can rarely turn back
   - Risk of premature delivery
2) **Late ECV**
   - Difficult to perform
   - Usually the baby can't turn back to breech
   - No risk of premature delivery

- **So the ECV is done at**
  -In primi → 36+ weeks
  -In multi → 37+ weeks

Complications of ECV

- Fetal bradycardia
- Cord accidents
- Feto-maternal haemorrhages

Procedure of ECV

- Admit the patient.
- Do CTG before procedure
- Keep fasting for 6 hrs
- Give tocolytics (salbutamol, terbutaline)
- Do ECV under USS guidance
- After ECV repeat CTG
- If Rh –ve → Give Anti D Prophylaxis
- **IF ECV is successful, further Mx is done as a singleton pregnancy in vertex presentation**.

After 37 weeks – 2 options

1) EL –LSCS

2) Assisted vaginal breech delivery

To decide on the mode of delivery in the above situations consider:

Maternal factors

- Previous vaginal deliveries are favourable. Especially if previous babies are bigger than the current baby.
- If the time of delivery is decided. Eg: DM, HT. As breech delivery can't be induced LSCS has to be done.
- Adequacy of the pelvis.
- Placenta previa
- Fibroids.

Fetal factors

- Type of breech (extended and flexed breech can go into labour)
- Estimated fetal weight > 3.5 Kg
- IUGR < 2.5Kg (small baby can come through partially dilated cervix but head can entrap)
- Prematurity
- Congenital malformations
- Fetal attitude (extended head "star gaze appearance" → breech delivery is contraindicated)
- **EL-LSCS is done at 39 weeks of POA**

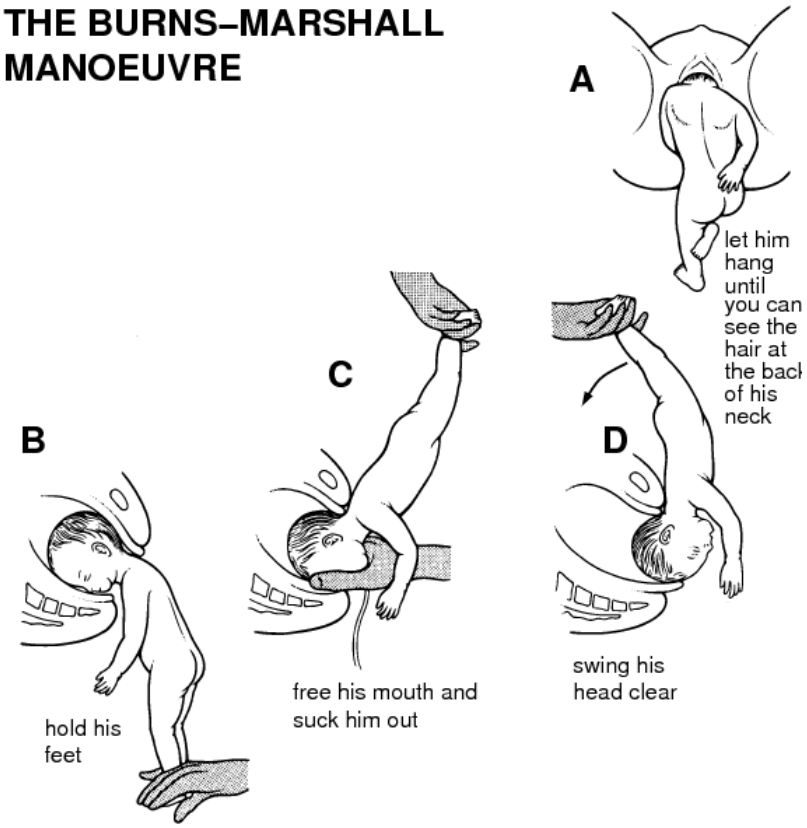
Assisted vaginal breech delivery

- Await spontaneous onset of labour
- Once she goes into labour
  - Send her to LR
  - Maintain partogram
  - Insert Iv cannula and send blood for DT
  - Keep patient fasting
  - Give adequate pain relief
  - Inform the seniors that there is a breech in labour
  - Inform PHO
- Avoid doing ARM
- Wait for the progress of labour to occur
  - The main problem is about predicting CPD
  - If there's lack of progress in the 1st stage there can be breech pelvic disproportion leading to CPD
  - So augmentation is not done.
- If at any time membranes are ruptured, do a vaginal examination and exclude cord prolapse.
- If the cervix is fully dilated and breech is at the ischial spine level for more than 1 hr, there may be breech pelvic disproportion. So Em-LSCS is done.
- When the breech is climbing (At the level of the introitus)
  - Get her to the edge of the bed
  - Lithotomy position
  - Clean and drape
  - When the rectum is visible give episiotomy.
- Always try to maintain sacro-anterior position
- Delivery of the leg
  - Flexed legs (come automatically)
  - Extended legs " **Pinnard maneuver"**
    - ✓ **Apply pressure over the popliteal fossa and flex the legs. Then legs are taken out.**

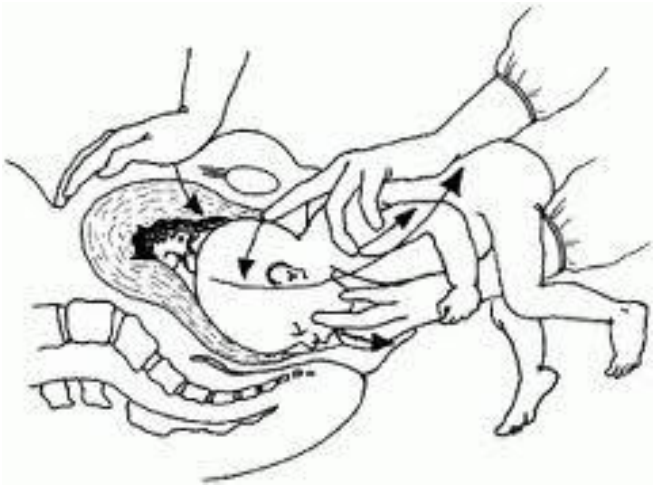
Figure 31.52 Assisting delivery of extended leg by pressure on popliteal fossa.

- Bring a loop of cord into the vagina
- Wrap a clean cloth around the exposed part of the baby & turn off the fans & air conditioners.
- Delivery of the shoulders. (think of delivering the shoulders when we can see the inferior borders of the scapulae)
    - ✓ When the arms are extended→**loveset maneuver**
    - ✓ When the arms are flexed→Sweep the arms over the chest
- Loveset maneuver
    - Hold the baby from its pelvis by keeping the two thumbs over the sacral dimples. In the resting position the posterior shoulder is at a lower level than the anterior shoulder.
    - Turn the baby 180^0 maintaining the sacro-anterior position.
    - Now the posterior shoulder has come anteriorly below the pubic symphysis.
    - Again turn the baby 180^0 maintaining the sacro-anterior position.
    - Deliver both shoulders.

- Once you see the Nape of the neck → deliver the Head
    - ✓ There are three methods
        1) Burn-Marshall maneuver
        2) Mauriceau-smellie Veit maneuver
        3) Forceps delivery
- **Burn-Marshall maneouver**
    - Hold the baby from the legs.
    - Summersalt the baby onto the mother's abdomen while someone is supporting the perineum
    - This is not done usually.



- **Mauriceau-smellie Veit maneouver**
  - Use the left hand and rest the baby on the left hand .
  - Flex the head by applying the firm pressure on the malar eminences.
  - Apply traction over the shoulders while pressing the head down by the right hand.



- **Forceps delivery**
  - Safest.
  - Long shank forceps. (Simpson's)
  - This prevents tentorial tear which occur due to sudden decompression and compression of the head.
- Hand over the baby to PHO.
- Manage the 3rd stage as singleton pregnancy in vertex presentation.
  - Give Ergometrine 0.5mg once the baby is completely outside.

Increased morbidity and mortality during the breech delivery is due to:

- Risk of prematurity
- Cord prolapse
- Head entrapment
- Congenital malformations
- Tentorial tears

What is face presentation?

The head is hyper-extended so the occiput is in contact with fetal back and the face is the presenting part.

Fetal skull diameter is submentobregmatic (9.5cm) diameter.

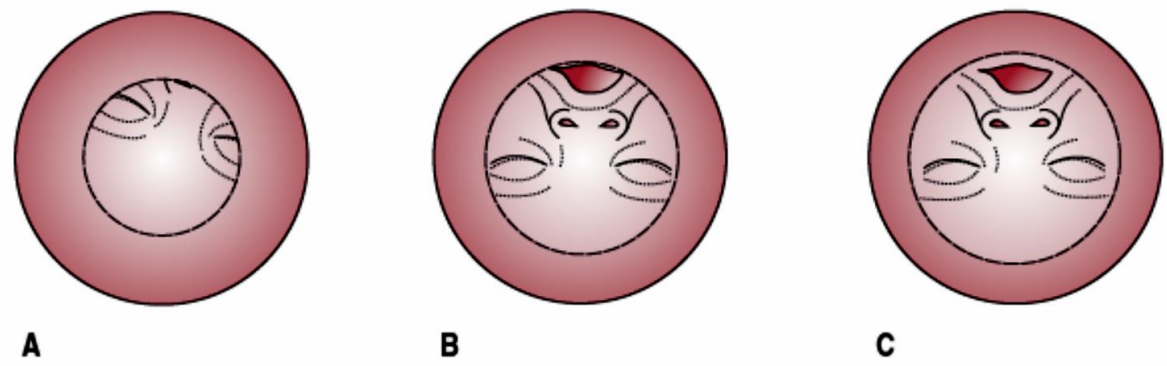


Figure 31.25 Vaginal touch pictures of left mentoanterior position: (A) The mentum is felt to left and anteriorly. Orbital ridges in left oblique diameter of the pelvis. (B) Following increased extension of the head, the mouth can be felt. (C) The face has rotated 1/8 of a circle forwards. Orbital ridges in transverse diameter of the pelvis. Position direct mentoanterior.

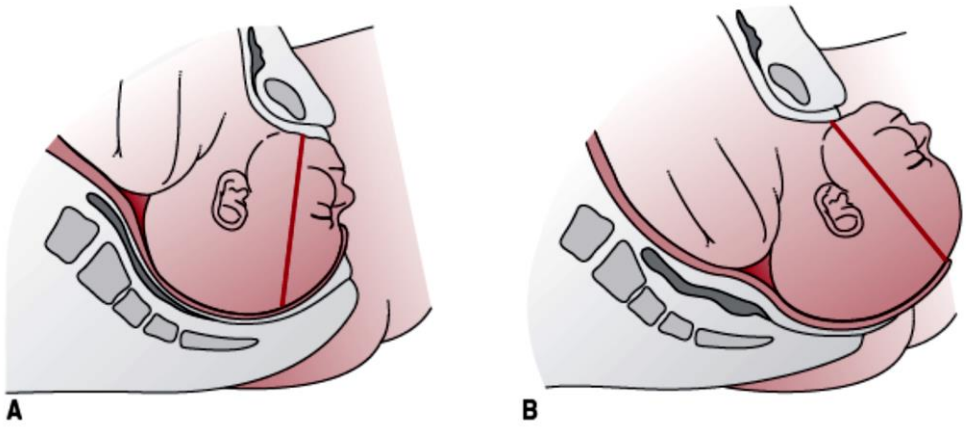


Figure 31.27 Birth of head in mentoanterior position: (A) The chin escapes under symphysis pubis. Sub-mentobregmatic diameter at outlet. (B) The head is born by a movement of flexion.

What are the causes for face presentation?

Fetal

- Large fetus
- Enlargement of the fetal neck – goiter, cycstic hygroma
- Numerous coils of cord around the neck
- Anencephaly

Maternal

- Contracted pelvis
- Pendulous abdomen of grand multipara

What is the management of face presentation?

- Assess pelvic adequacy, size of the baby, and associated complicating factors such as elderly primi, pre-eclampsia.
- Assess the position of the mentum
- Indications for the EL-LSCS
    - Contracted pelvis
    - Large baby
    - Associated complicating factors
- **Vaginal delivery**

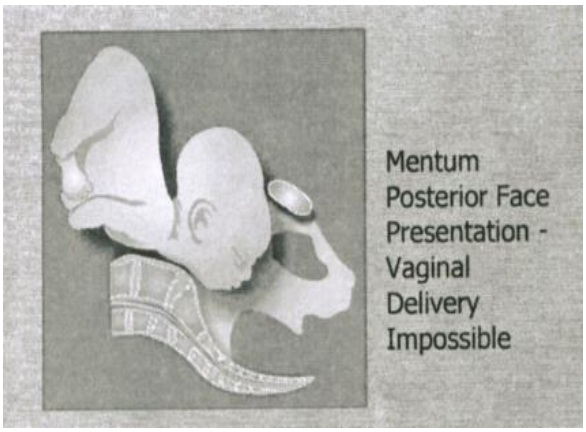
Mento –anterior

- **1st stage:** As usual
- **2nd stage:** wait for spontaneous delivery
  Perineum is supported by mediolateral episiotomy

Mento-posterior

- **2nd stage:** If anterior rotation of the chin take place can go into spontaneous or forceps delivery

  In incomplete or mal-rotation early decision of the mode of delivery should be taken
  - ✓ EM-LSCS
  - ✓ Manual rotation

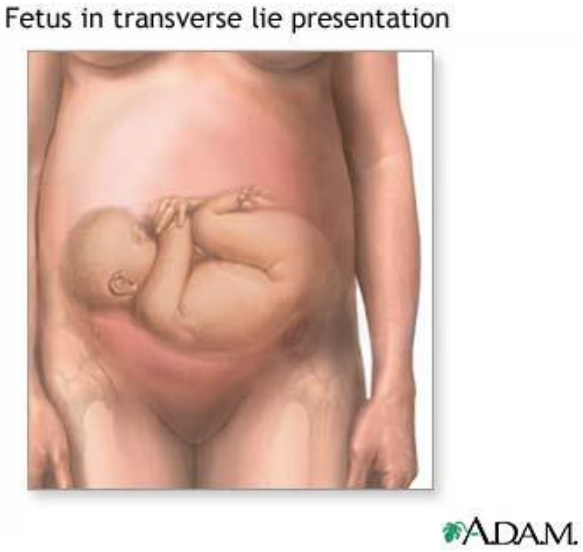


What are the complications of face presentation?

- Obstructed labour (as facial bones doesn't mould and in persistant mentoposterior position)
- Cord prolapse
- Facial bruising
- Cerebral haemorrhage(lack of moulding of the facial bones can lead to intracranial haemorrhage caused by excessive compression of the fetal skull)
- Maternal trauma

What is the management of shoulder presentation?

- ECV is attempted in women with POA >35 weeks before the onset of labour and rupture of membranes
- If it failed admit at 37 weeks (due to high risk of cord prolapse)
- If in labour do LSCS.



What is brow presentation?

- The portion of fetal head between the orbital ridge and the anterior fontanelle presents at the pelvic inlet.
- Presenting diameter is occipito-mental (13cm)

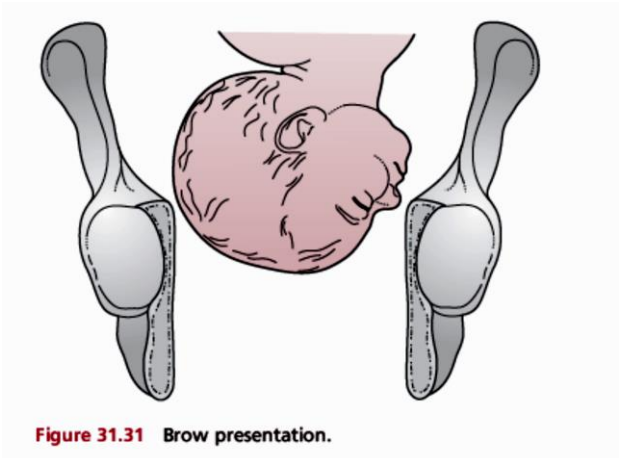


Figure 31.31 Brow presentation.

What is the management of brow presentation?

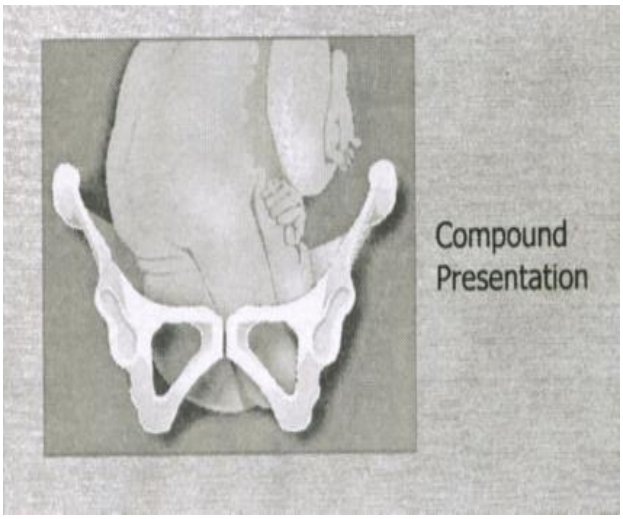
- Brow presentation is usually unstable will be converted either to a face or a vertex presentation
- In the absence of conversion caesarean delivery is required.

What is cord presentation?

- Loop of cord lies below the presenting part with intact membranes.
- LSCS is the best mode of delivery.

What is compound presentation?

- Usually a hand or occasionally a foot prolapse alongside the main presenting part which is usually the head.
- More commonly with premature infants.
- No intervention necessary as long as labour is progressing normally.



Anaemia in pregnancy

Mrs._____ , ____ year old, mother of ____ children with all children delivered by uncomplicated NVD or ___of children delivered by Em/ El LSCS , currently in her ____ pregnancy.

Presented with _____ at ____ POA.

