



FETAL DEVELOPMENT, LABOR, AND DELIVERY

MATERNAL HEALTH EDUCATION SESSION
FOR HEALTH WORKERS

Calcutta Kids

STAGES OF FETAL DEVELOPMENT

1 month



2 months



3 months



4 months



5 months



6 months



7 months



8 months



9 months



EMBRYO ONE MONTH

The embryo consists of two layers of cell from which all organs and body parts will develop. The beginning of the brain, spinal cord, and heart can be seen.



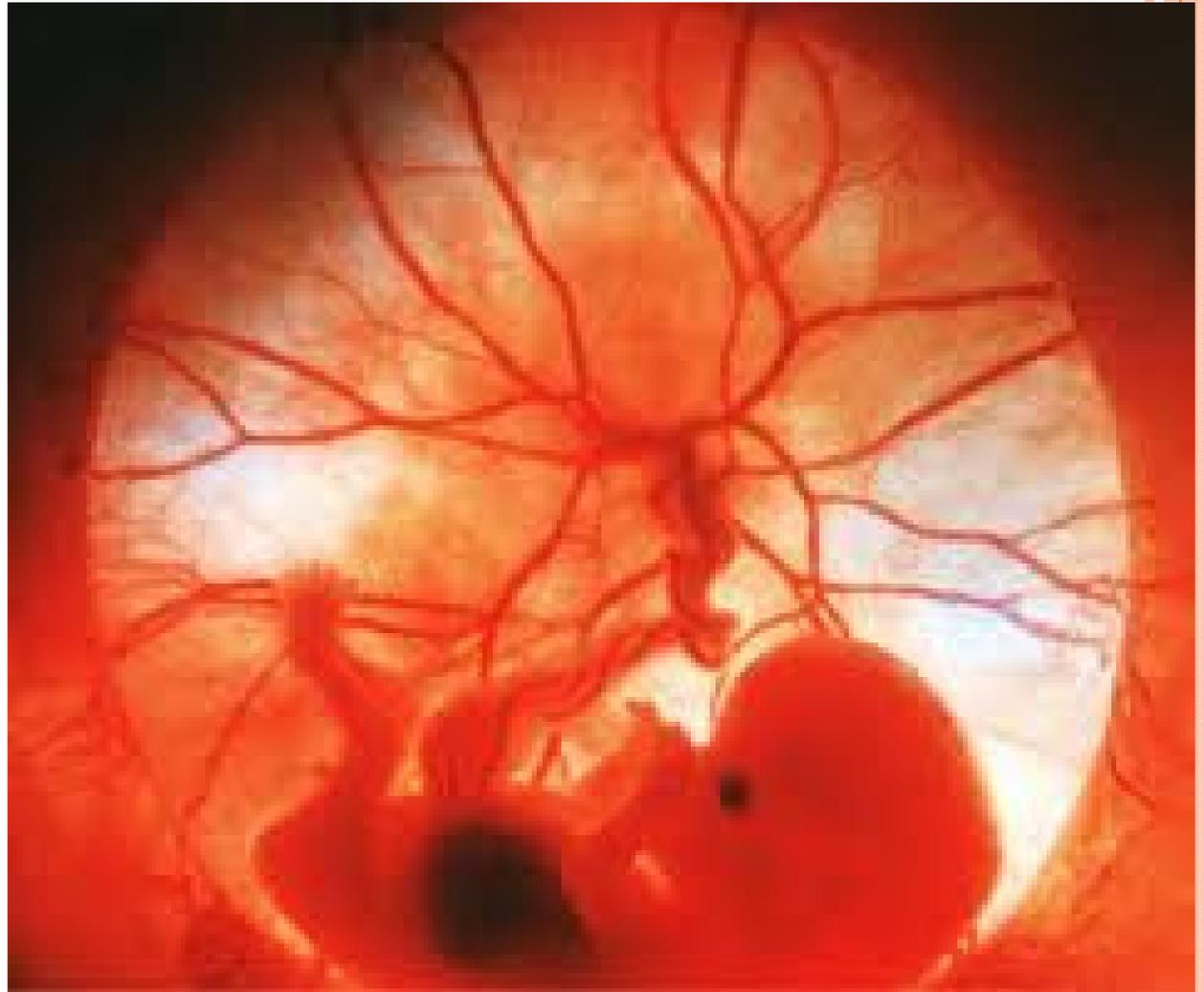
EMBRYO TWO MONTHS

The heart is beating.
The brain is starting to form.
Slightly webbed fingers can be seen.
The embryo is the size of a grape.



FETUS THREE MONTHS

The embryo officially becomes a fetus. The limbs, fingers, toes, and features on the face (eyes, nose, mouth) can be seen. The fetus is the size of a plum- about 3 inches (7.6 cm) long and weighs one ounce (28 g).



FETUS FOUR MONTHS



The fetus is 5 inches (12.7 cm) long and weighs 5 ounces (148 g). The skeleton is starting to harden from rubbery cartilage to bone.



