CEPHALO PELVIC DISPROPORTION (CPD)

CEPHALOPELVIC DISPROPORTION CPD

CPD is a pregnancy complication in which there is a size mismatch between the **mother's pelvis** and the **head of the baby**.

CPD can stall or completely halt vaginal delivery, making it dangerous or impossible; if an attempted vaginal delivery is unsuccessful, doctors should quickly move onto a C-section.

CPD either due to :-

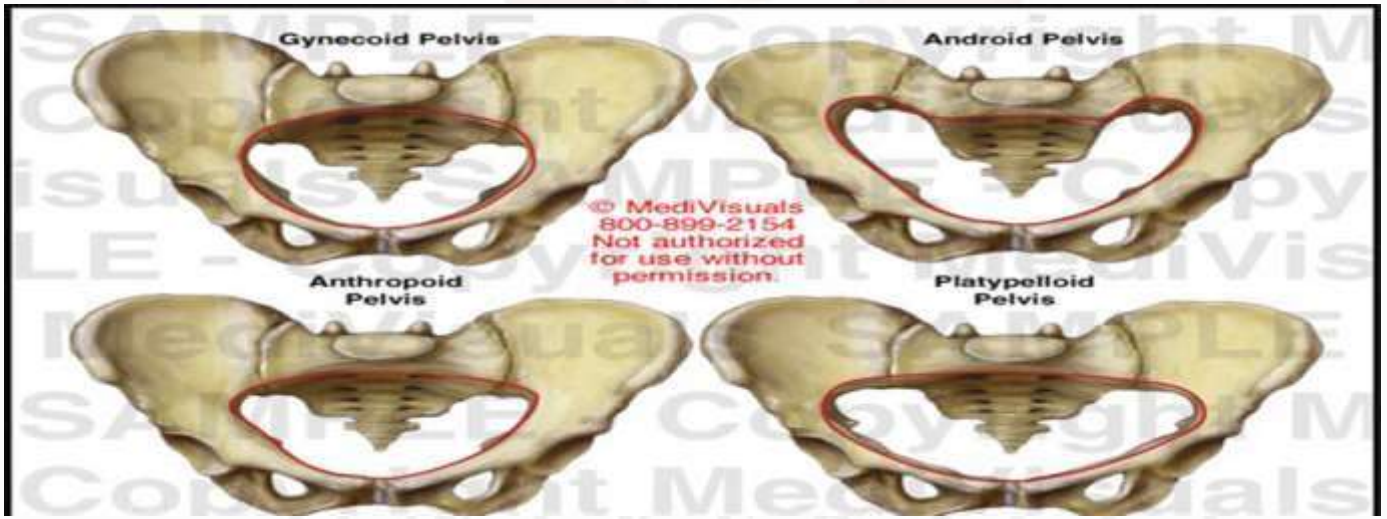
- **The baby's head is proportionally too large**
- **the mother's pelvis is too small**

to easily allow the baby to fit through the pelvic opening

Causes :-

1. Large baby due to:
   - Hereditary factors
   - Diabetes
   - Postmaturity (still pregnant after due date has passed)
   - Multiparity (not the first pregnancy)
2. Abnormal fetal positions
3. contracted pelvis
4. Abnormally shaped pelvis

Contracted Pelvis



Contracted Pelvis

Definition:

- **Anatomical definition**: It is a pelvis in which one or more of its diameters is reduced below the normal by one or more centimeters.
- **Obstetric definition**: It is a pelvis in which its size & shape is sufficiently abnormal that interfere with vaginal delivery of normal size fetus

