

physiology & mechansim of labor

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Outline

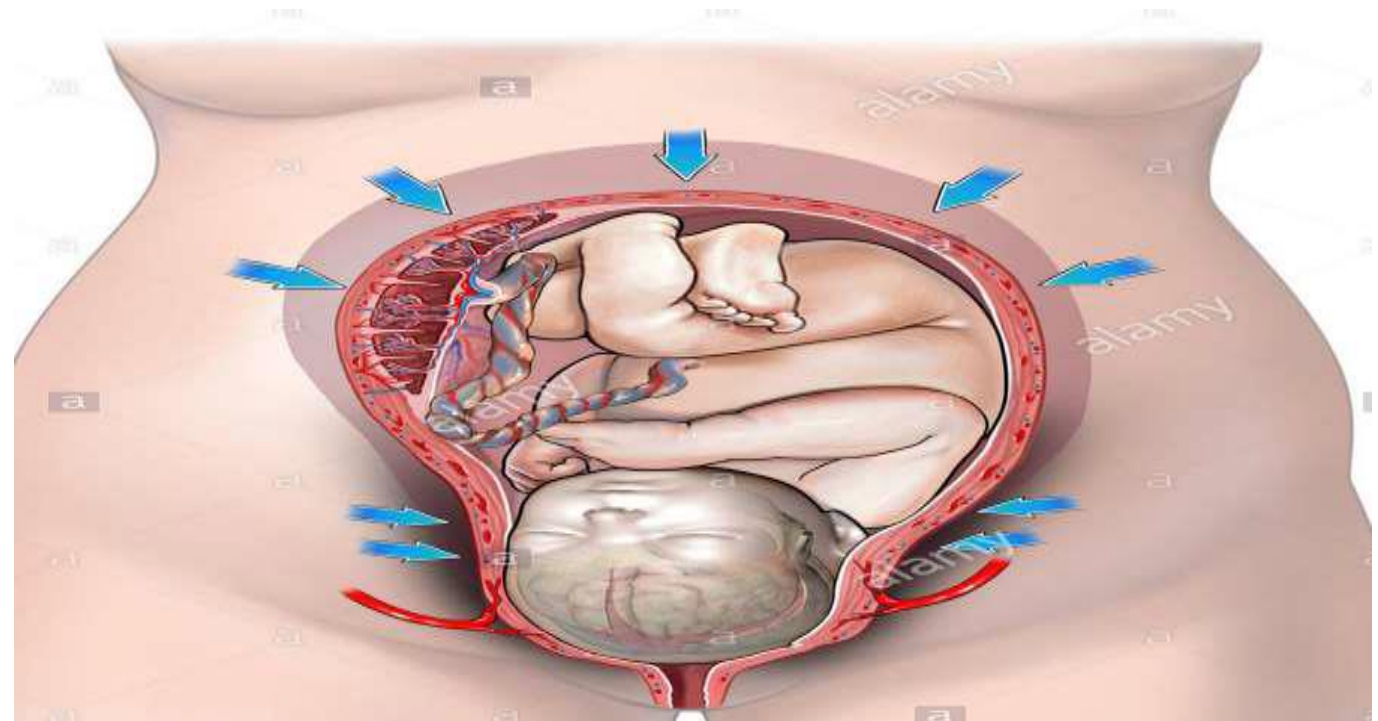
- **Definition of labor**
- **Mechanism of labor**
- **Signs and Symptoms of impending Labor**

Definition of Labor

- Labor is defined as the process by which the fetus is expelled (drive out) from the uterus.
- **More specifically**, labor requires regular, effective contractions that lead to dilation and effacement of the cervix.

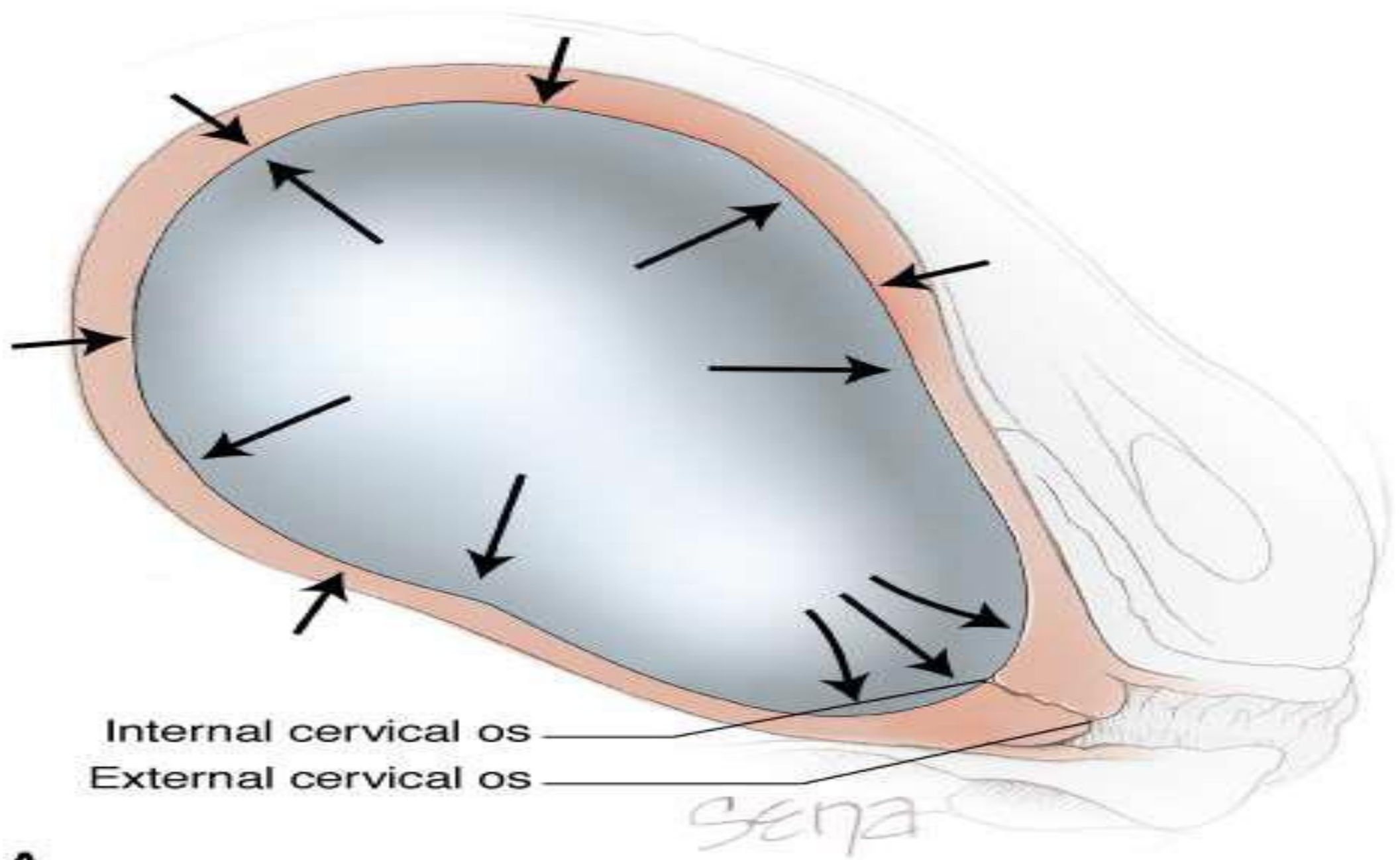
Uterine contraction :