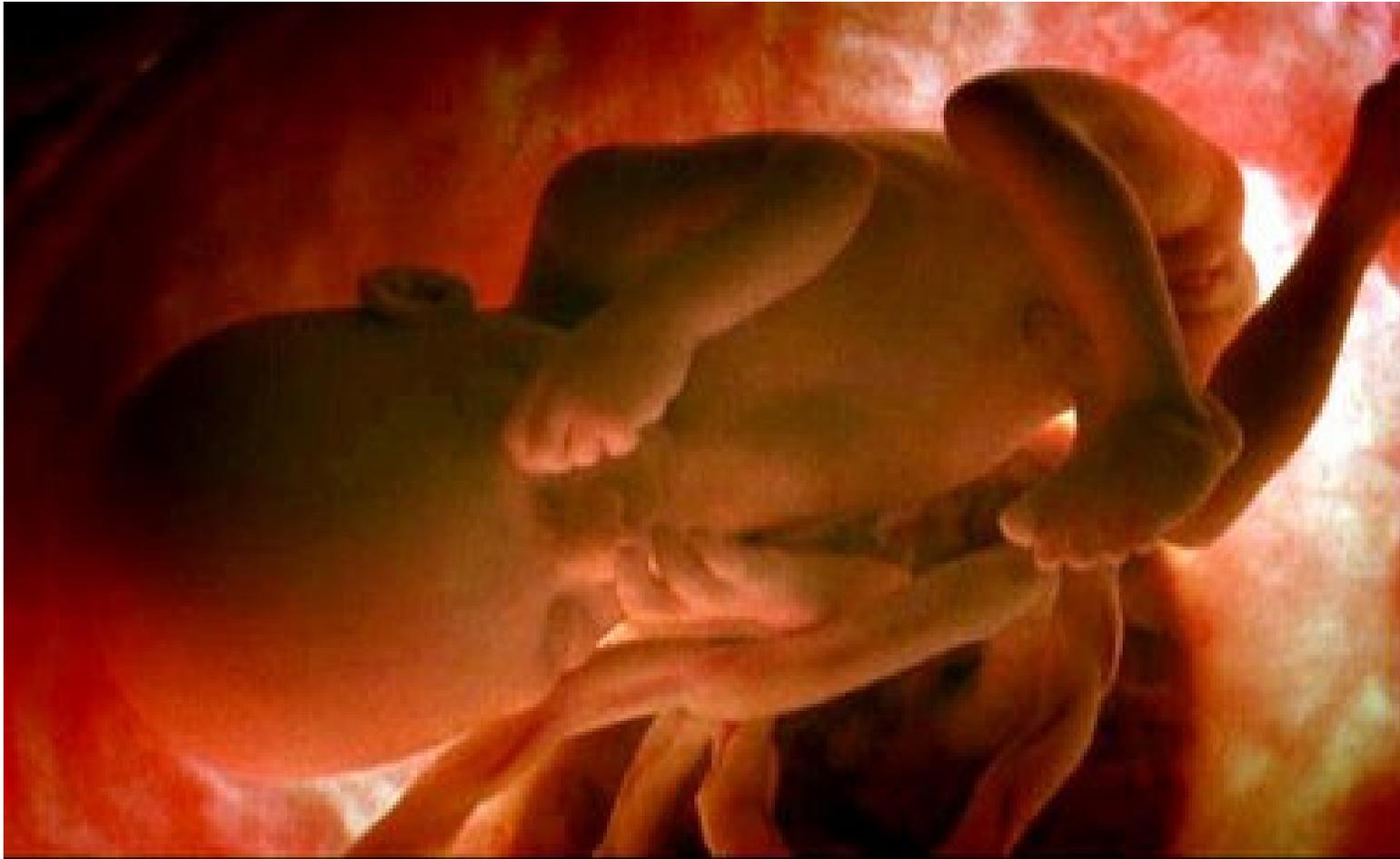
FETUS FIVE MONTHS



The eyebrows and eyelids are now in place. The baby is now more than 10 inches (25.4 cm) long if you stretched out its legs. The hearing starts developing. The baby starts kicking.



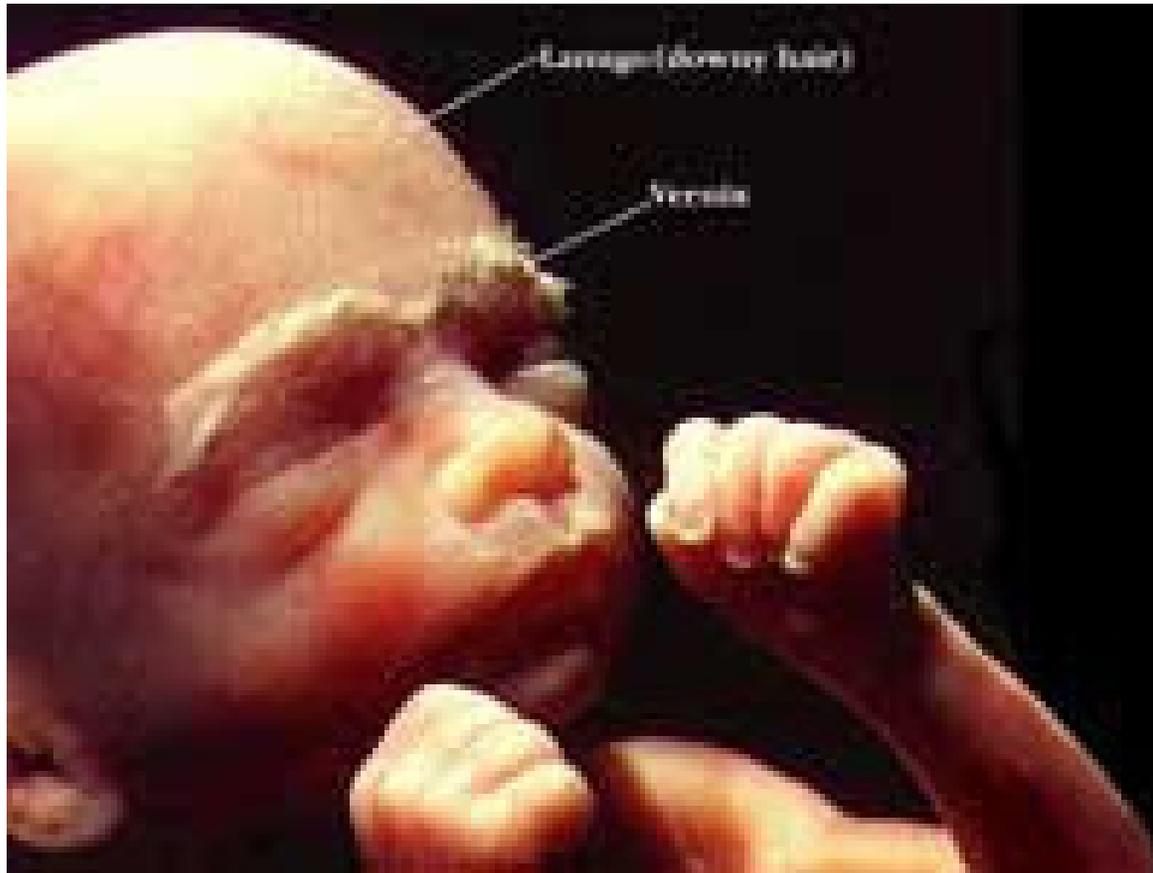
FETUS SIX MONTHS



The baby is almost fully formed. It weighs about a pound and a half (0.68 kg). The wrinkled skin is starting to smooth out as it puts on baby fat.



FETUS SEVEN MONTHS



The baby weighs about 3 pounds (1.4 kg) and is around 15 inches (38.1) long. It can open and close its eyes and follow a light.



FETUS EIGHT MONTHS



The baby now weighs about 4 $\frac{3}{4}$ pounds (2.2 kg). The layers of fat are filling it out, making him rounder, and the lungs are well developed.

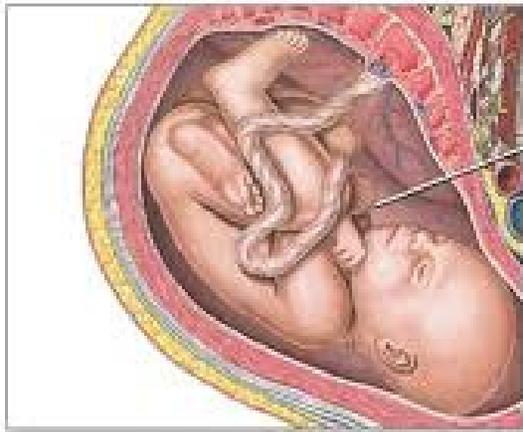


FETUS NINE MONTHS



The baby is fully developed and ready to be born. The average baby is more than 19 inches (48.3 cm) long and weighs nearly 7 pounds now (3.2 kg). But babies vary widely in size at this stage.

