

Intrapartum Maternal Monitoring

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Labor

- **Labor** is defined as regular, rhythmic and painful uterine contractions that cause progressive dilation and effacement (thinning and shortening) of the cervix and subsequent expulsion of the fetus.

Stages of Labor

- The First stage of Labor
- **1- Latent**
- **2-Active (Established)**
- The Second stage of labor
- The Third stage of labor
- The Fourth stage of labor

Stages of Labor

| | Onset | End | Duration |
|----------------|----------------------------|--|--|
| 1-First stage | Onset of true labour pains | Full cervical dilatation | Primi: 12-16 hrs Multi: 6-8 hrs |
| 2-Second stage | Full cervical dilatation | Delivery of the fetus | Primi: 1-2 hrs Mutti: average 0.5 hrs |
| 3-Third stage | After delivery of the baby | Complete expulsion of placenta and membranes | Up to 30 minutes |

Fourth stage: 1- 2 hours after delivery (observational)

The First stage of Labor

- ❖ The first stage of labor is divided into two phases:
 - The Latent phase
 - The active phase
- ❖ This describes the time from the diagnosis of labor to full dilatation of the cervix (10 cm).

The Latent Phase of 1st Stage of Labor

- Latent first stage of labor is the presence of irregular contractions which become progressively coordinated, discomfort is minimal, and the cervix effaces and dilates to 4 cm.
- The latent phase is difficult to time precisely, and duration varies, averaging 8 hours in nulliparas and 5 hours in multiparas.
- Duration is considered abnormal if it lasts > 20 hours in nulliparas or > 14 hours in multiparas

Management of ladies in their latent phase of the first stage of labor

- Women who are in the latent phase of labor should be encouraged to mobilize and should be managed away from the labor suite where possible.
- Intervention during this phase is best avoided unless there are identified risk factors.
- Simple analgesics are preferred
- There is no reason to restrict eating and drinking, although lighter foods and clear fluids may be better tolerated.
- Encouragement and reassurance are extremely important.

The active phase of 1st Stage of Labor

- **Active Phase:**
- A woman is considered to be in active or established labor when there is regular contractions and progressive dilation beyond 4 cm.
- Cervical dilatation during the active phase occurs typically at 1 cm/hour or more in a normal labor, but is only considered abnormal if it occurs at less than 1 cm in 2 hour.
- It is also variable in length, usually lasting between 2 and 8 hours, shorter in multiparous women.

Management of Ladies in their active phase of the first stage of labor

- One-to-one midwifery care should be provided.
- Additional emotional support from a birth partner should be encouraged.
- Obstetric and anesthetic care should be available as required.
- Maternal and fetal wellbeing should be monitored.
- Vaginal examinations are performed 4 hourly or as clinically indicated.
- Progress of labor is monitored using a partogram with timely intervention if abnormal.
- Appropriate pain relief should be provided consistent with the woman's wishes.
- Ensure adequate hydration and light diet to prevent ketosis

Methods of Augmentation of Labor

- Artificial Rupture of Membranes (Amniotomy)
- Adding Oxytocin

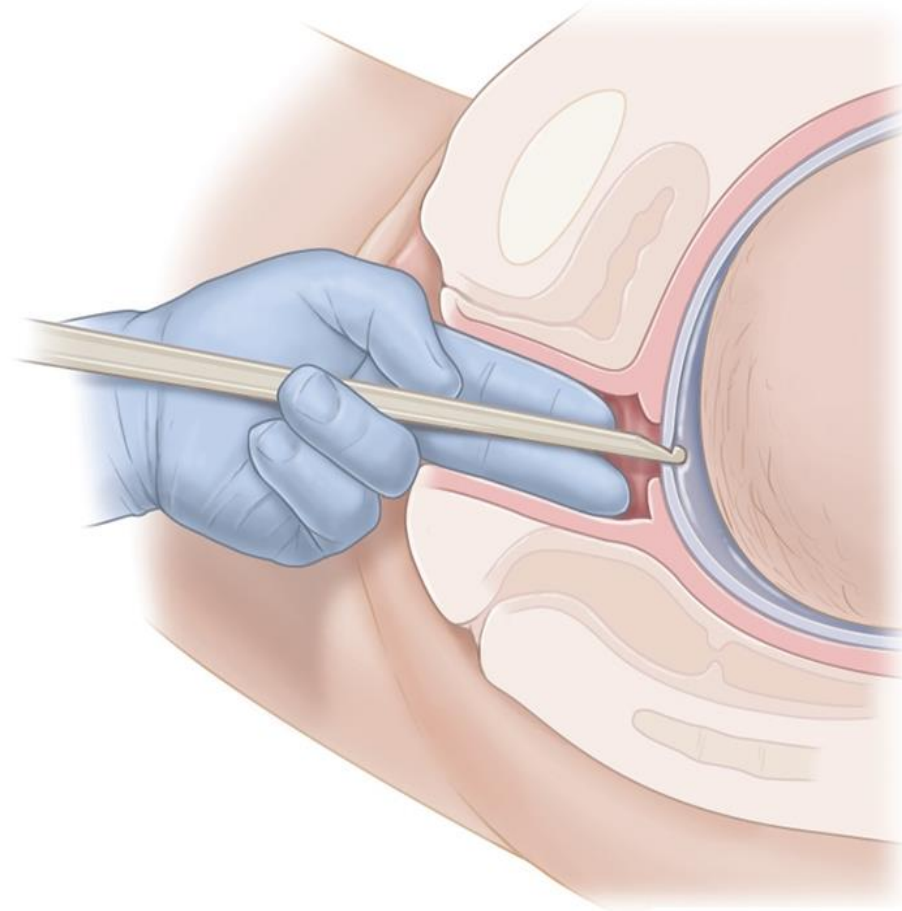
Rupture of the fetal membranes

- Rupture of the fetal membranes is a vital part of normal labor.
- During spontaneous labor at term, the membranes remain intact until after the onset of labor in 90% of women.
- In only 10% of women do they rupture prior to the onset of labour (prelabour or premature rupture of the membranes, PROM).
- If managed conservatively, 70% of mothers will establish in labor spontaneously within 24 hours, and 90% will establish by 48 hours.
- As the interval between rupture of the fetal membranes at term and birth increases, so may the risk of fetal and maternal infection

Artificial Rupture of Membranes (Amniotomy)

- ✓ Done in the active phase of the first stage of labor.
- ✓ **Benefits of Amniotomy:**
- ✓ It is a method of augmentation (Prostaglandin Release, as a result, labor may progress more rapidly)
- ✓ The status of amniotic fluid is detected (e.g Meconium stained liquor)
- ✓ Amniotomy during this stage may be necessary for specific indications, such as facilitating internal fetal monitoring & fetal scalp PH Sampling (FPS) to confirm fetal well-being.
- ✓ **Contraindications of Amniotomy**
- ✓ Amniotomy should be avoided in women with HIV infection or hepatitis B or C, so that the fetus not exposed to these organism.

Artificial Rupture of Membranes (Amniotomy)



Oxytocin

- **Oxytocin** (Oxt or OT) is a neuropeptide hormone normally produced in the hypothalamus and released by the posterior pituitary.
- **Oxytocin** is a natural hormone that stimulates uterine contractions in childbirth and lactation after childbirth. It also affects aspects of human behavior and the male and female reproductive systems.
- In the mid-1950s, **synthetic oxytocin** was successfully synthesized by a biochemist named Vincent du Vigneaud; he was later recognized with a Nobel prize for his work.

Oxytocin

- **Uses:**

- ✓ Augmentation of labor

- ✓ Management of post partum hemorrhage

- **Side Effects:** nausea, vomiting, hypotension, hyponatremia, water retention & overstimulation of the uterus.

- Augmentation of labor with an oxytocin infusion will often correct inefficient uterine contractions and may help correct a fetal malposition.

- Augmentation of labor with oxytocin can be dangerous in multiparous women with a uterine scar, a malpresentation and where there are concerns about fetal wellbeing.

Second stage of labor

- **This describes the time from full dilatation of the cervix (10 cm) to delivery of the fetus or fetuses.**
- **The second stage of labor may also be subdivided into two phases:**
- **1-The ‘passive phase’** describes the time between full dilatation and the onset of involuntary expulsive contractions.
 - There is no maternal urge to push and the fetal head is still relatively high in the pelvis.
- **2- The ‘active second stage’.**
 - There is a maternal urge to push because the fetal head is low (often visible), causing a reflex need to ‘bear down’.

