CARDINAL MOVEMENTS OF LABOUR

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Cardinal Movements of Labour

- Positional changes of the presenting part that are required to navigate the pelvic canal
  - Fetus straightens → back loses convexity, extremities are brought closer to the body
  - Ovoid shape changes into a shape of a cylinder with smallest possible cross-section passing through pelvic canal
- Movements are sequential, may overlap
  - Engagement, flexion, and descent may occur at the same time

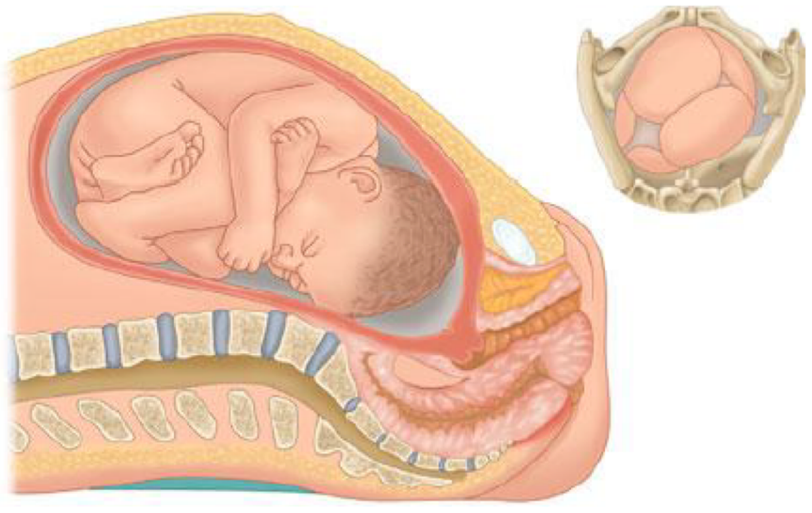
Cardinal Movements of Labour

Head is floating

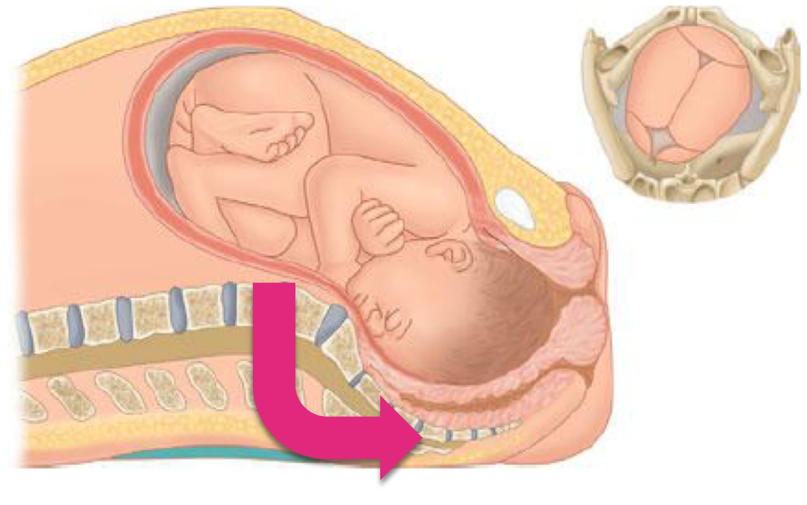
- Engagement
  - BPD enters pelvic inlet
  - Leading edge of the spine is at or below station 0
- Descent
- Flexion
- Internal rotation

Crowning

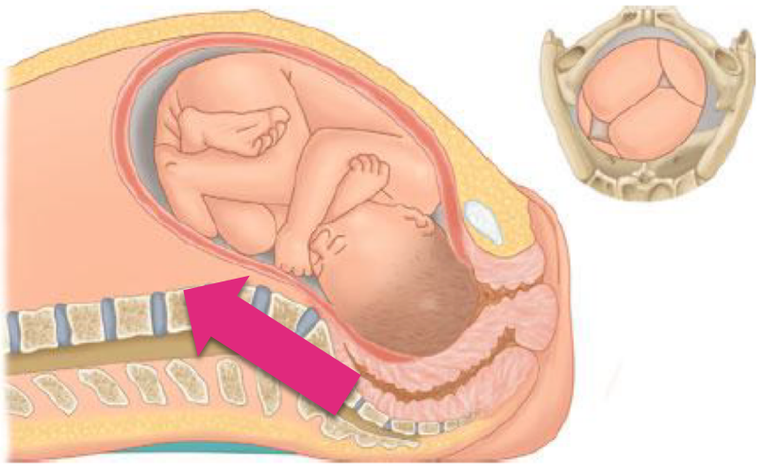
- Extension (delivers head)
- External rotation (restitution)
- Expulsion
  - Delivery of anterior and posterior shoulders



