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Normal labor/delivery

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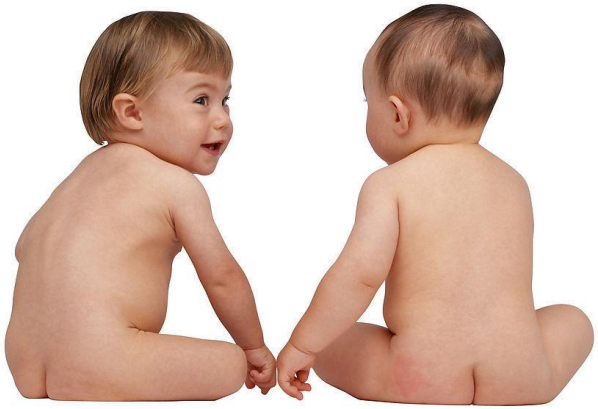

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What

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How

The birth of new life

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Why

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What is labor?

Childbirth is the period from the onset of regular uterine contraction untill expulsion of the placenta. The process by which this normally occurs is called labor.

Characteristics of labor include toil, trouble, suffering, bodily exertion especially when painful.

Such connotation all seem appropriate to us and emphasize the need for all attendants to be supportative of the laboring women's needs, particularly in regard to effective pain relief.

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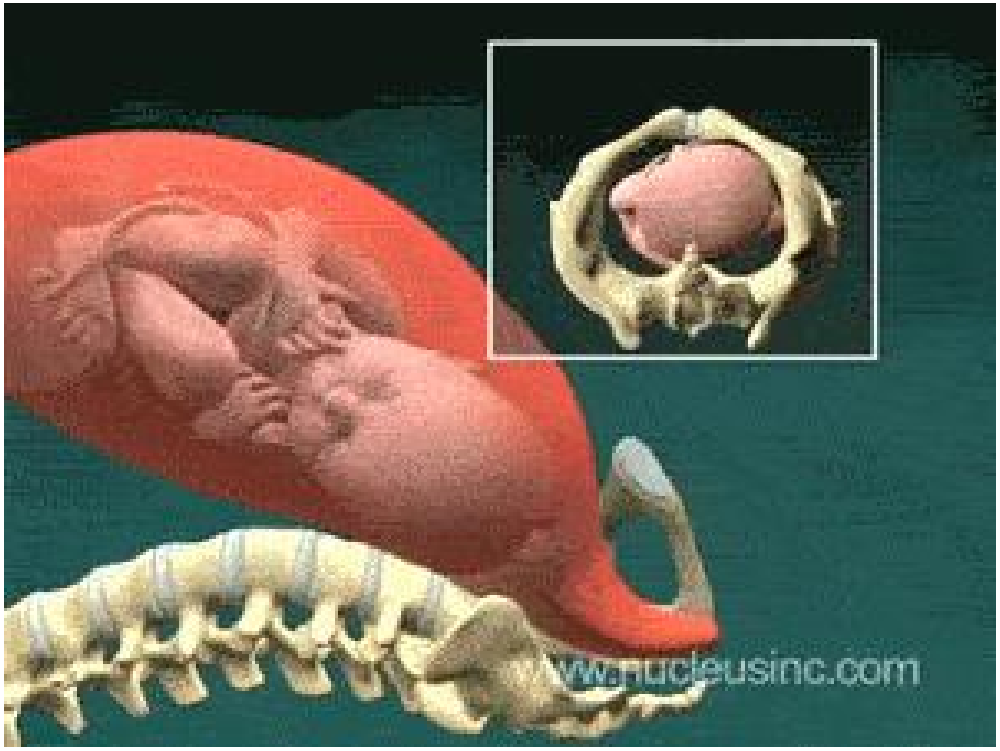
Labor/Delivery



It looks simple.

What's your idea?

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LIKE

THIS?

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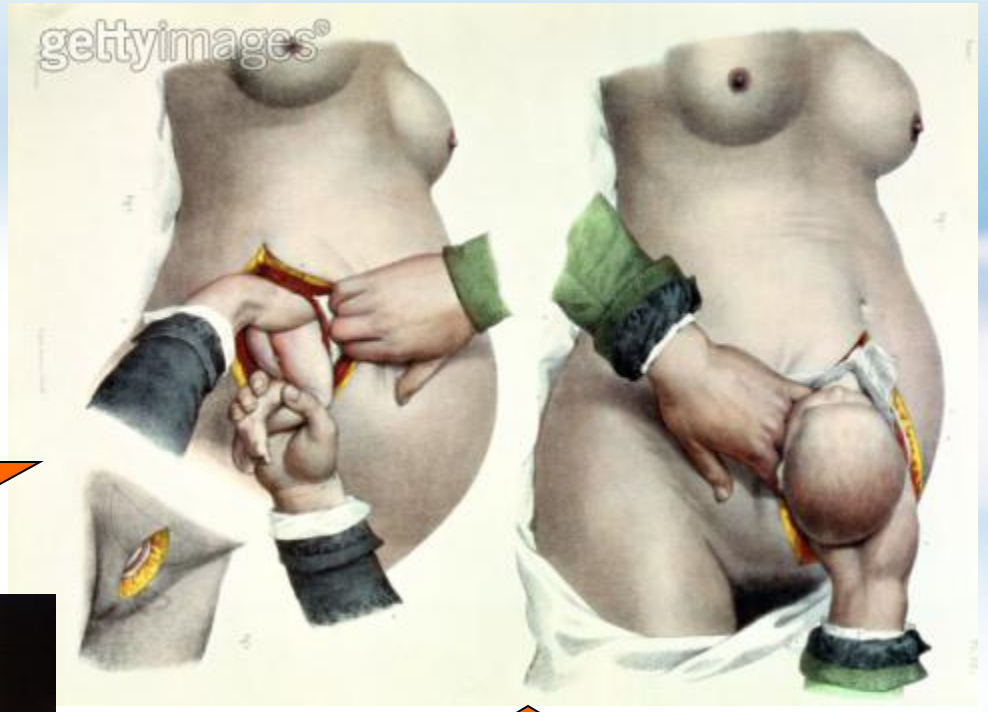
AND THIS?



OR THIS?

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Let ‘s realize it together

step by step

I am coming

When a patient first presents to the labor floor.

Questions regarding contractions, vaginal bleeding, leakage of fluid, and fetal movement.

The obstetric examination includes maternal abdominal examination for contractions and the fetus (**Leopold maneuvers), cervical examination, fetal heart tones,** and a sterile speculum examination if rupture of membranes is suspected.

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Examinations during labor

- Abdominal examination
- Cervical examination

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Obstertric examination

- Abdominal examination-Leopold maneuvers

  fetal lie

  fetal presentation

- Cervical examination

  the Bishop Score of cervix

  fetal position

  the phase of labor(cervical dilation and fetal station

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Figure A-D: Leopold maneuvers

First step:

The fundus of the uterus;

Second step:

Either side of the uterus;

Third step:

The presenting part just above the pubic symphysis.

Finally:

Engagement of the presenting part.