TIMING



Normal fetus at 36th week of pregnancy



Normal fetus at 40th week of pregnancy

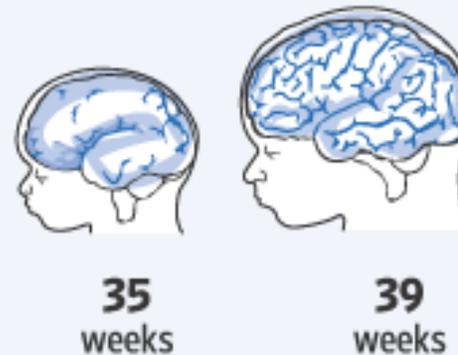
ADAM

ADAM

- **PRE-TERM:**
Before 37 weeks
- **FULL-TERM:**
37-42 weeks
- **POST-TERM:**
After 42 weeks

Bigger is Better

A baby's brain at 35 weeks weighs only two-thirds what it will weigh at 39 weeks.

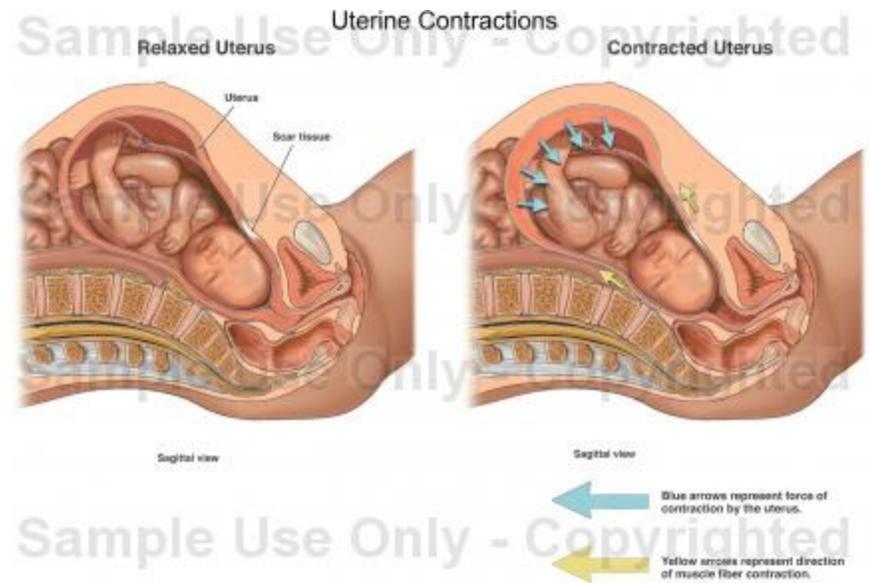
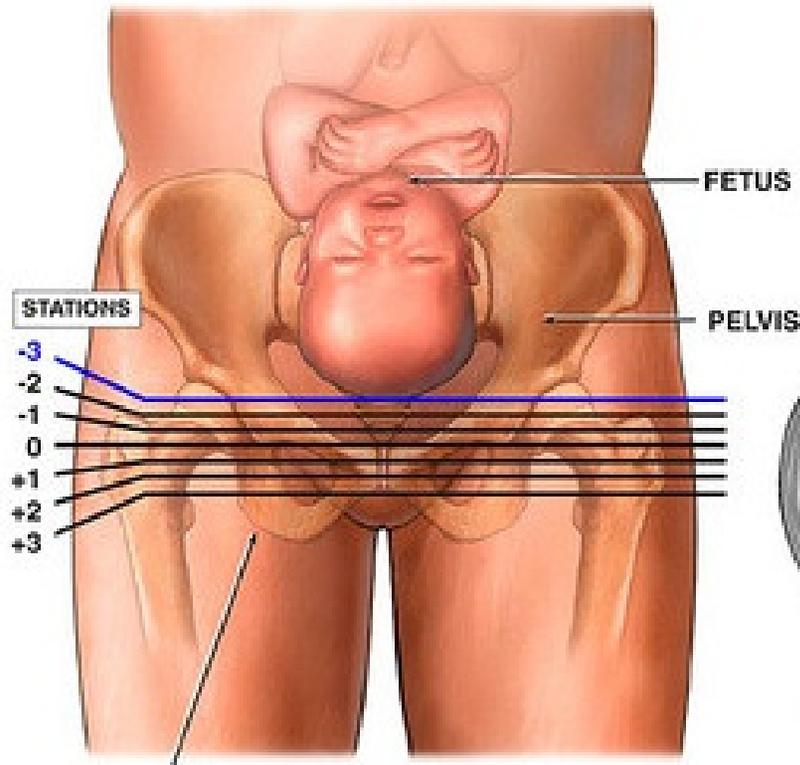