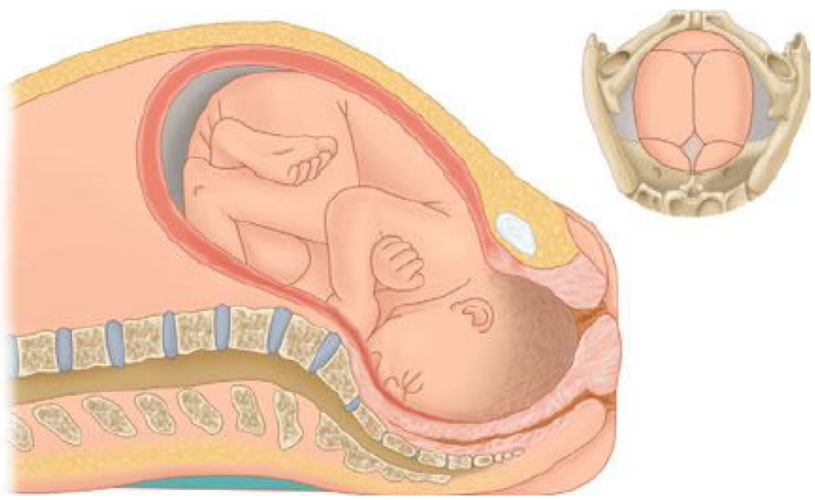
1. Head floating, before engagement



3. Further descent, internal rotation



2. Engagement, descent, flexion



4. Complete rotation, beginning extension

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Cardinal movements of labour and delivery from a left occiput anterior position [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

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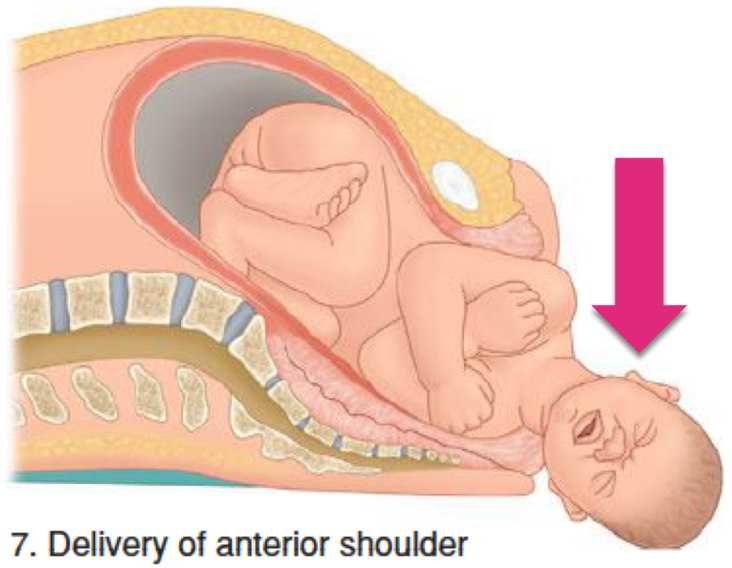
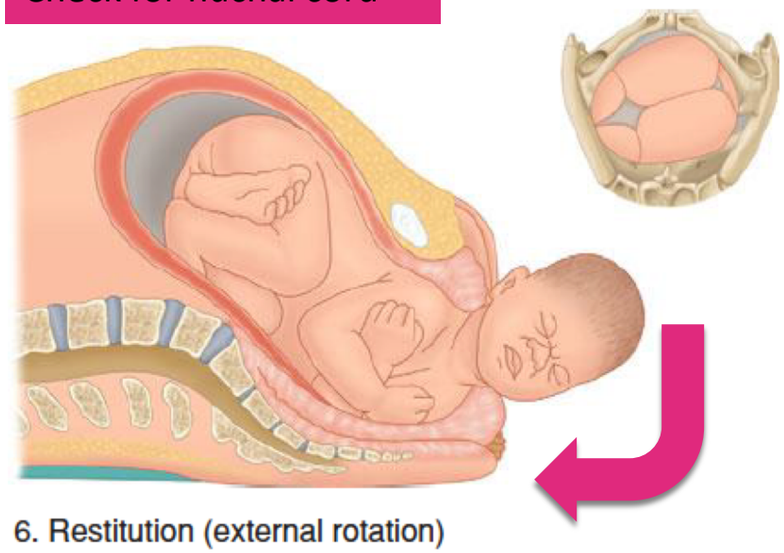
5. Complete extension