During contraction, uterus becomes hard and somewhat pushed anteriorly to make the long axis of the uterus in the line with that of pelvic axis



Uterine contraction :

At the same time, the patient experiences pain which is located more on the hypogastric region, often radiating to the thighs.



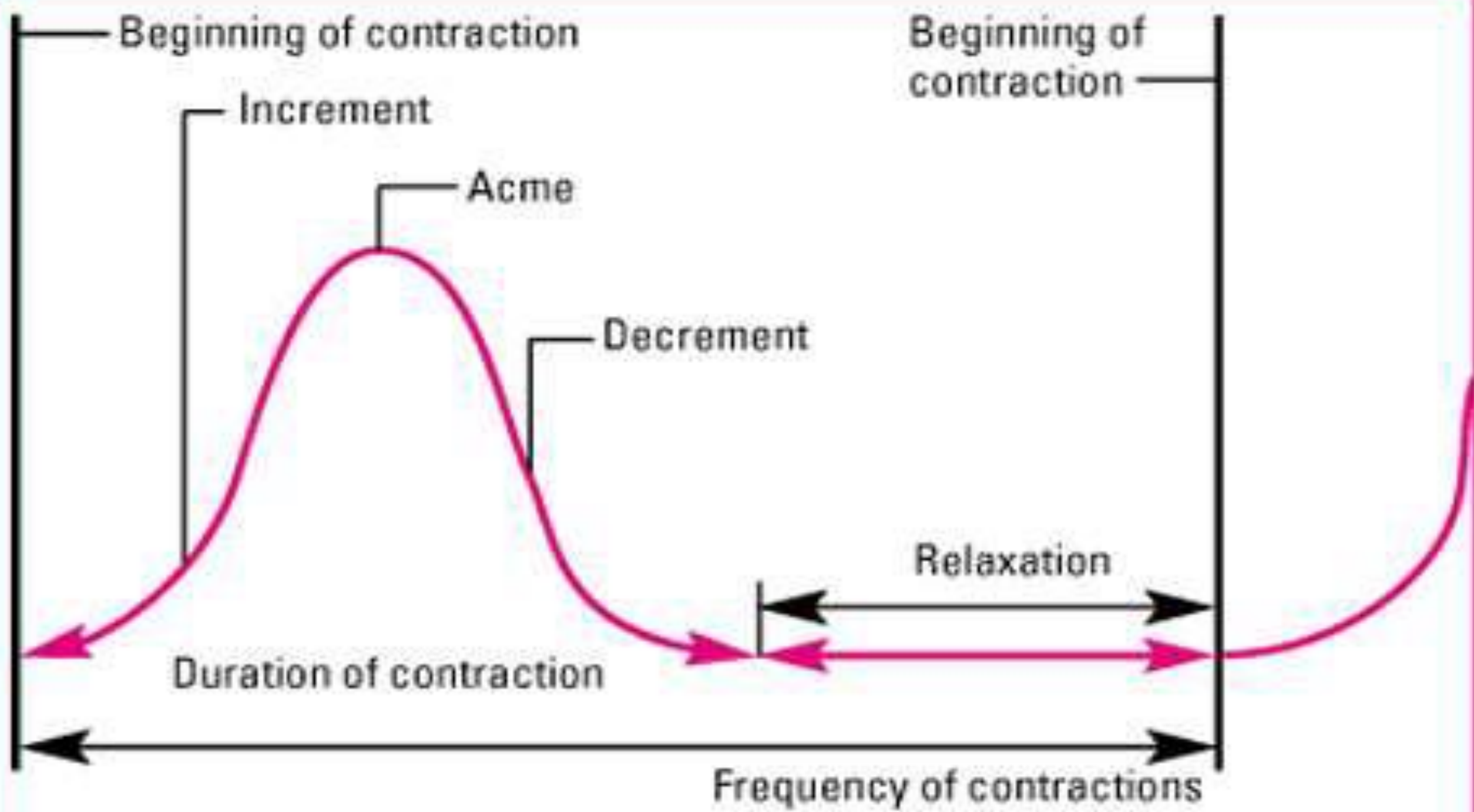
Internal cervical os
External cervical os

Senha

A

Intensity

- The intensity gradually increases with the advancement of labor until it becomes maximum in the second stage during delivery of the baby.

