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SPONTANEOUS CHILDBIRTH



Spontaneous childbirth

Spontaneous birth is a biological process whereby a woman expels the fetal egg by her own efforts and through natural channel.

The fetal egg consists of:

- fetus
- placenta
- fetal membranes



The process of childbirth, there are three components

- birth forces (the uterus)
- the birth object (the fetus, passenger)
- the birth canal

Spontaneous childbirth is the result of the forceful action of

- the uterine contraction the first period of labor
- the uterine contraction + the woman's free effort in the second period of labor

against the resistance of the birth canal



Labor is a clinical diagnosis.

The onset of labor is defined as regular, painful uterine contractions resulting in progressive cervical effacement and dilatation.

Uterine contraction without cervical change does not meet the definition of labor.

Braxton-Hicks contractions must be differentiated from true contractions. Typical features of Braxton-Hicks contractions are as follows:

- Usually occur no more often than once or twice per hour, and often just a few times per day
- Irregular and do not increase in frequency with increasing intensity
- Resolve with ambulation or a change in activity



Labor is a clinical diagnosis.

Contractions that lead to labor have the following characteristics:

- start as infrequently as every 10-15 minutes, but usually accelerate over time, increasing to contractions that occur every 2-3 minutes
- tend to last longer and are more intense than Braxton-Hicks contractions
- lead to cervical change



Stages of labor

Obstetricians have divided labor into 3 stages that delineate milestones in a continuous process.



First stage of labor

- begins with regular uterine contractions and ends with complete cervical dilatation at 10 cm
- divided into a latent phase and an active phase
- the latent phase begins with mild, irregular uterine contractions that soften and shorten the cervix
- contractions become progressively more rhythmic and stronger
- the active phase usually begins at about 3-4 cm of cervical dilation and is characterized by rapid cervical dilation and descent of the presenting fetal part



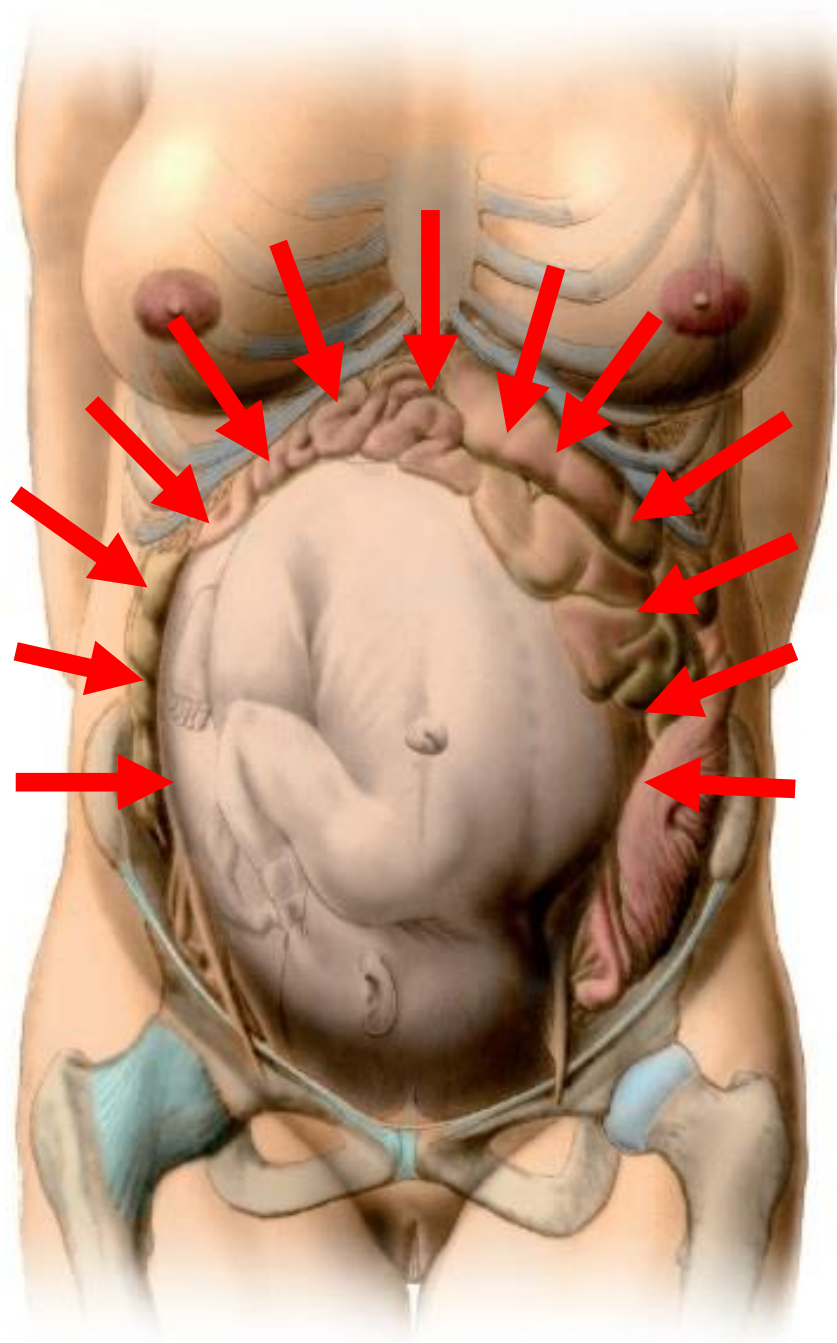
Second stage of labor

- begins with complete cervical dilatation and ends with the delivery of the fetus
- in nulliparous women, the second stage should be considered prolonged if it exceeds 3 hours if regional anesthesia is administered or 2 hours in the absence of regional anesthesia
- in multiparous women, the second stage should be considered prolonged if it exceeds 2 hours with regional anesthesia or 1 hour without it

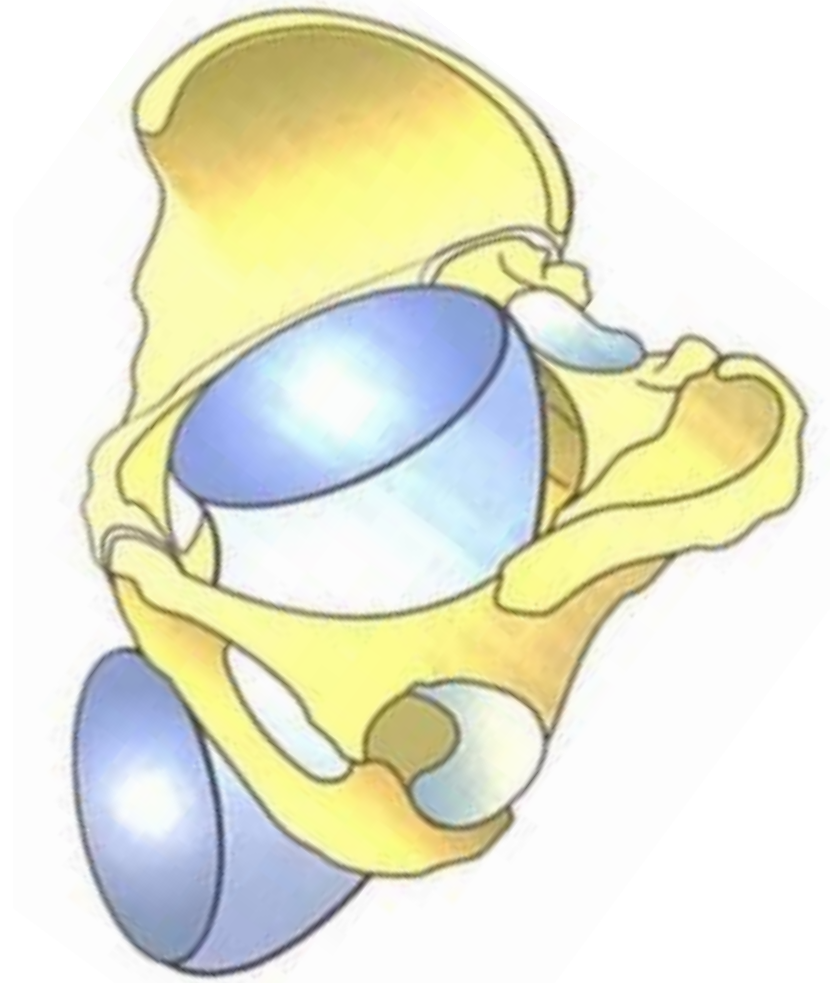
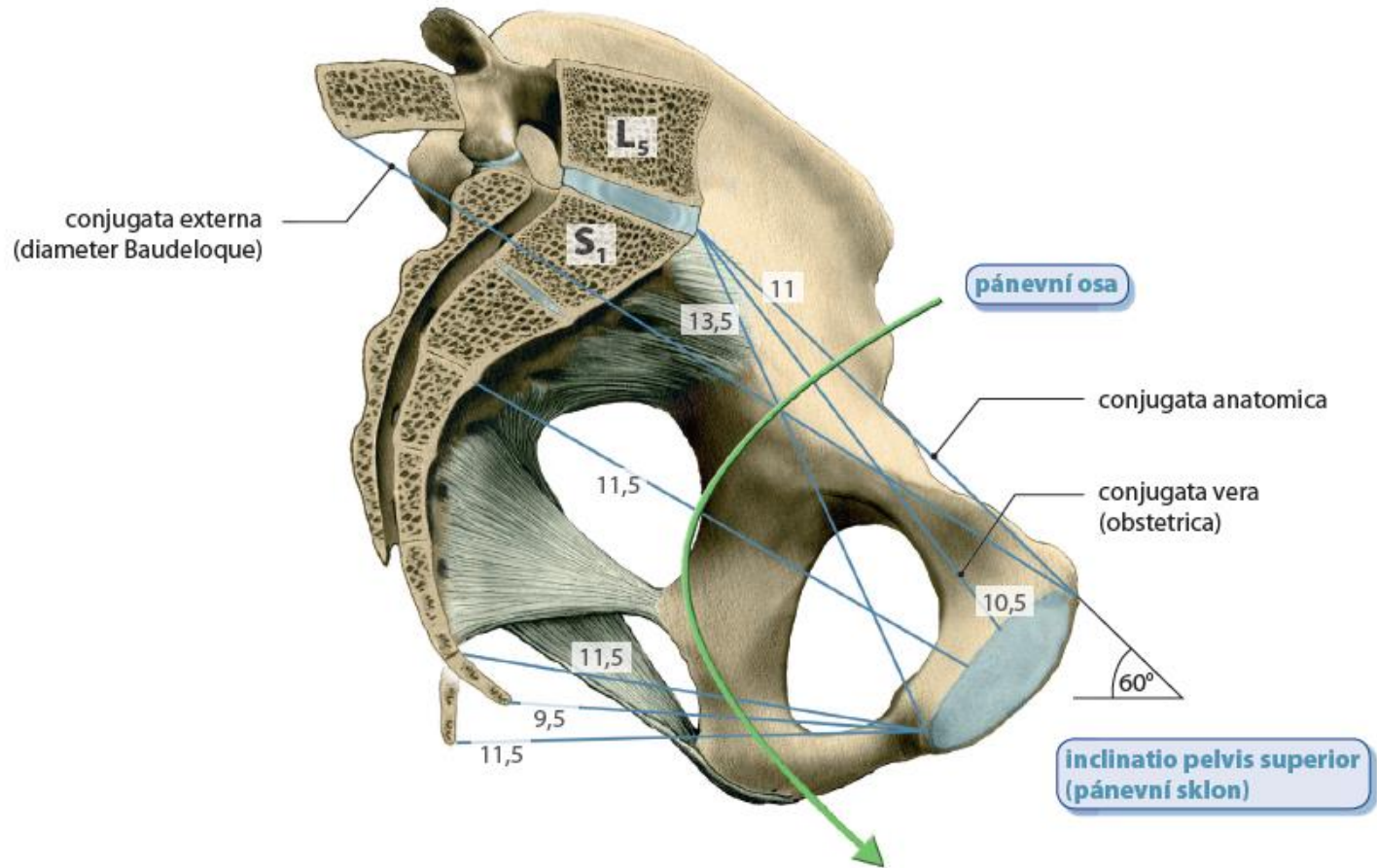


