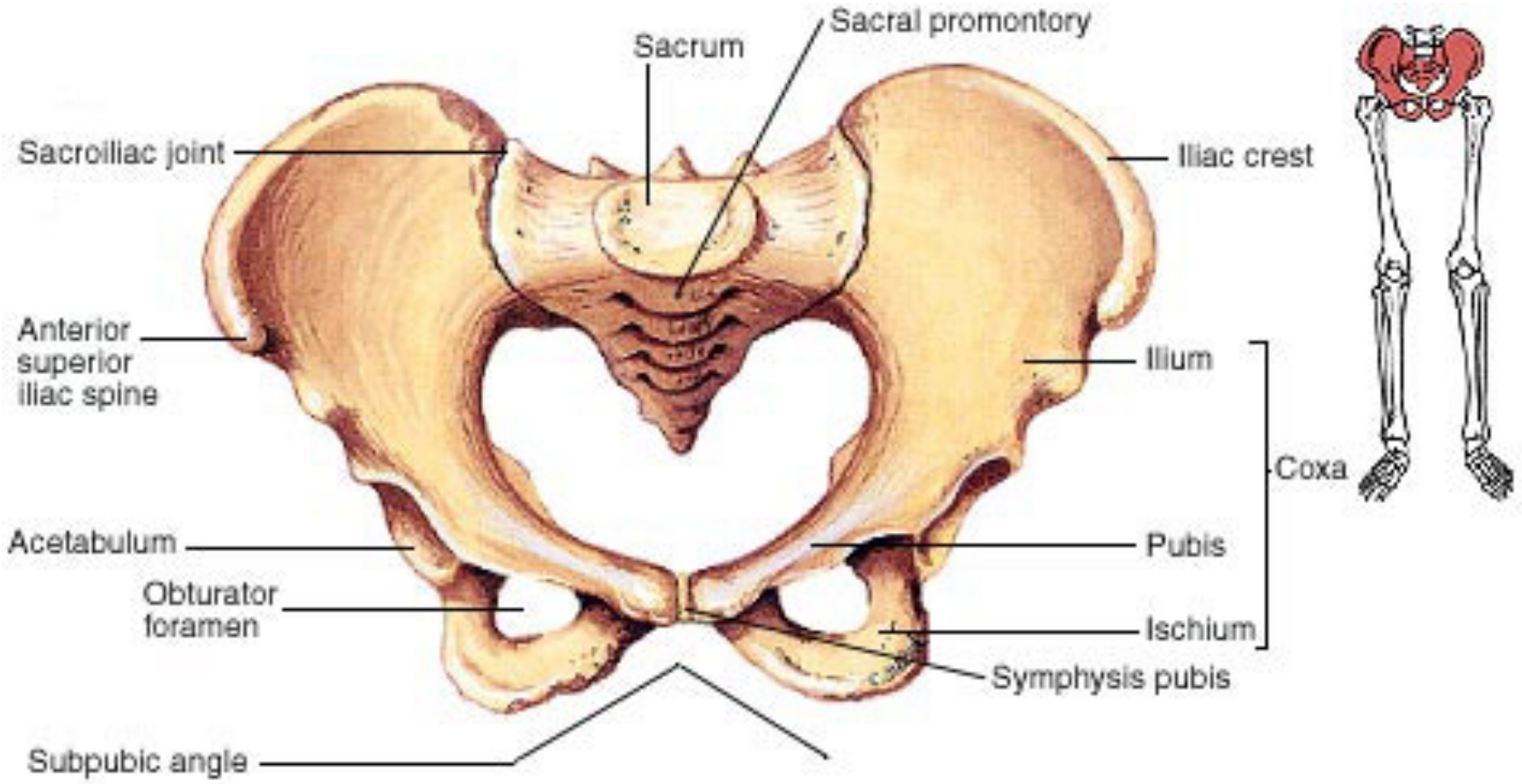
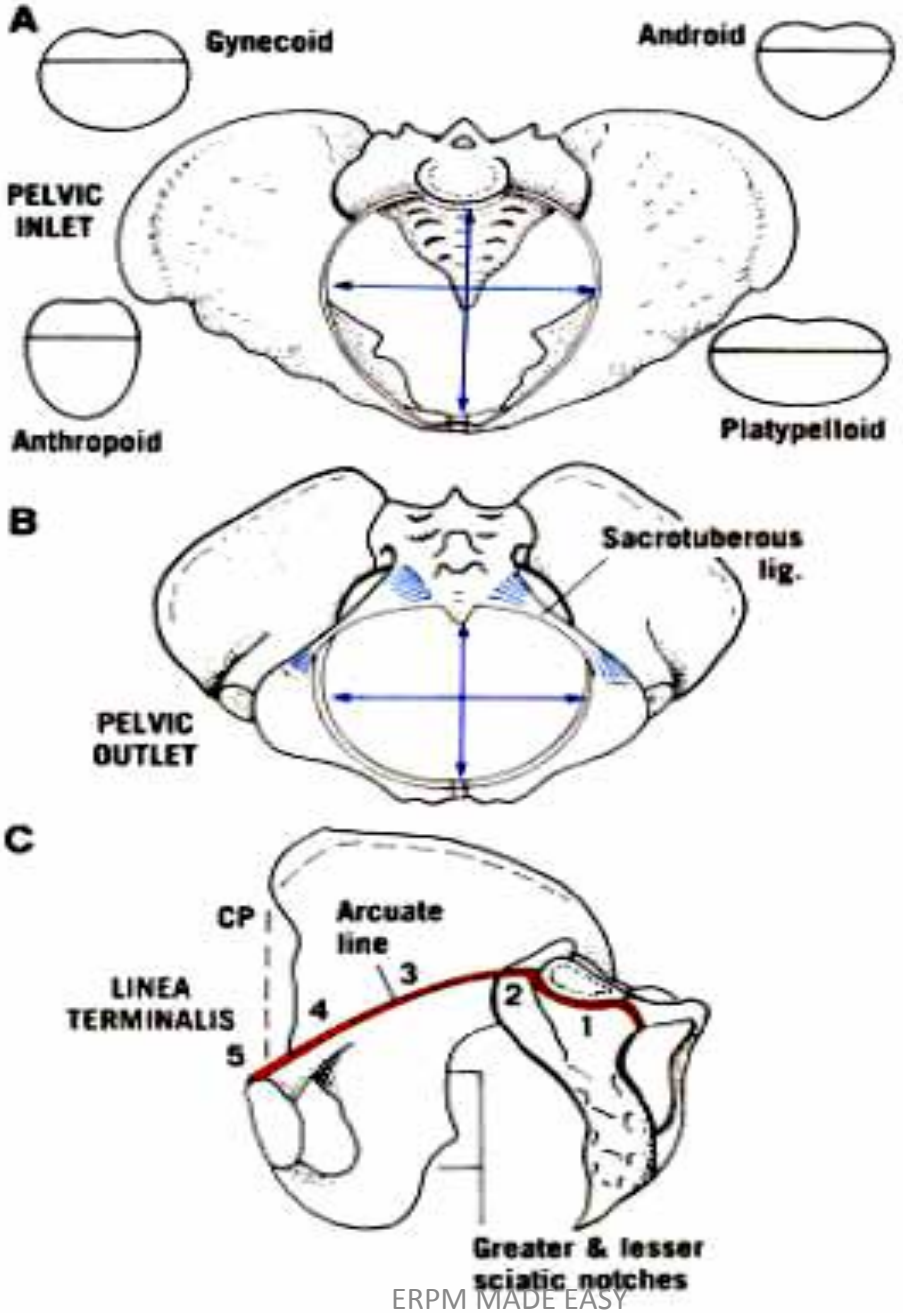
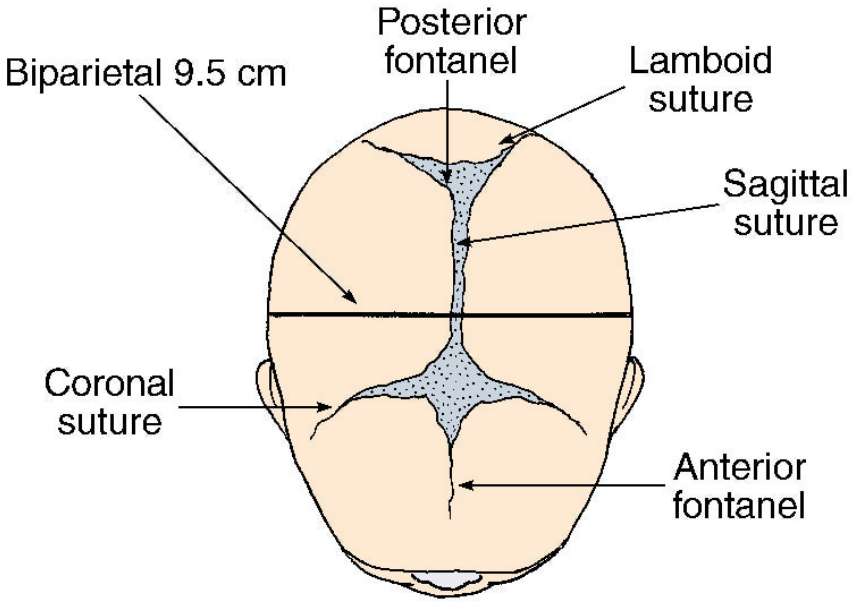
LABOR