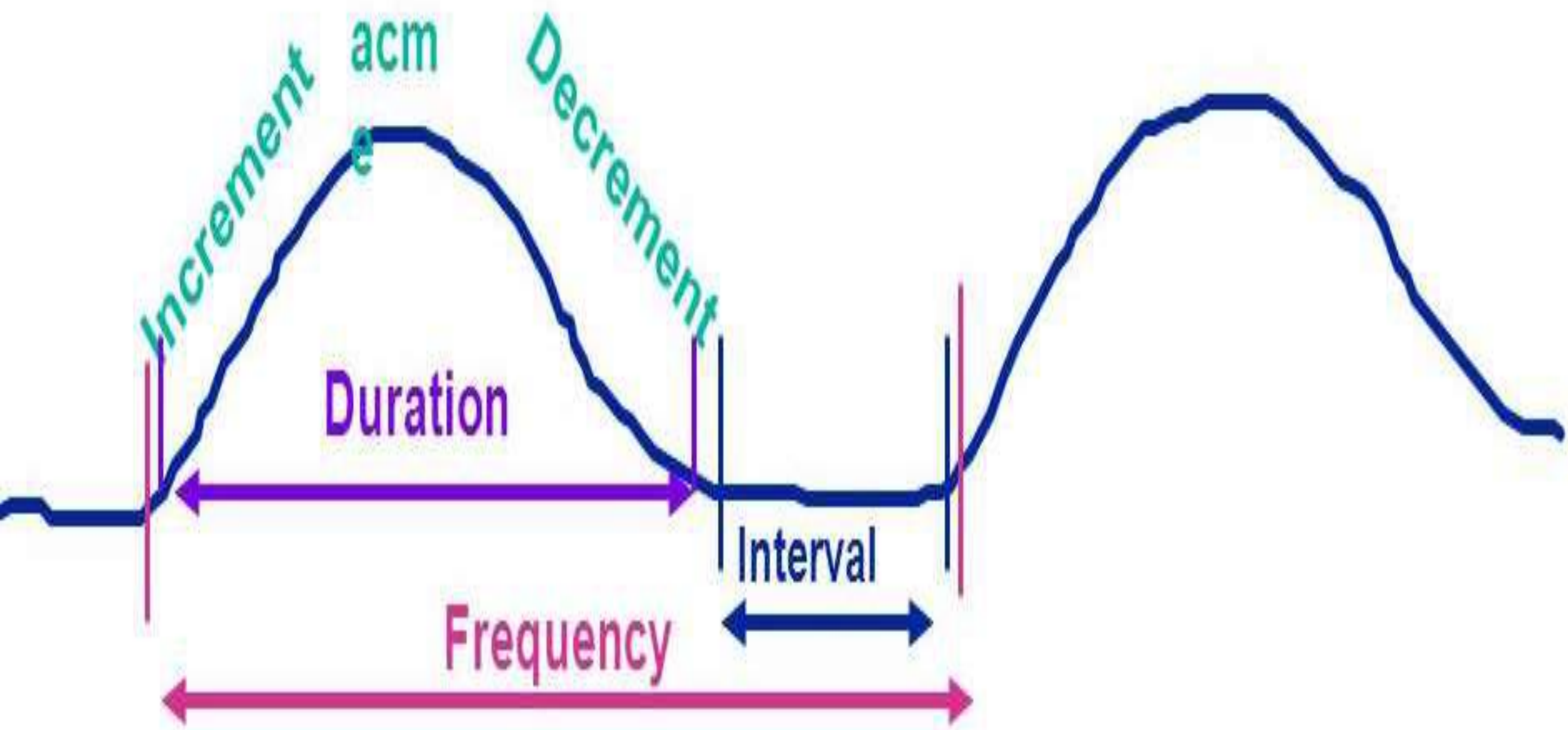


Duration

- In the first stage, the contractions last for about 30 seconds initially but gradually increases in duration with the progress of labor.
- Thus in the second stage, the contractions last longer than in the first stage.

Frequency

- In the early stage of labor, the contractions come at intervals of **ten** to **fifteen minutes**.
- The intervals gradually shorten with advancement of labor until in the second stage, when it comes every **two or three minutes**.

