Normal and Abnormal Labor

Normal Labor

- Labor is the process that leads to childbirth.
- Labor is a clinical diagnosis, defined by the:
  - Regular painful uterine contractions
  - Progressive cervical effacement & dilatation
- Cervical dilatation in the absence of uterine contractions is seen most commonly in the second trimester and is suggestive of cervical insufficiency
- the presence of uterine contractions in the absence of cervical change

Normal Labor…Cont'd

True labor	False labor
Contractions occur at regular intervals	Contractions occur at irregular intervals
contractions increase in intensity, frequency and duration	contractions remain the same or decreases in intensity, frequency
Contractions persist despite analgesics	Contractions disappear with analgesics
Only lower abdominal discomfort present	Lower abdominal and back pain present
progressive cervical dilatation and effacement	no cervical effacement and dilatation

Normal Labor…Cont'd

Criteria:

- Parturient without any risk (eg. Pre-eclampsia, Previous scar…)
- Labor should start spontaneously and at term,
- Fetal presentation must be by vertex,
- Delivery should be by spontaneous vertex delivery
- All stages of labor are lasting normal duration
- The neonate is alive, normal and the woman has uncomplicated puerperium

Normal Labor…Cont'd

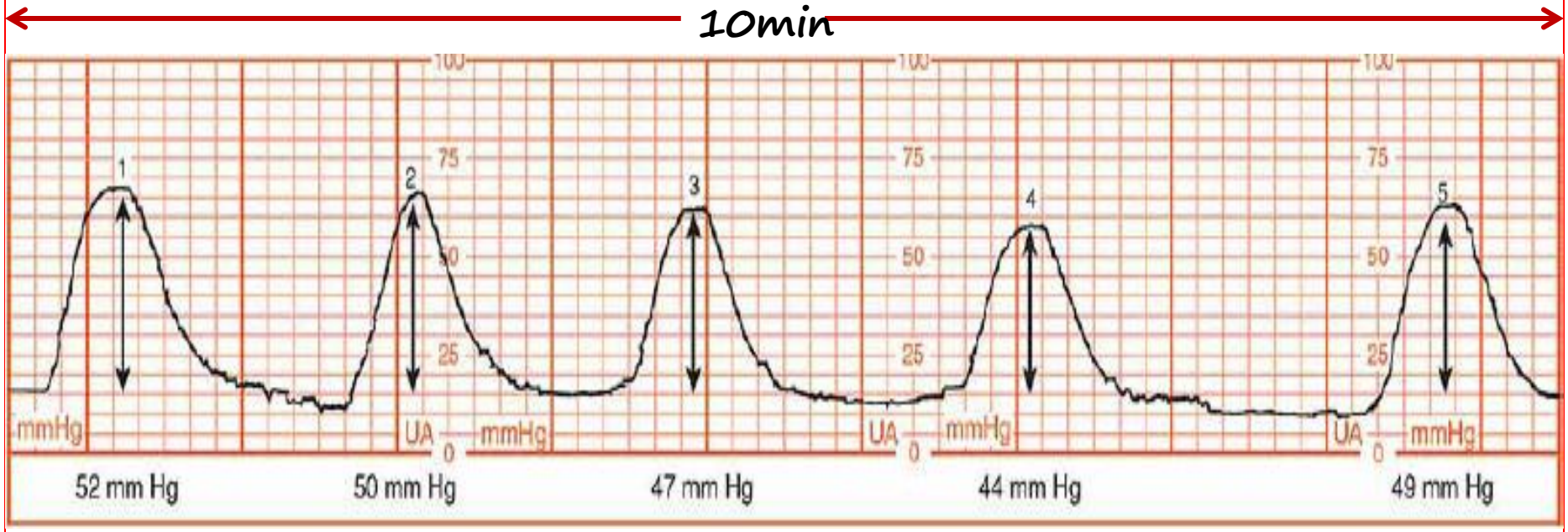
- Labor and delivery are not passive processes by which uterine contractions push a rigid object through a fixed aperture.
- The ability of the fetus to successfully negotiate the pelvis during labor and delivery depends upon a complex interaction of three variables:
  - Power (uterine contractions)
  - Passenger (fetus)
  - Passage (both bony pelvis and pelvic soft tissues)

Power (uterine contractions)

- is characterized by the frequency, intensity, and duration
- Assessment of uterine activity mey include manual palpation, external objective such as external tocodynamometry, and direct measurement via an internal uterine pressure catheter
- Classically, 3-5 contr /10 min lasting 45-60sec has been used to define adequate labor
- Tachysystole is defined as >5 contractions in 10 minutes, averaged over 30 minutes; presence or

Power…Cont'd

- The most common objective way of measuring power is using the *Montevideo unit (MVU),* a measure of average frequency and amplitude above basal tone (the sum of strength of each contraction in mmHg in 10min).



- 200 to 250 MVU is commonly accepted to define adequate labor in the active phase of labor

Passenger (fetus)

Fetal Lie- the r/p of the fetal long axis to that of the mother.

- >99% of labors at term, is *longitudinal*.

Fetal Presentation- is the portion of the fetal body that is either within the birth canal or in closest proximity to it.

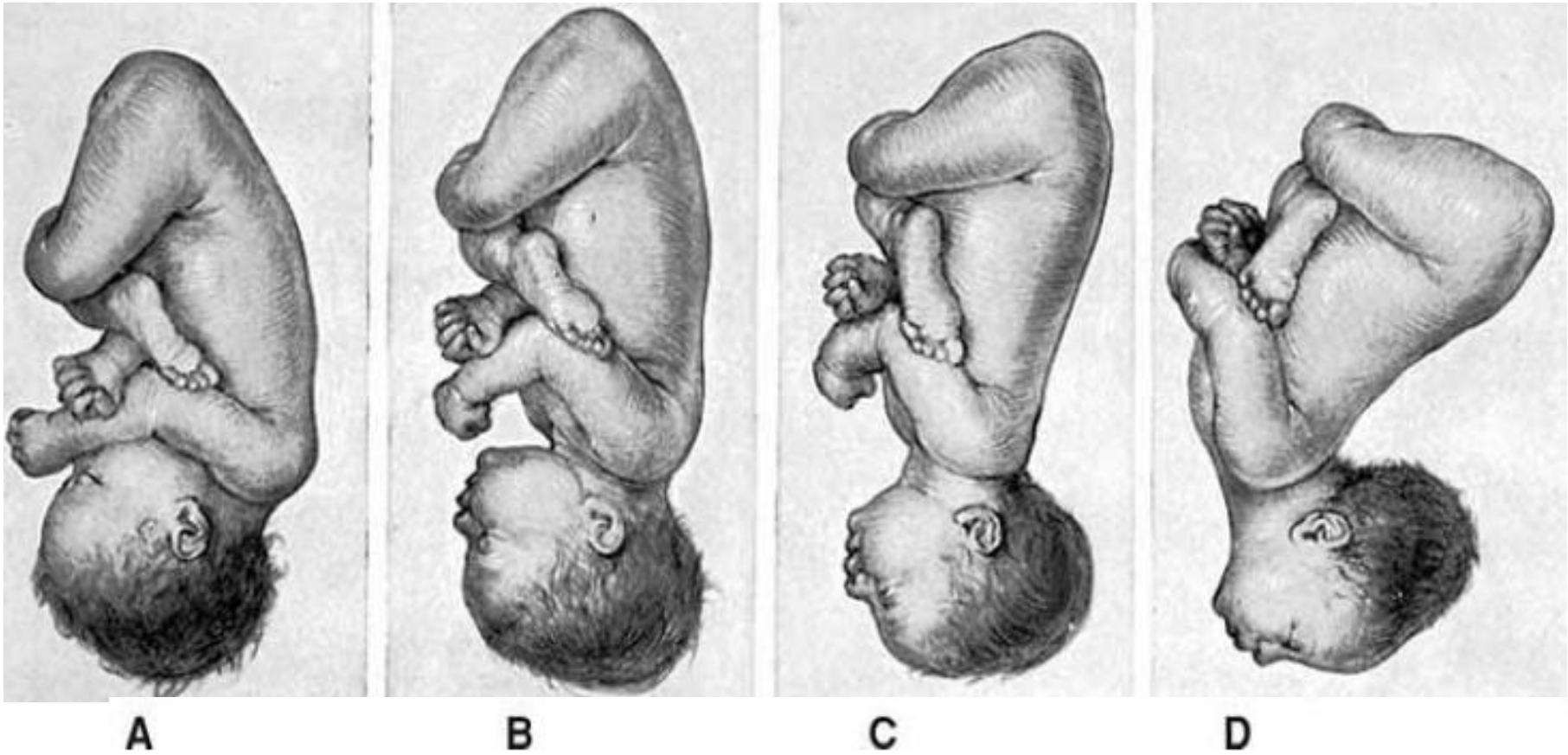
Presentation	Percent	Incidence
Cephalic	96.8	—
Breech	2.7	1:36
Transverse lie	0.3	1:335
Compound	0.1	1:1000
Face	0.05	1:2000
Brow	0.01	1:10,000

Fetal presentation…Comt'd

Cephalic Presentation: classified according to the r/p b/n the head and body

- the fetal head is flexed sharply; the occipital fontanel is the presenting part → *vertex or occiput presentation.*
- hyperextended neck; face in the birth canal → *face*
- The fetal head may assume a position b/n these extremes →fontanel may present— *sinciput presentation.* →the brow may emerge—

Fetal presentation…Comt'd



Longitudinal lie. Cephalic presentation. Differences in attitude of the fetal body in (A) vertex, (B) sinciput, (C) brow, and (D) face presentations.