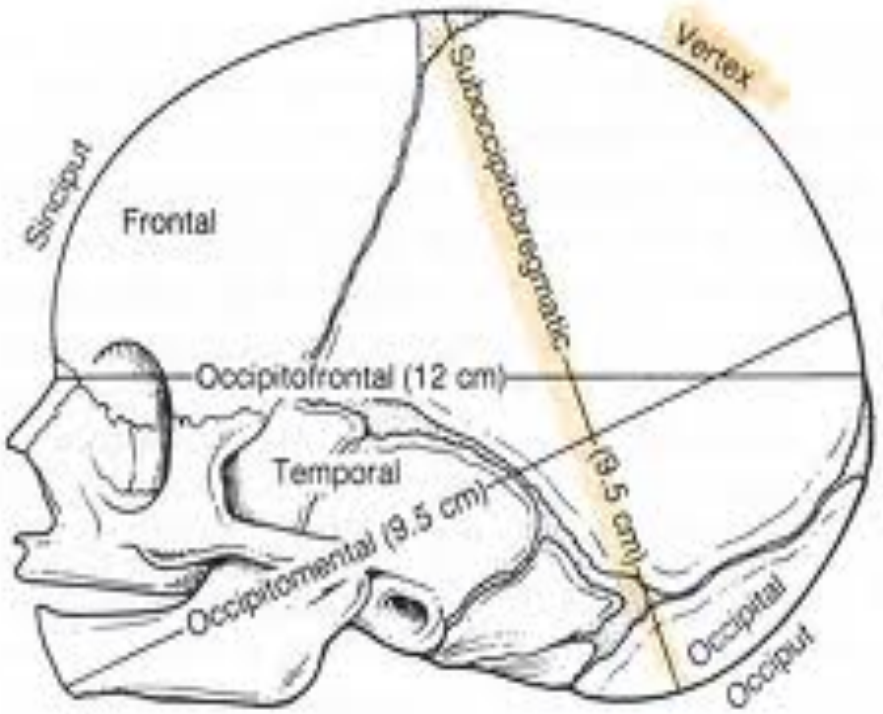
MADE EASY FOR ERPM

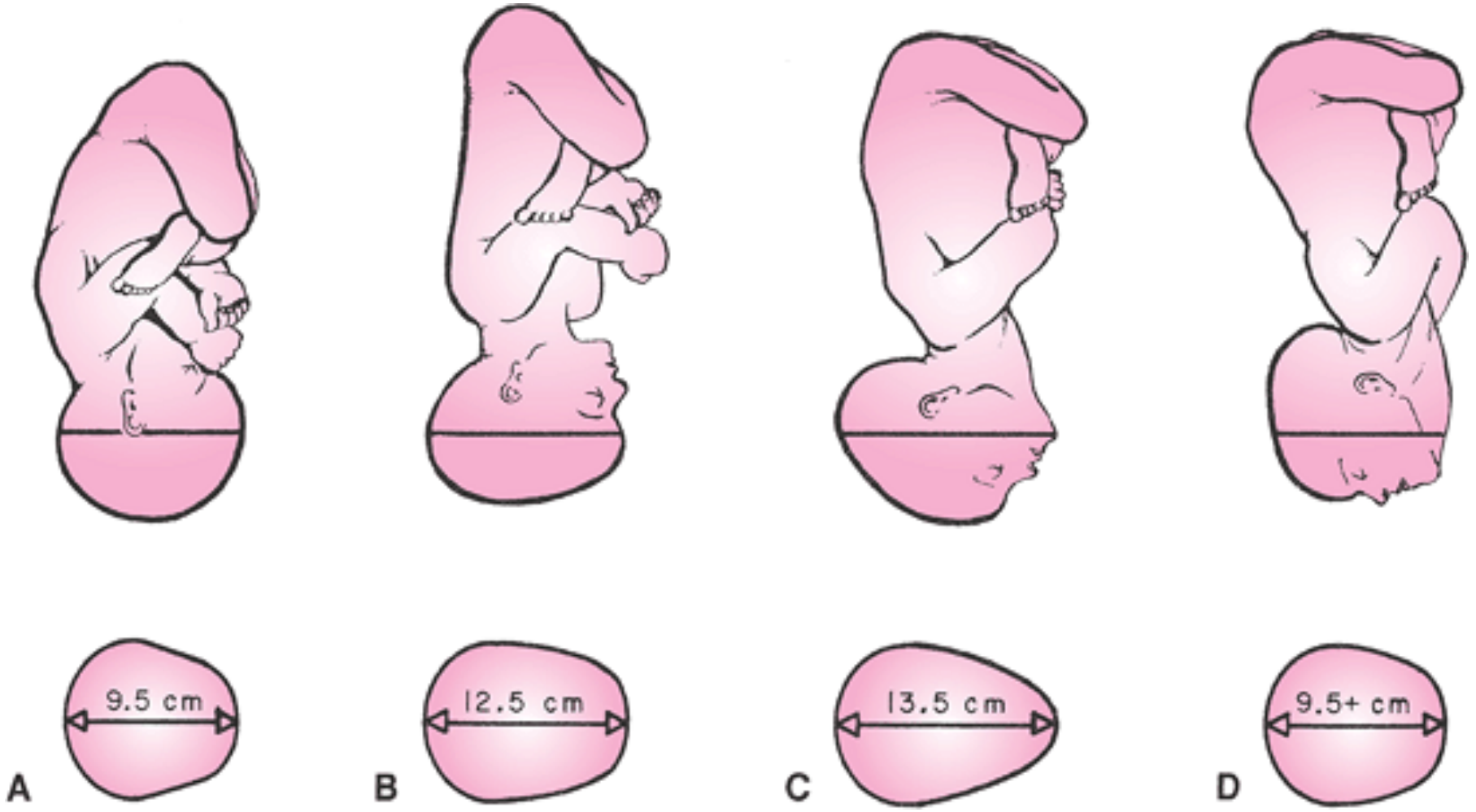
Mechanism of labor

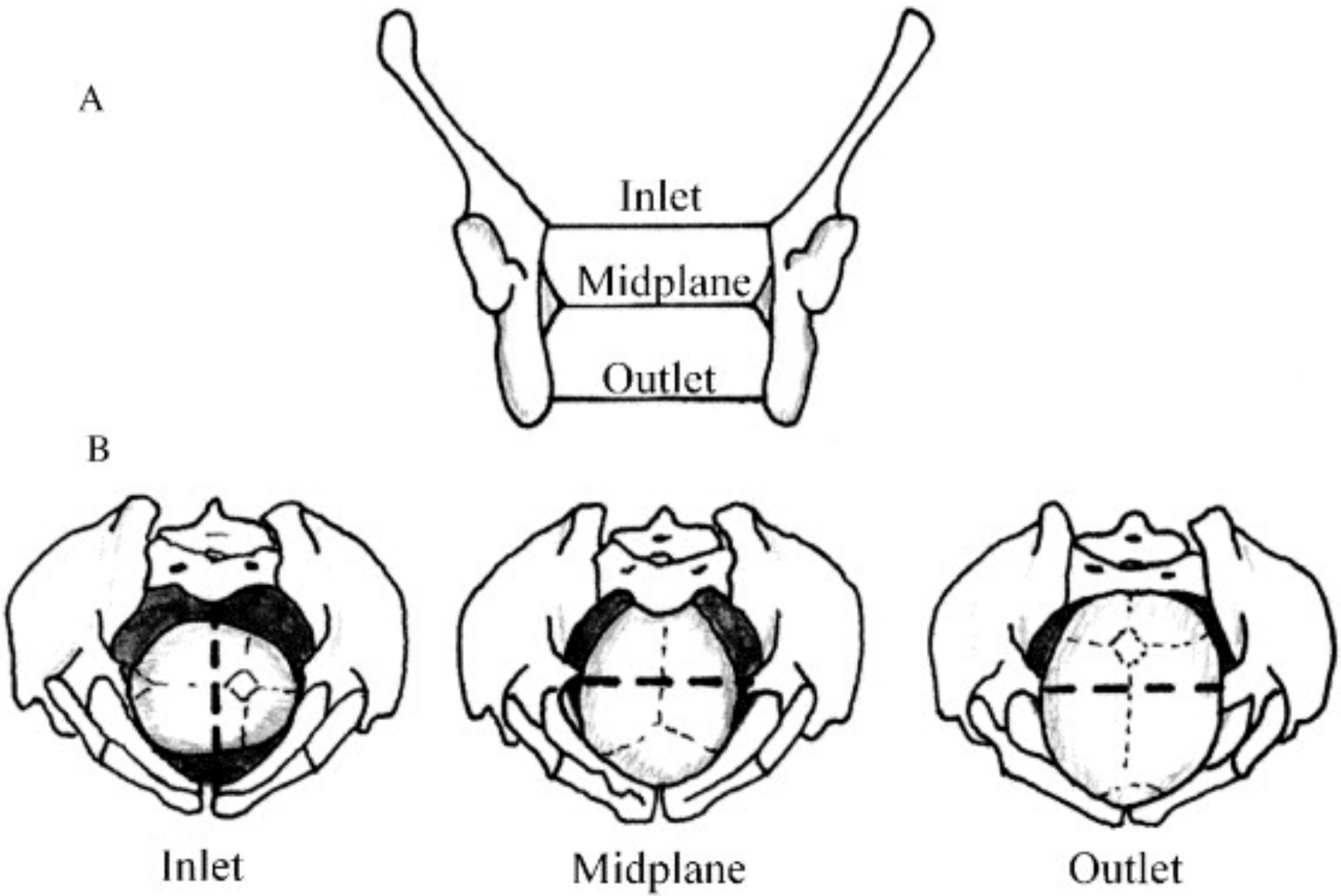


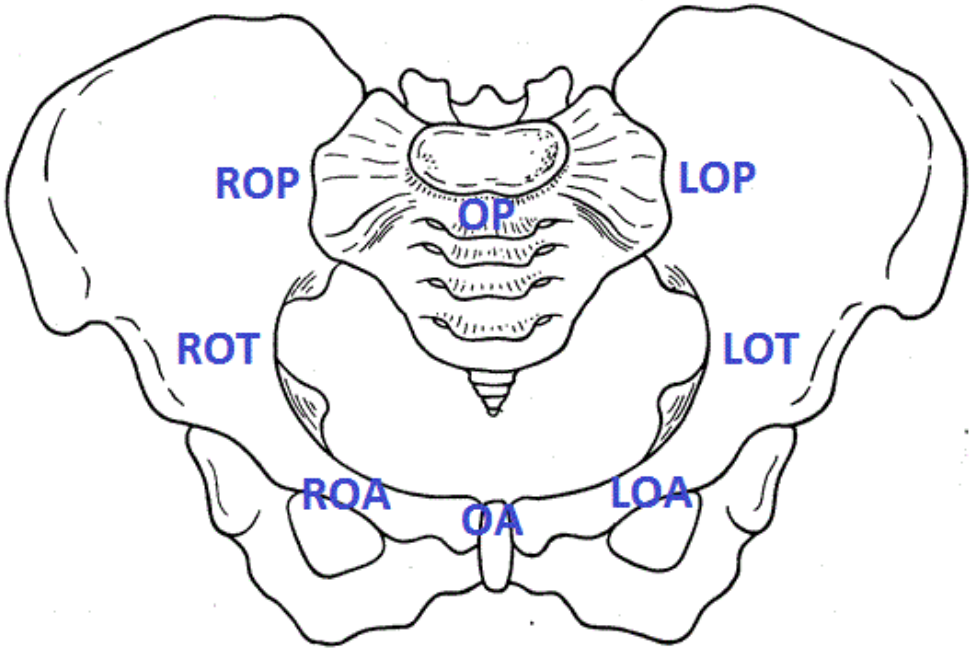

A
Gynecoid
Android
PELVIC INLET
Anthropoid
Platypelloid
B
Sacrotuberous lig.
PELVIC OUTLET
C
CP
Arcuate line
LINEA TERMINALIS
1
2
3
4
5
Greater & lesser sciatic notches