Third stage of labor

- the period between the delivery of the fetus and the delivery of the placenta and fetal membranes
- delivery of the placenta often takes less than 10 minutes, but the third stage may last as long as 30 minutes
- expectant management involves spontaneous delivery of the placenta
- the third stage of labor is considered prolonged after 30 minutes, and active intervention is commonly considered
- active management often involves prophylactic administration of oxytocin or other uterotonics (prostaglandins or ergot alkaloids), cord clamping/cutting, and controlled traction of the umbilical cord



Childbirth is a labour in which the resistance of the birth canal through which the fetus passes must be overcome



This figure shows the pelvic axis which is the thought curve of the center of the straight diameter of each plane of the pelvis

Maternal pelvis (passage)

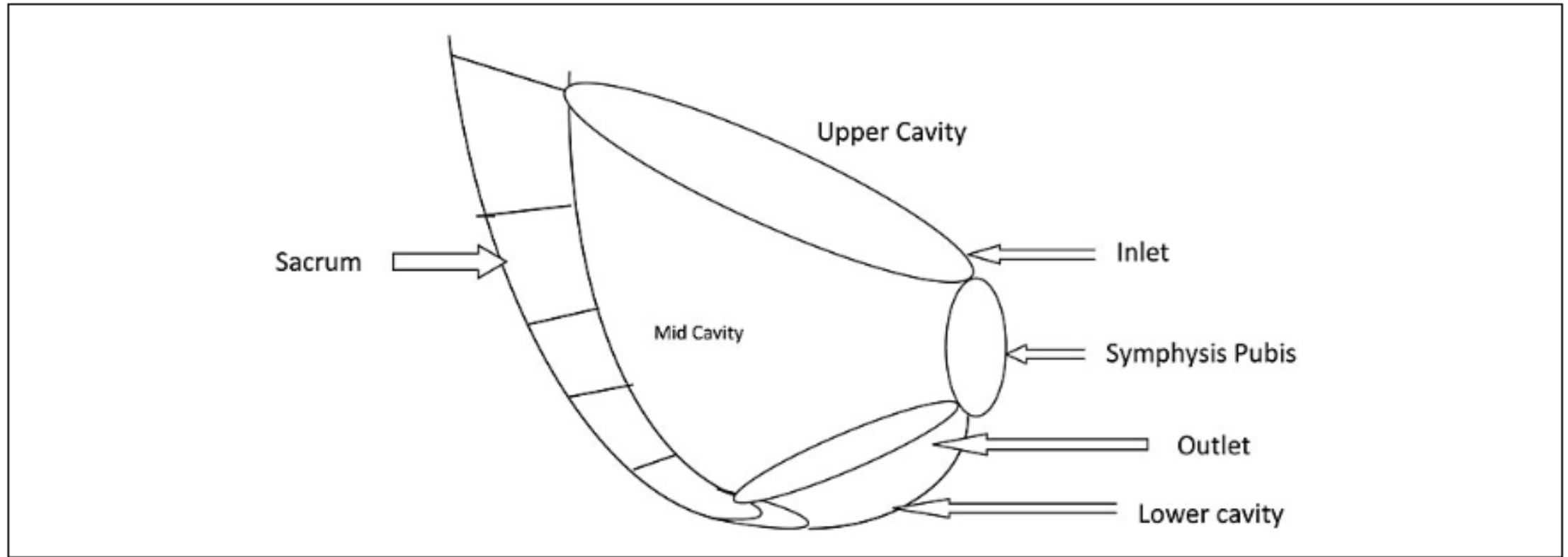
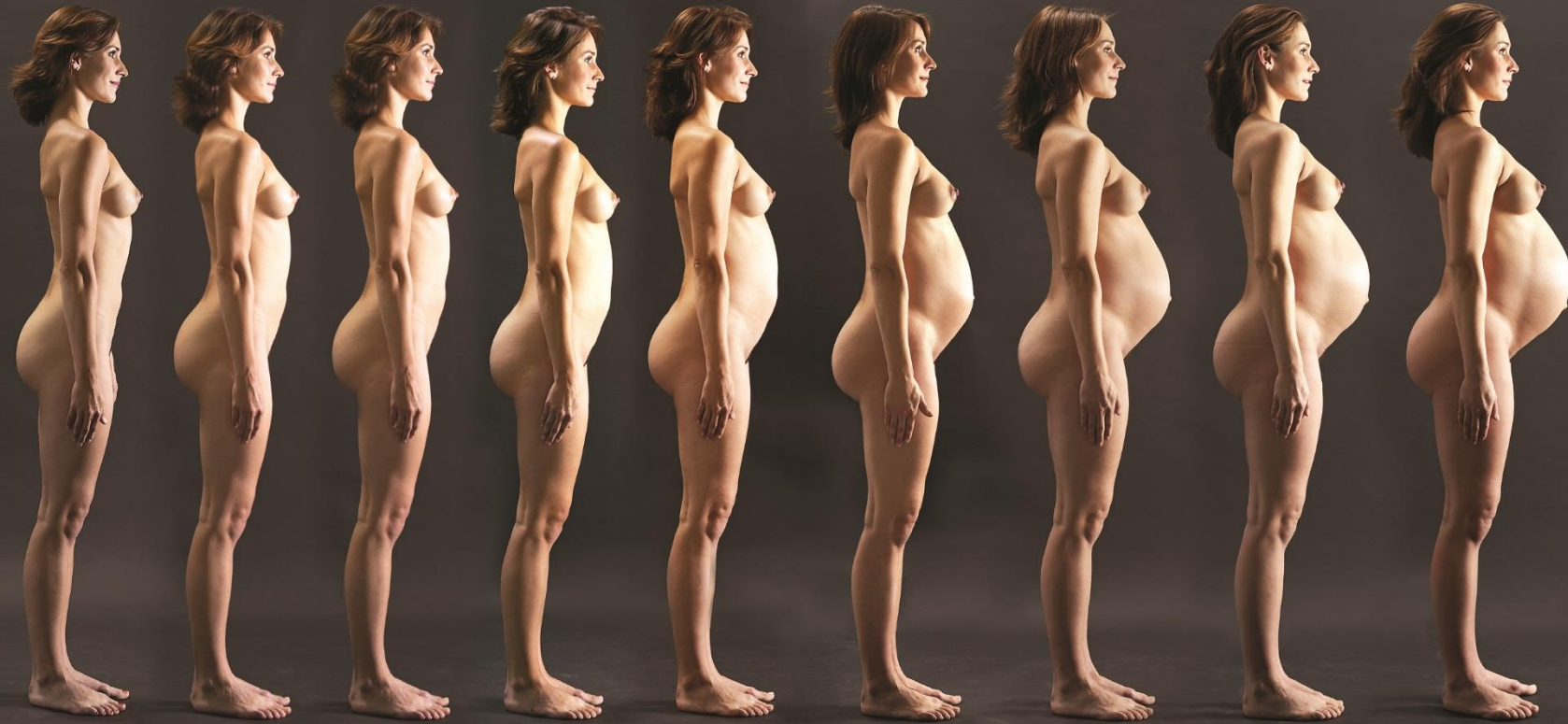
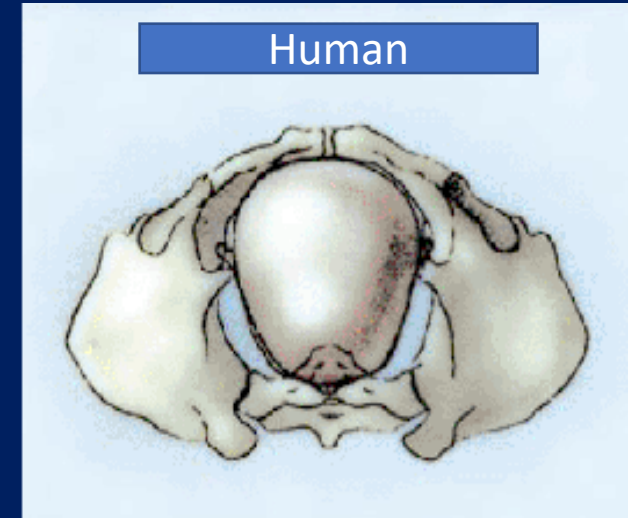
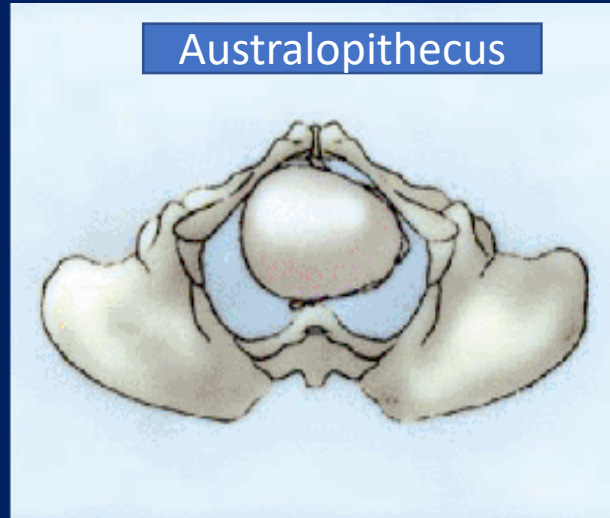
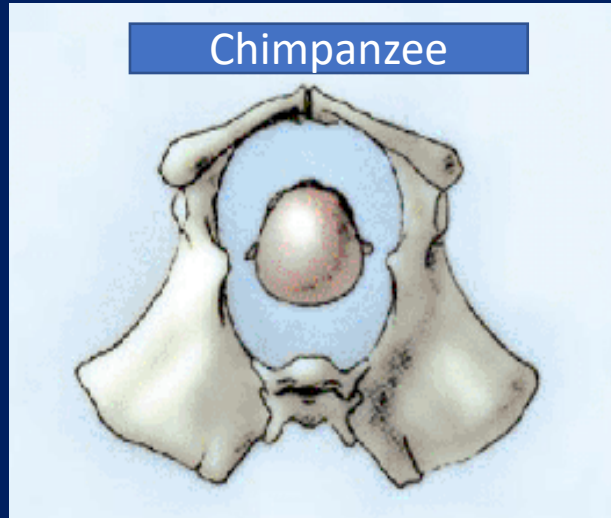


Figure 1 Bony pelvis: ilium, ischium, pubis, sacrum and coccyx.



Due to the fact that we walk on two bipedal locomotion, in humans, unlike other mammals, the direct diameter of the pelvic entrance has been transformed and is the smallest



Consequences on the course of human birth

1. Changes in the shape of the female pelvis (upright figure of the Australopithecus)
2. Consequences of the skull in human development



Fetus (passenger)

For a successful outcome, the fetal skull, shoulders, trunk and buttocks should pass through maternal pelvis.

Several variables in the fetus influence its journey through the birth canal.

Fetal size

Fetal lie

Presentation

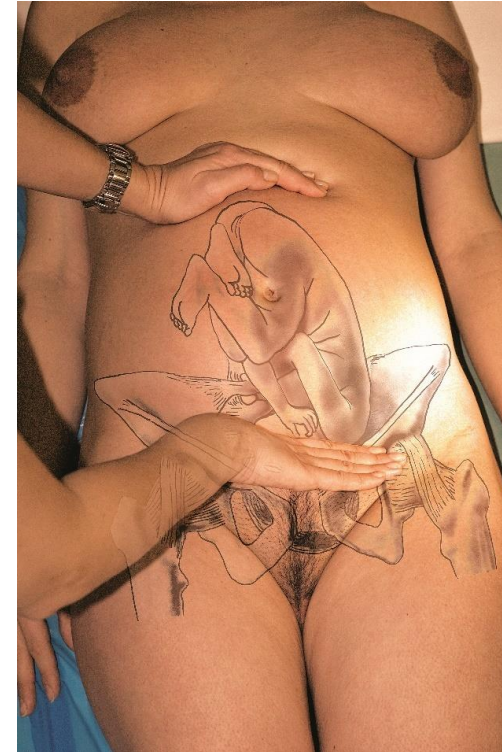
Attitude

Position

Fetus (passenger)

Fetal size can be estimated by palpation, ultrasound scan and customized growth chart but all of these methods are subjected to large degree of error.