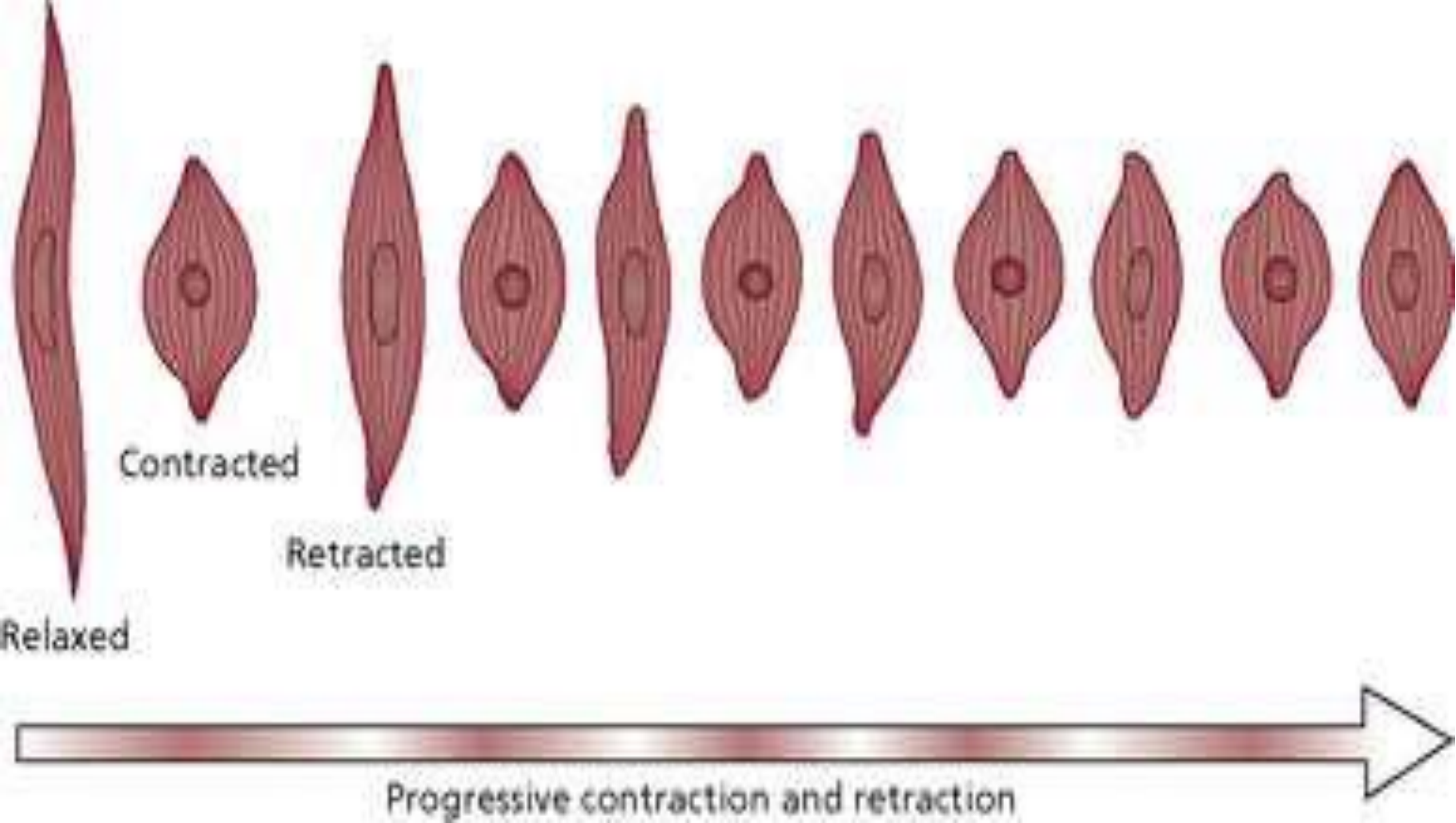


Retraction

- Retraction is a phenomenon of the uterus in labor in which the muscle fibers are permanently shortened.

The effect of retraction on normal labor are:-

Essential property in the formation of lower uterine segment and dilatation and effacement up of the cervix.



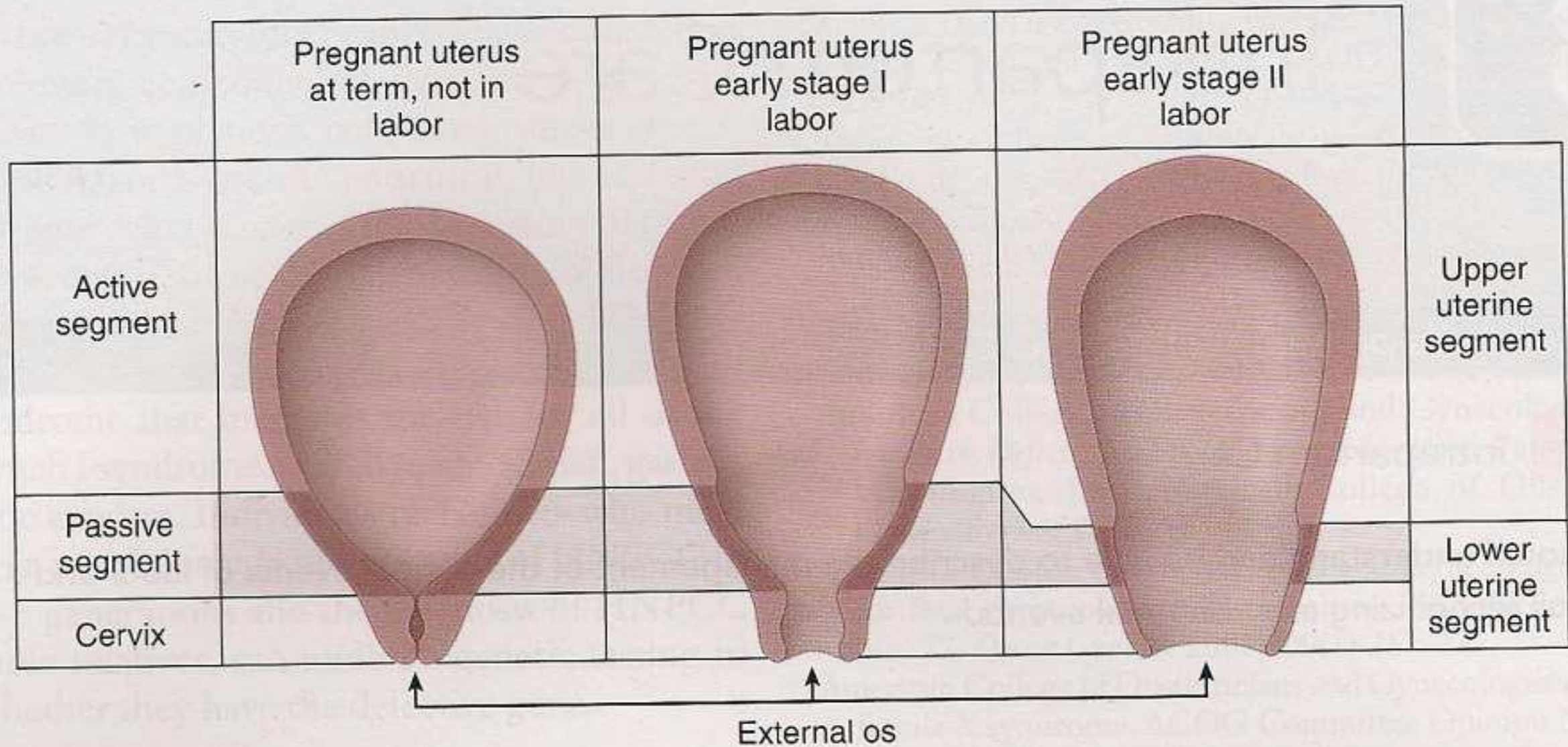


FIGURE 8.1. Mechanism of effacement, dilation, and labor. With continuing uterine contractions, the upper uterus (active segment) thickens, the lower uterine segment (passive segment) thins, and the cervix dilates. In this way, the fetus is moved downward, into and through the vaginal canal.