Source: March of Dimes



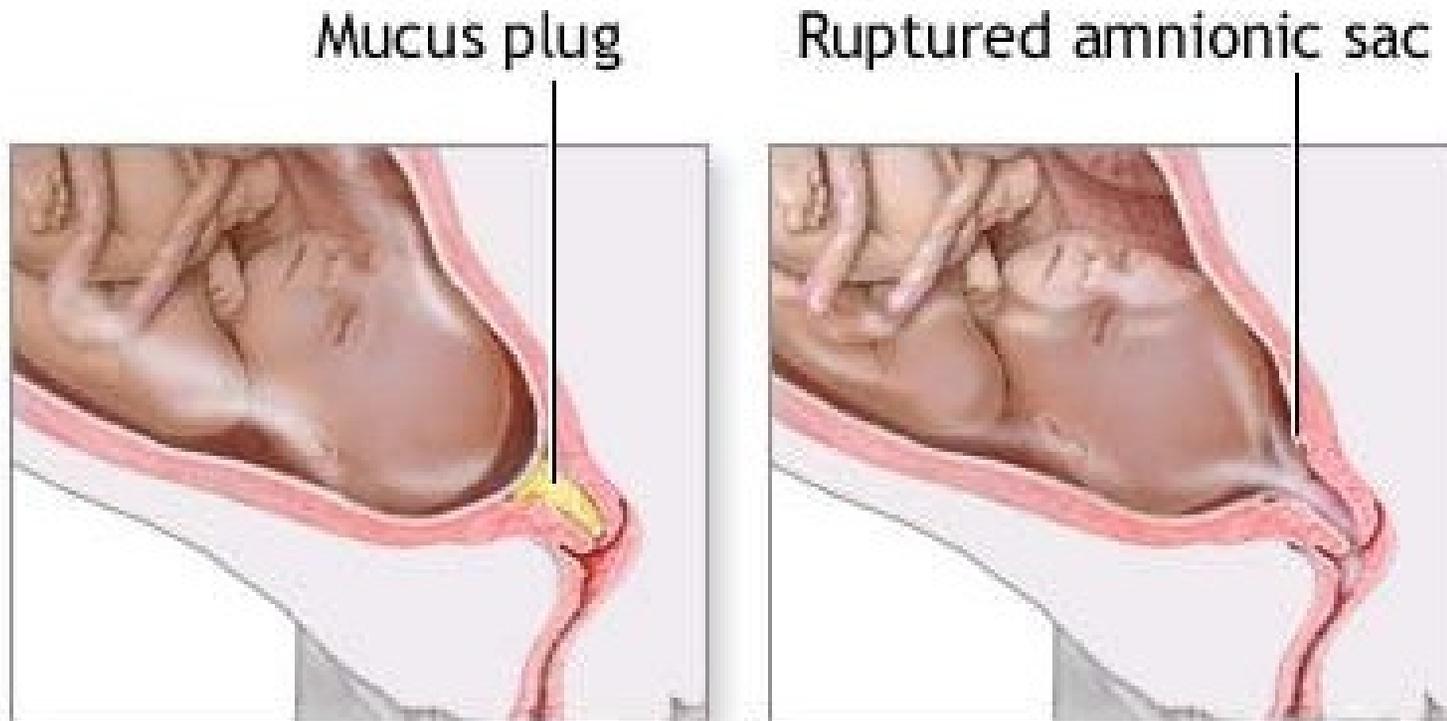
SIGNS OF LABOR

- The baby “drops” to the lower uterus– last month of pregnancy
- Pre-labor contractions (Braxton-Hicks) and start of real contractions



SIGNS OF LABOR

- Pass the mucous plug- may come out as a plug or discharge, may be tinged with blood
- Water breaks- amniotic sac ruptures



DURING LABOR: CERVIX STARTS TO CHANGE-GETS THINNER AND STARTS TO DILATE

Cervical Effacement & Dilation (*Borramiento y Dilatación Cervical*)

Effacement - the gradual thinning, shortening and drawing up of the cervix measured in percentages from 0 to 100%.

Borramiento - el adelgazamiento, acortamiento y encogimiento gradual del cervix medido en porcentajes del 0 al 100 %.



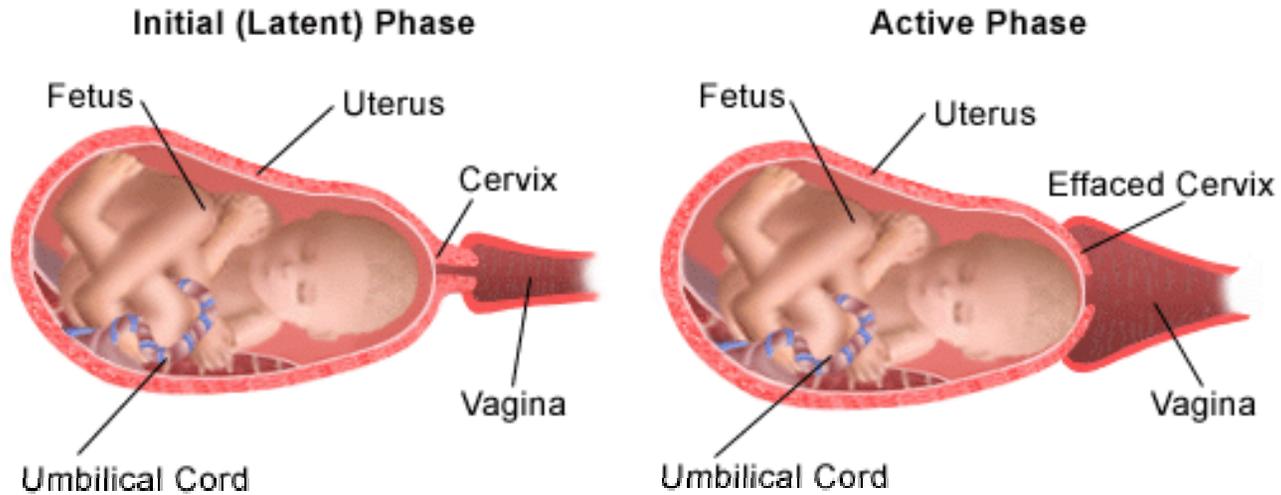
Dilation - the gradual opening of the cervix measured in centimeters from 0 to 10 cms.

Dilatación - La apertura gradual del cérvix medida en centímetros de 0 a 10 cms.