Fetal presentation…Comt'd

- The term fetus usually presents with the vertex, b/c
  - piriform or pear shaped uterus and.
  - the entire podalic pole of the fetus—that is, the breech and extremities—is bulkier and more mobile than the cephalic pole.
- As AF declines relative to the fetal mass the fetus orients its polarity to make use of the roomier fundus
- the high incidence of breech presentation in

Fetal Attitude

- the position of fetal head in relation to F body
- the fetus assumes a characteristic posture in late Px:

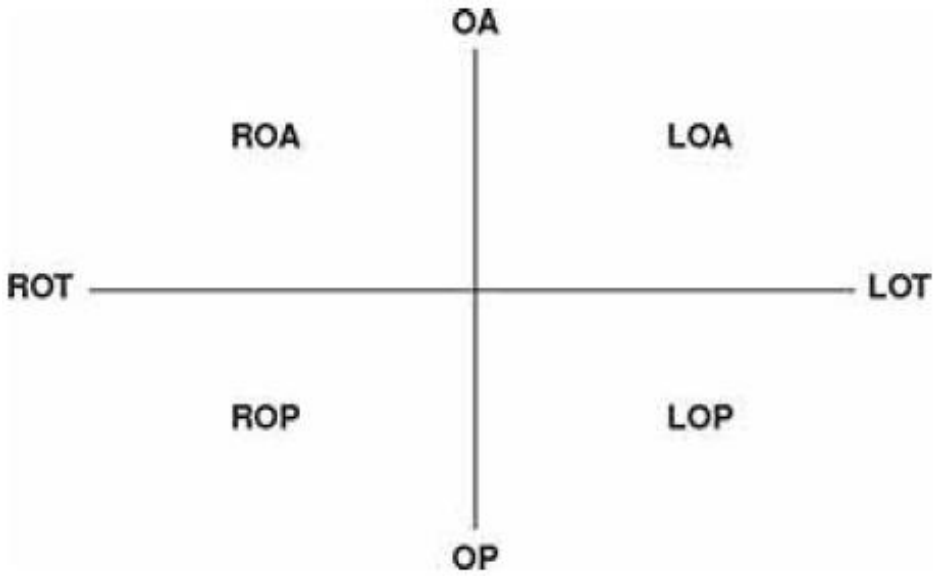
- convex back,
- sharply flexed head,
- the thighs are flexed to abdomen
- legs are bent at the knees
- armrs lie across the thorax or par
- the UC fills the space between the extremities.

Fetal Position

- the r/p of an arbitrarily chosen portion of the fetal presenting part to maternal pelvis
- The fetal occiput, chin (mentum), and sacrum are the determining points in vertex, face, and breech
- Because the presenting part may be in either the L or R position, there are LO and RO, LM and RM, and LS and RS
- Further, the r/p of a given portion of the presenting part to the anterior, transverse or posterior portion of the maternal pelvis is

Fetal Position…Cont'd

Approximately 2/3 of all vertex presentations are in the LO, and 1/3 in the RO



Station: is a measure of **descent** of the bony presenting part of the fetus through the birth canal

- The current standard classification (-5 to +5) is based on a quantitative measure in centimeters of the distance of the leading bony edge from the

Diagnosis of Fetal Presentation and Position

- Leopold maneuvers
- Vaginal examination
- Sonography and radiography

Passage (Maternal Pelvis)

- Clinical pelvimetry is currently the only method of assessing the shape and dimensions of the bony pelvis in labor.
- involves the assessment of the pelvic inlet, midpelvis, and pelvic outlet.
- The diagonal conjugate is a clinical measurable AP diameter of the pelvic inlet.

Passage….Cont'd

	parametres	Normal Value
PELVIC INLET	Transvers diam	**13cm**
	AP diametre (obst. Conj.)	**10cm**
	Sacral promontory	**flat**
MIDPELVIC	Interspinus diameter	**1ocm**
	Spinal prominency	**Less prominent**
	Sacral curvature	**concave**
	pelvic sidewall	**divergent**
PELVIC OUTLET	Coccyx	**Less prominent**
	Subpubic angle	**>90 degree**
	Intertuberous diam	**8cm**

Occiput Anterior Presentation

- In most cases, the fetus enters the pelvis in the *LOT* position more commonly than *ROT* position
- In *OA positions—LOA* or *ROA*—either the head enters the pelvis with the occiput rotated 45° anteriorly from the transverse position, or this rotation occurs subsequently.
- mechanism of labor in all these presentation is usually similar
- The positional changes in the presenting part required to navigate the pelvic canal

OA position…cont'd

- Delivery proceeds along the line of least resistance that is by adaptation of the smallest achievable diameters of the presenting part to the most favorable dimensions of the birth canal …cardinal movements of labor
  - engagement,
  - Extension,
  - descent,
  - External rotation,
  - flexion,
  - Expulsion
  - Internal rotation,
- these movements not only are sequential but also

Engagement

- Passage of the widest transverse diameter of the presenting part to a level below the plane of the pelvic inlet
- In cephalic with well-flexed head →biparietal diameter
- In breech →bitrochanteric
- The fetal head may engage during the last few weeks of pregnancy or not until after labor commencement.
- In many multiparous and some nulliparous women, the fetal head is freely movable above the pelvic inlet

Descent

- **the first requisite for birth of the newborn.**
- **In nulliparas, it may take place before the onset of labor, and further descent may not follow until the onset of the second stage.**
- **In multiparas, descent usually begins with engagement.**
- **Descent is brought about by one or more of four forces:**

  (1) pressure of the amnionic fluid,

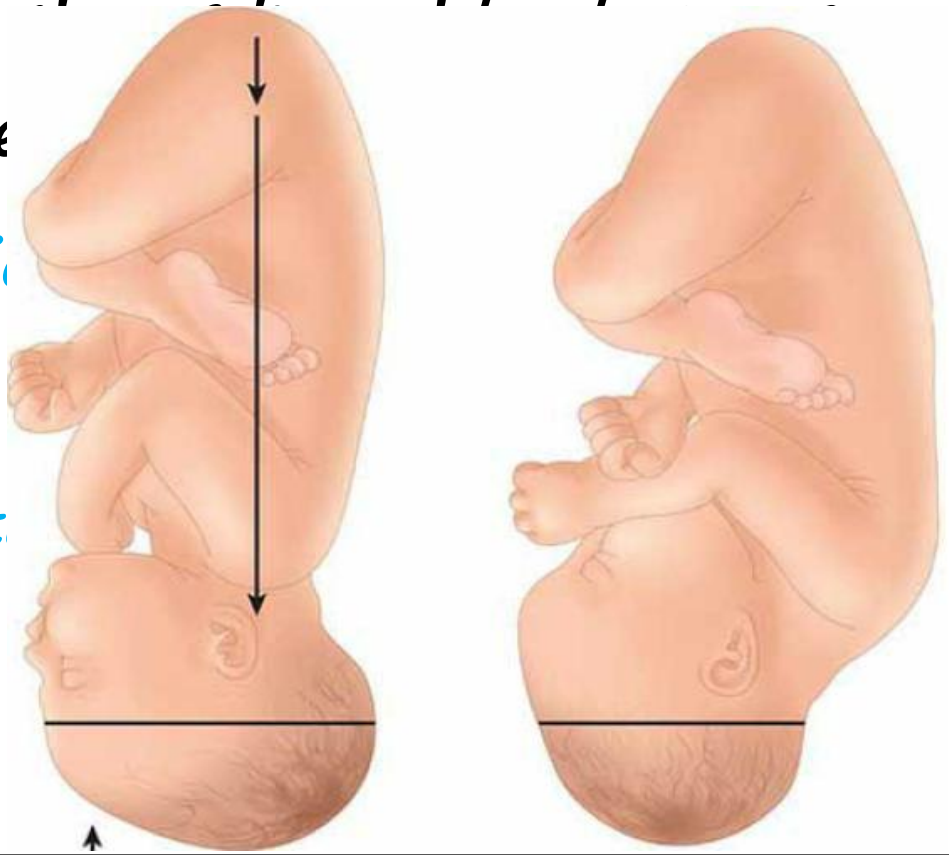
  (2) direct pressure of the fundus upon the breech with contractions,

  (3) bearing-down efforts of maternal abdominal muscles,

  (4) extension and straightening of the fetal body.

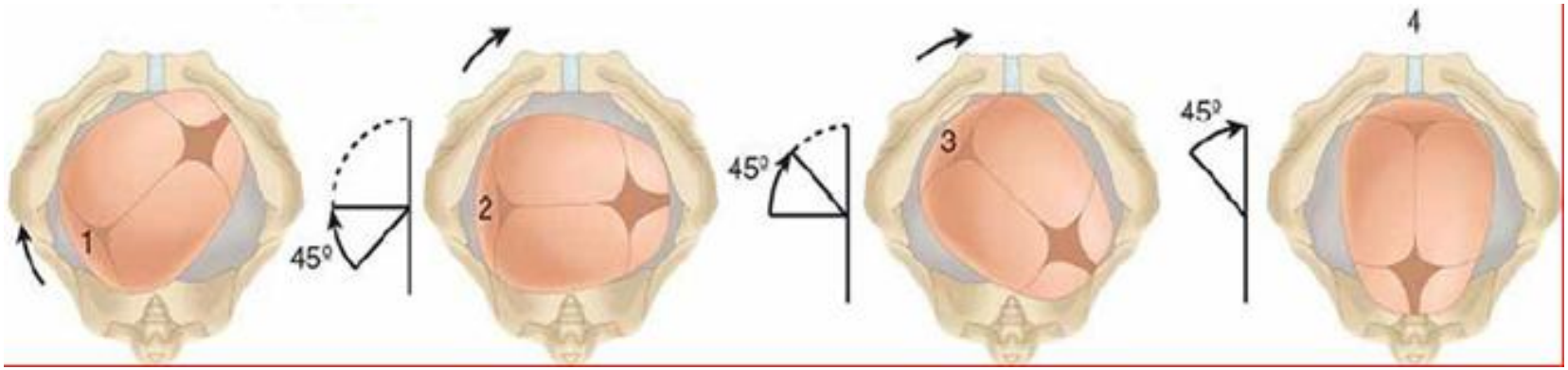
Flexion

- As soon as the descending head meets resistance from the cervix, pelvic walls, or pelvic floor, it normally flexes.
- With this movement, the
  intimate contact with the
  and suboccipitobregmati
  diameter is substituted
  the longer occipitofront



