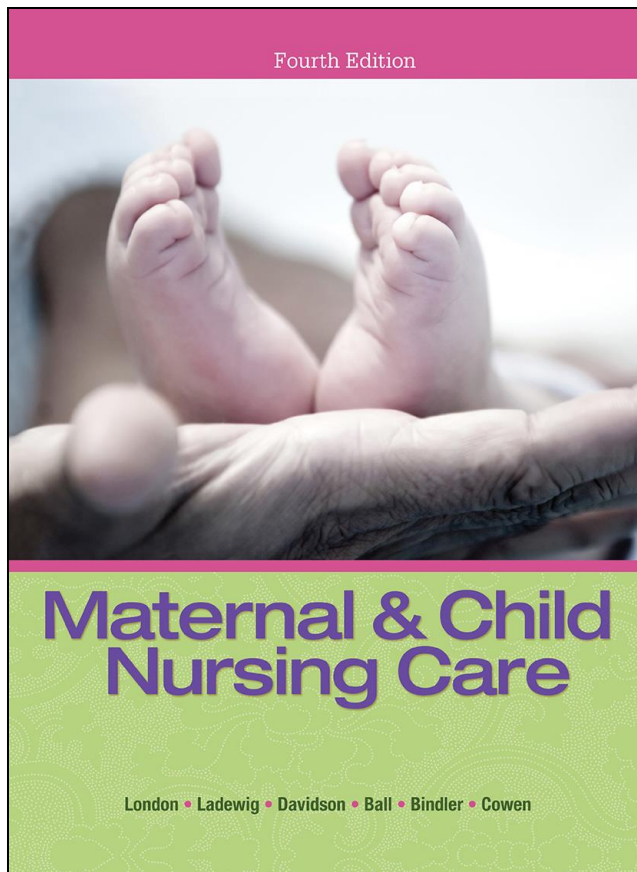


MATERNAL & CHILD NURSING CARE

FOURTH EDITION



CHAPTER 17

Processes and
Stages of Labor and
Birth

Dr. Sahar Hassan

Learning Outcome 17-1

Describe the five critical **factors that influence labor** in the assessment of an expectant woman's and fetus's progress in labor and birth.

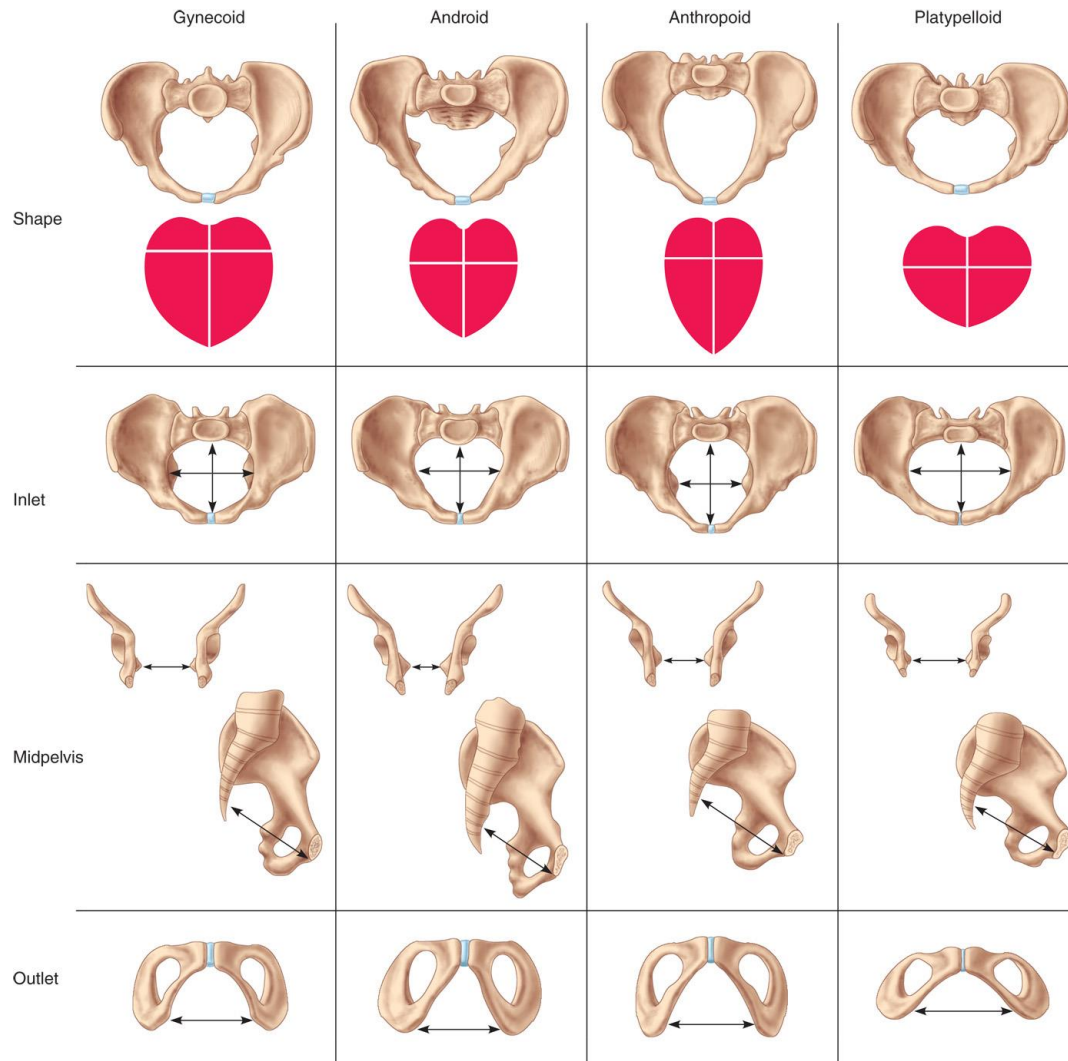
Factors Affecting Labor Progress

- The birth passageway (birth canal)
- The passenger (fetus)
- The physiologic forces of labor
- The position of the mother
- The woman's psychosocial considerations

Passageway

- True pelvis
 - Inlet, midpelvis, outlet
- Four types
 - Gynecoid
 - Android
 - Anthropoid
 - Platypelloid

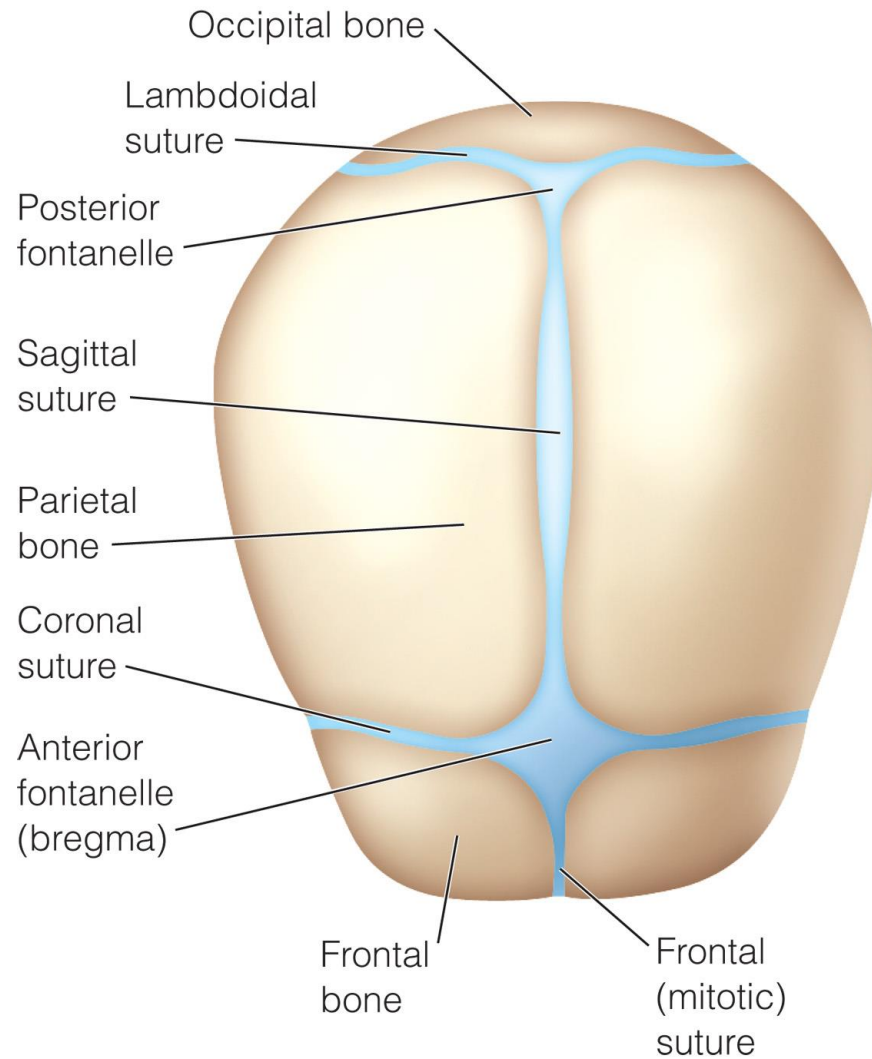
Figure 17-1 Comparison of Caldwell-Moloy pelvic types.



Fetus (passenger)

- Fetal head
 - Two frontal bones, two parietal bones, and occipital bone
- Molding: overlap of cranial bones due to pressure of powers of labour
- Sutures: membrane spaces btw cranial bones
- Fontanelles: intersections btw cranial sutures

Figure 17-2 Superior view of the fetal skull.