Posterior fontanel
Biparietal 9.5 cm
Lamboid suture
Sagittal suture
Coronal suture
Anterior fontanel

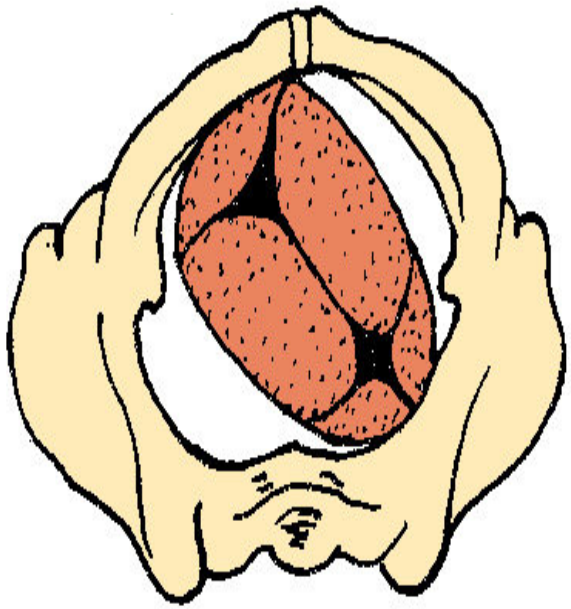

Vertex
Suboccipitobregmatic
Sinciput
Frontal
Occipitofrontal (12 cm)
Temporal
(9.5 cm)
Occipitomental (9.5 cm)
Occipital
Occiput

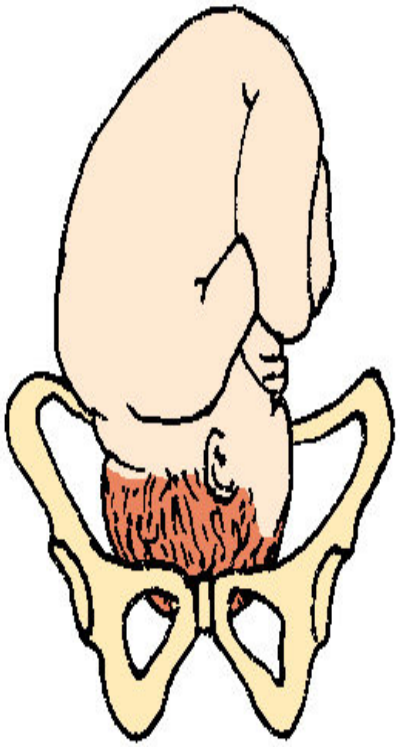

9.5 cm
12.5 cm
13.5 cm
9.5+ cm
A
B
C
D

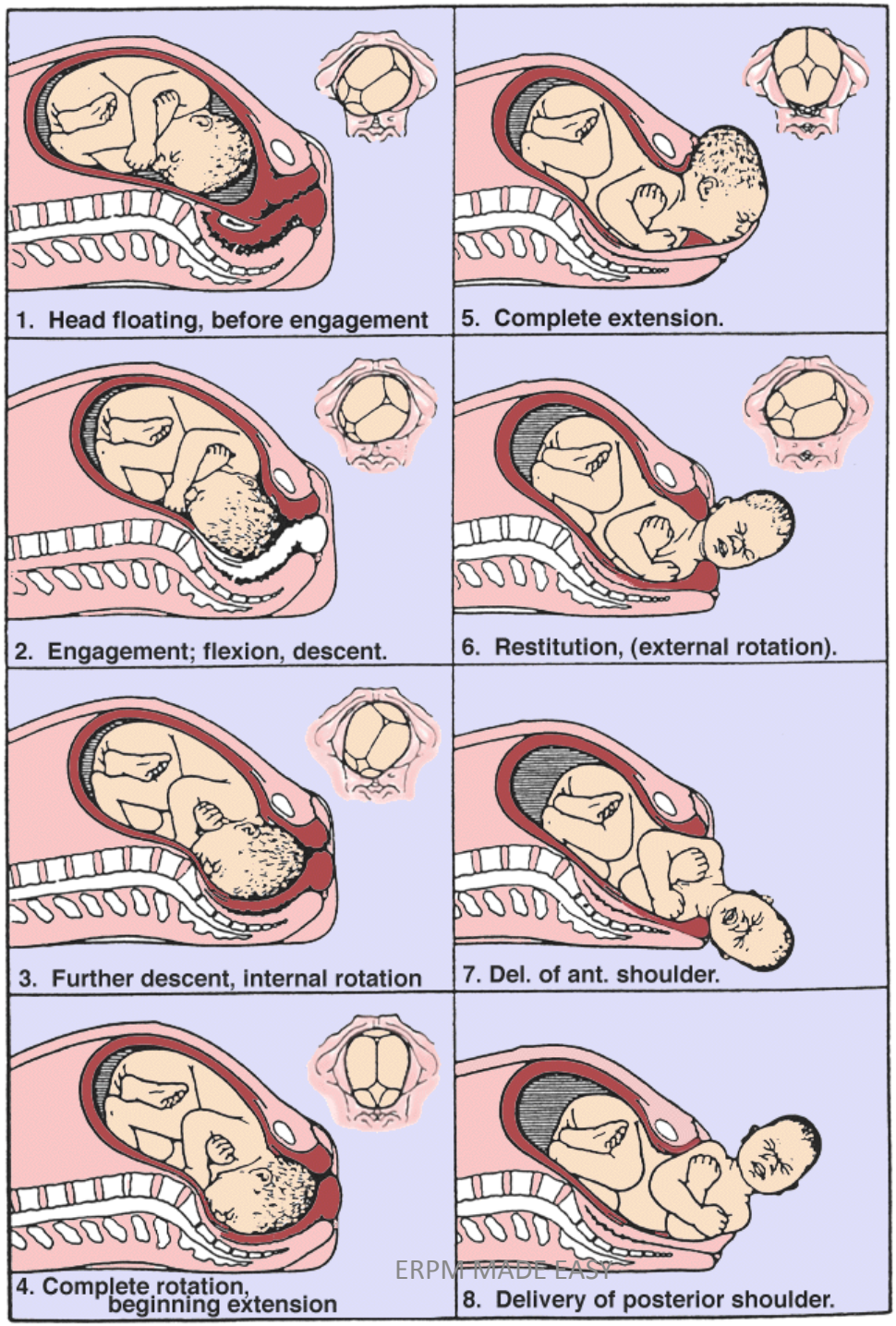

A
Inlet
Midplane
Outlet
B
Inlet
Midplane
Outlet



ROA



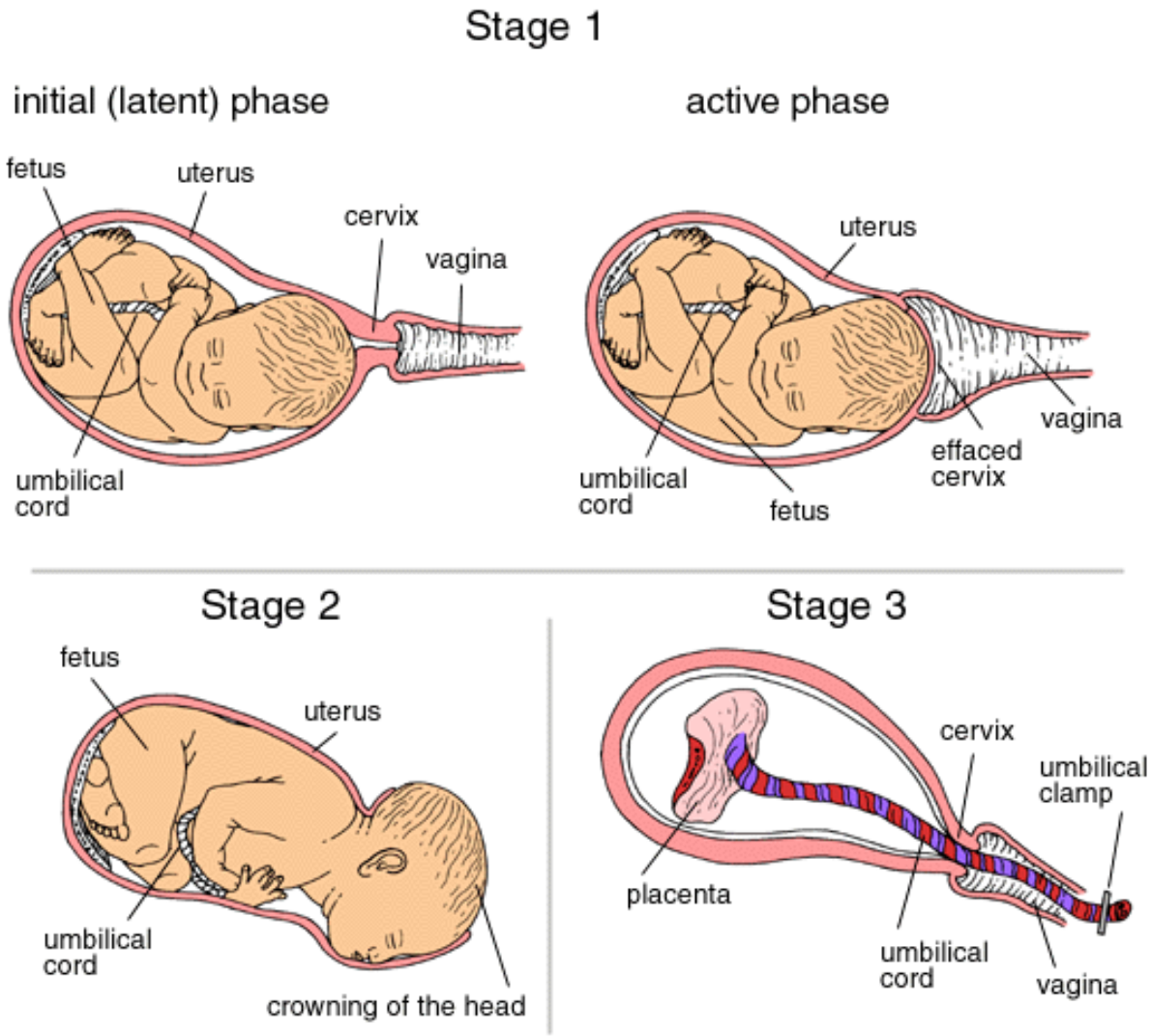



1. Head floating, before engagement
2. Engagement; flexion, descent.
3. Further descent, internal rotation
4. Complete rotation, beginning extension
5. Complete extension.
6. Restitution, (external rotation).
7. Del. of ant. shoulder.
8. Delivery of posterior shoulder.