Second stage of labor

- **PG**
 - 2 hrs without epidural anesthesia
 - 3 hrs with epidural anesthesia

- **MG**
 - 1 hr without epidural anesthesia
 - 2 hrs with epidural anesthesia

Third Stage of Labor

- The third stage is the interval between delivery of the baby and the complete expulsion of the placenta and membranes.
- This normally takes between 5 and 10 minutes and is considered prolonged after 30 minutes.
- A third stage lasting more than 30 minutes is defined as abnormal

Third Stage of Labor

- 90% of placentas are delivered within 10 minutes and the risk of postpartum hemorrhage almost doubles by the time the duration of third stage reaches twenty minutes.

Signs of Placental Separation

- Apparent lengthening of the cord
- A small gush of blood from the placental bed
- Rising of the uterine fundus to above the umbilicus
- Uterine contraction resulting in firm globular feel on palpation

Active management of the third stage

- Intramuscular injection of 10 IU oxytocin, given as the anterior shoulder of the baby is delivered, or immediately after delivery of the baby.
- Early clamping and cutting of the umbilical cord.
- Controlled cord traction.

Modified approach to active management of the third stage

- It is now recognized that a modified approach to active management of the third stage may be preferable with delayed cord clamping for between 1 and 3 minutes.
- This approach allows autotransfusion of placental blood to the neonate while maintaining the benefit of a reduced risk of PPH.
- It is of particular importance in preterm birth
- WHO Recommendations: Delayed umbilical cord clamping (not earlier than 1 min after birth) is recommended for improved maternal and infant health and nutrition outcomes.

Prolonged Labor & Precipitous Labor

- It would be reasonable to suggest that labor lasting longer than 12 hours in nulliparous women and 8 hours in multiparous women should be regarded as **prolonged**.
- **Precipitous labor** is defined as expulsion of the fetus within less than 3 hours of the onset of regular contractions.

Anatomy of the female pelvis

- ✓ **The Female Bony Pelvis**
 - The Pelvic inlet(The Brim)
 - The Midpelvis (The Midcavity)
 - The Pelvic outlet
- ✓ **The Pelvic Floor**
- ✓ **The Perineum**

Engagement

- Engagement is said to have occurred when the widest part of the presenting part has passed successfully through the inlet.

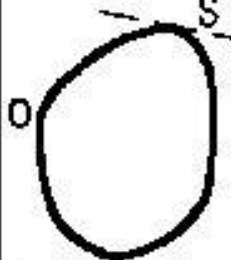
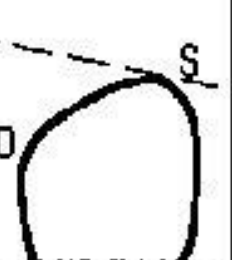
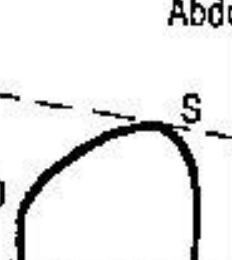
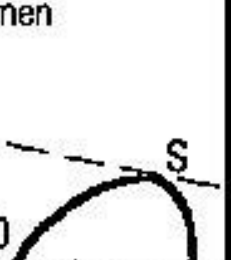


Engagement

- The fetal head normally enters the pelvis in the transverse position or some minor variant of this, taking advantage of the widest pelvic diameter.
- Engagement has occurred in the vast majority of nulliparous women prior to labor, usually by 37 weeks' gestation, but not so for the majority of multiparous women.

Engagement

- The number of fifths of the fetal head palpable abdominally is used to describe whether engagement has taken place.
- If more than two-fifths of the fetal head is palpable abdominally, the head is not yet engaged.
- $2/5$ up Engaged

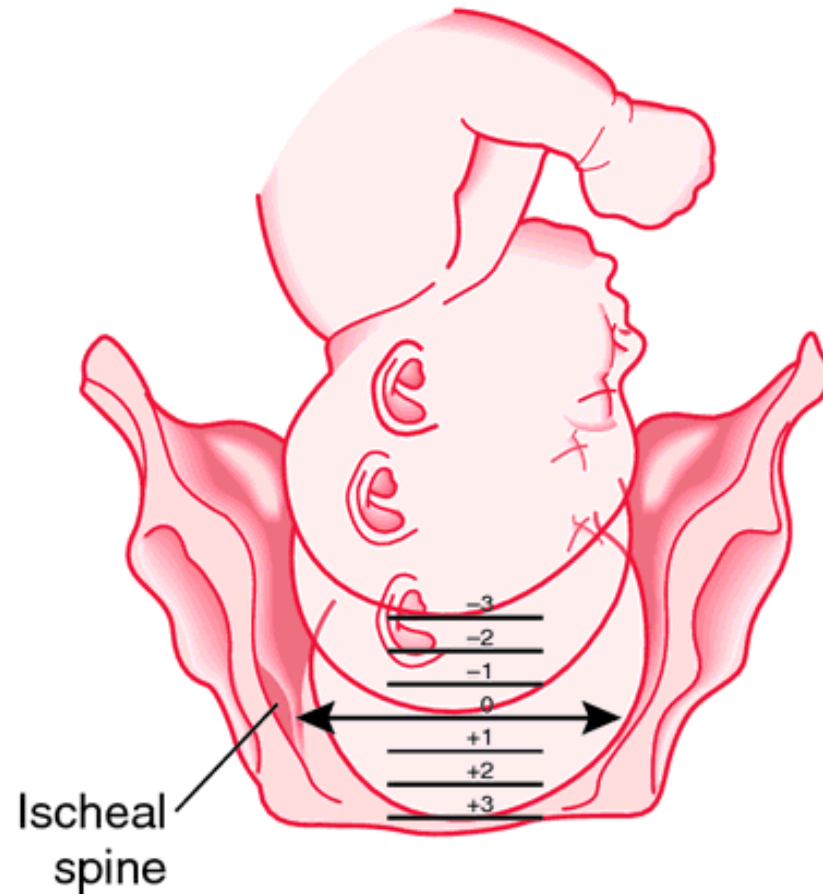
Rule of 5

| <i>5/5</i> | <i>4/5</i> | <i>3/5</i> | <i>2/5</i> | <i>1/5</i> | <i>0/5</i> |
|---|--|---|---|---|---|
| Abdomen | | | | | |
|  |  |  |  |  |  |
| Pelvic brim | | | | | |
| Pelvic Cavity | | | | | |
| Completely above | Sinciput <i>High</i> Occiput <i>Easily felt</i> | Sinciput <i>Easily felt</i> Occiput <i>Felt</i> | Sinciput <i>Felt</i> Occiput <i>Just felt</i> | Sinciput <i>Felt</i> Occiput <i>Not felt</i> | None of head palpable |

Engagement

- “0 Station” is an important landmark for engagement, when the presenting part is at the level of the ischial spine.

Engagement/ 0 Station



The ischial spines

- **The ischial spines are palpable vaginally and are used as important landmarks for two purposes:**
- 1- **To assess the descent of the presenting part on vaginal examination** (e.g. station zero is at the level of the ischial spines, -1 is 1 cm above the spines and $+1$ is 1 cm below the spines).
- 2- **To provide a local anesthetic pudendal nerve block.**
- The pudendal nerve passes behind and below the ischial spine on each side.

Fetal Lie

- Fetal lie refers to the relationship between the longitudinal axis of the baby with respect to the longitudinal axis of the mother.
 - Longitudinal lie
 - Transverse lie
 - Oblique lie

