Cardinal movements of labor

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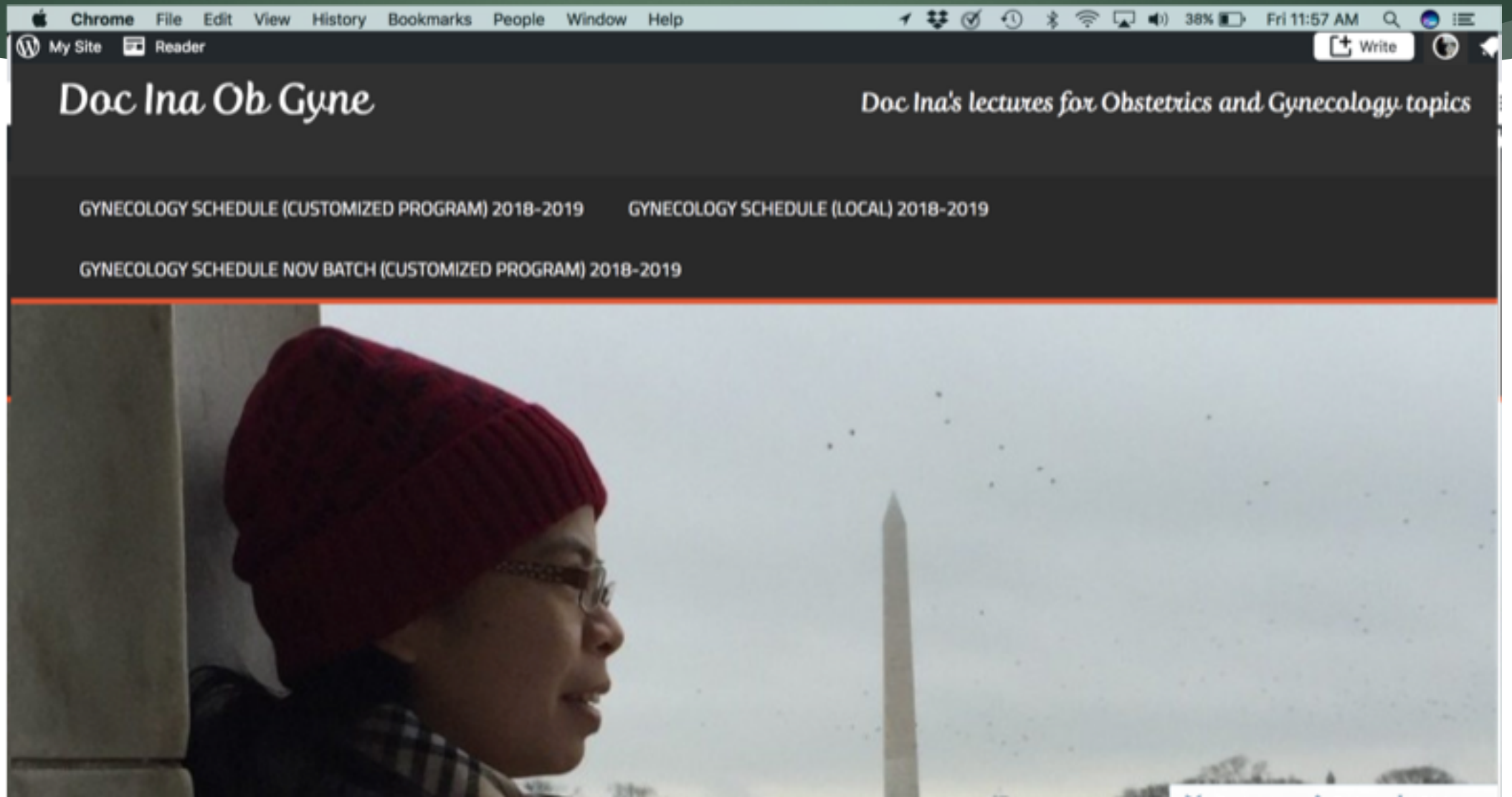
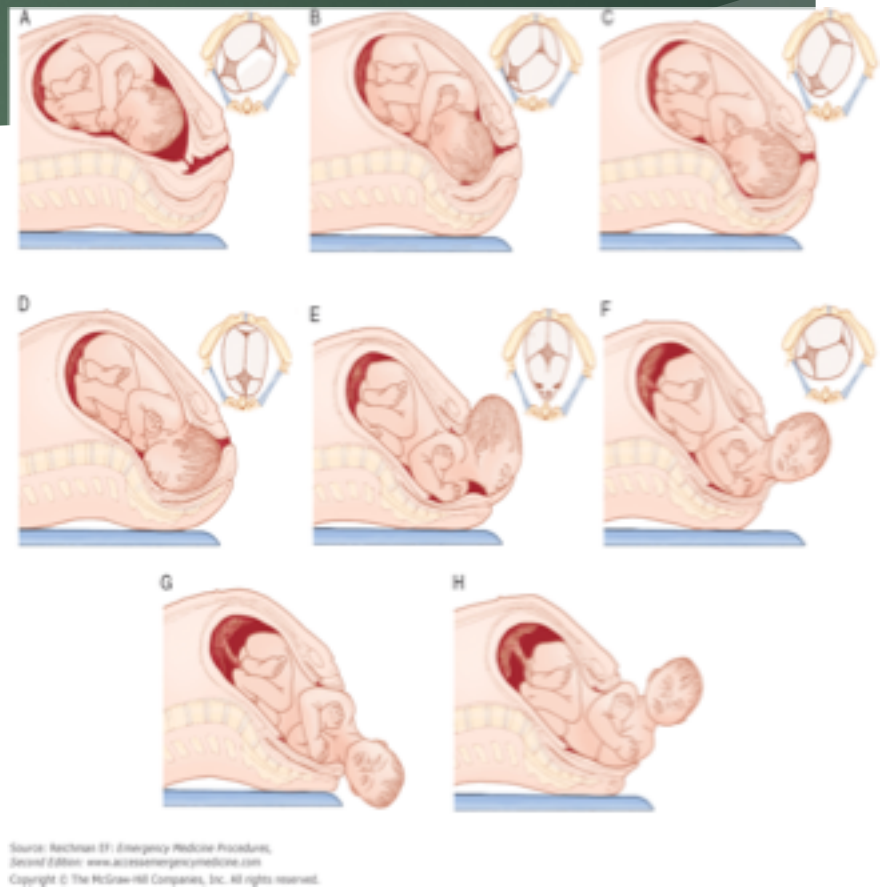


Reference

- Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, Sheffield JS (eds).William's Obstetrics 24th edition; 2014; chapter 22 Normal Labor

Cardinal movements of labor

- the cardinal movements of labor are engagement, descent, flexion, internal rotation, extension, external rotation, and expulsion
- During labor, these movements not only are sequential but also show great temporal overlap.