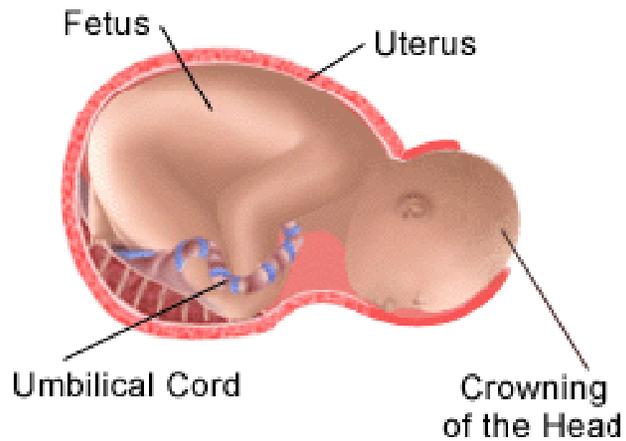


STAGES OF LABOR/DELIVERY

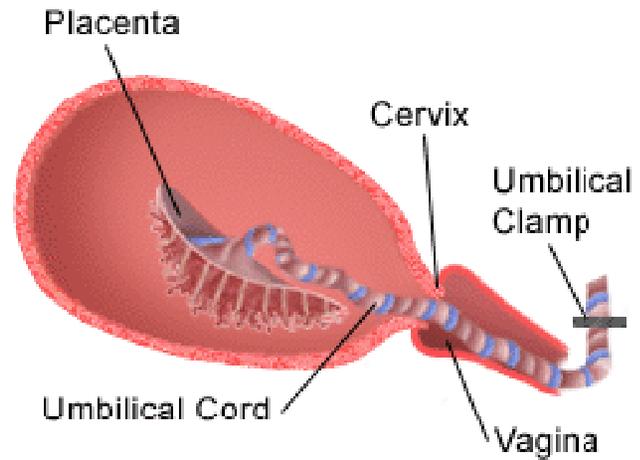
Stage 1



Stage 2

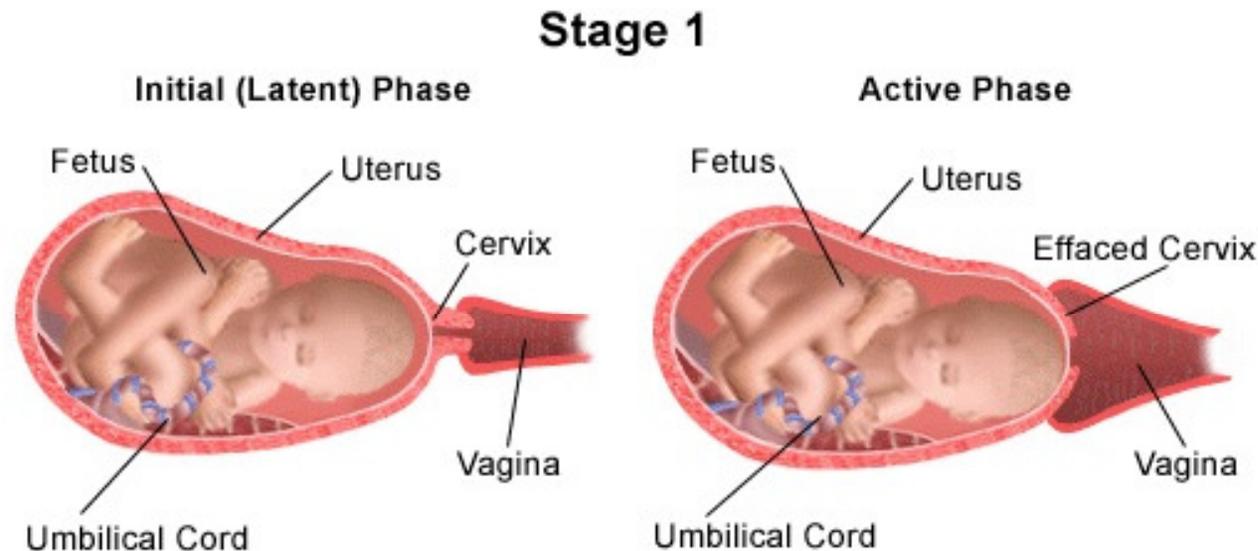


Stage 3



STAGES OF LABOR: FIRST STAGE

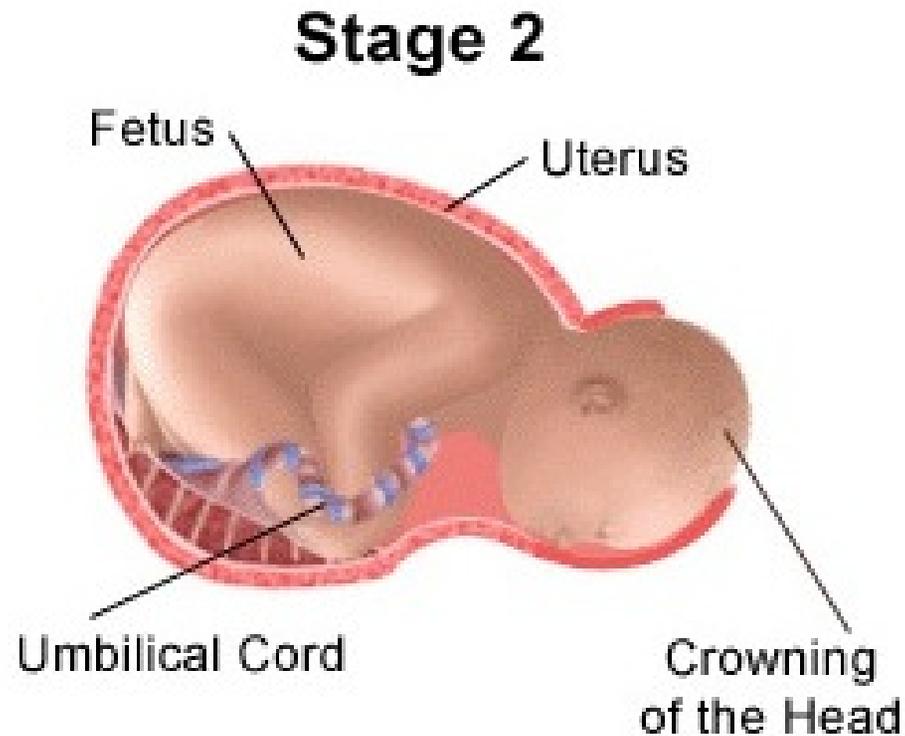
Begins when you start having contractions that progressively dilate and efface your cervix and it ends when your cervix is fully dilated:



- Initial Labor: Difficult to determine the start of labor because contractions begin very light.
- Active Labor: Active labor begins when the cervix is about 4 centimeters dilated and the progress starts to speed up- contractions are more frequent, longer, and stronger

STAGES OF LABOR: STAGE 2

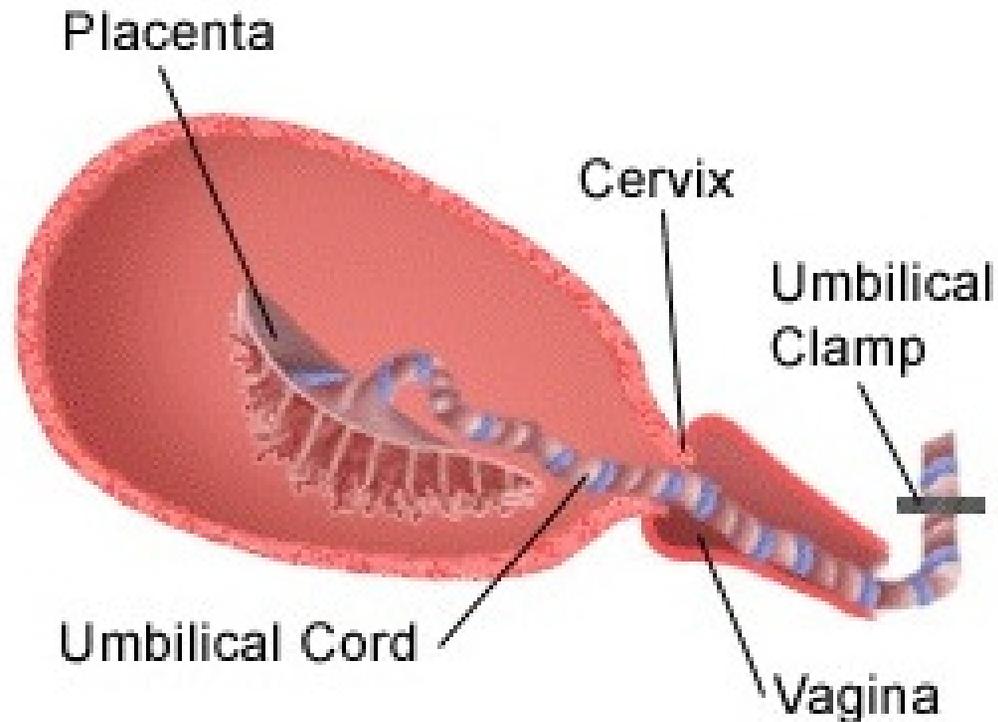
- Once your cervix is fully dilated, the second stage of labor begins: the final descent and birth of the baby.
- This is the "pushing" stage of labor, and it can last anywhere from minutes to a few hours.