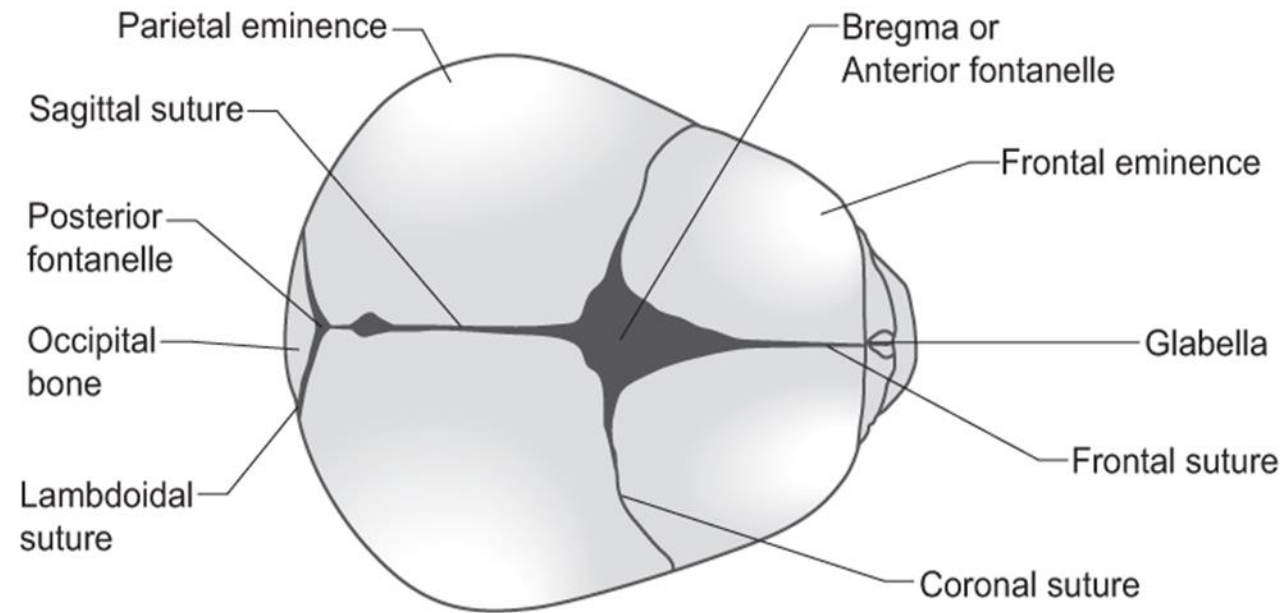
Presentation

- Presentation: that part of the fetus entering the pelvis first, e.g. vertex of head, face, brow or breech.

Vertex

- The vertex is the area bounded by the anterior and posterior fontanelle and the parietal eminence.
- In normal labor the vertex of the fetal head is the presenting part and the posterior fontanelle (indicating the occiput) is used to define the position of the fetal head in relation to the pubic symphysis.

The vertex



Position

- Position: orientation of the presenting part in relation to the maternal pubic symphysis, e.g. occipito-anterior, occipito-posterior, occipito-transverse.

Position

- The anatomical differences between the anterior and posterior fontanelles on vaginal examination facilitate correct diagnosis of the fetal head position in labor.
- The occipito-anterior (OA) position is the most favorable for a spontaneous vaginal birth.
- The occipito-transverse (OT) position or occipito-posterior (OP) position is a malposition and may result in prolonged labor, instrumental delivery or caesarean section.

Molding

- The parietal bones usually slide over the frontal and occipital bones. Furthermore, the bones themselves are compressible.
- These characteristics of the fetal skull allow a process called ‘molding’ to occur, which reduces the diameters of the fetal head and encourages progress through the bony pelvis, while still protecting the underlying brain.
- Severe molding, or molding early in labor, can be a sign of obstructed labor due to a fetal malposition (failure of the head to rotate) or cephalopelvic disproportion (a mismatch between the size of the fetal head and maternal pelvis).

Cephalopelvic Disproportion

- Cephalopelvic disproportion: (a mismatch between the size of the fetal head and maternal pelvis).
 - Macrosomic fetus
 - Contracted Pelvis

Three Ps

- POWER//PASSAGES//PASSENGER

- Abnormalities of the uterine contractions (the ‘powers’), the pelvis and lower genital tract (the ‘passages’) and the fetus (the ‘passenger’) can cause abnormal labor, resulting in the need for intervention and with that, an increased risk of morbidity or mortality.
- When the 3Ps are favorable, normal labor is likely to ensue, resulting in an unassisted or spontaneous vaginal birth.

Five “Ps” of Labor



The 5 “Ps” of Labor:

- Passenger (fetus)
- Powers (uterine contractions)
- Passage (the pelvis & maternal soft parts)
- Position (maternal)
- Psyche (maternal psychological status)

Bishop score

To assess cervical condition

| Parameter | 0 | 1 | 2 | 3 |
|--------------------|-----------|---------|----------|--------|
| Dilatation | <1 cm | 1–2 cm | 2–4 cm | >4 cm |
| Length | >4 cm | 2–4 cm | 1–2 cm | <1 cm |
| Consistency | Firm | Average | Soft | |
| Position | Posterior | Mid | Anterior | |
| Station | –3 | –2 | –1, 0 | +1, +2 |

Cervical Ripening

- Definition: the increased softening, distensibility, effacement and dilatation of the cervix, prelude to the onset of labor.
- These changes are due to alterations in the biomechanical properties of cervical tissue, including a reduction in collagen concentration, an increase in water content and a change in proteoglycan/glycosaminoglycan composition
- One important change involved is a rearrangement and realignment of collagen

Factors possibly linked to controlling cervical ripening including

- prostaglandins
- estrogens
- progesterone and antiprogesterones
- relaxin
- inflammatory mediators
- nitric oxide
- apoptosis

Methods commonly employed to encourage cervical ripening in clinical practice

| Pharmacological | Mechanical |
|--------------------------------|----------------------------------|
| Misoprostol - Prostaglandin E1 | Foleys Catheter |
| Dinopostone – Prostaglandin E2 | Single / Double Balloon catheter |

Normal birth

- ❖ **The World Health Organization (WHO) defines normal birth as follows:**
- The birth is spontaneous in onset and low risk at the start of labor and remains so throughout labor and delivery.
- The infant is born spontaneously in the vertex position between 37 and 42 weeks of pregnancy.
- After birth, mother and infant are in good condition

What are the 3 types of delivery?

- Vaginal delivery.
- Assisted vaginal delivery (Vacuum or Forceps).
- C-section (Cesarean birth)

Admission history

- Previous births and size of previous babies. Previous caesarean section.
- Onset, frequency, duration and perception of strength of the contractions.
- Whether membranes have ruptured and, if so, color and amount of amniotic fluid lost.
- Presence of abnormal vaginal discharge or bleeding.
- Recent activity of the fetus (fetal movement).
- Medical or obstetric issues of note (e.g. diabetes, hypertension, fetal growth restriction [FGR]).
- Any special requirements (e.g. an interpreter or particular emotional/psychological needs).
- Maternal expectations of labor and delivery?

Assessing progress of labor

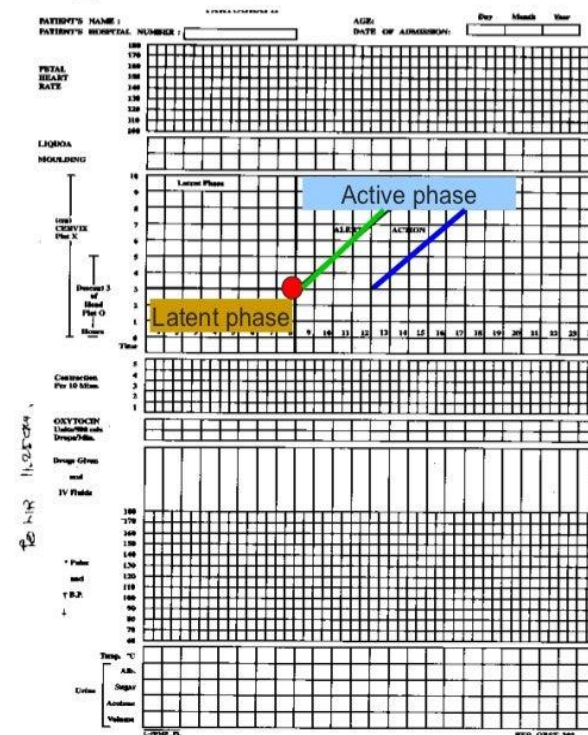
- Contractions
- Cervical dilatation
- Cervical effacement
- Descent of the head

PARTOGRAM

- Partogram is a key tool in detecting an abnormal or prolonged labor.
- It should be done for all women who are in labor, either low risk or high risk groups.
- Maternal and fetal monitoring are essential to pick up problems early and thus institute timely intervention.
- Documented evidence for medico-legal purpose.
- Educational value for all grades of staff.

PARTOGRAM

PARTOGRAM



Friedman's partogram - 1954

2 phases of labour (base on dilatation of the cervix ●)

- Latent phase (dilatation < 3 cm)
- Active phase (>3 cm dilated)

Philpott and Castle - 1972

Introduced the concept of "ALERT" and "ACTION" lines.

