Physiology of second stage of labour

Second stage of labour

- It starts from the full dilation of the cervix and ends with expulsion of fetus from the birth canal.
- It has got two phases

1. Propulsive phase-starts from full dilatation upto the descent of the presenting part to the pelvic floor
2. Expulsive phase- is distinguished by maternal bearing down efforts and ends with delivery of the baby.

- Average duration is 2 hours in primigravida and 1 hour in multipara.

Uterine action

- Contractions become stronger and longer but may be less frequent, allowing both mother and fetus regular recovery periods.
- The membrane often rupture spontaneously towards the end of the first stage or during transition to the second stage.
- The consequent drainage of liquor allows the hard, round fetal head to be directly applied to the vaginal tissues. This pressure aids distension.
- Fetal axis pressure increases flexion of the head, which results in smaller presenting diameters, more rapid progress and less trauma to both mother and fetus.

Uterine action continued

- The contraction becomes expulsive as the fetus descends further into the vagina.
- Pressure from the presenting part stimulates nerve receptors in the pelvic floor "this is termed the 'Ferguson reflex' and the woman experiences the need to push.
- The mother's response is to employ her secondary powers of expulsion by contracting her abdominal muscles and diaphragm.

Soft tissue displacement

- As the hard fetal head descends, the soft tissues of the pelvis becomes displaced.
  - Anteriorly-Bladder
  - Posteriorly- Rectum
  - The levator ani muscles
  - Perineal body

Soft tissue displacement cont…

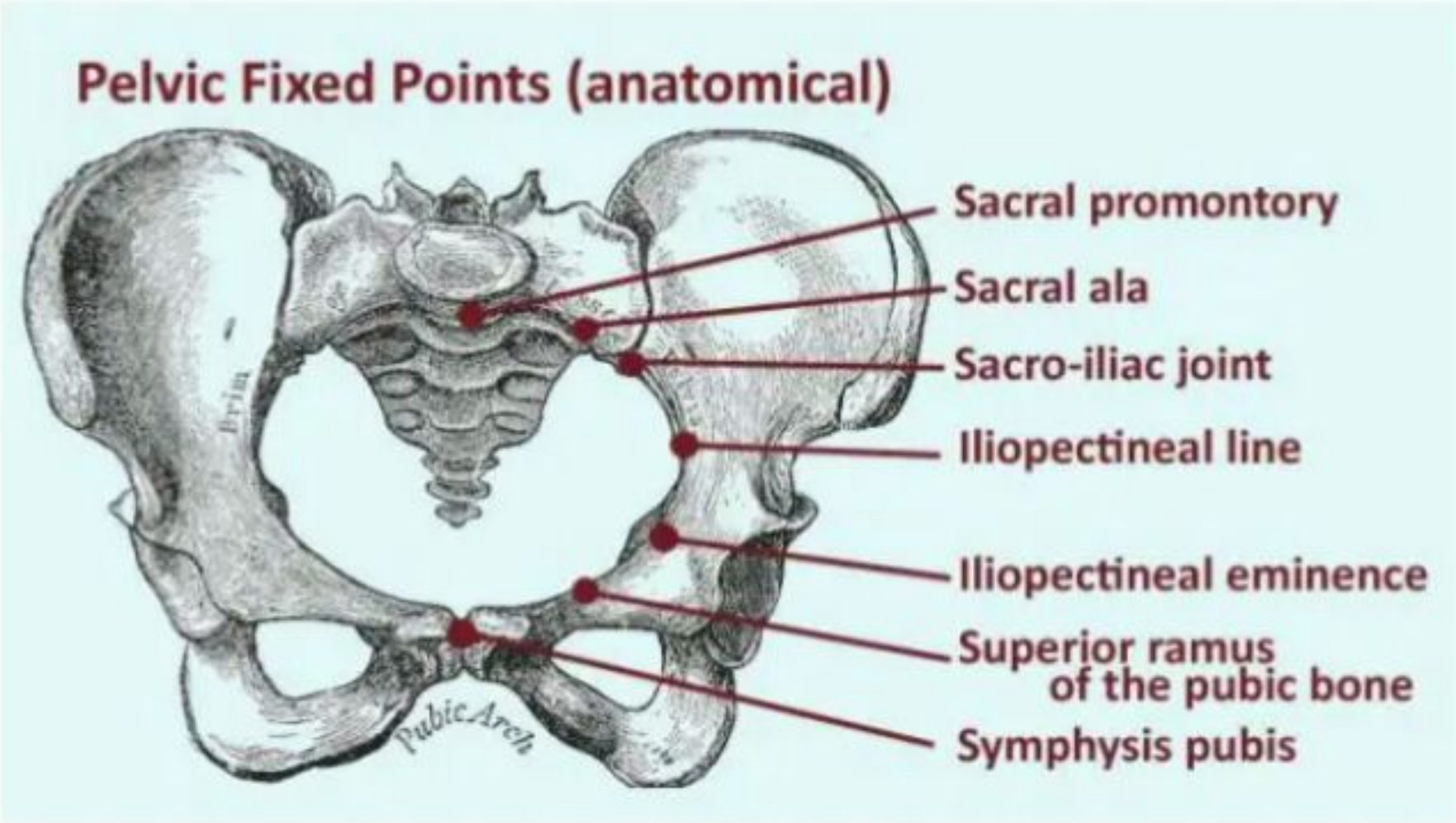
- The fetal head becomes visible at the vulva, advancing each contraction and receding between contractions until crowning takes place.
- The head is then born.
- The shoulders and body follow with next contraction, accompanied by gush of amniotic fluid and sometimes of blood.
- The second stage culminates in the birth of the baby.