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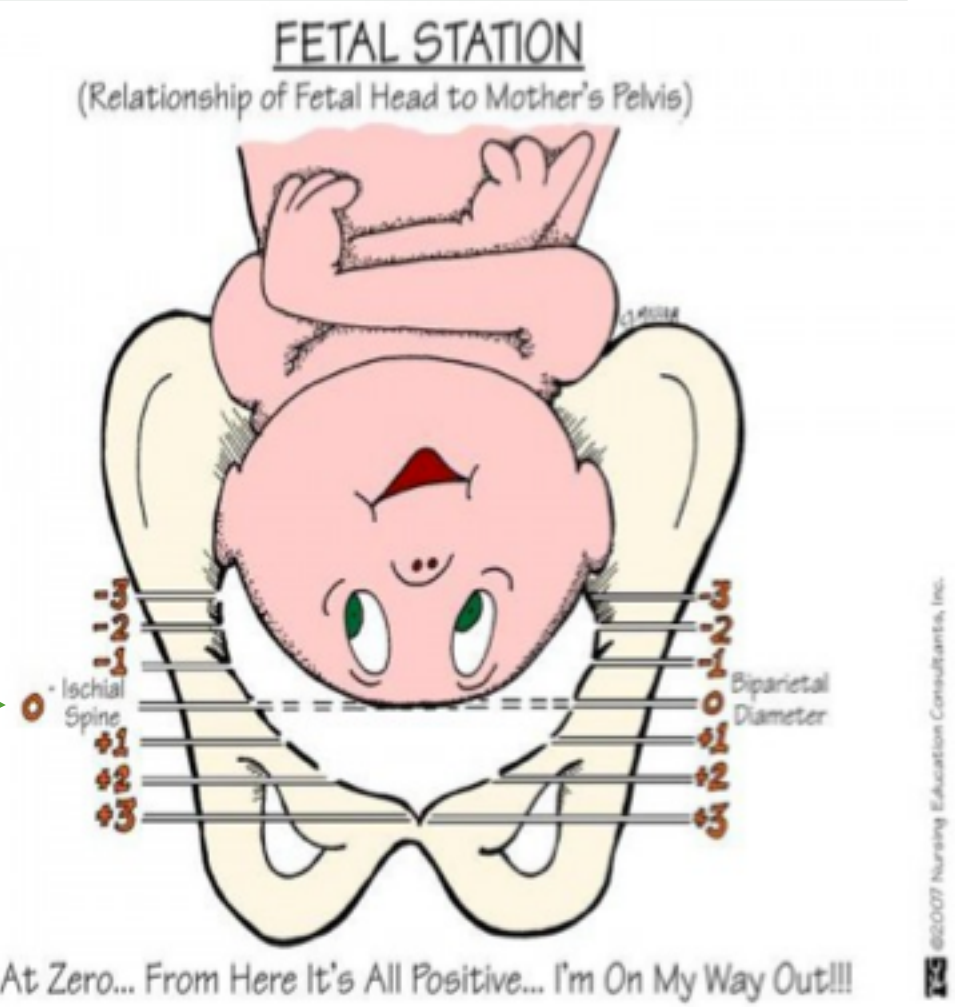
Engagement

- mechanism by which the **biparietal diameter**—the greatest transverse diameter in an occiput presentation—passes through the pelvic inlet (station 0)
- the fetal head may engage during the last few weeks of pregnancy or not until after labor commencement.
- If the fetal head is freely movable above the pelvic inlet, the head is sometimes referred to as **"floating."** *(unengaged)*
- A normal-sized head usually does not engage with its sagittal suture directed anteroposteriorly. Instead, the fetal head usually enters the pelvic inlet either transversely or obliquely.