Sutures of Fetal Skull

Sutures: membranes space between 2 bones where ossification is not complete, to help in overlapping of fetal skull at time of birth

- Sagittal suture: bw 2 parietal bones
- Coronal suture (2): bw parietal & frontal bone
- Lambdoidal suture (2): bw parietal & occipital
- Frontal suture: bw 2 fronted bone

Fontanelles of Fetal Skull

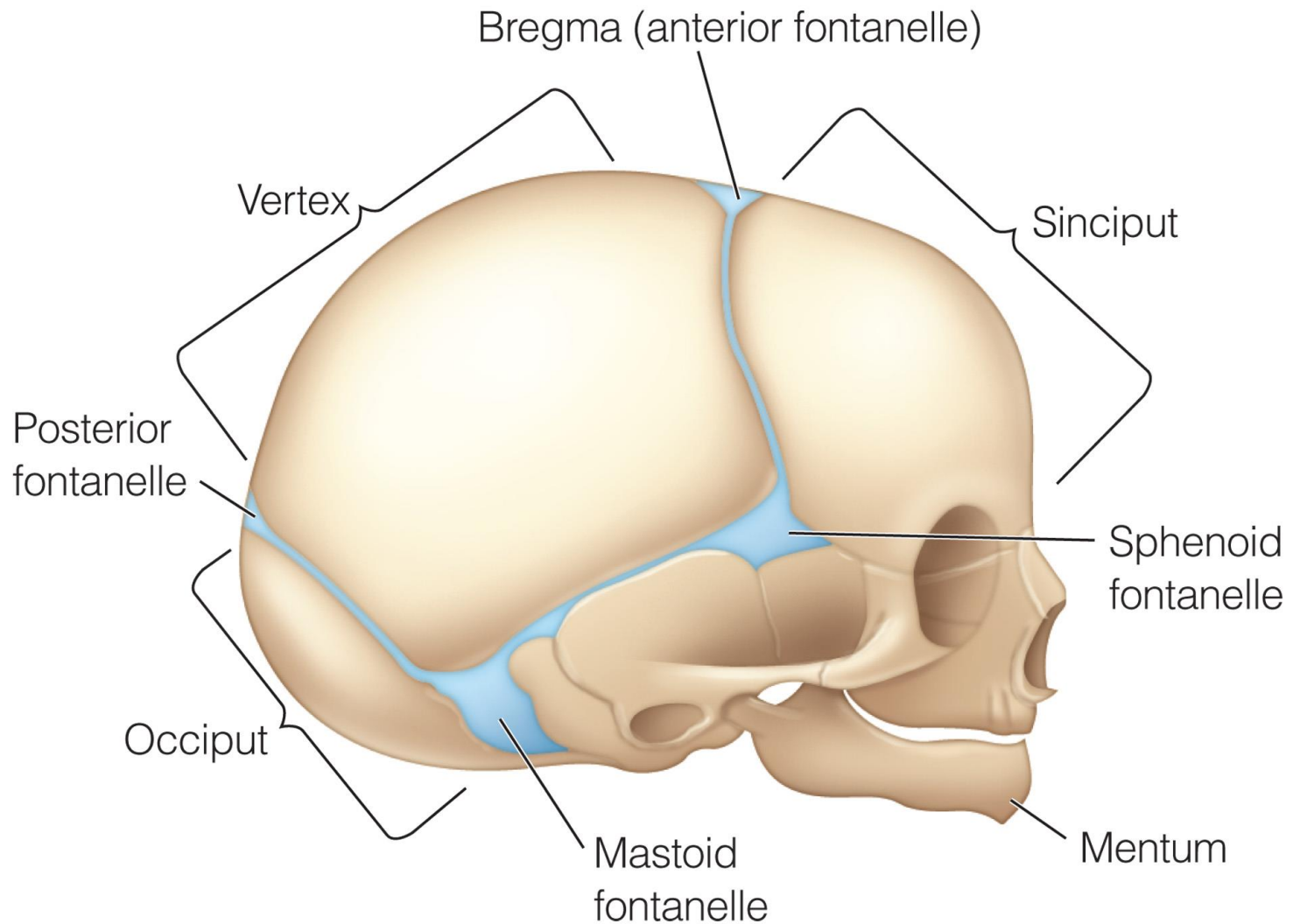
2 fontanelles:

- 1) Posterior fontanelle: or Lambda: small triangular shape, bw junction of lambdoidal & sagittal suture. Closes by 8-12 weeks of age
- 1) Anterior fontanelle or Bregma: kite-shape (diamond), 2x3 cm, bw sagittal, coronal & frontal. Permits growth of the brain. Closes @ 18 months old

Fetus

- Landmarks—
 - ✓ Mentum: fetal chin
 - ✓ Sinciput: ant. Area; brow
 - ✓ Bregma: diamond shape ant. fontanelle
 - ✓ Vertex: area btw ant. & post. fontanelle
 - ✓ Occiput: occipital bone; beneath post. fontanelle

Figure 17-3 Lateral view of the fetal skull. This figure identifies the landmarks that have significance during birth.



Fetal Attitude

- The relation of the fetal body parts to one another (flexion/extension)
- Normal attitude is flexion:
 - ✓ Back is rounded
 - ✓ Chin is flexed on the chest
 - ✓ Thighs are flexed on the abdomen
 - ✓ Legs flexed at the knee
 - ✓ Arms crossed over thorax
 - ✓ Umbilical cord bw the arms & legs

Figure 17-5 Fetal attitude. The attitude (or relationship of body parts) of this fetus is normal. The head is flexed forward, with the chin almost resting on the chest. The arms and legs are flexed.



Fetal Attitude

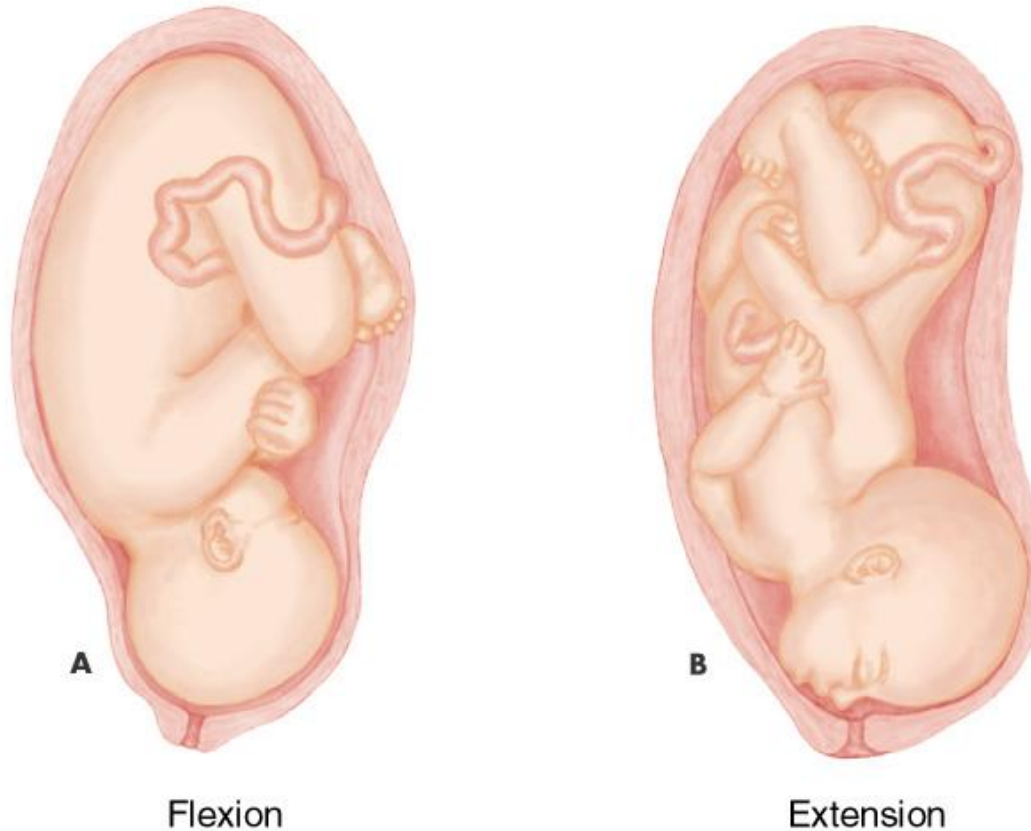


Figure 12-7 **A**, Attitude. The fetus is in the normal attitude of flexion, with the head, arms, and legs are flexed tightly against the trunk. **B**, The fetus is in an abnormal attitude of extension. The head is extended, and the right arm is extended. A face presentation is illustrated.

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Fetal Lie

- The relationship of spinal column of the fetus to that of the mother
- Longitudinal or transverse
- Normal lie is.....?

Fetal Lie

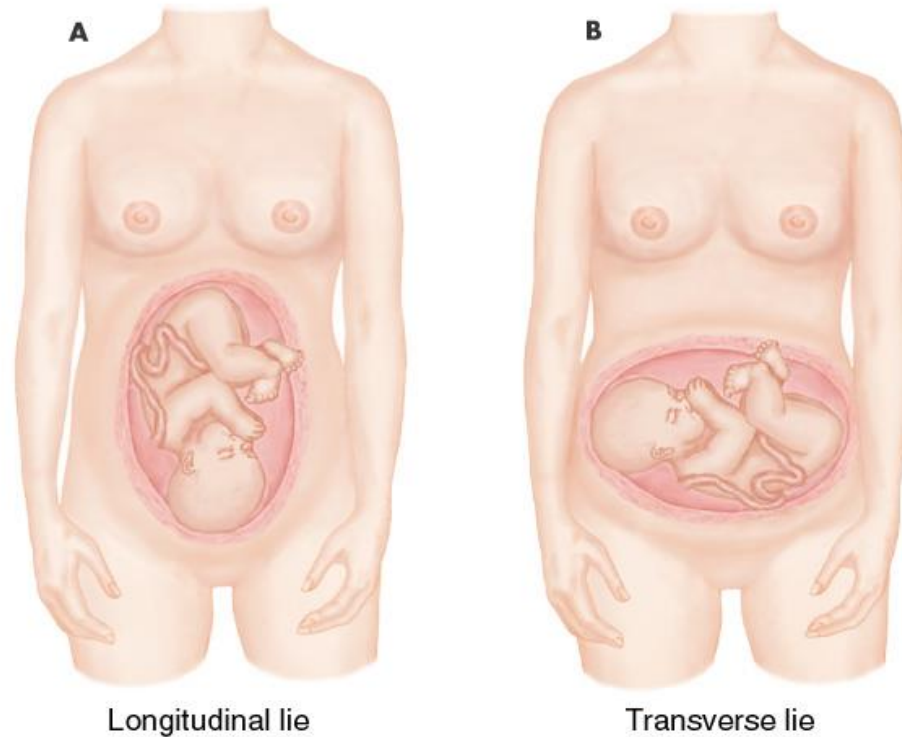


Figure 12-6 **A**, Fetal lie. In a longitudinal lie, the long axis of the fetus is parallel to the long axis of the woman. **B**, In a transverse lie, the long axis of the fetus is at right angles to the long axis of the mother. The woman's abdomen has a wide, short appearance.