Fetal lie is the relationship of the long axis of the fetus relative to longitudinal axis of the uterus. A fetus in longitudinal lie is suitable for vaginal delivery.

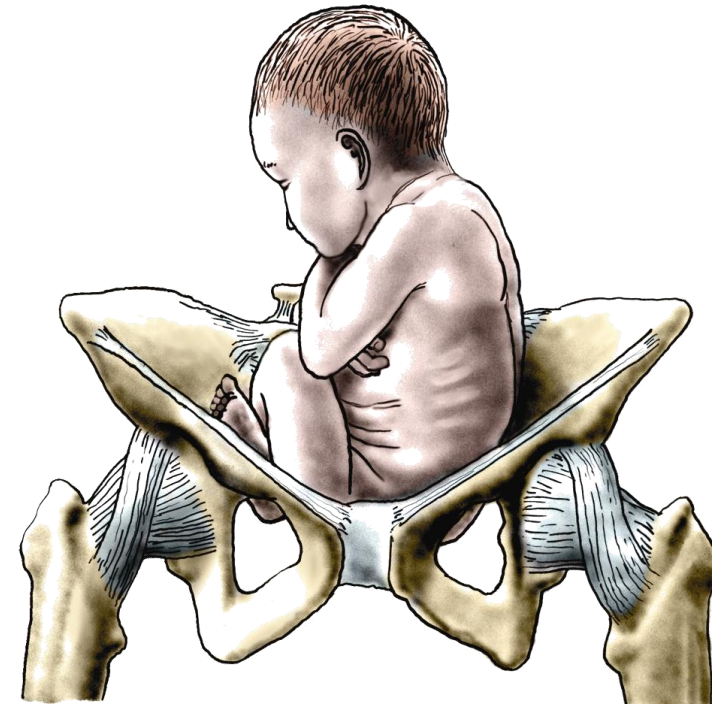
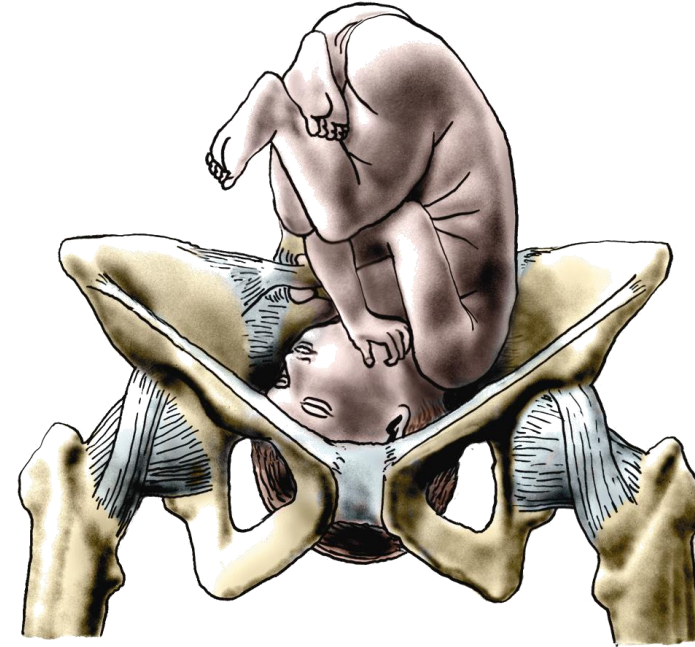


Fetus (passenger)

Fetal lie is the relationship of the long axis of the fetus relative to longitudinal axis of the uterus. A fetus in longitudinal lie is suitable for vaginal delivery.

- **Longitudinal lie**
 - **vertex presentation**
 - at the time of delivery 96% of women

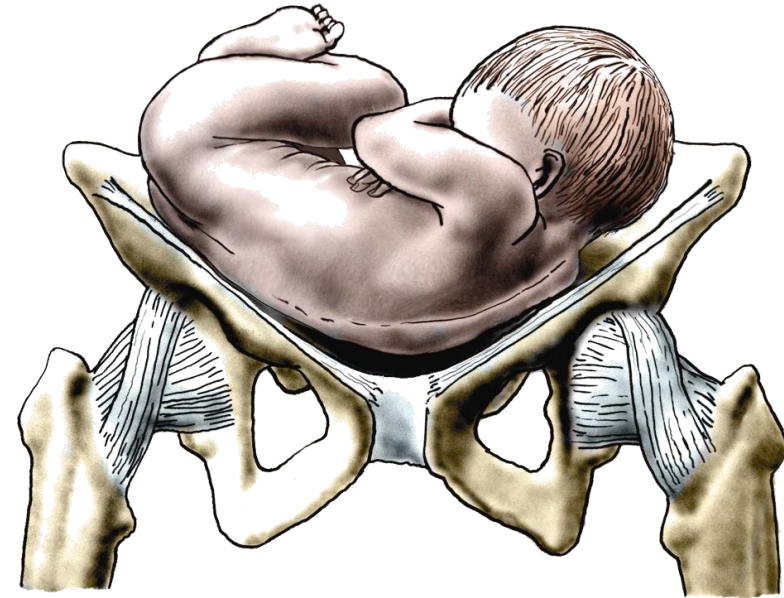
- **Longitudinal lie**
 - **breech presentation**
 - also the physiological position
 - higher number of birth complications for both mother and baby at the end of pregnancy in 3 - 4% of women



Fetus (passenger)

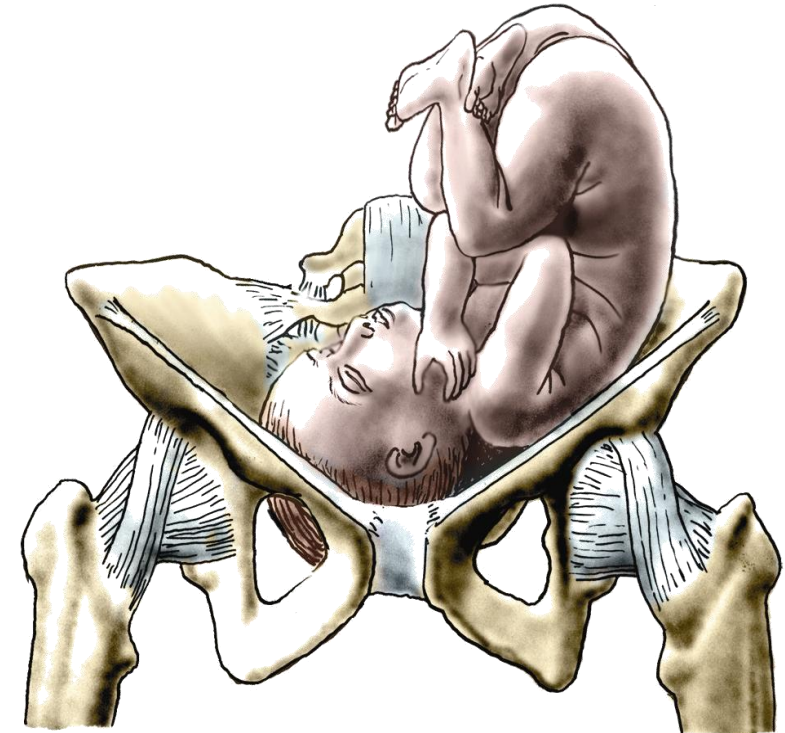
■ transverse lie

- pathological position
- pregnancy is always terminated by caesarean section
- at the end of pregnancy in 0.5% of women

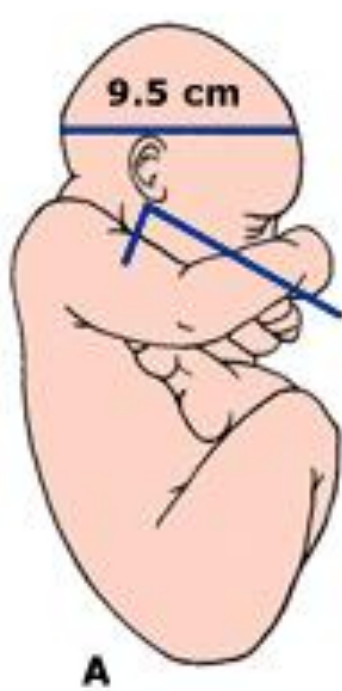


■ oblique lie

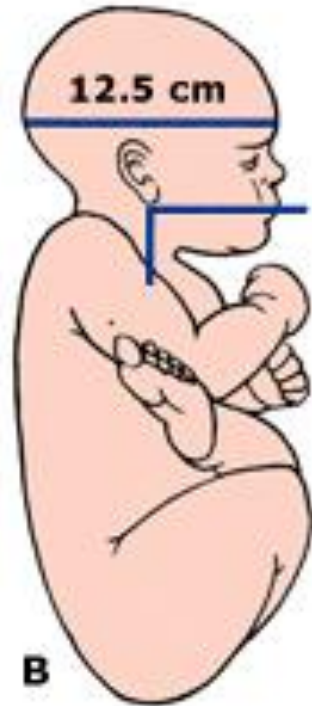
- intermediate position
- at the onset of uterine contractions, the fetus usually curls into the longitudinal head position, rarely into the transverse position



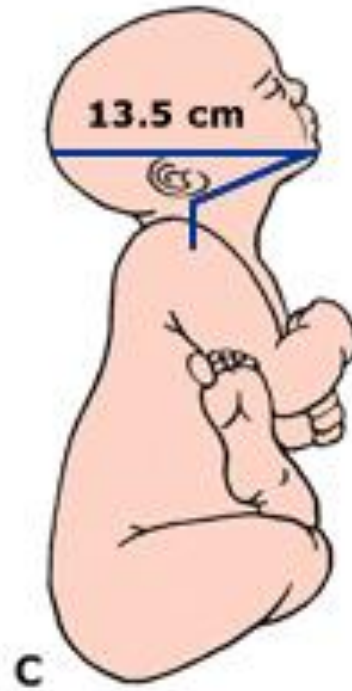
Attitude – position of fetal head with the fetal spine (the degree of flexion and/or extension of the fetal head. Flexion of fetal head is a favored attitude as it presents the smallest diameter to the maternal pelvis