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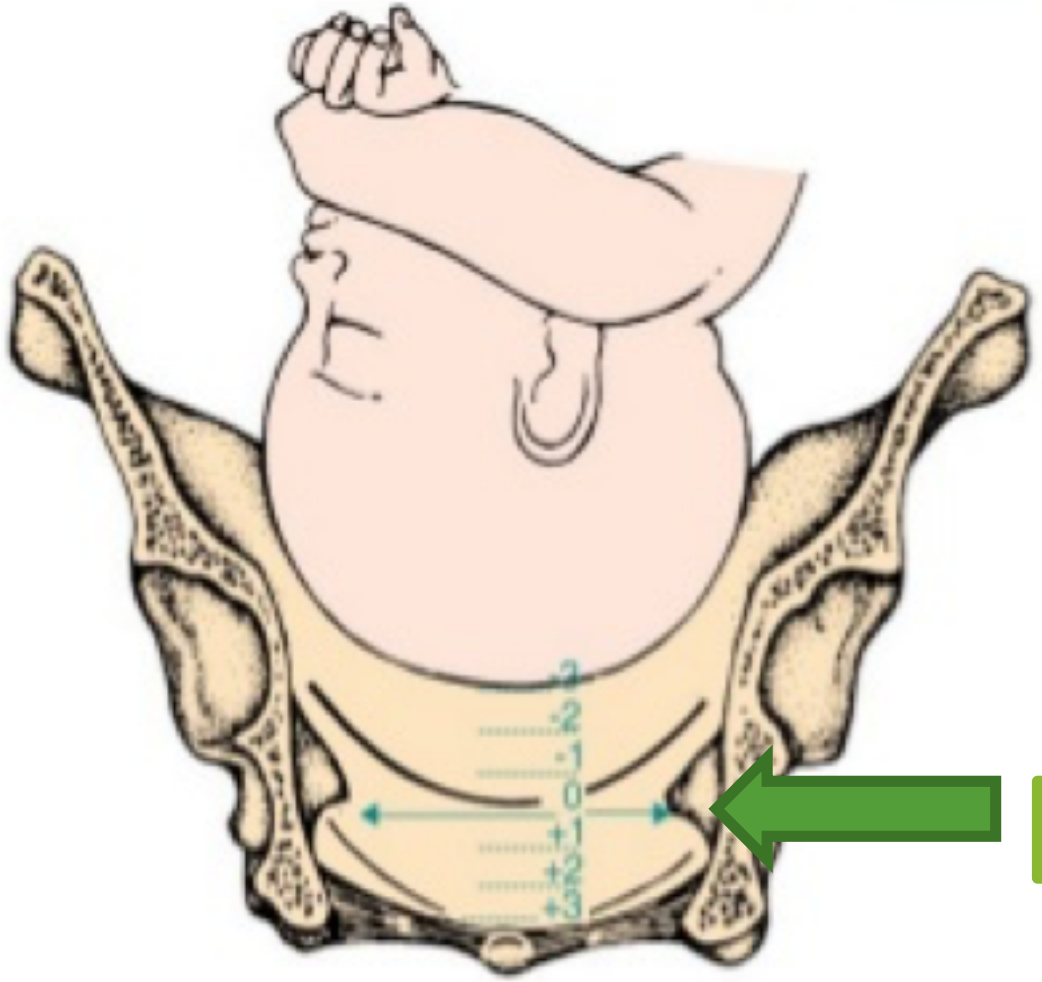
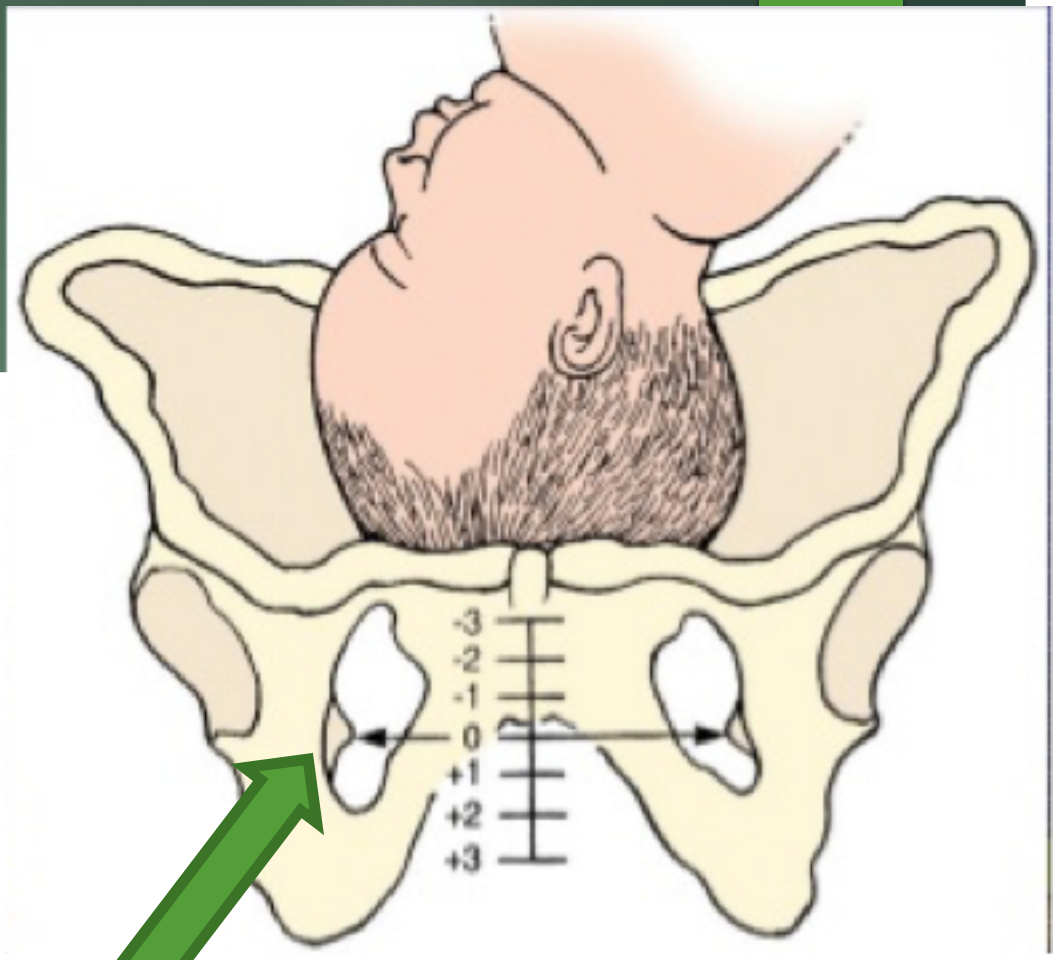
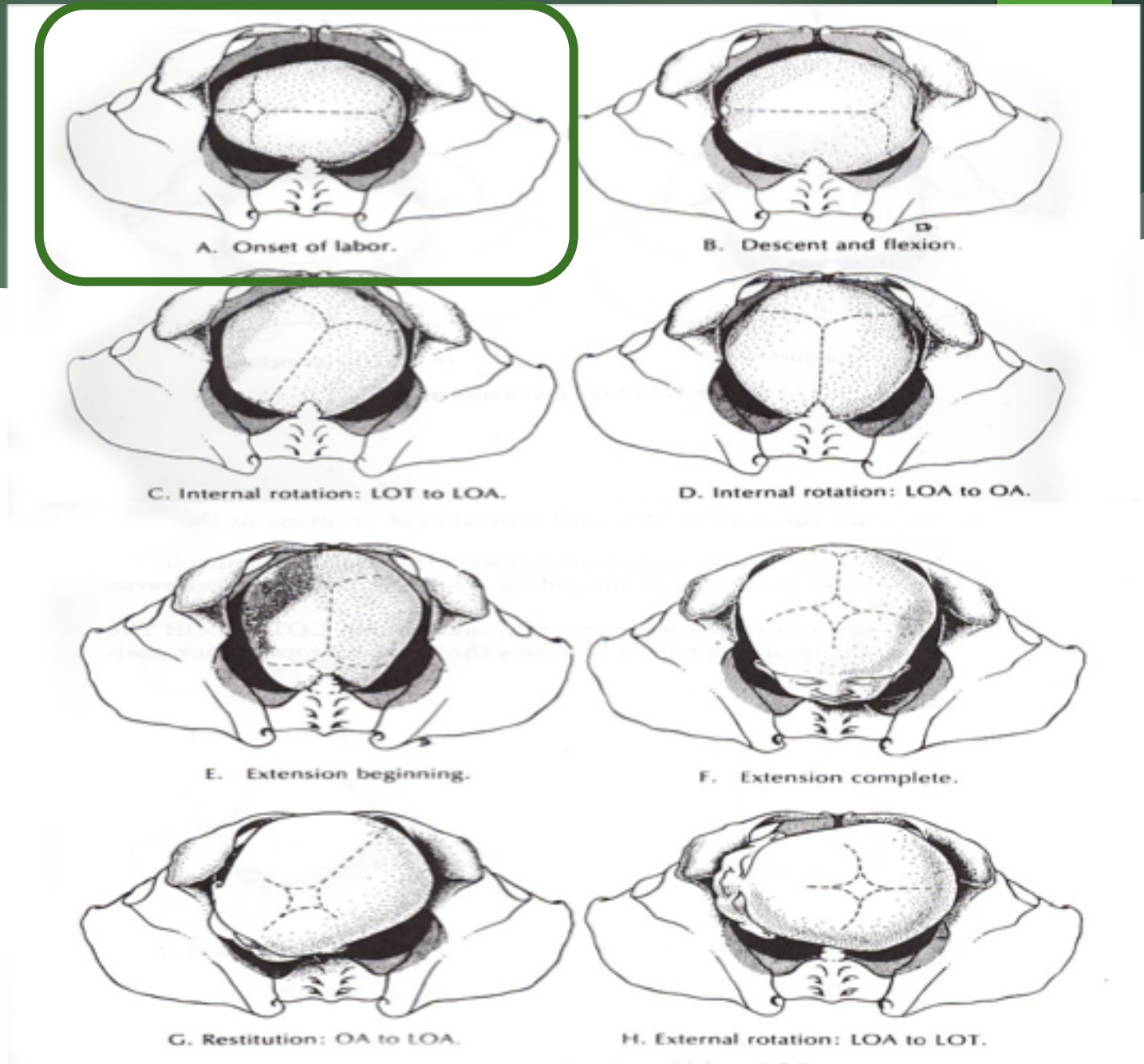
Engagement