Factors influencing the size and shape of pelvis

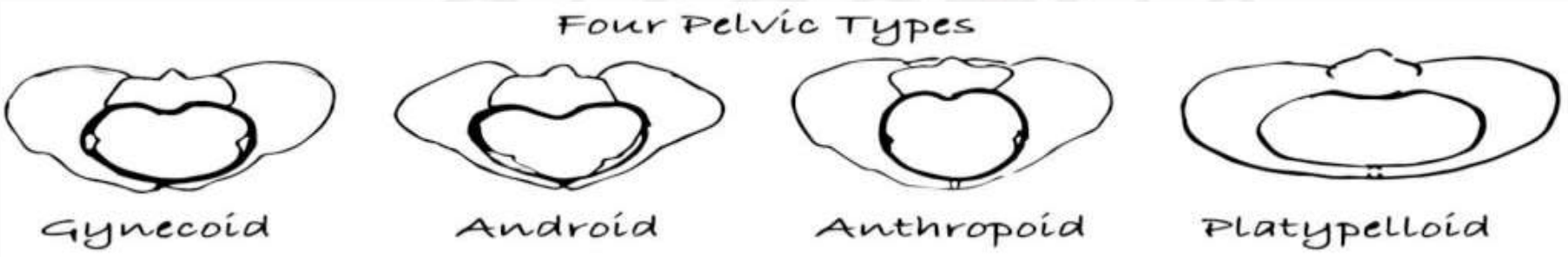
1. **Developmental factor**: hereditary or congenital.
2. **Racial** factor.
3. **Nutritional factor**: malnutrition results in small pelvis.
4. **Sexual factor**: as excessive androgen may produce android pelvis.
5. **Metabolic factor**: as rickets and osteomalacia.
6. **Trauma, diseases or tumours** of the bony pelvis, legs or spines.

Etiology of Contracted Pelvis

Causes in the pelvis

- **Developmental (congenital):**

1. Small gynaecoid pelvis (generally contracted pelvis).
2. Small android pelvis.
3. Small anthropoid pelvis
4. Small platypelloid pelvis (simple flat pelvis)



5Naegele's pelvis: absence of one sacral ala

6Robert's pelvis: absence of both sacral alae.

7High assimilation pelvis: The sacrum is composed of 6 vertebrae.

8Low assimilation pelvis: The sacrum is composed of 4 vertebrae.

9 Split pelvis: splitted symphysispubis

Etiology of ContractedPelvis

- **Causes in the pelvis**
- **Metabolic:**

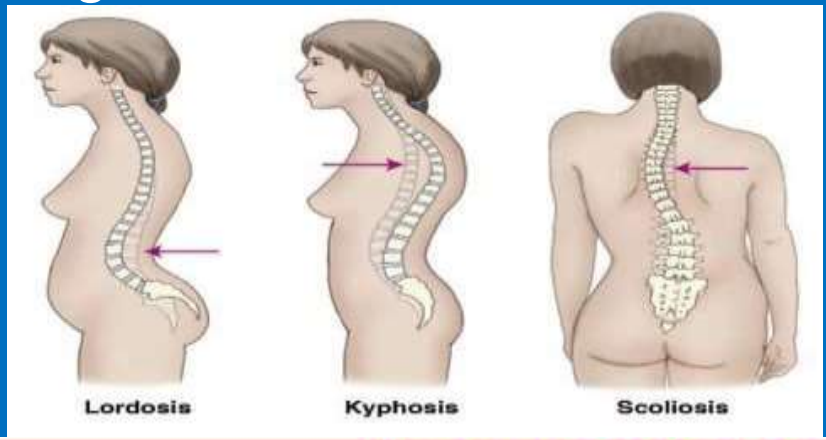
- Rickets.
- Osteomalacia (triradiate pelvic brim).

- **Traumatic**: asfractures.
- **Neoplastic:** asosteoma.
- **Infection :** TB

Causes in the spine

- **Lumbar scoliosis**
- **Spondylolisthesis:**

The 5th lumbar vertebra with the above vertebral column is pushed forward while the promontory is pushed backwards and the tip ofthe sacrum is pushed forwards leading to outlet contraction.



Etiology of Contracted Pelvis

Causes in the lower limbs

- Dislocation of one or bothfemurs.
- Atrophy ofone or both lowerlimbs.

N.B. oblique or asymmetric pelvis: one oblique diameter is obviously shorter than theother. This can be found in:

- Diseases, fracture or tumours affectingone side.

Pelvis

- **History**

- **Rickets**: is expected if there is a history of delayed walking and dentition.
- **Trauma or diseases**: of the pelvis, spines or lower limbs.
- **Bad obstetric history**: e.g. prolonged labour ended by:
  - ❑ difficult forceps
  - ❑ caesarean section or
  - ❑ still birth.

Pelvis

- **Examination**
- **General examination:**

➢ **Gait**: abnormal gait suggesting abnormalities in the pelvis, spines or lower limbs.