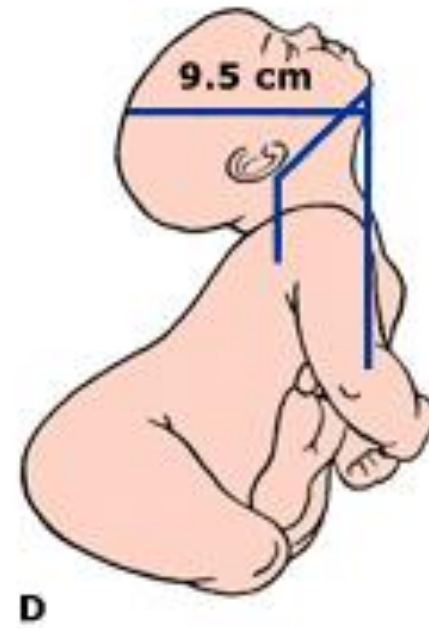
A
Flexion
suboccipitobregmatic 9.5 cm



B
Deflexed
occipitofrontal 12,5 cm



C
Deflexed
occipitomentale 13,5 cm



D
Deflexed
submentobregmatic 9,5 cm



(A) vertex



(B) sinciput



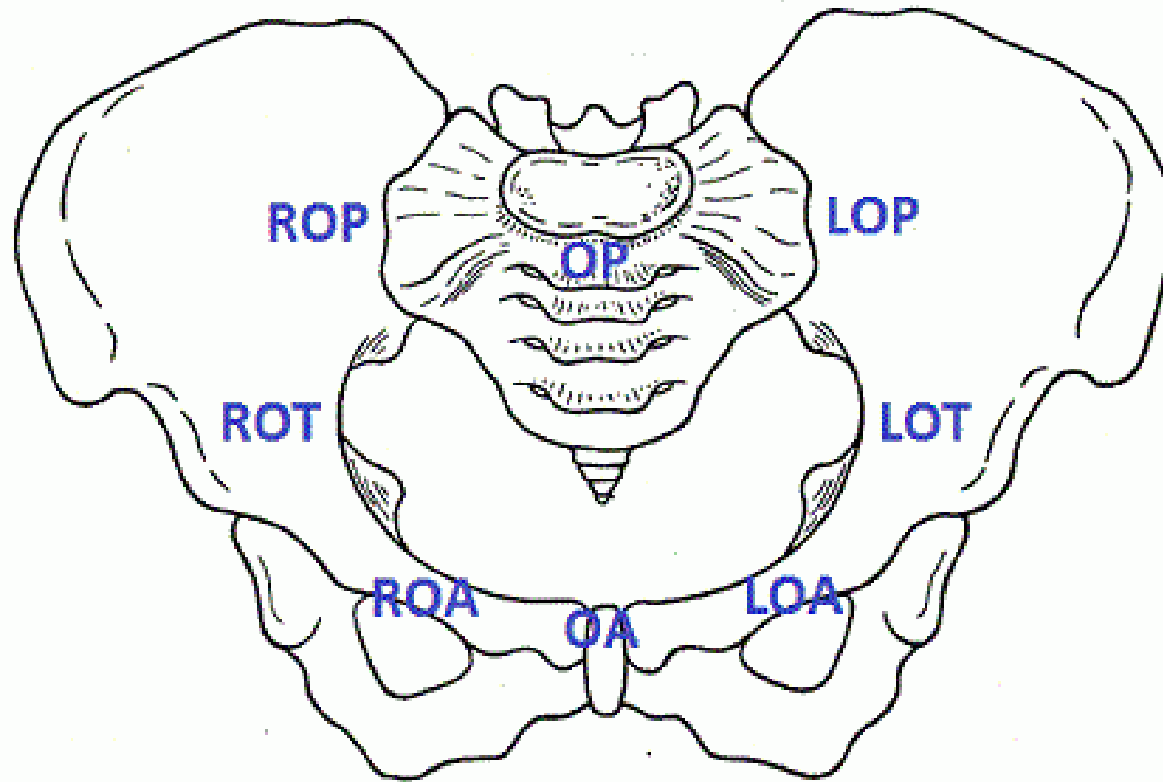
(C) brow

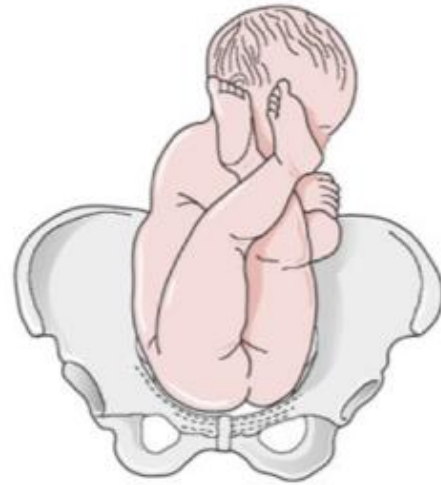


(D) face



Presentation – the part of the fetus that directly overlies the lower pole of the uterus/pelvic inlet. Hence in longitudinal lie the fetus may be cephalic or breech and in oblique/transverse shoulders or compound with more than one part overlying the pelvic inlet





Frank breech.



Complete
breech.

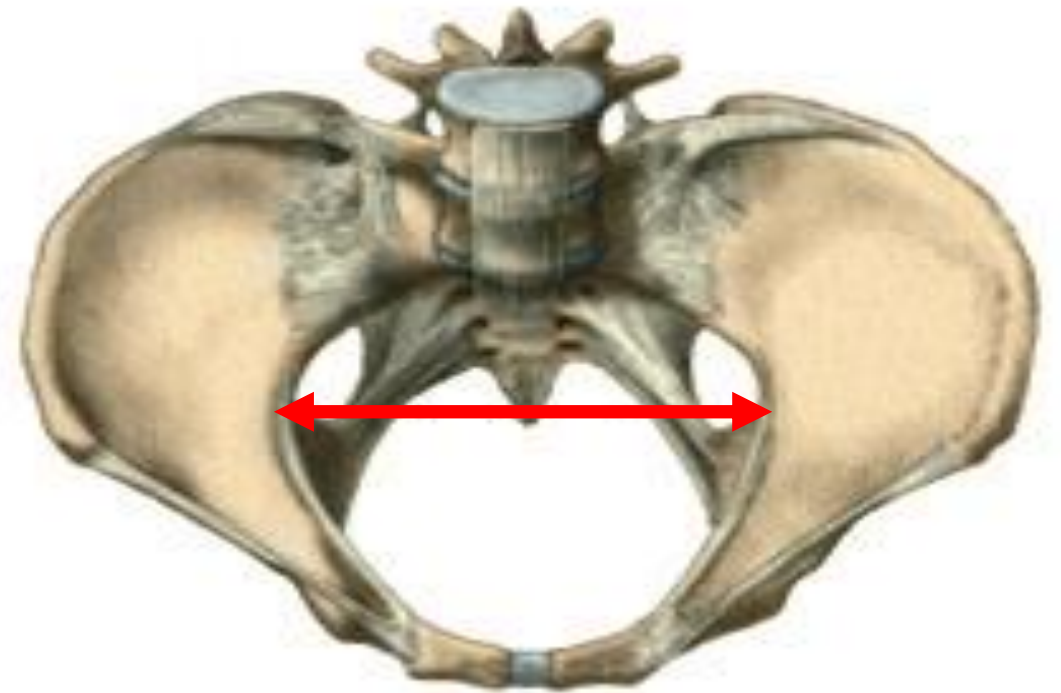


Footling
presentation.

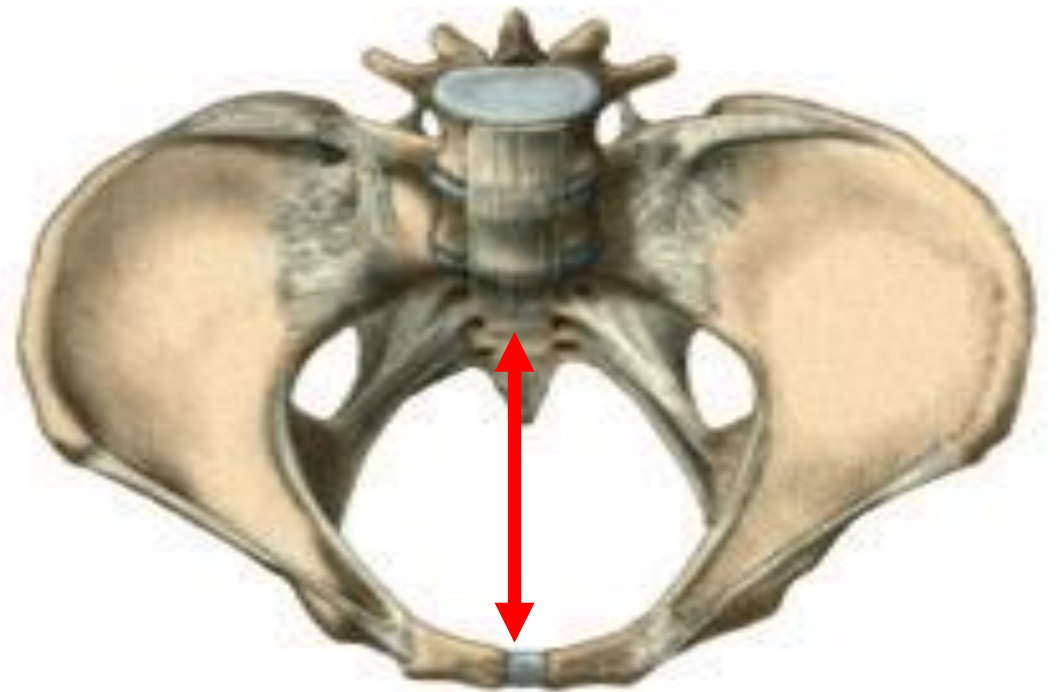
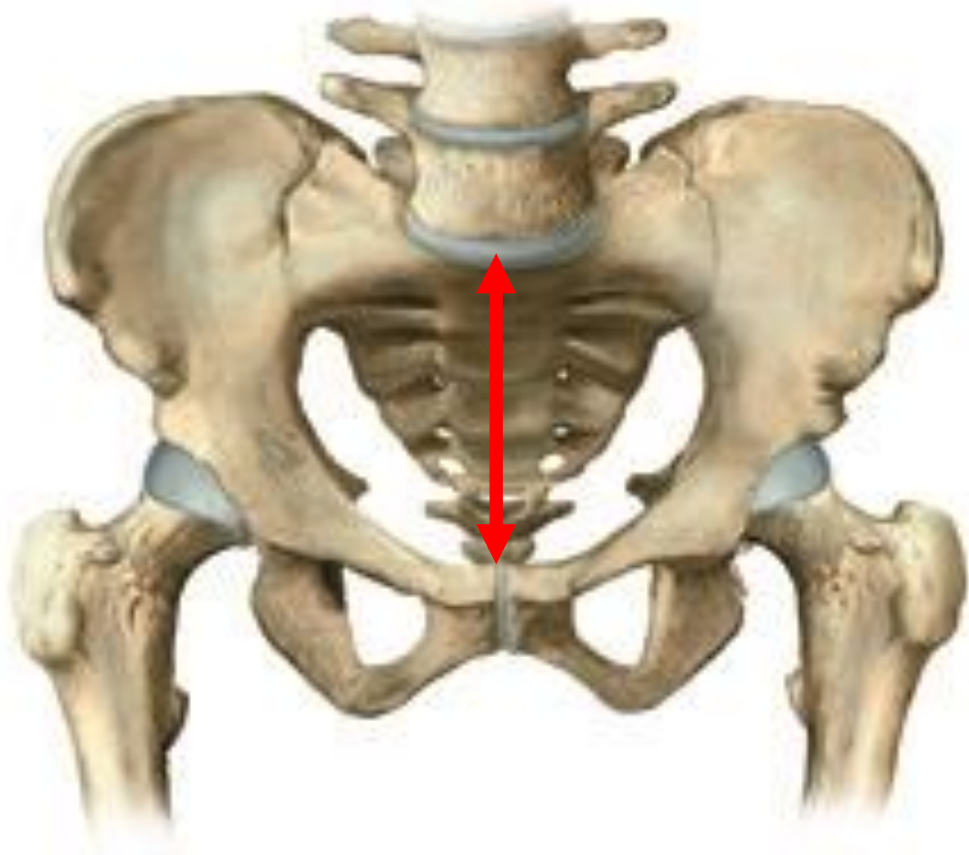


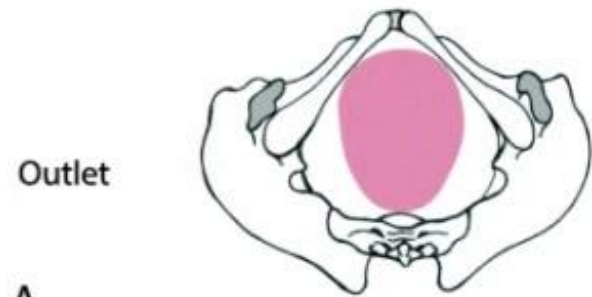
Knee
presentation.

Pelvis conversion (unlike other mammals)
The transverse diameter of the pelvic entrance is the largest.