Definitions

- **Labor –**
  - **Onset of regular painful contractions with progressive effacement and dilatation of the cervix**
- Position –
  - Relationship of presenting part to maternal pelvis
- Attitude –
  - Relationship of fetal head to spine
- Lie –
  - Relationship between the longitudinal axis of fetus and mother

Stages of labor



There are 3 stages of labor

- First stage
  - from the diagnosis of labor to full dilatation of the cervix
    - Latent stage – up to 4cm dilatation
    - Active stage – dilatation from 4 – 10 cm (1cm/hr)
- Second stage
  - from full dilatation of cervix to delivery of the fetus
- Third stage
  - from the delivery of the fetus to the delivery of placenta

Management of labor

Management Principles

- Hydration
- Analgesia
- Mobilization
- Maternal monitoring
- Fetal monitoring
- Labor monitoring

First stage – Latent Phase

- Hydration – increase oral intake
- Mild analgesia
  - Panadiene
- Mobilization – walk
- Routine maternal monitoring
- Routine fetal monitoring – CTG & FHS
- Labor monitoring – Per vaginal examination – 4 hourly

Active phase

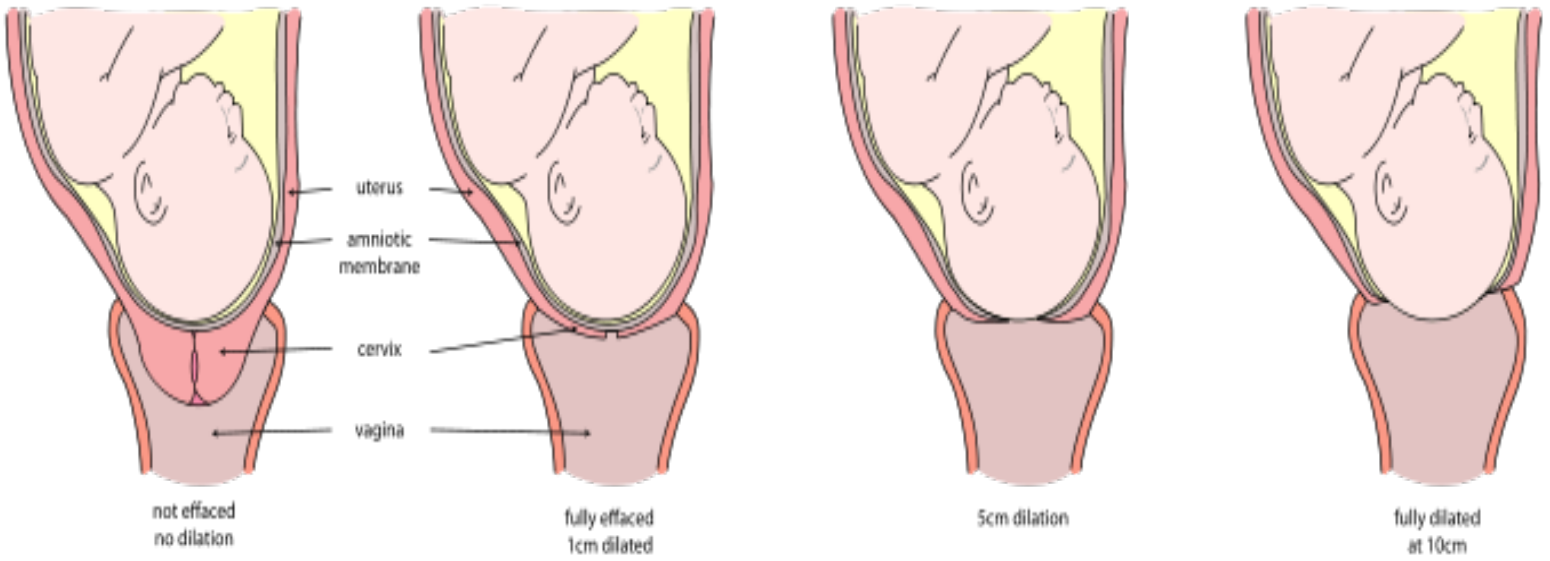
- Hydration
  - Oral sips of clear water
  - Normal saline or Hartman's
- Analgesia –
  - Narcotics (1mg/kg) – Pethidine + antiemetics
  - N_2O with air (50:50)
    - Inhalation anaesthesia
    - Inhale just before contraction
  - Epidural analgesia

- Mobilization – limited to the bed
- Monitoring of Mother
  - Low risk mother – Hourly Pulse, BP, Temperature
  - High risk mother
    - PIH – BP half hourly
    - DM – Hourly CBS
    - Heart disease – Continuous ECG, Pulse oxymetry, Strict fluid regimen

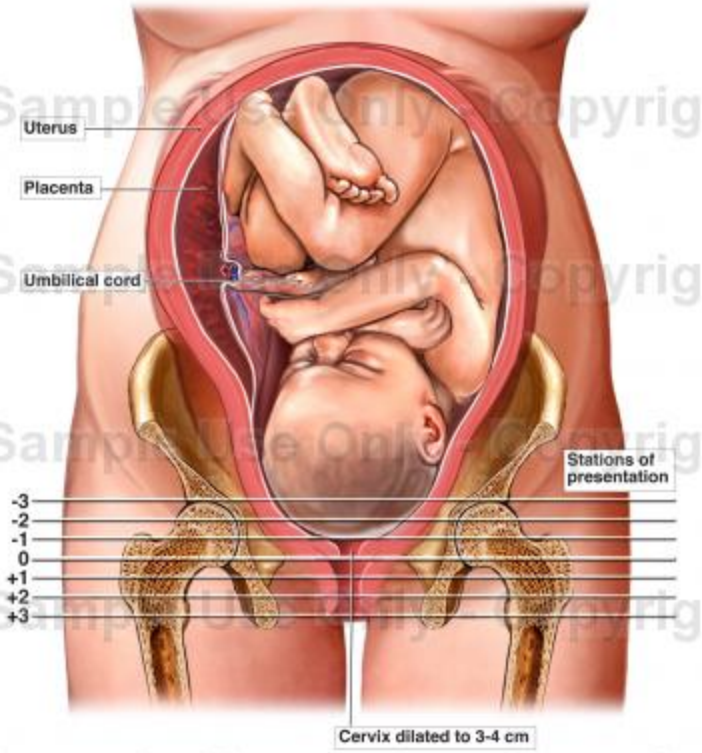
- Monitoring of Fetus
  - High Risk
    - cEFM
  - Low risk
    - Intermittent auscultation (every 15 minutes)

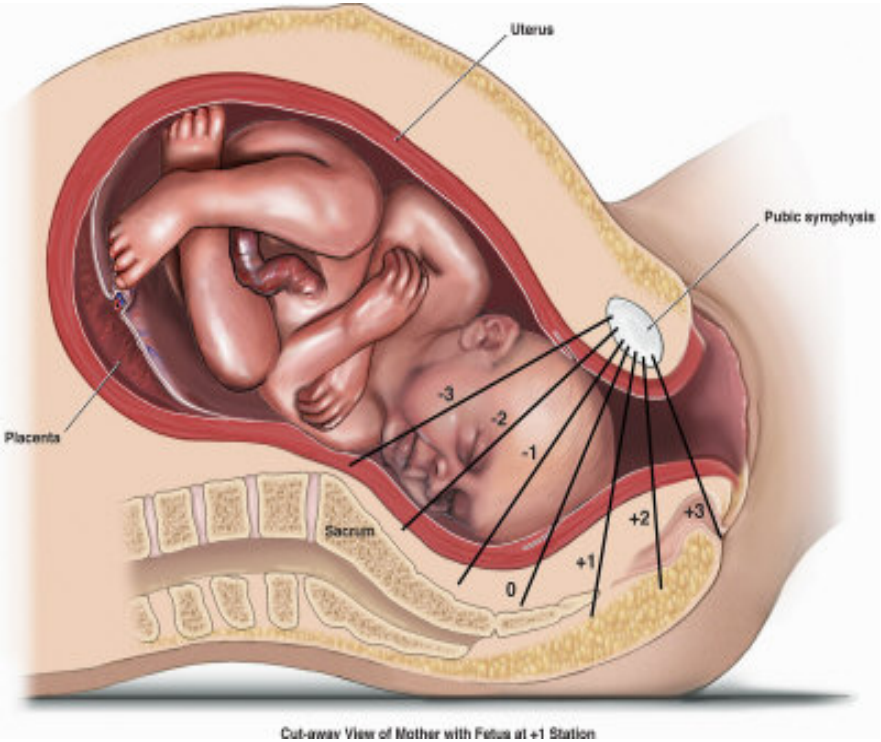
- Monitoring labor progress
  - Abdominally
    - Contractions
      - Classification
        - Mild - < 20s
        - Moderate – 20 – 40s
        - Severe - > 40s
      - Idealy 3 – 5 moderate contractions / 10mins
        1. Tachystole - >5 contractions/ 10mins
        2. Uterine hypertonicity - >120sec / contraction
        3. Uterine hyper stimulation – 1 + 2
        4. Uterine hyperstimulation syndrome – 3 + fetal distress
    - Presenting part – engagement

– Vaginally
  - Cervical dilatation
  - Effacement
  - Station of the presenting part
  - Position of posterior fontanels, sagital sutures



Labor and Delivery - Fetus at -1 Station of Presentation





Cut-away View of Mother with Fetus at +1 Station

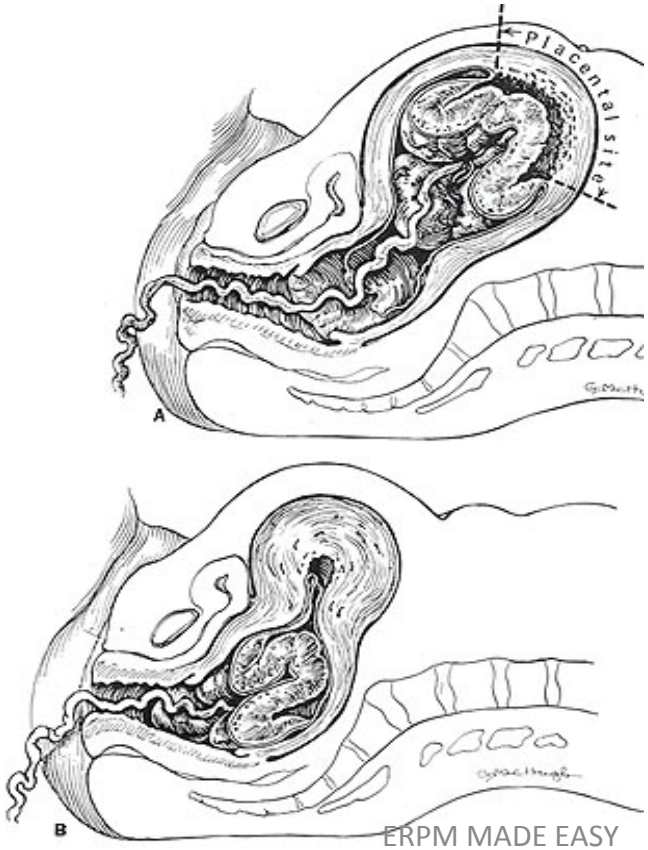
Second stage

- Intense monitoring like in 1st stage
- Primi – allow 2 hours to deliver
- Multi – allow 1 hour to deliver
- If on epidural – give additional 1 hour
- If any delay – instrumental delivery / LSCS