STAGES OF LABOR: STAGE 3

The final stage of labor begins immediately after the birth of the baby and ends with the delivery of the placenta. The contractions in the third stage are relatively mild.

Stage 3

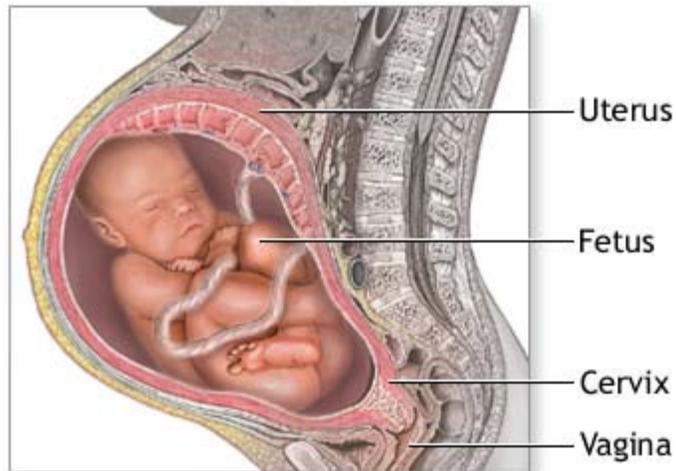


COMPLICATIONS

- **Cephalopelvic disproportion**
baby is too big, or pelvis too small
- **Abnormal presentation**



Fetus in breech presentation



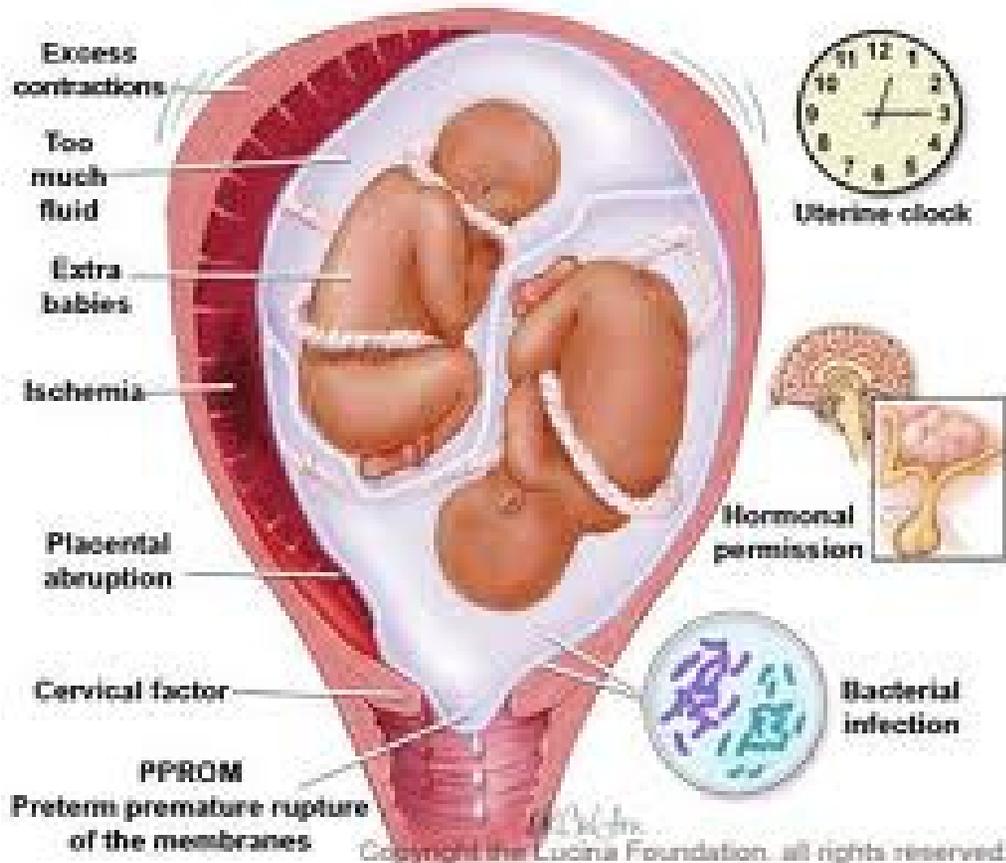
Fetus in transverse lie presentation



COMPLICATIONS

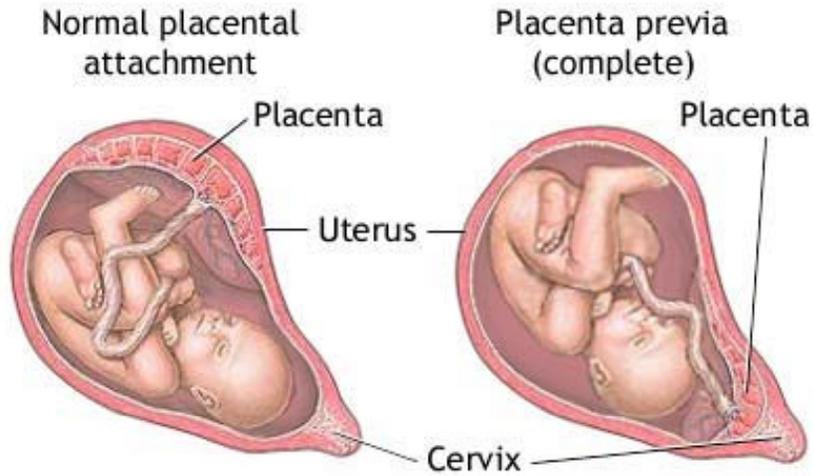
Pre-term labor and premature delivery: risk of immature lungs, respiratory distress, and digestive problems for premature baby

Pre-Term Labor - possible causes and risk factors



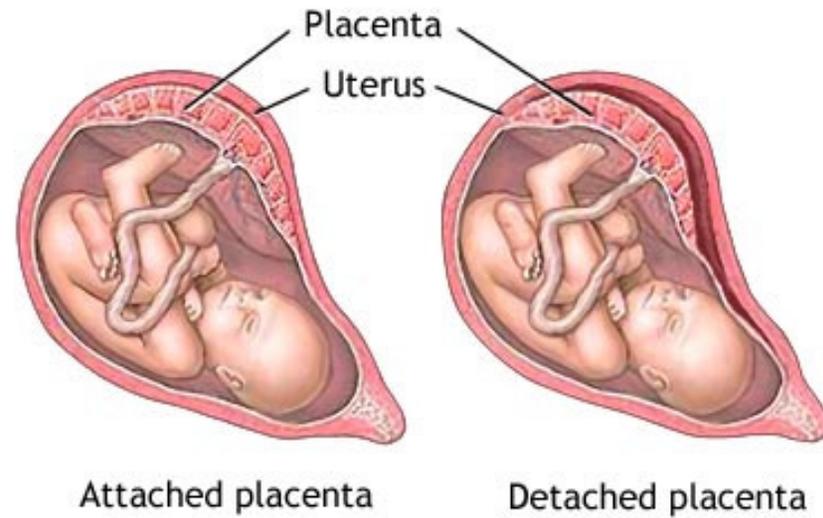
COMPLICATIONS

Placenta previa



ADAM.