➢ **Height**: women with less than 150 cm height usual y have contracted pelvis.

➢ **Spines and lower limbs**: may have a disease or lesion.(kyphosis,…)

Pelvis

•Examination

•General examination:

- **Manifestations of rickets as:**
  - square head
  - rosary beads in the costalridges.
  - pigeon chest
  - Harrison's sulcus and bowlegs.
- **Dystocia dystrophia syndrome**: the woman is*short,obese stocky, subfertile, has android pelvisand

Pelvis

Abdominal examination:

- Nonengagement of the head:

in the last 3-4 weeks in primigravida.

- Pendulous abdomen:

in a primigravida.

- Malpresentations:

are more common.

Pelvis

- **Pelvimetry**:

It is assessment of the pelvic diameters and capacity done at 38-39 weeks.It includes:

1. **Clinical pelvimetry:**

❖ **Internal pelvimetry** for:

✓ inlet
✓ cavity, and
✓ outlet.

❖ **External pelvimetry** for:

✓ inlet and
✓ outlet.

Diagnosis of Contracted Pelvis

- **Pelvimetry:**

2.Imaging pelvimetry:

- X-ray.
- Computed tomography (CT).
- Magnetic resonance imaging (MRI) .

- **N.B.** CT and MRI are recent and accurate but expensive and not always available so they are not in common use.

Internal pelvimetry

is done through vaginal examination

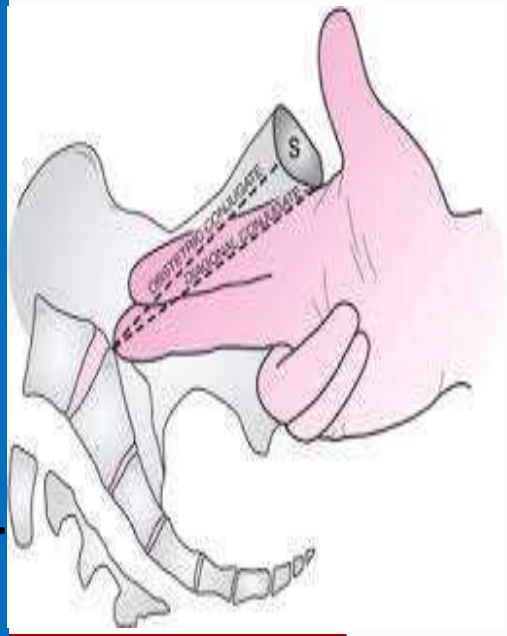
1. The inlet:

a. Palpation of the forepelvis (pelvic brim):

The index and middle fingers are moved along the pelvic brim. Note whether it is round or angulated, causing the fingers to dip into a V- shaped depression behind the symphysis.

b. Diagonal conjugate:

Try to palpate the sacral promontory to measure the diagonal conjugate. Normally, it is 12.5 cm and cannot be reached. If it is felt the pelvis is considered contracted and the true conjugate can be calculated by subtracting 1.5 cm from the diagonal conjugate .This assessment is not done if the head is engaged.



Internal pelvimetry

2.The cavity:

a. Height, thickness and inclination of the symphysis.

b. Shape and inclination of the sacrum.

c. Side walls: To determine whether it is straight, convergent or divergent starting from the pelvic brim down to the base of ischial spines in the direction of the base of the ischial tuberosity. Then relation between the index and middle finger of the base of ischial spines and the thumb of the other hand on the ischial tuberosity is detected. If the thumb is medial the side wall is convergent and if lateral it is divergent.

Internal pelvimetry

- **2.The cavity:**
- **d.Ischial spines:**

✓ Whether it is **blunt** (difficult to identify at all), **prominent** (easily felt but not large) or **very prominent** (large and encroaching on the mid-plane).

✓ The ischial spines can be located by following the sacrospinous ligament to its lateral end.

Internal pelvimetry

2.The cavity:

e. **Interspinous diameter**: By using the 2 examining fingers, if both spines can be touched simultaneously, the interspinous diameter is £ 9.5 cm i.e. inadequate for an average-sized baby.

f. **Sacrosciatic notch**: If the sacrospinous ligament is two and half fingers, the sacrosciatic notch is considered adequate.