Presumptive signs of second stage of labour

- Expulsive uterine contraction
- Rupture of forewaters
- Dilatation and gaping of the anus
- Appearance of the rhomboid of Michaelas
- Show
- Appearance of presenting part

Mechanism of normal labour

Landmarks of pelvis



Mechanism of labour

- As the fetus descends, soft tissue and bony structures exert pressures which lead to descent through the birth canal by a series of movements. Collectively, these movements are called the mechanism of labour.

Six considerations for normal labour

- The lie is longitudinal
- The presentation is cephalic
- The position is right or left occipitoanterior
- The attitude is one of the good flexion
- The denominator is the occiput
- The presenting part is the posterior part of the anterior parietal bone.

Cardinal movement

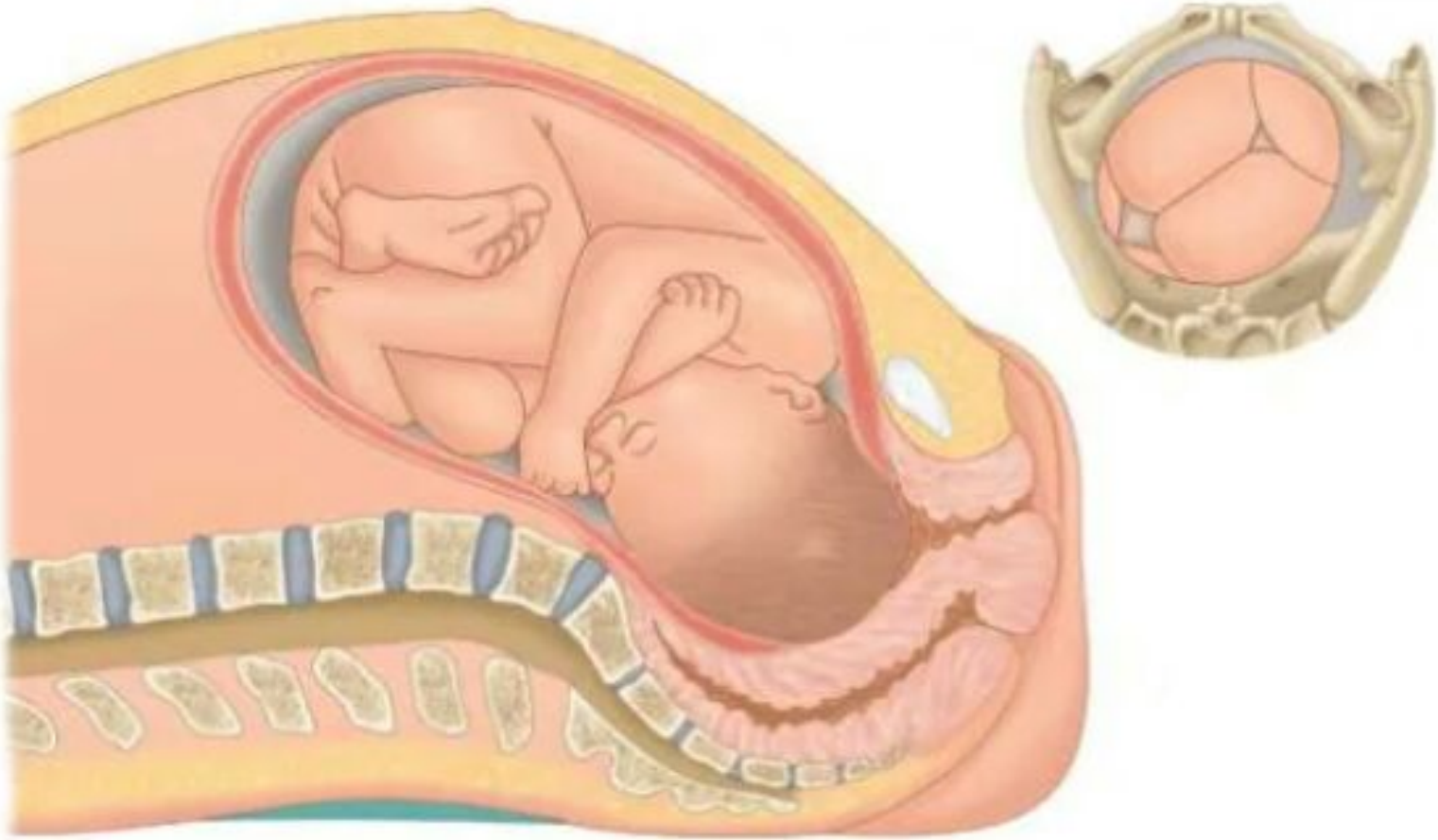
- Engagement
- Descent
- Flexion
- Internal rotation of the head
- Extension of the head
- External Rotation/Restitution
- Internal rotation of the shoulders
- Lateral flexion