Placenta abruption

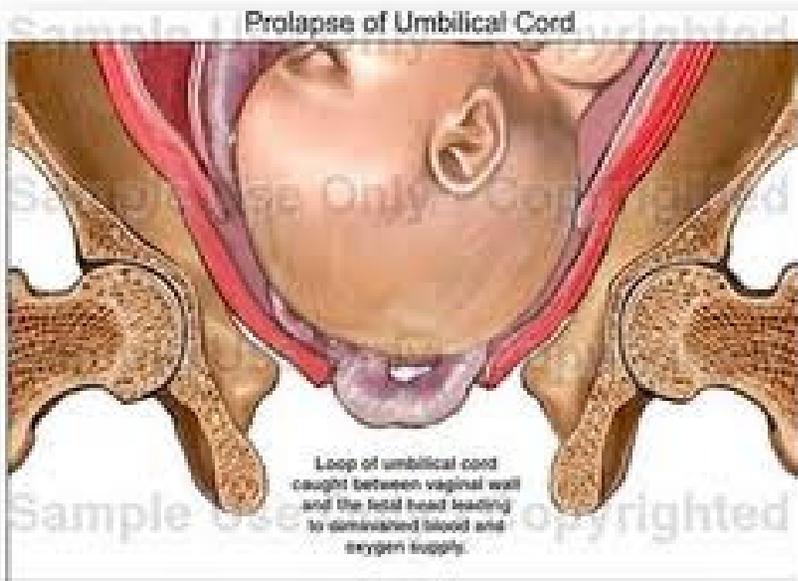


ADAM.

COMPLICATIONS

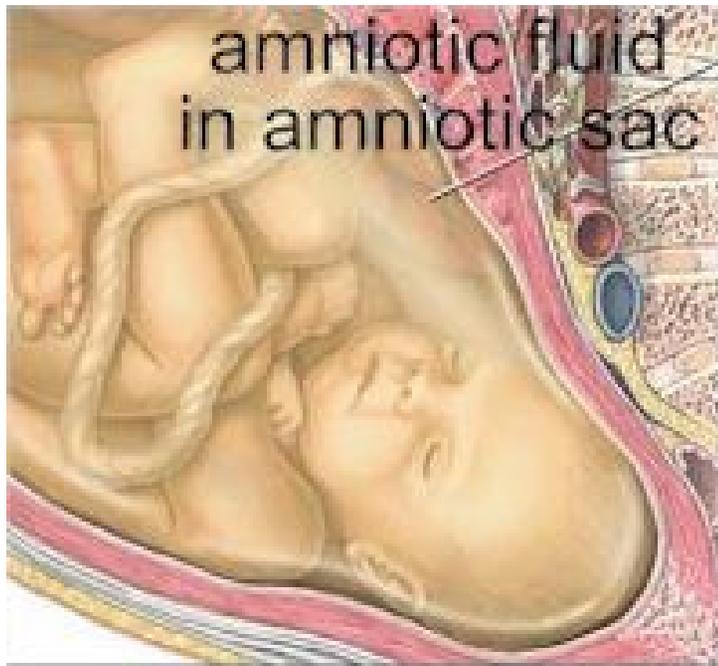
Umbilical cord abnormalities

Cord prolapse



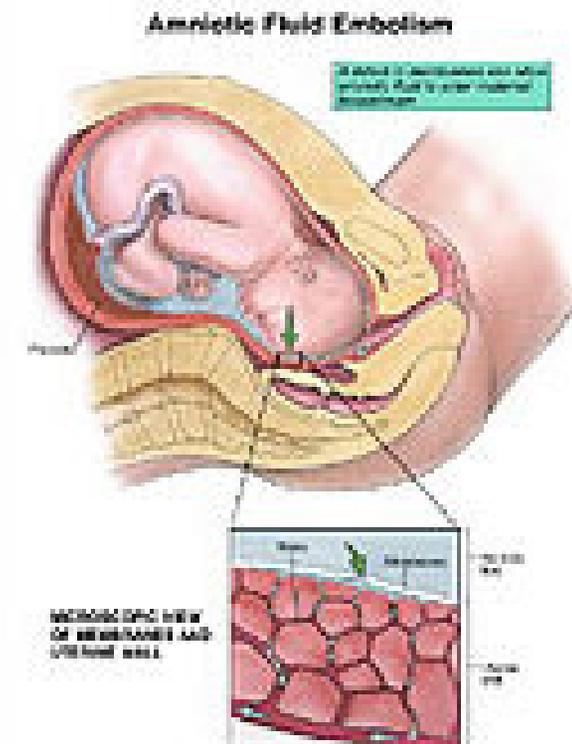
COMPLICATIONS

- **Premature rupture of membranes (PROM)**



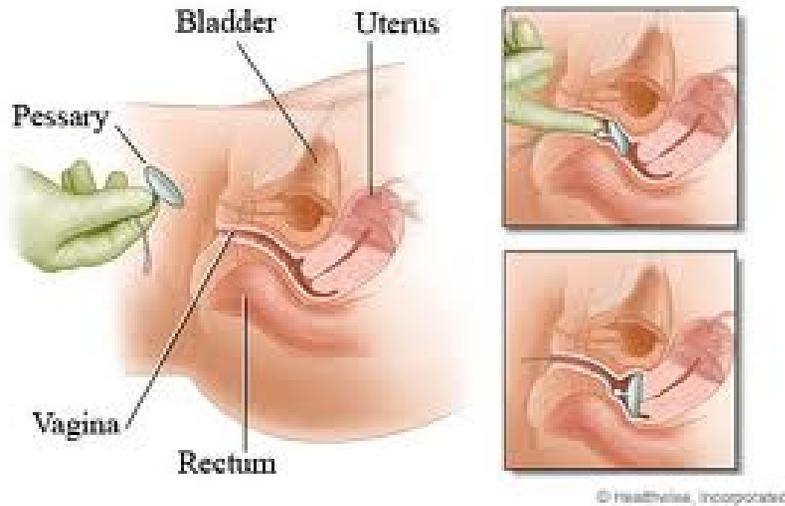
COMPLICATIONS

- **Prolonged labor/failure to progress:** a labor lasting more than 18 - 24 hours or fails to make changes in dilation or effacement of cervix
- **Amniotic Fluid Embolism:**
amniotic fluid enters the mother's bloodstream and causes an allergic reaction that results in cardio respiratory (heart and lung) collapse