Internal pelvimetry

3-The outlet:

a. Subpubic angle: Normally, it admits 2fingers.

b. Mobility of the coccyx: by pressing firmly on it while an external hand on it can determine its mobility.

c. Anteroposterior diameter of the outlet: from the tip of the sacrum to the inferior edge of the symphysis.

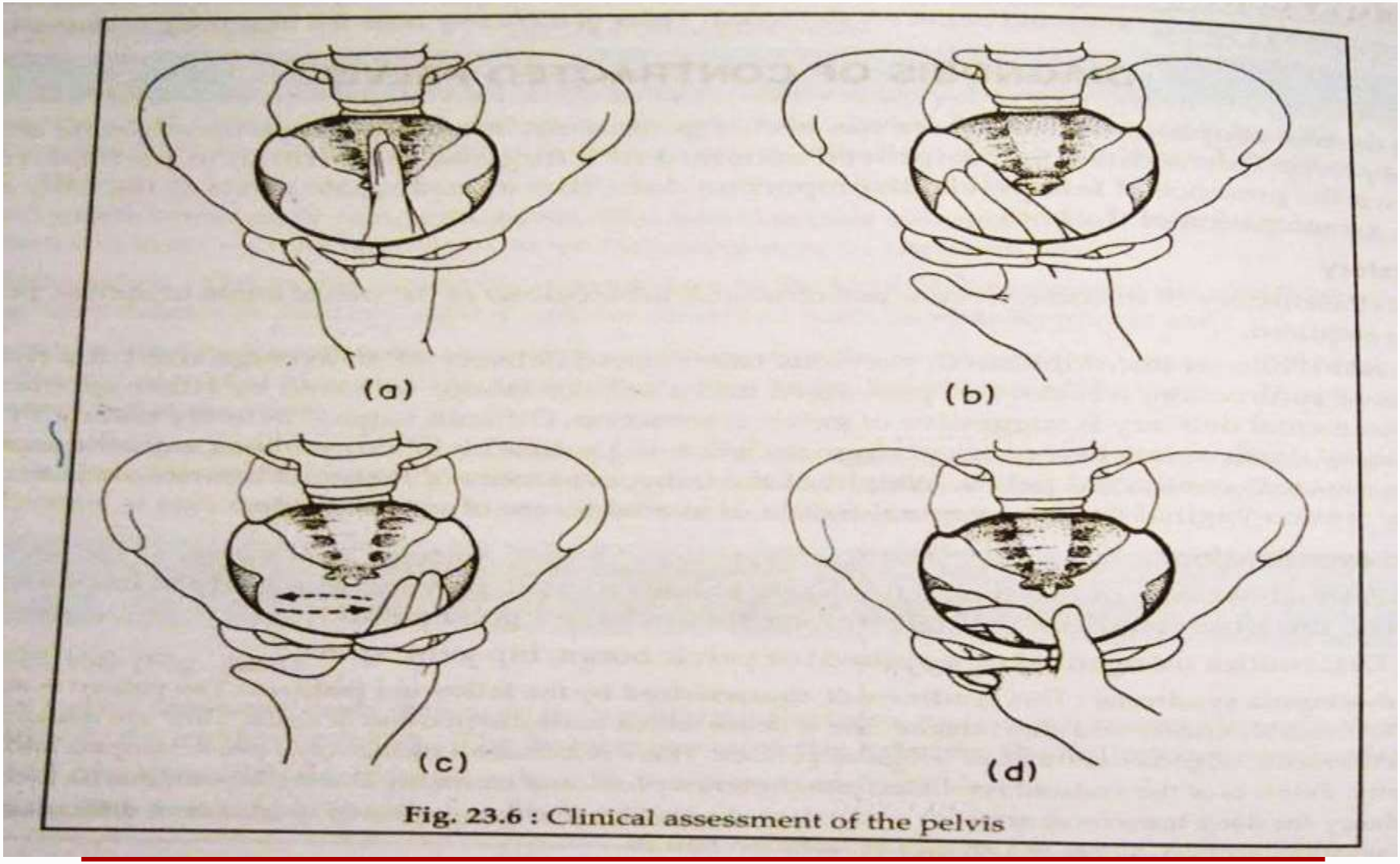
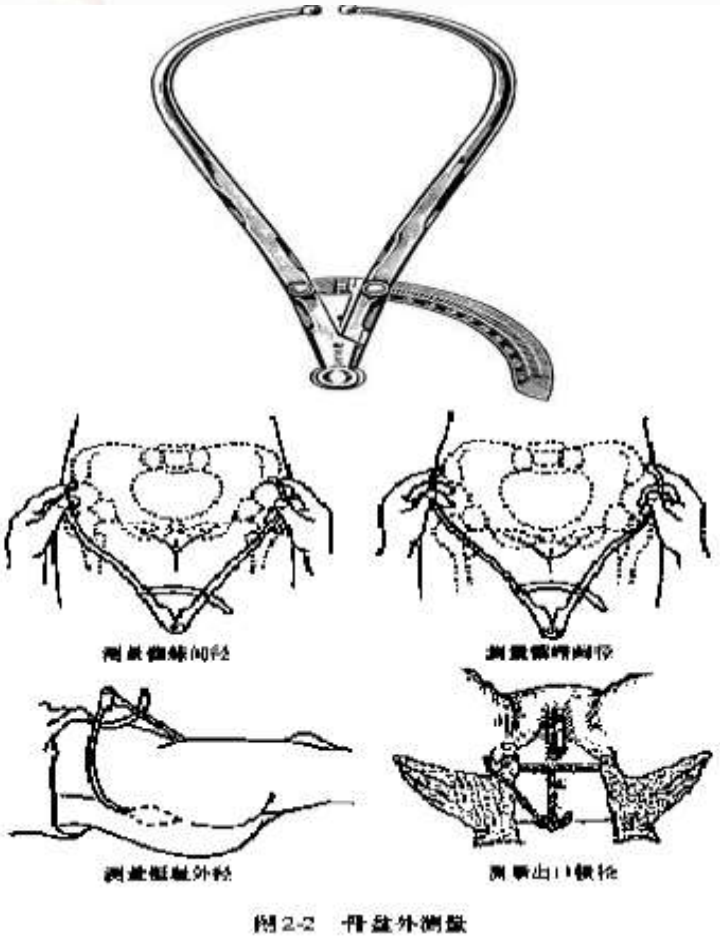