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Fetal presentation

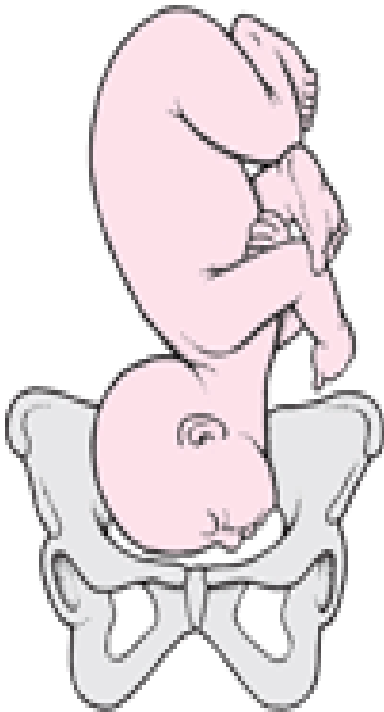
The part of the fetus that enters the pelvis first

3 main presentations:

- Cephalic: head first, 96%. Presenting part is usually occiput → presentation is vertex
- Breech, buttocks or feet first, 3%. Presenting part is usually sacrum
- Shoulder, 1%, presenting part is scapula

Fetal presentation

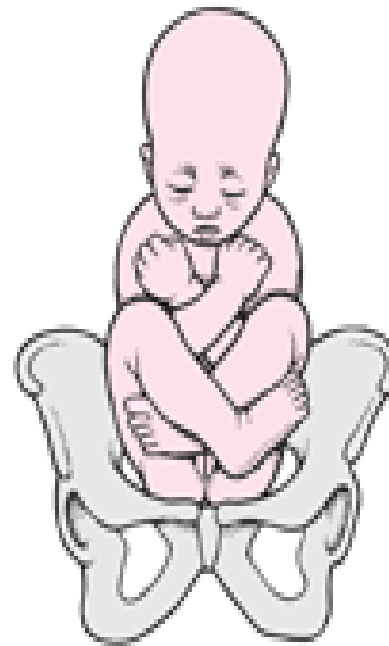
Face



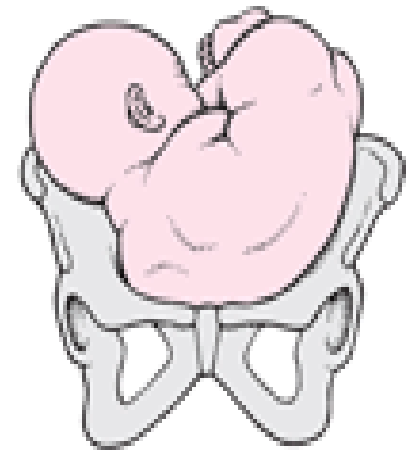
Brow



Breech



Shoulder



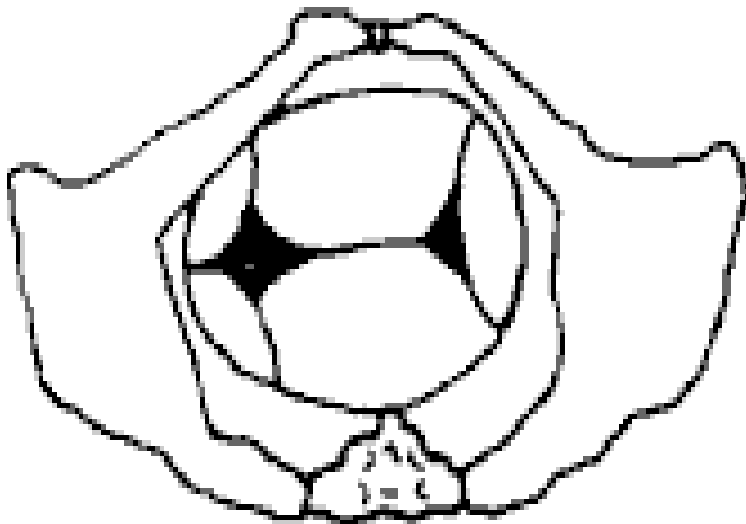
Abnormal Presentations

Normal presentation = Vertex presentation

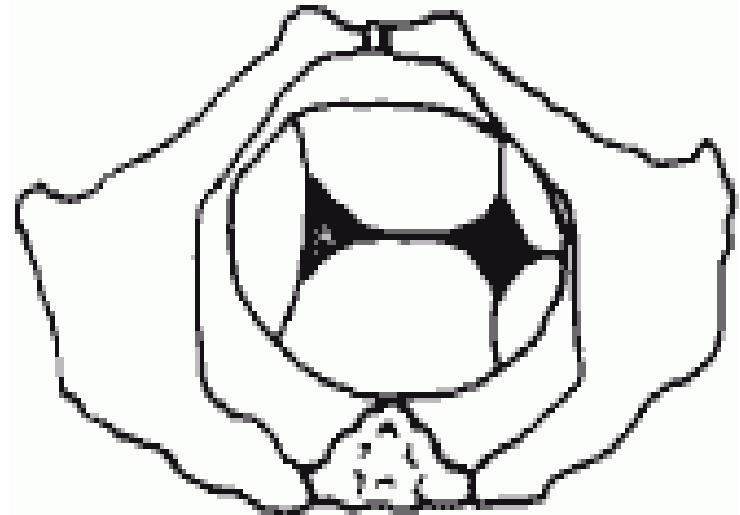
- If vertex is not the presenting part, this is called malpresentation
- If vertex is the presenting part, we look for the occiput as a landmark during VE to determine the fetal head in relation to mother's pelvis.

Usually...

The fetal head normally engages in the maternal pelvis in an occiput transverse position, with the fetal occiput transverse in the maternal pelvis.



Left occiput transverse



Right occiput transverse

Fetal Presentation

- Engagement: A term used to indicate that the largest transverse diameter of the presenting part (usually the bipariatal) has passed through the maternal pelvis brim & usually = zero station
- Occurs few weeks before labour begins in nulliparous & may occur before or during labor in multips.
 - We assess engagement by abdominal exam or vaginal exam

Figure 17-7 Process of engagement in cephalic presentation. A, Floating. The fetal head is directed down toward the pelvis but can still easily move away from the inlet.

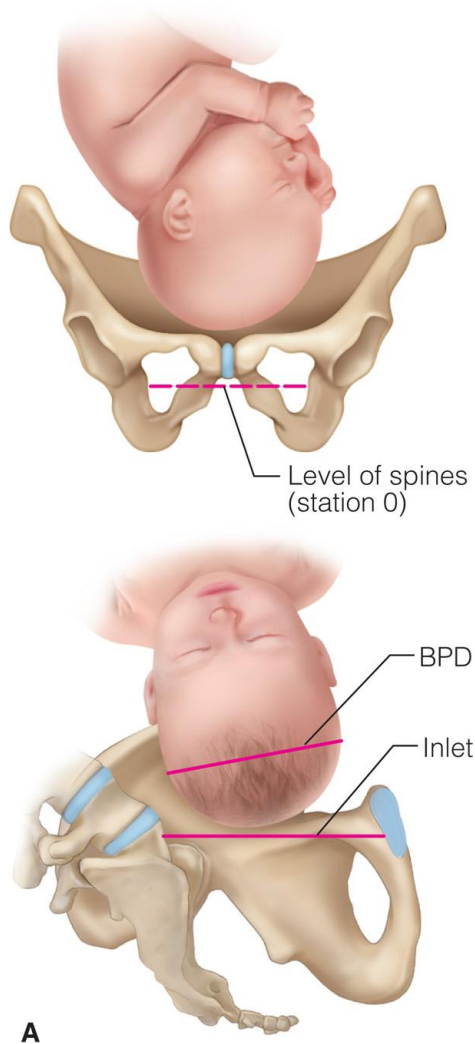


Figure 17-7 (continued) Process of engagement in cephalic presentation. *B*, Dipping. The fetal head dips into the inlet but can be moved away by exerting pressure on the fetus.

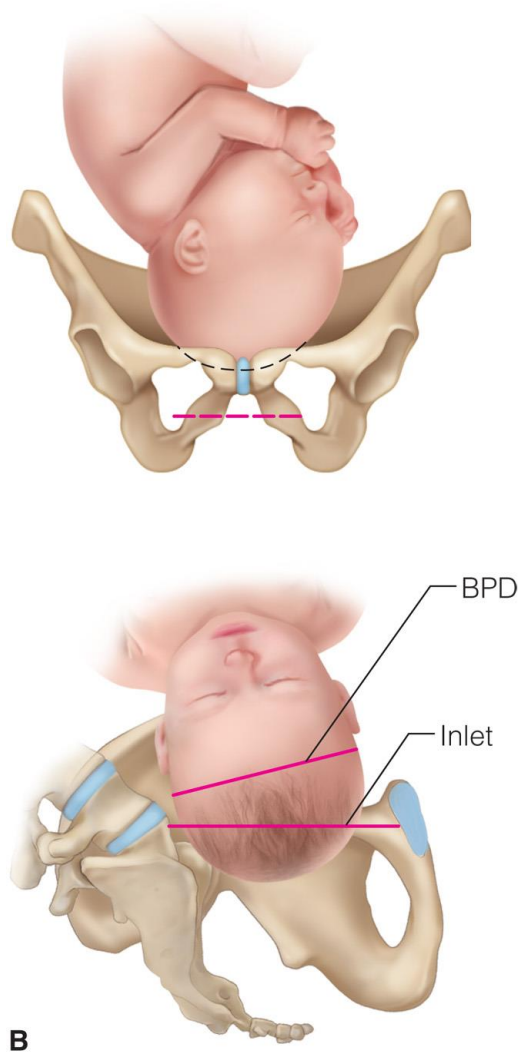
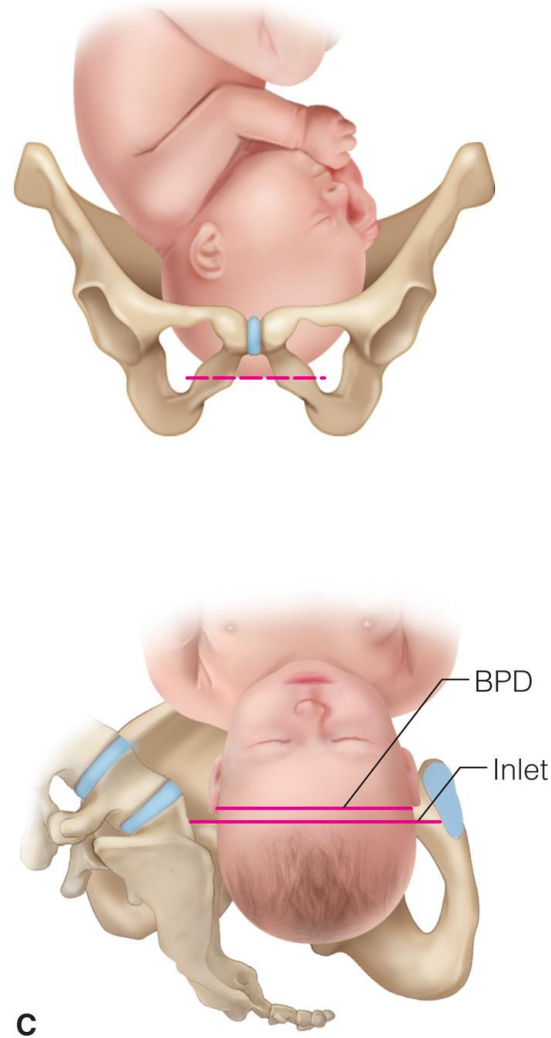