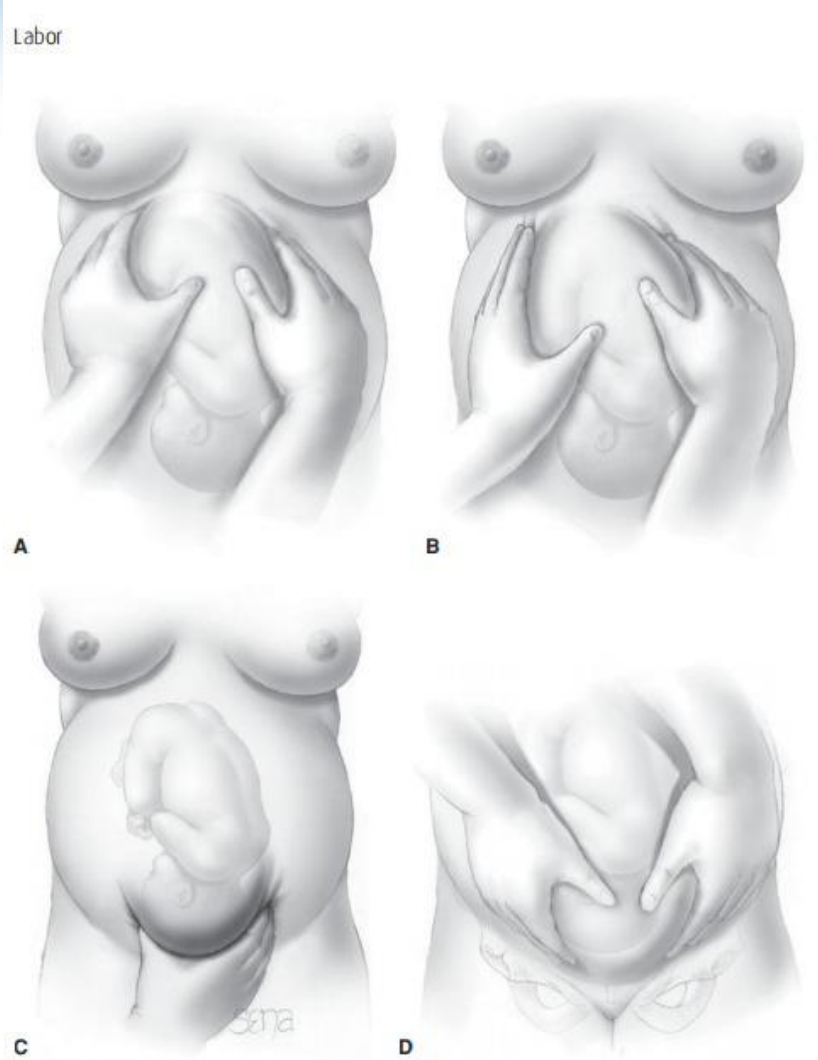

FIGURE 22-8 Leopold maneuvers (A–D) performed in a fetus with a longitudinal lie in the left occiput anterior position (LOA).

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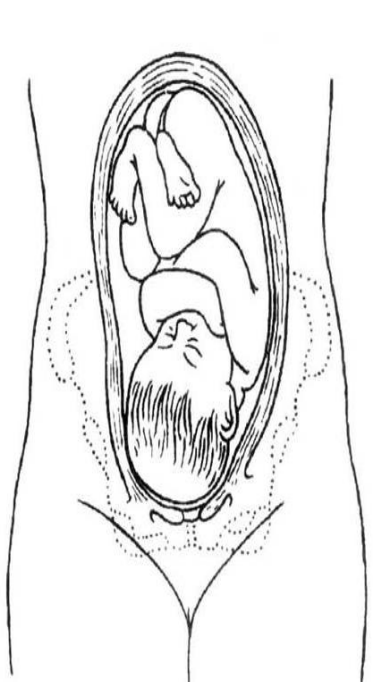
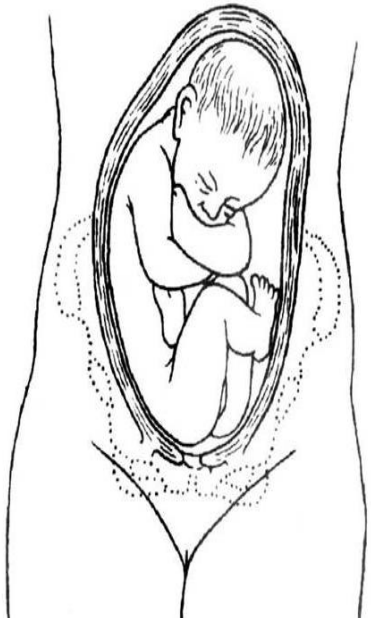
Results of Leopold maneuvers