Engagement

- The mechanism by which the biparietal diameter—the greatest transverse diameter in an occiput presentation—passes through the pelvic inlet is designated *engagement*.

Descent

- This movement is the first requisite for birth of the newborn.
- Different in nulliparous and multigravid women.
- Throughout the first stage of labour the contraction and retraction of the uterine muscles allow less room in the uterus, exerting pressure on the fetus to descend.
- Following rupture of the forewaters and the exertion of maternal effort, progress speed up.



2. Engagement, descent, flexion

Flexion

- As soon as the descending head meets resistance, whether from the cervix, walls of the pelvis, or pelvic floor, then flexion of the head normally results.
- Suboccipitobregmatic diameter (9.5 cm) is substituted for the longer occipitofrontal diameter (10 cm). The occiput becomes the leading part.

Internal rotation of the head

- During contraction, the leading part is pushed downwards onto the pelvic floor. The resistance of this muscular diaphragm brings about rotation.
- Occiput gradually moves toward the symphysis pubis anteriorly.
- Whichever part of the fetus meets the lateral half of this slope will be directed forwards and towards the center in a well flexed vertex presentation the occiput leads, and rotates anteriorly through $1/8^{th}$ of a circle when it meets the pelvic floor. This causes a slight twist in the neck as the head is no longer in direct alignment with the shoulders.

Internal rotation cont…

- The anteroposterior diameter of the head now lies in the widest (anteroposterior) diameter of the pelvic outlet.
- The occiput slips beneath the sub-pubic arch and crowning occurs when the head no longer recedes between contraction and the widest transverse diameter is born.
- Of flexion is maintained, the suboccipito bregmatic diameter, usually distends the vaginal orifice.

Extension of the head

- Once crowning has occurred the fetal head can extend, pivoting on the suboccipital region around the pubic bone.
- This releases the sinciput, face and chin, which sweep the perineum and are born by a movement of extension.