1. Low Hb at booking visit
2. Symptoms of anaemia – SOB, palpitations, lethargy, malaise, dizziness, faintishness

History

HPC

Hx of chronic bleeding

- **Menorrhagia**
- **Haemarrhoids**
- **Per rectal bleeding**
- **Hook worm infestation – poor personal hygiene, low socio economic status, pica**
- **Peptic ulcer disease**

Reduced production of Hb

- **Inadequate intake of a balanced diet – iron containing and folate containing**
- **Reduced absorption – malabsorption syn. , chronic diarrhea**
- **PHx of a bleeding disorder –Thalassemia**
- **PHx of a bone marrow disorder – Leukemia, myelodysplasia**

Hx of increase loss of nutrients

- **Number of children**
- **Spacing between childbirths < 2 yrs**

LRMP

Date of LMP – whether certain about dates
Menses - regularity, duration, age at menarche
Whether LMP was similar to previous cycles
Married for __ yrs.
Whether used any hormonal contraceptives and contraceptive Hx

EDD

LMP + 7days + 9 months
Dates from the USS

Dx of the pregnancy

At which week of which month
At which POA
By urine hCG positivity / USS
Planned / accidental pregnancy
Pre conceptional folates
Rubella

T_1 (0-12 wks)

Booking visit

- When – Month & week
- At which POA
- Where
- Blood group and other Ix results (can check the maternal record)
    - **Hb at booking visit**
- **Folate supplements – how much, since when, compliance**
    - **Presence of any co-existing condition which requires a high dose of folate**
        - ✓ **Previous pregnancy with a neural tube defect**
        - ✓ **Intake of antiepileptic drugs**
        - ✓ **Intake of DMARDs (disease modifying anti-rheumatoid agents)**
        - ✓ **Intake of cytotoxic drugs**
        - ✓ **Preexisting type I or type II DM**
        - ✓ **Haemolytic diseases – Thalassemia, sickle cell anaemia**

Routine clinic follow up

Complications

- Bleeding PV – **Miscarriages**
- hyperemesis gravidarum
- Fever with rash
- Exposure to radiation, drugs

T_2 (13- 28 wks)

Tetanus toxoid

Antihelminthic treatment

Quickening –POA

Supplements – Iron, calcium**, folate, vit. C**

- **SE of nutritional supplements**
    - ✓ **Fe – nausea, vomiting, constipation**
- **Compliance**
- **Correct technique in taking Fe supplements**
    - ✓ **Whether at night with Vit. C**
    - ✓ **Whether plain tea is taken with or following the ingestion of the tablet – reduce absorption**

Complications

- **SFH < POA – serial measurements (IUGR)**
- **Hb level, whether anaemia was detected**
- **Whether treated for anaemia**
    - **Oral haemetenics**
    - **Parenteral iron – IM / IV**
    - **Vit. B_{12} injections**
- Bleeding PV - **Miscarriages**
- UTI
- Symptoms of GDM or PIH

T_3 (29- 37 weeks)

Complications/ Uncomplicated

- **Features of heart failure – B/L ankle oedema initially, later orthopnoea, PND**
- **Worsening of any preexisting heart disease**
- **Pre mature labour**
- Haemorrhoids
- Varicose veins
- Bleeding PV
- Vaginal discharge

Term (38- 42 wks)

Labour pain, lower back/ abdominal pain, show, dribbling

USS

- **Dating scan (from 9/52+ to 13/52+)**
  - **Whether a single preg / multiple preg.**
  - **Presence of fibroids**
- Anomally scan – (22/52 to 24/52)
- **Growth scan – 32/52 – For the presence of any IUGR**
  To position the lie, presentation & the placenta – 36/52 to 38/52

How the pt is feeling today

Past Obs. Hx

Grand multipara

Hx of hydrops fetalis, polyhydramnios, preterm delivery, perinatal deaths

Hx of severe pre- eclampsia

P 1 …..

Antenatal complications

NVD / LSCS – Indication

POA, male/ female, birth weight

Now age

Any maternal or neonatal complications following the delivery

Past Gyn. Hx

Hx of subfertility, assisted conception

Hx of fibroids / PID

PMHx

- ✓ **Haemolytic diseases (thalassemia, sickle cell anaemia), Malaria, SLE (As an autoimmune haemolytic anaemia can occur), Pernicious anaemia, leukemia, myelodysplastic syn.**
- ✓ **Preexisting heart disease**
- ✓ **Preexisting DM**

PSHx

Hx of GI (gastric, SI) Sx

DHx & AHx

Anti-coagulants

NSAIDs, steroids – peptic ulcer disease

Anti-epileptic drugs, DMARDs, cytotoxic drugs

FHx
Consanguinity, congenital anomalies, multiple preg., **DM**, HT……..
Haemolytic diseases, SLE

SHx
Dietary hx

- **Whether a normal healthy diet – any restrictions**
- **Food rich in iron – meat, fish, dark green leaves**
- **Food rich in folates (fresh fruits and vegetables)**
- **Whether a strict vegetarian**
- **Habit of taking tea/ coffee following meals**

Occupation & level of education
Husband – occupation, level of education, alcohol, smoking
Monthly income
Knowledge on family planning and spacing between children
Travel hx - Malaria endemic area
Personal hygiene
Family support and by whom other children are looked after
Closest hospital – distance, transport

Examination

Built – cachectic in haematological malignancy
Dyspnoeic and propped up – Heart failure
Pallor
Icterus – Haematological malignancy
Glossitis, angular stomatitis, koilonychias – Fe deficient anaemia
Dry skin, brittle hair, gum bleeding – Evidence of other nutritional def.
Echymosis, purpura, petechiae
Engorged neck veins
Ankle/ sacral oedema – Heart failure

CVS – Heart failure
Pulse – rapid, thread pulse
Low BP
Elevated JVP
Cardiomegaly
Gallop rhythm
Murmurs – flow murmur, preexisting murmur complicated with anaemia

Abdominal examination
SFH < POA (IUGR)

Hepatosplenomegaly – Haemolytic disease, haematological malignancy, malaria
Tender hepatomegaly – HF

RS
B/L end inspiratory fine basal crepitations

Investigations

FBC

- Hb
- PCV
- Red cell indices – MCV, MCH, MCHC

Blood picture

Serum ferritin

Stools – occult blood

Management

1) Pre pregnancy
   - ❖ Adequate dietary &/ or supplementary nutrients to replenish the stores
   - ❖ Advice on adequate spacing of children
   - ❖ Counsel on family planning

2) Antenatal
   - ❖ Hb check ups
   - ❖ If pt is having heart disease or multiple pregnancy – Hb levels should be assessed frequently
   - ❖ Routine antihelminthics – In T_2
   - ❖ Supplementation of Fe, vit. C, folate and multivitamin – routinely

Fe deficiency anaemia

Aims of Mx

I. Prevention of iron deficiency anaemia
II. Mx of already developed anaemia
III. Prevention of complications of anaemia

Prevention of iron deficiency anaemia

- Advice on adequate intake of meat, dark green leaves
- Advice on avoiding drinking tea/ coffee following meals

Mx of a pt in T_2 with mild Fe deficient anaemia

Dietary modifications

Oral haemetenics

- ✓ $FeSO_4$ – cheap [100mg – for prophylaxis, 200mg – for mild anaemia, elemental Fe = 60mg]
- ✓ Ferrous gluconate, fumarate, succinate – expensive

Mx of a pt in T_2 with severe iron deficient anaemia

Parenteral iron is indicated

- Iron sorbitol
  - IM EOD
  - Dose – depend on the severity
  - AE – Painful injection

- Iron dextran
    - IV total dose infusion
    - Total dose = (weight (lbs) x Hb deficiency% x 0.3) + allowance for pregnancy
    - Should be diluted in N. Saline or 5% dextrose
    - Infusion started slowly (10 drops/ min.)
    - Increase the rate after watching for ½ hour for any reaction
    - AE – allergic reactions

The response is observed with an increase in retic. count in blood picture

Mx of a pt with folate deficiency
Prophylactic dose in a normal female – 400 μg/ day orally
Prophylactic dose when there is an increased requirement – 5mg/ day orally
In folate deficient anaemia – 5mg/day orally

Mx of a pt with Vit. B_{12} deficient anaemia
Vit. B_{12} IM injections 1mg weekly

Mx of a pt with severe anaemia in late pregnancy
Blood transfusion – May precipitate heart failure
Partial exchange transfusion
Frusemide 40mg – 1/2hr prior to the transfusion

Anaemia 2^{ry} to a haemoglobinopathy
Combined care is given by Obstetrician, Consultant physician and Consultant haematologist**.**
The partner should also be screened
Hypoxia, dehydration and infection should be avoided with aggressive treatment.

3) During labour
   Vaginal delivery
   Normal Mx of labour
   Epidural analgesia is adviced to reduce the stress of labour
   Reservation of 2 – 3 pints of cross matched blood
   Dehydration, cooling, infection & hypoxia during labour should be avoided
   Continuous foetal monitoring is necessary
   Active Mx of the 3rd stage of labour
    - Due to poor prognosis in PPH
4) Peuperium
   If any infection – Rx vigorously
    - Due to the high risk of puerperal sepsis

   Advice and educate on family planning and about spacing in between pregnancies
   Follow up until stores are replenished (may be for 1 – 2 yrs)

Discussion

1. **What is anaemia in pregnancy**
   Hb concentration of <11g/dL during pregnancy

   Mild anaemia → 9 -10g / dL
   Moderate anaemia → 7- 9 g/ dL
   Severe anaemia → < 7 g/ dL

2. Normal metabolism of iron

Total Fe content in the body → In Hb – 70%
→ In tissues – 30%

Iron absorption is regulated;

- ✓ By the amount of Fe stores
- ✓ Rate of erythropoiesis

Site of Fe absorption – Duodenum

Factors increasing iron absorption – vitamin C

Factors inhibiting Fe absorption – Phytates, phosphates, tannin

3. **Physiological changes in pregnancy**

Red cell count
Hb concentration
Haematocrit
Plasma folate concentration
} Reduces

Human placental lactogen (hPL)

- ✓ Stimulate erythropoietin secretion
- ✓ Causes bone marrow hyperplasia
- ✓ Linear gradual increase in red cell mass (with a peak of 25% increase in 32- 34 weeks.

Plasma volume – Increase in 40%

Rate of absorption (Fe, folate and Vit. B12) – Increases

4. Why does the Fe requirement increase in pregnancy

- Foetus totally depend on the maternal circulation for its Fe need
- Rate of red cell production increases
- Storage of iron for future lactation
- Preparation of the body for the loss of blood during the delivery

5. Pathophysiology for anaemia in pregnancy

Dilutional anaemia – *Normocytic normochromic anaemia*
Fe deficient anemia - *Microcytic hyochromic anaemia*
Folate deficient anaemia – *Megaloblastic anaemia*
Vit. B12 def. anaemia – Rare, *Megaloblastic anaemia*

6. Effects of anaemia in pregnancy

- Foetal complications
  - Increase the risk of miscarriages
  - Increase risk of premature labour
  - Increase risk of IUGR

- Maternal
    - Lethargy & general ill health
    - Dyspnoea and heart failure
    - Worsening of preexisting heart disease
    - Poor prognosis with PPH
    - Increase risk of puerperal sepsis

Elderly Primi

Elderly primi ≥ 35yr,in her 1st pregnancy

History

- Duration of marriage
- Hx of subfertility, undergo any fertility tx, is this pregnancy as a result of it?
- Antenatal hx
    - Hyperemesis gravidarum
    - Early pregnancy vaginal bleeding
- p.gyn hx –fibroids (Menorrhagia)
- Any other gyn problem
- Hx of chronic disease - DM, HT, collagen vascular disease
- Is on any drug treatment - anti epileptic
- Pre pregnancy folic acid use

Examnation

All 4 systems-co morbidities'

- heart disease
- Hypertension
- Anemia
- DM
- Abdomen- Masses(fibroids), location of fibroid,
  SFH, Polyhydramnios
  Lie, position
- Breast-suitability for breast feeding

Management

Antenatal -

- Ask to make booking visit as soon as possible
- Ix for anemia, chronic HT,DM fibroids and other gyn problems
- Downs Xn (β hcg, estradiol, α feto proten)
- OGTT at 28w POA as >35 yr is a risk factor for DM/GDM
- Dating USS(8-12w POA) , fetal anomaly
- Counseling about possible complications-congenital abnormality -Downs Xn
- Signs and symptoms about placental abruption (PV bleed ,lower abdominal pain)
- Anomaly scan at 20 weeks of POA - Neural tube defect-Downs Xn
- Regular ANC follow up, look for complications PIH,GDM
- If initial OGTT is negative-repeat OGTT at 24-28w POA
- Ask to get admit at term

Labour - Ask to admit for delivery at38w POA

- Abdominal examination –fetal size, liquor amount, presentation of fetus
- Asses pelvis for vaginal delivery (pelvimetry)
- Monitor fetal well being - FHS, FMC, CTG
- If any indication for LSCS such as PIH, GDM, previous uterine Sx - Elective LSCS at 38w
- If plan to Vaginal delivery - Await spontaneous onset of labour, but don't continue >41w
- Prepare as for emergency LSCS - fasting, premedication, inform anesthetist
- Induction of labour with ARM, Oxytocin if poor progression of labour
- Monitor labour with partogram
- Pain relief –epidural,
- Reassurance

  } To reduce maternal anxiety
- Inform PHO to attend to delivery
- If fetal or maternal indication do emergency LSCS
- Adequate mediolateral episiotomy
- If prolong 2nd stage of labour - assisted vaginal delivery with forceps, vacuum
- Actively manage 3rd stage of labour, look for complications - 1ry PPH, retained placenta
- Carefully examine baby for congenital anomalies
- Counsel to complete family as soon as possible, if have completed family ask to use contraceptive method

Discussion-

1. What are the problems associated with elderly primi?

Increased Risk of,

- Fetal congenital abnormalities–Downs Xn
- Medical disorders increase with age which can complicated with pregnancy-DM,HT,anaemia
- Pregnancy related complications-hyperemesis, GDM, PIH, collagen vascular disease, malposition, mal presentation, polyhydramnios.
- Benign uterine tumors (fibroids) –abnormal lie, miscarriage, sub fertility
- Uterus and other organs may not fully functioning-dysfunctional uterine bleeding
- Maternal anxiety
- Problems with breast feeding, take care of child (due to illnesses)
- Problems with labour-premature labour, prolonged labor, poor response to induction, uterine inertia, obstructed labour, non engagement of the head malposition (occipito posterior), impaired joint movements, increase risk of LSCS and assisted vaginal delivery

2. What are the methods available to detect downs fetus?

- Antenatal USS- Increased nuchal translucency
- Amniocentesis-
  - B HCG level - Increase
  - Estradiol - Increase
  - α feto protein- Reduce
- Amniocentesis chorionic villous sampling

3. what are groups of elderly primi ?

one with high fecundity-a women married late but conceives soon after.

One with low fecundity-married early ,conceives long after.

Prognosticaly more unfavorable in obstetrical terms

Chances of future pregnancies are remote.

Complications

During pregnancy-increase incidence of

I. Abortion
II. Pre-eclampsia –because of increase association with HT
III. Abrupto placentae-because of pre –eclampsia and folic acid deficiency
IV. Medical conditions associate with increase age-HT,DM,organic heart lesions
V. Tendency of post maturity
VI. IUGR

During labour – Increase incidence of

VII. Premature labour
VIII. Prolong labour –due to ,
    a. uterine inertia caused by anxiety or malposition (occipito –posterior)
    b. Impaired joint mobility
    c. Inelasticity of soft tissue of birth cannal
IX. Maternal and fetal distress appears early
X. Increased operative interference
XI. Retained placenta-uterine atony,fibroids

Puerperium-

XII. increase morbidity due to operative interferance
XIII. Failing lactation

Gestational Diabetes Mellitus

History

Introduction

Mrs. ……, …… year old, mother of …… children, in her …..nd pregnancy, presented with raised blood sugar level at …….. weeks of period of amenorrhoea. She's a house wife who lives at …….