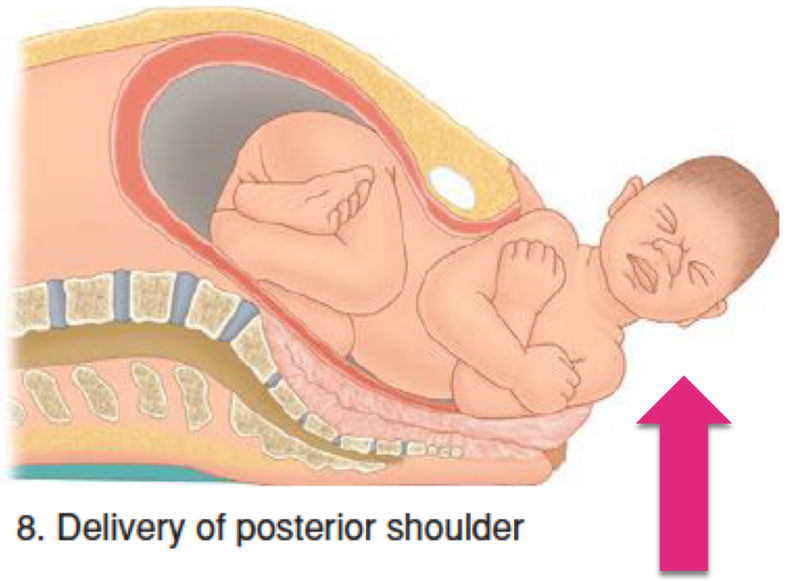


7. Delivery of anterior shoulder

Crowning
Head is delivered
Check for nuchal cord



6. Restitution (external rotation)

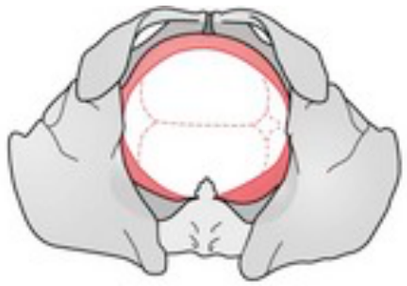


8. Delivery of posterior shoulder

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Cardinal movements of labour and delivery from a left occiput anterior position [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

Cardinal Movements of Labour

Onset of labour



Descent and flexion

Internal rotation: ROT to ROA

Pelvic inlet

Engagement

OT or 45 degree angle

Internal rotation: ROA to OA

Extension complete

External rotation: ROA to ROT

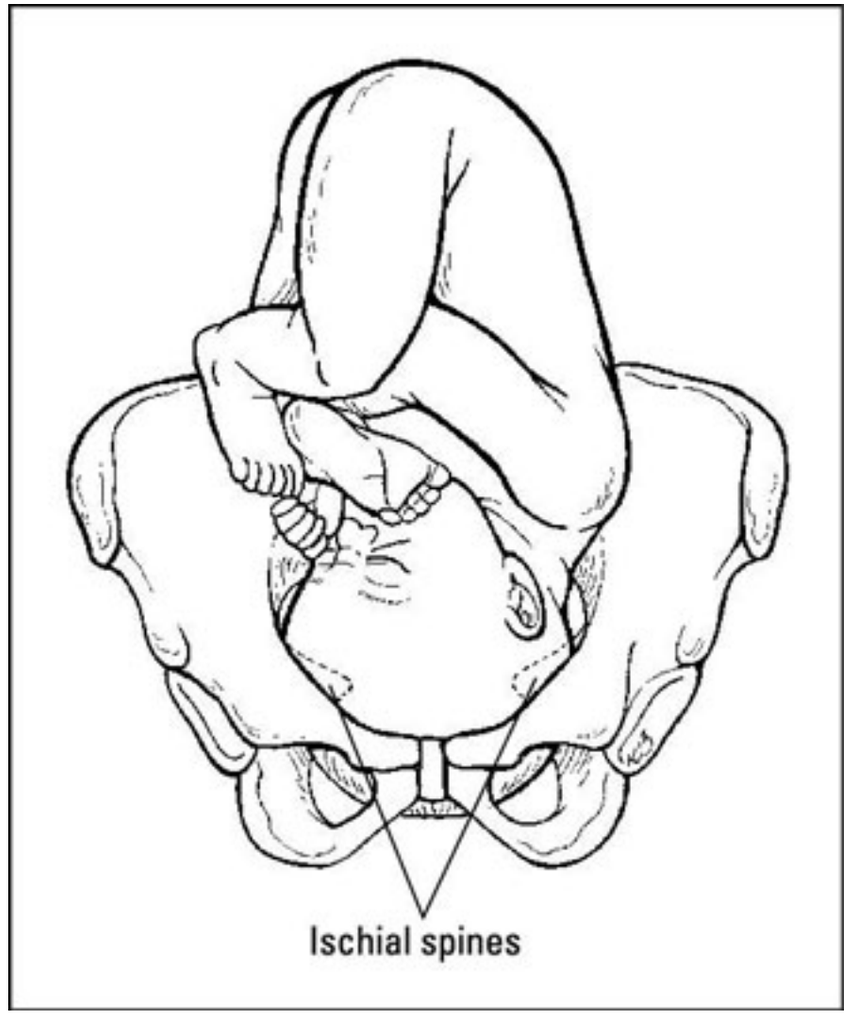
Internal rotation

Direct OA or OP

Lewis, P. (n.d.). Possible outcomes of an occipitoposterior position. The fetal head enters the pelvis with the occiput posteriorly [Digital image]. Retrieved from https://nursekey.com/and-malpresentations/