Mechanics of labor

- The ability of the fetus to successfully cross the pelvis during labor and delivery depends on the complex interactions of three variables:
 - 1- Uterine activity (Powers)
 - 2- The fetus (Passenger)
 - 3- The maternal pelvis (Passage)

Uterine activity (Powers)

- The powers refer to the forces generated by the uterine musculature. Uterine activity is characterized by the frequency, amplitude (intensity), and duration of contractions.

The Fetus (Passenger)

- The passenger, of course, is the fetus. Several fetal variables influence the course of labor and delivery.

1-Fetal Size,

2- Lie

3- Presentation,

4- Position,

5- Attitude, and

6-Station.

Fetal Size

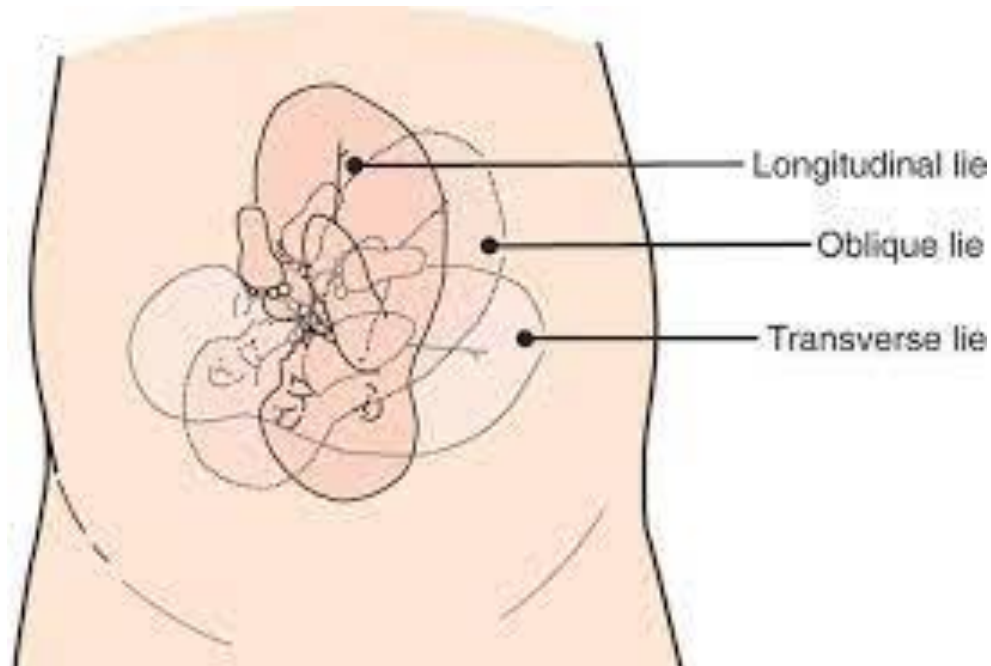
- Fetal size can be estimated clinically by abdominal palpation or with ultrasound, but both are subject to a large degree of error.
- **Fetal macrosomia** (defined by the American College of Obstetricians and
- Gynecologists [ACOG] as **actual birth weight greater than 4500 g**)

Fetal lie:

1-Longitudinal lie

2-Oblique lie

3-Transverse lie



Fetal presentation

- **Presentation** is determined by fetal lie and by the body part of the fetus that enters the pelvic passage first.
- Fetal presentation may be cephalic, breech or shoulder.
- The most common presentation is **cephalic**, this presentation occurs labor and birth are likely to proceed normally.
- Breech and shoulder presentations are associated with difficulties during labor and labor does not proceed as expected; therefore , they are called **malpresentation**.

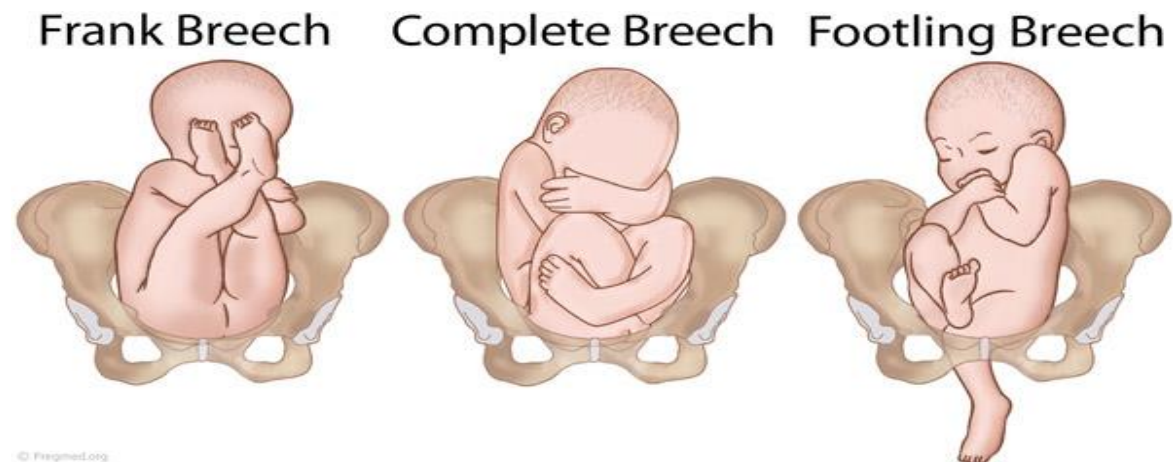
1- Cephalic

- (**Vertex presentation**) Is the most common Presentation
- **Brow presentation:**
- **Face presentation**

2- Breech presentation

Breech presentation occur in 3% of term birth.