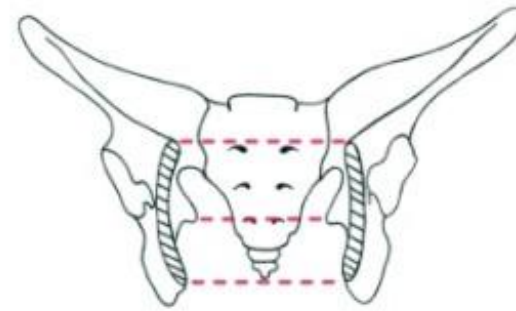


Pelvis conversion (unlike other mammals)
The direct diameter of the pelvic entrance is the smallest.



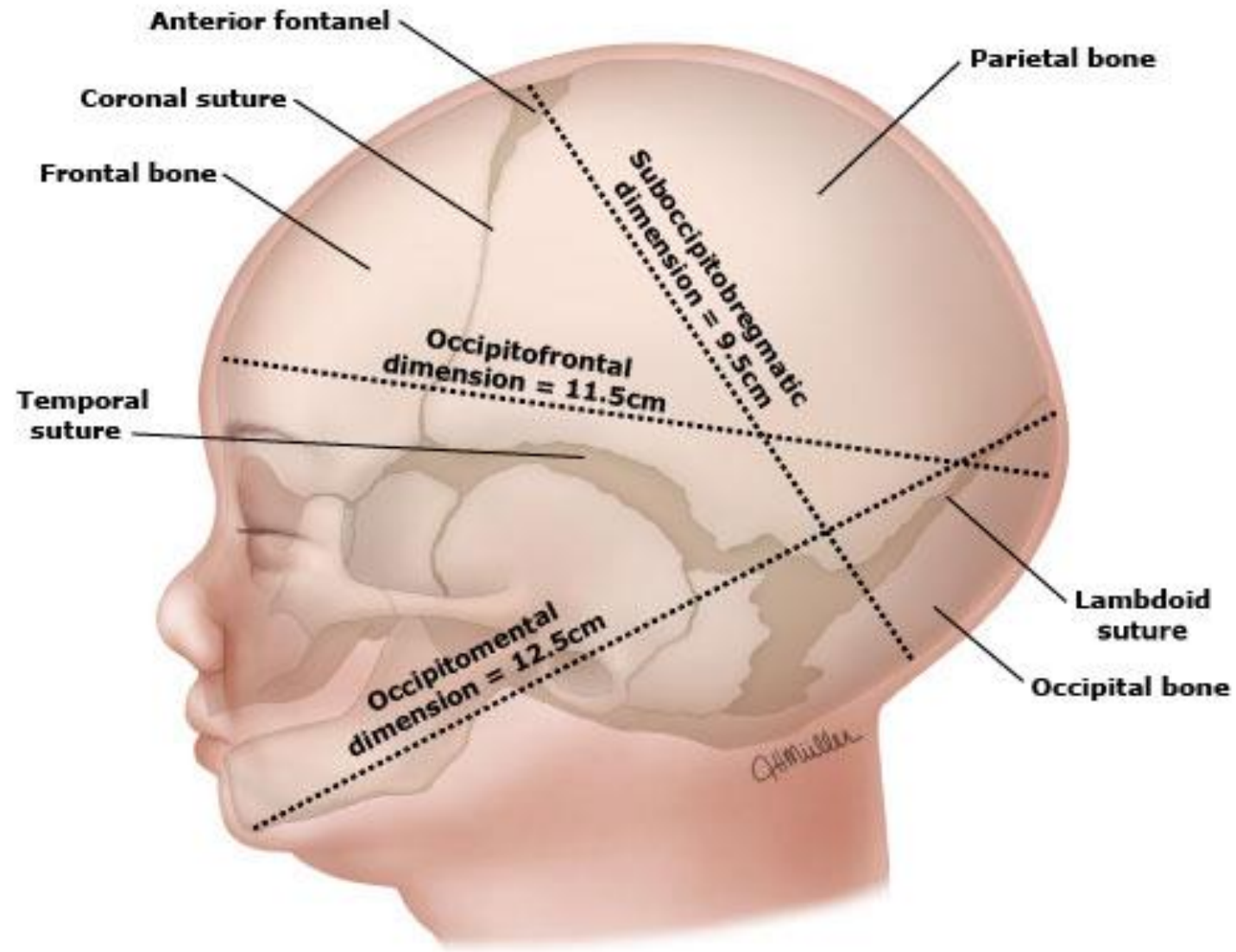


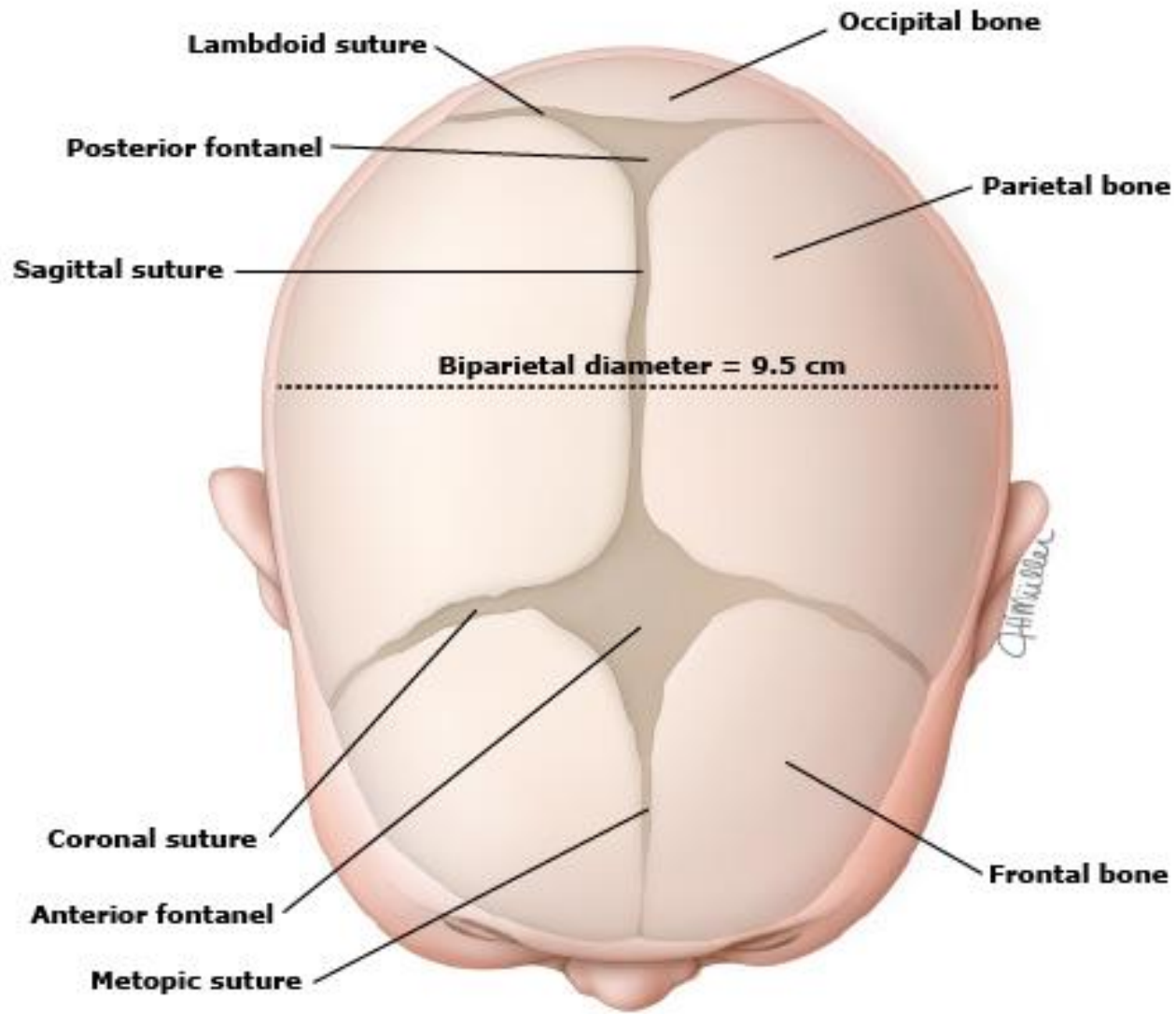
A



B

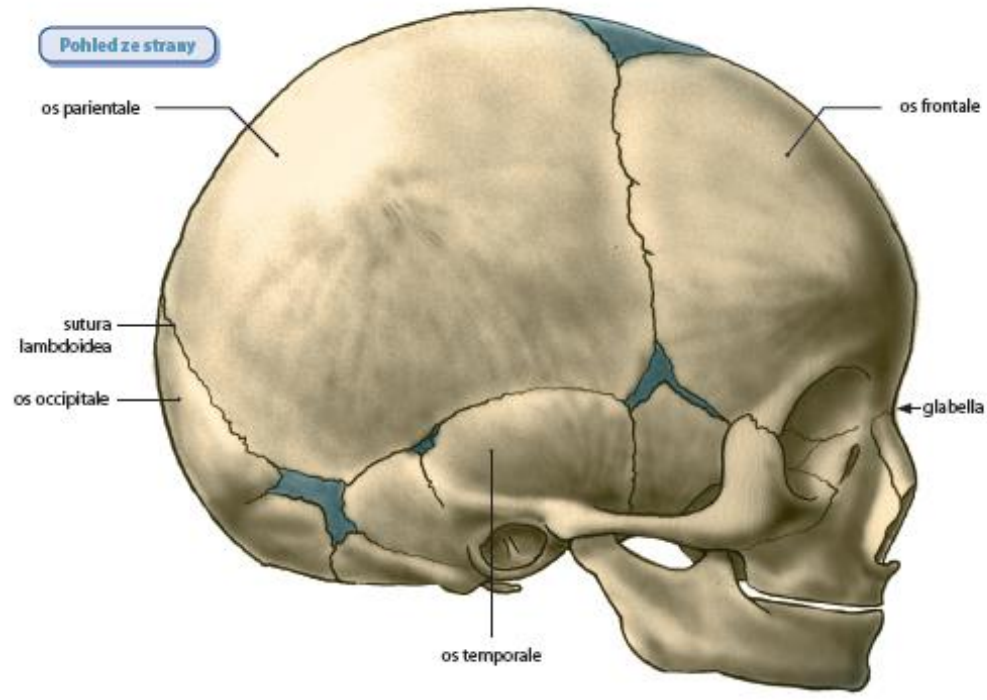
Rotational birth in humans. **A** The foetal head engages in a transverse to oblique direction and rotates about 90° to align its maximum dimension with the largest dimension of each pelvic plane. **B** Pelvic inlet, midplane and outlet in frontal view with parts of the pubic and ischial bones removed



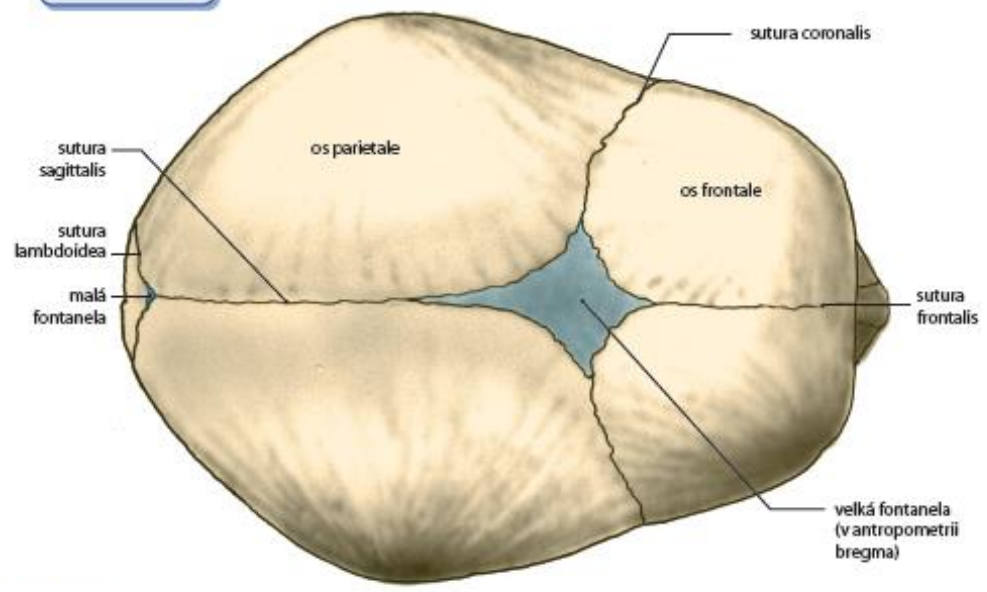


Knowledge of the anatomy of the fetal skull is very important because the sagittal suture and the small and large fontanelles orient them about the mechanism of birth and rotation of the fetal head, respectively