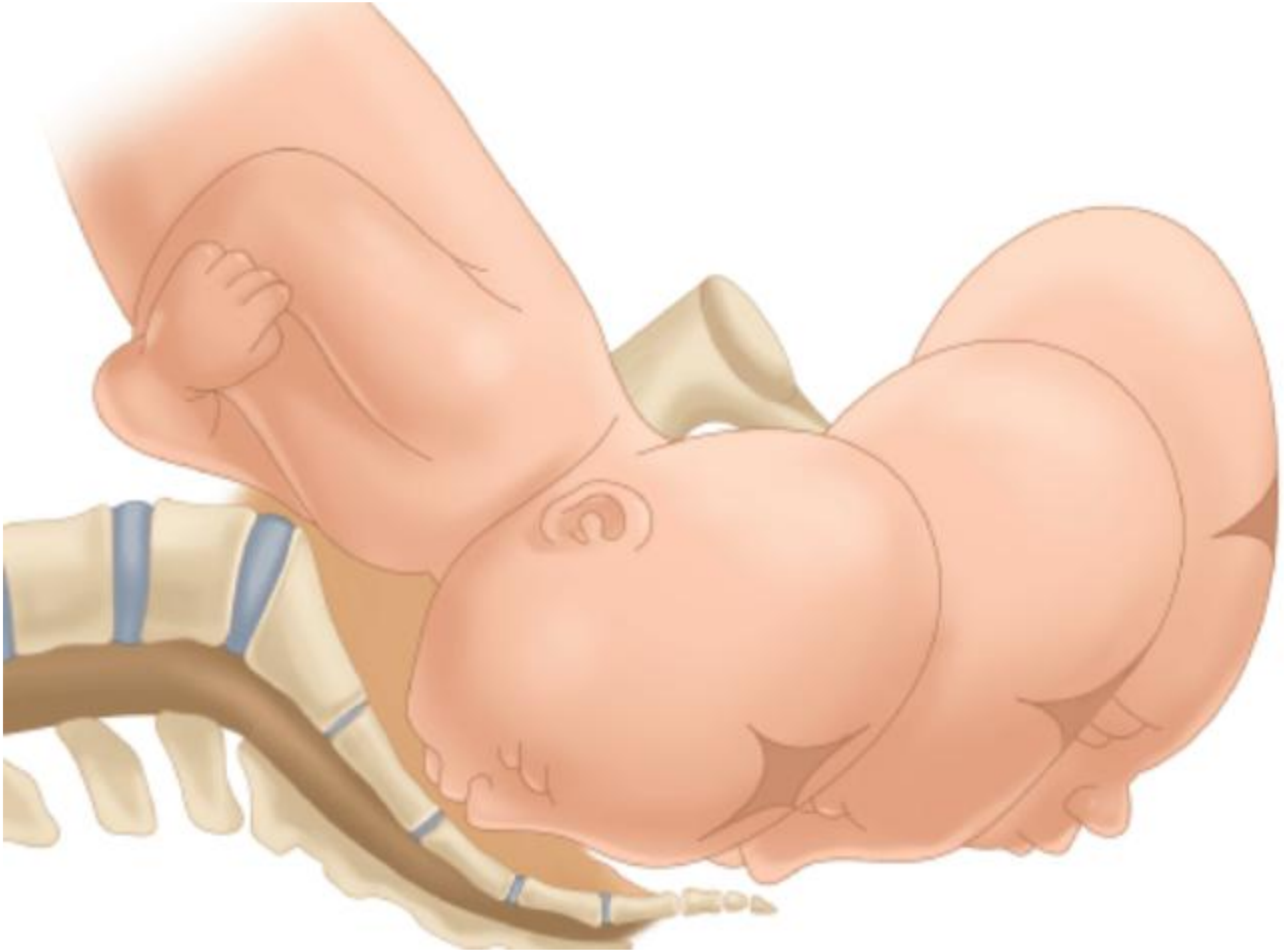
Internal Rotation

- This movement turns the occiput from transverse usually to anterior, but less commonly to posterior toward
- Internal rotation is essential for completion of labor, except when the fetus is unusually small.
- When the head fails to turn until reaching the pelvic floor, it typically rotates during the next 1-2 contractions in multiparas & during the next 3-5 contractions in nulliparas.



Extension

- When the head presses on the pelvic floor, two forces come into play.
- The first force, exerted by the uterus, acts more posteriorly,
- the second, from resistant pelvic floor and the symphysis, acts more anteriorly.
- The resultant vector is in the direction of the vulvar opening, thereby causing head extension and delivary
- This brings the base of the occiput into direct contact with the inferior margin of the symphysis pubis



External Rotation

- The delivered head next undergoes *restitution*
- If the occiput was originally directed toward the left, it rotates toward the left ischial tuberosity.
- If it was originally directed toward the right, the occiput rotates to the right.
- corresponds to rotation of the fetal body and serves to bring its bisacromial diameter into relation with the AP diameter of the pelvic outlet.
- Thus, one shoulder is anterior behind the symphysis and the other is posterior.

Expulsion

- Almost immediately after external rotation, the anterior shoulder appears under the symphysis pubis, and the perineum soon becomes distended by the posterior shoulder. After delivery of the shoulders, the rest of the body quickly passes.
- When the anterior shoulder is tightly wedged beneath the symphysis, then *shoulder dystocia* is diagnosed

Changes in Shape of the Fetal Head

Caput Succedaneum

- In prolonged labors before complete cervical dilatation, the portion of the fetal scalp immediately over the cervical os becomes edematous –caput succedaneum
- It usually attains a thickness of only a few mms, but in prolonged labors it may be sufficiently extensive to prevent the differentiation of the various sutures and fontanels.
- frequently from resistance of a rigid vaginal outlet

Changes in Shape…cont'd

Molding

- change in fetal head shape from external compressive forces.
- related to Braxton Hicks contractions, some molding may develops before labor.
- Most studies indicate that there is seldom overlapping of the parietal bones. A "locking" mechanism at the coronal and lambdoidal connections actually prevents such overlapping
- Molding results in a shortened suboccipitobregmatic diameter and a lengthened mentovertical diameter

Molding….cont'd

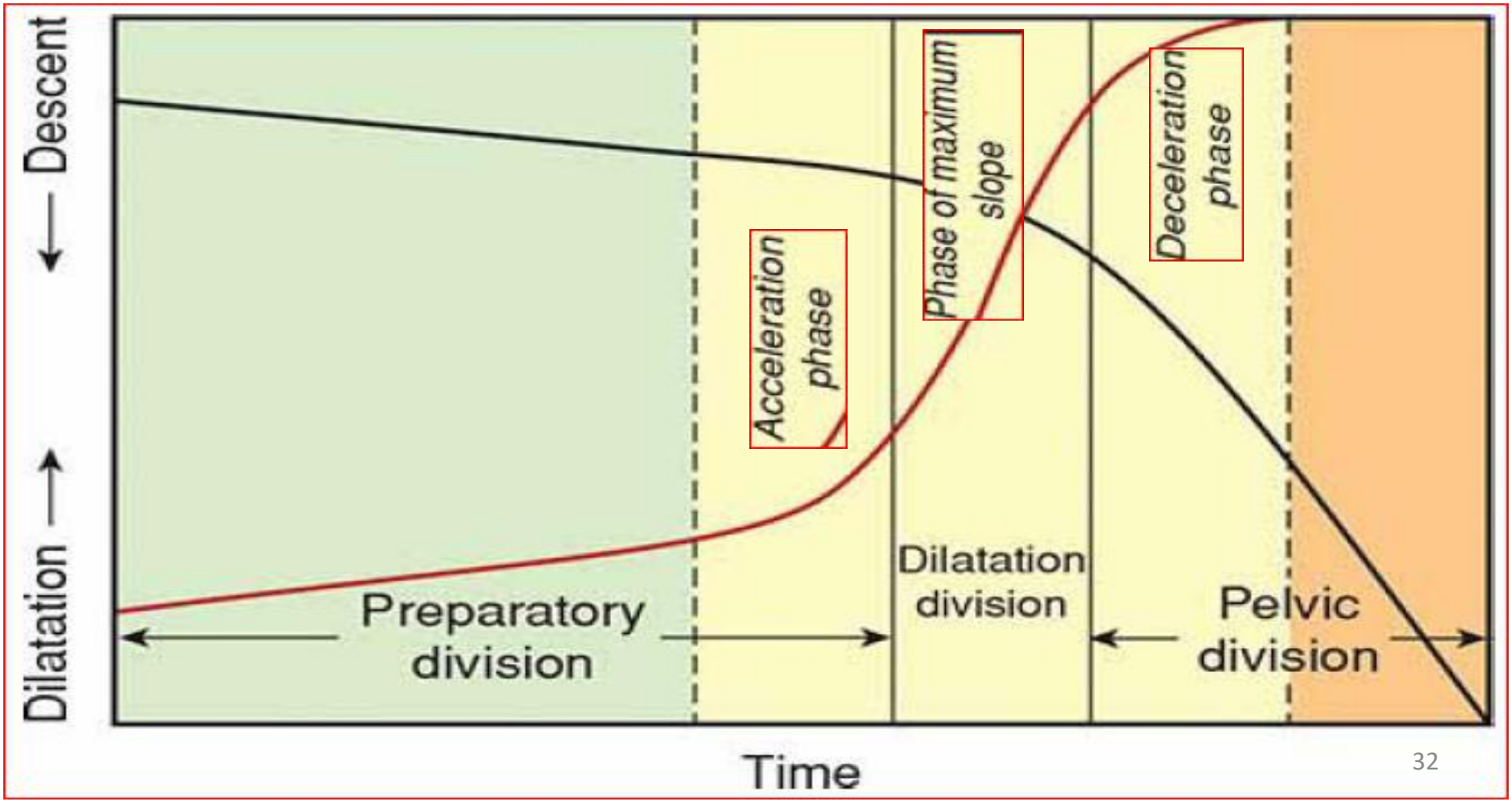
- These changes are of greatest importance in women with contracted pelves or in *asynclitism.*
- b/c the degree to which the head is capable of molding may make the difference on rout of delivery – SVD vs CS
- Most cases of molding resolve within the week following delivery, although persistent cases have been described

Labor Stages

- Normal labor is a continuous process that has been divided into four stages
- *First stage-* interval between the onset of labor and full cervical dilatation.
- *Second stage* – the interval between full cervical dilatation (10 cm) and delivery of the infant
- *Third stage-* the time from delivery of the baby to separation and expulsion of the placenta.

Labor Stages…Cont'd

- Friedman developed the concept of three functional labor divisions



Labor Stages…cont'd

► *preparatory division*, although the cervix dilates little, its CT components change considerably

✓ sedation and conduction analgesia are capable of arresting this labor division.

► *dilational division*, during which dilation proceeds at its most rapid rate,

✓ is unaffected by sedation.

► *pelvic division*, commences with the deceleration phase of cervical dilation. cardinal fetal movements of the cephalic presentation take place principally during this pelvic division.

Fist Stage of Labor

Latent Phase

- The onset is the point at which the mother perceives regular contractions.
- for most women ends once dilation of 3–5 cm is achieved.
- Of women who had been administered heavy sedation, 85% entered active labor, 10% contractions ceased – false labor and remaining 5% abnormal latent phase and required oxytocin stimulation.