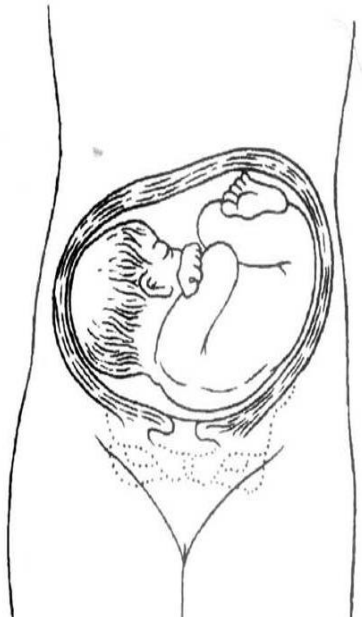
Fetal lie

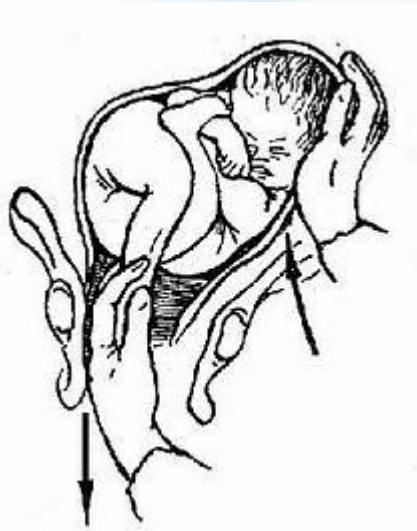


Longitudinal



transverse





oblique

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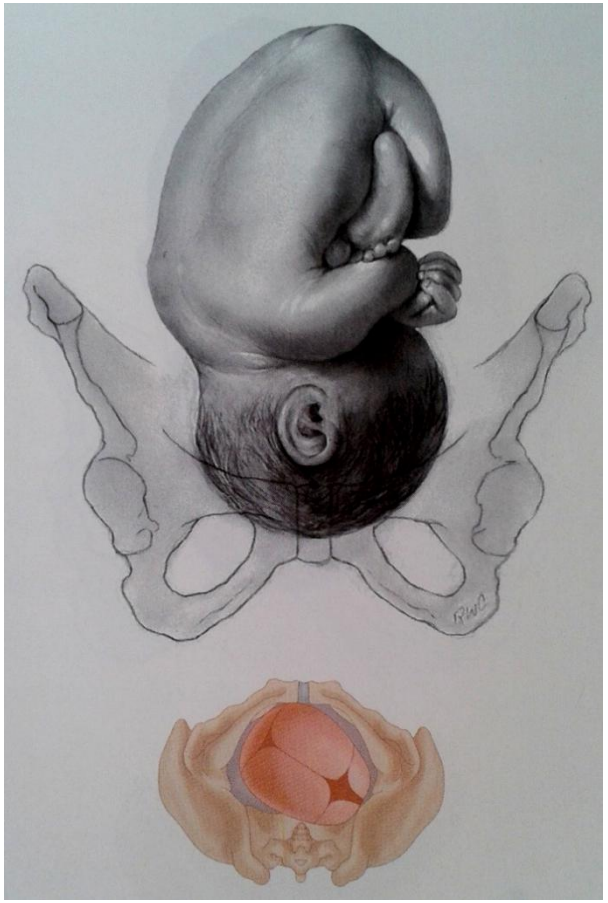
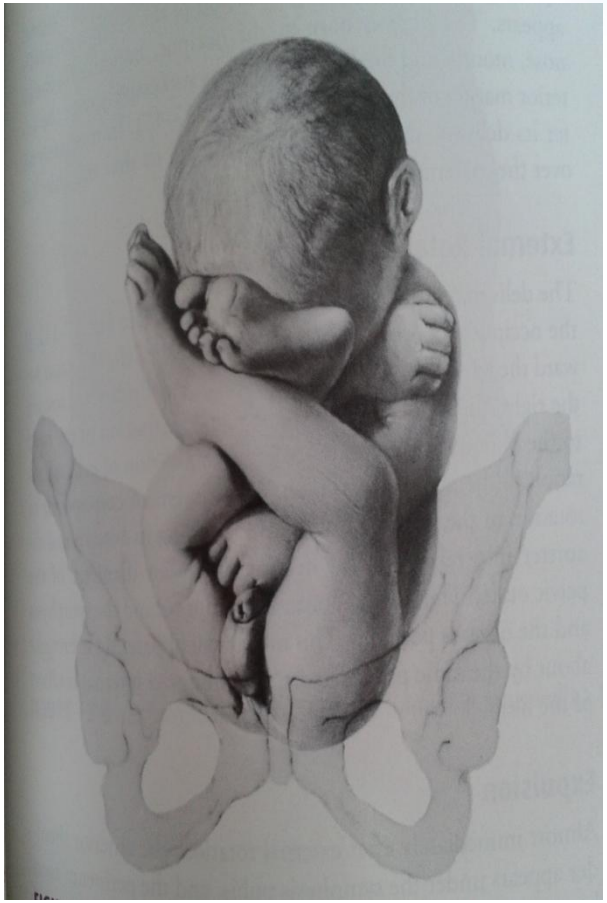
Results of Leopold maneuvers

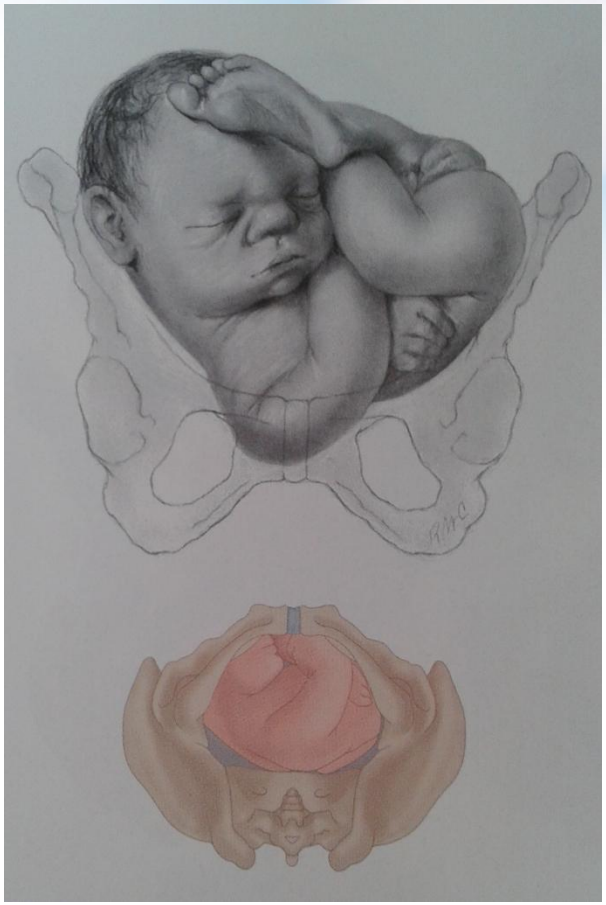
Fetal presentation:



Cephalic



Breech



shoulder

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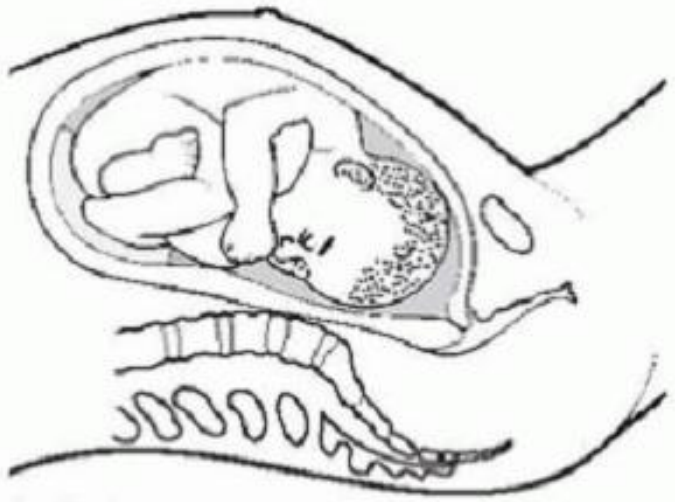
Results of Leopold maneuvers

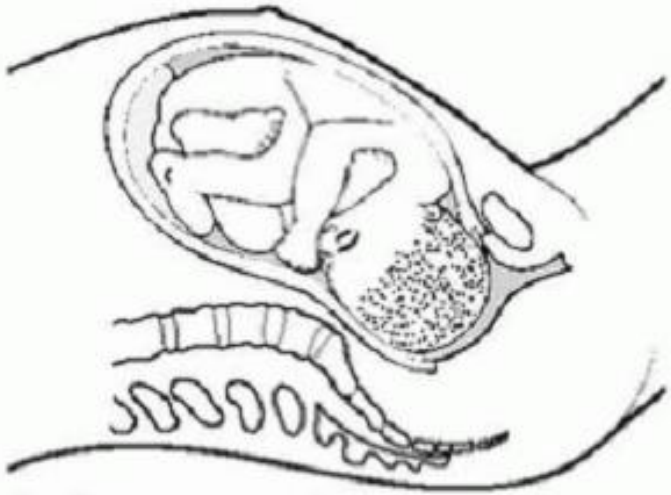
Fetal engagement:

no



A Before engagement

yes



B Engagement, flexion

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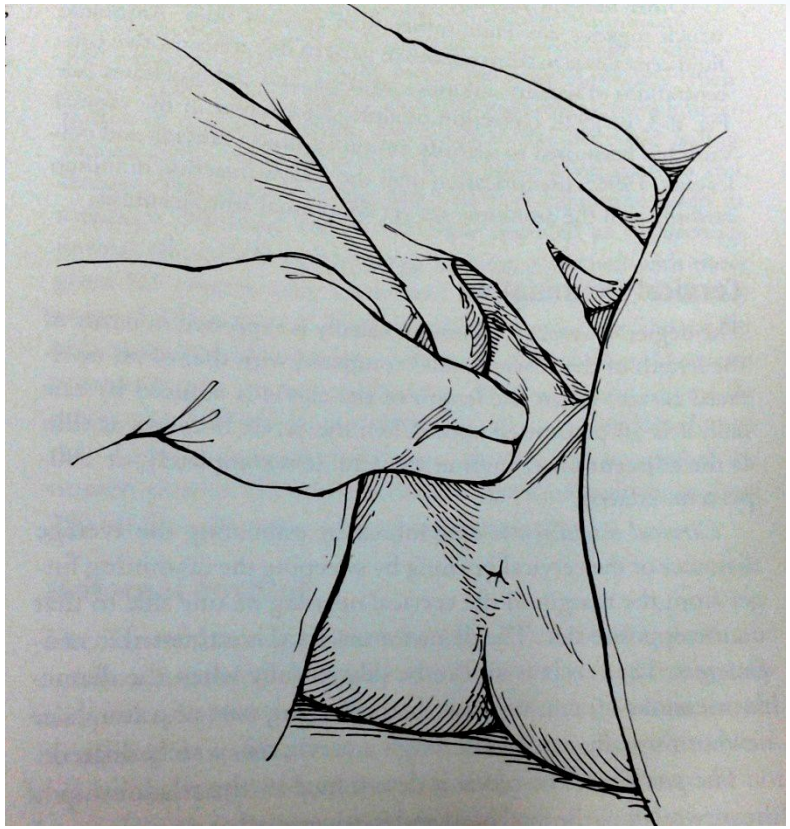
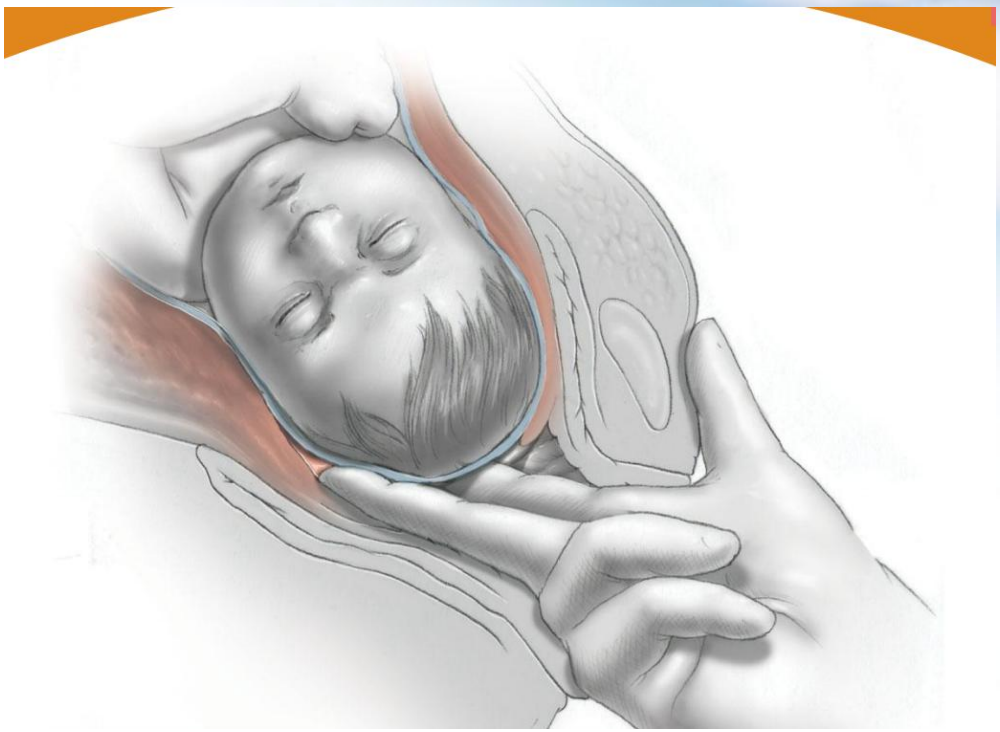
Cervical examination





To perform vaginal examination,the labia have been seperated With one hand, and the first and second figures of the other hand are Carefully inserted into the introitus.

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Cervical examination-Bishop score

Score	0	1	2
Position of cervix	Posterior	Axial	anterior
Length of cervix	2cm	1cm	<0.5cm
Consistency of cervix	Firm	Soft	Soft and stretchy
Dilation of cervix	0	1cm	>2cm
Station of the presenting part	-2	-1	0

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Cephalic presentation-Fetal Attitude or Posture