- ***LRMP(Accurate dating is important as delivery done early as 38 wks)***
  - Date
  - Whether she is sure about the date
  - Regularity or an irregularity
  - Is it similar to previous period
  - On any hormonal contraceptives
  - Breast feeding

Other Presentations

- Screening – High PPBS
- SFH>Dates
- Reduce/loss of fetal movements
- High BP/Pre-eclampsia
- Confinement

- Expected date of delivery

- ***If she is a chronic diabetic,***
  - ***When she was diagnosed?***
  - ***By whom?***
  - ***Initial FBS levels***
  - ***Regular follow up***
  - ***Good control***
    - ***Follow up investigations***
    - ***Complications (Diabetic retinopathy is a contraindication for pregnancy)***
    - ***Last HbA_1C level (If <7%, risk of congenital abnormalities are same as non diabetic pregnancy. If >7% there's a 25% higher risk of congenital abnormalities than non diabetic pregnancy) → risk of neural tube defects, congenital heart defects & other spinal anomalies including caudal regression syndrome (10 teachers pg.186)***
    - ***Dietary control/Life style modifications***
    - ***Anti diabetic medications she is on***
  - ***Presence of other associated diseases : Hypertension/IHD***

- H_x of present pregnancy

  T_1(0-12 wks)
  - Is it a planned pregnancy
  - Pre-pregnancy folic acid taken /not (will continue up to 5 months after delivery)
  - Rubella vaccination taken or not
  - when she was concerned about the pregnancy
  - Date of confirmation of preg. & how
  - Booking visit (At what POA) – in SL <8wks

- Tests done : Urine – ***Sugar, Albumin***
  Blood – Group/DT, Hb, VDRL, ***PPBS(Screening +ve if >140mg/dl)***
  BP (They are at risk of PIH)
- Specialized care : on which POA : In an uncomplicated pregnancy – 20wks(Anomaly scan), 32wks(Growth scan), 38wks(To confirm the presenting part)
- Complications :
  - Hyperemesis gravidarum
  - ***Bleeding PV (Risk of miscarriage)***
  - ***UTI, RTI, Wound infection, Candidiasis (They are at risk of infection)***
  - Drugs taken
- Ultra sound scans done (Dating scan 11 -13wks) → Measure crown-rump length
  - ✓ To confirm EDD (Calculated date taken if within one week of scan date)
  - ✓ Detect congenital anomalies(Anencephaly, Spina-bifida)
  - ✓ Chorionicity if twin pregnancy
  - ✓ Identify maternal gynaecological abnormalities(Ovarian cysts, Fibroids)
  - ✓ Identify the site of the fetus in uterus (Fundal is normal)

T_2 (12-28 wks)

- Regular antenatal visits, Quickening, Tetanus, Complications
- ***PPBS(after 28 wks)***
- ***Anomaly scan*** **(18-22wks)** ***(They are more prone to congenital anomalies)***
  - ✓ To identify placentation (Low lying placenta : <28wks → Should undergo repeat USS at 28 weeks → If still low lying → Placenta praevia
- $FeSO_4$, Vit C (Given at night after meals from T_2 to 6 months after delivery)
- Calcium lactate and Folic acid (Given in mornings from T_2 to 6 months after delivery)
- ***Infections***
- ***Detection of GDM/PIH***

T_3(28 wks onwards)

- ***PV bleeding, GDM, HT, Antepartum haemorrhage, Growth retardation***
- ***Weight gain (Macrosomic babies)***
- ***Fetal movements***
- Growth scan (after 28 wks…. In case of growth problem 2weekly repeat scans done)
  - ✓ BPD, HC, FL, AC measured. To identify IUGR compare HC & AC
  - ✓ ***Detection of fetal macrosomia***

- ***Management up to now***
    - ***Screening tests done and results***
        - ***PPBS (best) - >140 mg/dl +ve***
        - ***Glucose challenge test - >140 mg/dl +ve***
    - ***Diagnostic tests***
        - ***OGTT/75g glucose tolerance test (Fasting value >95mg/dl +ve, 2 hr glucose value >140 mg/dl)***
        - ***PPBS (>200mg/dl)***
        - ***FBS (>125 mg/dl)***
    - ***In a woman with previous GDM. Do OGTT at 20wks & 28 wks***
    - ***Do PPBS in booking visit & 28wks in all pregnant women***
    - ***Dietary control***
    - ***Whether the assessment of dietary control done after 2wks with blood sugar series***
    - ***Insulin/metformin started***
    - ***CTG***
    - ***Fetal movement monitoring***
    - ***Doppler studies***

- Past obs H_x
    - Year of previous pregnancy
    - ***Problems in antenatal period (GDM/PIH)***
    - Onset of labour : Spontaneous/Induced
    - Date ,place ,mode of delivery (NVD/Instrumental/LSCS) – ***Risk of shoulder dystocia***
    - Alive/not, ***Birth-weight (Macrosomia)→ Previous baby > 4.5Kg is a risk factor for GDM***
    - Postnatal complications
    - Breast feeding ,Developmental mile stones – ***Shoulder dystocia →hypoxic damage***
    - Now the child is looked after by whom
    - ***Recurrent miscarriages***
    - ***Preterm delivery***
    - ***Early onset of pre-eclampsia***
    - ***Congenital abnormalities (risk factor for GDM)***
    - ***Macrosomic baby(GDM)***
    - ***Unexplained still birth (Is a risk factor for GDM)***

- Menstrual & contraceptive H_x
- Gynaecological history - ***PCOD***
- PMH_x – Heart disease, ***DM, HT***, Epilepsy, DVT, Thyroid disease

- SH_x
- Drug H_x
    - Allergies to drugs, plaster
    - ***Anti-diabetic medications***
    - ***Insulin***
    - ***Compliance***
- FH_x – ***DM among 1st degree relatives ,HT***, Thalassemia, Consanguinity, Multiple pregnancies
- Social H_x
    - Mother
        - Educational level
        - Occupation
        - Knowledge about the disease
        - Knowledge about insulin use/storage
    - Husband
        - Occupation
        - Educational level
        - Monthly income
        - Substance misuse
    - Living condition/ Nearest hospital/Availability of a transport method

Examination

General Examination

- Features of chronic diabetes mellitus
- Infections

Abdominal Examination

- Inspection – Signs of pregnancy
- SFH (Less than POA/Compatible with POA/More than POA) - Macrosomia
- Lie
- Presentation
- Position
- Liquor (Can get polyhydroamnios)
- EFW (Macrosomia)
- FHS
    - Rate
    - Regularity

CVS

- Pulse
- BP (left lateral or seated)
- Murmurs

RS

- RR
- Lungs

CNS

Investigations

- **Screening**
    - ✓ Done on all pregnant women.
    - ✓ Do PPBS at booking visit and 28 weeks in all pregnant women.
  - Screening tests
    - FBS (Not reliable)
    - RBS
    - PPBS (Best) - +ve if >140mg/dl
    - Glucose challenge test - +ve if >140mg/dl
  - Diagnostic tests
    - OGTT/75 glucose tolerance test (Diagnostic values : Fasting>95mg/dl, 2hr >140mg/dl)
    - PPBS > 200mg/dl (1st measurement diagnostic)
    - FBS > 125 (1st measurement diagnostic)

Management

- Explain the condition to mother
  - Risks to the mother
    - PIH/Eclampsia
    - Infections
    - Hypo/hyperglycaemia
    - Ketoacidosis
    - Retinopathy (Progression)
    - Temporary worsening of nephropathy
    - Coronary artery disease
    - Thromboembolic state
  - Risks to the fetus
    - IUD (> risk if pregnancy continued more than 38 wks)
    - Macrosomia → Shoulder dystocia → Hypoxic brain injury
    - Polyhydroamnios
    - Miscarriage
    - Congenital defects
        - ✓ Neural tube defects
        - ✓ Congenital heart disease
        - ✓ Other spinal abnormalities
        - ✓ Caudal regression syndrome (rare)

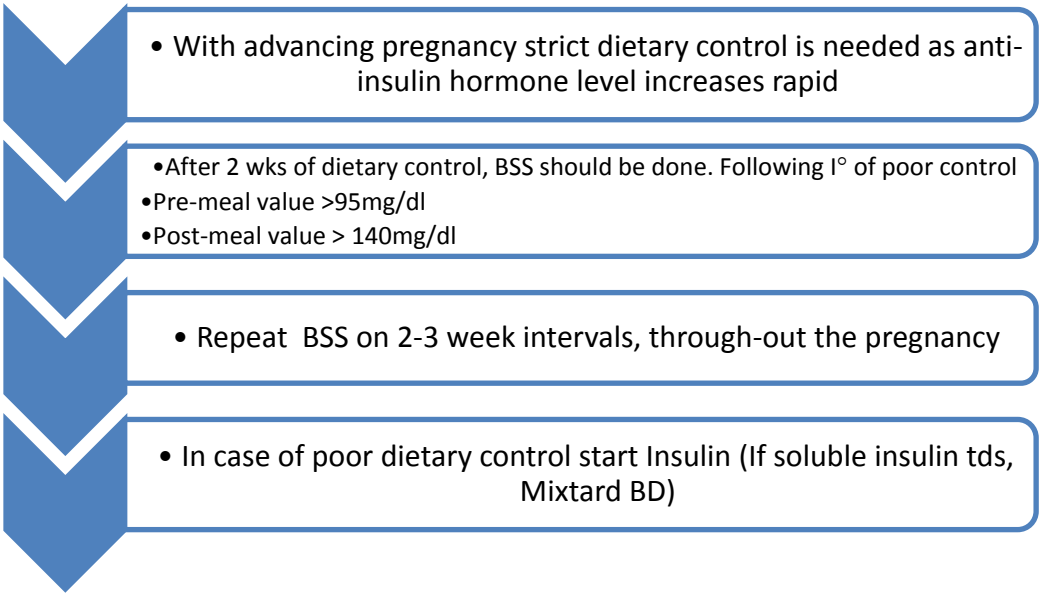
      } More risk if high blood sugar at early pregnancy
  - Outcome to mother
    - Risk of GDM in future pregnancies
    - Future risk of developing Diabetes

- Outcomes to neonate
  - Hypoglycaemia (in 1st 24 hrs)
  - Hyperbiliribinaemia (Fetal hyperglycaemia → ↑ Fetal insulin secretion → Bone marrow hyperstimulation→ Increase RBC production → Break down of RBC after birth → Unconjugate bilirubinaemia)
  - Congenital abnormalities
  - Macrosomia → Birth asphyxia & traumatic birth injuries
  - Respiratory distress
  - Hypomagnesaemia
  - Hypocalcaemia

    } Apnoeic episodes & fits
  - Respiratory distress syndrome

- Advice on dietary control
  - Avoid all refine sugars, white starch & fatty meals
  - Take 3 main meals along with 2 snacks in between
  - Total calorie intake should be 2000Kcal/day (In non pregnant state it is 1500Kcal/day)
  - Meal should include
    - 50% CHO
    - 25% Protein
    - 25% Fat
  - Educate about hypoglycaemic symptoms and initial treatment.

- Dietary control and monitoring (Home blood sugar monitoring is ideal)



- Metformin
  - If she was on metformin prior to pregnancy, can continue the drug during pregnancy.
  - Metformin is usually not started in newly diagnosed diabetic mother

- Insulin
  - Close monitoring should be done by FBS + PPBS(pre& post lunch) while taking insulin
  - Advice the patient about dose/storage/site(Best is around the umbilicus and thigh)

- Monitoring of mother
  - Should be done in consultant led hospital
  - Combined care with physician
  - Accurate dating is important
    - Delivery should be done at 38 weeks.
    - Very early delivery is unfavorable as it take long time for their lungs to get mature
  - Monitor for PIH
  - Anomaly scan at 20 weeks
  - Growth scan at 28 weeks onwards in 2-3 week intervals
  - Fetal well being
    - 34 weeks onwards
    - CTG
    - Fetal movements
    - Doppler studies
  - IUGR can occur in GDM patients in following conditions
    - Fetus with congenital abnormalities
    - Long standing DM with vasculopathy
    - PIH with placental insufficiency

- Delivery of the baby
  - At <38 weeks of POA only indicated in
    - PIH
    - Fetal distress
    - Macrosomia
  - Others are delivered at 38 weeks
  - During labour
    - Short active phase (6-8 hrs)
    - Low threshold for LSCS
    - Complications during the labour
      - ✓ Fetal distress
      - ✓ Lack of progression at 1^{st} and 2^{nd} stage
      - ✓ Shoulder dystocia
      - ✓ PPH
      - ✓ Maternal hypo/hyperglycaemia
    - Hourly blood glucose monitoring during labour
    - Inform PBU and PHO
    - Anticipate shoulder dystocia
      - ✓ In whom the labour has been induced
      - ✓ Patient with oxytocin infusion
      - ✓ Prolonged 2^{nd} and 3^{rd} stage of labour
      - ✓ Head is retracting after crowning(bad sign)
    - Anticipate PPH
- After delivery
  - Take normal diet
  - Check FBS, PPBS → If very high levels → Start insulin → Check FBS after about one week
  - Advice her on healthy diet
  - Advice on weight reduction (exercise)
  - Repeat OGTT 6 weeks post partum

- Planning of elective LSCS
    - Stop the morning insulin dose
    - Start on IV 5% dextrose
    - When inserting cannula take blood for FBS
    - Mark 1st on the theatre list

Discussion

- **How to perform following tests**
    - **PPBS**
        - No fasting
        - Take normal lunch
        - Measure blood sugar 2 hrs after lunch
        - Screening +ve if > 140mg/dl

    - **Glucose challenge test**
        - Can be done at any time of the day
        - Don't take sugar containing foods /drinks 30 mins prior to the test
        - 50g glucose is given and blood taken for sugar after 2 hour
        - Overnight fasting is not required
        - No food or drink except water in between drinking glucose and taking blood sample
        - Screening +ve if >140 mg/dl

    - **OGTT/75g glucose tolerance test**
        - Need overnight fasting
        - 2 blood collections : fasting and 2 hr blood glucose
        - Cannot eat or drink anything except water during the test
        - Should be done on all screening positives

- **What's the patho-physiology of GDM**
    - During pregnancy there is an increase in human placental lactogen and cortisol, both which are insulin antagonists and therefore mother develops relative insulin resistance.
    - These changes are more marked during 3rd trimester
    - To balance these changes maternal pancreas secretes increase amounts of insulin to maintain CHO metabolism
    - In contrast, following a CHO challenge, the levels of glucose are higher than in the non-pregnant state.

- **Definition of GDM**

    Glucose intolerance detected for the 1st time during pregnancy at any gestational age.

- **Long term monitoring during pregnancy can be done using**
    - PPBS
    - HbA_1C

Grand multipara

Mrs ------ , ---- yr old mother in her 6th/more pregnancy with ---- living children all delivered ---------- and non complicated/ antenatally or perinatally complicated by ----------. She is presenting ----- years after the birth of her last child at ----- weeks gestation

History

General: age – usually elderly
Parity
POA

Presented with/ for –

- LRMP – sure of dates and documented, similar to previous periods, any hormonal contraceptive use 3/12 prior to conception, lactating
- Periods - days/ cycle duration, regular/ irregular
- EDD – when , confirmed by dating scan
- Planned pregnancy /not – usually unplanned
- Pregnancy recognized at which POA
- Pre- existing medical problems – what, control, last reading
- Peri-conceptional folic acid & rubella vaccination
- Booking visit – when (need early booking), Ix – BP, BMI

Present obs Hx

T1 – vaginal bleeding (risk of miscarriage)
Hyperemesis gravidarum

T2 – supplements, tetanus – routine ANcare
PIH,GDM
Regular clinic visits - mandatory

T3 – APH
Varicose veins, Haemorrhoids

USS
Dating scan – by whom, POA (9- wks), serial scans if later
Singleton/multiple

Anomaly scan – 18-22weeks
Growth scan – IUGR

Scan after 36weeks –
Placenta position (placenta praevia common)
Malpresentation (pendulous abdomen, ↑ lumbar lordosis

Following admission – features of labour – progressive abdominal pain, dribbling, show
Fetus – fetal movements felt, KCC, CTG
Ix and Mx done upto now

Parity	Maternal age	Mode of delivary	POA	AN + PN complications	BW	Current health

Past obstetric Hx

- AN complications in each – GDM, PIH, treatment and follow up
- Hx of spontaneous / induced abortion – illegal, complications (sepsis, endometritis)
- Interval between each – Back to back pregnancies
- Mode of delivary – prolonged labour, LSCS – Em/El, indication, at what gestation, if Em in which stage
- Term/preterm
- Birth weight – tendency to develop IUGR after 4th pregnancy
- postpartum complications – mother and child
- Current health

Past gyn Hx – UV prolapse
Contraceptive use – type, duration, compliance and history of contraceptive failure

PMHx – DM, HTN, Anaemia, thyroid disorders

Allergy Hx
DHX
FHX

SHx – **Education**, socioeconomic status – poor, substance abuse
Social problems – housing, care of young, child neglect
Reasons for large family – religious **Desired family size**
Knowledge and view on contraception
Husband – education, occupation, substance abuse
Income
Nearest hospital with basic obstetric facilities, mode of transport and time taken

Examination

Height and weight
Pallor
Maternal nutritional deficiencies – angular stomatitis, glossitis, koilonychia
Dental hygiene

Abdomen

CVS – BP

Breast - opportunistic screening

Discussion

Definition of grand multi-parity

Female who has given birth to **5/more** viable fetuses (POA >28weeks)

Complications

During pregnancy

1) Miscarriage – spontaneous/ induced
2) malpresentations – due to pendulous abdomen, ↑ lumbar lordosis → ↑pelvic inclination
3) Multiple pregnancy
4) Placenta praevia
5) APH
6) Medical disorders – anaemia (iron deficiency and folate, B12 deficiency)
   HTN with or w/o pre eclampsia
   Cardiac problems
   Exaggeration of – varicose veins, Haemorhoids, hiatus hernia
7) Prematurity and preterm labour

During labour

1) Cord prolapse or presentation – malpresentation, high floating head at labour onset

2) CPD - * increasing fetal size (increase in fetal size upto 4th pregnancy. In subsequent pregnancies risk of IUGR)
   * Secondarily contracted pelvis – malnutrition
   * subluxation of SIJ → forward projection of the sacrum → reduced inlet conjugate

3) obstructed labour – due to malpresentation, malposition and CPD
4) uterine rupture – due to above → forceful contractions, thin uterine wall

5) PPH - * uterine atony
   * ↑ ass. with adherent placenta – increased collagen deposition in between muscle fibres

6) Shock – poor health, haemorrhage, undetected uterine rupture

Puerperium

1) Sub involution
2) Lactation failure

<u>Management</u>

- ♥ It's considered to be a 'high risk' pregnancy
- ♥ Require early booking visit and identification of risk factors - Eg:- Anaemia, HTN, DM
- ♥ Correction of risk factors Eg:- Anaemia – dietary advice + haematinics
- ♥ Dating scan, anomaly scan and growth scans to be done
- ♥ Regular AN clinic follow up

At term

- Mother should be admitted to a tertiary care center at completion of 37weeks.
- Pregnancy should not be continued for >40weeks
- Fetal well being scan should be done at term to assess fetal size, presentation and position
- Perform clinical pelvimetry
- Look for indications for LSCS , if any plan El-LSCS at 38weeks
  - ≥3 LSCS
  - Chronic disease complicating pregnancy (HTN)
  - Major degree placenta praevia
- Monitor fetal well being – FHS tds, daily CTG, fetal movement chart
- ASOL

During labour

- Labour can be complicated by –
  - Malpresentation
  - Cord presentation and prolapse
  - CPD – secondary to brow presentation
    spondylolisthesis
  - Uterine rupture
  - Primary PPH
- Prepare the mother as for Em- LSCS – keep NBM, blood grouping and cross matched
- Labour can be induced via ARM if cervix is favourable
- Actively look for cord presentation or prolapse – manage if present
- Routine augmentation of labour with oxytocin is not advised (since tendency to rupture)
- Monitor maternal, fetal well being and progression of labour via strict maintenance of the partogram
- Provide pain relief and hydrate
- Observe for features of uterine rupture

If presence of maternal – fetal distress
Prolongation of labour(due to CPD, malpresentation) } Em- LSCS

- Actively manage 3rd stage of labour –
  - Ergometrine 0.5mg with the delivery of the anterior shoulder in cephalic presentation
  - Controlled cord traction with the contraction of the uterus
- Look for PPH and retained placenta

After delivery

- Mother should be counseled on effective family planning
  Recommended contraceptive method – long term, with less demand on compliance
  IUCD, implanon
- Family should be completed with mutual consent of both partners
- Arrange for postpartum or interval female sterilization (2weeks after delivery)