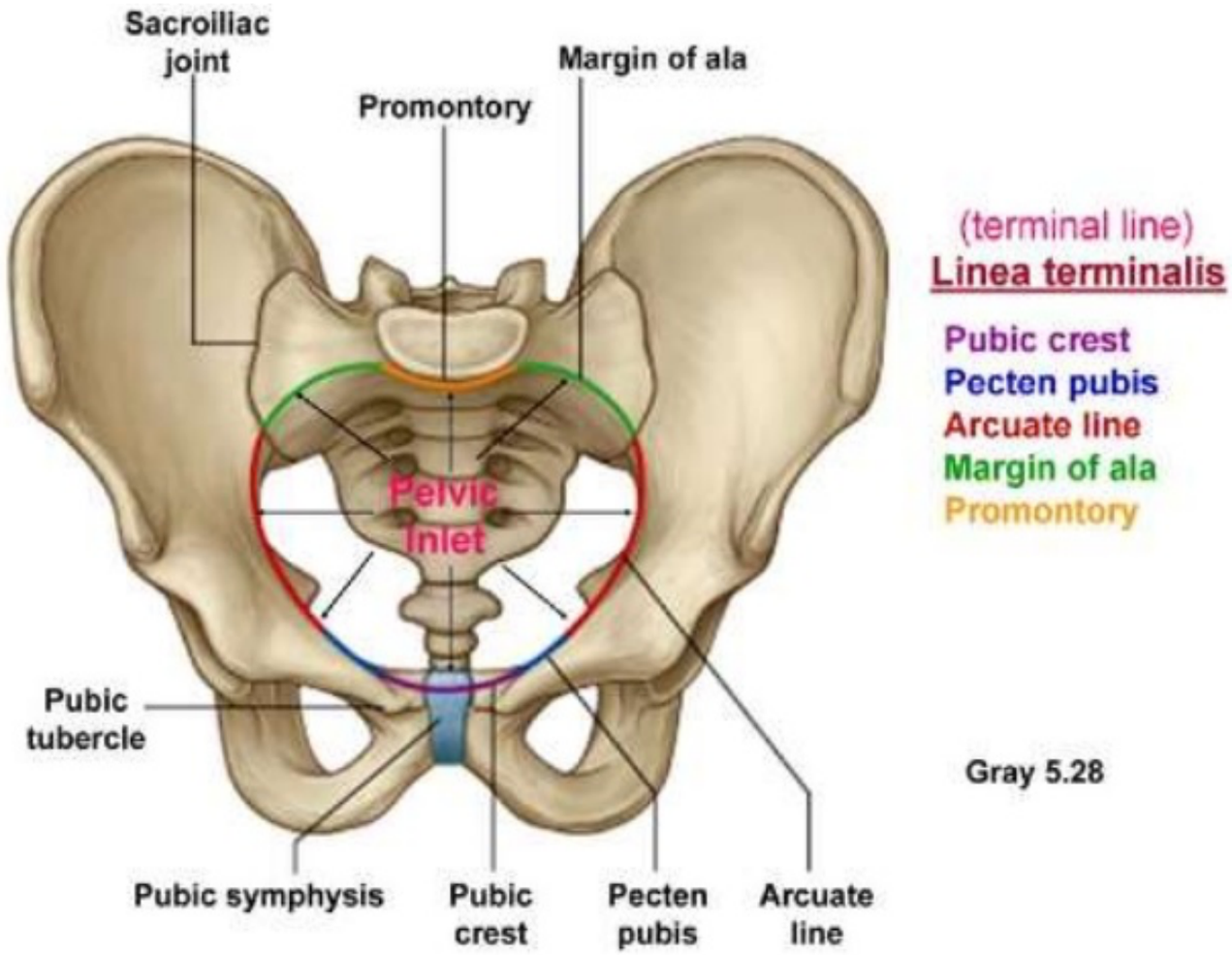
1. Engagement

- BPD passes through pelvic inlet
  - BPD is the greatest transverse diameter
- May occur during last few weeks of pregnancy or during labour
  - Fetal engagement before labour onset does not affect vaginal delivery rates in SOL or IOL
- Fetal head enters pelvis transversely (OT) or obliquely (ROA or LOA)
  - Does not enter pelvis in direct OA or OP
  - To accommodate transverse axis of pelvic inlet



Born, K. (n.d.). [Digital image]. Retrieved from http://www.dummies.com/health/pregnancy/feeling-your-baby-drop-during-the-third-trimester/

The Pelvic Inlet



Gray 5.28

Pelvic Inlet

- Upper opening of true pelvis
- Boundaries: superior border of pubic symphysis, pubic crest on either side, laterally by arcuate lines, posteriorly by sacral promontory

Batch, V. (2010). [Digital image]. Retrieved from https://www.slideshare.net/vedmurkey/the-passage-maternal-pelvis

OT Presentation

- Most commonly, fetus enters pelvic inlet in OT position
  - LOT more common than ROT