First Stage….Con't

Active Phase

- The lower limit for the rate of cervical dilatation during the active phase is 1.2 cm/hr in primi and 1.5 cm/hr in multigravida during Friedman's observation
- Descent begins in the later stage of active dilatation, commencing at 7 to 8 cm in nulliparas and becoming most rapid after 8 cm.
- Active-phase abnormalities have been reported to occur in 25 percent of nulliparous and 15 percent of

Second Stage of Labor

- from complete cervical dilation to fetal delivery.
- The median duration is about 50mns for nulliparas and 20mns for multiparas, but it is highly variable.
- in a woman with a contracted pelvis, with a large fetus, or with impaired expulsive efforts from conduction analgesia or sedation, the second stage may be longer.
- Higher maternal BMI has no effect

Third Stage of Labor

- From delivery of the fetus to delivery of the placenta
- Separation of the placenta generally occurs within 2–10 minutes of the end of the second stage, but it may take 30 minutes or more to spontaneously separate
- Signs of placental separation
  - Fresh gush of blood from vagina
  - Umbilical cord lengthens outside the vagina
  - Fundus of the uterus rises up
  - Uterus becomes firm and globular

Third Stage….Cont'd

- Management of the third stage of labor may be expectant or active
- Expectant management refers to the delivery of the placenta without any intervention
- Active management consists of
  - early cord clamping,
  - controlled cord traction, and
  - administration of a uterotonic agent

Management of Normal Labor & Delivary

- The ideal management of labor and delivery requires two potentially opposing viewpoints on the part of clinicians.
  - First, birthing should be recognized as a normal physiological process that most women experience without complications.
  - Second, intrapartum complications, often arising quickly and unexpectedly, should be anticipated.

Initial Evaluation

- *Maternal V/S*
- *Fetal heart rate*
- *Detection of ROM*: is significant for three reasons:

1. cord prolapse & compression if the presenting part is not fixed
2. labor is likely to begin soon if the Px is at or near term.
3. intrauterine infection is more likely as time interval increases

- *Cervical Examination* : Cx effacement, dilatation & position as well as fetal station

Management of First-Stage Labor

Admission Criteria

1. All women with Dx of latent labor with known risk or ROM

2.For a woman without known risk and intact membrane – cervix dilation is ≥ 4 cms with complete effacement

Admission procedure

- Warm and friendly acceptance
- Appropriate Hx, P/E and lab.
- Inform the client/parturient about her conditions
- After review of ANC record and present evaluation, plan a scheme of management during labor and immediate postpartum depending on risk

Maternal wellbeing monitoring

Vital signs: pulse every 30mns

T° and BP – every 4 hourly or more frequently if indicated

Maternal position – avoid supine position

- Should not be confined to bed unless contraindicated (e.g. sedated patient, for frequent monitoring, high head and ruptured membranes)
- Can assume any position comfortable to her (Left Lateral Position, Right Lateral Position, sitting unless indicated.)
- Encourage the mother to walk around

Maternal wellbeing….Cont'd

Nutrition – oral intakeIn general encourage oral intake of liquid diet (tea,juice) but not hard foods

Companionship in labor:

- Encourage partner to accompany the spouse who is in labor.
- Partner support and education should start during ANC and continue through delivery

Pain management – provide continuous emotional support

- Inform laboring mothers about the procedures to which they will be subjected during labor and delivery
- The selected analgesia should be simple to administer, safe to the mother and fetus, no undue effect on progress of

Fetal Well – being monitoring

FHR – use Pinnard stethoscope Immediately after a contraction

- Every 30 min for a parturient without any risk and
- Every 15 min for with a risk condition

Status of liquor for meconium

- Grade I – Good volume of liquor, lightly meconium stained
- Grade II – Reasonable volume with a heavy suspension of meconium
- Grade III – Thick meconium which is undiluted

Monitoring of progress of labor

Uterine contraction –every 30 min for active phase

Descent of fetal head: by abdominal palpation before PV

Vaginal examination to see:

- Rate of cervical dilation at least 1 cm/hr.
- Station, position, degree of moulding
- Done every 4hrs unless the following condition occur:
  - After spontaneous rupture of membranes
  - When there is abnormal FHR pattern
  - Before giving analgasia
  - Symptoms suggesting 2nd stage (to confirm the

Management of Second-Stage Labor

Median duration –50 min for nullparous 20 min for multiparous

- Progress is measured by fetal descent and rotation

Maternal care and wellbeing evaluation in second stage

- V/S : continued as 1st stage but more frequently Q 1hr
- general condition fatigue , pain, and state of hydration
- LL position till head is visible and preparation

Second-Stage Mx…Cont'd

FHR Monitoring in second stage of labor

- Every 15 min for low-risk fetuses
- Every 5 min for high-risk fetus or CEM

Labor progress evaluation in second stage of labor

- Evaluate the degree of descent every 1 hr
- With degree of caput & molding

Preparation for delivery

- Notify nursing staff that delivery is imminent.
- Move the woman to the delivery room if its is separate.
- Make sure all the equipment for delivery and newborn care are available
- There should be a pre-warmed neonatal corner for neonatal care
- Position the mother to semi-sitting (back up and leg down)
- Attendant should be dressed and gloved appropriately
- Sterile draping in such a way that only the immediate area about the vulva is exposed.
- Perineal care:- cleaning of the vulva and perineum with antiseptic downward

Assistance of spontaneous delivery

Goal: -Reduction of maternal trauma

-Prevention of fetal injury

-Initial support of the newborn

Episiotomy: do episiotomy when there is

- ✓ Threat for a perineal tear
- ✓ Perineal resistance for fetal head descent
- ✓ ↓ Fetal/maternal distress to expedited delivery

Performed when fetal head has distended the vulva 2-3cms unless early delivery is indicated.

Episiotomy….Cont'd

- **Use analgesia/anesthesia for making episiotomy**
- **Types - median or mediolateral**

Medial Verses Mediolatelar Episiotomy

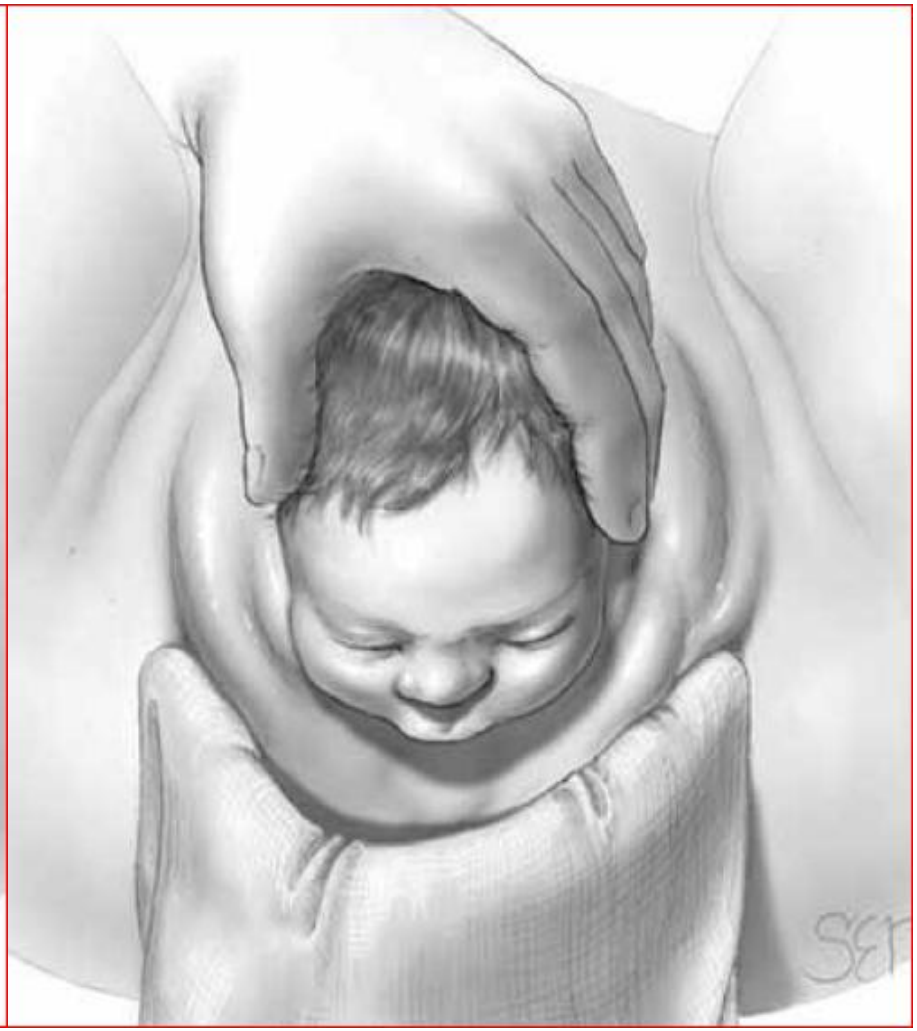
Characteristic	Midline	Mediolateral
Surgical repair	Easy	More difficult
Faulty healing	Rare	More common
Postoperative pain	Minimal	Common
Anatomical results	Excellent	Occasionally faulty
Blood loss	Less	More
Dyspareunia	Rare	Occasional
Extensions	Common	Uncommon

Delivery of the Head

- Prevent rapid delivery and assist extension of the head.
- Assist using modified Ritgen's maneuver i.e., hand protected with sterile towel placed on the perineum and the fetal chin palpated and pressed up ward gently effecting extension.
- Check for cord around the neck - disentangle it from around the head or clamp at two sites and cut in between if not reducible.
- After delivery of the head, wipe the mouth, oropharynx first (routine suctioning not recommended).
- Complete delivery of the rest of the body

Delivery of the Head…cont'd

Perineum is supported as the head crowns



gloved hand used to support the perineum other hand is used to guide and control the fetal head