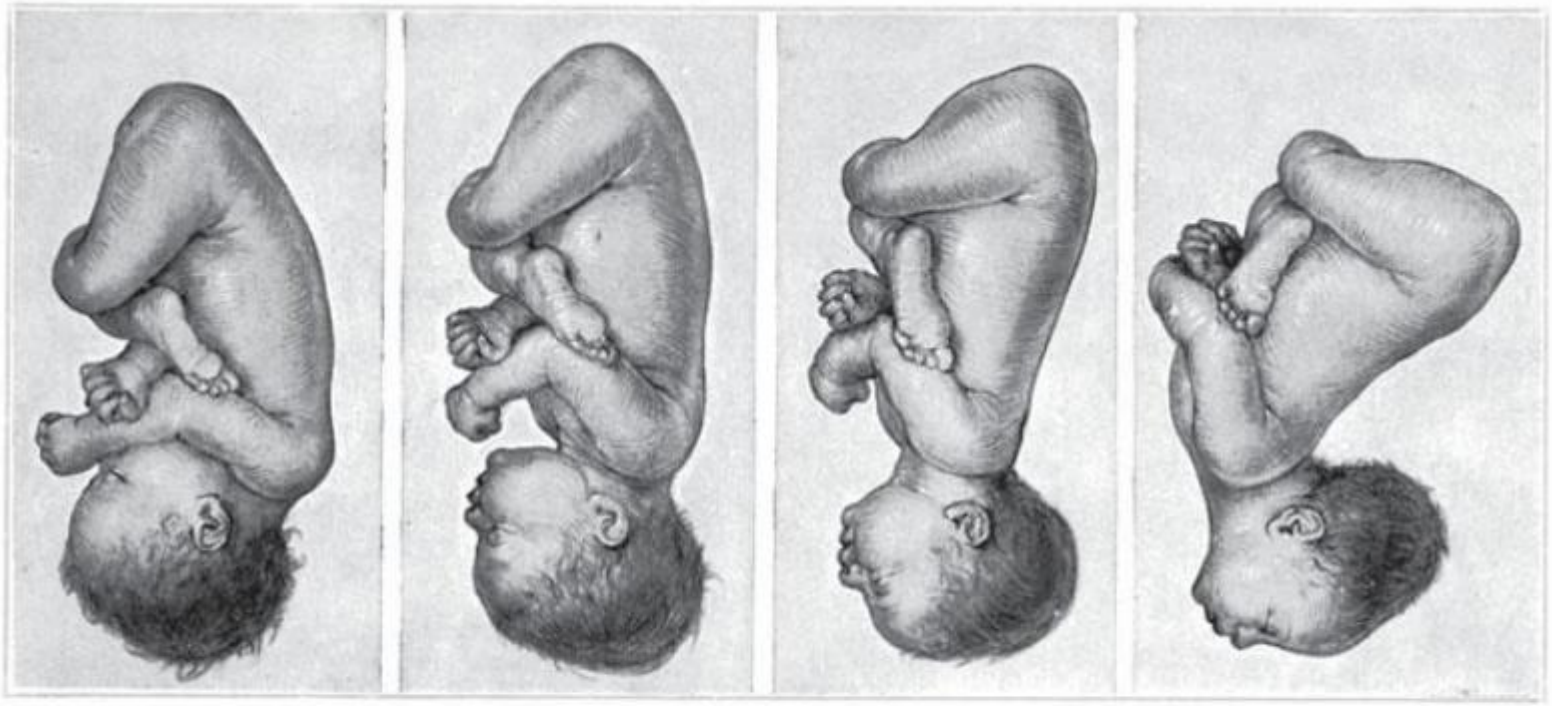

FIGURE 22-1 Longitudinal lie. Cephalic presentation. Differences in attitude of the fetal body in **(A)** vertex, **(B)** sinciput, **(C)** brow, and **(D)** face presentations. Note changes in fetal attitude in relation to fetal vertex as the fetal head becomes less flexed.

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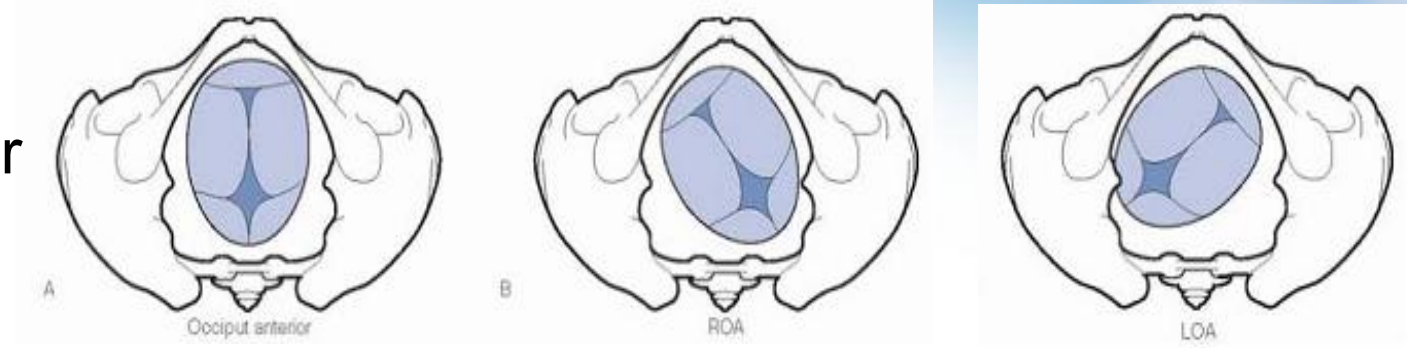
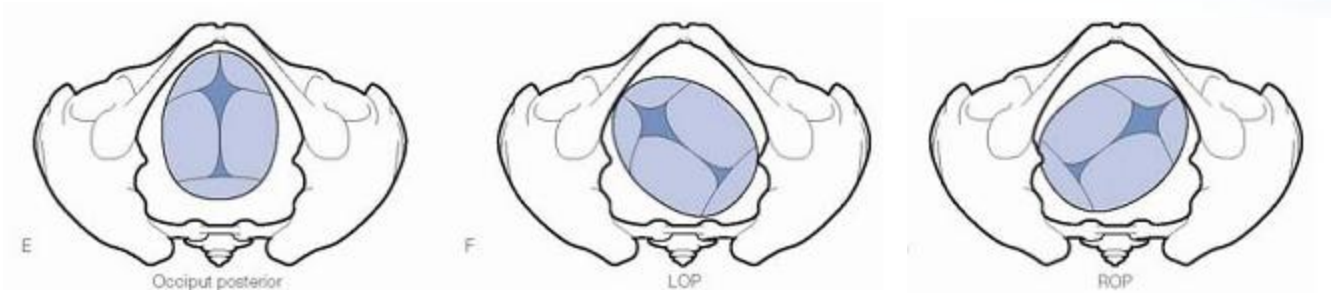
Cervical examination-Fetal position

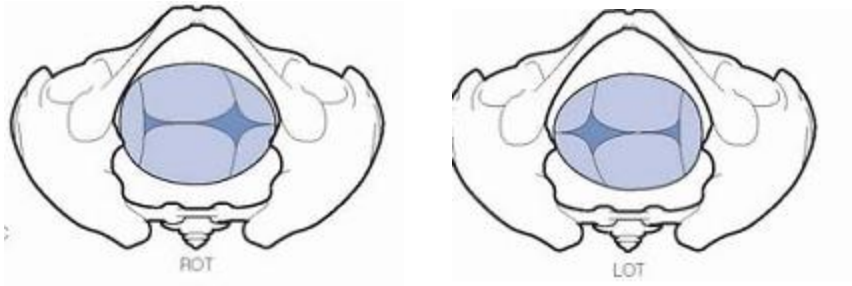
Occiput anterior



Occiput posterior



Occiput transverse



By palpation of fetal sutures , fontanelles or ear.

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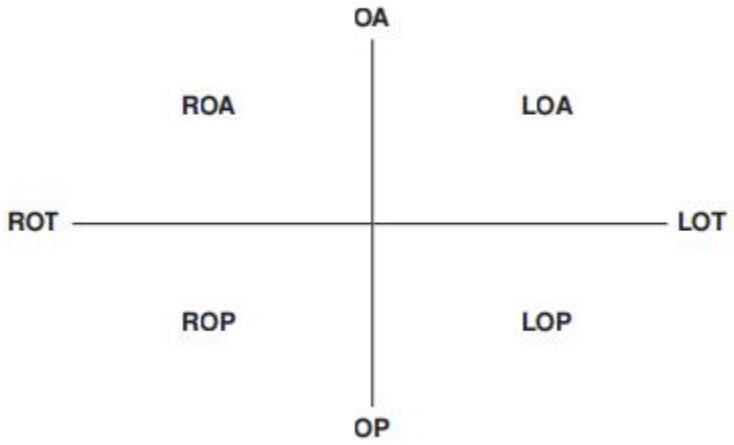
Cervical examination-Fetal position



Approximately two thirds of all vertex presentations are in the left occiput position, and one third in the right.