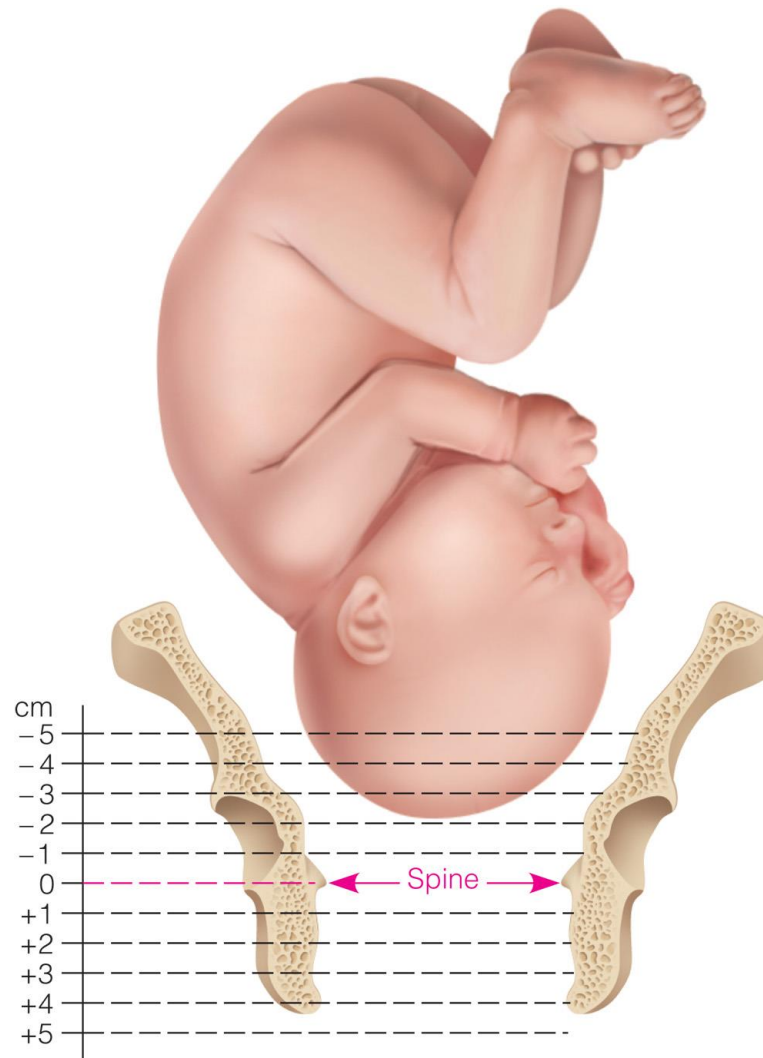
Figure 17-7 (continued) Process of engagement in cephalic presentation. C, Engaged. The biparietal diameter (BPD) of the fetal head is in the inlet of the pelvis. In most instances the presenting part (occiput) is at the level of the ischial spines (zero station).



Fetal Presentation

- Station
 - Relationship of the presenting part to the ischial spines
 - Ischial spines are zero station
 - If presenting part above the ischial spine—negative number
 - If presenting part below the ischial spine—positive number

Figure 17-8 Measuring the station of the fetal head while it is descending. In this view the station is $-2/-3$.



Fetal Position

- Right (R) or left (L) side of the maternal pelvis
- Landmark: occiput (O), mentum (M), sacrum (S), or acromion (scapula[Sc]) process (A)
- Anterior (A), posterior (P), or transverse (T)

Fetal position

The relation of the presenting part (occiput, sacrum, mentum or sinciput) to 4 quadrants of the mother's pelvis

We write it by using 3 letters: e.g. ROA

- 1st letter: describes the location of presenting part in the right (R) or left (L)
- Middle letter: describes presenting part of the fetus (O = occiput, S = sacrum, M = mentum, Sc = scapula (shoulder))
- 3rd letter: stands for location of the presenting part in relation to the ant. (A), post. (P), or transverse (T) portion of the maternal pelvis

So, ROA = right occipito anterior which means:

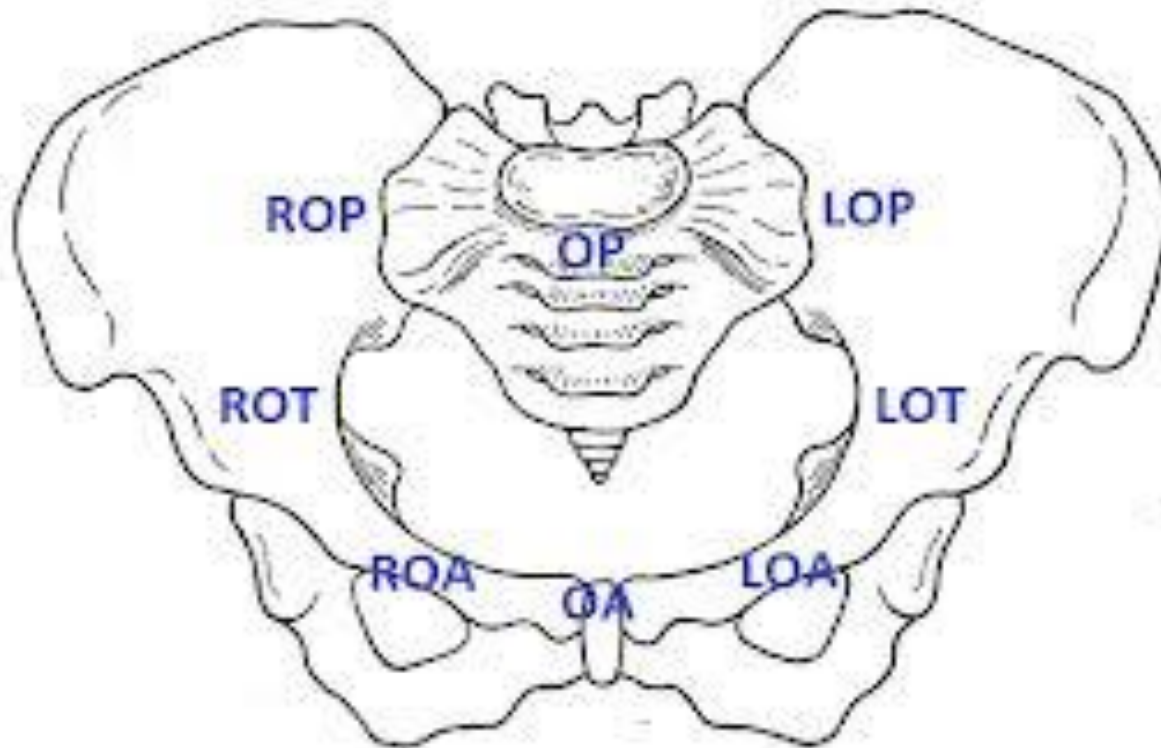
the occiput is the presenting part & is located in the right ant. Quadrant of maternal pelvis

THINK...!

Can you read:

- ROP
- LOA
- LOT

The mother's pelvis



Physiologic Forces of Labor

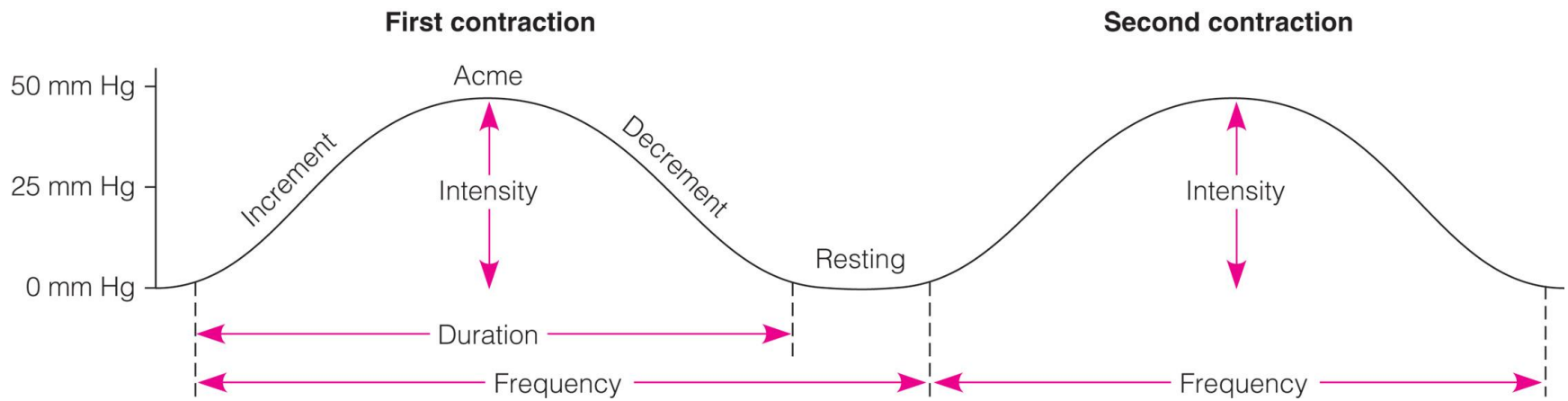
- Primary forces—uterine muscular contractions
 - Contraction phases—increment, acme, decrement
 - Described with frequency, duration, and intensity
- Secondary forces—abdominal muscles used in pushing