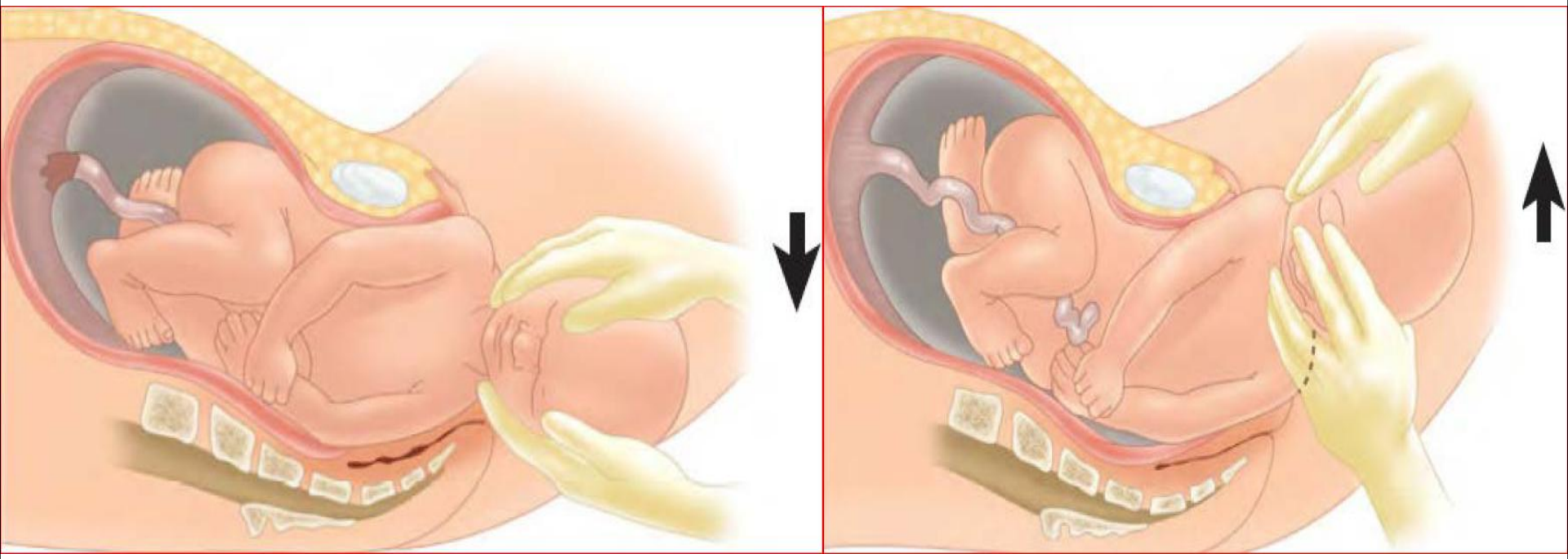
Modified Ritgen maneuver. Moderate upward pressure is applied to the fetal chin by the posterior hand covered by a sterile towel. The other hand applies occipital pressure.

Delivery of the Shoulders

A. Gentle downward traction to effect descent of the anterior shoulder.

B. Gentle upward traction to deliver the posterior shoulder.

- **The rest of the body almost always follows the shoulders without difficulty.**



Shoulder delivary….cont'd

- After securing complete delivery, wipe the newborn's body with clean towels, and wrap them with a dry towel.
- Put fetus at the level the of the introitus for 3 min before clamping(unless preterm, small, and HIV positive women or of unknown status)
- The umbilical cord is cut between two clamps placed 4 to 5 cm from the fetal abdomen, and later an umbilical cord clamp is applied 2 to 3 cm from the fetal abdomen. Take cord blood if indicated.

Cord Care

Timing of Cord Clamping.

- If after delivery the newborn is placed at or below the level of the vaginal introitus for 3 minutes and the fetoplacental circulation is not immediately occluded by cord clamping, an average of 80 mL of blood may be shifted from the placenta to the neonate
- This provides approximately 50 mg of iron, which reduces the frequency of iron-deficiency anemia later in infancy.

Active management of 3rd stage of labor (AMTSL)

is a standard management of third stage of labor.

- Administration of uterotonic agents followed by
- Controlled cord traction (CCT)
- Uterine massage (after the delivery of the placenta).

Benefit of AMTSL

- Duration of third stage of labor will be short
- Less maternal blood loss
- Less need for oxytocin in post partum

Active management of 3rd stage…cont'd

1. Use of uterotonic agents

- Within one minute of the delivery of the baby,
- Palpate the abdomen to rule out twining
- Oxytocin 10 units IM
- is the preferred drug for AMTSL and 1st line drug for PPH
- Ergometrine is the 2nd line drug for PPH
- Misoprostol has the advantage that it is cheap and stable at room temperature.

Active management of 3rd stage…cont'd

- If oxytocin is not available, other uterotonics can be used

  Ergometrine 0.2 mg IM, syntometrine (1 ampoule) IM

  or

  Misoprostol 400-600 mcg orally.

2.Controlled cord traction

- Clamp the cord close to the perineum and hold in one hand.
- Place the other hand just above the woman's pubic bone and stabilize the uterus by applying counter-pressure during controlled cord traction.

Active management of 3rd stage…cont'd

- With the strong uterine contraction, gently pull downward on the cord with uterine support continue
- If the placenta does not descend during 30-40s of CCT, hold the cord and wait until the uterus is well contracted again
- As the placenta delivers, hold the placenta in two hands and gently turn it until the membranes are twisted. Slowly pull to complete the delivery.
- Look carefully at the placenta to be sure none of

Active management of 3rd stage…cont'd

3. Uterine massage

- Immediately massage the fundus of the uterus until the uterus is well contracted.
- Palpate for a contracted uterus every 15 minutes and repeat uterine massage as needed during the first 2 hours of the postpartum period.
- Ensure that the uterus does not become relaxed (soft) after you stop uterine massage.

Abnormal Labor

Dystocia: It literally means *difficult labor* and is characterized by abnormally slow labor progress.

Mechanisms of Dystocia

- With the onset of labor, progress depend on-
  - uterine contractions,
  - cervical resistance, and the
  - forward pressure exerted by fetal part.
- In 2nd stage, the mechanical relationship b/n the fetal head size and position and the pelvic capacity, namely fetopelvic proportions, becomes clearer as the fetus attempts to descend

Mechanisms…Cont'd

- Uterine malfunction can result from overdistention, OL or both. Thus, ineffective labor is possible warning sign of CPD
- Difficult to separate the labor abnormalities into pure uterine dysfunction and FPD b/c of closs interlink
- In the absence of objective means to distinguishing the two, clinicians must rely on a trial of labor to determine if labor can be successful in effecting vaginal delivery

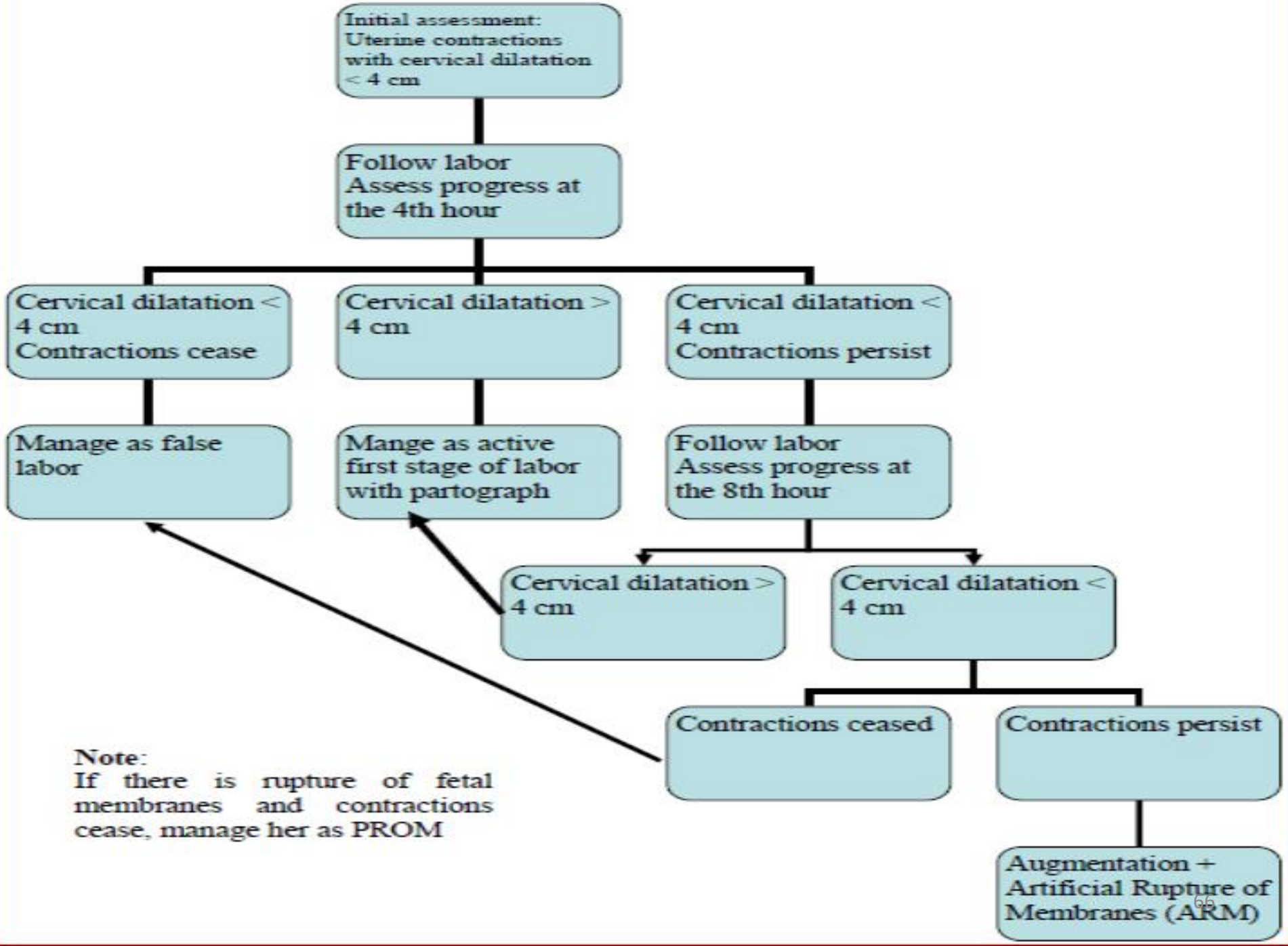
Types of Labor Abnormality

Labor Pattern	Diagnostic Criteria: Nulliparas	Diagnostic Criteria: Multiparas	Preferred Treatment	Exceptional Treatment
Prolongation Disorder				
Prolonged latent phase	> 20 hr	> 14 hr	Bed rest	Oxytocin or cesarean delivery for urgent problems
Protraction Disorders				
Protracted active-phase dilatation	< 1.2 cm/hr	1.5 cm/hr	Expectant and support	Cesarean delivery for CPD
Protracted descent	< 1 cm/hr	< 2 cm/hr		
Arrest Disorders				
Prolonged deceleration phase	> 3 hr	> 1 hr	Evaluate for CPD: CPD: cesarean No CPD: oxytocin	Rest if exhausted Cesarean delivery
Secondary arrest of dilatation	> 2 hr	> 2 hr		
Arrest of descent	> 1 hr	> 1 hr		
Failure of descent	No descent in deceleration phase or second stage			

Latent-Phase Prolongation

- defined as >20hrs in the nulliparas and 14hrs in the mult
- True labor with at least 2 regular contractions in 10 minutes
- In some, uterine contractions cease, - false labor
- in others, an abnormally long latent phase persists and is often treated with oxytocin stimulation.
- **Causes:-** Dysfunctional uterine contraction
  - Unripe cervix
  - Cephalo-pelvic disproportion
  - Malpresentations and malpositions

Diagnosis and management of prolonged latent phase of labor



Active-Phase Disorders

- *protraction disorder* ■ slower progress or
- *arrest disorder* ■ complete cessation

Protracted Active-phase Dilatation

multiparas→ <1.5cm/hr;

nulliparous→<1.2cm/hr

- WHO define as <1 cm/hr dilation for a minimum of 4 hours.
- observation for further progress is appropriate treatment.
- For insufficient Ux contraction, augmentation is initiated.