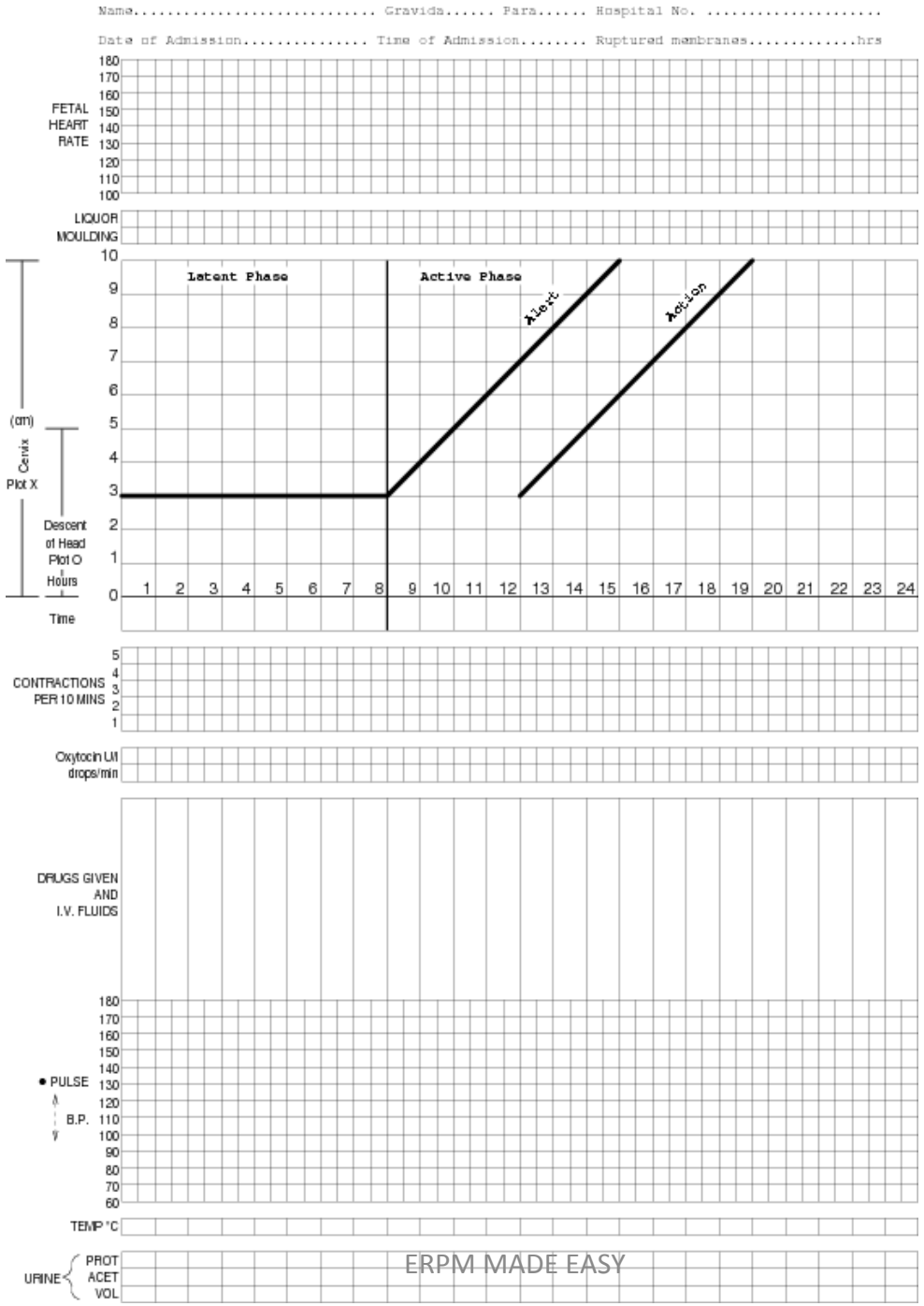
Third stage

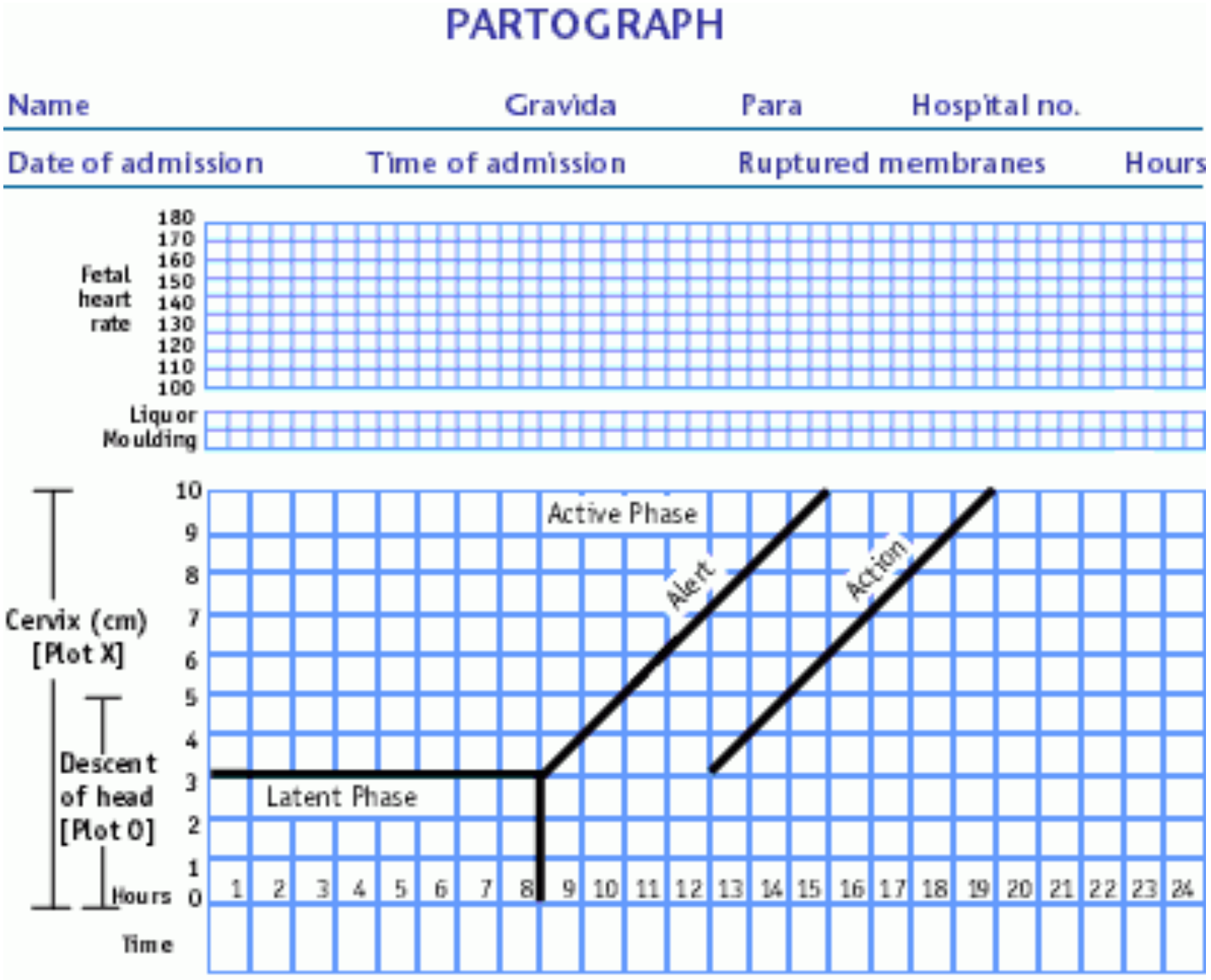
- Active management
  - Aim – getting the uterus contract violently and remain contracted after delivery of placenta
    - Oxytocin 10U IM or 5U IV after delivery of the baby
    - Controlled cord traction
    - Gentle fundal massage