Management of complications

- **Uterine rupture**

Uterine rupture

- Rupture involving the full thickness of the uterine wall – COMPLETE
- Separation of the visceral peritoneum overlying the lower segment (peritoneum intact) INCOMPLETE
- Both types are lethal

Causes

1. Spontaneous
   During pregnancy – usually complete and involves the upper segment
   - ♥ Grand multiparity – due to thin uterine walls
   - ♥ Previous damage to the uterine walls – following D & C, manual removal of placenta
   - ♥ Congenital malformation of the uterus – bicornuate uterus
   - ♥ Couvelair uterus – premature detachment of the placenta resulting in extravasation of blood and collection within the uterine musculature

   During labour

   - ♥ Obstructive rupture – in CPD formation of " BANDLS' RING' (asynchronus contraction of the upper and lower segments of the uterus → formation of a thinned ring between the 2 contracting parts)
   - ♥ Non obstructive – grand multiparity

2. Scar rupture
   Caesarean section – classical 5-10x > LSCS
   Why? 1) Upper segment which is contractile interferes with initial healing
   2) Wide edges
   3) High chance of placental localization in the upper segment, disturb Scar integrity
   4) ↑ transverse dm of the uterus → right angle stretching effect
   (LSCS scar rupture although rare if ruptures commonly during labour)
   Hysterotomy – high risk
   Myomectomy – since in non pregnant uterus heals well
   Unless multiple or reaching the uterine cavity
   Uterine perforation – following an attempted abortion
3. Misuse of oxytocin
4. forcible ECV under GA
5. obstetric trauma
   - ♥ internal podalic version
   - ♥ breech extraction/ forceps delivary through incompletely dilated Cx
   - ♥ shoulder dystocia
6. fall or blow onto abdomen

Clinical features

1) Severe, Continuous suprapubic pain
2) Variable vaginal blood loss
3) Patient exhausted and dehydrated

Time of rupture

4) Sense of giving away at the height of uterine contraction
5) Uterine contractions cease → constant pain changed to dull ache

Signs – 1) tender lower segment
2) Disappearance of uterine contour
3) Uterus contracted and felt separately from fetus , superficial fetal parts
4) Signs of hypovolemic shock
5) Presenting part recede
6) Cervix reform
7) Fetus – FHs absent/abnormal

Management

1. Resuscitate – wide bore IV cannula, fluid boluses
2. Blood transfusion
3. Emergency explorative laparotomy –
   - repair – simple approximation of the uterine rent
     Commonly in scar rupture
   - hysterectomy – total/ subtotal

Heart diseases complicating pregnancy

History

Introduction

Mrs. ……, …… year old, mother of ……, in her …..nd pregnancy, known patient with heart disease admitted for confinement at …….. weeks of period of amenorrhoea. She's a house wife who lives at …….

- ***LRMP(Accurate dating is important as patient is asked to admit at 38weeks)***
  - Date
  - Whether she is sure about the date
  - Regularity or an irregularity
  - Is it similar to previous period
  - On any hormonal contraceptives
  - Breast feeding

- Expected date of delivery

Introduction

- Age:-Increase maternal age→Increase risk of IHD

Presentation

- Previously diagnosed patient with heart disease becoming pregnant comes with symptoms of HF→Breathlessness, Chest pain, Palpitations, Syncope, Haemoptysis, oedema
- Heart disease mother without complications came for delivery
- Incidental diagnosis of heart disease at ANC or admitted to hospital due to any other illness

History

This pregnancy

- Initial diagnosis of heart disease→
  - when, where, By whom, Advices not to have pregnancy
  - Whether assessment of fitness for pregnancy
  - Whether discussed about risk →Maternal health, Fetal health- Developing congenital heart disease, Preterm labour and IUGR
  - Whether optimization of the heart condition done prior to pregnancy→Surgical correction , cardiology referral
  - Optimization of anaemia done prior to pregnancy
  - Whether antibiotic prophylaxis taken – Rheumatic fever
  - Any anticoagulation started – following valve replacement
  - Was she made aware of the need to avoid factors that precipitate heart failure during pregnancy→Anaemia, Hypertension, Infections

Trimesters

- 1st Trimester→Did she go to early booking visit, Hb levels
- 2nd trimester→
- 3rd Trimester→
  Any symptoms of complicated heart disease

  - Heart failure→SOB on exertion, orthopnoea, PND
  - Cardiac arrthythmia→faintishness, syncopal attacks
  - Thromboembolism→LOC with paralysis-Strokes, chest pain(IHD),

  - How frequent visits made.
  - Regular assessment by a cardiologist done
  - Scans done→Date scan, serial growth scan, anomaly scan
  - Hospital admissions during pregnancy with features of HF.

    Or
  - Hospital admissions due to reduce fetal movements or small for dates
  - Look for concurrent illness→Infection, anaemia (Palpitations of HF), Dental caries

Offering of drugs - Benzathine penicillin-Once a month IM injection

Anticoagulants

Digoxin

Previous pregnancy

- Presence of a heart disease in previous pregnancy
- Occurrence of complication→HF
- Drugs used
- Mode of delivery, method of pain relief in pregnancy
- Fetal outcome→Low birth weight, Congenital Heart Disease
- Advices after delivery→Permanent sterilization if pregnancy CI

Past Gynaecological hx:-

Contraceptive hx:- IUCD-insertion with antibiotic cover

temporary – implantable/injectable progestins

PMHx:-Obesity, Hypertension, Rheumatic heart disease, congenital heart disease, Thyrotoxicosis, Ischaemic heart disease

PSHx:-Cardiac surgeries, Antibiotic prophylaxis for minor surgical procedures (IE)

Drugs:-Benzathine penicillin, Anticoagulants, Digoxin, Frusemide

Allergies:-

Family hx:- Family hx of CHD or congenital malformations (Risk of getting CHD in child)

Social hx

- Smoking
- Poor socioeconomic status:-Crowded places avoid, increase risk of respiratory tract infections
- Family support:-when mother gets HF, is there someone at home to support

Examination

General

- Dyspnea:- (HF)
- Febrile:-Infection
- Pallor:-Anaemia
- Cyanosis:-Heart failure/Cyanotic HD
- Increase JVP
- Finger clubbing with cyanotic HD
- Ankle oedema
- Signs of IE:- Roth spots, splinter haemorrhages, Clubbing, Janeway lesions

CVS

- PR:- Tachycardia, irregular rhythm, volume
- BP - reduce BP
- Shifted apex-Cardiomegaly or can be physiological in pregnancy
- Apex beat:-heaving/thrusting
- Thrills
- Cardiac murmurs

Respiratory system

- Dyspnea and tachypnea
- Bilateral basal fine crepitations
- Signs of LRTI :- Consolidation, coarse crepitations, reduce air entry

Abdomen

- Tender hepatomegaly-CCF

Discussion

- **What are the conditions that are extremely high risk to pregnancy?**
    1. Pulmonary hypertension
    2. Eisenmenger's syndrome
    3. Marfan's syndrome with dilatation of aortic route>4cm
    4. Grade 3 or 4 heart failure(NYHA classification)
    5. Severe left ventricular outflow tract obstruction

Contraception for a mother who has heart disease

- Depends on severity
- Temporary→Injectable/Implantable progestins(CCF/Valvular disease)
- IUCD→Uncomplicated valvular disease

Permanent

- Sterilization of female

If the patient is on warfarin how do you manage that patient during pregnancy?

- Omit Warfarin in T_1 and start Heparin(SC) 40mg bd.
- After 12 weeks up to 36 weeks again start warfarin.
- From 36 weeks onwards → Heparin 40 mg bd sc
  (Warfarin crosses placenta, resulting in fetal ICH)
- Stop heparin 12 hours prior to delivery or LSCS
- After 6 hrs from surgery/labour → Start heparin 40mg sc
- Once oral intake is established → Give warfarin 5 mg nocte (Continue heparin also)
- Do PT/INR on 4^{th} day
- According to PT/INR change the warfarin dose.
- After achieving target PT/INR stop heparin & continue warfarin treatment for 4 months.

Teratogenic effects of warfarin

- Congenital malformations
- Chondrodysplasia punctate - On vertebrae, Femur, bones of hands
- Abnormal cartilage and bone formation
- Stippling of epiphyses on X-ray
- Nasal hypoplasia
- Hypotension(wide set eyes)

How will you manage this kind of patient coming to your ward with Heart Disease uncomplicated for delivery?

- Early admission - Admit the patient to ward at 38 week POA
- Await spontaneous onset of labour for vaginal delivery
- Avoid induction of labour unless an obstetric indication exists
- SABE prophylaxis – IV Ampicillin and Gentamicin
- Monitor maternal, fetal well being
  - Maternal well being → PR, BP, features of complications of heart disease-cardiac failure, cardiomyopathy, cardiac arrhythmias, Thromboembolism
  - Fetal well being → Maintain kick count chart, symphysio fundal height serial measurements, daily CTG

    - When the cervix is favourable and no complications developed due to cardiac problem → send for vaginal delivery to the labour room.
    - Adequate analgesia needed. →Epidural analgesia
    - Give prophylactic antibiotics during labour → Due to ARM, instrumentation (IV ampicillin, IV gentamicin)

- Avoid supine position – lateral recumbent position advised
- Avoid delay in 2nd stage of labour and avoid prolonged labour
- Actively manage 3rd stage of labour→Give oxytocin slow IV but AVOID Ergometrine (It causes vasoconstriction and increase Blood pressure)

- Why need adequate analgesia epidural in these patients?
  - Due to pain
  - Increase in Catecholamines
  - Increase sympathetic activity
  - Increases heart rate
  - Precipitate the symptoms and cause problems in the heart disease patient

- **Complicated HD for delivery?**

- **HD mother coming to get pre pregnancy counseling?**

  Pre-conceptional counseling

  - Detection of heart disease
  - Assess fitness for pregnancy
  - Discuss risks→Maternal health, risks of fetus developing congenital heart disease
  - Optimization of maternal condition→surgical correction of heart disease if needed, correction of anemia

How will you provide post partum care to this mother with heart disease?

- Asses carefully during post partum period since circulating volume is increased as the blood to the uterus is shunted to the systemic circulation
- Advice on further pregnancy
- Advice breast feeding
- Heart failure monitor
- Cardiac assessment
- Advice on contraception

FUNDUS MORE THAN DATES

DD

1. *MULTIPLE PREG*
2. *MACROSOMIA*
3. *POLYHYDRAMNIOS*
4. *FIBROIDS*
5. *H.MOLE*
6. *CONCEALED PLACENTAL ABRUPTION*

History

Concerns in history& examination,

Wrong dates/Post dates

Twin pregnancy

GDM

H. Mole

Tumour/Fibroid complicating Pregnancy

Concealed placental abruption

Presentation

Large abdomen with SOB, back pain

Large abdomen with swollen legs, varicose veins

POA-5 things to ask

Regular/irregular, duration
Hormonal Contraceptives
Lactation +/-
Documented/not

Dating scan → when(Must do at 11-12wks)

Cal EDD
Scan EDD
POA/POG → confirmed EDD/not

Name
Age
Parity
Blood group
Known with

P_1
P_2
P_3

1) Conception
2) folic acid
3) any special events,
Eg: Miscarriages

4) Gap between pregnancies & contraception
5) Mode of delivery
6) Complications
7) Now

This pregnancy-

Conception, rubella
ANC visit- When, Weight, What are the findings
Date, anomaly, growth scans- When, What
Describe T_1, T_2, T_3
Admission and up to now Tx
Gyn Hx
FHx
SHx

Name

Age- ↑ (1) usually

Parity- ↑ (1) usually

Known with-
DM,GDM(2)

6. Placenta previa

Previous pregnancies-

Period of subfertility(1)
GDM/DM
POA at delivery-premature labour
LSCS$^{+/-}$ (6)
Fetal loss (1)
Twins (1)

Conception - Ovulation induction (clomiphene, tamoxifen, FSH), assisted reproduction techniques (IUI,IVF)(1)

ANC-when visited, pre pregnancy weight, weight gain up to now,
Urine and blood sugar levels, Hb levels, BP
Other abnormal findings, Fe, Folic acid, Vit supplementation (dose)(1)

T_1- Exaggerated pregnancy symptoms, hyperemesis(1,5)
Dating scan-when, confirmed dates, confirmed twin preg,
USS scan-establish chorionicity (λ sign- dichorionicity, inverted T sign- monochorionicity)(1),
Fibroid or ovarian mass (4)

T_2-GDM, PIH, anaemic features,
Congenital anomalies - anencephaly, spina bifida, exomphalos(3)
Placenta praevia
Amniotic fluid index via anomaly scan (20weeks-POA)

T_3 - Growth scan (32weeks POA)-IUGR, structural abnormalities, complications of twins(TTTS)
Respiratory difficulties, PROM, APH, hospitalizations
After the admission what happened up to now

PMHx-DM,HT

GynHx- Previous miscarriages, spontaneous abortions, procedures like D & C, ERPC(6)
Menorrhagia, Dx with fibroids, myomectomy, ovarian cysts, hx of subfertility

Dietary Hx- Iron containing food

FHx-Twins in maternal side

SHx- Level of education
Living children
Family and social support
Husband-occupation, smoking, income
Emergency-nearest tertiary care hospital, mode of transport, time to reach hospital

EXAMINATION

GENERAL

Weight

Height

Pre pregnancy weight

BMI

Anaemia features-pallor,glossitis, angular stomatitis, koilonychia
Pressure effects- excessive leg oedema, varicose veins
Breast
Thyroid

ABDOMEN

Inspection

Grossly distended abdomen, globular shape with full flanks
Shiny glistening skin with excessive striae
Everted/flattened umbilicus
Oedema of the abdominal wall

Palpation

SFH- ≥3 discrepancy is significant
EFW-usually high

Multiple pregnancy
Multiple fetal poles palpated
2 fetal heads palpated
2 different heart beats heard

Polyhydramnios

Undue difficulty in feeing fetal parts
Ballotable head even in T_3
Fluid thrill$^+$

Auscultation

Fetal heart sounds

Investigations - early

Abdominal ultra sound scan-7

1. Confirm multiple pregnancy and determine number of fetuses
2. Look for placentation and chorionicity
3. Congenital anomalies
4. Estimated fetal weight
5. Discordance in fetal growth
6. Amniotic fluid level/AFI
7. Placental location

Best time to diagnose multiple pregnancy is 9-10 weeks of POA via abdominal USS
Difficult after 20 weeks

Careful weight measurement- especially during clinic visits

If there's discordance of weight (20-25% in the estimated fetal weight between 2 fetuses) occurs due to differences between each twin's placental surface area can be due to Twin to Twin Transfusion Syndrome

3RD trimester USS

Helps to diagnose IUGR, Discordance
If IUGR is suspected serial USS at 1-2 week intervals can be done

Management

ANP

- Early booking visit.
- Confirm the dates and the diagnosis.
- Establish the chorionicity (done at T_1)
- Shared antenatal care.
- Exclude congenital anomalies.
- Inform both partners.
- Educate regarding the complications and importance of regular clinic follow up, managing at tertiary care
- Dietary supplementation
- Supplementation therapy-Iron and folic acid, Ca and other trace elements(Zn,Cu)
- Close monitoring with regard to complications
  - BP ,urine sugar and protein
  - USS- growth assessment
  - TTTS,IUGR ,amniotic fluid volume
- Fetal well being- Fetal Movement Chart, Doppler if monochorionic
- Breast examination for the appropriateness for breast feeding and advises should be given on correct methods of breast feeding of two babies
- Ask mother to avoid heavy work to avoid preterm labour

Decide on the mode of delivery

Depends on,

1) Mono amniotic twins
2) Presentation of the 1st twin-if cephalic- vaginal delivery possible
   If breech-caesarean
Presentation of 2nd twin can always change after 1st twin delivery
3) Severe growth discordance
4) Other maternal risk factors- Age, parity, previous LSCS, other co-morbidities
5) Available skills and facilities

INDICATIONS FOR CAESSAREAN SECTION

1st twin transverse lie
Severe IUGR
Placenta previa
Cephalo Pelvic Disproportion
Conjoint twins
Maternal co-morbidities

- **Can wait till spontaneous onset of labour to occur until 40 wks .Now induction at 38 weeks is recommended.**

VAGINAL DELIVERY

- ✓ Once the mother is in labour
- ✓ Get her in to the labour room
- ✓ Insert IV cannula
- ✓ Keep fasting
- ✓ grouping and reserve blood
- ✓ Inform the middle grade doctor (SHO ,R) about the laboring woman.
- ✓ Adequate pain relief
- ✓ CTG with contraction probe
- ✓ Partogram
- ✓ Inform PHO
- ✓ When the head is crowning put patient in to lithotomy position and consider episiotomy
- ✓ Twin 1 is delivered as a singleton delivery, if needed use low cavity forceps
- ✓ Once the 1st is delivered clamp the placental side of cord (to prevent the reduction of the blood supply to other twin in monochorionicity)
- ✓ Aim is to deliver other twin within 20-30 min.
- ✓ Examine for the presentation of the other twin → cephalic
  → Non cephalic

- ✓ If **the next twin is cephalic** wait for few min for the contractions to appear
  -If no contractions, ARM and start Oxytocin 5U
  -Manage delivery as a normal delivery
- ✓ If the next twin is in breech or transverse
  1) External cephalic version and deliver as cephalic