ALERT LINE – represent the mean rate of slowest progress of labour

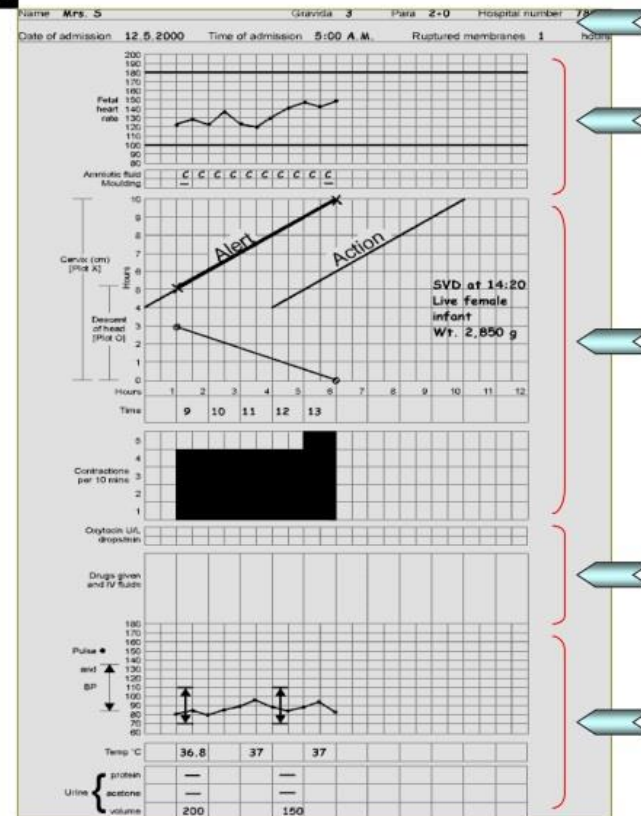
ACTION LINE – appropriate action should be taken.

Normal labour is plotted to the left alert line

Component of Partogram



Component of Partogram



Mother information

Fetal well-being

- Fetal heart rate
- Character of liquor
- Moulding

Labour progress

- Dilatation
- Descent
- Uterine contraction

Medications

- Oxytocin
- Pain relief (e.g. pethidine)

Maternal well-being

- BP, Pulse, Temperature
- Urine – albumin, glucose, acetone
- Urine output

Partogram Recording

PARTOGRAM RECORDING

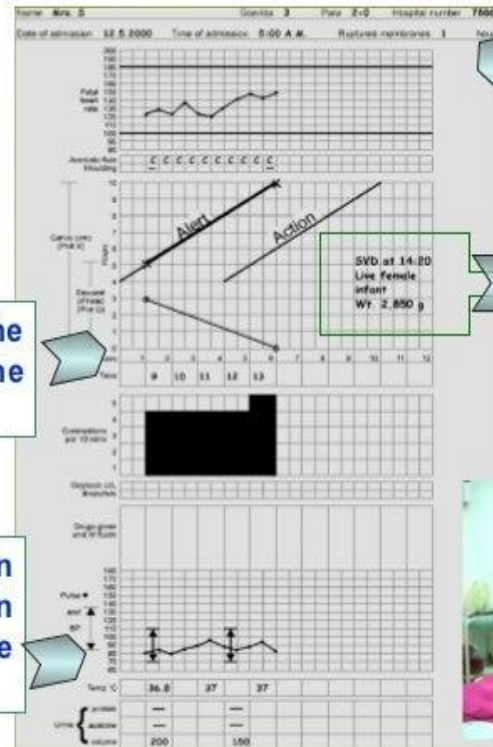


1

Begin plotting at the "zero" hour on the partogram

2

All entries made in relation to time when the observations are made



3

Notes should be legible, dated and timed.

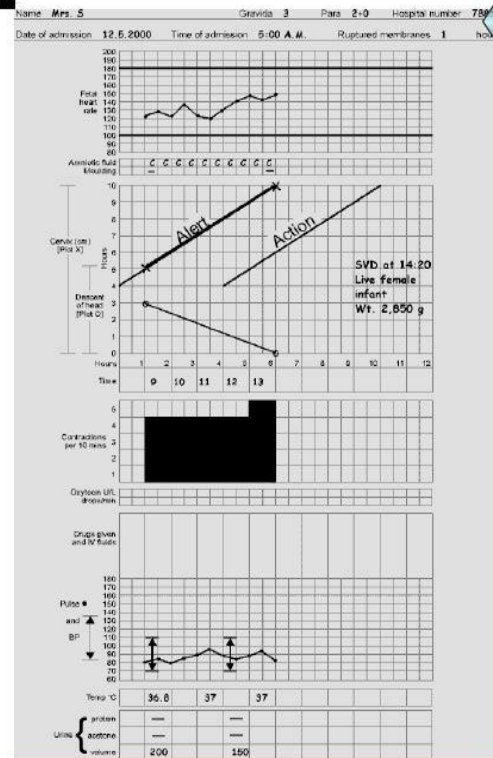
4

Enter the outcome of delivery



Partogram Recording

PARTOGRAM RECORDING



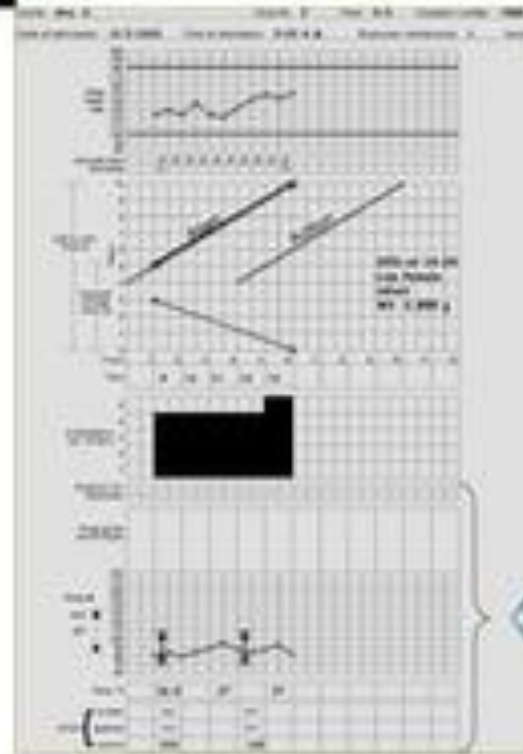
Mother information

- Name
- Age
- Parity
- Gestational period
- Date/time of admission
- Time of rupture membrane
- Short antenatal history



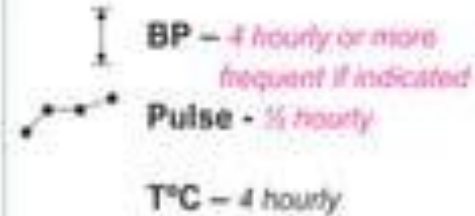
Partogram Recording

PARTOGRAM RECORDING



Mother condition

Vital signs recording

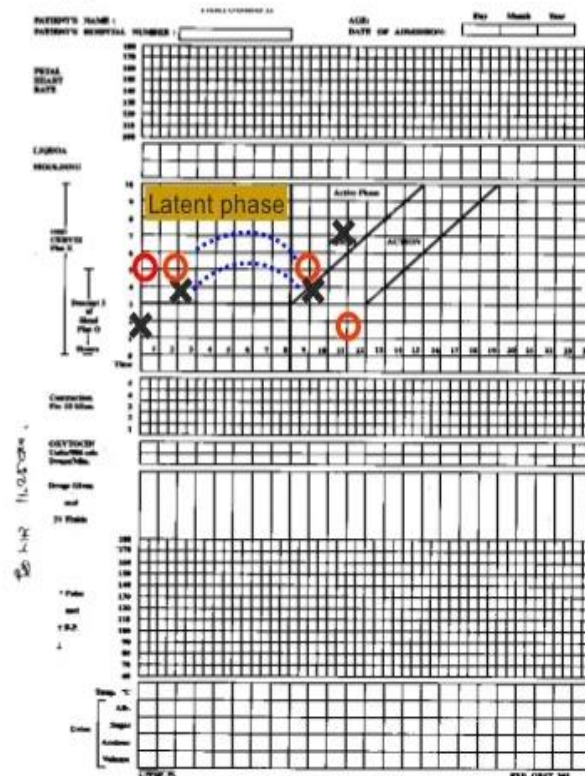


- Urine analysis – dipstick
acetone → Nil or +
albumin → Nil or +
glucose → Nil or +