Fig. 23.6 : Clinical assessment of the pelvis

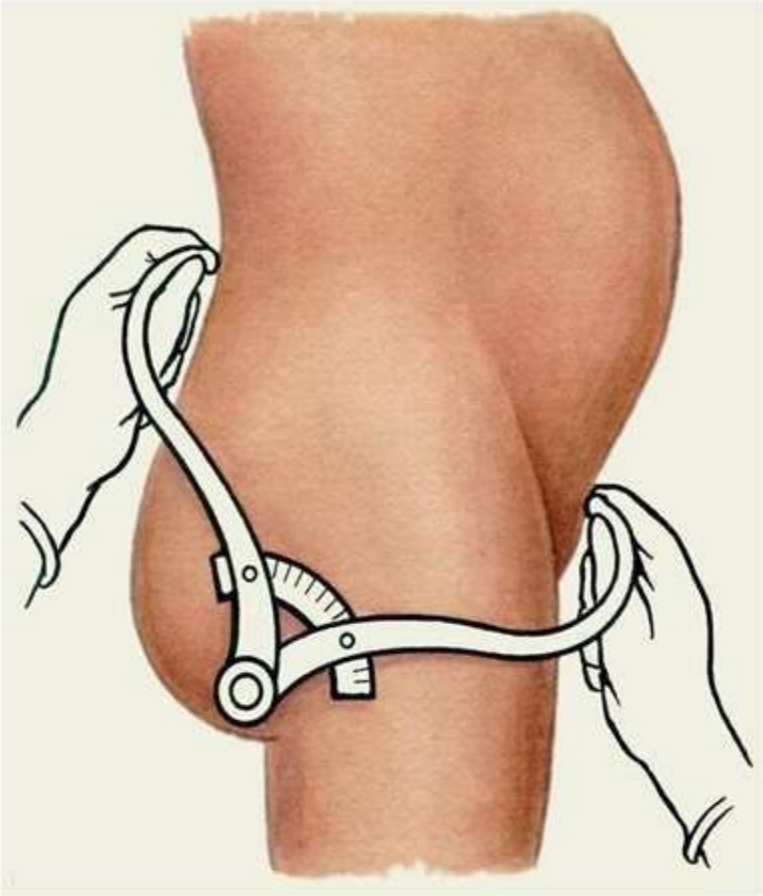
External pelvimetry

- Thom's, Jarcho's or crossing pelvimeter can be used for external pelvimetry.