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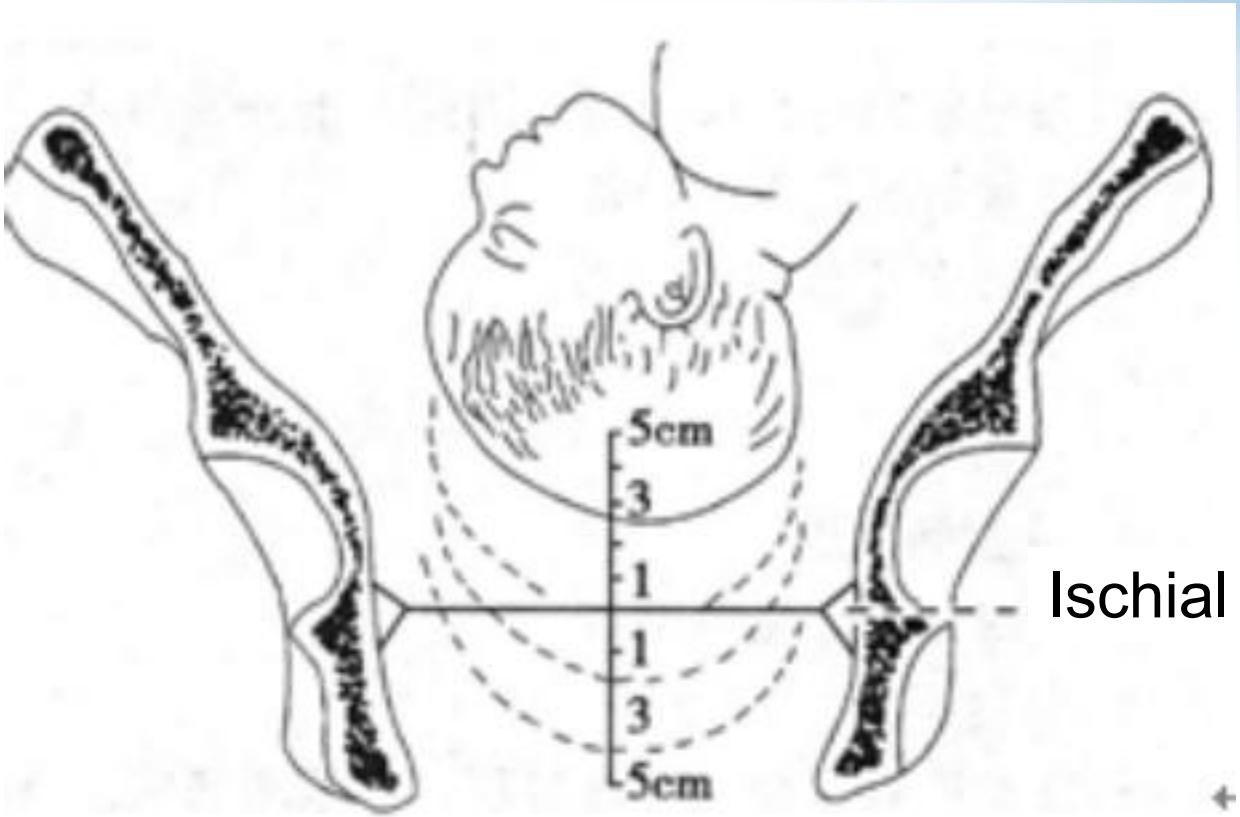
Cervical examination-Fetal station



Ischial Spine

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Rupture of membrane

- Premature rupture of membranes (PROM): the membranes surrounding the fetus rupture prior to the onset of labor.
- Diagnosis of ROM is suspected with a history of a gush or leaking of fluid from the vagina.
- Diagnosis can be confirmed by the **pool**, **nitrazine**, and **fern tests**.

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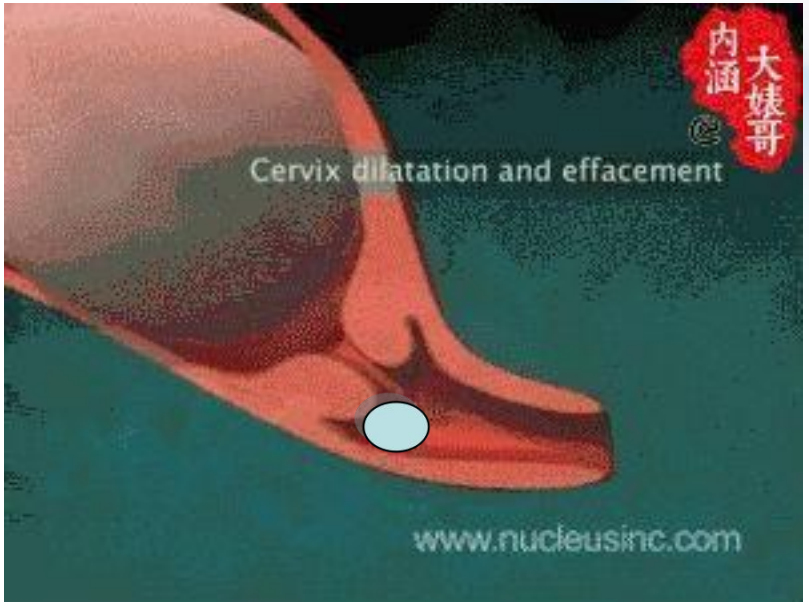
Pool