- Urine volume

Partogram Recording

PARTOGRAM RECORDING



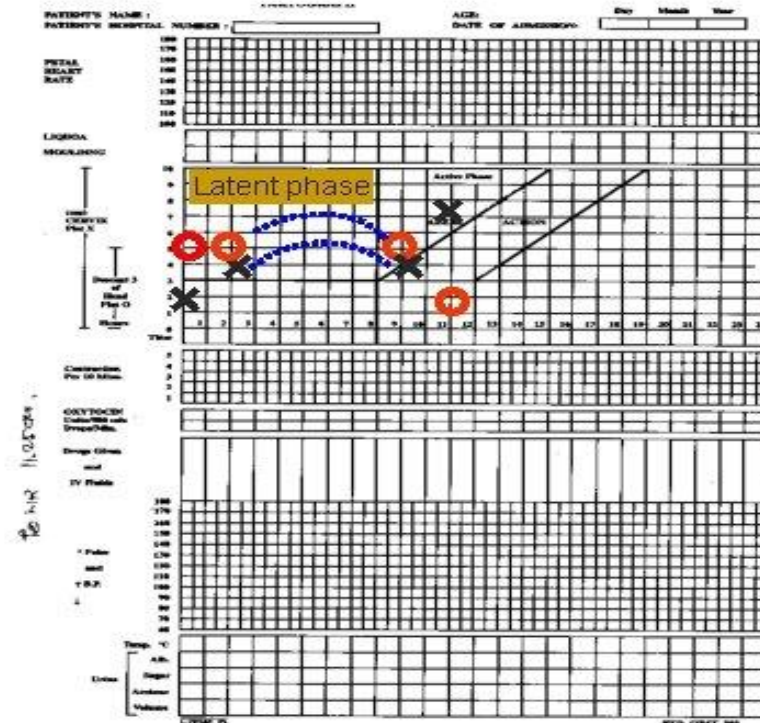
Labour progress recording in active phase

Plot dilatation as "O"
Plot descent as "X"

| | 0 hours (admission) | 2 hours | 4 hours |
|-------------------|------------------------|---------|---------|
| Dilatation "O" | 2 cm | 4 cm | 7 cm |
| Descent "X" | -2 | -1 | +1 |

Partogram Recording

PARTOGRAM RECORDING

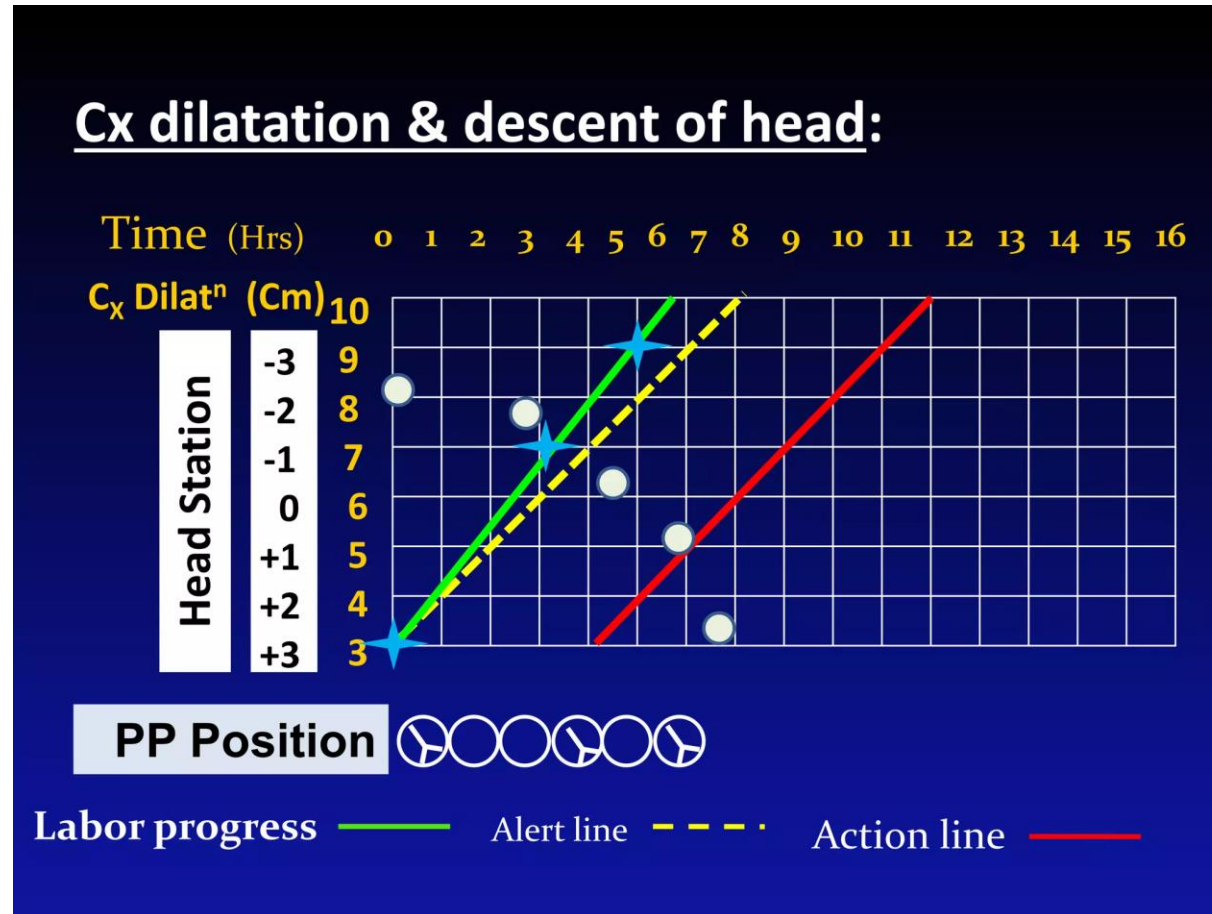


Cervical dilatation

If labour progress well plotting of cervical dilatation should always remain to the left of alert line.

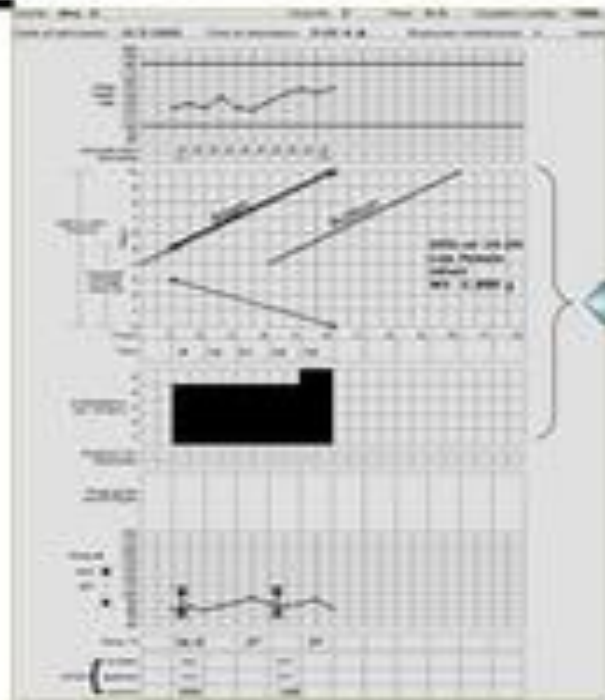
If it cross to right of action line this warns that labour may be prolonged.

Partogram Recording



Partogram Recording

PARTOGRAM RECORDING



Labour progress

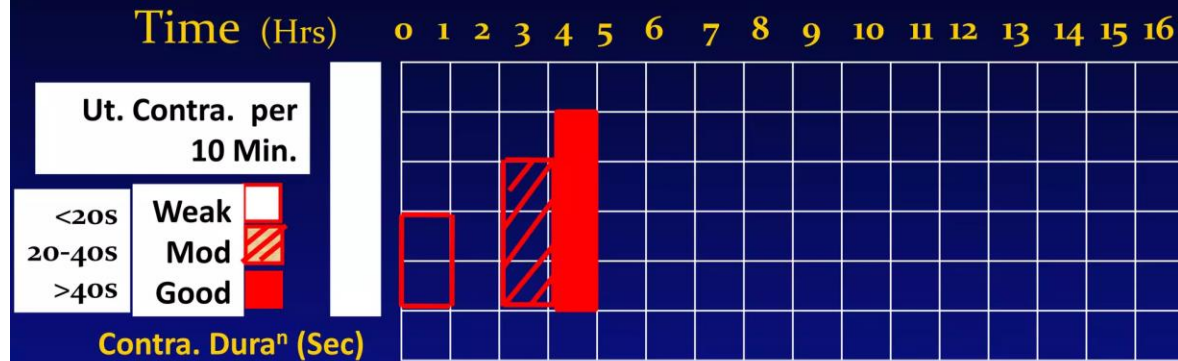
Uterine Contractions

3. Observation is made $\frac{1}{2}$ hourly
4. Assess the frequency, duration.
5. Each square represent 1 contraction felt in 10 minutes.
6. Frequency – highlight the numbers of square.
7. Duration – shade the contraction in the square.