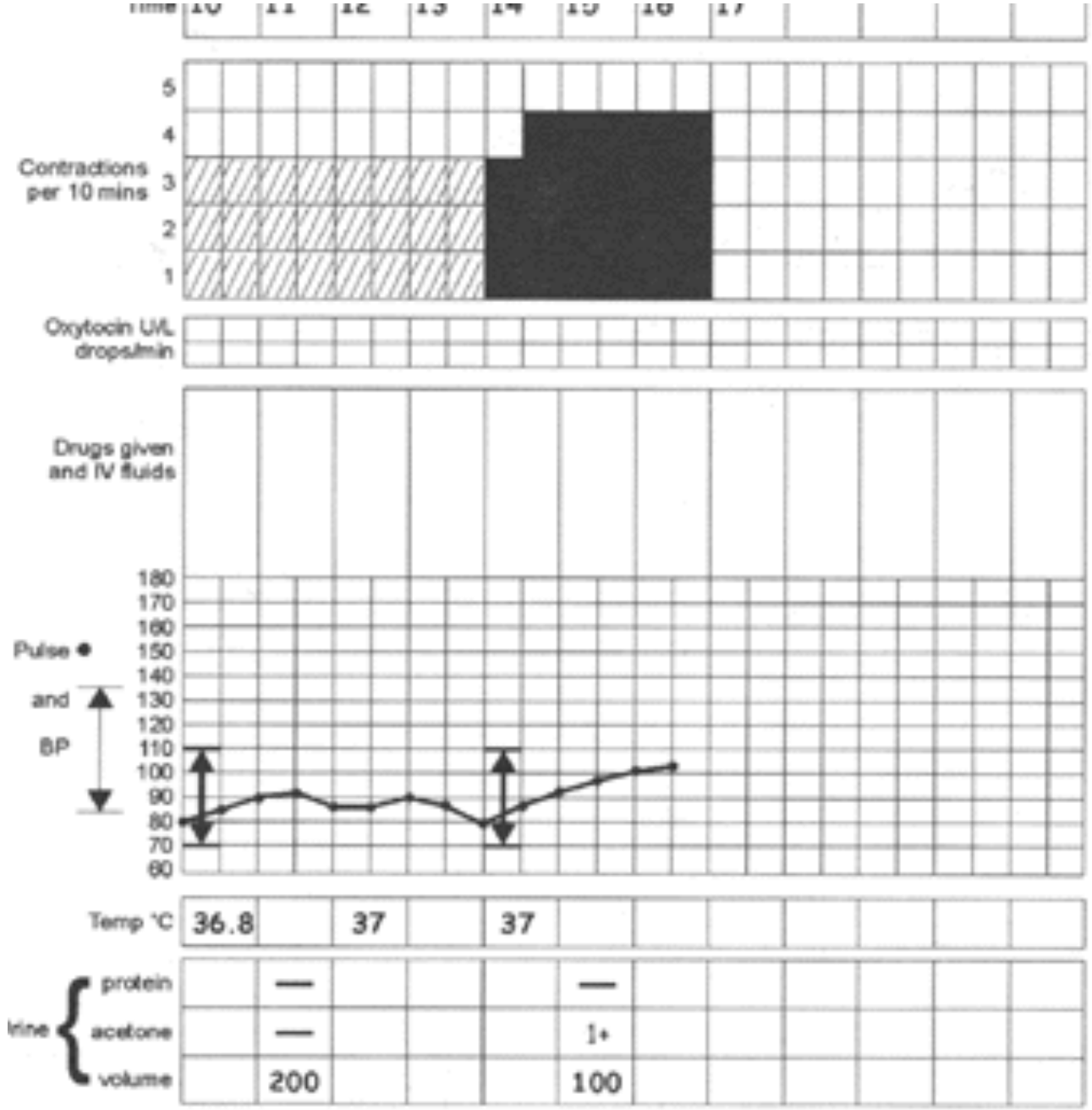
- Signs of placental separation
  - Lengthening of the cord protruding from the vulva
  - Small gush of blood from the placental bed
  - Rising of uterine fundus to above the umbilicus
  - The fundus becomes hard and globular



Partogram


Name..... Gravida..... Para..... Hospital No. .....
Date of Admission..... Time of Admission..... Ruptured membranes.....hrs
FETAL HEART RATE
180 170 160 150 140 130 120 110 100
LIQUOR MOULDING
Latent Phase
Active Phase
Alert
Action
(cm)
Cervix Plot X
Descent of Head Plot O
Hours
10 9 8 7 6 5 4 3 2 1 0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Time
CONTRACTIONS PER 10 MINS
5 4 3 2 1
Oxytocin U/l drops/min
DRUGS GIVEN AND I.V. FLUIDS
• PULSE
B.P.
180 170 160 150 140 130 120 110 100 90 80 70 60
TEMP °C
URINE
PROT
ACET
VOL


PARTOGRAPH
Name
Gravida
Para
Hospital no.
Date of admission
Time of admission
Ruptured membranes
Hours
Fetal heart rate
180
170
160
150
140
130
120
110
100
Liquor
Moulding
Cervix (cm) [Plot X]
Descent of head [Plot O]
Hours
Time
10
9
8
7
6
5
4
3
2
1
0
Active Phase
Alert
Action
Latent Phase
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24


Contractions per 10 mins
5
4
3
2
1
Oxytocin U/L drops/min
Drugs given and IV fluids
Pulse ●
and
BP
180
170
160
150
140
130
120
110
100
90
80
70
60
Temp °C
36.8
37
37
Urine
protein
—
—
acetone
1+
volume
200
100

Induction of labor

Definition

- Planned initiation of labor prior to its spontaneous onset

- IOL is performed when the **risk to fetus / mother** in **continuing pregnancy out weighs** the **risk of bringing the pregnancy to an end**

Indications

- **Prolonged pregnancy**
- Unexplained APH / Symptomatic abruption
- Fetal growth restriction
- DM
- PET & Other maternal HT disorders
- Twin pregnancy continuing beyond 38 weeks
- Deteriorating maternal illness
- Obstetric cholestasis near term
- Prolonged PPROM
- IUD

Risks of Prolonged Pregnancy (>42 weeks)

- Still birth
- Fetal compromise in labor
- Meconium aspiration
- Mechanical problems

- **When to induce in prolonged pregnancy?**
  - **41 – 42 weeks**

Bishop's Score

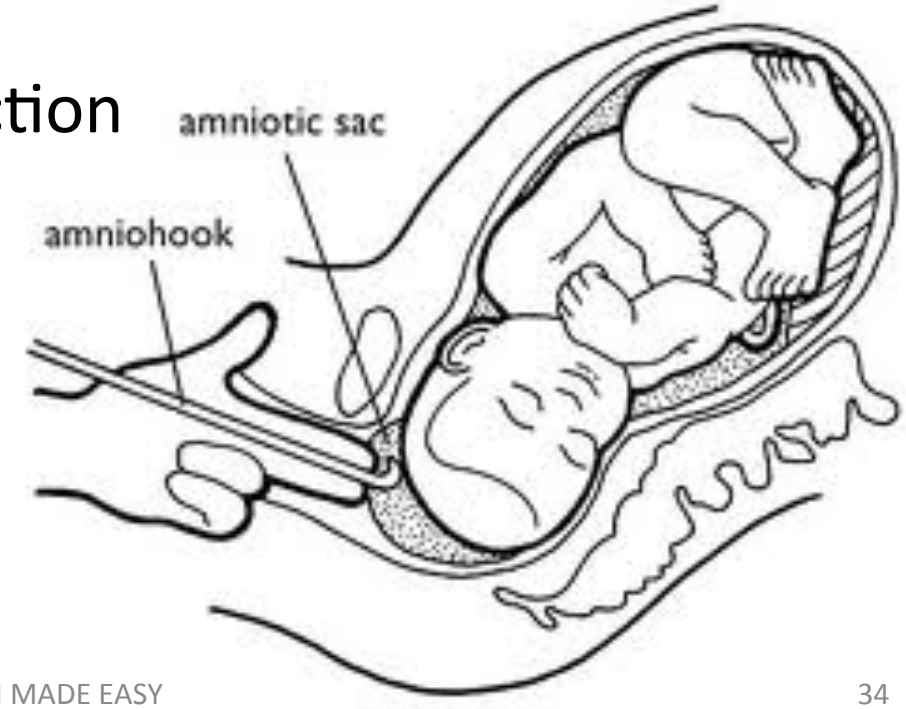
Cervix	Score			
	0	1	2	3
Position	Posterior	Midposition	Anterior	--
Consistency	Firm	Medium	Soft	--
Effacement	0-30%	40-50%	60-70%	>80%
Dilation	Closed	1-2 cm	3-4 cm	>5 cm
Baby's Station	-3	-2	-1	+1, +2

Methods of induction

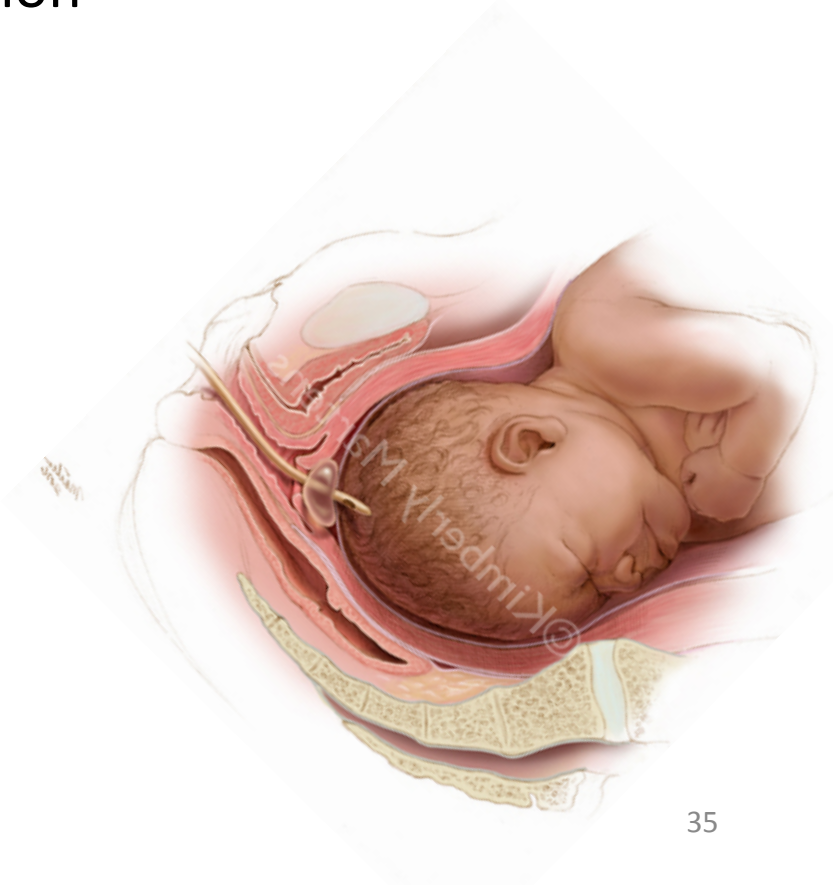
Medical method	Surgical method
• Prostaglandins	• Foley catheter balloon inflation
• Oxytocin	• Artificial separation of membranes
• Mifepristone	• Amniotomy

METHODS

- Artificial rupture of membrane - surgical
  - head must be fully engaged
  - cervix effaced
  - OS > 3cm dilated
  - Good uterine contraction



- Prostaglandins - medical
  - Used for cervical ripening
  - 01 tablet (3mg) inserted into posterior fornix
  - If cervix
    - Favorable – ARM or syntocinon
    - Unfavorable – 2nd tablet
- Foley catheter
  - Used for cervical ripening
  - If cervix is favorable – ARM



After induction of labour

- Allow for spontaneous progression
- If delay
  - augment with oxytocin
    - Primi – 32 mU/min – 5U oxytocin in 500ml of normal saline
    - Multi – 20 mU/min – 2U oxytocin in 500ml of normal saline

Complications of IOL

- Greater pain in labor
- Uterine hyper stimulation
- Cord prolapse
- Risk of uterine rupture in VBAC
- Failure of induction
- Increased need of operative delivery
- Fetal compromise