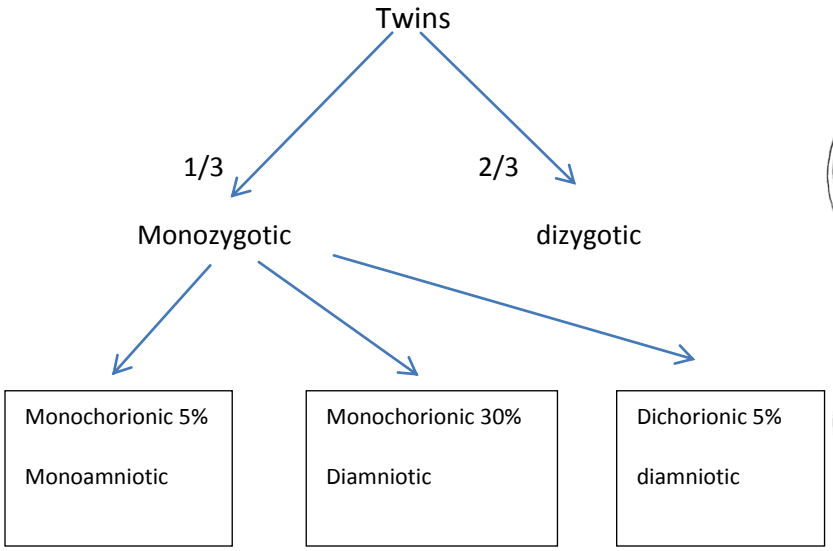
  2) Assisted breech delivery

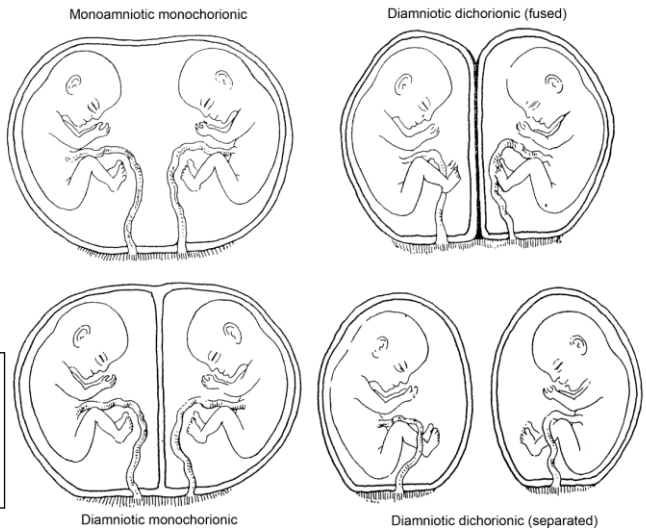
  3) Internal podalic version → should actively manage the 3rd stage

- ✓ Anticipate PPH (large placental site , uterine over distension)
- ✓ Never give oxytocin for breech delivery

Discussion

Multiple pregnancy is the simultaneous development of two or more fetuses in the uterus





Incidence and risk factors

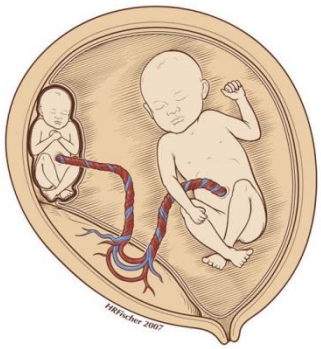
- ✓ Twins 1%
- ✓ Higher multipliers (3 or more fetuses) 1:2500

Maternal complications

- ✓ Vanishing twin
- ✓ Fetus papyraceous or compressus
- ✓ Hyperemesis gravidarum
- ✓ PIH
- ✓ GDM
- ✓ Anaemia
- ✓ Placenta previa

Fetal complications

- ✓ Prematurity
- ✓ Increased perinatal mortality
- ✓ IUD
- ✓ IUGR
- ✓ **TTTS**-abnormal vascular communication, chronic net shunting of blood from donor to recipient



Donor- oligohydramnios, anaemic, hypotensive, hypovolemic, heart failure
Recipient- polyhydramnios, large, plethoric, hypertensive, heart failure

- ✓ Conjoint twins-partial deviation of embryo
- ✓ Placental insufficiency
- ✓ congenital anomalies
- ✓ monoamniotic twins-single cavity, high risk of cord accidents

Peripartum complications

- ✓ Malpresentation,malposition
- ✓ Cord prolapsed due to early rupture of membranes
- ✓ Maternal and fetal distress
- ✓ Birth trauma of neonate

Post partum complications

- ✓ PPH due to low lying placenta, over distended abdomen
- ✓ Respiratory distress and other complications of prematurity
- ✓ Sepsis
- ✓ Complications due to birth trauma

Polyhydramnios

Definition

AFI> 95th centile for gestation(AFI>20)

Causes- Maternal- GDM

Fetal- TTTS
Oesophageal atresia/duodenal atresia
Spina bifida
Anencephaly

Acute Polyhydramnios

Excess amniotic fluid accumulates rapidly
Sudden uterine enlargement
Almost always ass. with TTTS

Complications
Unstable lie
Preterm labour leading to prematurity
PROM
Cord prolapse
Placental abruption
Prolonged labour-impaired uterine contraction resulting from overreacting uterine musculature
PPH
Perinatal mortality

Investigations

USS=AFI
Urine sugar
FBS/RBS
Anomaly scan

Management

1) Confirmation and identification of any underlying cause- USS-fetal malformation, GDM
2) Correction of underlying cause
   Eg-Tight control of GDM
3) Relieve symptoms

Supportive therapy
- Bed rest, back rest
-Analgesics for pain
-Amniocentesis-slow decompression

5) Counseling of mother
6) Adequate rest
7) Regular ANC follwup
8) If PV bleeding → come to the hospital immediately
   If >37 weeks-deliver

Management

ARM should be done within a controlled manner to prevent cord prolapse
Mother should be prepared for EM/ LSCS
Anticipation and management of ass complications-malpresentation
Cord prolapse
Placental abruption
Proper management of the 2nd stage-eg-assisted delivery in case of prolong labour
Active management of 3rd stage of labour to prevent PPH
PHO should be informed and present at time of delivery
At birth a macrosomic baby should be screened for hypoglycemia
A complete newborn examination

Fibroid complicating pregnancy

Presentation-
1) Previously diagnosed patient becomes pregnant
2) Incidental diagnosis during pregnancy
3) Presenting with pressure symptoms
   Bladder-Retention of urine
   Rectum-Constipation
4) Recurrent miscarriages
5)Malpresentation/abnormal lie
6) Preterm labour/prematurity
7) IUGR
8) Non engaged presenting part
9) Red degeneration causing symptoms
   Acute onset pain over tumor
   Malaise
   Dry mouth and tongue
   Constipation

Ix –leucocytosis

Ex-tenderness and rigidity over the tumor
Rapid pulse

Management

Conservative management if no complications

Antenatal period

Uncomplicated- wait until 38 weeks to formulate mode of delivery
Complicated- impaction in early months

- Manual correction-push the uterus digitally through the posterior fornix while drawing the cervix posteriorly by the allis forcep at the same time
- Patient should be in the sims position
- After correction pessary inserted and kept upto 18-20 weeks
- If manual correction fails- myomectomy,laparotomy

Red degeneration

Mx- o.ampicillin 500mg tds 7 days
Analgesics and sedatives
Symptoms resolve within 10 days

Management during labour

Indication for LSCS- cervical/broad ligament fibroid
Fibroid above the presenting part-uneventful vaginal delivery
Fibroid below presenting part-NVD ?????
Should be alert on PPH, retained placenta

Normal pregnancy

History

- HX of GDM, PIH, APH
- Mode of delivery of the 1st child – NVD or LSCS
    - If LSCS emergency or elective

Name –

Age - < 19 years teenage pregnancy

>35 years elderly

A 25 year old mother of one child who is a (occupation) in her 3rd pregnancy. She is married for 6 years. Her first pregnancy was in 2009 which was not due to an assisted conception. It was a term pregnancy ended up in a vaginal delivery at 40 weeks of POA with no post natal complications. The birth weight of the baby was 3kg & the baby is doing well. Now he is 5 years.

Her 2nd pregnancy was a first trimester miscarriage.

- LMP
    - Her LRMP was on _____
    - She is sure about her dates & it was documented
    - It was similar to previous regular cycles of 28 days which lasted for about 4 days
    - She was not on hormonal contraceptives, was not on breast feeding prior to conception
    - This is a planned pregnancy(accidental)

- EDD
    - Her calculated EDD is on_____ which was confirmed by a dating scan on _____ at 12 weeks of POA OR
    - Her EDD by dates is ____ corrected USS date is _____

Calculate EDD
Subtract 3 months from next year same month of POA & add 7 days
OR
+ 9 months & 7 days to POA

- POA
    - She is currently at 39 weeks+ 3 days of POA

1st trimester/ T1 [12 weeks]

- She had received rubella vaccine during schooling & had taken pre conceptional folic acid
- The pregnancy was confirmed by an urine hCG test at 5 weeks of POA
- Booking visit at 6 weeks of POA to a _____clinic on _____
    - She underwent routine antenatal investigations
        - Hb
        - VDRL
        - PPBS
        - Blood group & Rh
        - UFR
        - Urine sugar
        - Urine protein
- She has received routine supplements
    - Iron supplements with vitamin C
    - Folic acid
    - Calcium
    - Thriposha
- What was done?
- Special advices?
- Special problems? (high BP, BMI, U>sugar)
- Excessive vomiting, bleeding

2nd trimester/ T2 [12- 28 weeks]

- Given 2 tetanus toxoid doses
- Worm treatment
- Symptoms of UTI - Dysuria, frequency, lower abdominal pain
- PIH
    - High BP,
    - Facial & fingers swelling
    - Frothy urine
- GDM - Urine sugar, PPBS
- Quickening/ first fetal movement [Dr SP X], Which POA
- Anomaly scan done- any abnormality

3rd trimester/ T3 [28 up to 37 – 40 weeks]

- Haemorrhoids
- Varicose veins
- Vaginal discharge
- KCC given around 28- 32 weeks
- Labour pain - Low back pain, abdominal pain, show

- Dribbling
    - When
    - Colour
    - Foul smelling
    - Reduced fetal movements
- Growth scan – Normal, IUGR or large baby, placental location – abnormality
  If available last USS – date, findings
- She admitted for confinement
- Currently no abdominal pain, back ache, dribbling. Fetal movement present
- After admission done a VE, speculum Ex, blood taken for several investigations, CTG monitoring done
- Kcc given

Gyn Hx

- Contraception
- If this is un planned pregnancy
    - Talk about unawareness of contraception
    - Contraception failure

PMHx

- DM, HT, renal disease, epilepsy, thyroid disease, heart disease

PSHx

- Blood transfusion,

DHx

FHx

- Congenital abnormalities
- Heart diseases
- DM, HT
- Consanguinity
- Bleeding disorders

SHx

- Education level
- Income [DR SP X]
- Husband' s job, alcohol, smoking
- Family support
- Distance to hospital

Examination

General

- Height
- Weight
- Afebrile, not pale, no facial , finger or leg oedema
- No varicose veins

CVS

- BP
- PR
- Heart sounds, murmurs

Respiratory system – Respiratory rate, auscultatory findings of lung

Abdomen

- On inspection abdomen is distended with evidence of pregnancy like
- Linea nigra, striae, flat umbilicus
- There is a pfanensteil / supra pubic transverse incision
- SFH - ----, compatible with dates [+/- 2]
- Palpate lower pole
    - Head is in the lower pole
    - Not/ engaged
- Breech is in the upper pole
- Smooth curved mass on left - Back is in the left side
- Soft boggy mass on right – limbs are on the right side
- EFW is about 2.5 kg
- Liquor is adequate
- FHS - 3cm below & 4cm left lateral to umbilicus

Weeks	28	32	34	36
Weight/kg	1	1.5	2	2.5

SUMMARY

A 26 year old mother of 1 child who is married for 6 years admitted with a POA of 40 weeks. Her LRMP was on -----calculated EDD is ------- with uncomplicated pregnancy. Came for the confinement. On examination there is a single fetus on longitudinal lie & cephalic presentation. FHS is 138bpm. On admission she had mild abdominal contractions with a normal CTG.

Management

- Await spontaneous onset of labour
- If not in labour wait upto 10 days passed the due date
- Monitor FHS, CTG, USS after admission
- CTG is done once after admission, every 2 hourly after inserting PG, daily if IUGR , another one after admission to labour room
- Ask the mother to maintain fetal movement chart > 10 movements within 12 hours
- Once she is in labour
    - Give enema
    - NBM
    - On IV drip
    - Bladder emptied
    - Send her to the labour room
    - Maintain partogram
    - Insert IV cannula
    - Take blood for Ix

- Keep her fasting
- Monitor
  - Maternal wellbeing
  - Fetal wellbeing
  - Progress of labour
  - Hydration
- Pain relief

Table 1□: Partogram

- **Patient identification details, date and time**
- **Progress of labour**
- **Cervical dilatation (Use of standard cervical dilatation charts to determine the degree of the cervical dilatation in centimetres)**
- **Descent of the fetal head (Recorded in fifths assessed by abdominal palpation. One finger breadth is considered equal to one fifth of the fetal head)**
- **Frequency, duration and strength of uterine contractions**
  - **Frequency: Interval in minutes between two palpable contractions is recorded over the timeline in the allocated space according to the duration that is described below.**
  - **Duration: Duration of contractions is measured by timing the contraction by palpation.**
- **Fetal wellbeing**
- **Fetal heart rate**
- **Description about liquor**
  - **C- clear**
  - **A- Absent liquor**
  - **I – Membranes intact**
  - **B- Blood stained**
  - **M- Meconium stained**
- **Maternal wellbeing**
- **Blood pressure**
- **Pulse rate**
- **Level of hydration**
- **Temperature**
- **Others**
- **Degree of moulding**
  - **- absent**
  - **+ - groove between the frontal bones is absent**
  - **++ - overlap of frontal bones present, but reducible with finger pressure**
  - **+++ -overlap of bones present and not reducible with finger pressure**
- **Alert line, action line**
- **Medications administered.**

CTG

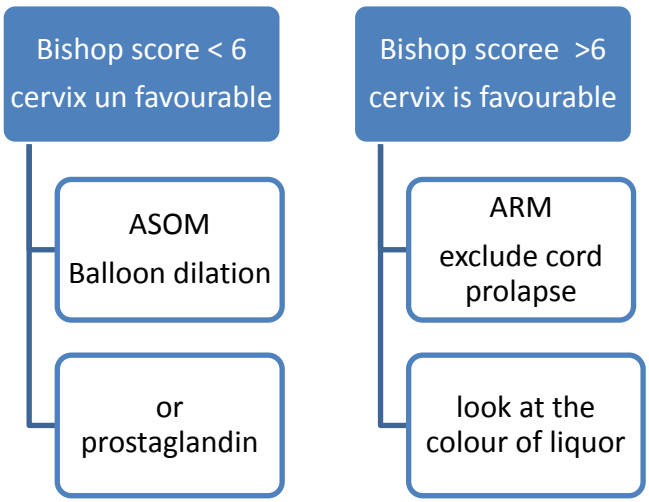
- Maternal
  - BP, temperature in every 4 hourly
  - PR& RR every 1/2 hourly
  - Urine volume

- Fetal
  - Liquor colour every 15 min
  - FHS every 15min in the 1st stage, after each contraction in 2nd stage
  - CTG
- Progress of labour
  - Interval between two contractions(in minutes)
  - Cervical dilatation(cm)
  - Descent of foetal head abdominally(finger breaths)

BISHOP Score

- Cervical dilation[cm].by a VE every 4 hourly
- Effacement %
- Station
- Consistency [firm, medium, soft]
- Position - posterior ,central, anterior

- Induction of labour



- Usually we do PG induction
  - 2 PG insertion
  - At 5 am & 11 pm
  - CTG monitoring every 2 hourly after PG
  - Then send to the labour room
- Foley catheter & ISMN 60mg are also used
  - Need BP monitoring ½ hour later to ISMN induction

Augmentation of labour

- In the absence of adequate contractions
- Syntocinon infusion
  - Primi 4 units in 50cc N/S
    - Drop rate 4 ml/min ½ hourly → 8 → 12 → 16 ,18,24
  - Multi 4 units in 50cc N/S
    - Drop rate 2 ml/min → 4 → 6 → 8
  - Aim is 3 contractions/10 min
  - After giving syntocinon another CTG should be performed
  - Look for uterine hyper stimulation
    - Contractions > 90 sec or
    - > 4 contractions /min
    - If present stop the infusion
    - Assess fetal wellbeing
    - Tocolytics to relax uterus
- Analgesia
  - Epidural is the best
  - Pethidine during 1st stage
- Walking
- Position
- During 2nd stage
  - Keep l/lateral in between contractions
  - Bear down with each contraction
- At the time of crowning
  - Medio lateral episiotomy under local anaesthesia
  - When the head comes out
    - Don't bear down
    - Assist natural rotation
    - Deliver anterior shoulder by downward traction
    - Clamp the cord
    - Baby kept on mother's abdomen
    - Encourage breast feeding
- 3rd stage / delivery of the placenta
  - Active management of 3rd stage to prevent PPH, uterine inversion
  - 0.5 mg of Ergometrine @ the delivery of the anterior shoulder
  - Control cord traction
  - Examine placenta for completeness of membranes & cotyledons
  - Apply uterine fundal massage

    - If the mother is Rh –ve cord blood for
        - Grouping & Rh
        - Hb
        - Serum bilirubin
        - Direct Coomb's test
        - Retic count
- Monitor BP, PR, RR, bleeding
- If vaginal bleeding present syntocinon infusion 10 – 20 units
- Suture episiotomy, vaginal or vestibular tears under LA
- Baby
    - Clean the baby
    - Calculate APGAR score at 1, 5 10 min
    - Measure growth parameters
    - Hand over the baby to the mother as soon as possible
    - Breast feeding
- Observe 2 hours at labour room
- Care of personal hygiene
- BCG vaccination for the baby
- Issue CHDR
- Advice mother regarding breast feeding
- On discharge educate about care of episiotomy
    - No suture removal
    - Absorbing sutures used (Vicryl)
    - Clean the suture site with soap & clean water
    - Don't use warm water, disinfectants such as savlon
    - Not to apply soap directly by rubbing it on the wound
    - Wound should be kept dry
    - Come back if
        - If loosening of sutures
        - Wound infections
        - 2ry PPH
    - Inform PHM area after discharge

Discussion

- During antenatal period
    - Once pregnancy diagnosed make the booking visit in the clinic as soon as possible
    - Registration & pregnancy record
    - Detailed hx, ex, BMI
    - Refer to specialized care if needed
    - Booking visit investigations
    - Regular clinic visits
        - Up to 28 weeks – once a month
        - 28 – 36 weeks – every 2 weeks
        - From 36 to delivery – every week

- During follow up visits
    - Plot weight on weight chart to monitor weight gain
    - Urine for sugar & protein
    - BP
    - SFH
    - FHS
- Folic acid 1 tab [5mg] a day in first 12 weeks
- After 12 weeks
    - 1 tablet containing FeSo4 200mg with vitamin C after dinner
    - Calcium lactate after breakfast
    - If from malaria endemic area prophylaxis
        - 2 tablets of Chloroquine[300mg] every 7th day. Throughout pregnancy
- Anti helminthic treatment with Mebendazole in the 2nd trimester
- 2 packs of thriposha in every clinic visits
- TT 2 doses 4 -6 weeks apart during 2nd trimester
- USS scan during 11- 14 weeks
    - Dating scan- CRL
    - Nuchal translucency
    - Nasal bone
- 18 - 21 weeks – anomaly scan
- 32 weeks growth scan

- What are the stages of labour
    - 1st stage – onset of labour to full dilation of cervix
        - Active
        - Latent

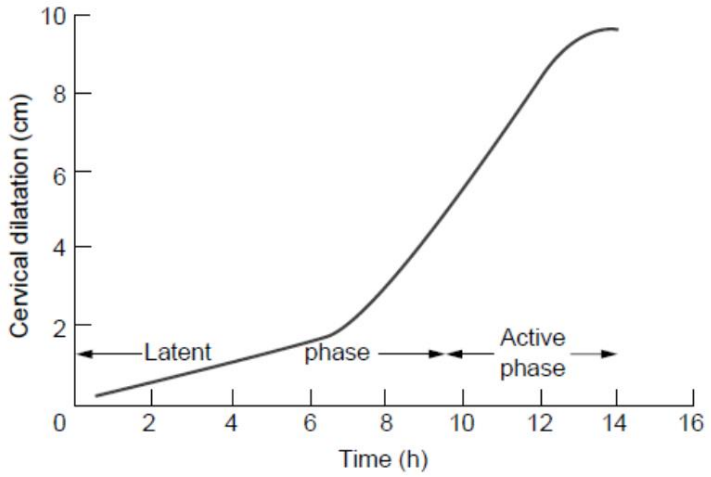


Fig. 7.6 The classic 'sigmoid' curve of progress of cervical dilatation during labour (after [5]).