- | | | | |
|-----------|---|--------------------------|----------|
| < 20 sec | - | <input type="checkbox"/> | Mild |
| 20-40 sec | - | <input type="checkbox"/> | Moderate |
| > 45 sec | - | <input type="checkbox"/> | Strong |

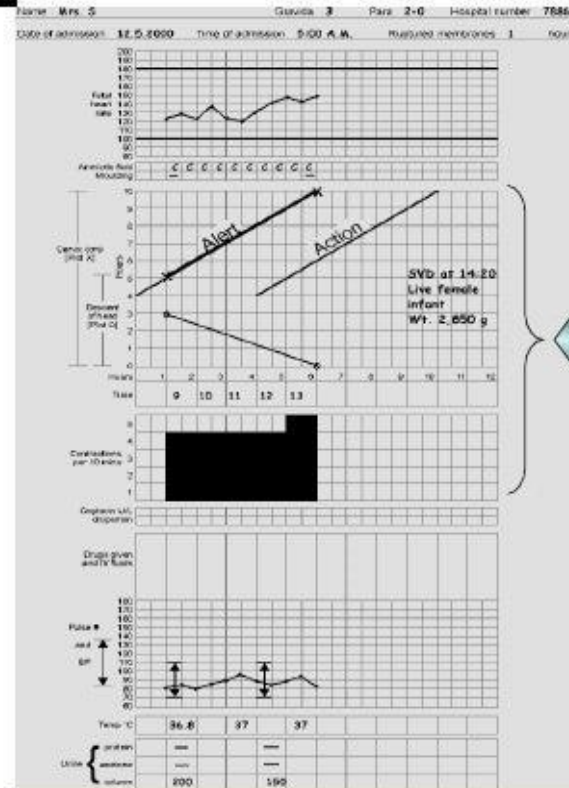
Partogram Recording

Uterine contractions



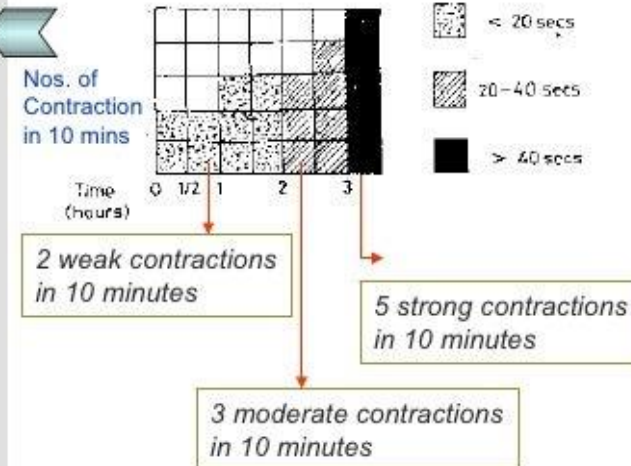
Partogram Recording

PARTOGRAM RECORDING



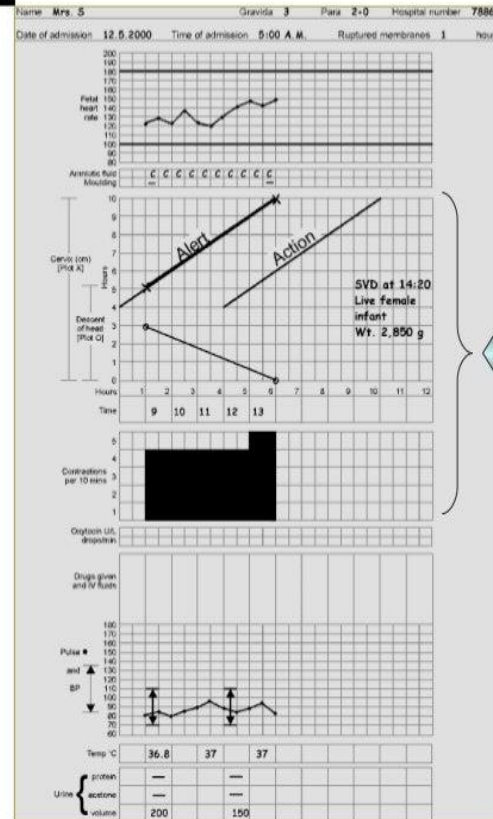
Labour progress

Recording the uterine on the partogram



Partogram Recording

PARTOGRAM RECORDING



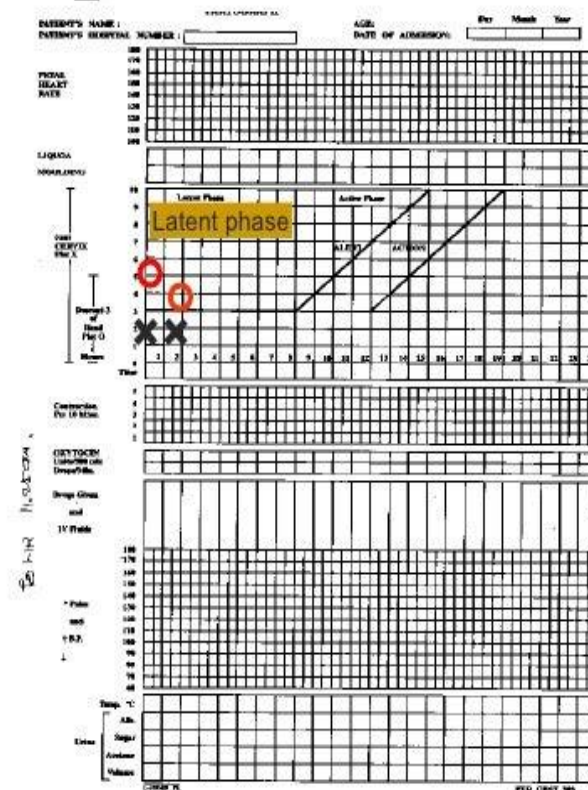
Labour progress

Dilatation and Descent

- Latent (0-3 cm) and Active (3-10 cm) phase.
- Dilatation of cervix plotted as "X" axis and Descent plotted as "O" axis.
- First vaginal examination done on admission is recorded.
- Subsequent vaginal examination is done every 2-4 hourly.
- Transfer from latent to active phase.

Partogram Recording

PARTOGRAM RECORDING



Labour progress recording in latent phase

Plot dilatation as "X"
Plot descent as "O"

At admission:

- Dilatation → 2 cm
- Descent → -2

2 hours after admission:

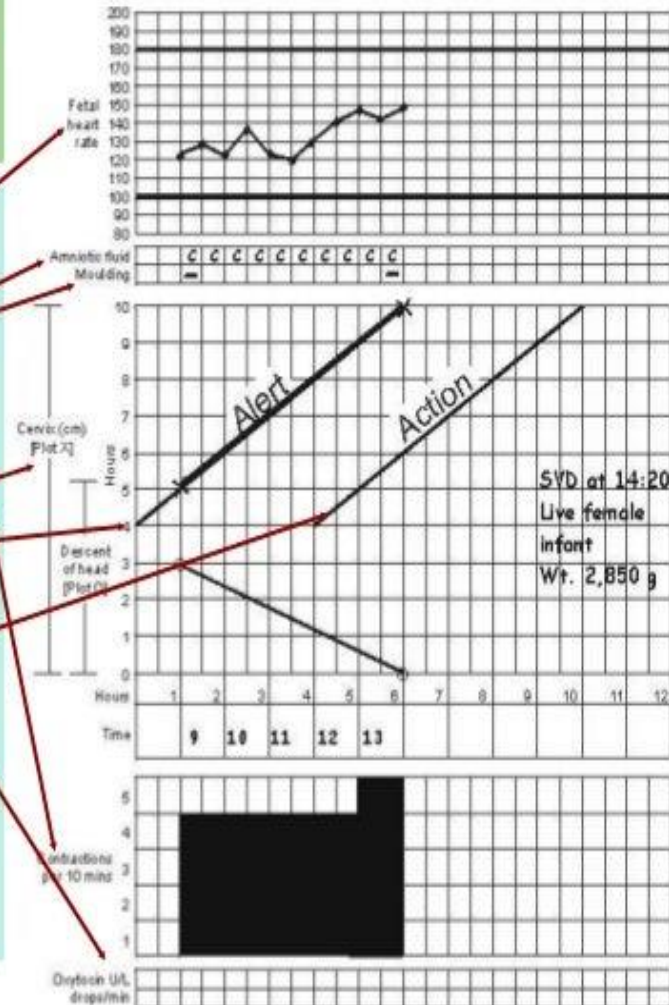
- Dilatation → 2 cm
- Descent → -1

As the dilatation is only 2 cm therefore the labour progress is in the latent phase