- **Interspinous diameter (25cm)**: between the anterior superior iliac spines.
- **Intercrestal diameter (28 cm)**: between the most far points on the outer borders of the iliac crests.
- **External conjugate (20 cm(.**
- **Bituberous diameter (11cm)**



- external conjugate – external size of pelvis. End of pelviometr set on middle of the upper margin of symphysis, the other end is over the sacral fossa contained between fifth lumbar vertebra and the beginning of the first sacral vertebra. External conjugate is 20 cm



Radiological pelvimetry

- **Lateral view:**

❖ The patient stands with the X-ray tube on one side and the film cassette on the opposite side.

❖ **it shows**

✓ the anteroposterior diameters of the pelvis, angle of inclination of the brim, width of sacrosciatic notch, curvature of the sacrum and cephalo-pelvic relationship.

- **Inlet view**: The patient sits on the film cassette and leans backwards so that the plane of the pelvic brim becomes parallel to the film.
- **Outlet view:** The patient sits on the film cassette and leans forwards.

Cephalometry

- **Ultrasonography**: is the safe accurate and easy method and can detect:

➢ The biparietal diameter(BPD)

➢ The occipito-frontal diameter.

➢ The circumference of the head.

- **Radiology (X-ray**: isdifficult to interpret.

Cephalopelvic disproportion tests

These are done to detect contracted inlet if the head is not engaged in the last 3-4 weeks in a primigravida.

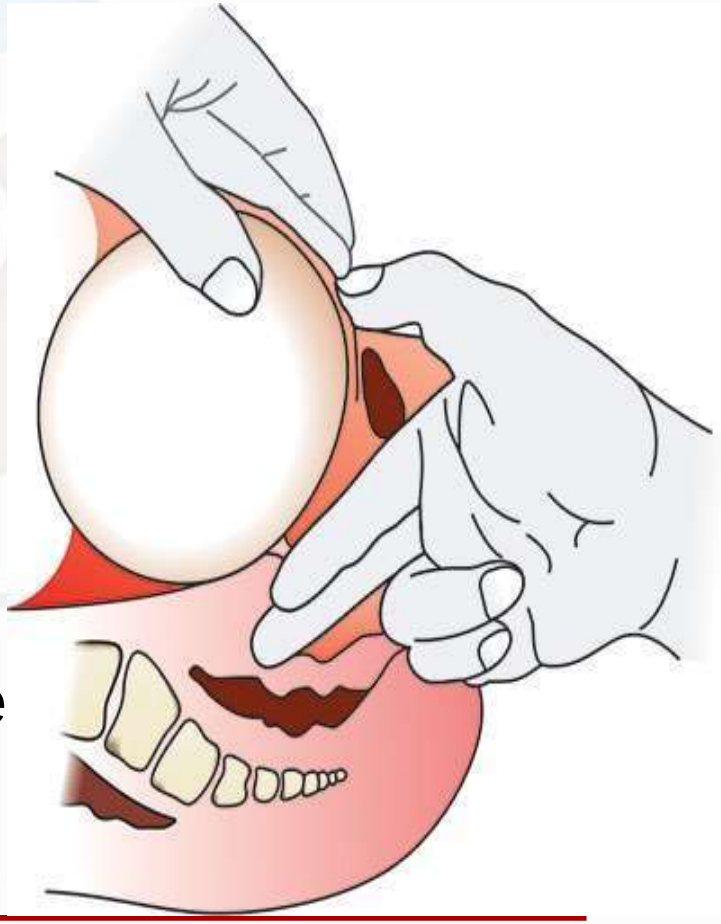
- **(1) Pinard's method:**

- The patient evacuates her bladder and rectum.
- The patient is placed in semi–sitting position to bring the foetal axis perpendicular to the brim.
- The left hand pushes the head downwards and backwards into the pelvis while the fingers of the right hand are put on the symphysis to detect disproportion.