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nitrazine

The pH of aminiotic fluid is 7.5cm, litmus test paper become blue

fern tests

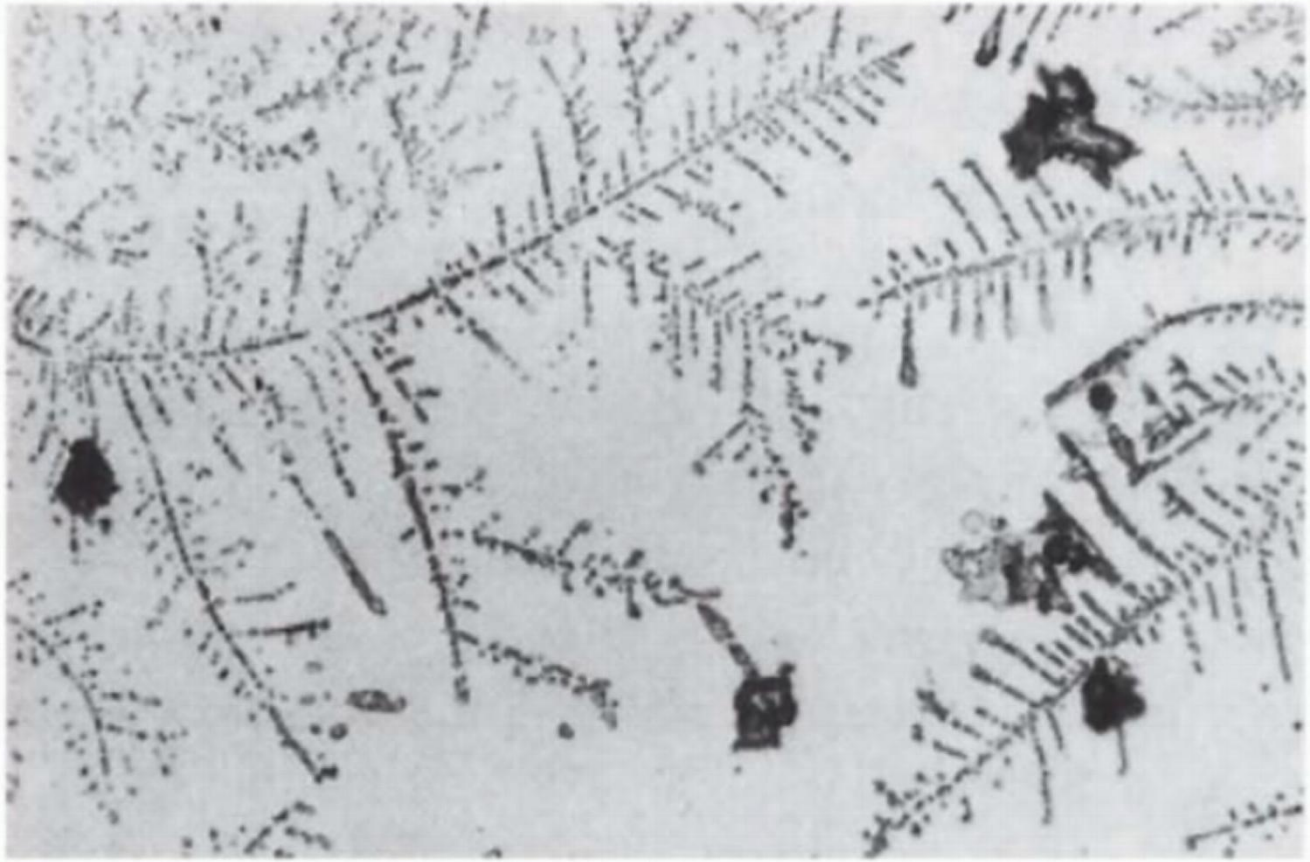

Figure 4-2 • Fern test. (From Beckmann CRB, Ling LW, Laube DW, et al. *Obstetrics and Gynecology*, 4th ed. Baltimore: Lippincott Williams & Wilkins, 2002.)

Process of labor

- Mechanisms of labor
- The stage of labor

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When does the labor begin?

Pain?

Bleeding?

Leakage?

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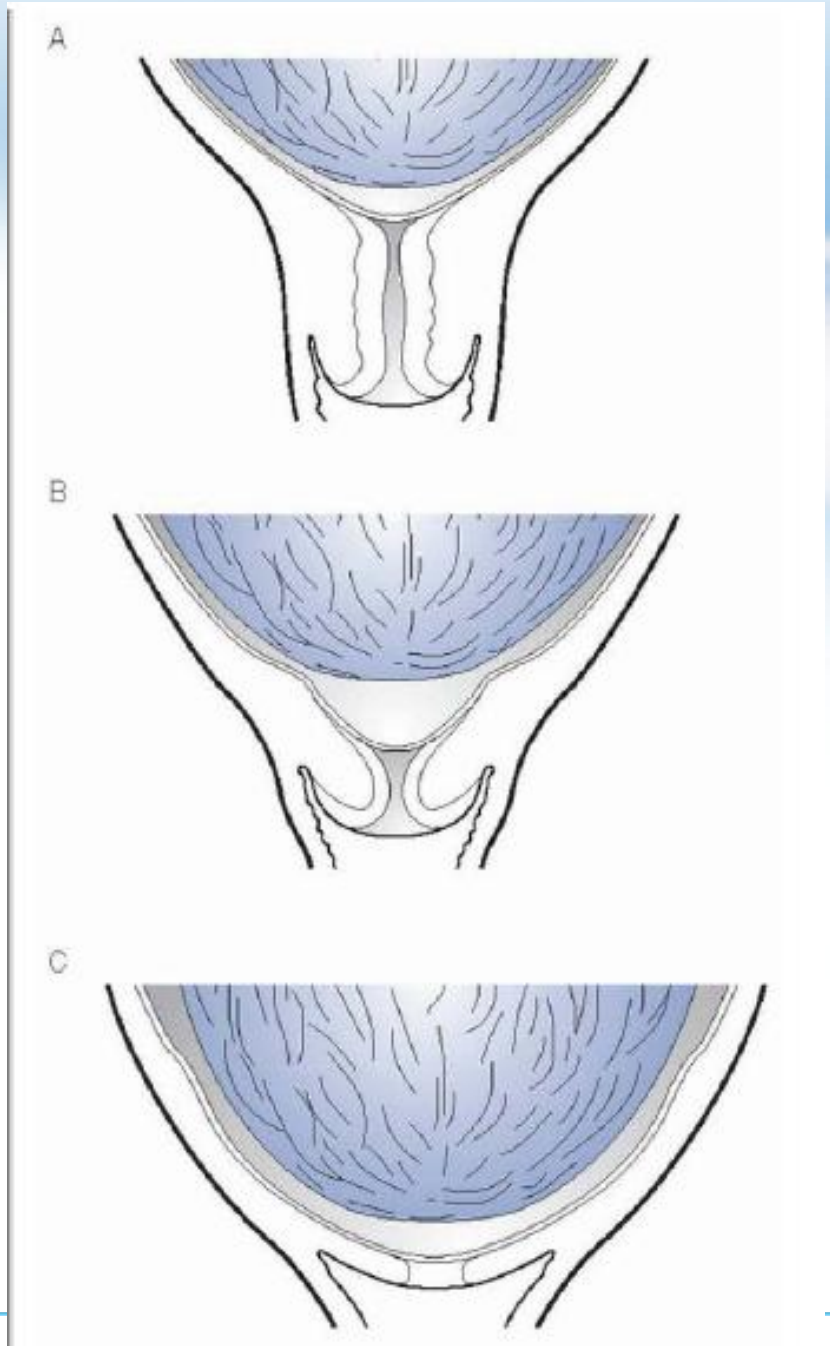
Definition of Labor

Labor is defined as contractions that cause cervical change in either effacement or dilation.



(A)Cervix prior to labor.
(B) 50% effaced cervix.
(C) 100% effaced cervix.

How does the labor progressed

Mechanisms of labor include

- Engagement
- Descent
- Flexion
- Internal rotation
- Extension
- External rotation