Partogram Recording

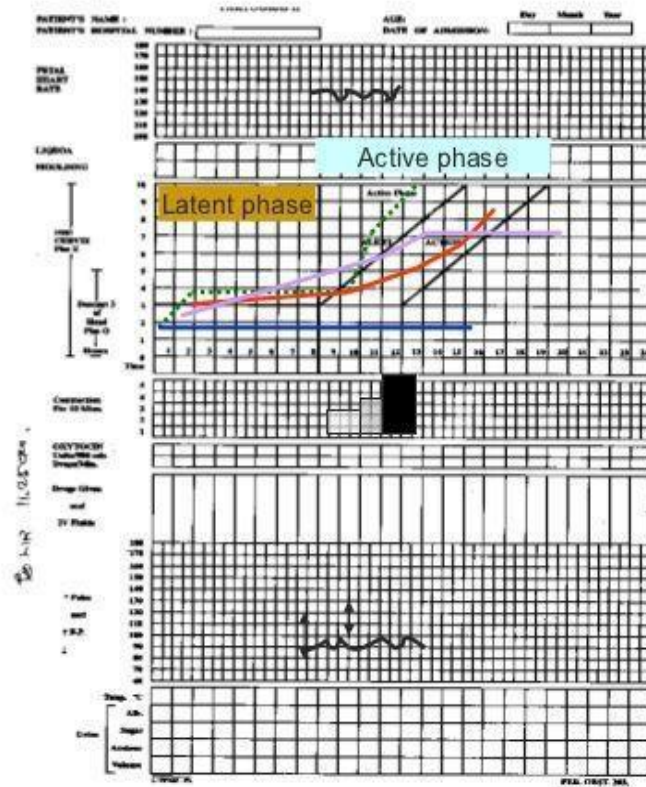
Partograph and Criteria for Active Labor

- Label with patient identifying information
- Note fetal heart rate, color of amniotic fluid, presence of moulding, contraction pattern, medications given
- Plot cervical dilation
- **Alert line** starts at 4 cm--from here, expect to dilate at rate of 1 cm/hour
- **Action line:** 4h from alert line if patient does not progress as above, action is required



Partogram Recording

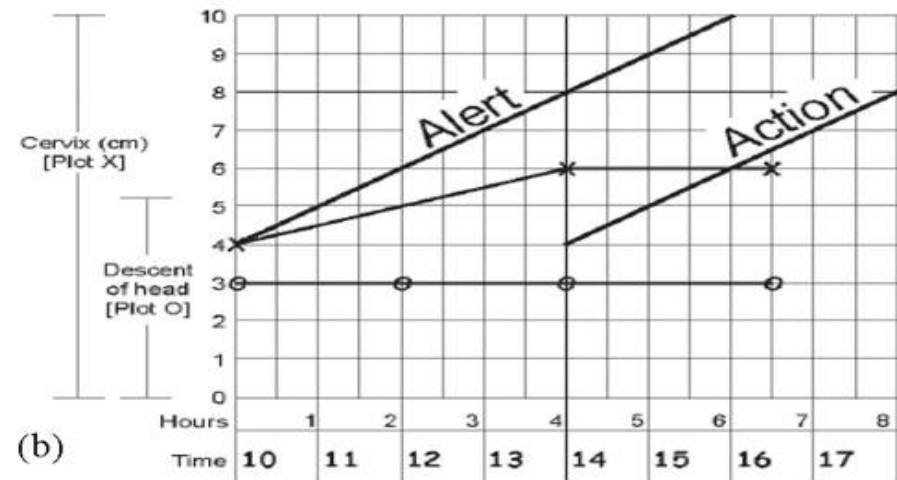
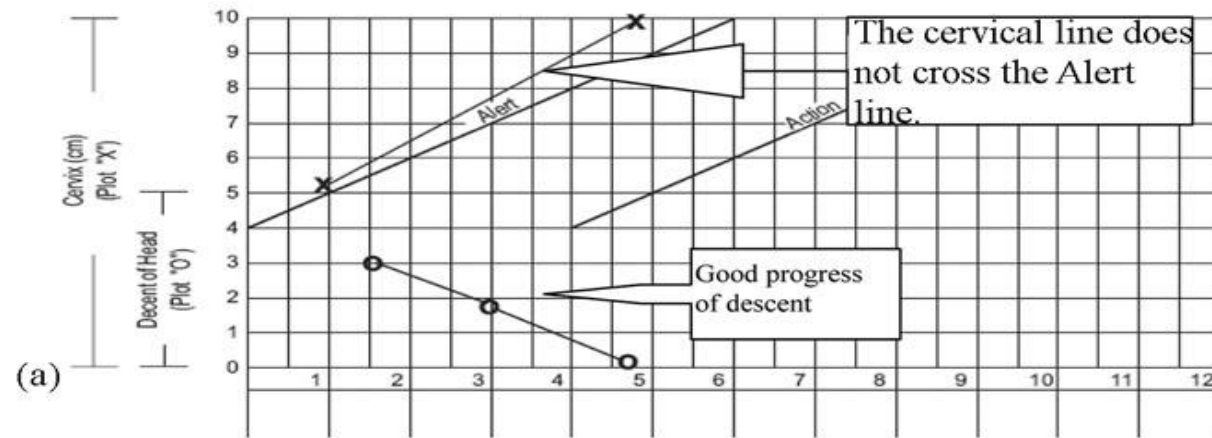
PARTOGRAM RECORDING



LABOUR PATTERNS

- Normal labour
- Prolonged latent phase
- Primary dysfunctional labour
- Secondary arrest

Cervical dilatation has stopped and the record line has crossed the Action line



Labor Patterns

- Normal Labor
- Prolonged Latent phase
- Primary Dysfunctional Labor
- Secondary Arrest

Normal labor progression

- Normal labor progression requires consideration of 3 "Ps," representing power, passage, and passenger.
 - ✓ Power refers to uterine contractions and maternal expulsive efforts.
 - ✓ Passage is the maternal pelvis
 - ✓ The passenger is the fetus (size, presentation & position)
- **Asynclitism or extension of the fetal head, occiput posterior or transverse positions, and mentum or brow presentations may contribute to or be sole etiologies of abnormal labor progression or labor dystocia.**

Abnormal Labor Indicators

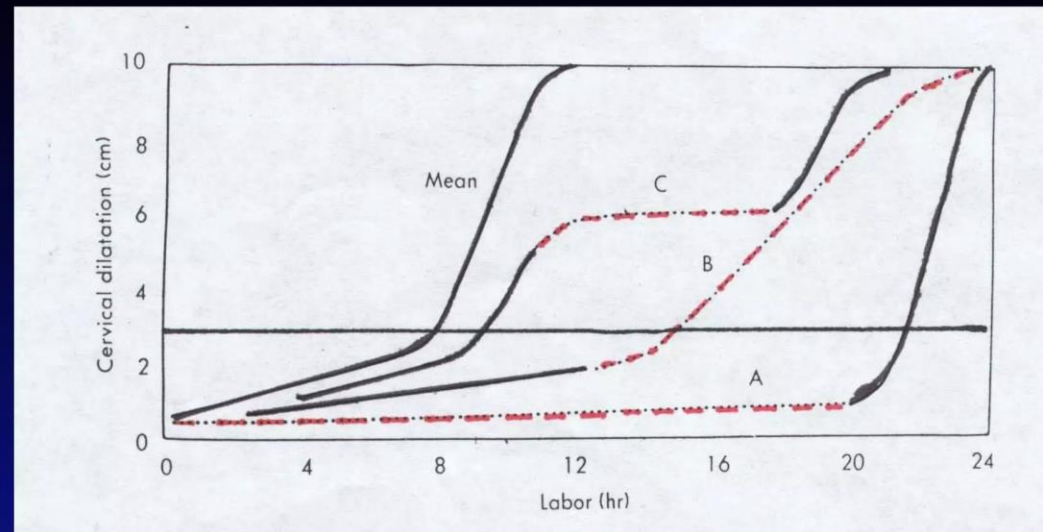
| Indication | Nullipara | Multipara |
|--|-------------|-------------|
| Prolonged latent phase | >20 h | >14 h |
| Average second stage | 50 min | 20 min |
| Prolonged second stage without (with) epidural | >2 h (>3 h) | >1 h (>2 h) |
| Protracted dilation | < 1.2 cm/h | < 1.5 cm/h |
| Protracted descent | < 1 cm/h | < 2 cm/h |