INTERVENTIONS DURING LABOR

Induction of Labor- Medications



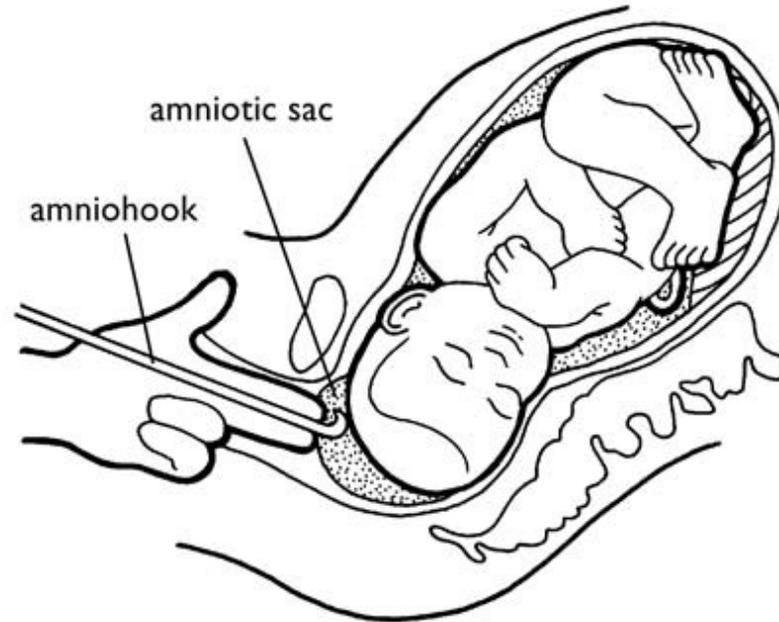
Prostaglandin: Suppositories are inserted into the vagina causing the uterus to go into labor

Oxytocin: A hormone that stimulate contractions. Pitocin and Syntocinon are IV medications to stimulate contractions.



INTERVENTIONS DURING LABOR

- *Induction of labor*

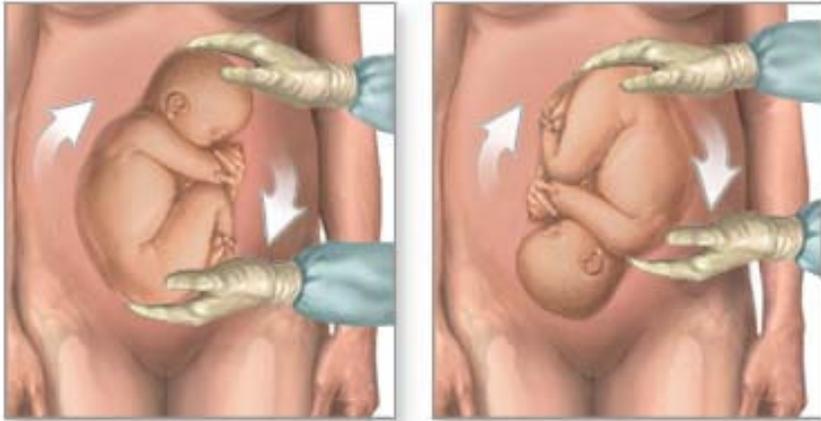


- **Artificial rupture of the membranes (AROM):**
A sterile, plastic, thin hook is brushed against the membranes just inside the cervix causing the baby's head to move down against the cervix, which usually causes the contractions to become stronger. This procedure releases a gush of warm amniotic fluid from the vagina.



INTERVENTIONS DURING LABOR

External version

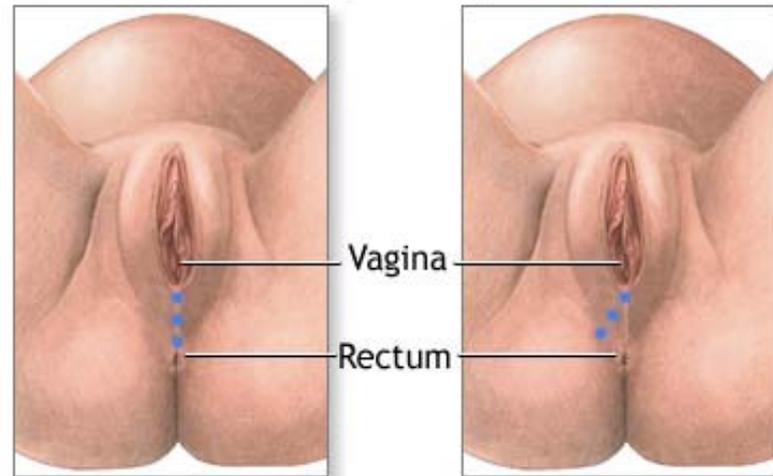


Version for abnormal presentation

ADAM.

Episiotomy

Episiotomy



Median incision

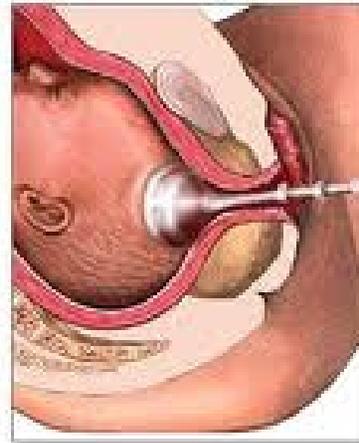
Mediolateral incision

ADAM.

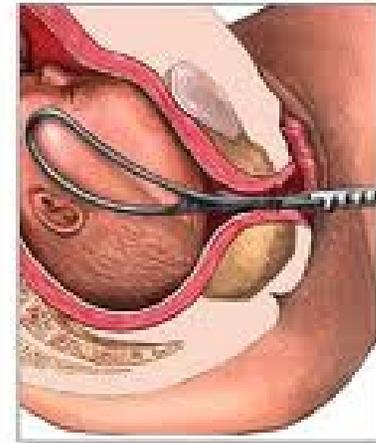
INTERVENTIONS DURING LABOR

Forceps
Vacuum (Ventouse)

Vacuum-assisted birth



Forceps-assisted birth



ADAM.

Cesarean section



The surgeon reaches into the abdominal incision and lifts the baby's head as an assistant pushes down on the upper uterus

C-section

ADAM.



DISCUSSION

Fetal Development



- When does the embryo become a fetus?
- When does the skeleton harden?
- When does the fetus begin to process sounds and kick with limbs?
- When can the fetus begin to process sight and follow light?
- When are the lungs fully formed and the fat layers developing?



DISCUSSION



- What are pre-term, full-term, and post-term?
- What are the signs of labor?
- What are the stages of labor?
- What conditions can complicate labor?
- What are some interventions used during labor?