- 2nd stage – from full dilation of cervix to delivery
- 3rd stage – from delivery of the baby to delivery of the placenta
- 4th stage – 1-2 hours following delivery of the placenta
  Mother is at risk of PIH, PPH
  Need observation

- Bishop score
  - Assess the favorability of the cervix for vaginal delivery
  - 5 main components
    - Station
      - Descent of the baby into the maternal pelvis
      - According to an imaginary line between 2 ischial spines
      - When head is in this line it is zero
      - When above it is (-)
      - When below (+)
      - From-5 at pelvic inlet to +4 at pelvic outlet
    - Dilation
      - Size of the cervix from 0cm to 10cm
    - Effacement
      - Shortening of the cervix
      - Measured in percentage
      - If normal 0%
      - Half its original size 50%
      - 100% effaced- external OS overlaps internal OS
    - Position
      - Direction of the cervix
      - Posterior, anterior, central
      - Anterior cervix is more favourable
      - Posterior is less favourable
    - Consistence
      - Softer the cervix better the chance for vaginal delivery

Score	0	1	2	3
Dilation (cm)	0	1-2	3-4	5- 10
Effacement (%)	0 - 30	40 - 60	60 – 70	>80
Station	-3	-2	-1/0	+1/+2
Consistence	firm	medium	soft	-
Position	posterior	central	anterior	-

Partogram

- Complications & management plan should be written in the top
- Cervical dilation

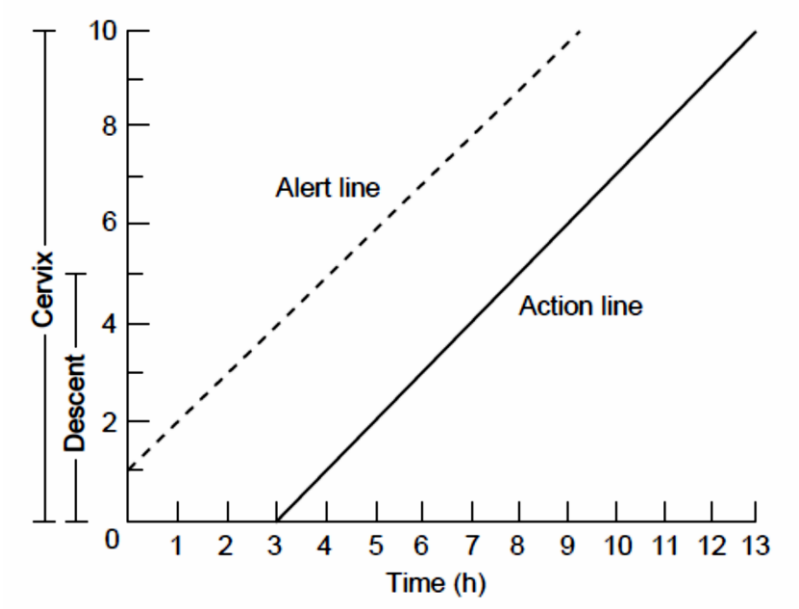


Fig. 7.7 The partogram with 'alert' and 'action' lines proposed

Past section

History

Introduction

30 year old lady with 2 living children, in her ….rd pregnancy admitted for confinement at 38 weeks of POA. She is a house wife who lives at …… . She has undergone LSCS in her 2nd pregnancy.

❖ Increasing age more likely to undergo LSCS. Multiparity is more likely to cause rupture of uterus

Other presentations
- VBAC
- Lower abdominal pain

History of presenting complaint

- Ask about the current pregnancy- LMP, EDD
  - T1 – hyperemesis [IUGR lead to LSCS]
  - T2 – GDM, PIH [macrosomic baby, IUGR]
  - T3 – growth scan large baby /small/normal size, USS finding of placental location after 34

Weeks, abnormality of location, multiple pregnancy [risk of rupture], abnormal presentation, History of vaginal bleeding

Previous section

- When
- Where
- Indication – Fetal/Maternal
- Elective/emergency & how long was she in labour (To find-out the stage of labour)
- Type of scar
- Gestation (preterm labour likely upper segment)
- Type of anaesthesia
- Birth weight
- NVD following LSCS [less likely to rupture]
- Perineal tears
- Post-partum hemorrhage
- Infected scar
- Endometritis following LSCS [severe abdominal pain, high fever, purulent vaginal discharge, vaginal bleeding, given IV antibiotics]

Gynaecological History

- Myomectomy
- Hysterotomy done [opened endometrium]
- Hx of subfertility
- Previous pelvimetry

Past medical history

- IHD, anemia & other comorbidities

Family History - DM, HT

Social History - Social issues, Adequate income, Family support, Future fertility wishes, Need LRT, Distance from home, Transport facilities,

Examination

- Type of scar, tenderness over scar
- SFH for IUGR or macrosomia
- Abnormal lie/presentation
- Multiple pregnancies
- EFW

Management

- Clinical pelvimetry
- Obstetric USS – growth, fetal macrosomia, hydrocephalus like anomalies, Placental location
- Give a trial of scar
    - Patient is advised to be present to the hospital early in labour.
    - Await spontaneous onset of labour. (Medical induction of labour with PGE_2(Dinoprostone) is associated with an increase risk of uterine rupture. So it shouldn't be used)
    - Once she is in labour take her to the labour room.
    - Keep her fasting.
    - Insert large bore IV cannula 17 G
    - Take blood for basic investigations - FBC
    - Take blood for grouping & DT & preserve blood 1 pint
    - Adequate pain relief with pethidine or epidural (But epidural can mask uterine rupture)
    - Maintain partogram, monitor BP, PR, RR
    - Continuous CTG monitoring. (Any abnormality, FHR>160 or <120, Loss of baseline variability should be informed to seniors)
    - Continuous fetal heart sound monitoring. In the 1st stage → every 15 mins, 2nd stage → After each contraction)
    - Artificial Separation Membranes and Folly catheter induction can be done
    - Oxytocin can't be given.
    - Inform senior Obstetrician, PHO

Problems of trial of scar

- Uterine rupture
- Placenta acreta
- Placenta previa

- Look for signs of uterine rupture.
    - Maternal
        - Severe continuous pain (Pain which continues between contractions)
        - Fresh vaginal bleeding
        - Scar tenderness
        - Haematuria
        - Tachycardia
        - Hypotension
        - Blood stained liquor
        - Shoulder tip pain
    - Fetal
        - Reduced fetal movements
        - Easily palpable fetal parts
        - Signs of fetal distress (Fetal tachycardia or decelerations)
    - Progress of labour
        - Cessation of contractions
        - Regression of the presenting part

- Hydration - As indicated
- 2nd stage management
- 3rd stage – active management
- If there is impending rupture go for LSCS
- If ruptured
    - Inform seniors, anesthetist, hematologist, PHO, ICU
    - Oxygen via facemask
    - Start IV drip (Hartmann/ N. saline)
    - Get down the cross matched blood & preserve more
- If DIC occurs
    - Inform & get the consent for hysterectomy
    - Rush to the theatre with pre medications
        - IV Ranitidine 50 mg
        - IV Metoclopramide 10 mg
        - Na citrate 30 ml
        - Prophylactic antibiotics
- If the bleeding is severe – hysterectomy
- Repair the sutured site
- Debrief the woman & husband

Discussion

- Factors in deciding the mode of delivery in previous history of LSCS
    - Strength of scar
    - Size of the baby
    - Pelvis & maternal factors

Strength of scar

Well formed scar

Less number of scars - <2 scars

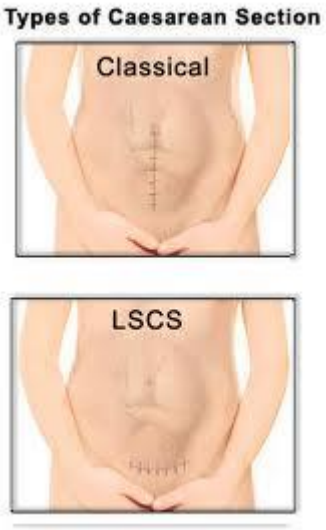
Types of scar (Strength more in LSCS than classical)

Previous incision > 15 months

Previous evidence of uterine, scar infection

Myomectomy with opening into endometrium

} Less strength



LSCS

- Horizontal incision over lower segment.
- Commonest
    - Easy to perform
    - Take the baby out
    - Suture the muscle layers
- Less bleeding
- Less infection

Upper segment scar

- Mid line scar over upper segment
- Increase bleeding
- Less approximation
- Higher incident of rupture next time if NVD
- Indications
    - Fibroids in lower segment
    - Placenta previa
    - Preterm breech with poorly formed lower segment
    - Transverse lie with ruptured membranes
    - Transverse lie with congenital anomaly of uterus

Inverted T scar

- Less strength

J shape scar

- Indications
    - Transverse lie
    - Premature baby
    - Difficulty in delivering the baby

Size of the baby

- By clinically - examination
- USS

Size of the pelvis & maternal factors

- Clinical pelvimetry
- Maternal comorbidities
    - DM
    - HT
    - Placenta previa
    - Increase age

- What should you do in emergency cesarean section?
    - Informed written consent
    - IV cannula
    - Take blood for DT & preserve 1 pint
    - Pre medications
        - IV Ranitidine 50mg
        - IV Metoclopramide 10mg
    - IV N/S infusion of 1 pint
    - Send with prophylactic antibiotics
        - IV Metronidazole 500mg
        - Ampicillin 2g
    - Inform PHO
    - Prepare the theatre list & inform theatre, Anesthetist
    - Give Na Citrate before induction of anaesthesia
    - Inform PBU if the baby is premature

- Absolute contraindications for vaginal birth
    - Previous classical/Inverted "T" uterine scar
    - Previous hysterectomy or myomectomy entering the uterine cavity
    - Previous uterine rupture
    - Presence of contraindications to the labour such as placenta previa
    - Malpresentations

- Relative Contraindications for vaginal birth
    - Previous surgery for stress incontinence
    - Previous 3rd or 4th degree perineal tears.

Post term pregnancy

History

- LMP
    - similar to her normal periods
    - Regular
    - Any contraception
- USS done during antenatal period
    - at which gestation
    - Dating scan
    - Anomaly scan
    - Growth scan
- Presence of any maternal complications –GDM,HT
- Presence of symptoms of labour – colicky abdominal pain, watery vaginal discharge
- PHx or FHx of post term pregnancies.
- Always talk about the baby
    - Fetal movements
    - USS results

Examination

- General Ex of the mother
- Ex of all systems
- Abd Ex
    - Amount of liquor
    - Size of the baby
- VE – to assess the favourability of the Cx

Management

- Get admitted by 40 wks of gestation
- ASOL (not more than 42wks)
- Fetal movement chart
- PPBS
- CTG – daily
- Reassure

Mother should be advised to get admitted by 40 wks

Pregnancy should not be allowed to continue more than 42wks

- It may lead to placental insufficiency
- Maternal complications
    - Perineal injury
    - ↑rate of LSCS

- Perinatal complications
  - ↑ rate of perinatal mortality; x2 by 42wks, x6 by 43 wks
  - Fetal macrosomia
  - Shoulder distocia
  - CPD
  - Post maturity Xn
    - oligohydroamnios→due to pacental insufficiency
    - meconium aspiration
    - reversible neonatal complications

An impending post term baby

↓

Whose gestation age is b/w 40-42wks of gestation

- whether to deliver the baby or not
- if so when & how to deliver the baby

If a decision not to deliver the baby is taken

↓

Due to cervix is not favourable

↓

Careful monitoring of the mother & the fetus is done

Look for the presence of complications

- fetal growth restriction
- oligohydroamnios
- maternal disease

If the cervix is favourable + no CPD

↓

Induction can be done

↓

With ARM & syntocinon(augmentation)

↓

Baby can be delivered vaginally

In mothers who don't have the above complications + low risk pregnancy

↓

ASOL

During this period careful fetal monitoring is done

- FHS
- Fetal movement chart
- USS for
  - fetal well- being
  - Amnoitic fluid index
  - biophysical profile
- CTG

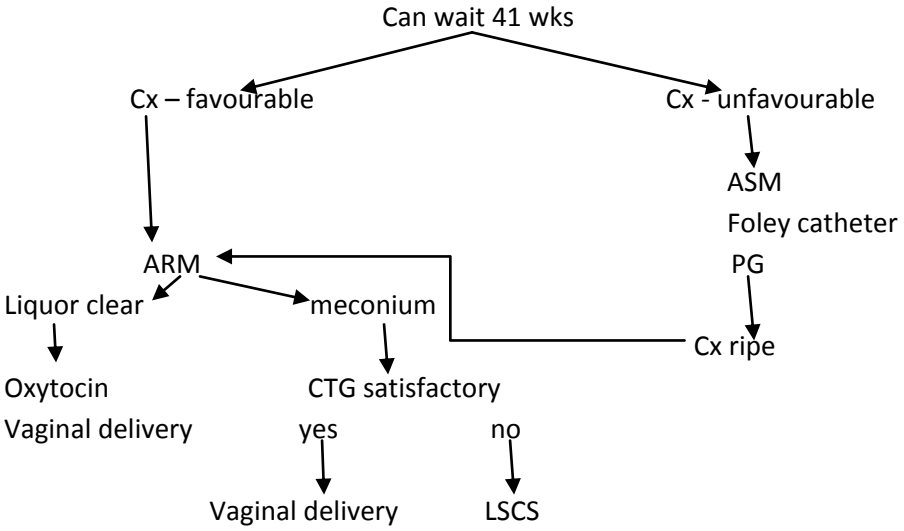
Immediate induction of labour or delivery done if

- ↓ amniotic fluid index on scan
- ↓fetal movements
- Abnormal CTG

1. Maternal well being
2. Fetal well being
3. Progress of labour
4. Pain relief
5. Adequate hydration
6. Special situations

During labour

- Partogram is maintained
- Look for signs of fetal distress – meconium stained liquor
- Inform PHO
- Pt should be prepared for EM LSCS as CPD may occur
- 3rd stage is actively managed
- Carefully monitor the neonate
- Look for the signs of meconium aspiration
- Neonatal hypoglycaemia
- Look for Features of post maturity
  - Dry peeling skin
  - Over grown nails
  - Abundant scalp hair
  - Visible creases of palms & soles
  - Minimal fat deposits



Definition of 'Term'

37-42 weeks of gestation

Why post term pregnancy is a problem?

- At this gestation baby is at its maximum size
- Placenta is becoming more calcified, less efficient & more prone to failure

Causes for post term

- Wrong dates
- Familial; genetic factors, male gender
- Maternal
  - Primi, elderly, previous post term
- Fetal
  - Anencephaly

Complications

Maternal
- ↑morbidity due to induction & operative delivery

Fetal
- During pregnancy
  - ↓placental function
  - Oligohydroamnios
  - Meconium
  - IUD
- During labour
  - Fetal hypoxia
  - dysfunctional Labour
  - Meconium aspiration
  - Shoulder dystocia
  - Cord compression due to oligohydroamnios
- Following birth
  - Hypoglycaemia
  - Polycythaemia
  - Respiratory distress

- ***Labour***
- Spontaneous
- Artificially induced
- Spontaneous & augmented

Assessment of the cervix→Bishops score
- Effacement – length of the Cx
- Dilatation- 10cm
- Position- anterior/ posterior
- Consistency – soft
- Station of the presenting part

Unfavourable - <6
Favourable - >6 (better for induction)

Common indications for induction
- Post dates
- Fetal growth restriction
- Other evidence of placental insufficiency; oligohydroamnios
- Pre eclampsia
- Other maternal hypertensive disorders
- Deteriorating maternal illnesses
- PPROM (prolonged prelabour rupture of membranes)
- Unexplained APH
- DM
- Twin pregnancy continued beyond 38wks
- Rh iso-immunization

Induction
Induction of labour is the planned initiation of labour prior to its spontaneous onset.