Restitution

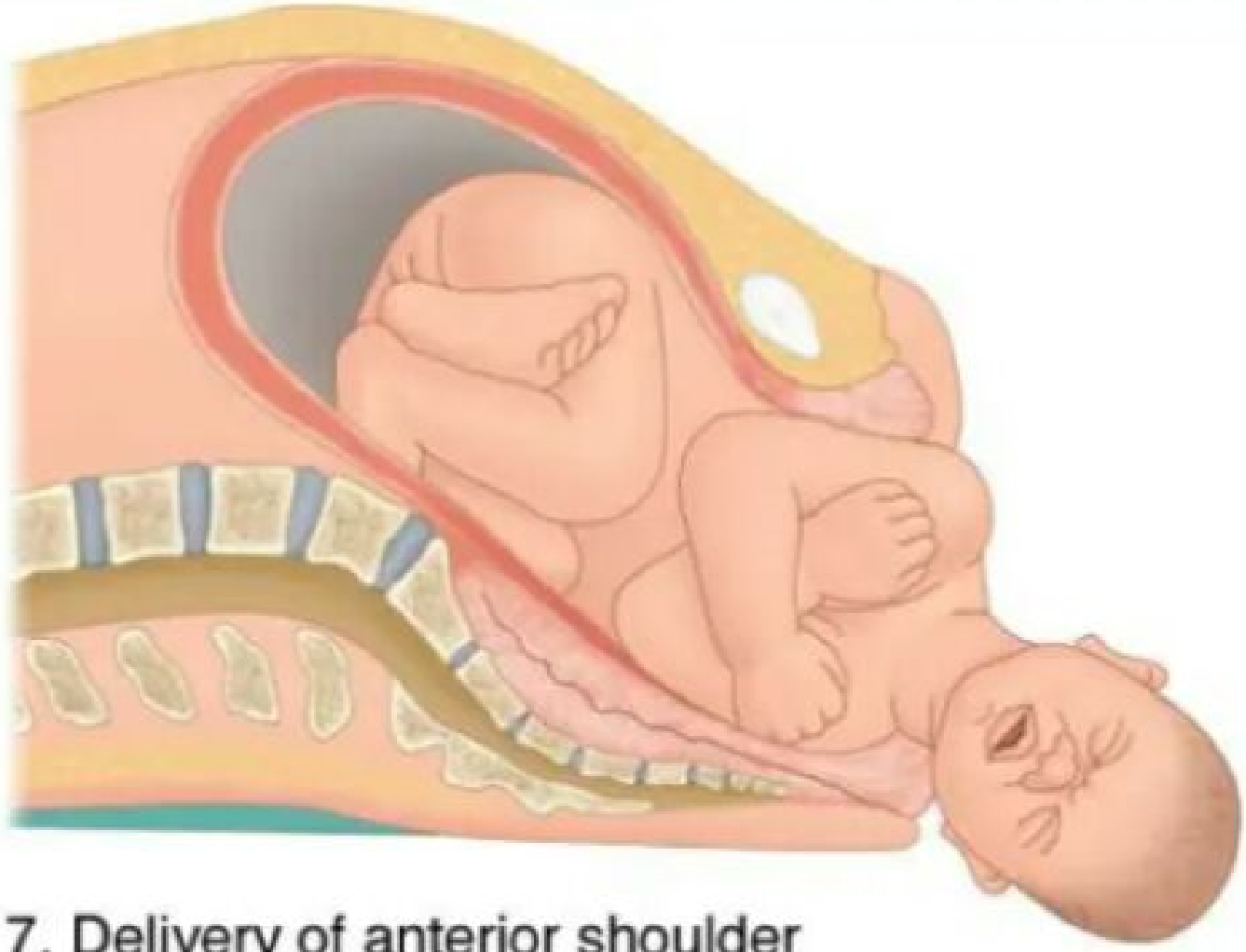
- The twist in the neck of the fetus that resulted from internal rotation is now corrected by a slight untwisting movement.
- The occiput moves one-eight of a circle towards the side from which it started

Internal rotation of the shoulders

- The shoulders undergo a similar rotation to that of the head to lie in the widest diameter of the pelvic outlet, namely anteroposterior.
- The anterior shoulder is first to reach the levator ani muscle and is therefore rotates anteriorly to lie under the symhysis pubis.
- It occurs in the same direction as restitution, and the occiput of the fetal head now lies laterally.

Lateral flexion

- Almost immediately after external rotation, the anterior shoulder slips beneath the subpubic arch and the posterior shoulder passes over the perineum.
- After delivery of the shoulders, the rest of the body is born by lateral flexion as the spine bends sideways through the curved birth canal.



7. Delivery of anterior shoulder

Second stage ends with delivery of baby.