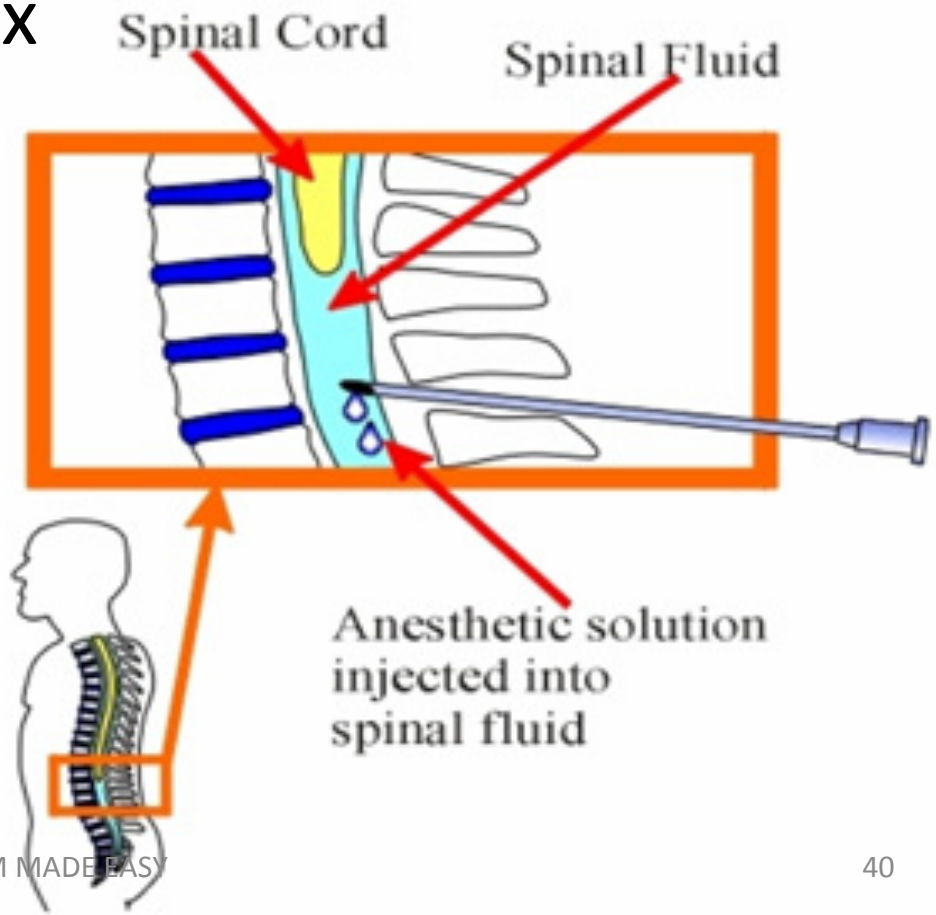
Pain relief in labor

Non Pharmacological Measures

- One to one care
- Relaxation
- Breathing exercise
- TENS
- Non conventional

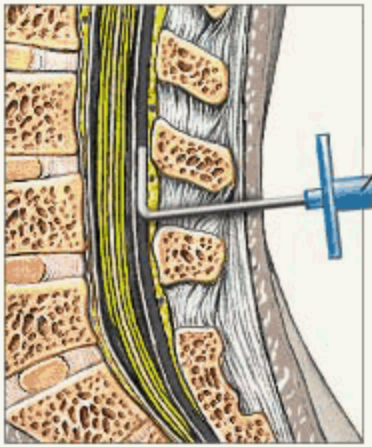
Pharmacological Measures

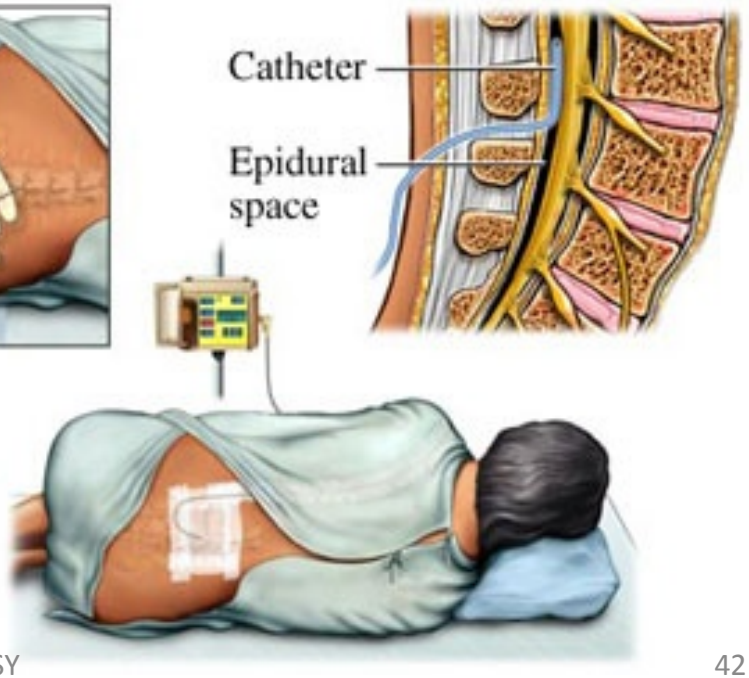
- IM Pethidine
- Inhalational - Entonox
- Epidural
- Spinal



Epidural Analgesia

Indications	Contraindications
Effective pain relief	Coagulative disorder
Prolonged labour	Local sepsis
Multiple gestation	Increased intracranial pressure
High risk of operative delivery	Hypovolemia
Maternal hypertensive disorder/medical conditions	Lack of trained staff


Epidural needle
Catheter


Catheter
Epidural space

Complications

- Hypotension
- Accidental dural puncture
- Accidental total spinal anasthesia
- Post dural puncture headache
- Toxicity
- Bladder function impairement
- Increase need of Oxytocin
- Spinal haematoma
- Short term respiratory depression

Prolonged labor

Duration of Normal Labor

	1st stage		2nd stage	3rd stage
	Latent phase	Active phase		
PRIMI	10 – 14 hours	1cm / Hr	2 hrs	< 30 mins
MULTI	8 – 12 hours	1.5cm / Hr	1 hr	< 30 mins

Prolonged 1st Stage

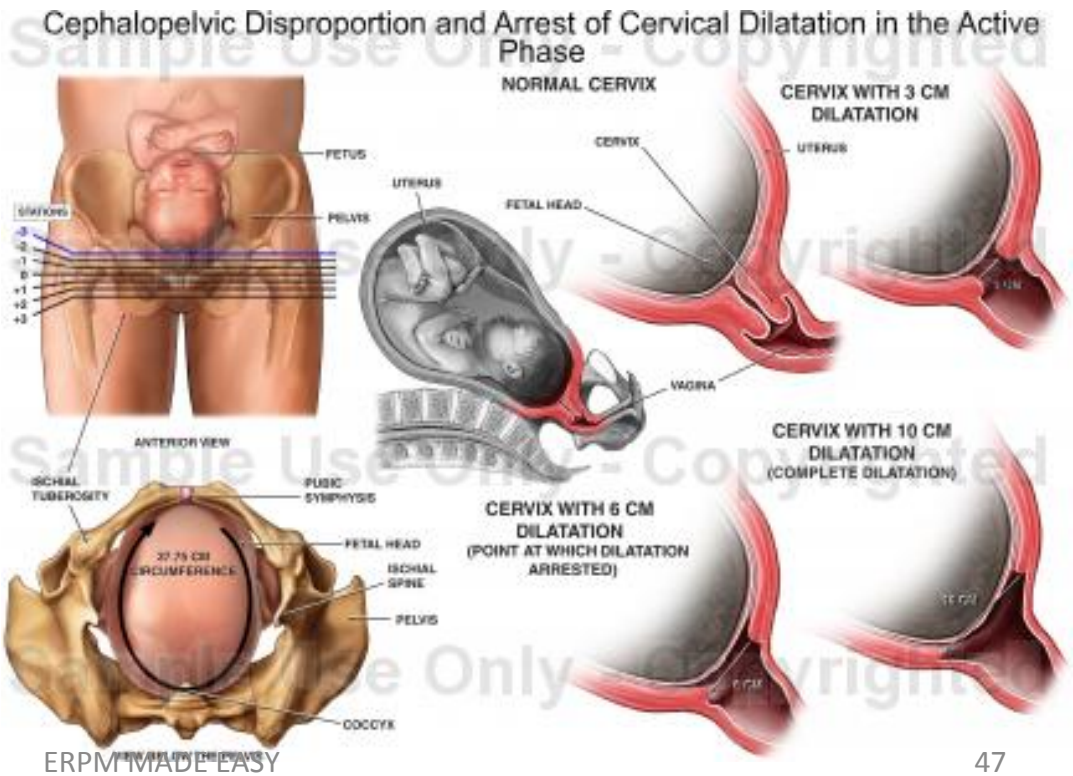
- Inefficient Uterine Contractions
  - Extremes of age
  - Primi gravidae
  - Uterine over distention
  - Malposition of the fetal head
  - Minor degree of CPD

- Abnormalities of the passage
  - lower segment fibriod
  - Cervicla dystocia
    - Cervicla scarring
    - teachealectomy
  - pelvic contractures

- Cephalo - pelvic disproportion

True CPD	Relative CPD
Large Baby	Mal position of the fetal head
Small pelvis	deflexion
Combination of both	

Baby's head too large to fit through mother's pelvis



Prolonged 2nd Stage

- Secondary uterine inertia
  - Maternal dehydration
  - Ketosis
- Occipito posterior position of fetal head
- Deep transverse arrest