- **Complete breech**
- **Frank breech**
- **Footling breech**



Fetal position

- The relation of a chosen point (occiput) of the fetal presenting part to the Right or Left side of the maternal birth canal.

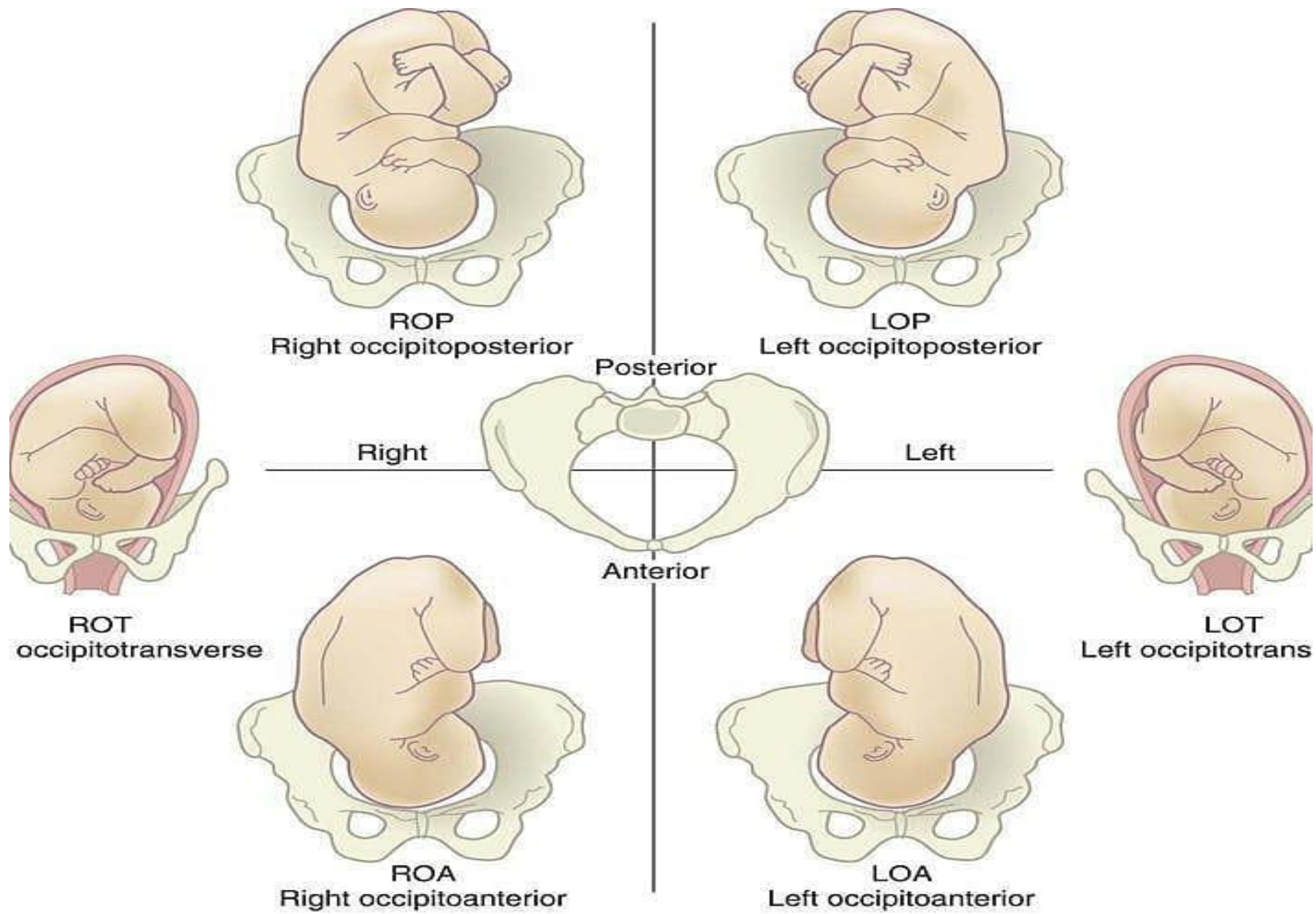
- **The chosen point**

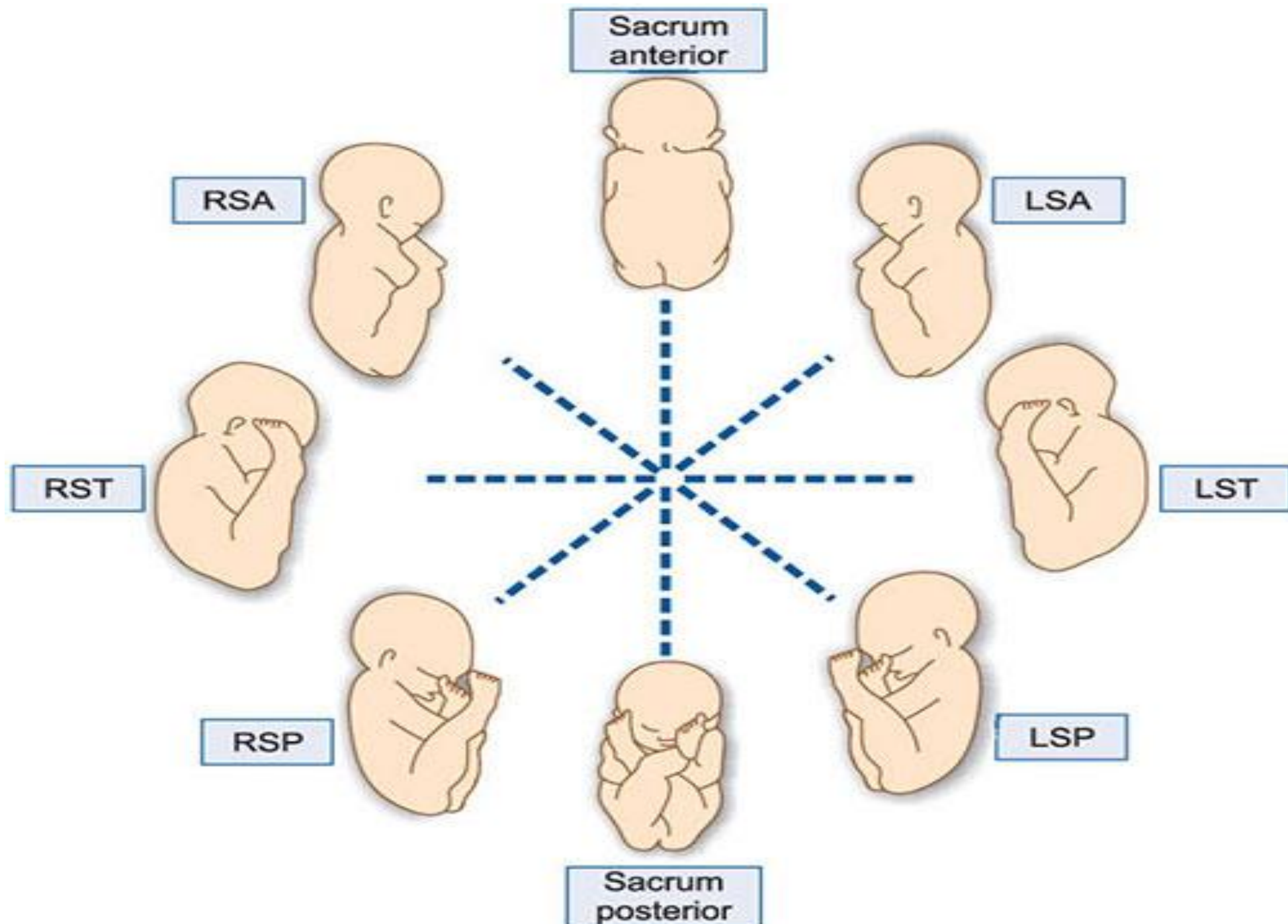
1- Vertex presentation – occiput

2- Face presentation - mentum

3- Breech presentation - Sacrum

Each presentation has two positions Rt or Lt Each position has 3 varieties : anterior, transverse, posterior







(A) Right mentoposterior



(B) Left mentoposterior



(C) Right mentolateral



(D) Left mentolateral