Dystocia of labor

- **Dystocia of labor** is defined as difficult labor or abnormally slow progress of labor.
- Other terms that are often used interchangeably with **dystocia** are **dysfunctional labor**, **failure to progress** (lack of progressive cervical dilatation or lack of descent), and **cephalopelvic disproportion (CPD)**

First Stage Prolongation, Protraction, and Arrest

Disorders of 1st stage of labor



- A. Prolonged latent phase
- B. Prolonged active phase
- C. Arrested active phase

First Stage Prolongation, Protraction, and Arrest

• Latent Phase

- The decision to admit the patient to the hospital depends on various factors, including the status of the cervix, the emotional state of the patient, associated complications, tolerance to pain, and the patient's distance from the hospital.
- Increased obstetrical interventions have been associated with admission during the latent phase of labor. Therefore, it is imperative to consider the options of admission versus continued outpatient management of the latent phase of labor.
- Therapeutic rest may be considered if desired. Morphine may be administered at a dose of 5 to 10 mg.

First Stage Prolongation, Protraction, and Arrest

- **Latent Phase**
- **Prolongation In nulliparous patients:** latent phase duration of more than 20 hours
- **In multiparous patients:** latent phase duration of more than 14 hours
- Due to its variable and slow progression, latent phase prolongation alone is not an indication for cesarean delivery.

Management of prolonged latent phase

Prolonged latent phase – Management:

- **Expectant**
 - Awaiting active labour- provided no indication for delivery.
 - Simple analgesics, Mobilization, reassurance
- **Active**
 - If delivery is indicated- **Induction / augmentation labor**
 - Early ARM- increase risk of prolonged labour with PPROM- risk of IU infection and neonatal sepsis, risk of CS 10 folds.

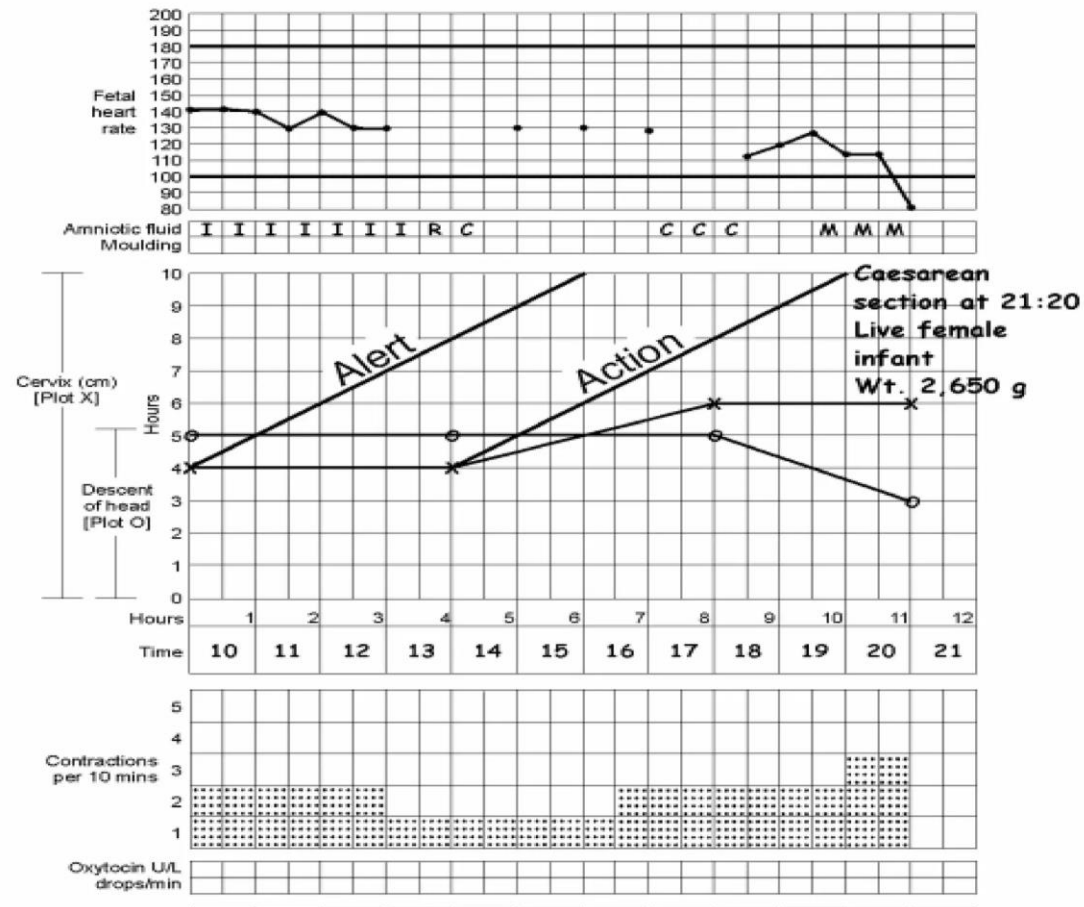
First Stage Prolongation, Protraction, and Arrest

- **Active Phase:**
- **Secondary arrest of cervical dilatation**
- **Secondary arrest of head descent**

- **Protraction and Arrest (once 6 cm cervical dilation is achieved)**
- No cervical dilation after 4 hours of adequate contractions, with ruptured membranes
- No cervical dilation after 6 hours of inadequate contractions, with ruptured membranes, and despite oxytocin administration

Prolonged Active Phase

Name **Mrs. M** Gravida **1** Para **0+0** Hospital number **1248**
 Date of admission **14.5.2000** Time of admission **10:00 A.M.** Ruptured membranes **13:30** hours



Arrest of labor in the second stage of labor

3. Prolonged 2nd stage of labour

- **Definition**
- **PG**
 - > 2 hrs without epidural anesthesia
 - > 3 hr with anesthesia
- **MG**
 - > 1 hr without epidural anesthesia.
 - > 2 hrs with anesthesia

Arrest of labor in the second stage of labor

3. Prolonged 2nd stage of labor

1. Protraction of descent

- Descent of presenting part during the 2nd stage of labor occurring at
 - **< 1cm/h in PG**
 - **< 2cm/h in MG**

2. Arrest (failure) of descent- no progress of descent for **< 2 hrs.**

-

Protracted or Arrested Second Stage

- **Protracted or Arrested Second Stage**
- Without epidural anesthesia, nulliparous women can push for at least 3 hours and multiparous women for at least 2 hours before considering operative intervention.
- As long as the fetus continues to descend and/or rotate to a favorable position for spontaneous vaginal delivery and the fetal heart rate pattern is reassuring, any operative intervention should be delayed.
- Manual rotation of the fetus from occiput posterior presentation to occiput anterior presentation can be attempted if needed in a protracted second stage.
- An additional hour of pushing may be allowed in women with epidural anesthesia before considering operative intervention.
- Operative vaginal delivery may be utilized when the second stage of labor is protracted.

Adverse maternal and fetal outcomes which are associated with labor abnormalities

- **Complications**

- Roughly 20% of labors are associated with *prolongation*, *protraction*, or an *arrest* abnormality.
- Infection, operative birth, low Apgar score at 5 minutes, prolonged hospitalization for both mother and baby, third- and fourth-degree maternal perineal tears, above-average blood loss, and NICU (neonatal intensive care unit) admissions are all increased with abnormal labor progress
- Fistula is one of the most distressing late complications of obstructed labor

Clinical Signs of Obstructed Labor

- The labour has been prolonged
- The mother is exhausted and anxious
- Signs of dehydration +_ Acidosis
- The mother is tachycardiac, tachypneic with low grade fever
- The urine is concentrated
- The vulva is edematous
- The vagina is dry and hot
- Cervix: is fully or partially dilated, oedematous and hanging
- The vertex showed shows excessive moulding and large caput
- Bandl's ring may be seen

Bandl's ring

- Bandl's ring (also known as pathological retraction ring)
- A Bandl ring may be associated with protracted or arrested labor.
- A Bandl ring is a constriction between the thicker upper contractile and thinner lower uterine segments.
- It is unclear why this constriction develops during parturition, although prolonged labor and labor dystocia have been suggested as possible causes.

Bandl's ring



Dr Amal Barakat

• Thank You

• The End of Intrapartum Maternal Monitoring