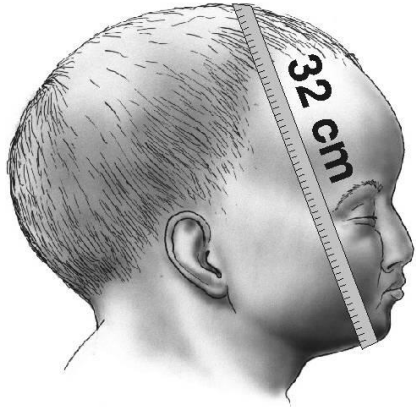
Pohled ze strany



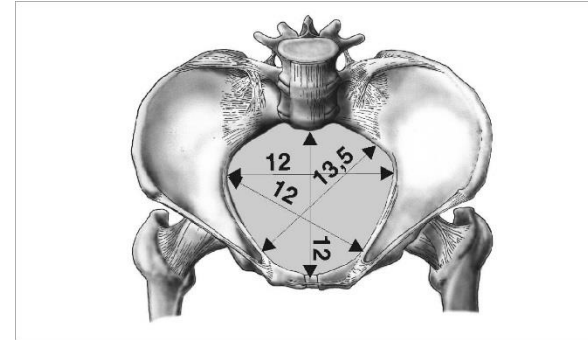
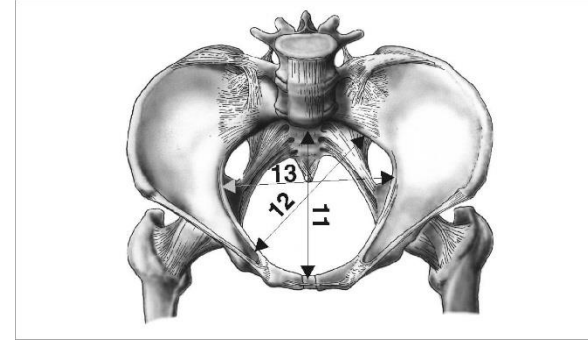
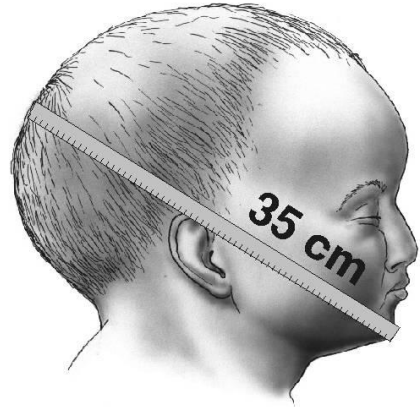
Pohled shora



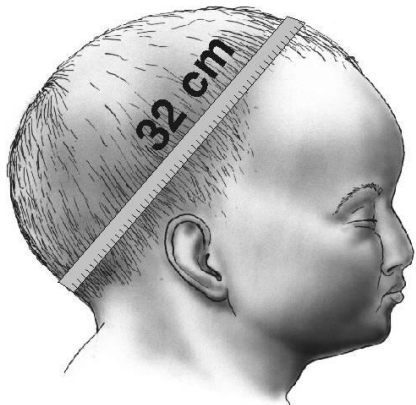
submentobregmatický
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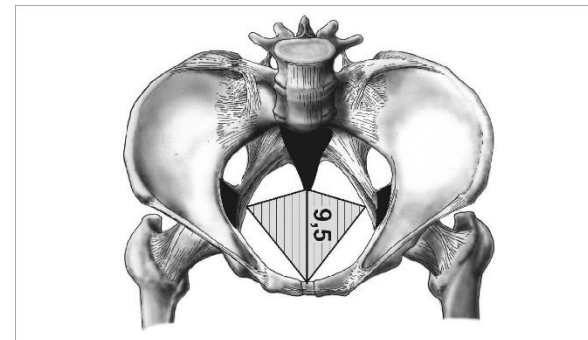
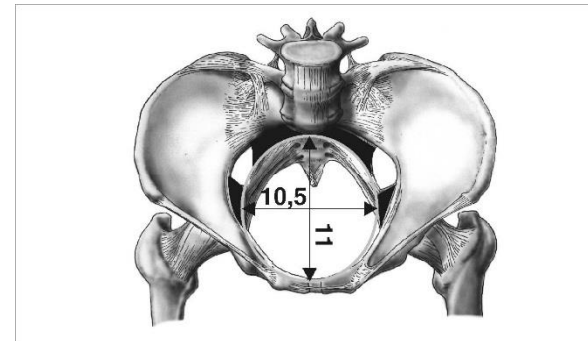
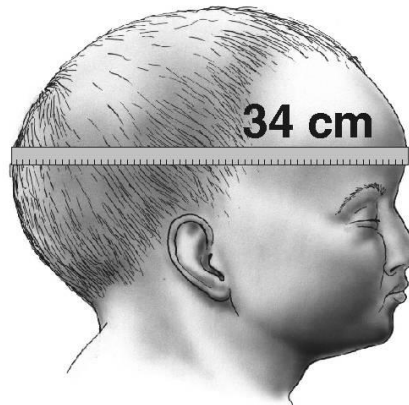
mentookcipitální
obvod



subokcipitobregmatický
obvod



frontookcipitální
obvod

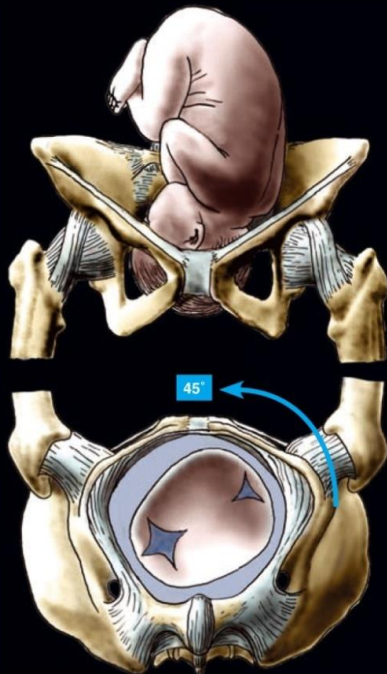




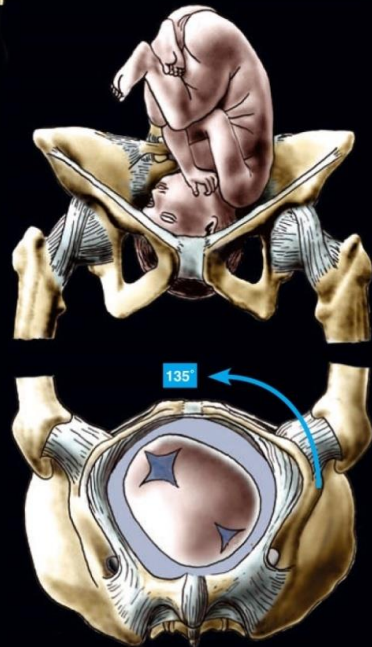
Mechanism of labor

The mechanisms of labor, also known as the cardinal movements, involve changes in the position of the fetus's head during its passage in labor. These are described in relation to a vertex presentation. Although labor and delivery occurs in a continuous fashion, the cardinal movements are described as the following 7 discrete sequences :

1. Engagement
2. Descent
- 3. Flexion**
- 4. Internal rotation**
- 5. Extension**
- 6. Restitution and external rotation**
7. Expulsion



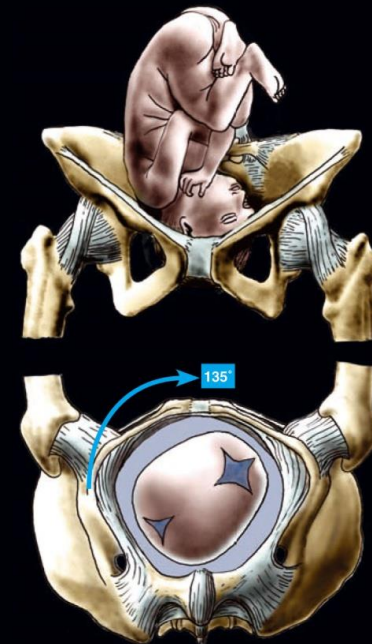
↑ **Levé přední postavení**
(u 60 % rodiček).
Hlavička plodu rotuje 45°



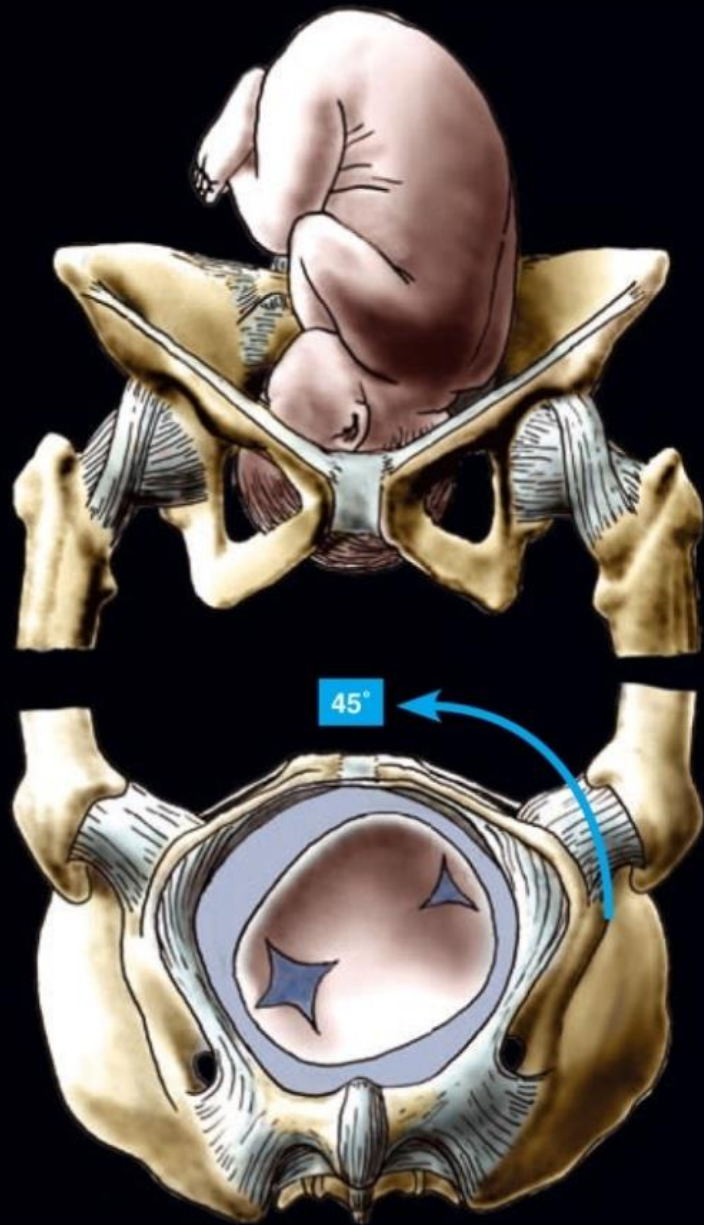
↑ **Levé zadní postavení**
(u 5 % rodiček).
Hlavička plodu rotuje 135°. Porod
je delší a bolestivější, dokonce i po
podání epidurální analgezie