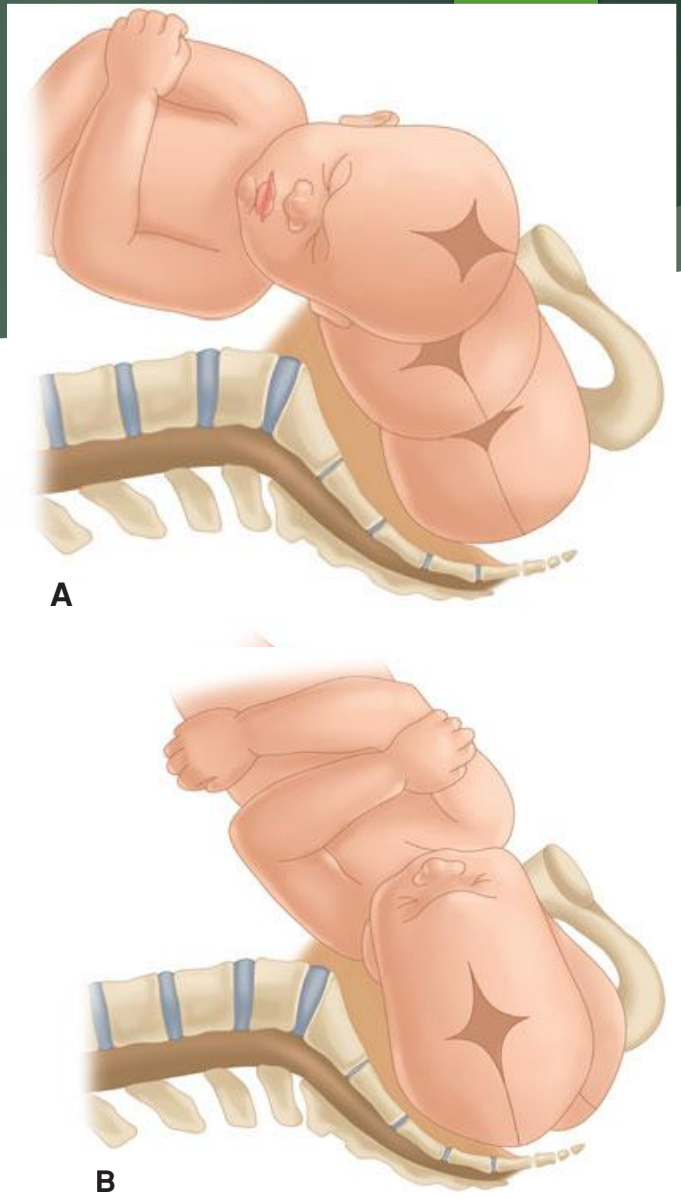
Station 0 = level of ischial spines

Engagement: fetal position



DESCENT

- this movement is the first requisite for birth of the newborn.
- In nulliparas, engagement 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.



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FLEXION

- *As soon as the descending head meets resistance*, whether from the cervix, pelvic walls, or pelvic floor, *it normally flexes.*
- With this movement, the chin is brought into more intimate contact with the fetal thorax, and the appreciably shorter suboccipitobregmatic diameter is substituted for the longer occipitofrontal diameter

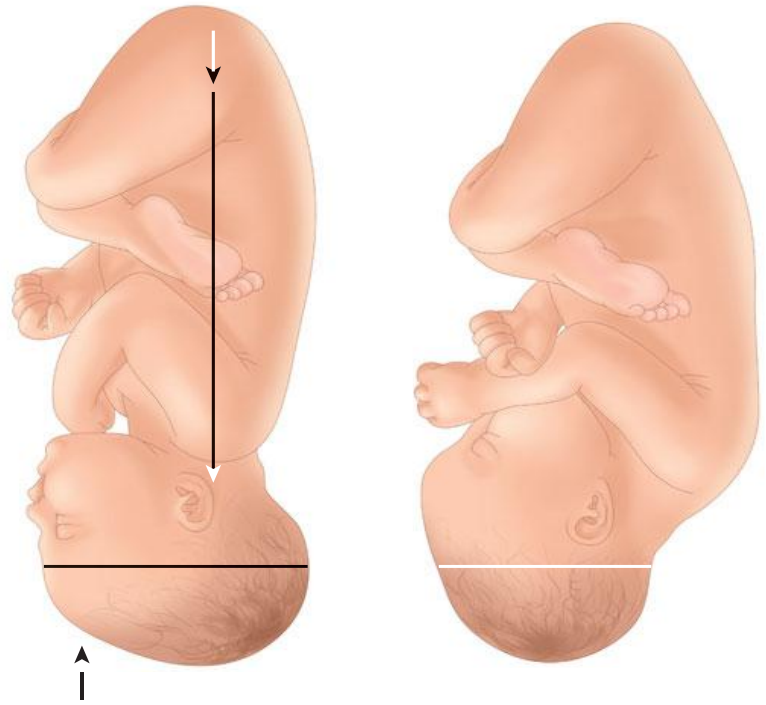

FIGURE 22-13 Lever action produces flexion of the head. Conversion from occipitofrontal to suboccipitobregmatic diameter typically reduces the anteroposterior diameter from nearly 12 to 9.5 cm.

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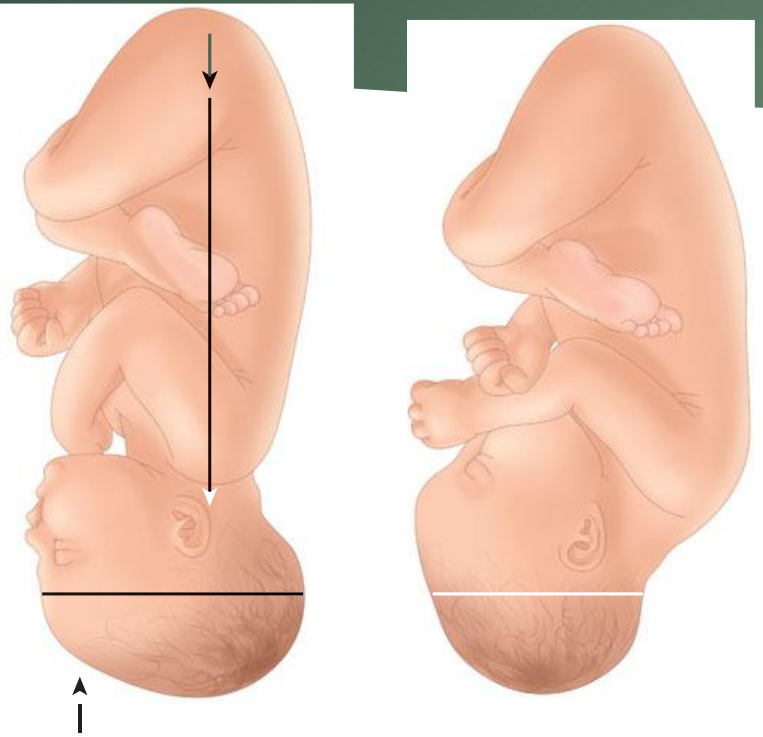
Flexion



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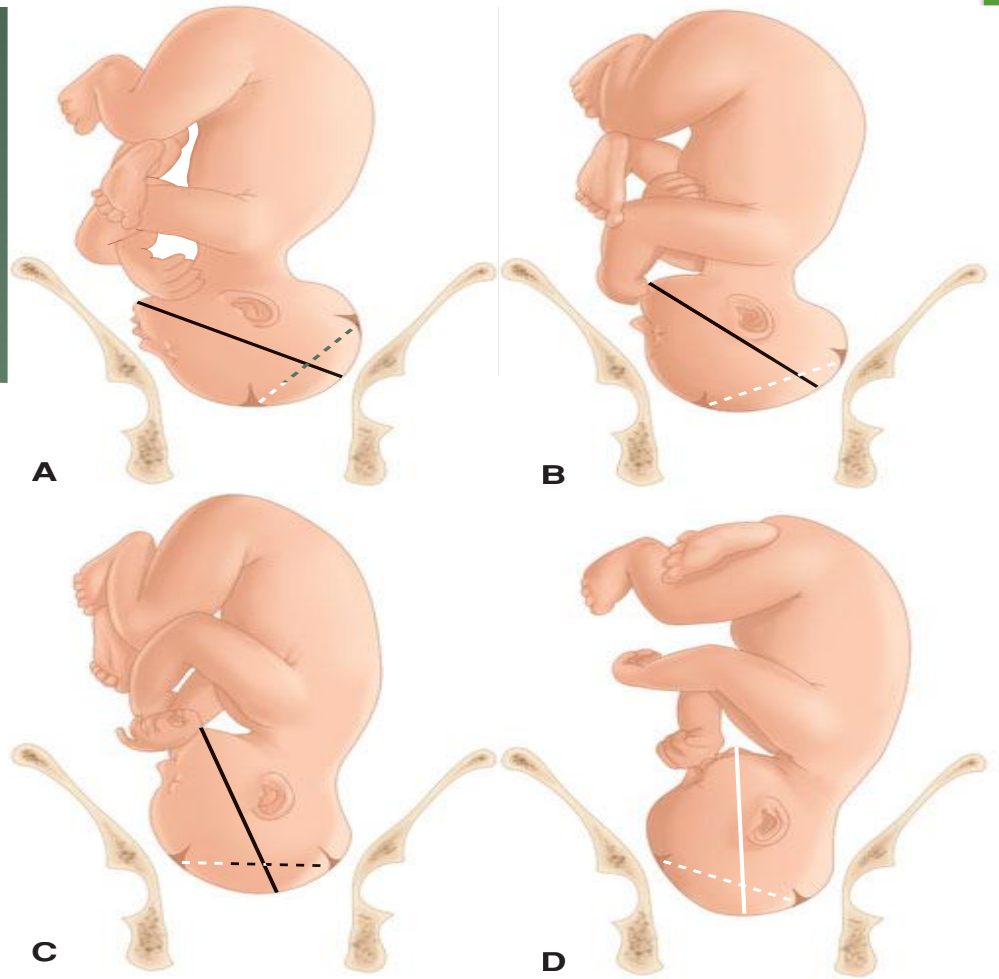