Augmentation
Speeding up the progress of labour when the progress is not satisfactory

Induction of labour

- Favourable
- Intact membranes→ ARM
- Unfavourable
  - Cervical ripening
    - ✓ Pharmacological-PGE2,anti-progesterone agents(mifepristone)
    - ✓ Non-pharmacological- ASM, Foley catheter induction

Augmentation

- Oxytocin infusion
- Look for uterine hyperstimulation
  - Contractions lasting > 90 Sec
  - > 4 contractions per min

	oxytocin	ARM
Contraindications	Previous uterine scar Grand multipara (>4) Abnormal lie & presentation(transverse lie, breech) Allergy to oxytocin High head	Abnormal lie & presentation High head Vaginal infection Placenta previa
complications	Hyperstimulation Fetal distress Uterine rupture Hypersensitive reactions	Cord prolapse Hand prolapse Infections (chorioamnionitis) Damage to Cervix & fetus
Advantages		-Visualize liquor -Meconium could be detected -Less risk of amniotic fluid embolism -Minimize uterine volume & -allow more effective contractions

Avoid PG in

- Past LSCS
- Abnormal presentation
- Acute asthma

Hypertensive disorders in pregnancy

History

General information

- Name
- Age
- Gravidity and parity
- LMP(5 things) and POA
- Calculate the EDD

P/C

1. Chronic hypertensive patient(can have supper added pre-eclampsia)(high risk)
2. Gestational hypertension
3. Pre-eclampsia

H/P/C

Any presenting feature assess further

- ✓ Onset
- ✓ Duration
- ✓ Progression
- ✓ Associated features wise

History of current pregnancy

Trimester 1	○ Is it a planned/expected pregnancy ○ Pre-pregnancy folic acid ○ Rubella vaccination ○ Date of confirmation of preg. & how ○ Booking visit (At what POA) – in SL <8wks ○ Tests done : Urine – **Sugar**, **Albumin** Blood – Group/DT, Hb, VDRL, PPBS **BP** (Even though the BP is normal there can be hidden high BP due to progesterone effect resulting systemic vasodilatation) ○ Complications : ▪ Excessive vomiting ▪ Bleeding PV ▪ Drugs taken ○ Ultra sound scans done (Dating scan 11 -13wks) → Measure crown-rump length ✓ To confirm EDD (Calculated date taken if within one week of scan date) ✓ Detect congenital anomalies (Anencephaly, Spina-bifida) ✓ Chorionicity if twin pregnancy (best detected at 9-10 wks) ✓ Identify maternal gynaecological abnormalities (Ovarian cysts, Fibroids) ✓ Identify the site of the fetus in uterus (Fundus is normal)

Dating scan

- 11-12 Wks – CRL
- 12-20 Wks – BPD
  HC
  FL

Trimester 2	○ Regular antenatal visits, Quickening, Tetanus, Complications ○ **BP record** ○ **PPBS** (after 28 wks) ○ Anomaly scan (18-22wks) ✓ To identify placentation (Low lying placenta : <28wks → Should undergo repeat USS at 28 weeks → If still low lying → Placenta preavia ○ $FeSO_4$, Vit C (Given at night after meals from T_2 to 6 months after delivery) ○ Calcium lactate and Folic acid ○ Detection of GDM/PIH
Trimester 3	○ **PV bleeding, GDM, HT**, **Ante-partum haemorrhage, Growth retardation** ○ Weight gain ○ Fetal movements ○ Growth scan (after 28 wks…. In case of growth problem 2weekly repeat scans done) ✓ BPD, HC, FL, AC measured. To identify IUGR compare HC & AC ✓ Detection of fetal macrosomia

Symptoms and sign of pre eclampsia

Symptoms of imminent eclampsia
- Headache
- Visual haloes
- Vomiting
- RHC pain

	Complication	features
Maternal CNS	Eclampsia Cerebral haemorrhage/oedema Cortical blindness	Fits, persistent headache, visual blurring, visual halos, scotomas
Renal	Renal cortical necrosis Renal tubular necrosis	Reduced UOP
Respiratory	Pulmonary oedema	Chest pain, cough, haemoptysis
Liver	Periportal necrosis Subcapsular haematoma HELLP syndrome	RHC pain, jaundice
Coagulation system	DIC Microangiopathic haemolysis	Bleeding
Placenta	Abruptio placentae Retroplacental bleeding	Abdominal pain Vaginal bleeding
fetal complications	IUGR Fetal hypoxaemia IUD	SFH measurement in clinics and Hx Fetal movements

Risk factors

Maternal	Fetal/placental factors
Primigravidity Age < 20; >35 H/O pre eclampsia Obesity Medical disorders ✓ Chronic renal disease ✓ Chronic hypertension ✓ G.D.M. ✓ Antiphospholipid syndrome F/H of pre eclampsia Rh disease, multiple pregnancy-large pregnancy	Advancing gestational age Multiple pregnancy H.mole triploidy

POHx-hypertensive disorders in past pregnancies
DM
Menstrual and gyn Hx
PMHx/PSHx- chronic HT/ DM
FMx-pre eclampsia, young
SHx

Examination

Signs of imminent eclampsia
- Facial swelling
- Finger tip swelling
- RHC tenderness
- Exaggerated tendon reflexes
- Clonus
- Papilloedema

General
- ✓ Wt/ht-BMI
- ✓ Jaundice(fulminant hepatic failure)
- ✓ Patichiae, bruising, bleeding gum
- ✓ Fluid retension(non dependant)-face and finger tips

CVS
- ✓ PR
- ✓ BP-
  - ➢ Position- left lateral or seated (avoid aorto-caval compression)
  - ➢ Appropriate size cuff
  - ➢ Patient should be resting
  - ➢ Muffling sound should be taken as diastolic
  - ➢ More important value is DBP - more related to maternal and fetal morbidities and motality
  - ➢ Systolic is related to cerebral perfusion

RS
- ✓ Lung bases for crepts

CNS
- ✓ GCS
- ✓ vision
- ✓ Knee jerk
- ✓ Clonus >1
- ✓ Fundi- papilloedema, haemorrage

Investigations

- To confirm diagnosis
  - Urine ward test – Proteinuria
  - UFR (Proteinuria)
  - Urine culture & ABST – To exclude UTI

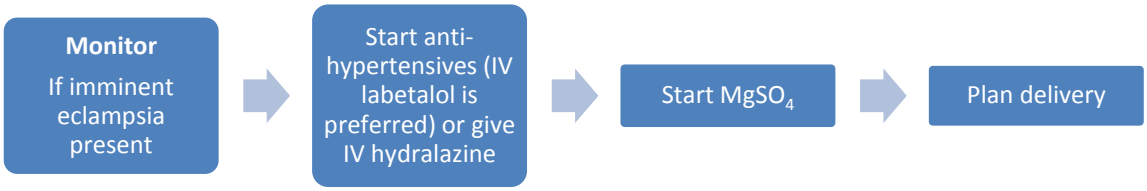
- To identify other organ involvement

Investigation	Complication
FBC(Hb/PLT)	Low platelet
Liver enzymes (SGOT/SGPT)	HELLP/periportal necrosis
S.creatinine SE/BU	Renal function If oliguric
PT/INR (If platelet <100,000)	If platelet are low

- Fetal wellbeing **(affects growth and well being)**
  - USS
    - Growth-HC/AC/EFW
    - Well being-
      - ✓ AFI, fetal movements, fetal tone
      - ✓ Doppler studies(umbilical artery/middle cerebral artery)
  - CTG – tds
  - FHS-tds
  - FM
  - BP – tds (More frequently needed according to severity)

AFI (sum of all the maximum vertical pool measurements from the 4 quadrants of the uterus
- Oligohydroamnios <5cm
- Polyhydroamnios > 25cm

Daily monitoring
- BP – Frequency depends on the condition of the patient)
- FBC - daily
- S. Creatinine – daily
- ALT/AST – daily
- If platelet count < 100,000 → PT/INR
- IP/OP chart
- Urine ward test – tds/qds
- CTG - tds
- FHS – tds
- Maintain fetal movement chart



Management **('healthy mother and healthy baby')**

Early onset pre eclampsia is very difficult to manage

Continuous monitoring
Any fetal compromise deliver the baby in a specialized unit (<30 wks-neonatal unit/PBU)
dexamethasone

In late onset we have to deliver baby early so, have to optimize the fetal condition

- ✓ Treatment of hypertension
- ✓ Correction of hydration
- ✓ Prevention of eclampsia
- ✓ Early delivery of baby

1. Treatment of hypertension

Mild HT	DBP- 90-99 Hgmm SBP- 140-19 Hgmm	No treatment
Moderate HT	DBP-100-109 Hgmm SBP-150-159 Hgmm	Oral drugs
Severe HT	DBP-≥110 Hgmm SBB-≥ 160 Hgmm	IV drugs

Oral drugs

- Nifedipine(SR)-
  - 20 mg bd (max- 80mg/120mg daily)
  - Safe during pregnancy, quick action, only bd dose

- Methyl dopa-
  - loading dose 500-750 mg
  - Continue with 250/8h(3g/day)
  - Take 3 days to act
  - Change every third day

- Oral labitalol-100mg/bd (max 800mg daily)

IV drugs

- IV hydralzine-
  - Bolus- 5mg (can repeat every 15-20 mins up to 4 doses)
  - Infusion (if not settled)-20 mg in 100ml of N/S or RL (not Dextrose)
  - Action-vasodilator(causes reflex tachycardia so stop if HR > 140)

- IV labitalol-(alpha and beta effects)
  - if not controlled with above or HR > 140
  - Bolus-20mg slowly(rpt in every 10-20 mis up to 200mg)
  - Infusion-200mg in 100ml of N/S

2. **Correction of hydration**

- With clear oral fluids
- If severe N/S or R/L iv 200ml bolus over 20-30 mins
  (if oedematous colloids are better than crystalloids)
- Maintenance – 1-1.5 ml/Kg/h
- If UOP <0.5 ml/Kg/H give colloid 50ml or crystalloid 100 ml over 20 mins (can rpt up to 3 boluses), if not improved CVP guided fluid management
- # frusemide can be given when the UOP < 0.5 in the presence of adequate hydration or when there is pulmonary oedema

3. **Prevention and treatment of pre-eclampsia**

Indications for $MgSO_4$

1. Severe PIH or severe pre eclamosia has or previously had eclamptic fit
2. Eclampsia
3. Birth planned within 24 h with severe pre eclampsia

Method of administration

- ✓ Loading dose-4g diluted in 200ml N/S over 10-15 mins(IV/IM)
- ✓ Maintenance-1g/hr as an infusion for 24 hrs
- ✓ Continue 24 hrs following last fit or 24 hrs postpartum whichever is longer

Monitor for toxicity

- ✓ Absent knee jerk
- ✓ Respiratory rate < 10/min
- ✓ UOP > 0.5ml/kg/hr (Catheterize the patient to measure UOP)
- ✓ Heart rate < 50/min

Management of toxicity

- ✓ Stop the drug (reduce or stop)
- ✓ Hydration with fluids (frusemide should be avoided-slow excretion)
- ✓ Calcium gluconate (if severe bradycardia or cardiac arrest)- 10% calcium gluconate over 10 mins

4. **Early delivery of the baby**

- If POA > 34 weeks + BP stable → Induction → Vaginal delivery
- If POA < 34 weeks
  - If < 32 weeks →IM dexamethasone →El-LSCS (Bcoz of ↑ rate of failed induction)
  - If > 32 weeks →IM dexamethasone → Induction → Vaginal delivery
    (But this depends on the condition of the mother and the fetus)

Definition of failed induction
Failure to establish labour after one cycle of treatment, consisting of the insertion of two vaginal PGE_2 tablets (3 mg) at 6-hourly intervals

- Multidisciplinary approach (obstertrician, anesthetist, paediatrician)
- Hysterotomy, NVD, LSCS can be performed
- Once had a fit baby should be delivered ASAP
    - ✓ If in labour room (cervix- 7-10 dilated)- NVD
    - ✓ If not- LSCS

  Close monitoring of fluid balance is needed if pre eclampsia is present
  Avoid ergometrine during third stage-exacerbate the HT

Irrespective of fetal condition indications for delivery

- ✓ HELLP syndrome (within 24h)
- ✓ Eclampsia, severe preeclampsia
- ✓ Liver necrosis
- ✓ Severe water lodgining/oedema(facial/hands)
- ✓ Albuminuria (increasing)

At least monitor postpartum for 48h
But can get a fit even after 2-3 wks after the delivery
Usually resolves after delivery can recur in subsequent pregnancies

5. <u>Postpartum care</u>

- Continue BP monitoring (because 44% eclamptic cases occur after the delivery)
- Monitor for signs of pre eclampsia mainly during first 48h
- Discharge after 3rd day if no complications and BP stable

- Continue antenatal anti HT treatment
- In PIH
    - ✓ Start antihypertensive treatment ≥150/100
    - ✓ If <130/80-can stop the drugs
    - ✓ If , 140/90 – consider reducing treatment

- Chronic HT
    - ✓ Aim to keep <140/90
- If anti hypertensives to be continued. Offer medical review after 2 wks
- Offer medical review for all at 6-8 wk postnatal visit
- If anti HT treatment is to be continued afer 12 wk postnatal review offer specialist assessment
- Advice to achieve and keep BMI 18.8-24.9 before next pregnancy
- Use anti HT which are safe during breast feeding
    - ✓ Labetalol
    - ✓ Nifedipine
    - ✓ Enalapril
    - ✓ Captropil
    - ✓ Atenalol
    - ✓ Metoprolol

[ARB, amlodipine ACEI (other than enalapril and captopril) not have sufficient evidence to comment on safety]

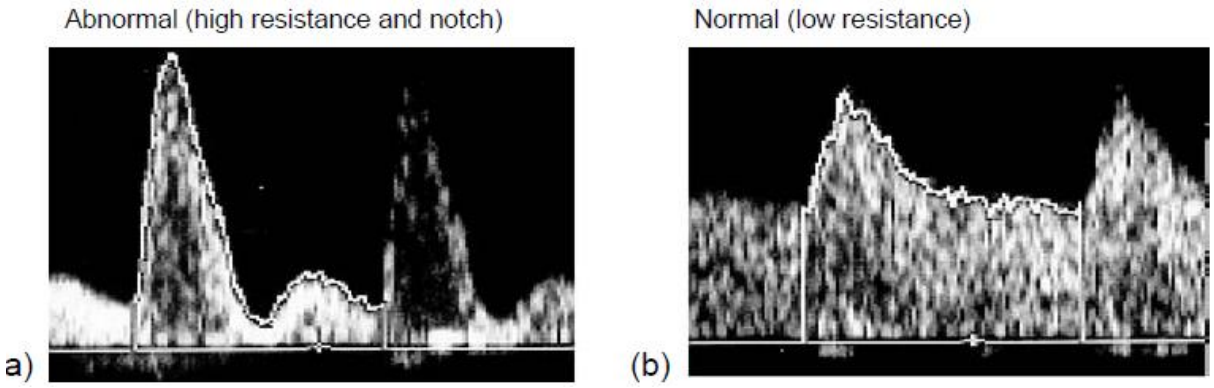
Prevention

At least 2 moderate risk factors or at least 1 high risk factor for pre-eclampsia- aspirin 75mg/day from 12wks till birth

- Low-dose aspirin reverses the imbalance between the vasoconstrictor thromboxane A2 and the vasodilator prostacyclin, which is known to occur in pre-eclampsia

Uterine artery Doppler also a good predictor of future pre-eclampsia (at 12 wks)

- The most promising biophysical test is that of uterine artery Doppler
- Quick and inexpensive test
- Advantage of identifying poor placental perfusion
- There is a relatively high resistant circulation with a notch apparent in the uterine artery Doppler



Moderate	High
First pregnancy	**PHx of HT disorder**
Age ≥ 40	**CKD**
FMHx	**AI disease(SLE,APLS)**
Multiple pregnancy	**DM 1/2**
BMI≥ 35	**Chronic HT**

$MgSO_4$

Used to;

- ✓ Primary prevention
- ✓ Secondary prevention
- ✓ Management of eclamptic fit

Has a wide therapeutic index - does not need to monitor levels

Reversible drug-anti dote- calcium gluconate

Other advantages

- ✓ Relaxes the uterus-reduce preterm deliveries
- ✓ Mild hypotensive
- ✓ Neuroprotective effect-in prevention of CP (2h before premature delivery)

Side-effects

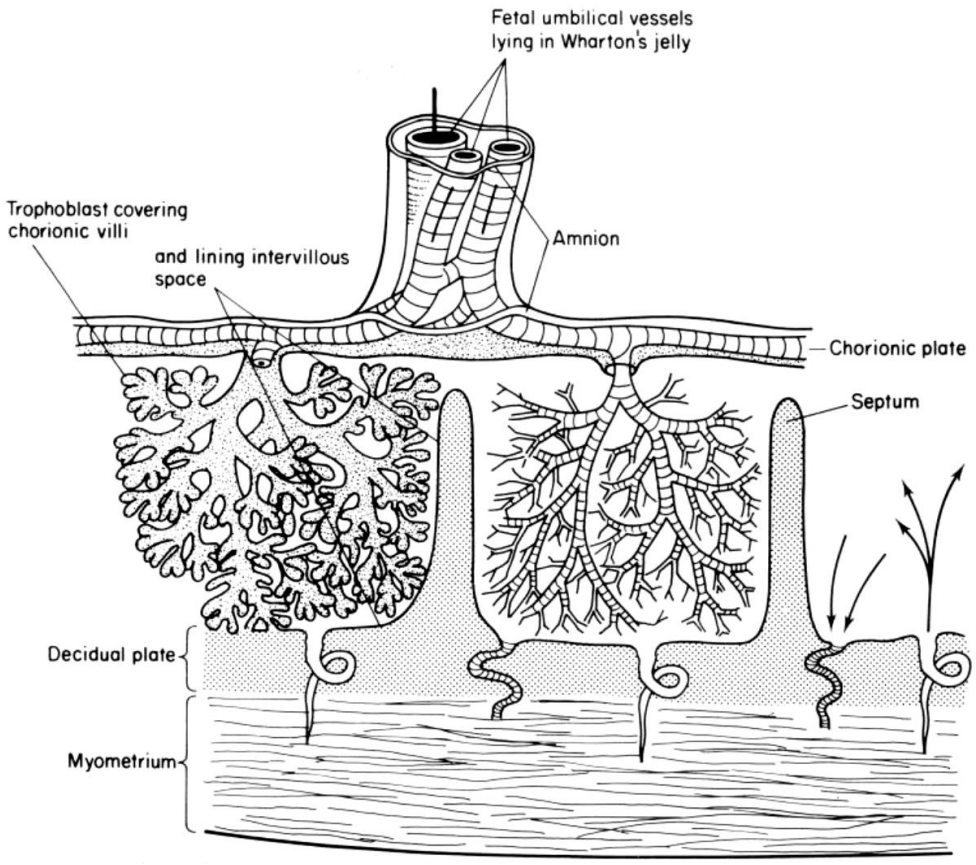
- ✓ Generally associated with hypermagnesaemia
- ✓ Nausea, vomiting, thirst, flushing of skin
- ✓ Hypotension, arrhythmias, coma, respiratory depression
- ✓ Drowsiness, confusion, loss of tendon reflexes
- ✓ Muscle weakness; colic and diarrhoea following oral administration