Active phase…Cont'd

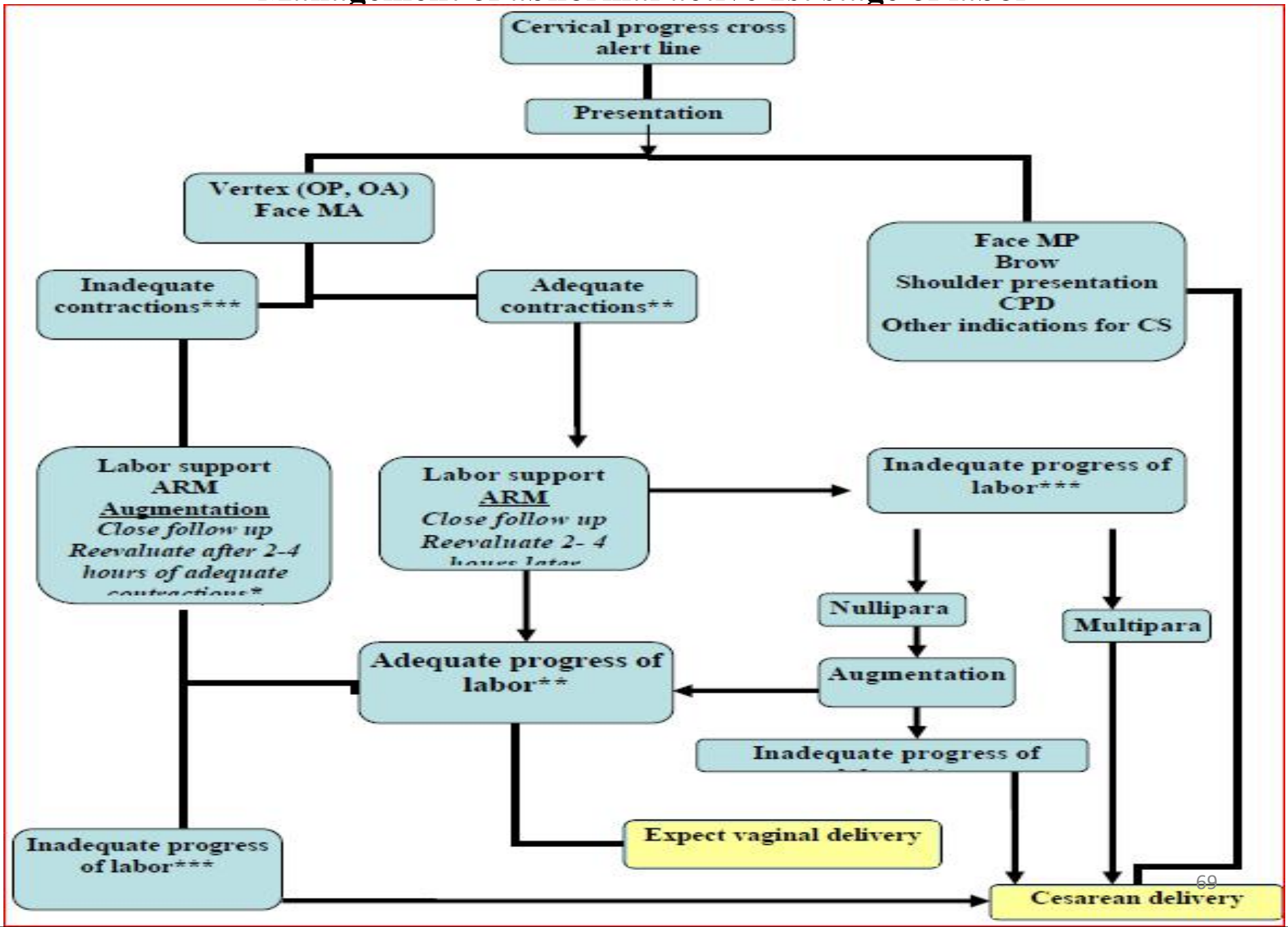
Secondary Arrest of Dilatation

- No cervical dilatation for ≥2hrs in both multi. & nulliparas
  - cervix should be dilated ≥4 cm
  - contraction of ≥200MVU in 10mns has been present

ACOG proposed first stage arrest define as:

- Cervical dilation ≥6 cm dilation and ROM with:
- No cervical change for ≥4 hours despite adequate contractions

Management of abnormal active 1st stage of labor



Second-Stage Descent Disorders

Prolonged 2nd stage Dx with:

- in nulliparas >2 hrs and >3 hrs when regional analgesia is used
- For multiparas >1 hr and >2 hrs with regional analgesia
- ACOC- no progress (descent or rotation)
  - Nulliparous ≥3 hrs without and ≥4 hrs with epidural anesthesia
  - Multiparous ≥2 hrs without and ≥3 hrs with epidural anesthesia

❖ intervention is not necessarily indicated as long as

Management

- Depend on FHBP, signs of CPD, positions, presentation, Ux contractions, pelvic capacity & maternal effort.
- RFHB, no signs of CPD and there is some degree of descent or rotation; wait for spontaneous delivery regardless of slow progress
- If there is inadequate uterine contraction & no FHB abnormality & CPD Oxytocin augmentation according to the protocol
- If there are signs of CPD with alive fetus, cesareans delivery
- If there is FHB abnormality & no CPD, instrumental delivery provided indications & criteria are fulfilled

Causes of Abnormal Labor

- Arises from three distinct abnormality categories.
- *Powers*: *uterine dysfunction* (strength or coordinated) and inadequate maternal effort during 2nd st
- *Passage*: bony pelvis or ST structural changes
- *Passenger*: malpresentation, malposition, or abnormality

Power Abnormality

- uterine contractions of normal labor are characterized by a gradient of myometrial activity
- This force greatest and last longest at the fundus—*fundal dominance*—and diminish toward the cervix.
- contractions start from the fundus and propagate down the uterus.
- Normal spontaneous contractions often exert pressures ~60 mm Hg
- But, lower limit of contraction pressure required to dilate the cervix is 15 mm Hg

Types of Uterine Dysfunction

- two physiological types of uterine dysfunction are defined.

1. *hypotonic uterine dysfunction:* more common,
   - no basal hypertonus,
   - Ux contractions have a normal gradient pattern (synchronous)
   - Insufficient pressure to dilate the cervix.
2. *hypertonic Ux dysfunction or incoordinate Ux dysfunction,*

   ✓ either basal tone is elevated appreciably or

   ✓ the pressure gradient is distorted; result from:

   ➢ more forceful contraction of midsegment than the fundus

Maternal Pushing Efforts

- force created by abdominal muscule propels the fetus downward with contractions of the uterus
- Heavy sedation or regional analgesia may reduce the reflex urge to push or bear down
- Also overridden by the intense pain created by bearing down

Passage disorder

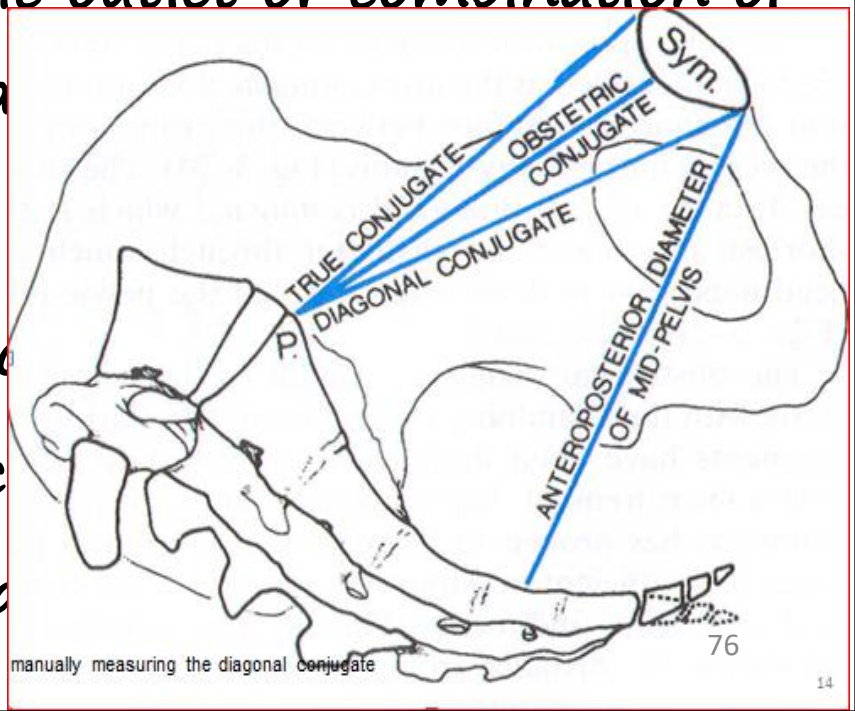
- FPD arises from:
  - diminished pelvic capacity
  - abnormal fetal size or presentation, or more usually from both.
- The pelvic inlet, midpelvis, pelvic outlet or combination of them may be contracted→ crea

Contracted Inlet:

-AP diameter of the inlet is <10 c

-the transverse diameter is <12 c

►when both diameters are contra



Contracted Inlet…Cont'd

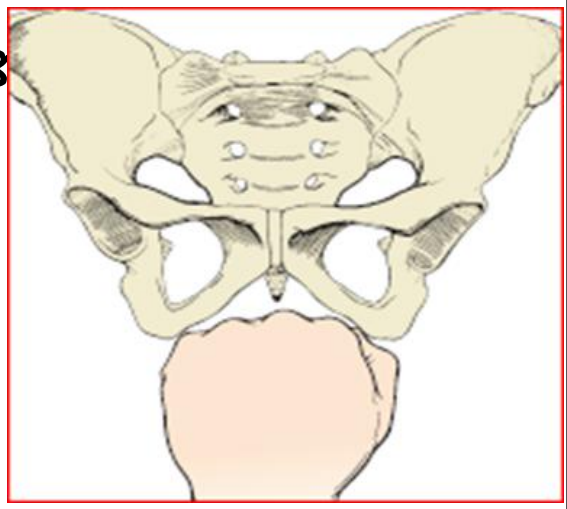
- Normally, cx is dilated by hydrostatic action of membranes or by the presenting part after ROM
- In contracted pelves early spontaneous rupture of the membranes is more likely.
- head is arrested in the pelvic inlet
- LUS predisposed to less effective contractions.
- Hence, further dilation may proceed very slowly or not at all
- Malpresentations are more common; face & shoulder 3x; cord prolapse is 4x more

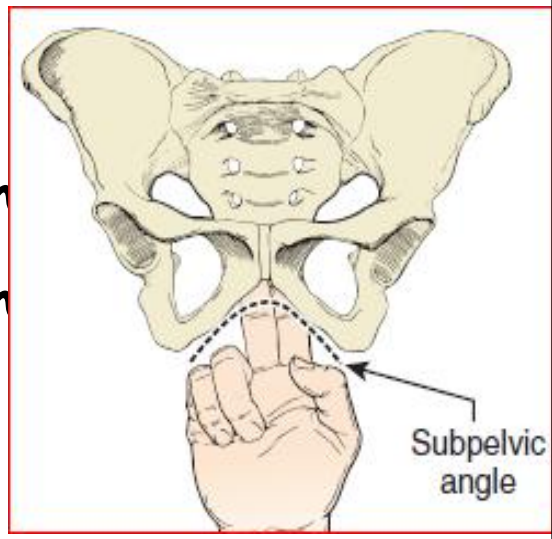
Contracted Midpelvis

- is more common than inlet contraction.
- frequently causes transverse arrest of the fetal head
- the midpelvis is contracted when interspinous + posterior sagittal diameters -normally 10.5cm + 5 cm—is <13.5 cm
- suspect whenever the interspinous diameter is < 10 cm
- When it measures < 8 cm, the midpelvis is contracted.
- Clinical estimation of midpelvis is not possible; but suspect in

Contracted Outlet

- is defined as an intertuberous diameter<=8 cm.
- may cause dystocia by an often-associated midpelvic contraction; isolated *utlet contraction rare.*
- A narrow pelvic arch <90° can signify a narrow pelvis.
- With increased narrowing of the pubic arch the occiput cannot emerge directly beneath the symphysis pubis but is forced farther down upon the ischiopubic rami.
- The perineum becomes increasingly





Abnormality of Passenger (Fetus)

- abnormal labor can caused by
  - mal position or mal presentation,
  - excessive size of the fetus or fetal mal formation
- Fetal macrosomia (defined by ACOG as actual birth weight >4500 g) is associated with an increased likelihood of failed trial of labor and may be associated with labor abnormalities.
- Mal position or mal presentation the most common cause of fetal dystocia

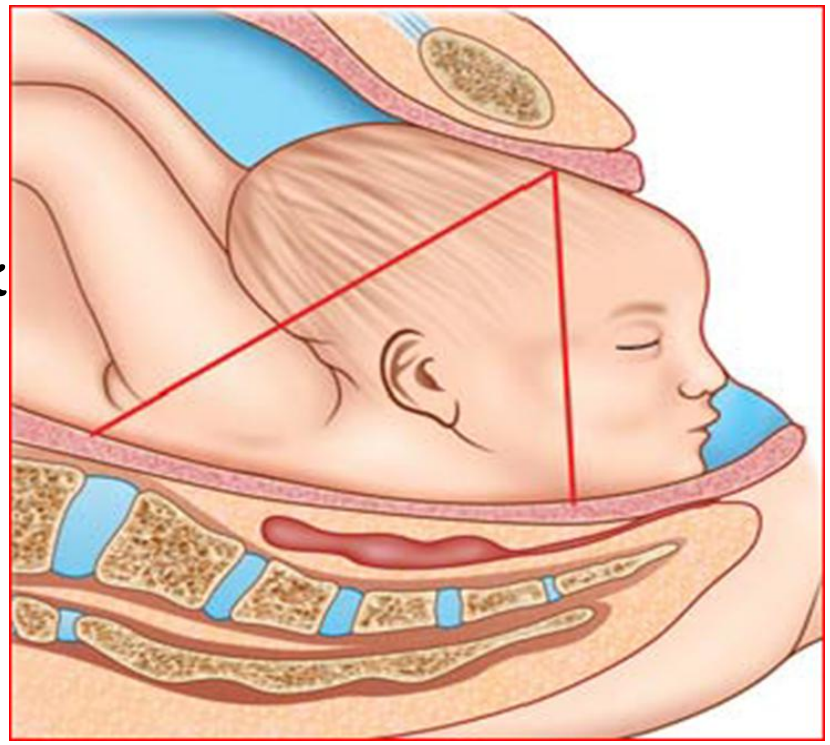
Face Presentation

- reported incidence of 1 in 600, or 0.17 percent.
- the neck is hyperextended →occiput is in contact with the fetal back, and the chin (mentum) is presenting
- may present with the MA or MP position
- most convert spontaneously to anterior even in late labor
- Some may persist in MP →the fetal brow (bregma) is pressed against the maternal symphysis pubis.
- precludes flexion of the fetal head necessary to

Face…Cont'd

Causes

- Preterm fetuses,
- enlarged neck
- coils of cord around the neck
- fetal malformations
- hydramnios
- Anencephalic
- Contracted pelvis
- High parity



Diagnosed:

by vaginal examination and palpation of facial features.

A breech may be mistaken for a face presentation

Radiographically, demonstration of the hyperextended head with the facial bones at or below the pelvic inlet is characteristic

Face…Cont'd

Mechanism of Labor

- the brow generally presents early and is usually converted to present the face after further extension of the head during descent
- The mechanism of labor in these cases consists of the cardinal movements of descent, internal rotation, and flexion, and the accessory movements of extension and external rotation.

Management

- In the absence of a contracted pelvis, and with effective labor, successful vaginal delivery usually will follow.
- Fetal heart rate monitoring is probably better done

Face…Cont'd

- face presentations among term-size fetuses are more common when there is some degree of pelvic inlet contraction, cesarean delivery frequently is indicated.
- Attempts to-

✓ convert a face presentation manually into a vertex

✓ manual or forceps rotation of a persistently MP to MA

✓ internal podalic version and extraction dangerous and should not be attempted.

Brow Presentation

- This rare presentation is diagnosed when that portion of the fetal head between the orbital ridge and the anterior fontanel presents at the pelvic inlet.
- the fetal Except the fetal head is small or the pelvis is unusually large, engagement and subsequent delivery cannot take place as long as the brow presentation persists.
- is commonly unstable and often converts to a face or an occiput presentation.
- head thus occupies a position midway between full

Etiology and Diagnosis

- Etiology similar to that for face
- abdominal palpation when both the occiput and chin can be palpated easily, but vaginal examination is usually necessary.
- The frontal sutures, large anterior fontanel, orbital ridges, eyes, and root of the nose are felt on vaginal examination, but neither the

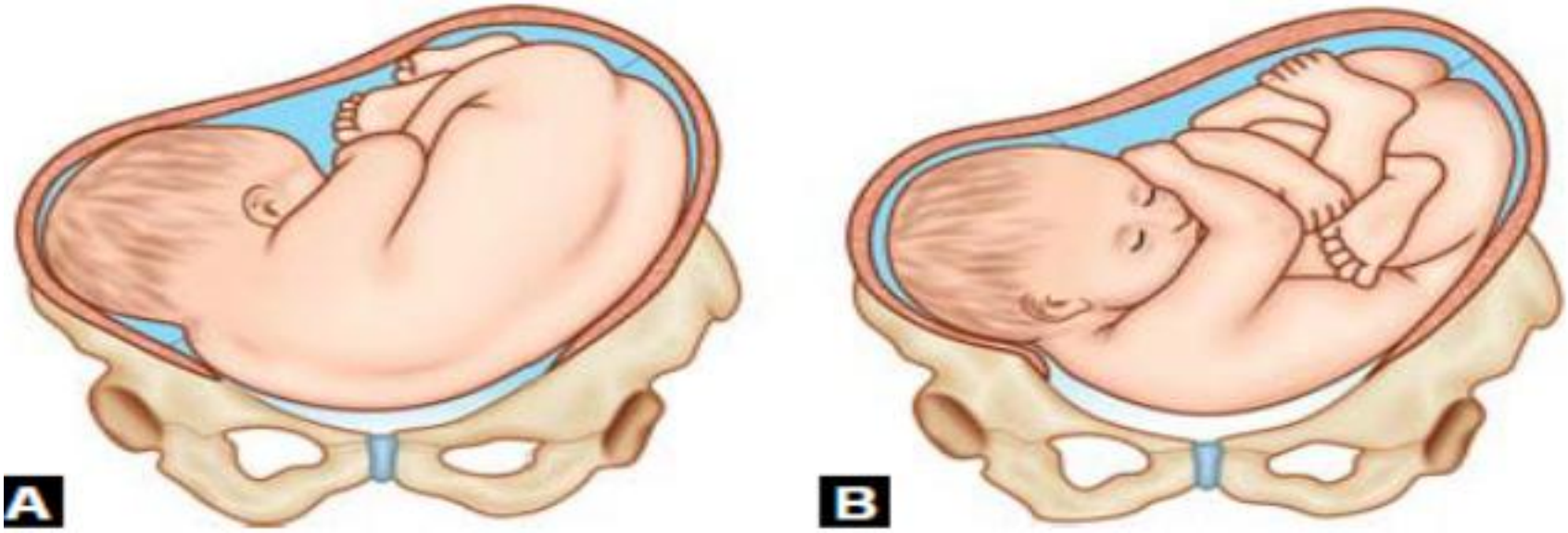
Mechanism of Labor

- With a very small fetus and a large pelvis, labor is generally easy, but with a larger fetus, it is usually difficult.
- b/c engagement is impossible until there is marked molding that shortens the occipitomental diameter or until there is either flexion to an occiput presentation or extension to a face presentation
- The caput succedaneum is over the forehead, and it may be so extensive that identification of the brow by palpation is impossible.
- Principles of management are the same as those for a face presentation

Transverse Lie

- the long axis of the fetus is perpendicular to that of the mother
- When it forms an acute angle, an *oblique lie* results.
- The latter is usually transient, b/c either a longitudinal or transverse lie results when labor supervenes → *unstable lie*
- shoulder is usually positioned over the pelvic inlet.
- The head occupies one iliac fossa, and the breech the other.
- Dipend on acromion in r/n to maternal side it can be

Transverse Lie….cont'd



Diagnosis

- transverse lie is usually recognized easily
- abdomen is unusually wide,
- fundus only slightly above the umbilicus
- no fetal pole is detected in the fundus
- ballottable head is in one iliac fossa and the breech in the other

Diagnosis…cont'd

- in anterior back, a hard resistance plane is palpated
- When it is posterior, irregular nodulations representing fetal small parts are felt
- On vaginal examination, if the side of the thorax can be reached, it may be recognized by the "gridiron" feel of the ribs
- With further dilation, the scapula and the clavicle are distinguished on opposite sides of the thorax.
- The position of the axilla indicates the side of the mother toward which the shoulder is directed

Etiology

Some of the more common causes of transverse lie include:

(1)abdominal wall relaxation from high parity,
(2) preterm fetus,
(3) placenta previa,
(4) Abnormal uterine anatomy,
(5) hydramnios, and
(6) contracted pelvis.