FIGURE 22-14 Four degrees of head flexion. The solid line represents the occipitomental diameter, whereas the broken line connects the center of the anterior fontanel with the posterior fontanel. **A.** Flexion poor. **B.** Flexion moderate. **C.** Flexion advanced. **D.** Flexion complete. Note that with complete flexion, the chin is on the chest. The suboccipitobregmatic diameter, the shortest anteroposterior diameter of the fetal head, is passing through the pelvic inlet.

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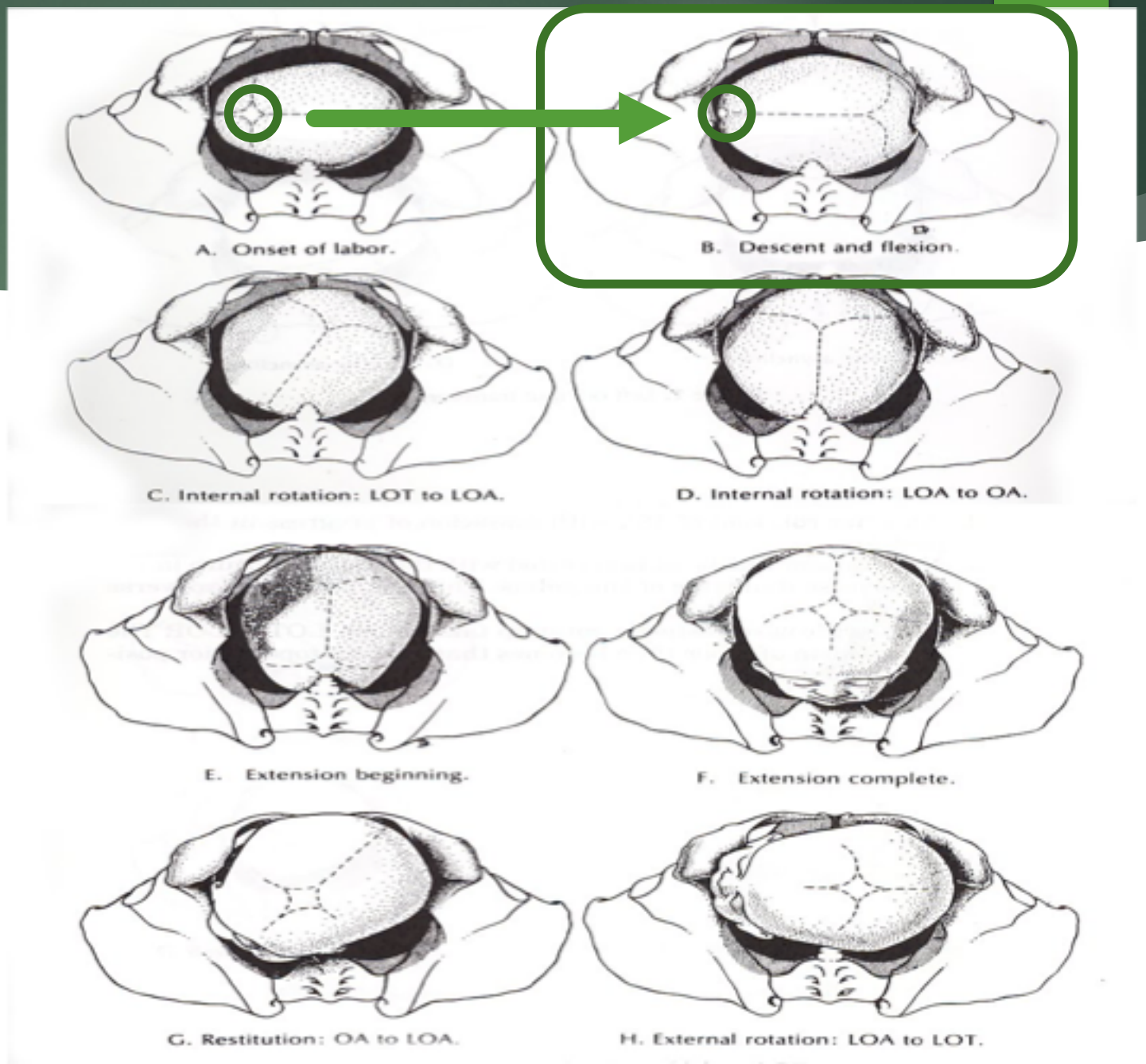
Flexion: fetal position



Internal Rotation

- this movement consists of turning of the head in such a manner that the occiput gradually moves toward the symphysis pubis anteriorly from its original position or, less commonly, posteriorly toward the hollow of the sacrum
- Internal rotation is essential for completion of labor, except when the fetus is unusually small.