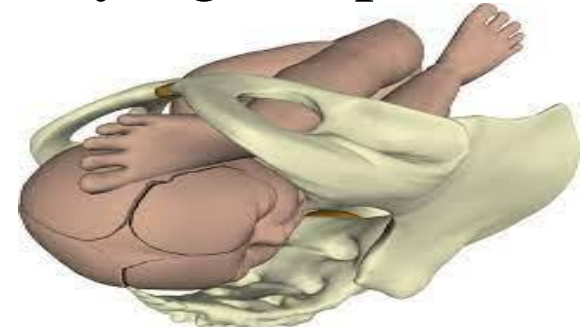
(E) Right mentoanterior



(F) Left mentoanterior

3-Compound presentation:

Refers to the presence of more than one fetal part overlying the pelvic inlet, such as a fetal hand and the vertex.

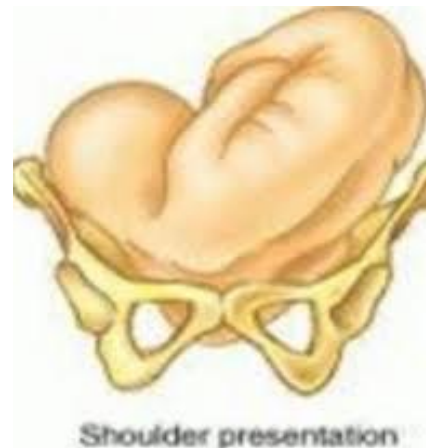


4-Funic presentation: refers to presentation of the umbilical cord and is rare at term.



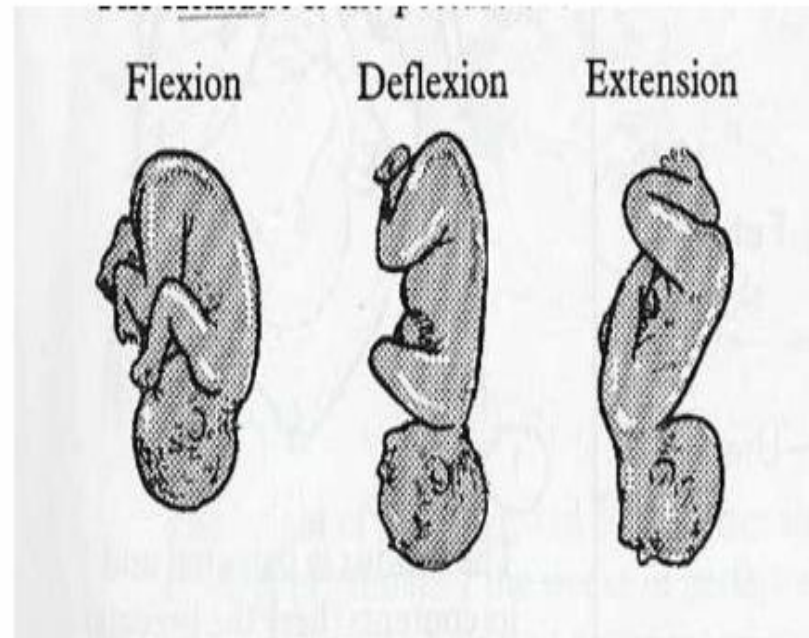
5- Shoulder presentation:

Shoulder present first



Attitude:

The relationship of fetus' body parts to one another. Normal fetal attitude is when the head is tucked down to the chest with its arms and legs drawn in towards center of chest.