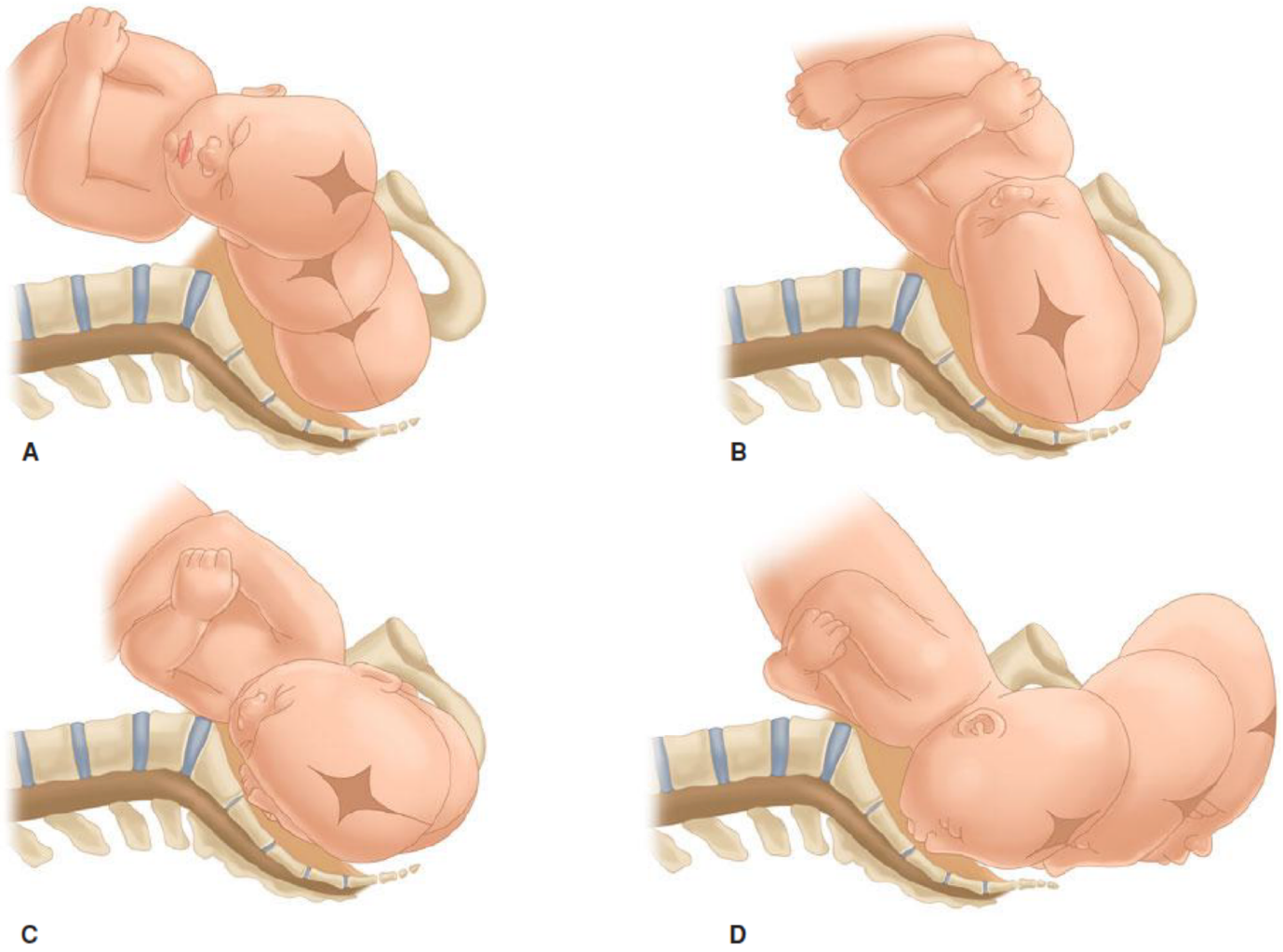


FIGURE 22-15 Mechanism of labor for the left occiput transverse position, lateral view. **A.** Engagement. **B.** After engagement, further descent. **C.** Descent and initial internal rotation. **D.** Rotation and extension.

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Mechanism of labour for the left occiput transeverse position, lateral view [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

OA Presentation

- Fetus enters pelvic inlet at 45 degree angle (ROA or LOA)
  - Does not enter as direct OA