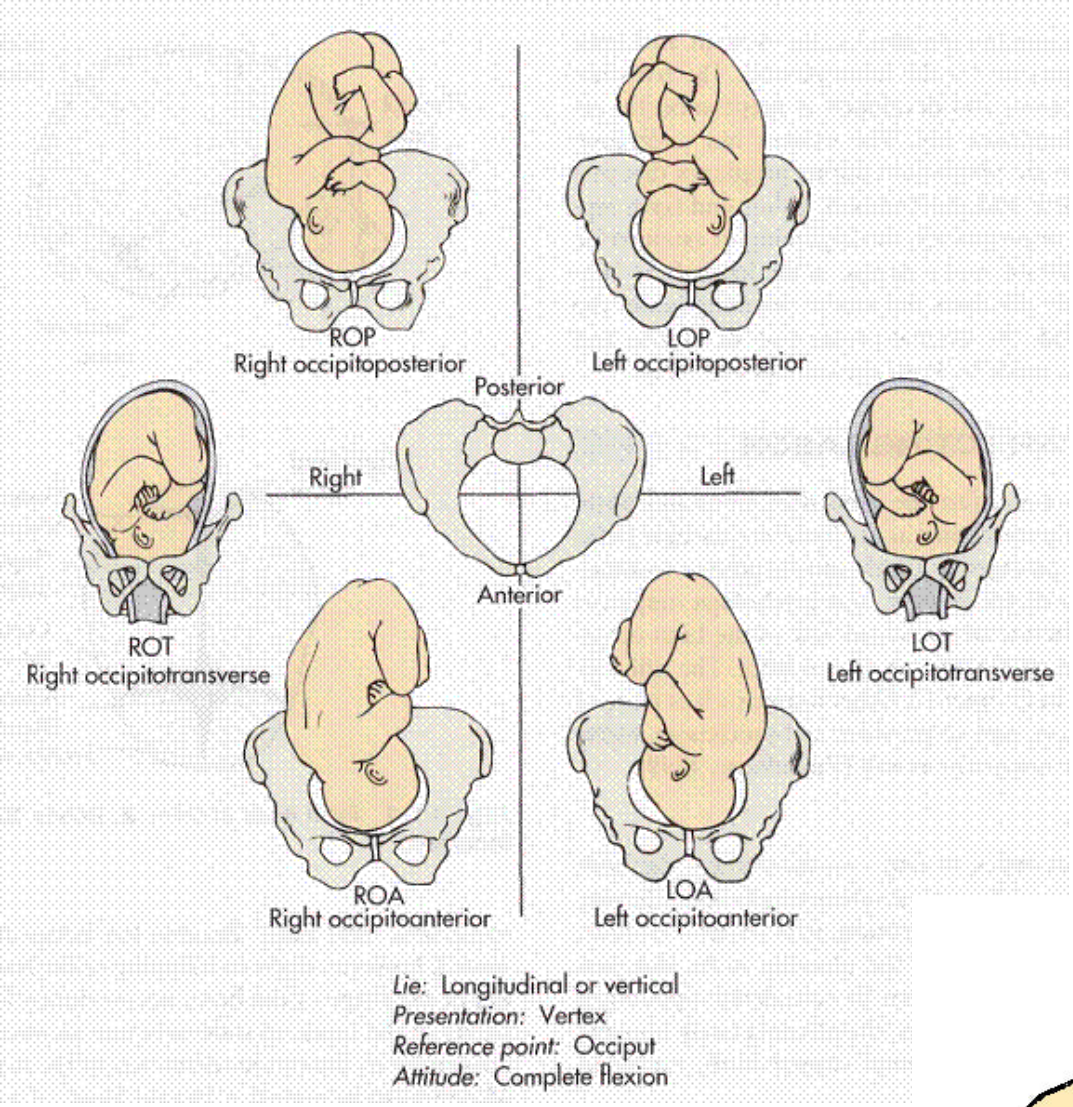
Management

- Exclude true CPD –
  - If present EM – LSCS
- If no true CPD,
  - augment labor with IV Oxytocin
- Maternal rehydration, analgesia, reassurance plays an important role
- Instrumental delivery in the 2nd stage
- If fetal distress present, expedite the delivery or perform EM – LSCS

Complications

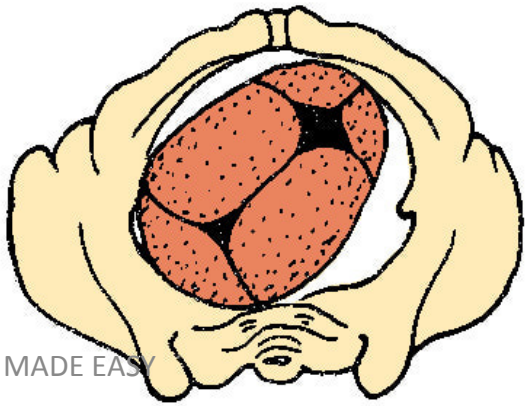
Maternal	Fetal
Dehydration	Hypoxia
Infection	Acidosis
Increased operative delivery	Fetal distress
PPH	Still birth
Genital tract trauma	Asphyxia neonatarum
Increased maternal motility rate	Neonatal sepsis
Vesico vaginal fistula	Injury due to operative delivery
Chronic pelvic infection	Increased peri natal morbidity
Pelvic floor damage	Delayed milestones
Sphincter damage	Intracranial injuries

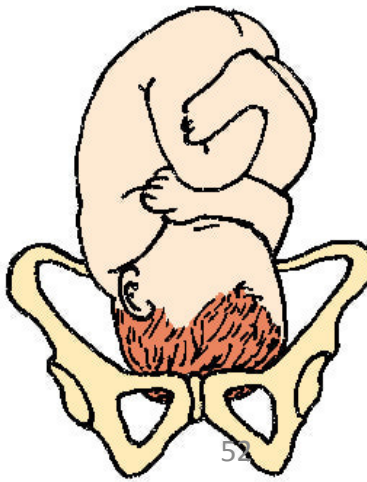
Occipito posterior position



Lie: Longitudinal or vertical
Presentation: Vertex
Reference point: Occiput
Attitude: Complete flexion

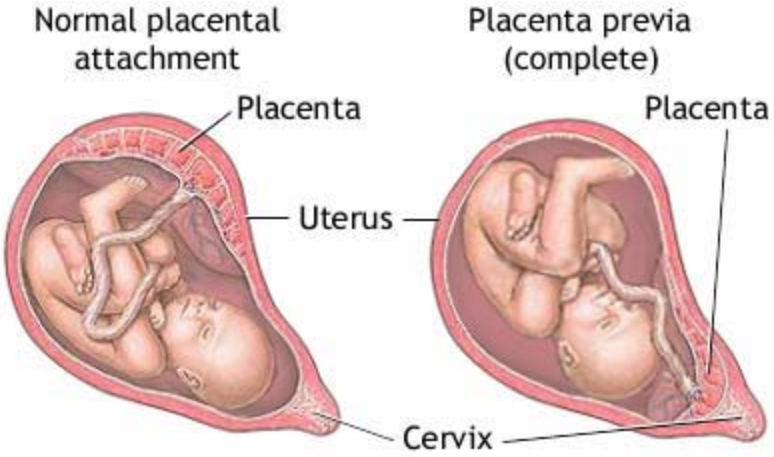
ROP





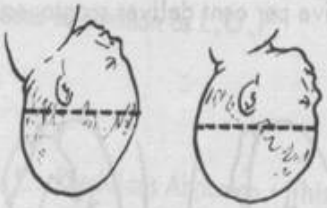
Causes

- Abnormal pelvis
- Anterior placenta previa
- Large fetus
- Inefficient uterine contractions



Two types of occipito-posterior (O.P.) are described.

A Flexed O.P. with suboccipito-frontal and biparietal diameter engaging 10cm (4in.) x 9.5cm ($3\frac{3}{4}$in.).

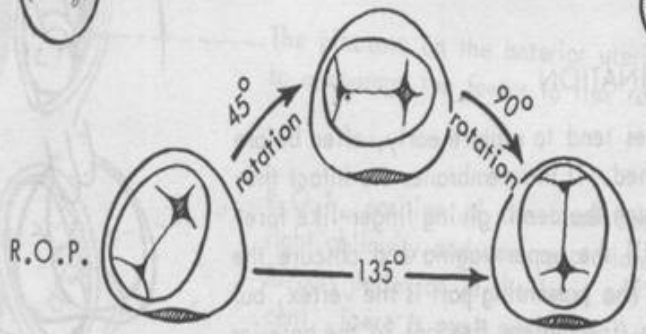


B Deflexed O.P. with occipito-frontal and biparietal diameters engaging 11.5cm ($4\frac{1}{2}$in.) x 9.5cm ($3\frac{3}{4}$in.).

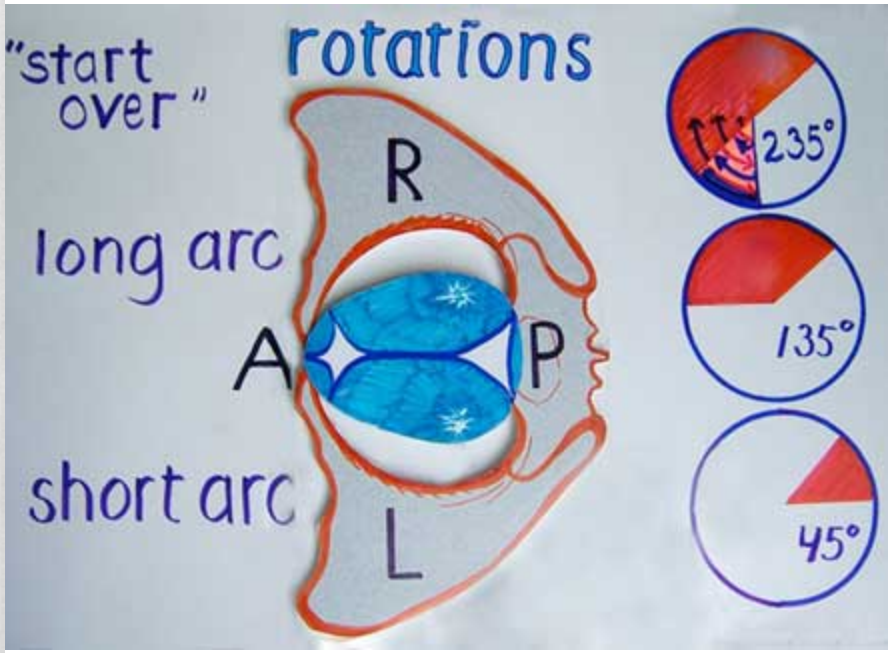
Engagement occurs in the transverse or the right oblique diameter of the brim. Descent occurs in the right oblique diameter of pelvis giving the right occipito-posterior position (R.O.P.). Descent continues to pelvic floor.

FURTHER PROGRESS DEPENDS ON FLEXION OF HEAD

A If flexion of the head increases in descent then the occiput strikes pelvic floor first and rotates anteriorly through the right occipito-transverse (R.O.T.) position - and then to the R.O.A. position and to the direct O.A. position.



The occiput has thus rotated through the angle of 135° to bring the occiput to the symphysis pubis. This is known as LONG rotation.
The mechanism is thereafter the same as for the occipito-anterior position.



- OP position usually undergoes internal rotation to become OA with sufficient uterine contractions

- Occasionally OP persists and still face to pubis delivery is still possible

- Some times the head undergoes 1/8th of a circle rotation and the process arrests at Occipito Transverse position

  - Known as deep transverse arrest
  - Requires rotational delivery
    - Manual rotation and then forceps delivery
    - Rotational forceps delivery
    - Rotational ventouse delivery

- Engaging diameter: Occipito frontal diameter

Indications for LSCS in OP position

Early caesarean section	Late caesarean section
True CPD	Fetal distress
Macrosomia	Prologed fist stage not responding to conservative management
Associated maternalcompications	Failed instrumental delivery

- **Do not apply second instrument if one fails –**
  - **Plan for EM - LSCS**