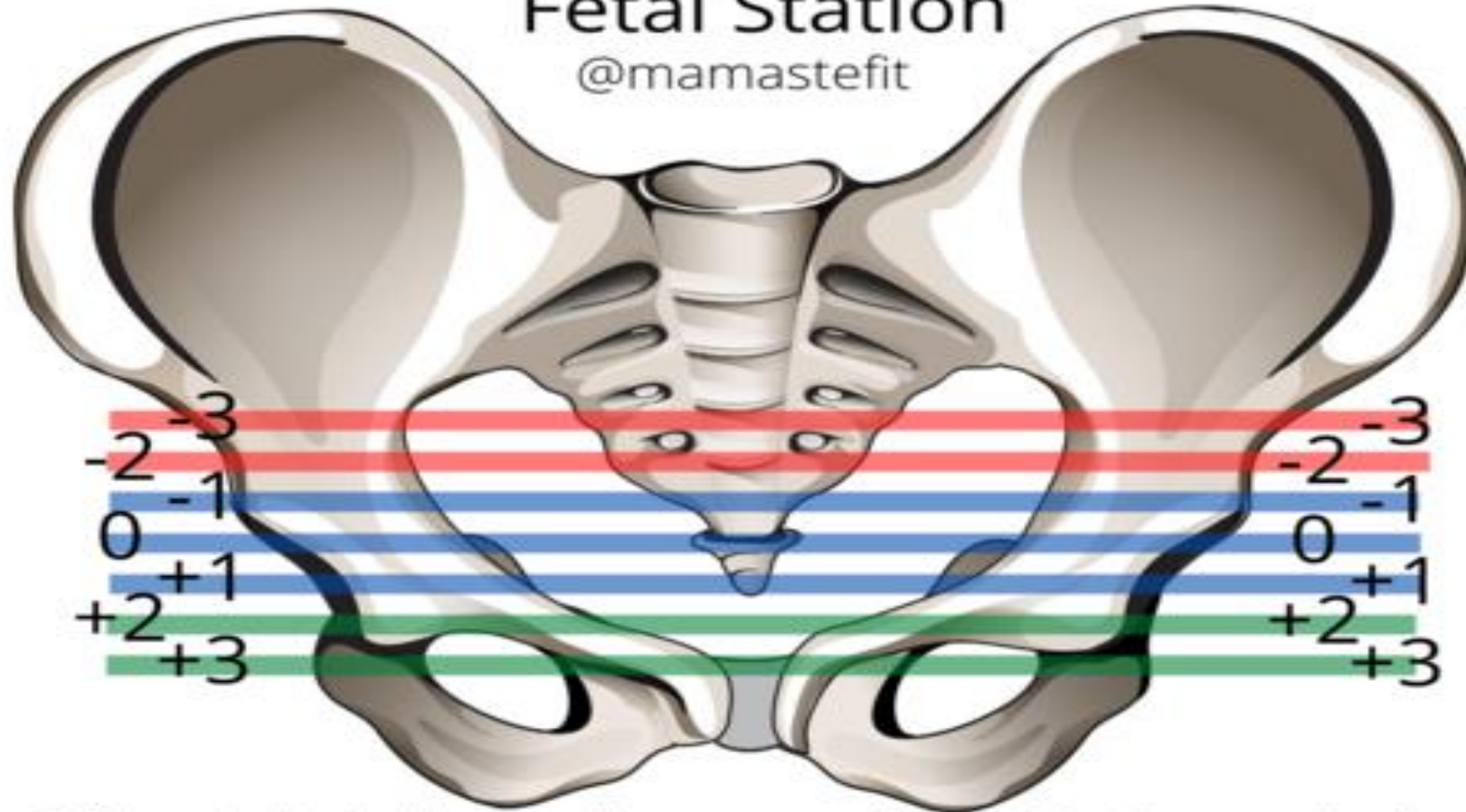


Engagement

- Engagement of the presenting part occur when the largest diameter of the presenting part reach or passes through the pelvic inlet.
- Engagement can be determined by vaginal examination.
- **In primigravida**, engagement occurs approximately 2 weeks before term.
- **In multipara** engagement occur several weeks before the onset of labor or during the onset of labor.

Fetal Station

@mamastefit



Where is baby located in your pelvis?? Station can help explain how high or low baby is!

Red lines = focusing on opening the **inlet**

Blue lines = focus on opening the **midpelvis**

Green lines = focus on opening the **outlet** (time to push!)

Fetal station is measured based off the relationship of the presenting portion of baby and the ischial spines!

Signs and Symptoms of impending Labor

- **Lightening:**

The presenting part (usually the fetal head) settles downward into the pelvic cavity, causing the uterus to move downward as well.

- Leg cramps or pains

- Increased pelvic pressure

- Increased urinary frequency

- Increased venous stasis, causing edema in the lower extremities

- Increased vaginal secretions, due to congestion in the vaginal mucosa

2- Braxton-hicks contractions:

- Irregular contractions, are usually felt in the abdomen or groin region and patients may mistake them for true labor.
- Braxton-Hicks contractions do not lead to dilation or effacement of the cervix, and thus are often termed “false labor.”

- **3- Cervical changes:**

- In preparation for passage of the fetus, the cervix undergoes many physiological changes. The cervix softens (“cervical ripening”), stretches, and thins, and eventually. This softening and thinning is called cervical effacement.

4- Bloody show

- The added pressure created by engagement of the presenting part may lead to the expulsion of a blood-tinged mucus plug, called bloody show.

5- Rupture of the membranes

- The amniotic membranes rupture once labor is well established, either **spontaneously** or by **amniotomy**, the artificial rupture of the membranes by the primary care provider.
- The fluid should be clear and odorless. A yellow green tinged amniotic fluid may indicate infection or fetal passage of meconium and this finding always signals the need for further assessment and fetal heart rate monitoring.

Question