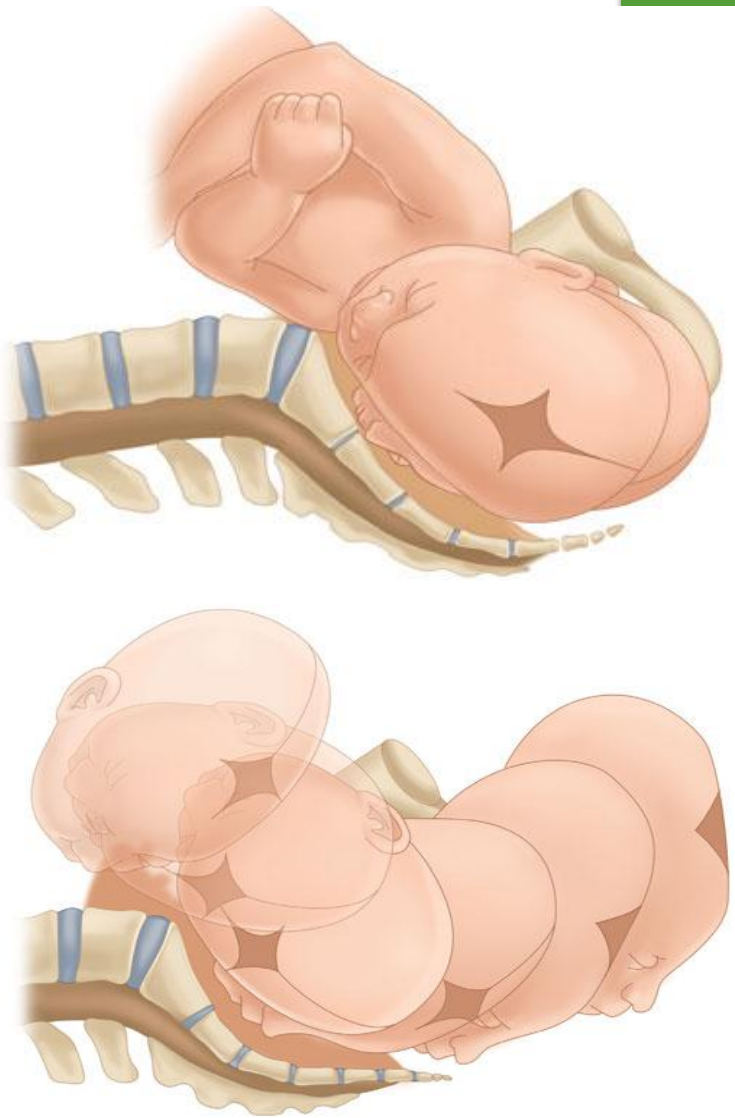


FIGURE 22-16 Mechanism of labor for left occiput anterior position.

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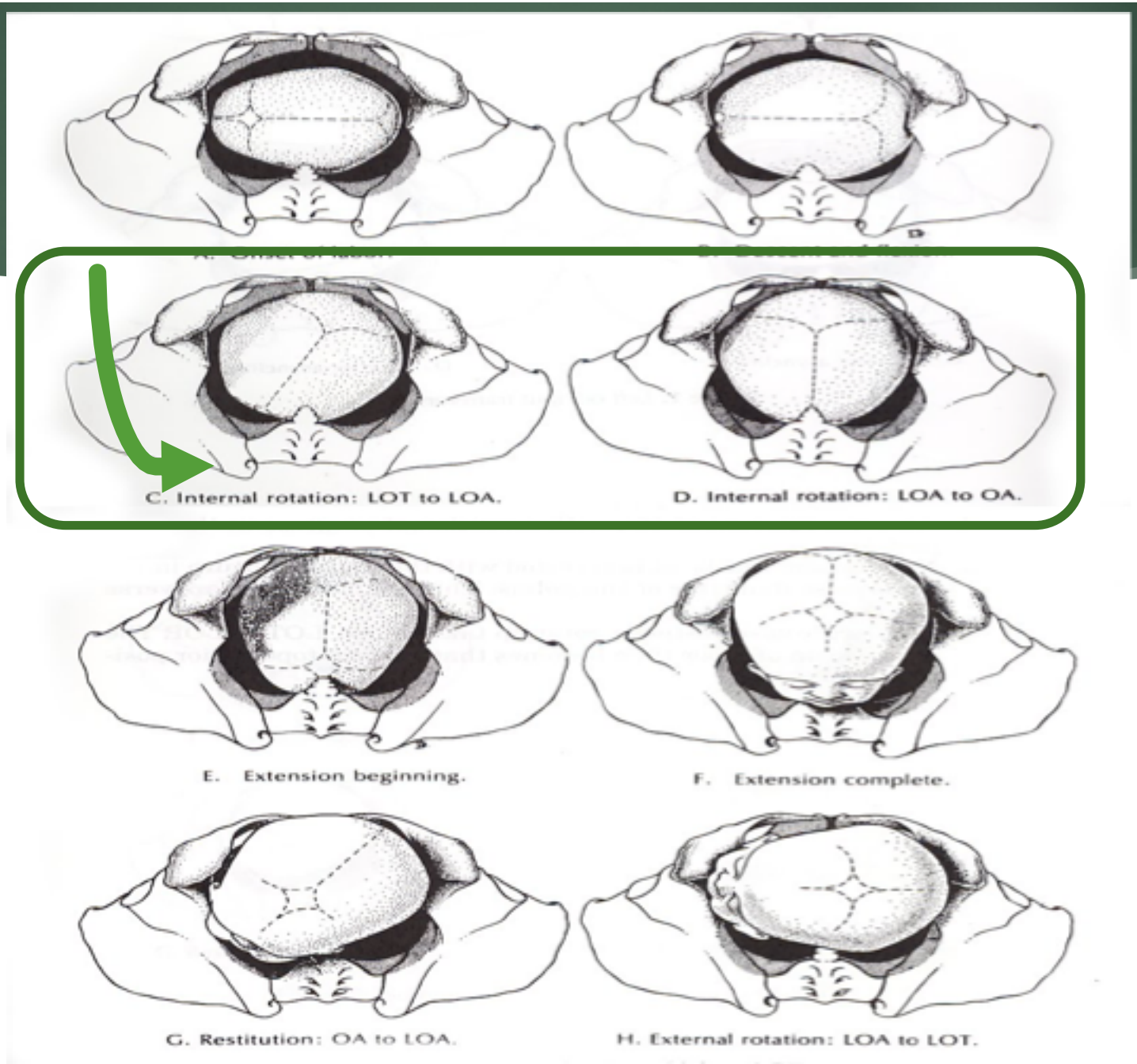
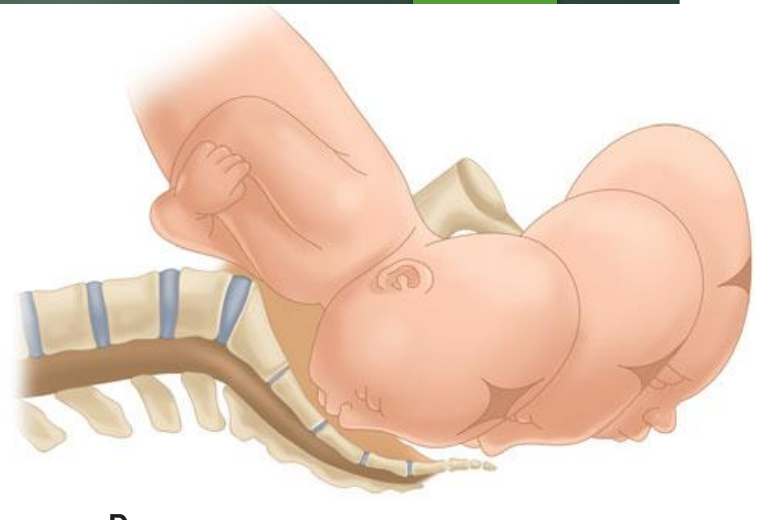
Internal rotation: fetal position



Extension

- After internal rotation, the sharply flexed head reaches the vulva and undergoes extension.
- When the head presses on the pelvic floor, 2 forces come into play:
  1. first force is exerted by the uterus and acts more posteriorly
  2. Second force is supplied by the resistant pelvic floor and the symphysis, and acts more anteriorly.
  - the resultant vector force is in the direction of the vulvar opening, thereby causing head extension.
  - this brings the base of the occiput into direct contact with the inferior margin of the symphysis pubis
  - Immediately after its delivery, the head drops downward so that the chin lies over the maternal anus.