- Women with ≥4 deliveries have a x10 incidence compared with nulliparas b/c of relaxed and pendulous abdomen
- Placenta previa and pelvic contraction act similarly

Mechanism of Labor

- Spontaneous delivery of a fully developed newborn is impossible with a persistent transverse lie
- After rupture of the membranes, if labor continues, the fetal shoulder is forced into the pelvis, and the corresponding arm frequently prolapses .
- After some descent, the shoulder is arrested by the margins of the pelvic inlet, with the head in one iliac fossa and the breech in the other

Mechanism of Labor…cont'd

- As labor continues, the shoulder is impacted firmly in the upper part of the pelvis.
- The uterus then contracts vigorously in an unsuccessful attempt to overcome the obstacle
- With time, a retraction ring rises increasingly higher and becomes more marked.
- With this *neglected transverse lie*, the uterus will eventually *rupture*

Management

- Active labor with a transverse lie is an indication for cesarean delivery.
- Before labor or early in labor, with the membranes intact, attempts at external version in the absence of other complications can possible.
- With C/S, dorsoanterior presentations a vertical incision is typically indicated

Compound Presentation

Incidence and Etiology

- an extremity prolapses alongside the presenting part, and both present simultaneously in the pelvis.
- a hand or arm prolapsed alongside the head 1 in700 deliveries.
- Much less common was prolapse of one or both lower extremities alongside a cephalic presentation or a hand alongside a breech.

Causes

are conditions that prevent complete occlusion of the pelvic inlet by the fetal head, including preterm labor.

Compound…cont'd

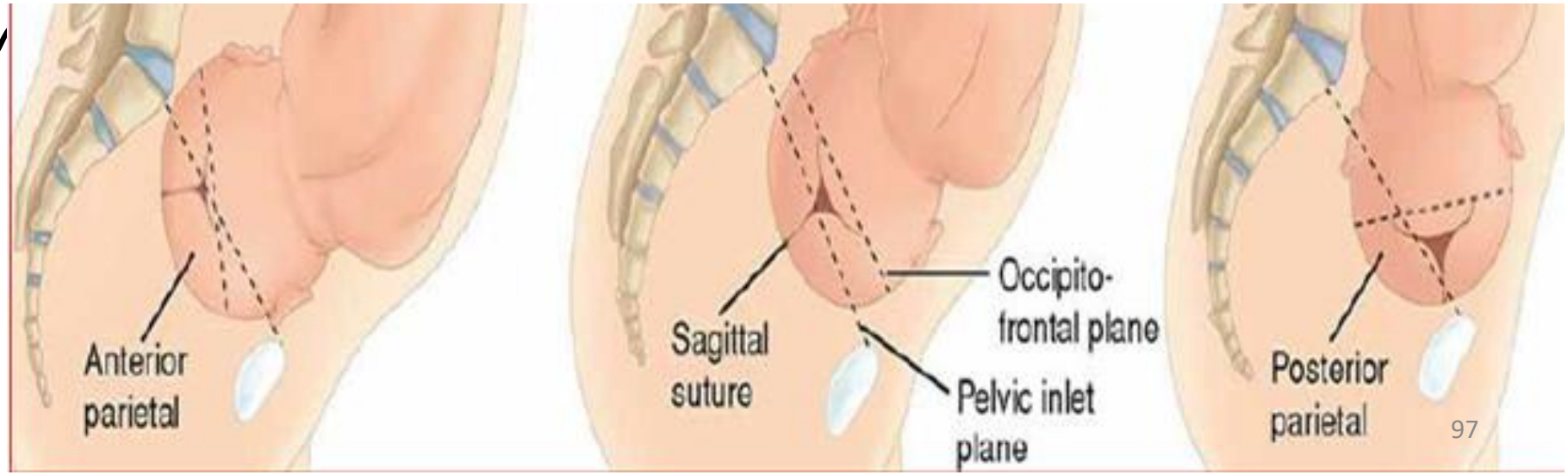
Management and Prognosis

- In most cases, the prolapsed part left alone, most often it will not interfere with labor.
- If the arm is prolapsed alongside the head, observed closely to retracts out of the way with descent of the presenting part.
- If it fails to retract and if it appears to prevent descent of the head, the prolapsed arm should be pushed gently upward
- In general, rates of perinatal mortality and morbidity are increased as a result of concomitant
  - ✓ preterm delivery
  - ✓ prolapsed cord

Asynclitism

- The sagittal suture frequently is deflected either posteriorly toward the promontory (*anterior asynclitism*) or anteriorly toward the symphysis (posterior *asynclitism*

Moderate degrees of asynclitism are the rule in normal labor; but is a common reason for CPD in severe, even v



OP Presentation

- In about 20% of labors, the fetus enters the pelvis in an OP position.
- The ROP is slightly more common than LOP.
- more often associated with a narrow forepelvis and with anterior placentation
- In most OP presentations, the mechanism of labor is identical to that observed in the transverse and anterior varieties, except that the occiput has to internally rotate to the symphysis pubis through 135 degrees, instead of 90 and 45 degrees,

OP Presentation…cont'd

- With effective contractions, adequate flexion of the head, and a fetus of average size, most posteriorly positioned occiputs rotate promptly as soon as they reach the pelvic floor, and labor is not lengthened appreciably.
- In ~5-10% of cases, however, rotation may be incomplete or may not take place at all, especially if the fetus is large

→esult in transverse arrest or persistent occiput posterior respectivily.

Persistent Occiput Posterior Position

- ✓ The possibilities for vaginal delivery are:
  - Spontaneous delivery
  - Forceps delivery with the occiput directly posterior
  - Manual rotation to the anterior position followed by spontaneous or forceps delivery
  - Forceps rotation of the occiput to the anterior position and delivery

Occiput Transverse Position

- Most likely rotate anterior position in the absence of a pelvic architecture abnormality.
- Spontaneous anterior rotation usually is completed rapidly, spontaneous delivery or delivery with outlet forceps.
- The occiput may be manually rotated anteriorly or posteriorly and forceps delivery performed from either the anterior or posterior position
- With the platypelloid (anteroposteriorly flattened) and the android (heart-shaped) pelves, there may not be adequate room for rotation of the occiput to either the anterior or the posterior position

Disorders of the Third Stage

Retained placenta

- interval b/n delivery of the infant & placenta is usually <10mns
- complete within 15 minutes in 95% of deliveries.
- after 30 minutes, most practitioners diagnose retained placenta associated increased incidence of hemorrhage
- Attempting manual removal can be performed under regional anesthesia or conscious sedation.
- If this is not successful, a sharp curettage can be performed under sonographic guidance.
- Prophylactic broad-spectrum antimicrobial agents are

Precipitous Labor And Delivery

- is extremely rapid labor and delivery, result in expulsion of the fetus in <3hrs or a rate of cervical dilatation of ≥5 cm/hr for nulliparas and 10 cm/hr for multiparas
- Such short labors more common in multiparas who had contractions intervals <2mns
- It may result from;
  - ✓ an abnormally low resistance of the soft parts of the birth canal.
  - ✓ abnormally strong uterine and abdominal contractions.

Maternal Effects

serious maternal complications:

- vigorous uterine contractions with a long, firm cervix and a noncompliant birth canal may lead to uterine rupture or extensive lacerations of the birth canals or perineum.
- The uterus that contracts with unusual vigor before delivery is likely to develop uterine atony & PPH

Fetal and Neonatal Effects

- vigorous uterine contractions, prevent appropriate uterine blood flow and fetal oxygenation.
- Resistance of the birth canal rarely cause intracranial

Fetal and Neonatal Effects...cont'd

- unattended birth, the newborn may fall and be injured.
- it may need resuscitation that is not immediately available.

Treatment

- Unusually forceful spontaneous uterine contractions are not likely to be modified to a significant degree by analgesia.
- The use of tocolytic agents such as magnesium sulfate is unproven in these circumstances.

Complications With Dystocia

Maternal Complications

- Intrapartum chorioamnionitis and postpartum pelvic infection are more common with prolonged labors.
- PPH from atony … prolonged and augmented labors.
- higher incidence of uterine tears with hysterotomy if the fetal head is impacted in the pelvis
- Uterine Rupture, abnormal thinning of the LUS from prolonged labor in high parity and prior CD
- Fistula Formation; tissue interrupted b/n bony structures for a considerable time→impaired circulation, necrosis, slughing

Maternal Complications…cont'd

- **Pelvic Floor Injury** direct compression from the fetal head and downward pressure from maternal expulsive efforts, stretch and distend the pelvic floor, resulting in functional and anatomical alterations in the muscles, nerves, and CT.
- **Lower Extremity Nerve Injury** external compression of the common fibular (formerly common peroneal) nerve result in inappropriate leg positioning especially with prolonged 2nd stage labor.

❖ symptoms resolve within 6 months of delivery in most women.

Perinatal Complications

- *Caput succedaneum* and *molding* develop commonly
- Mechanical trauma such as nerve injury, fractures, and cephalohematoma are also more frequent.

THANK YOU !