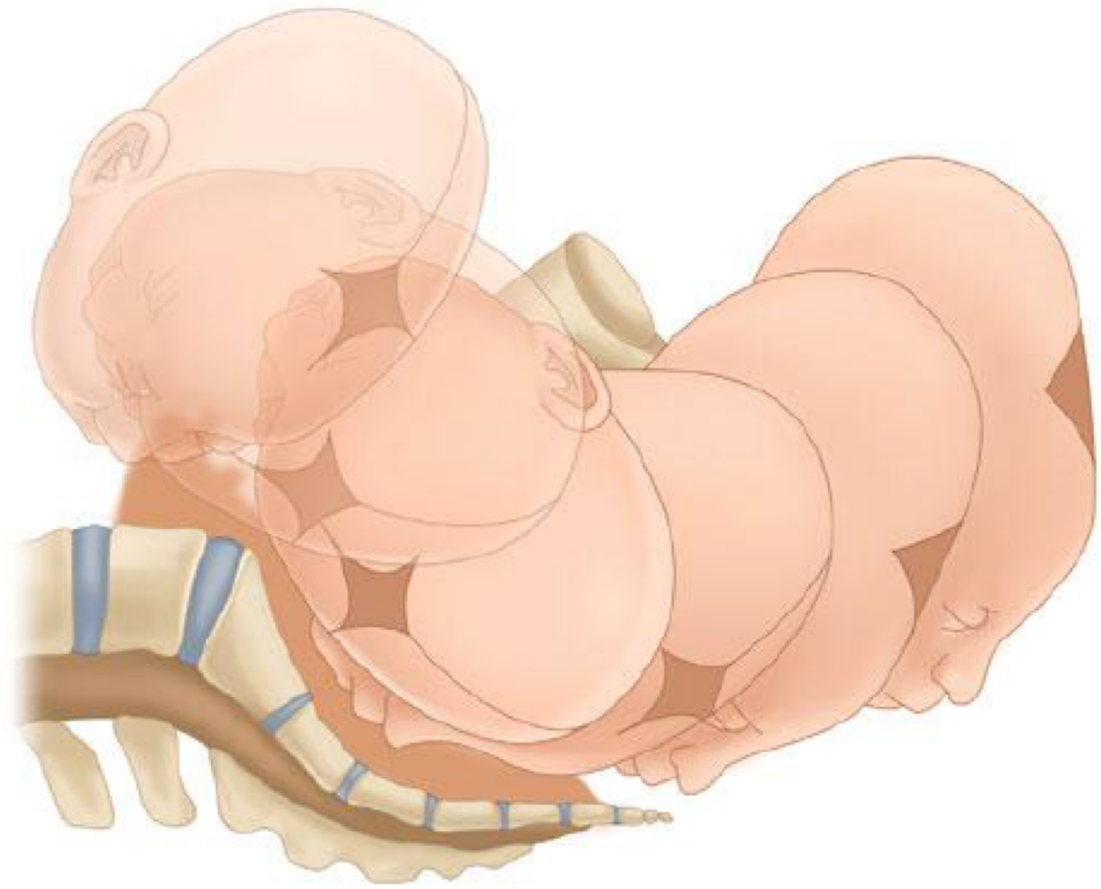


FIGURE 22-16 Mechanism of labor for left occiput anterior position.

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Mechanism of labour from left occiput anterior position [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

OP Presentation

- Fetal head enters pelvic inlet at 45 degree angle
  - Does not enter as direct OP

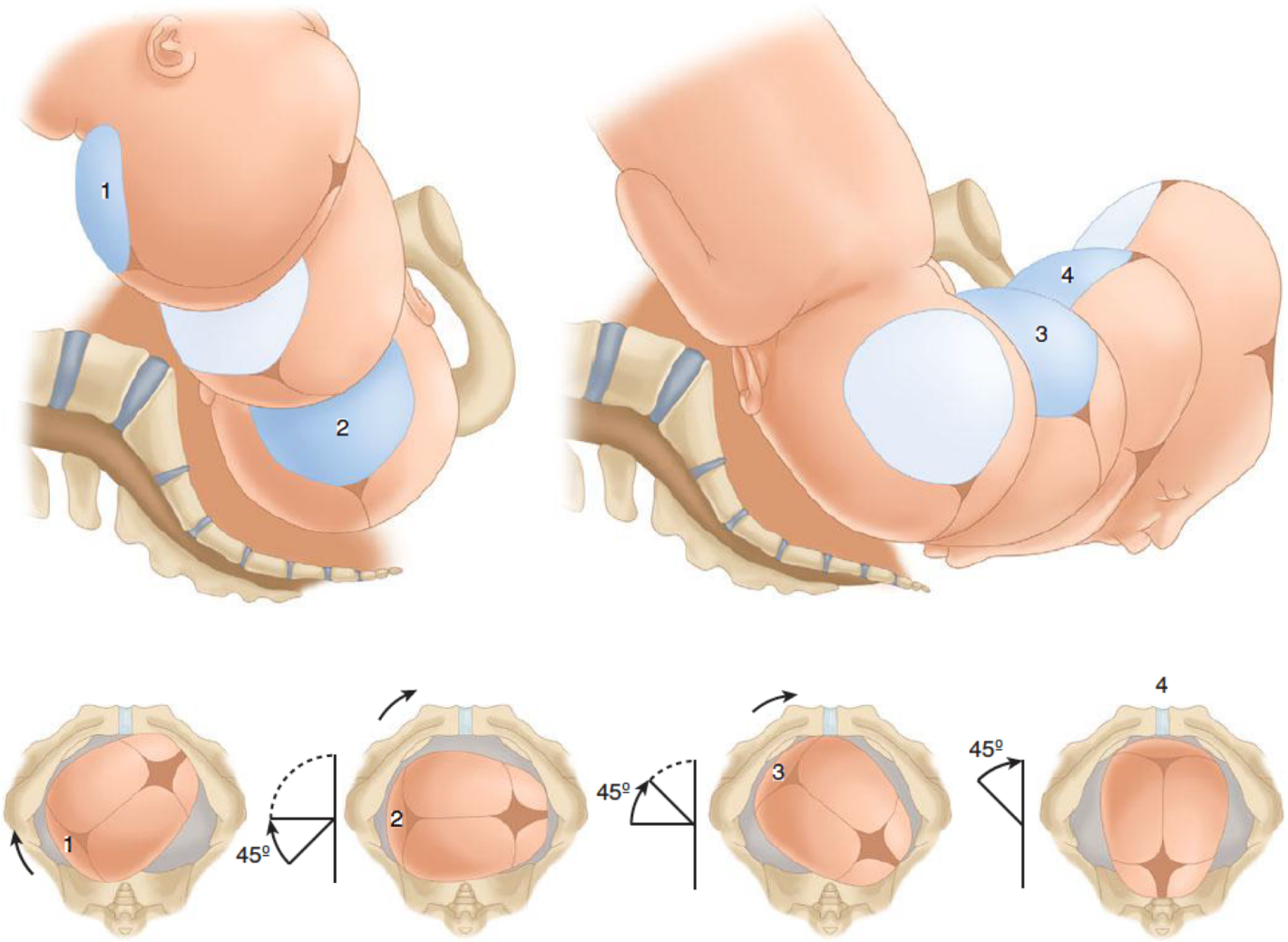


FIGURE 22-17 Mechanism of labor for right occiput posterior position showing anterior rotation.