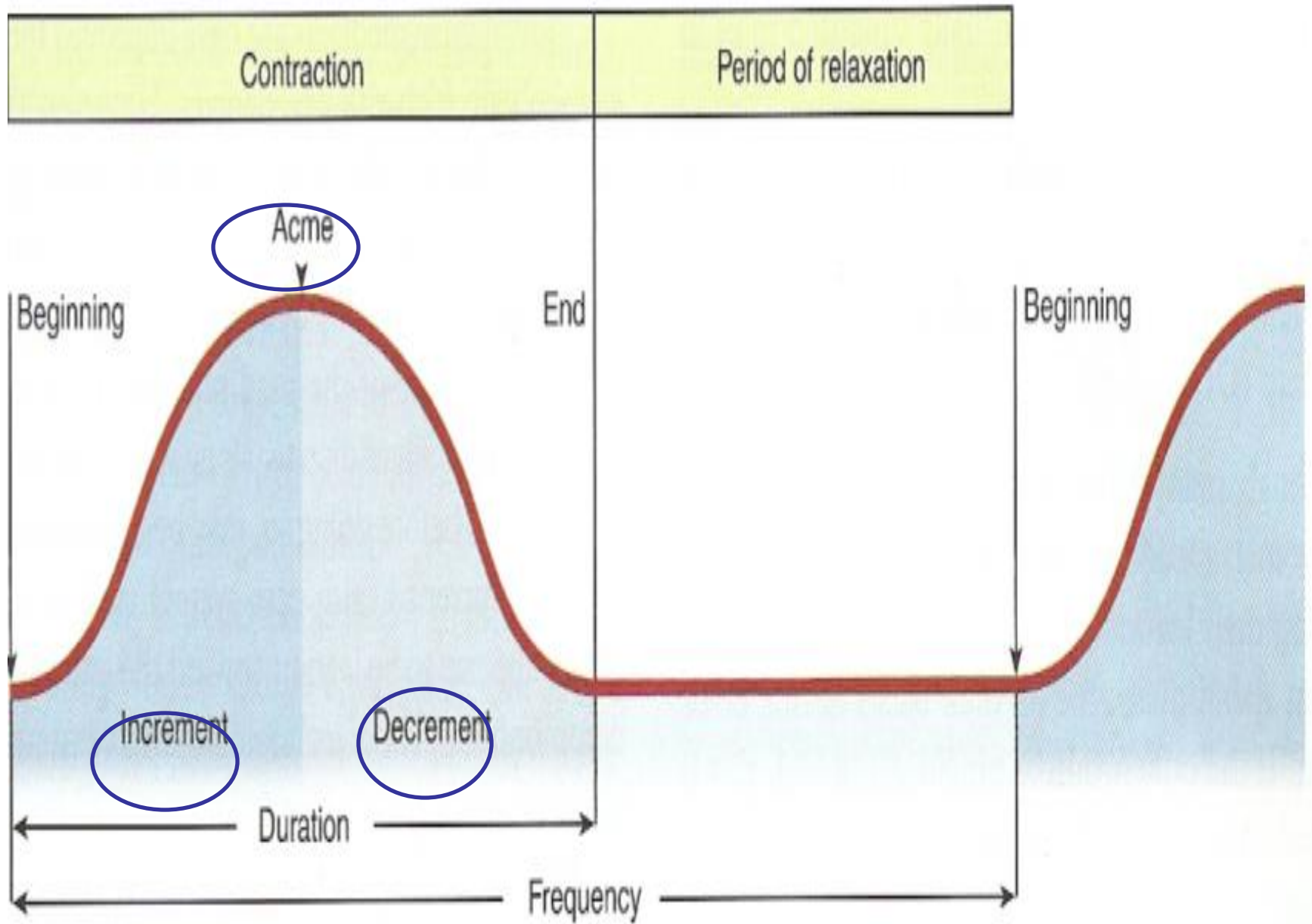
Contractions (powers)

Contractions are responsible for:

- effacement of the cervix
- dilation of the cervix
- descent of the fetus

Figure 17-10 Characteristics of uterine contractions.





Contractions (powers)

- Uterine contraction is involuntary & therefore cannot be controlled by the experiencing women
- Contractions are intermittent & rhythmic with a period of relaxation
- During a contraction the long muscles of the uterus contract, starting at the top of the uterus & working their way down to the bottom

Contractions (powers)

- Normal contractions occur every 2-5 minutes & last less than 90 seconds & should be moderate to strong when palpated
- Normal: 5 or fewer contractions in 10 minutes averaged over a 30 minutes
- Tachysystole: 5 or more contractions in 10 minutes averaged over 30 minutes (old term: hyperstimulation).

Contractions (powers)

We describe contractions by:

- Frequency: the time from beginning of one contraction to the beginning of the next
 - ✓ Recorded in minutes (e.g., q 3–4 min)
- Duration: length of the contraction from the beginning to the end.
 - ✓ Recorded in seconds (e.g., each contraction lasts 45–50 seconds)

Contractions (powers) cont.

- Intensity: strength of contraction
- Resting phase or uterine relaxation period that allows the woman and uterine muscle a pause for rest

Psychological Factors

- Fears
- Anxieties
- Excitement level
- Feelings of joy and anticipation
- Level of social support

Learning Outcome 17-2

Examine an expectant woman's and fetus's response to labor based on the physiological processes that occur during labor.

Process of labor

- The term labor refers to the process of moving the fetus, placenta, and membranes out of the uterus through the birth canal

Cause of Labor Unclear

- Possible changes in progesterone & estrogen levels
- Research on possible causes
 - Progesterone withdrawal hypothesis: decrease availability of Progesterone → Estrogen work more to stimulate contx
 - Prostaglandin: Unclear RS with process of labor. Important for contx of the smooth muscle of the uterus & cervical ripening.

Causes of Uterine Changes

- Estrogen
 - Stimulates uterine muscle contractions
- Collagen fibers in the cervix are broken down
- Increase in the water content of the cervix

Uterine and Cervical Changes

- Physiologic retraction ring
- Upper uterine segment thickens & pulls up
- Lower segment expands & thins out
- Effacement: shortening and thinning of the cervix
- Effacement is measured in percentage and goes from 0% to 100%.

Figure 17-11 Effacement of the cervix in the primigravida. *A*, Beginning of labor. There is no cervical effacement or dilatation. The fetal head is cushioned by amniotic fluid.

A

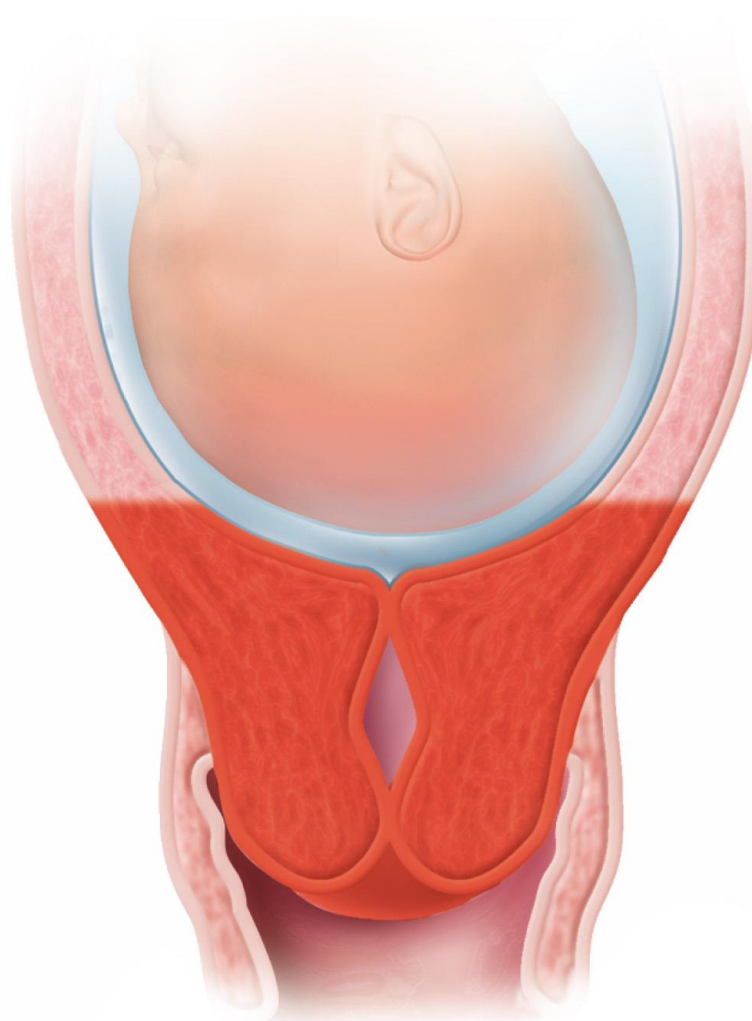


Figure 17-11 (continued) Effacement of the cervix in the primigravida. *B*, Beginning cervical effacement. As the cervix begins to efface, more amniotic fluid collects below the fetal head.