Cephalopelvic disproportion tests

(2) Muller - Kerr's method:

- It is more valuable in detection of the degree of disproportion.
- The patient evacuates her bladder and rectum.
- The patient is placed in the dorsal position.
- The left hand pushes the head into the pelvis and vaginal examination is done by the right hand while its thumb is placed over the symphysis to detect disproportion.



Degrees of Disproportion

1. **Minor disproportion:**

   The anterior surface of the head is in line with the posterior surface of the symphysis. During labour the head is engaged due to moulding and vaginaldelivery can be achieved.

2. **Moderate disproportion 1st degree disproportion):** The anterior surface of the head is in line with the anterior surface of the symphysis. Vaginal delivery may or may not occur.

3. **Marked disproportion 2nd degreedisproportion):**

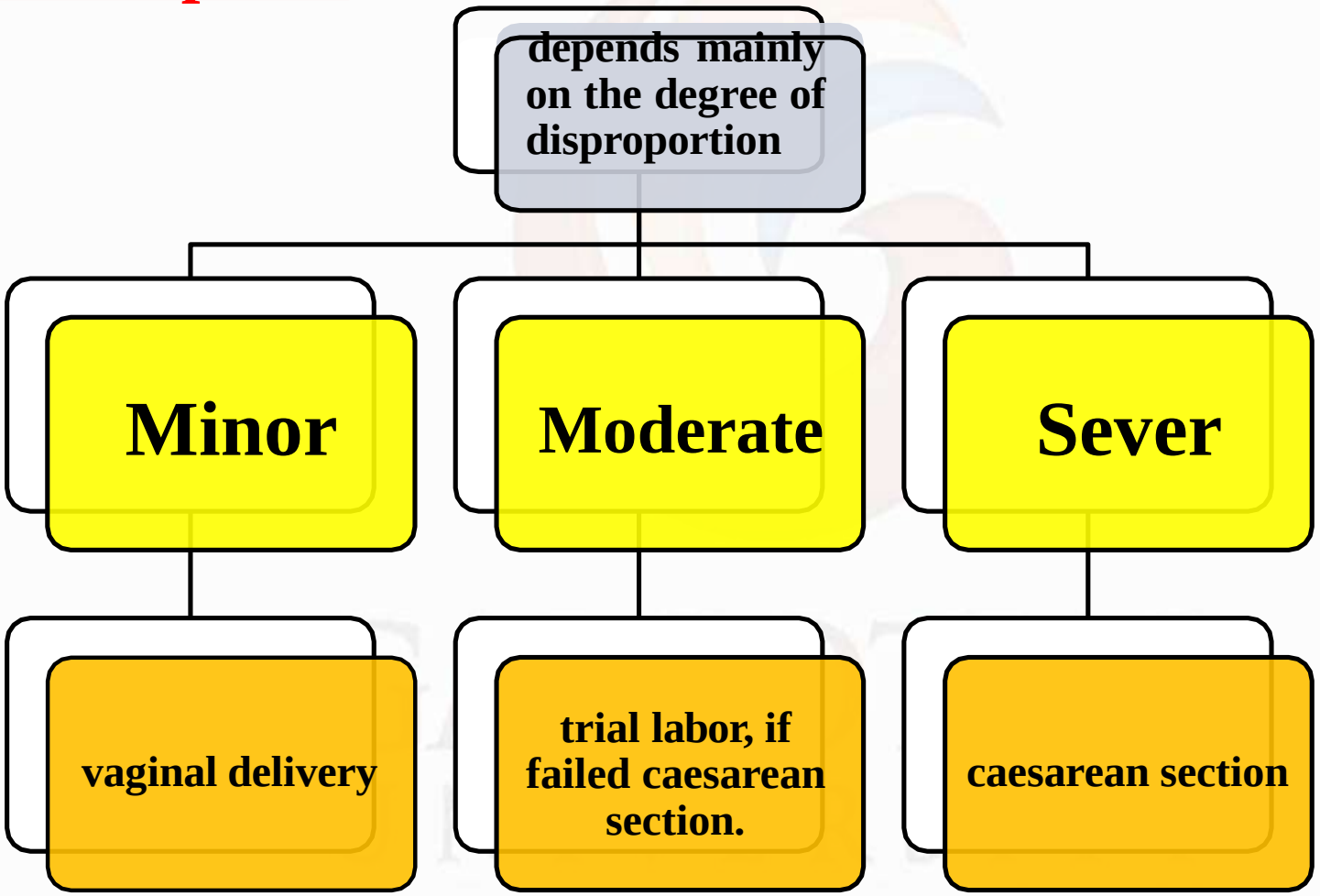
   The head overrides the anterior surface of the symphysis. Vaginal delivery cannot occur.