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Mechanism of labour for right occiput posterior position showing anterior rotation [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

Asynclitism

- **Synclitism-** sagittal suture lies halfway between pubic symphysis and sacral promontory
- **Asynclitism-** sagittal suture deflects anteriorly or posteriorly
  - Mild-moderate asynclitism may be present in normal labour
    - Head shifting from posterior to anterior asynclitism helps with descent
  - Severe asynclitism can cause CPD, even in a normal pelvis

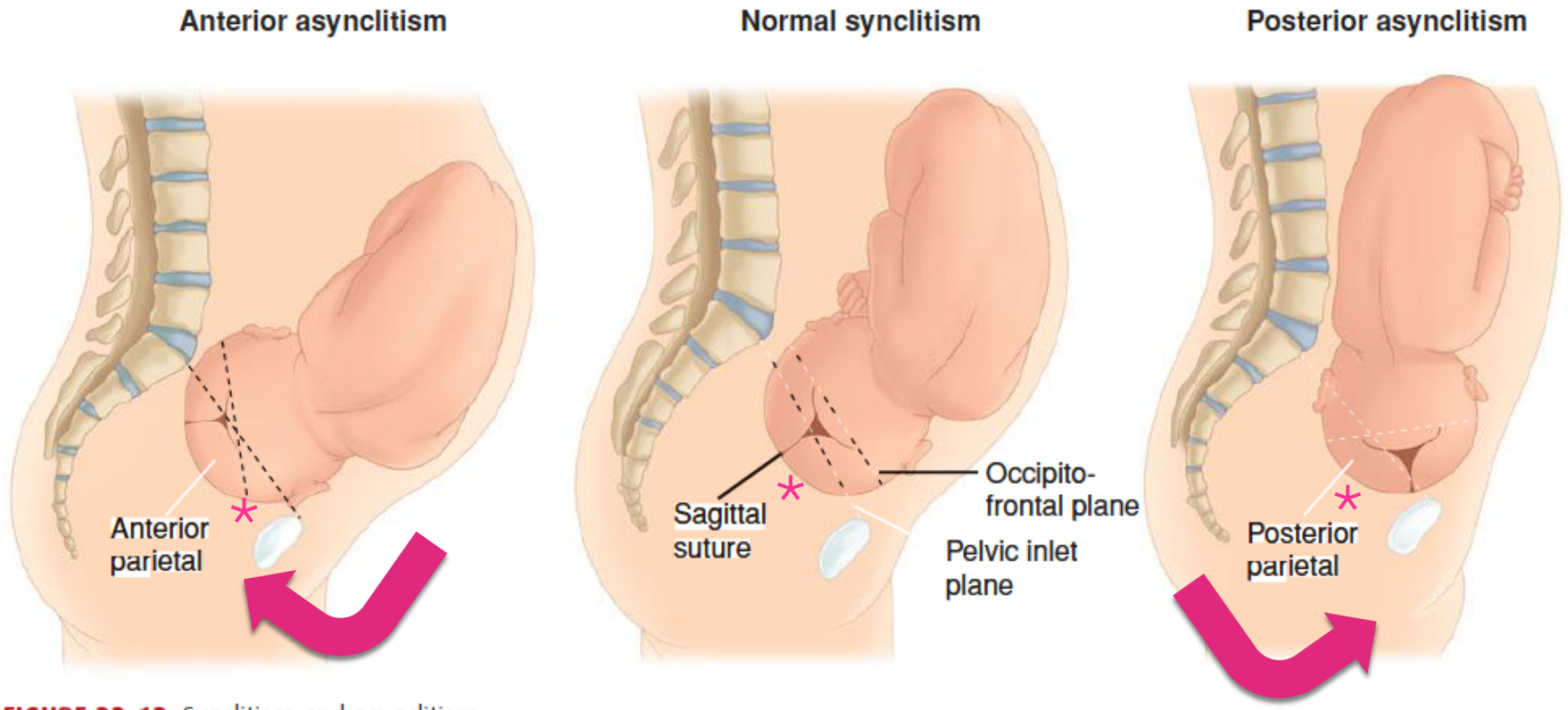


FIGURE 22-12 Synclitism and asynclitism.

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Cynclitism and asynclitism [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

Anterior asynclitism
- Sagittal suture deflects towards sacral promontory

Posterior asynclitism
- Sagittal suture deflects towards pubic symphysis

2. Descent

- Nulliparas: descent occurs during 2nd stage
- Multiparas: descent usually begins with engagement

Occurs due to

- Pressure of amniotic fluid
- Direct pressure on the breech by the fundus during contractions
- Bearing-down of maternal abdominal muscles
- Extension and straightening of fetal body

3. Flexion

- Due to resistance from the cervix, pelvic walls, or pelvic floor
- Chin is brought towards the chest
  - Shifts from longer **occipitofrontal diameter (12cm)** to shorter **suboccipitobregmatic diameter (9.5cm)**