B

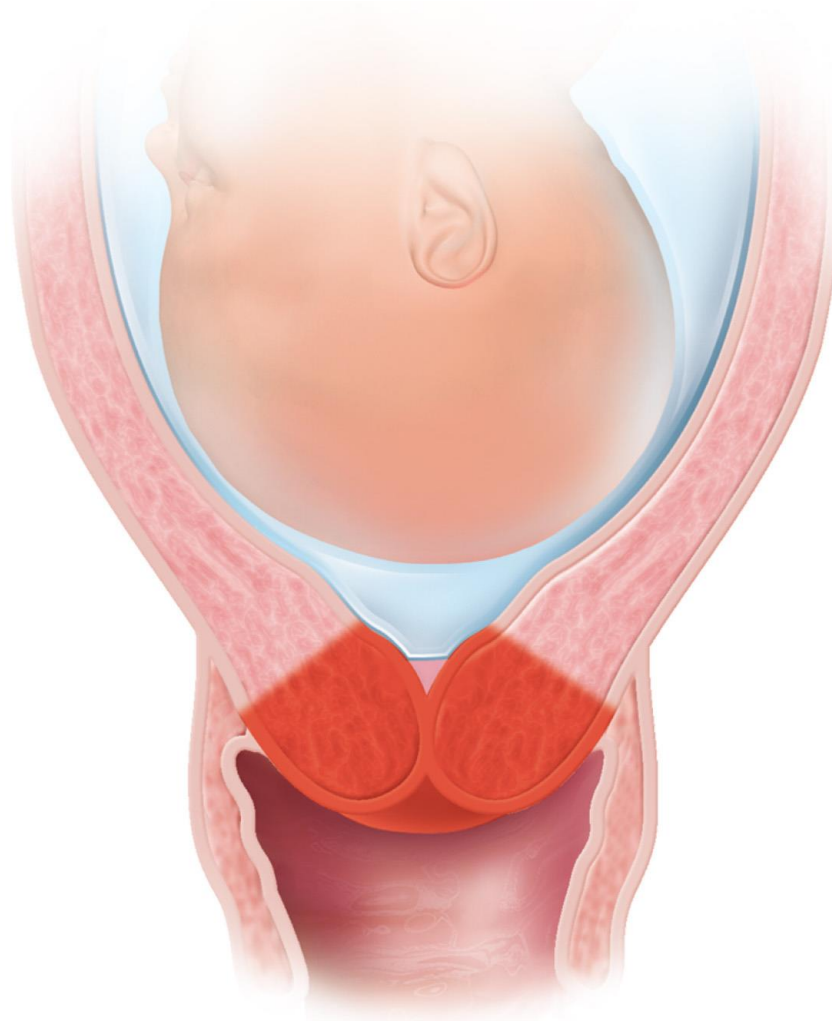


Figure 17-11 (continued) Effacement of the cervix in the primigravida. C, Cervix about one-half effaced and slightly dilated. The increasing amount of amniotic fluid exerts hydrostatic pressure.

C

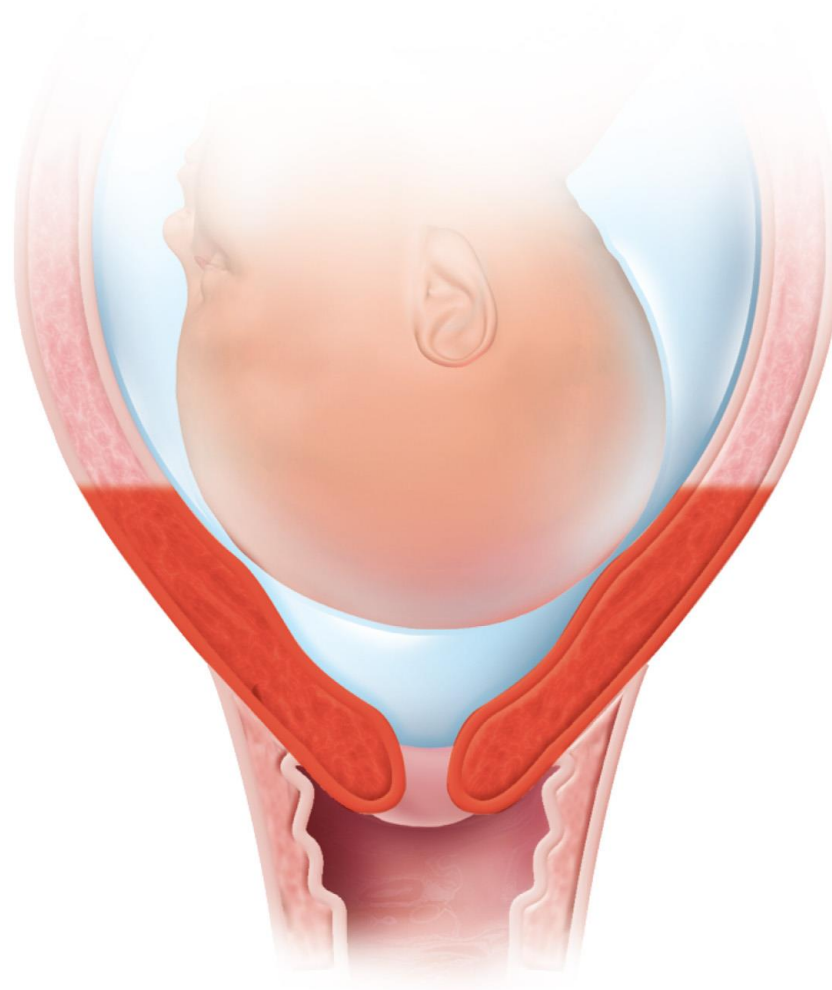
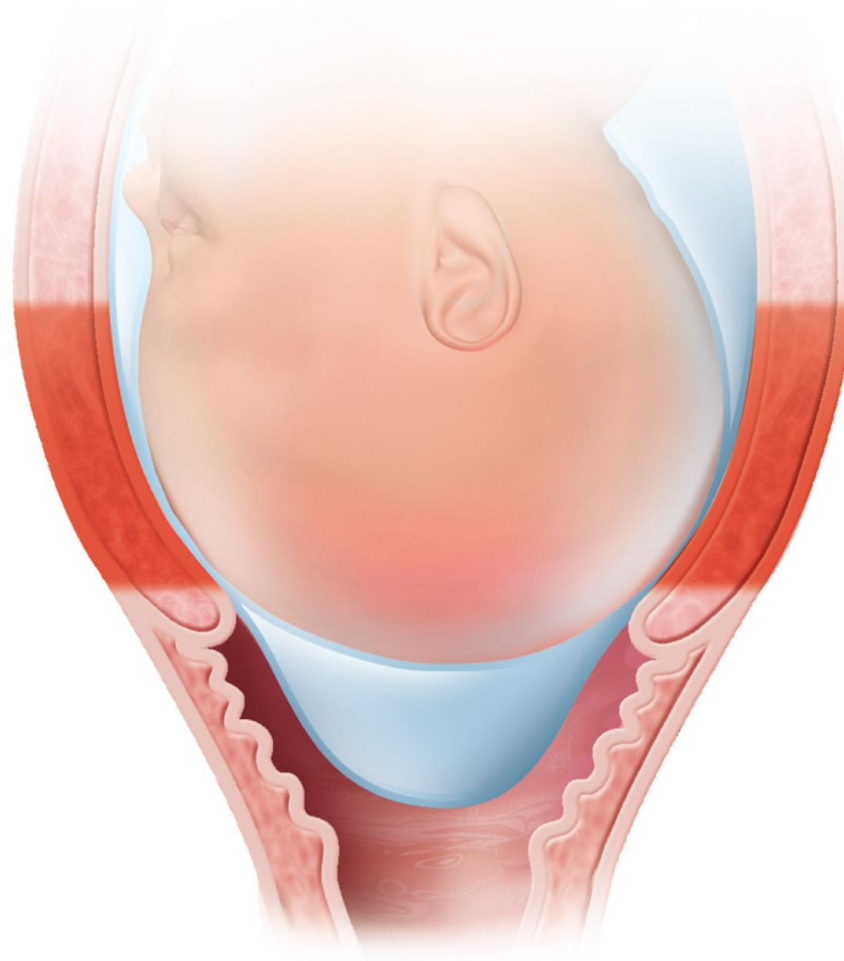


Figure 17-11 (continued) Effacement of the cervix in the primigravida. *D*, Complete effacement and dilatation.

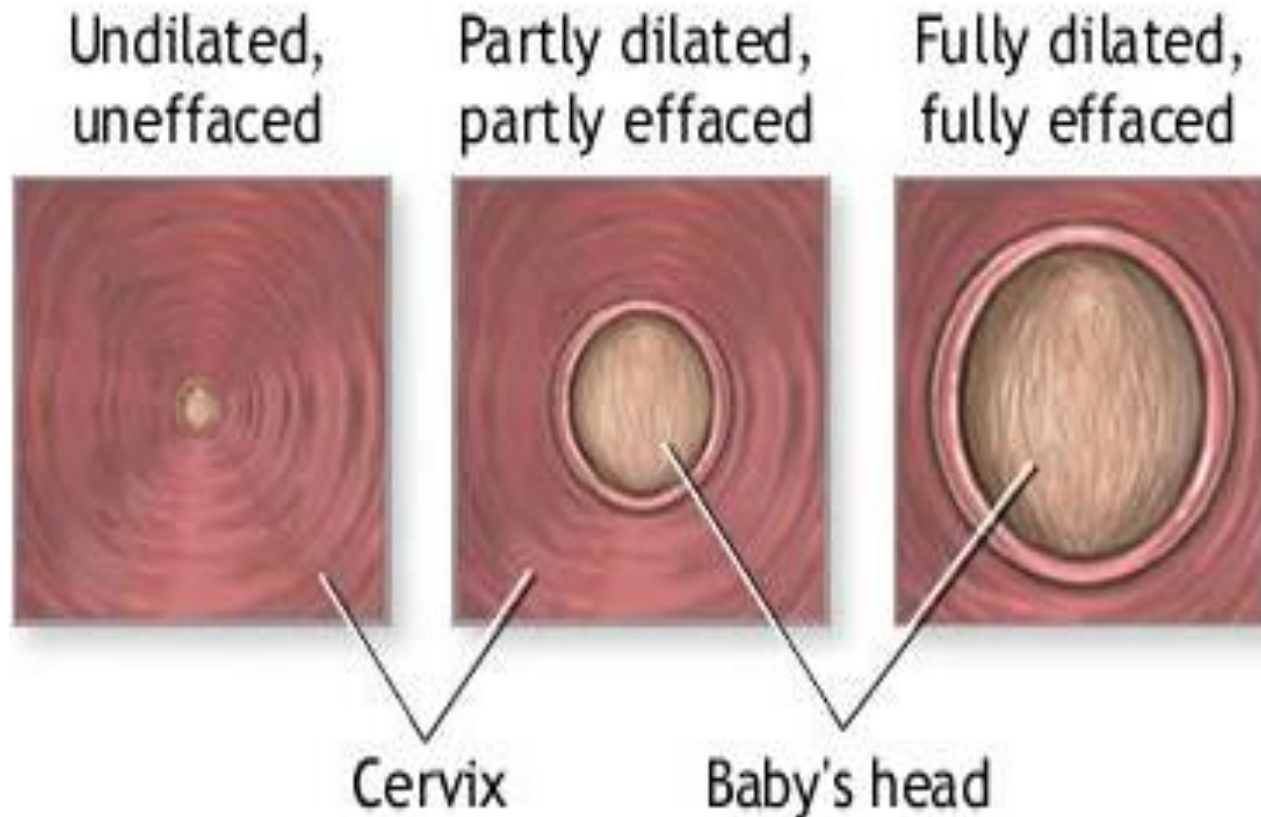
D



Cervical dilation

- Dilation of cervix is:
 - ✓ drawing upward of the musculofibrous components of the cervix caused by strong contractions
 - ✓ occur due to pressure of fetus
 - ✓ the enlargement or opening of the cervical os
 - ✓ dilates from closed (or <1 cm diameter) to 10 cm diameter