Administration of $MgSO_4$

- Via burette set
  Remove 25ml from a N. saline pack and introduce 1 vial of $MgSO_4$ (contains 10g in 25ml) to it. Now it contains 10g of $MgSO_4$ in 500 ml (2g in 100ml)
  - Bolus dose – Take 200ml in 100ml aliquots and infuse via burette set within 20 mins (10min per each 100ml) – 600 drops/min for each 100 ml
  - Maintenance – Infuse 50ml/hour (contains 1g) from the same solution. (50 drops per minute via burette set)

- Via an infusion set
  - Bolus – Take 10ml of $MgSO_4$ (contains 4 g) dilute up to 50 ml in N.saline and infuse at the rate of 2.5ml/min
  - Maintenance – Take $MgSO_4$ vial completely and add 25 ml N.Saline (Now 10g/50ml solution). Give at a rate of 1g/hour (5ml/hour)

Pathophysiology



Placenta

- Fetal organ
- Receive highest blood flow of any fetal organ (40% of Cardiac Output)
- Towards the end of the pregnancy compete with fetus for maternal substance
- Functional unite is cotyledons grouped in to visible lobes
- Blood flow increase from(50ml/min in T_1) to 600ml/min in term
- Conversion of maternal spiral arteries by trophoblastic invasion
- From narrow, tortuous muscular vesicles to wide bore flaccid vesicles (lacks smooth muscle/less likely to produce vaso-active compounds)
- Failure of this process results in pre eclampsia/ gestational HT
- This will result in reduced blood supply to placenta
- And that will release a factor(s) to maternal circulation which targets the endothelium

Genetic predisposition → Abnormal immunological response → Deficient trophoblastic invasion
↓
Vascular endothelial cell activation ← Circulating factor(s) ← Hypo-perfused placenta
↓
Clinical manifestations of
the disease

- Evidence suggest that pre eclampsia is due to an activation or dysfunction of vascular endothelium
- Also there is a increase of cell surface markers of endothelial cell damage (vWF, fibronectin)

Normal pregnancy is characterized by marked peripheral vaso-dialataion
↓
Reduced total peripheral resistance(despite ↑ CO and circulatory volume)
(due to reduced sensitivity to vasoconstrictors increased vasodilators produced by endothelium)

- In the pre eclampsia reduced sensitivity to vaso-dialatores and insensitivity to vaso-constricotors is lost
- Vasospasm and endothelial cell dysfunction with platelet activation and micro-aggregate formation results in pathological features of pre eclampsia

What are the other causes of reduced blood supply to the placenta?

- Collagen vascular disease
- APLS
- Severe DM
- Chronic HT

Definitions

Gestational HT

1. BP > 140/90 in 2 or more occasions at least 4 hours apart
2. After 20 wks of gestation
3. In previously normo-tensive patient
4. Resolve completely by sixth post partum weak

Pre-eclampsia

1. Gestational HT +
2. Proteinuria ≥300mg in 24h collection of urine
3. +/- oedema
   Severe pre eclampsia-severe HT + proteiuria

Eclampsia

1. Pre eclampsia +
2. Convulsion

Is the major epileptic form convulsions (tonic clonic), that cannot be attributed to other causes in a pre eclamptic patient (randeniya)
Due to vasospasms leading to cerebral ischaemia and oedema

Management of an eclamptic fit

- General management of a epilepsy(ABC, left lateral)
- Usually self limiting(1-2 mins)
- Give IV/IM Mg sulphate
- If prolonged
  - ✓ IV diazepam 10mg
  - ✓ IV Thiopentone 50mg
- Deliver the baby as early as possible

Rh (-) Mother

History

Mrs. ……, ……yr old lady in her ……. pregnancy with a Hx of T1 miscarriage during her 1st pregnancy presented with……..(PC) at …….wks of POA / admitted for confinement.
Her blood group is …….

Details about each pregnancy-

- Sensitizing events during previous pregnancies-
  - Miscarriages & threatened miscarriages
  - Therapeutic/legal termination of pregnancy
  - IUD
  - Ectopic pregnancy
  - APH
  - Abdominal/pelvic trauma
  - Invasive obs procedures- amniocentesis, cordocentesis, chorionic villous sampling
  - Therapeutic procedures- IU transfusions, ECV, LSCS, manual removal of placenta, ERPC
- Parity & blood group & RH typing of previous children
- Whether Rhogam (anti D Ab) given /not
- Hx of fetal/neonatal complications
  - hydrops fetalis
  - IUD
  - Neonatal jaundice/ kernicterus
  - Rx- phototherapy/ exchange transfusions
- Details of present pregnancy
  - LRMP- date
  - certain/not , documented/ not
  - similar to previous menstruations /not
  - was on hormonal contraception/on lactation

EDD- calculated date & USS EDD (when USS done)

- ANC visit
  - Maternal blood grouping & Rh
  - Fathers blood group
  - Ab screening test done/not
  - Prophylactic Abs given/not

T1 - Threatened miscarriages with heavy bleeding &/or abdominal pain
If yes, anti D given/not

T2 - } APH, therapeutic/invasive procedures- ERPC, abdominal traum
T3 – } features of pre eclampsia, polyhydramnios

- USS Scan
  - Anomaly scan
  - Growth scan

  } Hydrops fetalis

Social Hx- Future fertility wishes, need of LRT

Examination

General Ex of mother
Breast Ex
Abdominal Ex

- Features of polyhydramnios
  - fundus larger than dates(SFH)
  - Shiny glistering abd

- features of pre eclampsia – abdominal wall oedema
- FHS – well being of baby

CVS Ex- BP

Discussion

Pathophysiology

- Rh Ag- 5main types- D, C, c, E, e
  - D Ag is more immunogenic. AD trait.

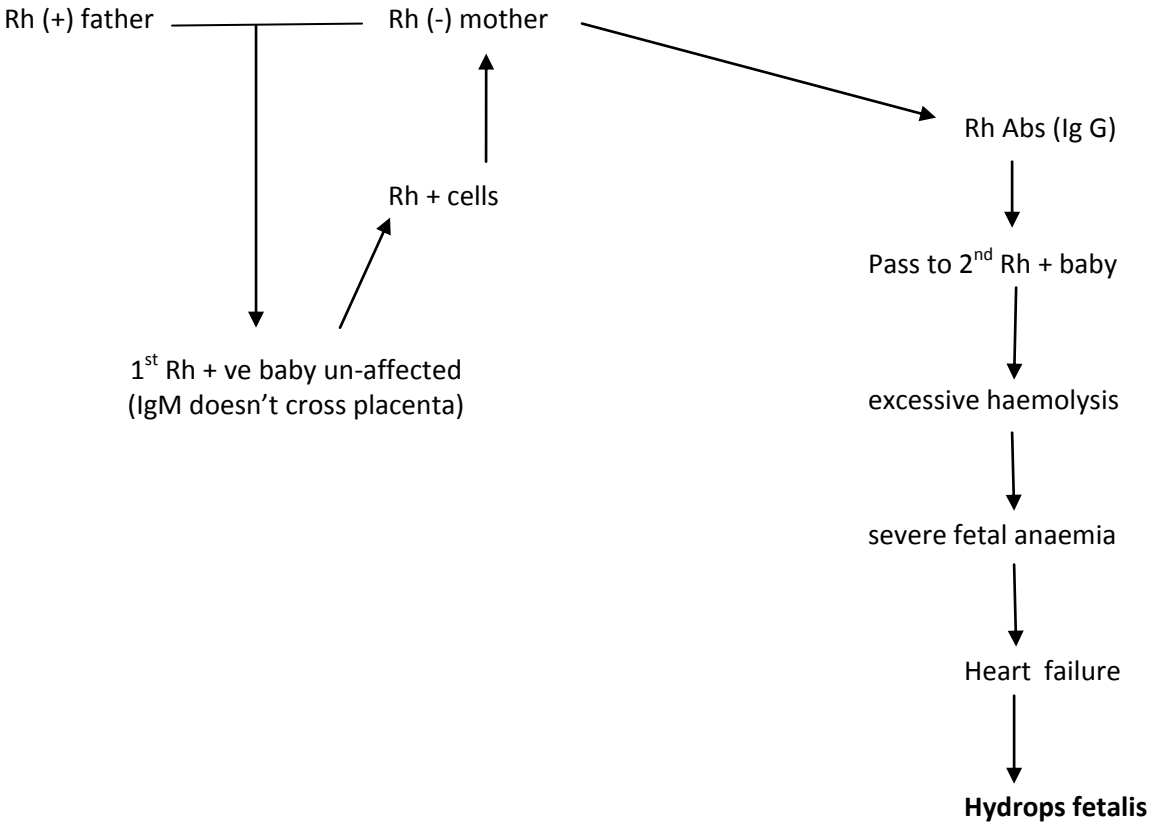
- Rh isoimmunization occurs when,
  - **Mother Rh (-)** (No Rh Ag or Ab) **AND Fetus Rh (+)** (Rh Ag +)

- Sensitizing events-
  - Following delivery, after separation of placenta- commonest
  - Spontaneous miscarriages & threatened miscarriages- after 12 wks
  - Threatened miscarriage before 12 wks if recurrent/severe bleeding/associated abdominal pain
  - ERPC- Regardless of POA
  - Therapeutic/legal termination of pregnancy
  - Ectopic pregnancy

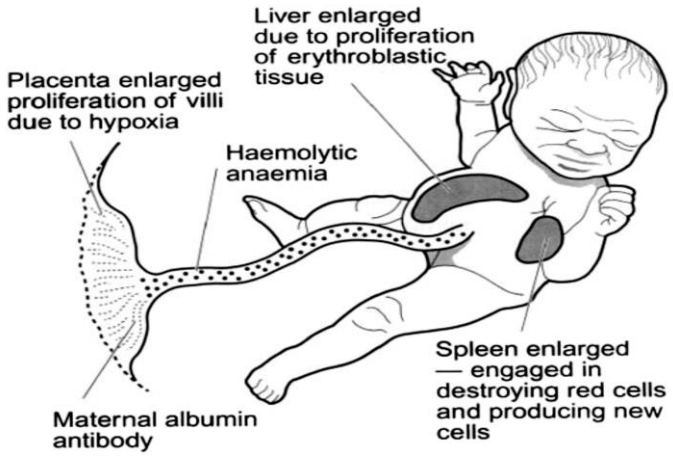
    } Regardless of POA
  - APH
  - Abdominal/pelvic trauma
  - Invasive obs procedures- amniocentesis, cordocentesis, chorionic villous sampling
  - Therapeutic procedures- IU transfusions, ECV, LSCS, manual removal of placenta
  - Antenatal silent feto-maternal transfusions

- In T1, sensitization is unlikely because the volume of fetal blood is so small

- All sensitized mothers does not produce Anti bodies, because
    - Sensitizing dose- 0.25ml
    - Immune tolerance-pregnancy is a state of ↓immunity
    - Co-existing ABO incompatibility
    - Immunogenicity-depend on genotype of fetus



- Generally, the severity of the clinical outcome becomes greater with each subsequent pregnancy



- Complications to fetus & neonate-
    - HDN
    - kernicterus
    - Hydrops fetalis
    - IUD

- Complications to mother-(very rare)
    - Pre eclampsia
    - Polyhydramnios
    - Big baby with its complications
    - Hypofibrinogenaemia- due to prolonged retention of dead tissue in uterus
    - PPH-due to big placenta & blood coagulopathy

Hydrops fetalis - progressively ↑ing fetal anaemia → extra medullary haemopoesis → Hepatospenomagaly

Tissue anoxemia → damage to liver

Other functions of liver ↓ → hypoalbuminaemia → ↓oncotic pr → generalized fetal oedema

- Diagnosed by
    - USS
        - scalp oedema (1st sign)
        - Grossly oedematous fetus

- Jaundice is not a feature in IU period, because fetal bilirubin is conjugated & excreted by maternal liver.
- Leads to IUD or death soon after birth

HDN

- Fetus born alive with anaemia & hepatosplenomegaly
- No jaundice at birth**,** umbilical cord bilirubin↑ & amniotic fluid abnormally yellow
- Later develops jaundice, because immature liver cannot handle the ↑bilirubin load.
- Lifespan of maternal Ig G in fetal circulation -100 days. Thus, fetal haemolysis continues up to 3 months after birth.

Kernicterus

- Until about 10th day of life BBB is not functionally mature. Thus accumulated UC bilirubin (fat Soluble) cross immature BBB & gets deposited in basal ganglia → neurotoxicity → Permanent brain damage → Permanent sensoneural Deafness → Developmental delay (MR)

- Acutely- child is irritable, lethargic, refuse feeds, ↑pitched cry, involuntary movements & neonatal seizures.

Management

- Blood grouping & Rh typing at ANC booking visit - Identify mothers at risk early
- Screen for unexpected Abs (To identify silent feto maternal transfusions)
    - at booking visit of POA
    - 28 wks of POA
    - 34 wks of POA

- 2 Methods of antibody screening
    - Direct method → by directly calculating the Ab titre in maternal circulation.
    - Indirect method → Indirect coombs test
        - Rh(+) RBC are added to maternal serum & intubate. Add coomb's reagent
        - If anti D Abs present in maternal serum, they bind to these Rh(+) RBCs
        - Coomb's reagent contain IgM Abs against these Ag-Ab complexes
        - If clumping of RBC is present → test (+)

- If screening become + → quantitative analysis of Ab titre – by direct & indirect methods
    - Direct method → directly assess the Ab titre in maternal blood
        - When Ab titre is > 1/16 dilution – critical titre
        - If Ab titre is rising or fetus shows any distress - do amniocentesis for further evaluation

    - Indirect method → USS guided amniocentesis – amniotic fluid sample send for spectrometric assessment to assess the quantity of bilirubin in the fluid.

- Afterwards serial levels of Abs has to be done. If,
    - Low titre, not rising, no evidence of fetal distress → continue pregnancy under close supervision
    - Ab level is above critical titre & any evidence of fetal hydrops → immediate delivery

Mother not sensitized previously

- Ideally prophylactic anti D (500iu / 100 µg) is given at 28 & 34 wks of POA to Rh negative mothers (not practice in SL due to ↑cost)
- If a potentially sensitizing event occurred
    - <20 wks POA- ½ a vial of anti D
    - >20 wks POA- 1 vial of anti D

- Following delivery,
    - Clamp umbilical cord early
    - Cut cord away from umbilicus-to facilitate possible exchange transfusion
    - Maternal end of cord should not clamp, drain early
    - Collect cord blood,
        - 2ml-blood grouping & Rh
        - 2ml-serum bilirubin
        - 2ml-direct coombs test

        } Plain bottle

        - 2ml-fetal Hb
        - 2ml-reticulocyte count

        } EDTA bottle

- Direct coomb's test – coomb's reagent is added to fetal RBCs. Incubation is not required. If there is clumping of RBCs – test is positive
- 1 vial (300µg/1500IU) of anti D (Rhogum) IM - to deltoid, for those who have delivered an Rh+ baby. (should give before 72 hrs of delivery.)
- If mother has a bleeding disorder – give via IV / SC route

If mother sensitized previously

- Test for blood group & Rh factor of father
- If Rh +, do karyotyping of father to see whether he is homozygous/heterozygous.(not done in SL)
    - If homo:-Rh+ babies- 100%, If hetero:- Rh+ babies- 50%
- To confirm Rh status of baby - amniocentesis (not done in SL)
- No value in giving anti D Abs to a previously sensitized mother.

Serial measurements of maternal Ab levels- if Ab titer > 4 IU or if the titer is progressively ↑ing

↓

Significant

↓

Assess fetus with 2 weekly USS & Doppler scan-look for early features of hydrops fetalis.

- If fetus severely affected-consider POG
    - POG<34wks - 2 doses of 12.5mg of IM Dexamethasone, 12 hrs apart & Consider immediate delivery by LSCS/IOL or IU transfusion of blood -leukocyte depleted O(-ve) blood cross matched with maternal blood.
    - POG>34 wks- immediate delivery

- If fetus not much affected
    - Pregnancy : continue till term
    - Close monitoring of fetus
    - Delivery can be performed virginally (should done at a centre with neonatal resuscitation facilities & presence of a PHO)
    - Following delivery- assess for jaundice. Consider giving phototherapy or exchange transfusion.

- Counsel mother
    - Possible complications to baby
    - Possible complications to occur in future pregnancies
    - Family planning methods
    - Early booking visits in future pregnancies

Kleihauer Test-

- Done to detect the amount of feto-maternal haemorrhage
- When a sample of maternal blood is acidified, maternal adult Hb denature & adult red cells shrink – appear as 'ghost cells'. Fetal Hb is resistant to acid denaturation- will stand out in blood picture.
- Dose of anti D Abs depend on,
    i. POA
    ii. Amount of feto-maternal haemorrhage

T 1 - Small fetal blood volume, unlikely for sensitization to occur
T2, T3 – Dose calculated by kleihauer test

Eg: If 1ml of blood transfused → 20µg Ag transfused
If 50ml transfused ⟶ 20 x 50 = 1000µg

Rhogum vial contain (2ml) - 300µg
Thus, mother should receive ⟶ 1000/300 = 3.3 vials