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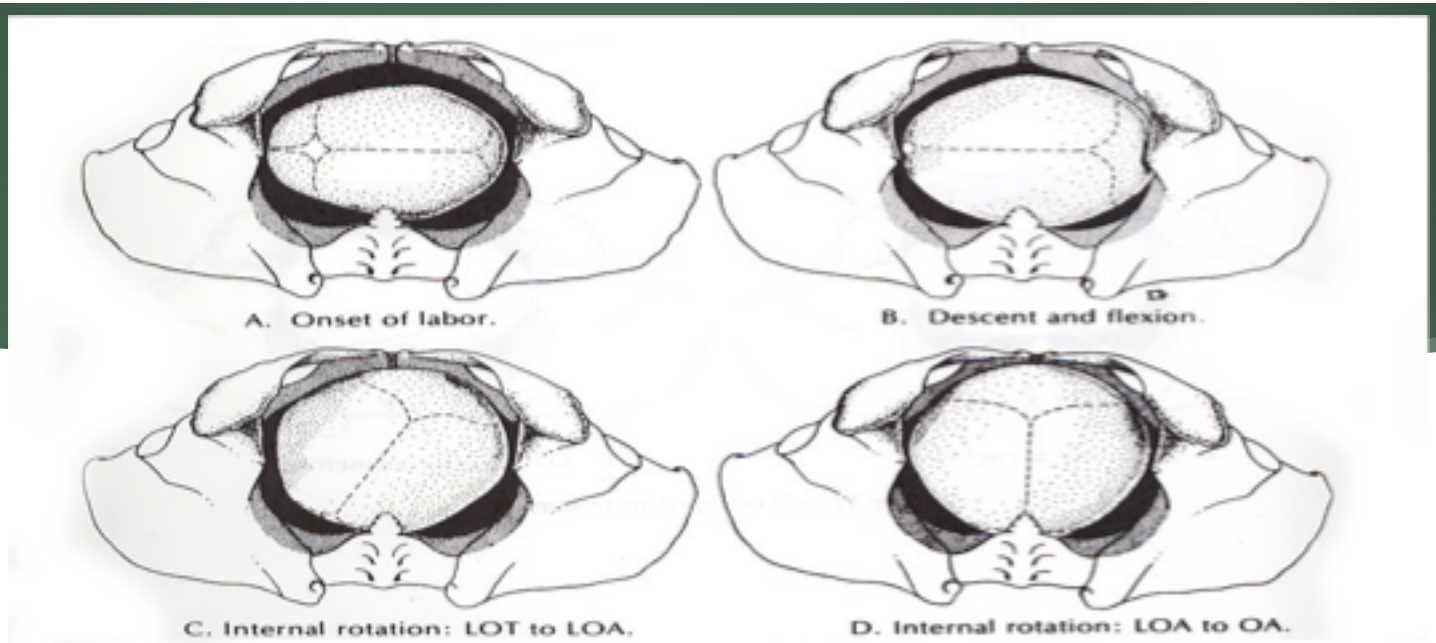
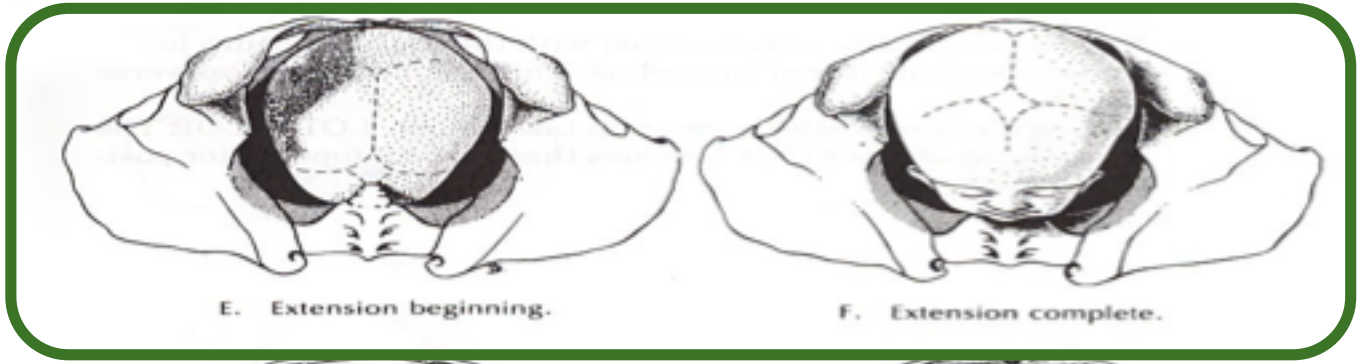
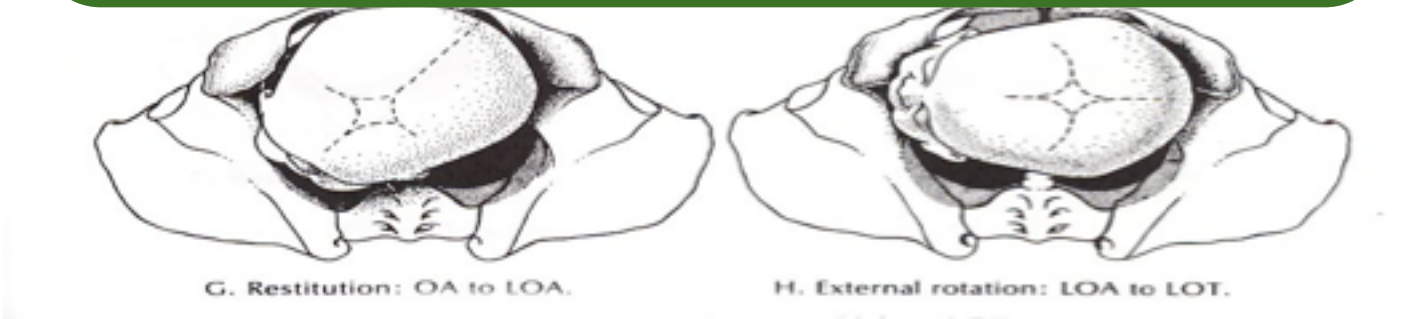
Extension: fetal position

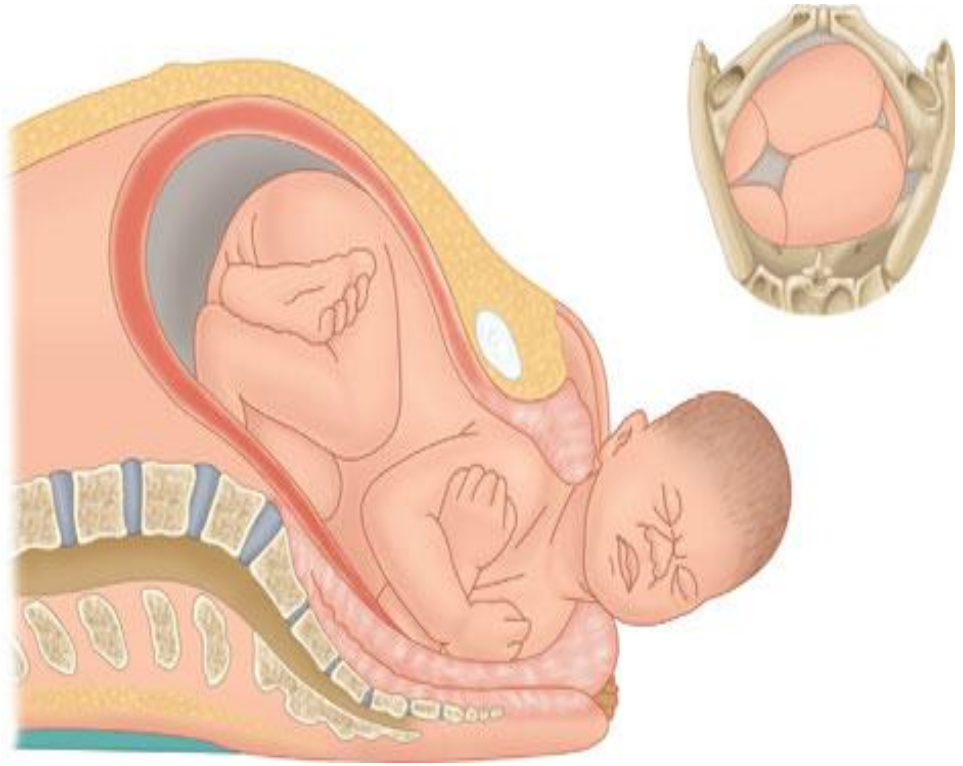






External Rotation (Restitution)

- 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.
- Restitution of the head to the oblique position is followed by external rotation completion to the transverse position.
- this movement corresponds to rotation of the fetal body to bring its bisacromial diameter into relation with the anteroposterior diameter of the pelvic outlet.
- thus, one shoulder is anterior behind the symphysis and the other is posterior.