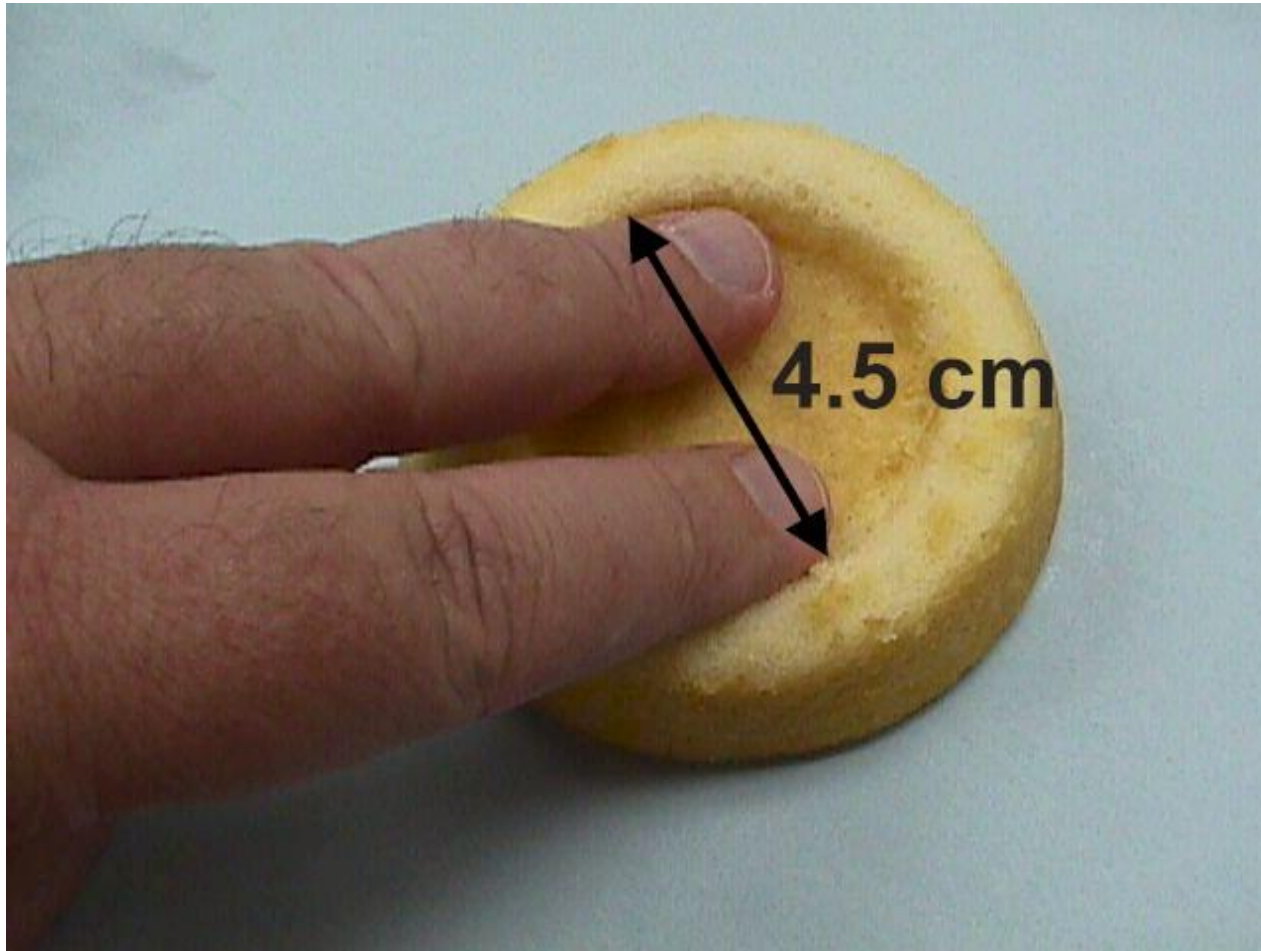
Cervical dilation



How do we assess cervical changes?



How do we assess cervical changes?



Learning Outcome 17-3

Assess for the premonitory signs of labor when caring for the expectant woman.

Premonitory Signs of Labor

- Lightening: descent of the fetus into the true pelvis that occurs approximately 2 weeks before term in first-time pregnancies
- Braxton Hicks contractions:
 - ✓ irregular Ucs do not result in cervical change
 - ✓ associated with false labor
 - ✓ begin to coordinate muscle layers of the uterus to perform when true labor begins

continued on next slide

Premonitory Signs of Labor (cont.)

- **Bloody show:**
 - Mucous plug expelled, resulting in pink-tinged secretions
 - Sign of impending labor
- **Sudden burst of energy:** Some women may experience a burst of energy or feel the need to put everything in order; sometimes referred to as nesting

Premonitory Signs of Labor (cont.)

- Weight loss: some women may experience a 0.5 – 1.4 kg weight loss. Less common!
- Nausea and vomiting
- Diarrhea
- Backache: low backache and sacroiliac discomfort due in part to the relaxation of the pelvic joints
- Rupture of membranes (ROM): Amniotic membranes rupture and labor usually begins within 24 hours

Premonitory Signs of Labor (cont.)

- Premonitory signs of labor
 - Rupture of membranes (ROM)
 - Spontaneous ROM (SRROM)
 - Height of intense contraction
 - If engagement has not occurred, danger that umbilical cord may be expelled with fluid
 - Artificial ROM (AROM) by amniohook
 - Premature ROM (PROM)
 - Preterm PROM preceded by infection

Learning Outcome 17-4

Differentiate between **false and true labor.**

True Labor

- Progressive dilatation & effacement
- Regular contractions increasing in frequency, duration, & intensity
- Pain usually starts in the back and radiates to the abdomen
- Pain is not relieved by ambulation or by resting

True Labor

- Cervical dilatation, effacement progressive
- Contractions do not decrease with:
 - Rest
 - Warm tub bath

False Labor

- Lack of cervical effacement and dilatation
- Irregular contractions do not increase in frequency, duration, and intensity
- Contractions occur mainly in the lower abdomen and groin
- Pain may be relieved by ambulation, changes of position, resting, or a hot bath or shower

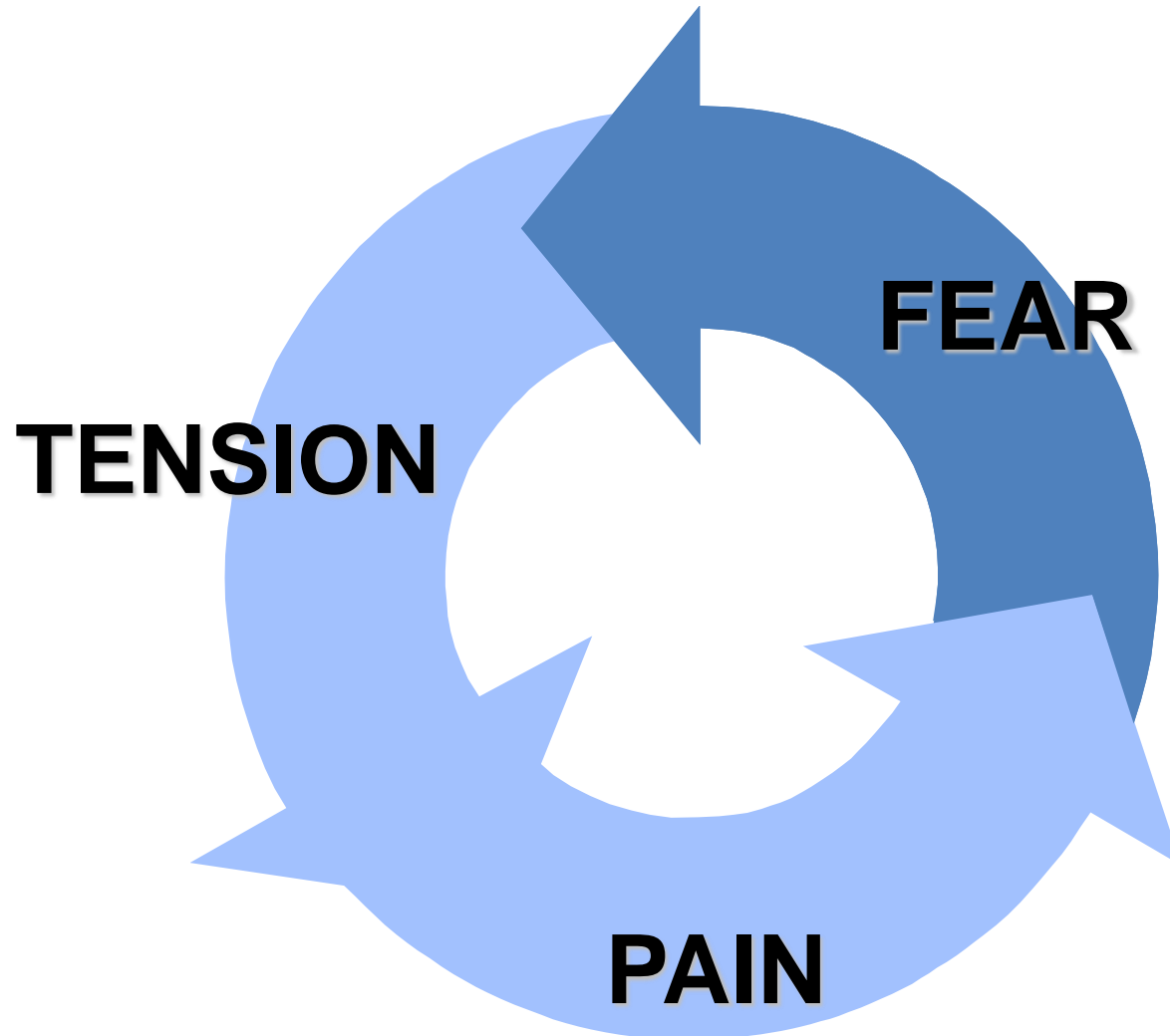
False Labor

- Nurse's response to false labor
 - Education
 - False labor common
 - Difficult to distinguish from true labor
 - Reassurance
 - Interventions
 - Decrease anxiety, discomfort

Learning Outcome 17-5

Describe the **physiologic and psychologic changes occurring in an expectant woman during each stage of labor** in the nursing care management of the expectant woman.