Degrees of Contracted Pelvis

1. **Minor degree:** The true conjugate is 9-10 cm. It corresponds to minor disproportion.
2. **Moderate degree:** The true conjugate is 8-9 cm. It corresponds to moderate disproportion.
3. **Severe degree:** The true conjugate is 6-8 cm. It corresponds to marked disproportion.
4. **Extreme degree:** The true conjugate is less than 6 cm. Vaginal delivery is impossible even after craniotomy as the bimastoid diameter (7.5 cm) is not crushed.

Contracted pelvis

Management



Trial of Labour

- It is a clinical test for the factors that cannot be determined before start of labour **as**:

❖ Efficiency of uterine contractions.

❖ Moulding of the head.

❖ Yielding of the pelvis and soft tissues.

Procedure :

- Trial is carried out in a hospital where facilities for C.S is available.
- Adequate analgesia.
- Nothing by mouth.
- Avoid premature rupture of membranes by:
  - rest in bed,
  - avoid high enema,
  - minimise vaginal examinations.
- The patient is left for 2 hours in the 2nd stage with good uterine contractions under close supervision to the mother and foetus

Indications of trial oflabour:

1. Young primigravida ofgood health.
2. Moderate disproportion.
3. Vertex presentation.
4. No contractedoutlet
5. Average sizedbaby.
6. Vertex presentation

Termination of trial oflabour:

- **Vaginal delivery**: either spontaneouslyor by forceps if the head isengaged.
- **Caesarean section** if: failed trial oflabour i.e. the head did notengageor

complications occur during trial as

foetal distress or prolapsed pulsatingcord beforefull cervical dilatation.

Indications of caesarean section in contracted pelvis

1. Moderate disproportion if trial of labour is contraindicated orfailed.
2. Marked disproportion.
3. Extreme disproportion whether the foetusis living or dead.
4. Contracted outlet.
5. Contracted pelvis with otherindicationsas;

I. elderly primigravida,
II. malpresentations, or
III. placenta praevia.

Complications

Maternal

During pregnancy:

- ↑retroverted gravid uterus.
- Malpresentations.
- Pendulous abdomen
- Nonengagement.
- Pyelonephritis due to more compression of the ureter.

During labour:

- Slow cervical dilatation and prolonged labour.
- PROM and cord prolapse.
- Obstructed labour and rupture uterus.
- Injury to pelvic joints or nerves from difficult forceps delivery.
- Postpartum hemorrhage.

Fetal

- Intracranial hemorrhage.
- Asphyxia.
- Fracture skull.
- Nerve injuries.
- Intra-amniotic infection

Complications of Contracted Pelvis

- **Maternal:**

During pregnancy:

1. Incarcerated retroverted graviduterus.
2. Malpresentations.
3. Pendulous abdomen.
4. Nonengagement.
5. Pyelonephritis especially in high assimilation pelvis due to more compression of the ureter.

Complications of Contracted Pelvis

During labour:

1. Inertia, slow cervical dilatation and prolonged labour.
2. Premature rupture of membranes and cord prolapse.
3. Obstructed labour and rupture uterus.
4. Necrotic genito-urinary fistula.
5. Injury to pelvic joints or nerves from difficult forceps delivery.
6. Postpartum haemorrhage.

Complications of Contracted Pelvis

- **Foetal:**

1. Intracranial haemorrhage.
2. Asphyxia.
3. Fracture skull.
4. Nerve injuries.
5. Intra-amniotic infection.

QUIZ

1. Roberts pelvis has ……ala of sacrum

a) 2

b) 1

c) No

2. High assimilation pelvis has

a) 6 vertebrae b) 5 vertebrae c) 4 vertebrae

d) 3 vertebrae

The sacrum is composed of 6 vertebrae.

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THANK YOU