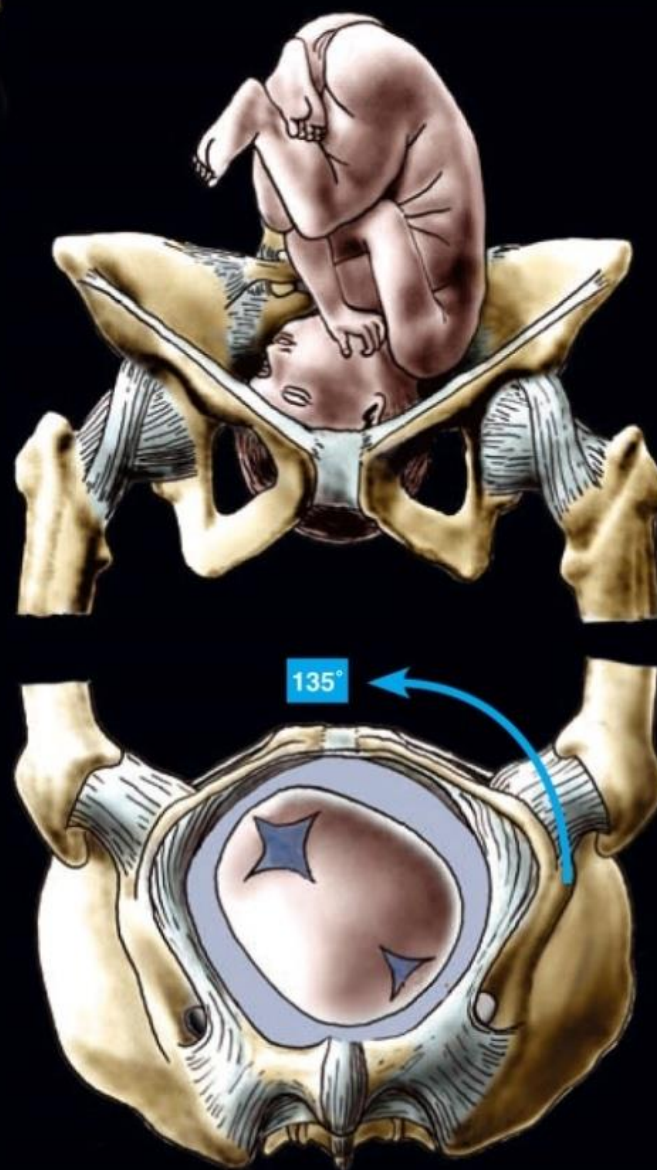
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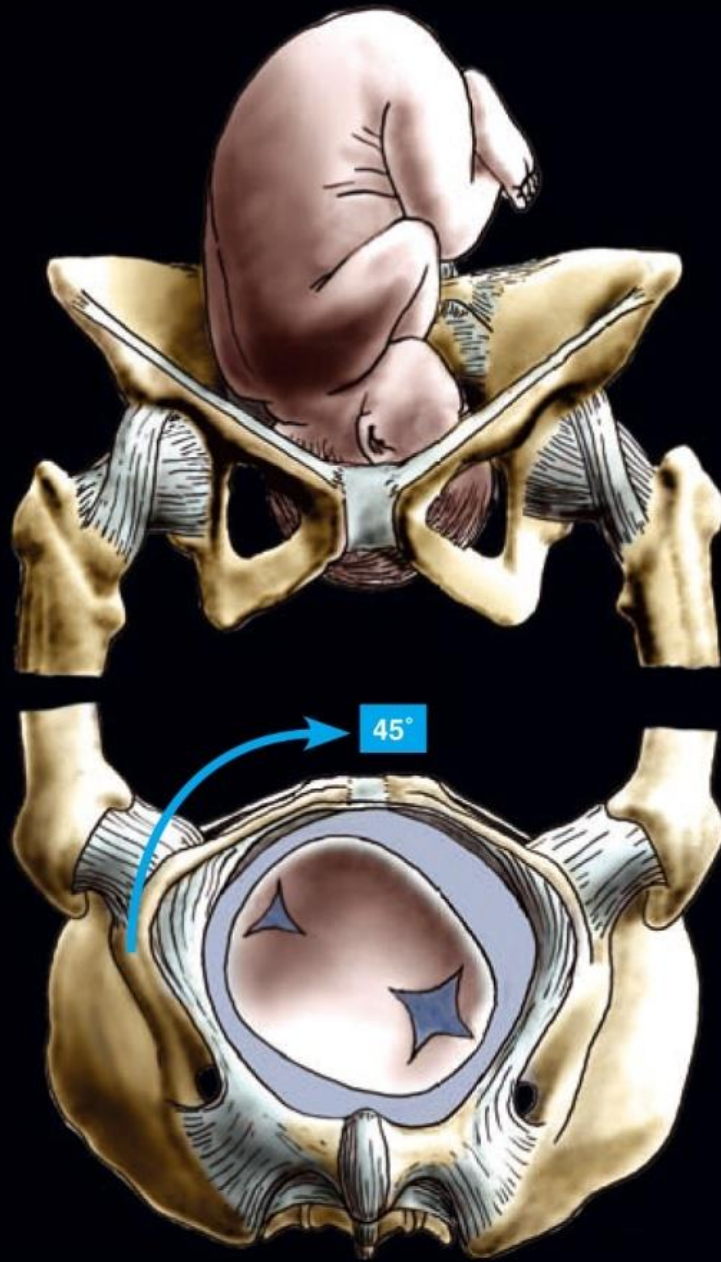
↑ **Pravé zadní postavení**
(u 30 % rodiček).
Hlavička plodu rotuje 135°. Porod
je delší a bolestivější, dokonce i po
podání epidurální analgezie



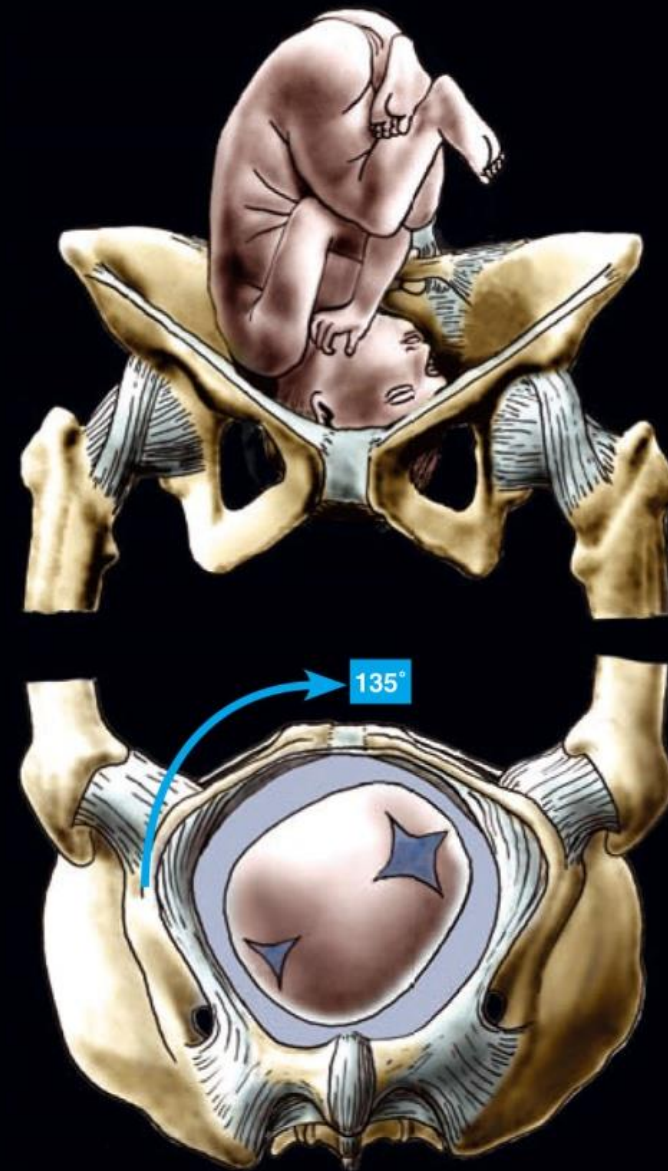
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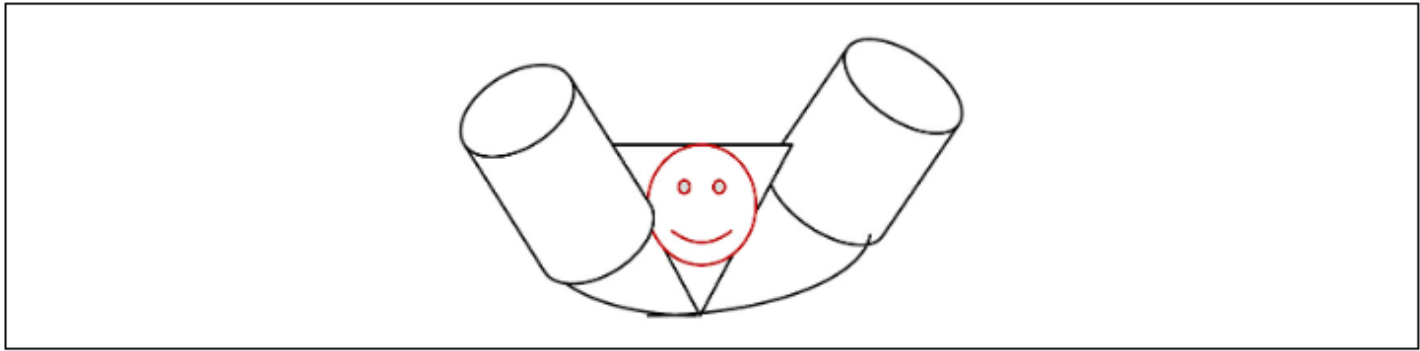
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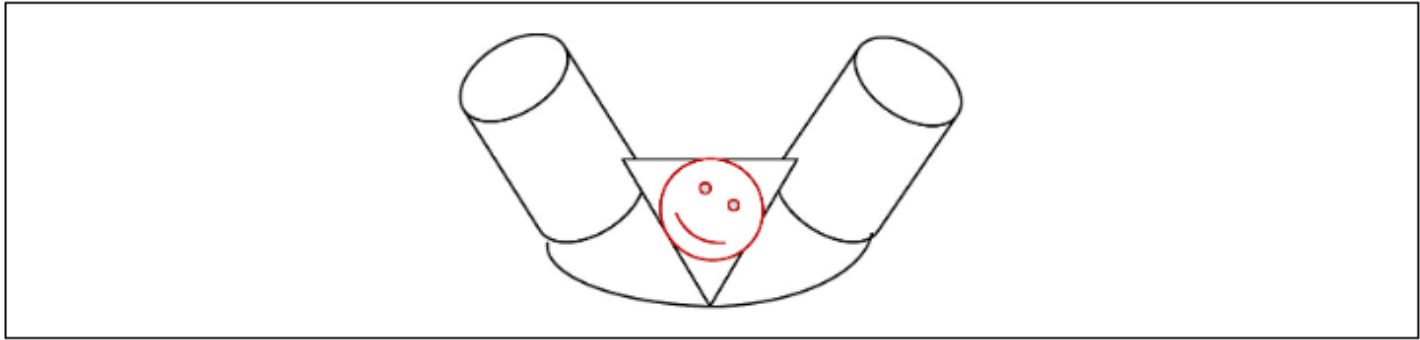
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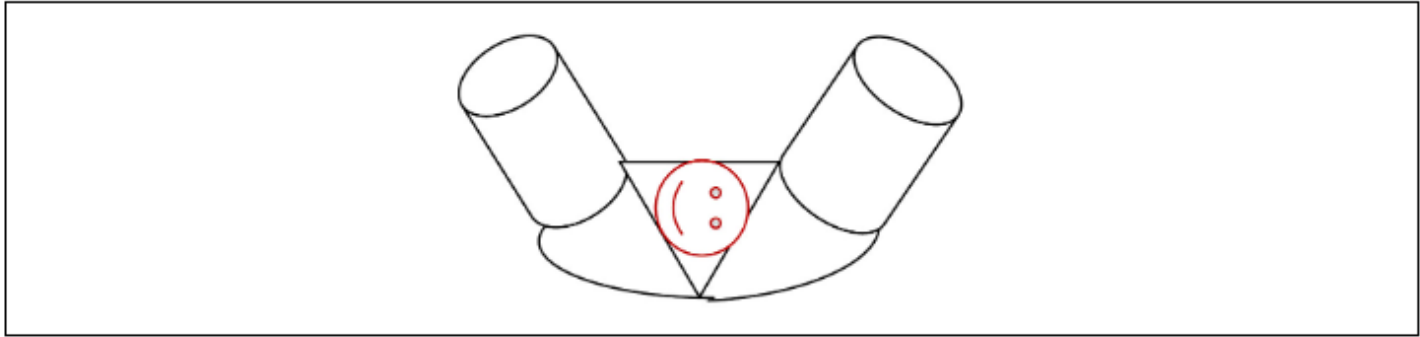
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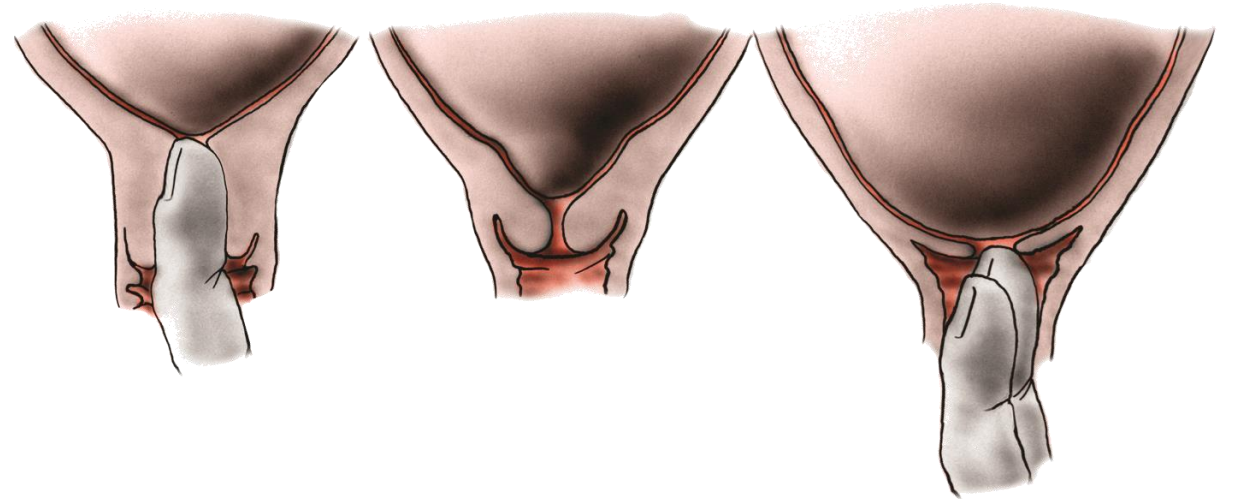
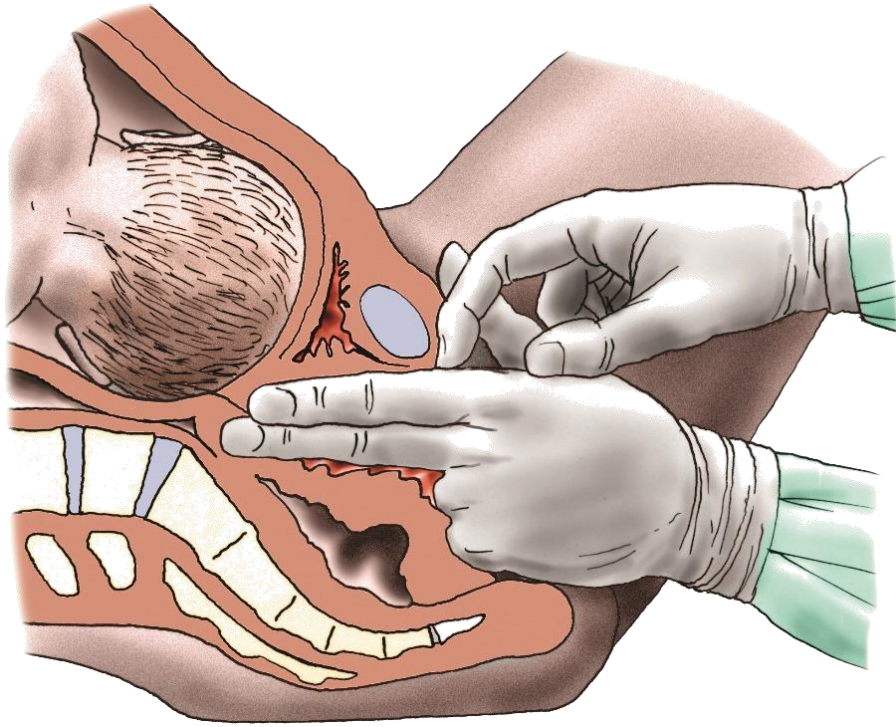
Fetal head position at birth by extension.