BREAK THE CYCLE !



Maternal Psychosocial Response to the Active Phase

- Anxiety
- Need for energy and focus
- Fear of loss of control
- Use of various coping mechanisms
 - Sense of purpose and need for regrouping
 - Helplessness and decreased coping ability

continued on next slide

Maternal Psychosocial Response to the Active Phase

- Support person involvement may increase satisfaction & decrease anxiety

Maternal Psychosocial Response to the Transition Phase

- Awareness of the need for energy & focus
- Significant anxiety or loss of control
- Restlessness
- Inner directed and often tired

continued on next slide

Maternal Psychosocial Response to the Transition Phase

- May not want to be left alone
- Support person may need a break
- Nursing interventions
 - Reassure the woman that she will not be left alone
 - Remain available as relief support
 - Inform woman of where/abouts of her labor support people

Maternal Psychosocial Response to Progressive Dilatation of Transition Stage

- Intense pressure may cause fear
 - Nurse should provide reassurance that sensations are normal in this stage of labor
- May become apprehensive, irritable, & withdrawn
- Desire for verbal and physical support may vary

Maternal Psychosocial Response to Second Stage

- May feel some relief
 - Transition phase is over
 - Birth is near
 - Able to push

Factors influencing a positive birth experience

- ✓ clear information on procedure
- ✓ positive support, not being alone
- ✓ sense of mastery, self- confidence
- ✓ trust in staff caring for her
- ✓ positive reaction to the pregnancy
- ✓ personal control over breathing
- ✓ Preparation for childbirth experience.

Second Stage of Labor – Nursing Interventions

- Encourage woman to focus on pushing
- Encourage rest when possible
- Provide leg support
- Offer ice chips
- Cooling techniques
- Verbal encouragement
- Assist support person

Stages of labor

Stages of Labor and Birth

- Theoretical separations
 - Laboring woman will not usually experience distinct differences

First Stage

- Latent or early phase
 - Beginning cervical dilatation & effacement
 - No evident fetal descent
 - Uterine contractions increase in frequency, duration, and intensity
 - Contractions usually mild, regular
 - Excited, talkative, smiling

First Stage

- Active phase
 - Cervical dilatation from 4 to 7 cm
 - Progressive fetal descent
 - Contractions more frequent and intense
 - Maternal responses
 - Increased anxiety

First Stage

- Transition phase
 - Cervical dilatation from 7 to 10 cm
 - Progressive fetal descent
 - Contractions more frequent and intense
 - Other characteristics
 - Hyperventilation
 - Restlessness
 - Difficulty understanding directions
 - Generalized discomfort

First Stage

- Transition phase
 - Other characteristics
 - Requests for medication
 - Increased need for support
 - Curling of toes
 - Loss of control
 - Maternal responses
 - Woman likely to withdraw into self
 - Anxious to "get it over with"

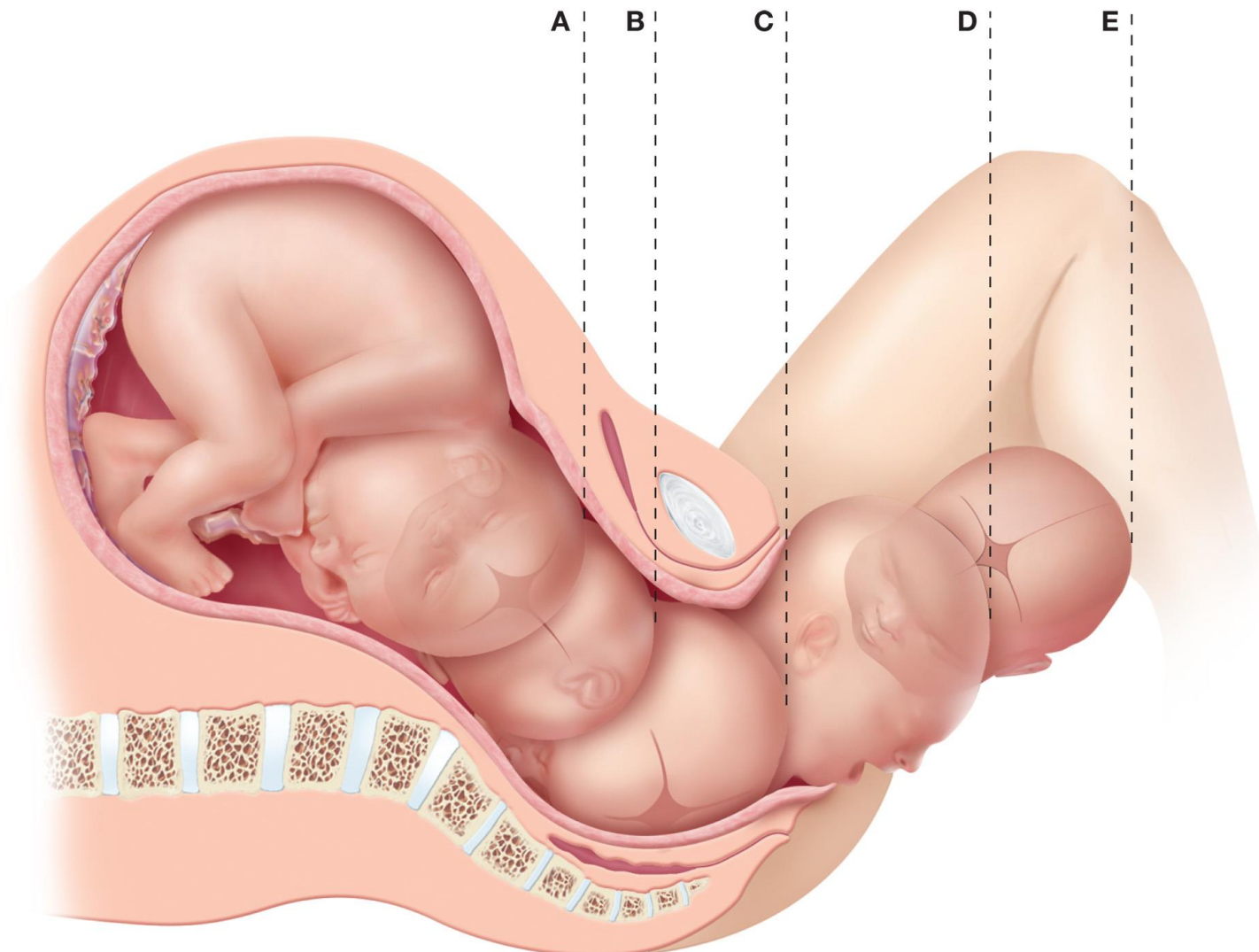
Second Stage

- Begins with complete dilatation (10 cm)
- Ends with birth of baby
- Spontaneous birth (vertex)
- Positional changes of the fetus
- Crowning
 - Fetal head encircled by introitus of vagina and birth imminent
- Maternal urge to push

Cardinal movements (mechanisms of labor)

1. Descent
2. Flexion
3. Internal rotation
4. Extension
5. Restitution
6. External rotation
7. Expulsion

Figure 20–13 Cardinal movements (mechanisms of labor). **A.** and **B.** Descent. **C.** Internal rotation. **D.** Extension. **E.** External rotation.



Third Stage of Labor

- From birth of infant to delivery of placenta
- Placental separation
 - Increase in bleeding
 - Signs
 - Globular-shaped uterus
 - Rise of fundus in abdomen
 - Sudden gush, trickle of blood
 - Further protrusion of umbilical cord

Third Stage of Labor

- Placental delivery
 - Retained if not expelled 30 minutes after end of second stage
 - Shiny Schultze
 - Fetal side presents
 - Dirty Duncan
 - Maternal side presents

Fourth Stage of Labor

- 1 to 4 hours after birth
- Physiologic readjustment
- Thirsty and hungry
- Shaking
- Bladder is often hypotonic
 - Leads to retention
- Uterus remains contracted to control bleeding at placental site

Learning Outcome 17-6

Explain the maternal systemic response to labor in the nursing care of the expectant woman.

Pain during Labor

- Pain
 - Pain during labor
 - Normal physiologic process
 - First stage pain
 - Cervical dilatation
 - Second stage pain
 - Uterine muscle cell hypoxia
 - Third stage pain
 - Uterine contractions

Pain during Labor

- Pain
 - Factors affecting response to pain
 - Preparation for childbirth
 - Individuals respond to painful stimuli
 - Families react to healthcare system based on own culture
 - Nurse needs to identify cultural norms
 - Fatigue and sleep deprivation

Pain during Labor

- Pain
 - Factors affecting response to pain
 - Previous experience with pain
 - Anxiety
 - Attention and distraction
 - Culture of health care

Learning Outcome 17-7

Examine fetal responses to labor.

Fetal Responses to Labor

- Normal fetus has no adverse effects.
- Heart rate changes
 - Early decelerations harmless
- Acid–base status in labor
 - Decrease in fetal pH → what does a low pH indicate?
- Hemodynamic changes
 - Fetal, placental reserve enough to last fetus through anoxic periods

Fetal Adaptations

- Fetal heart rate decelerations due to intracranial pressure
- Behavioral states
 - ✓ Quiet and awake state
 - ✓ Aware of pressure sensations
 - ✓ Fetus sensitive to light even in utero
 - ✓ Hearing reliable at 28 weeks

- END