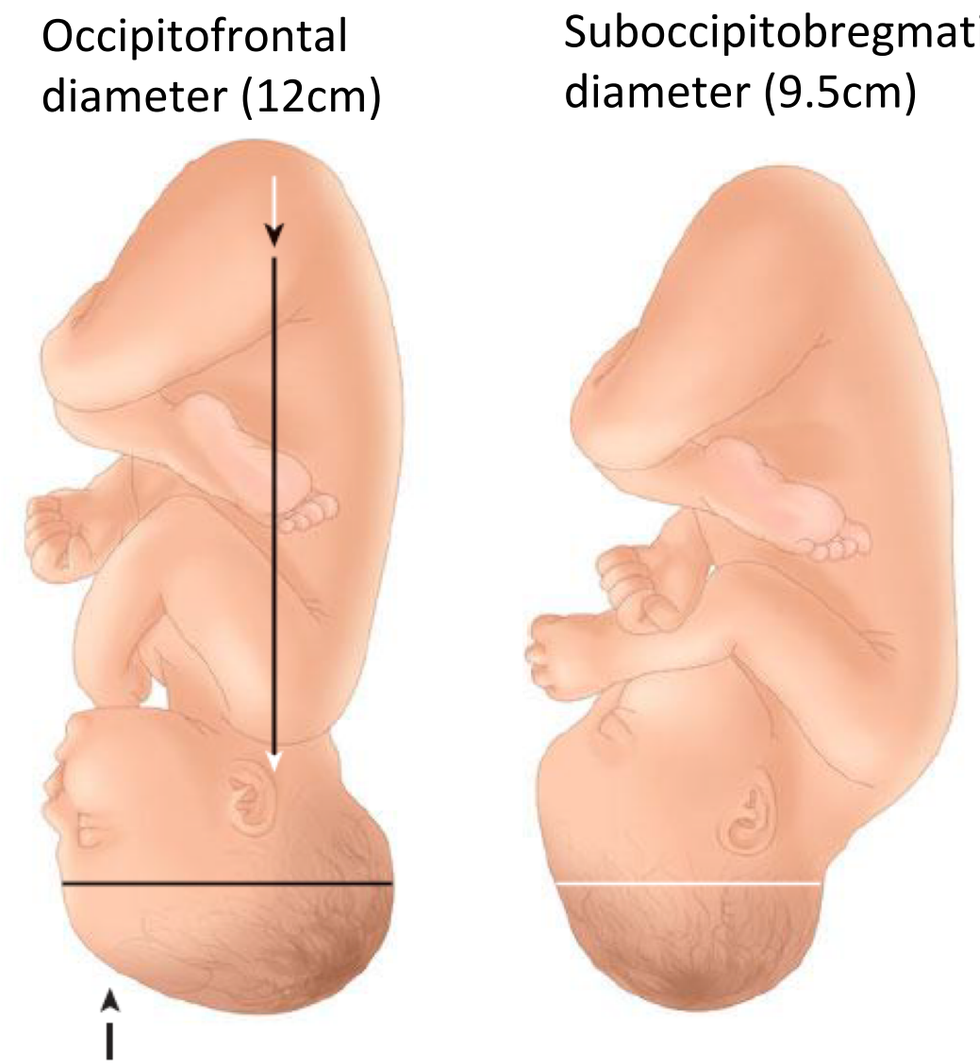


FIGURE 22-13 Lever action produces flexion of the head. Conversion from occipitofrontal to suboccipitobregmatic diameter typically reduces the anteroposterior diameter from nearly 12 to 9.5 cm.

Cunningham, F., Leveno, K., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). Lever action produces flexion of the head. Conversion from occipitofrontal to suboccipitobregmatic diameter typically reduces the anteroposterior diameter from nearly 12 to 9.5cm [Digital image]. Retrieved from https://accessmedicine.mhmedical.com/content.aspx?legacysectionid=p9780071798938-ch022

4. Internal Rotation

- Moves occiput away from transverse axis
- Rotates into direct OA position (more common) or direct OP
- Timing
  - In 2/3 of pts, completed by the time the head reaches the pelvic floor
  - In ¼, shortly after head reaches the pelvic floor
    - Nulliparas: rotates in the next 3-5 contractions after reaching pelvic floor
    - Multiparas: rotates in the next 1-2 contractions
- 5%- internal rotation does not occur

5. Extension

- Due to resultant vector in the direction of introitus
  - 1. Force exerted by the uterus acting posteriorly
  - 2. Force from pelvic floor and pubic symphysis, acts anteriorly
- Immediately after delivery of the head, the chin drops downwards to lie over maternal anus

6. External Rotation (aka Restitution)

- Occiput and fetal body rotate into transverse position → rotates bisacromial diameter
  - If occiput was originally directed left → rotates towards L ischial tuberosity
  - If occiput was originally directed right → rotates towards R ischial tuberosity
  - Movement is brought on the same pelvic factors that produced internal rotation

7. Expulsion

- Delivery of anterior and posterior shoulders
- The rest of the body passes quickly

References

Cunningham, F., Leveno, K., Bloom, S., Spong, C., Dashe, J., Hoffman, B., & Casey, B. (2018). *William's obstetrics* (25th ed.). New York: McGraw-Hill Education.