Fetal head restitution.



Fetal head external rotation.



Vaginal examination

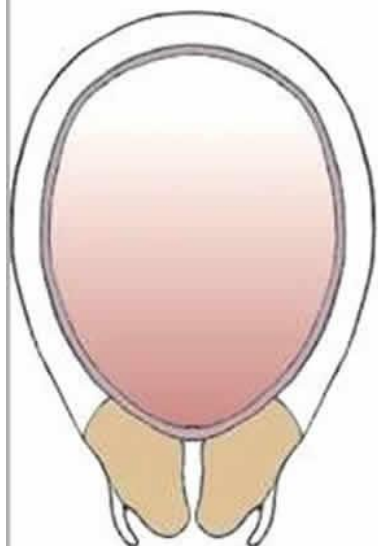
With the first and third fingers we open the labia minora and labia majora.

Very gently introduce the index finger through the posterior commissure, painless area and then add the middle finger.

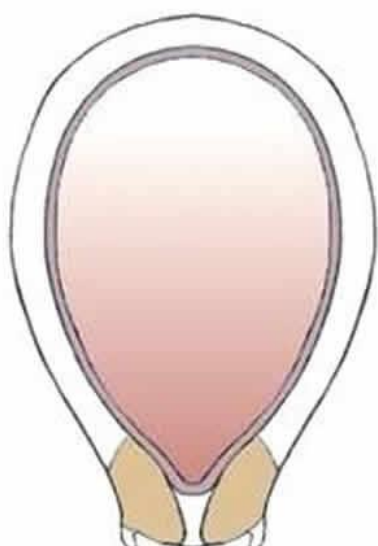
We examine the spaciousness of the pelvis and the presentation of the fetus.

Primigravida

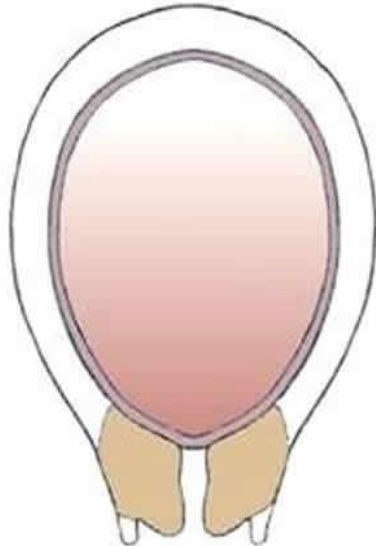
Multigravida



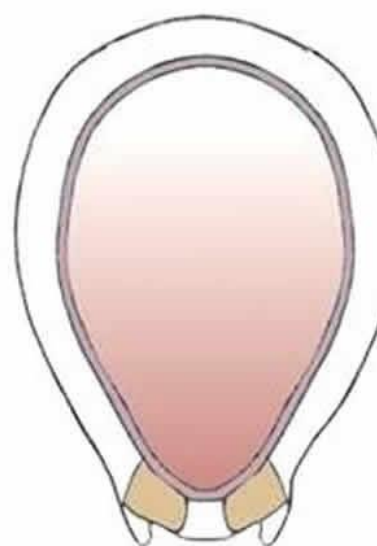
Before labor



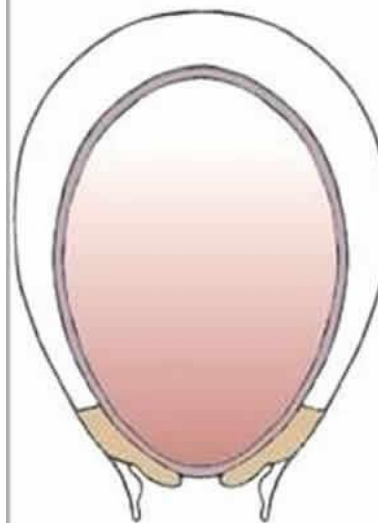
Early effacement



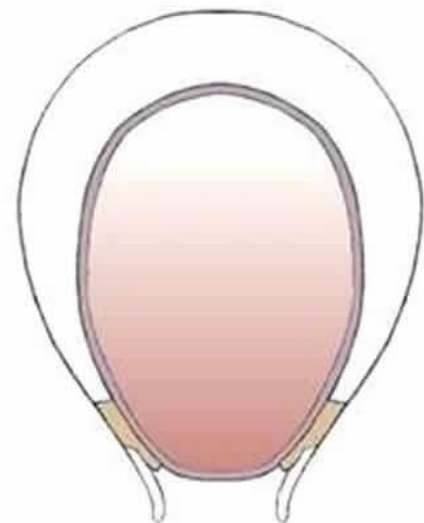
Before labor



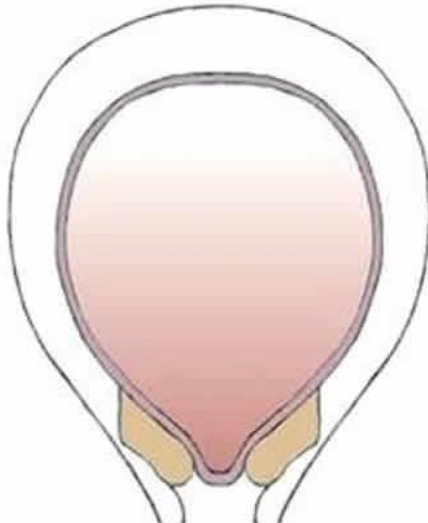
Effacement and beginning dilation



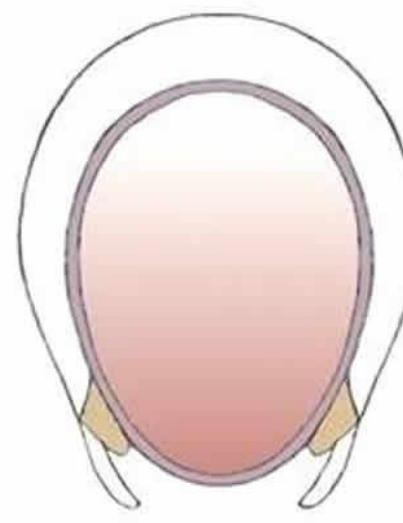
Complete effacement



Complete dilation



Dilation



Complete dilation



When can a mother push?

- cervix has to be fully dilated
- water has broken, amniotic fluid leaked
- the head must be rotated
- the head must be in the pelvic outlet

When is the head in the pelvic outlet?

The head is in the pelvic outlet when its leading part is visible between the labia minora and labia majora between contractions.