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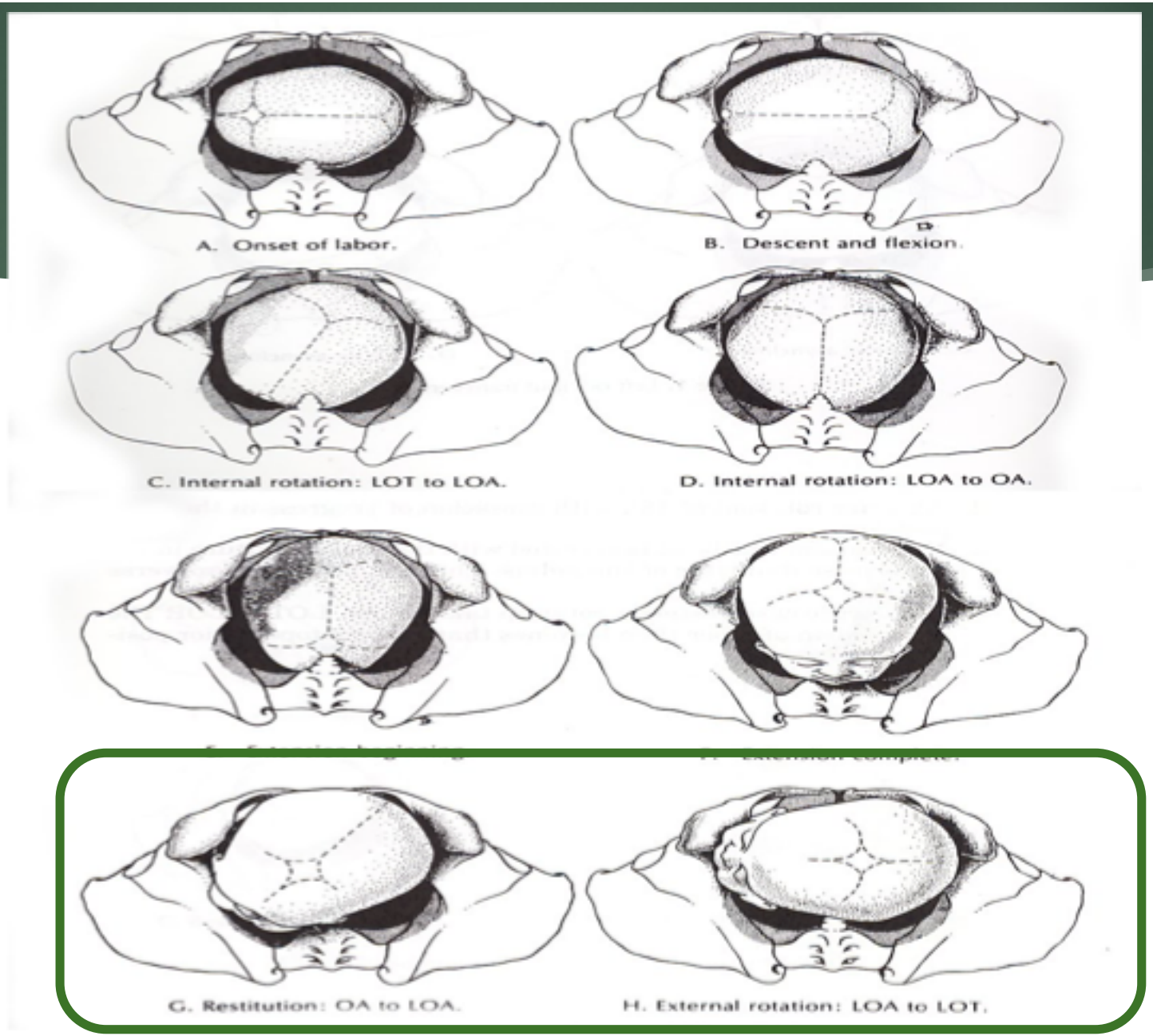
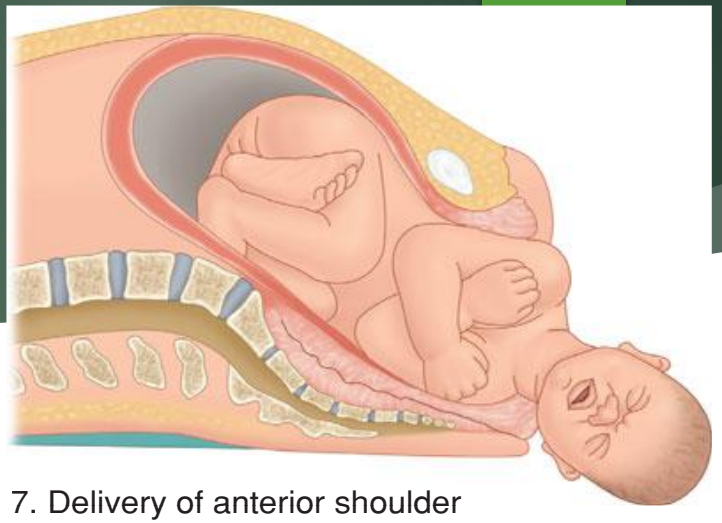
External rotation: fetal position

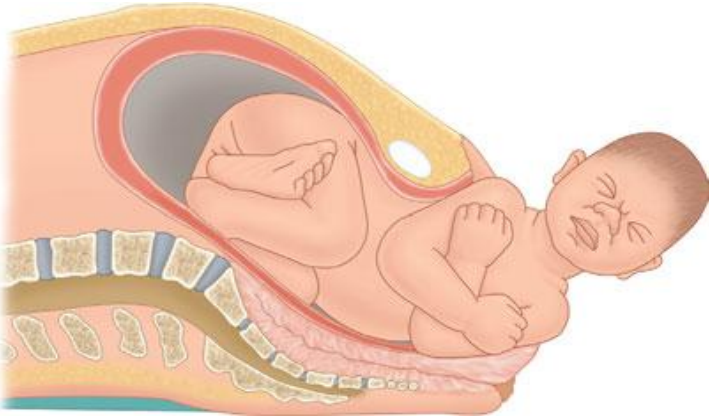


Expulsion

- 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.



7. Delivery of anterior shoulder



8. Delivery of posterior shoulder

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Summary

- Cardinal Movements of Labor

1. Engagement
2. Descent
3. Flexion
4. Internal Rotation
5. Extension
6. External Rotation (Restitution)
7. Expulsion

Thank you!

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