At last Delivery finished

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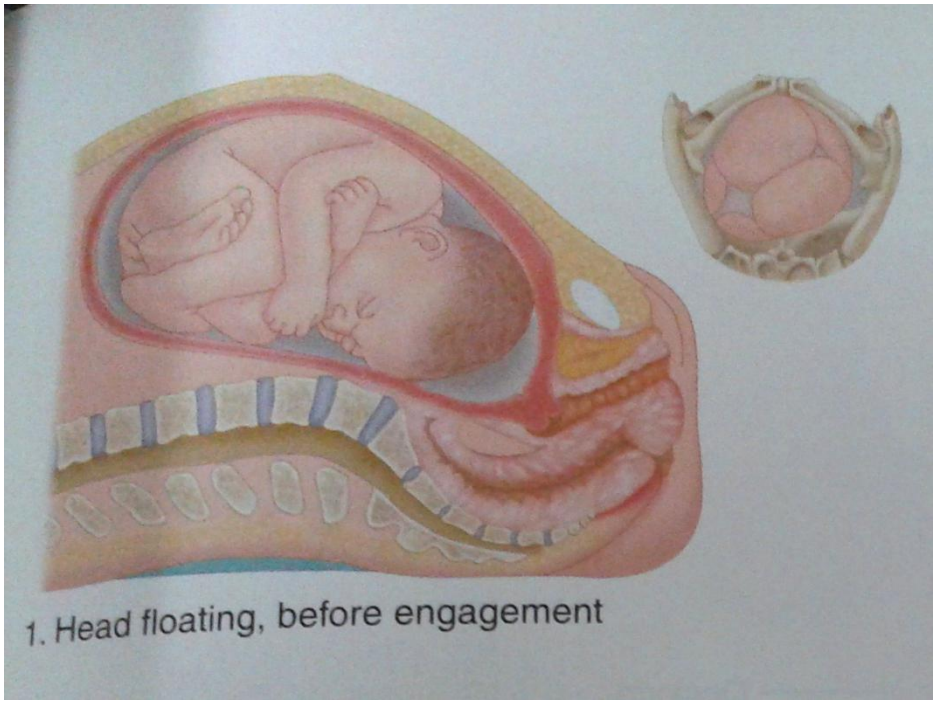
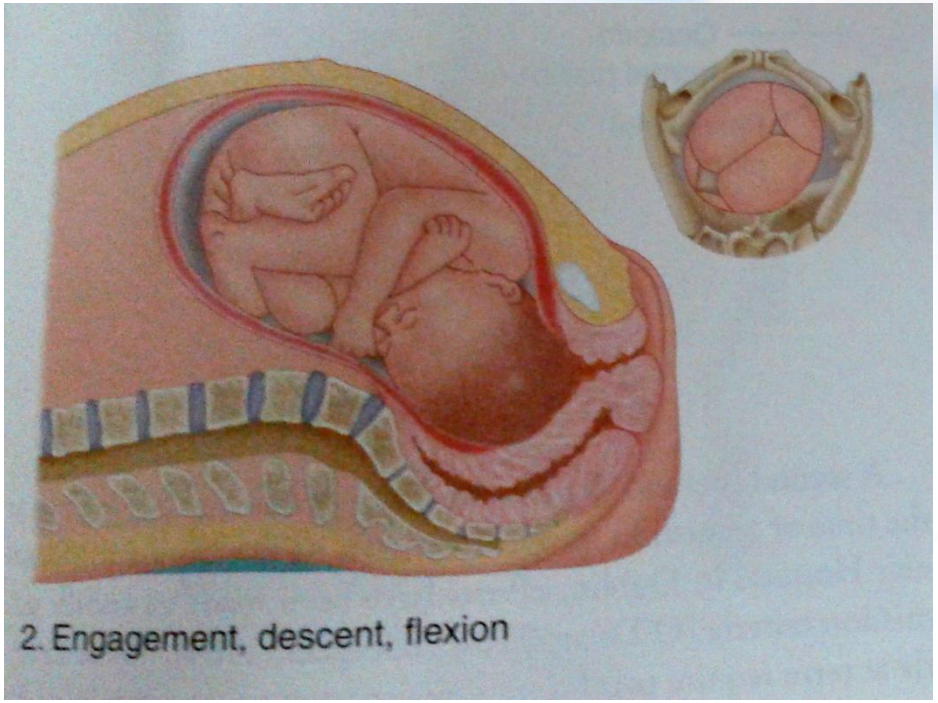
Mechanisms of labor(1-2)


1. Head floating, before engagement


2. Engagement, descent, flexion

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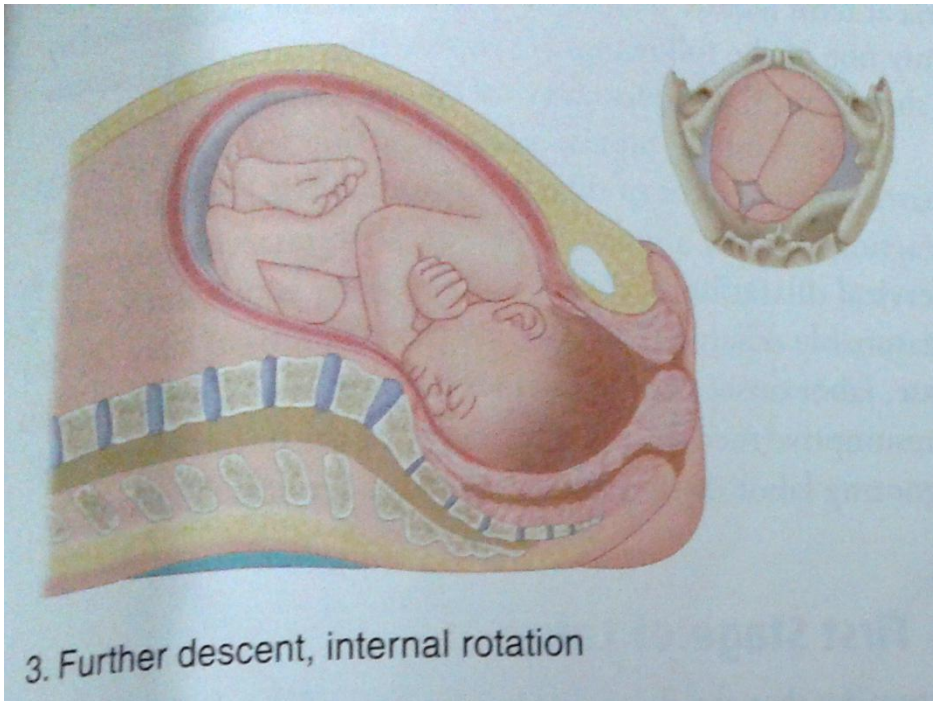
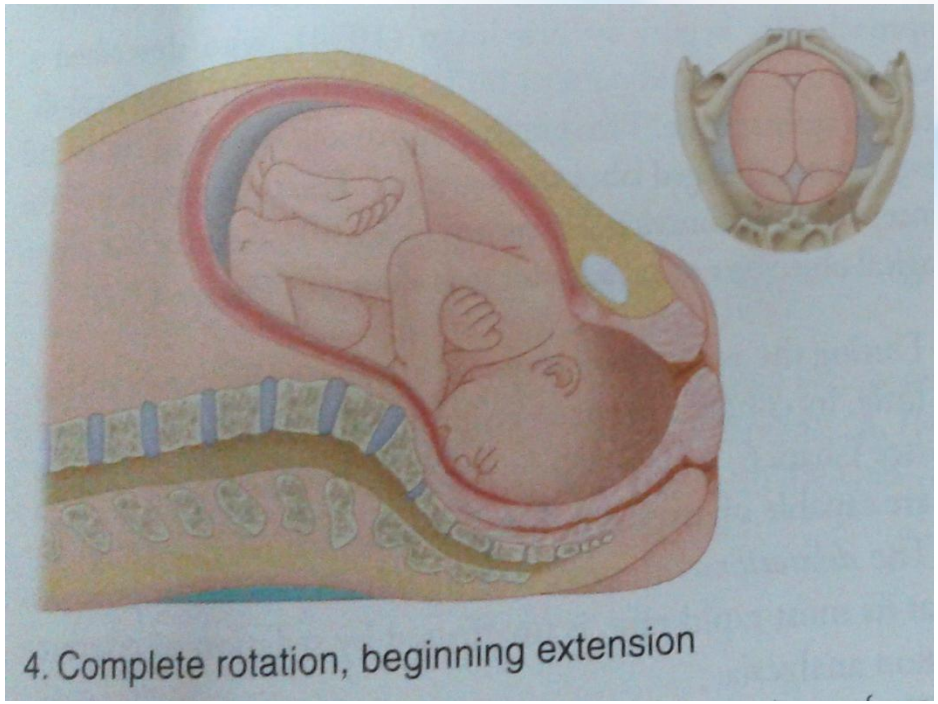
Mechanisms of labor(3-4)



3. Further descent, internal rotation



4. Complete rotation, beginning extension

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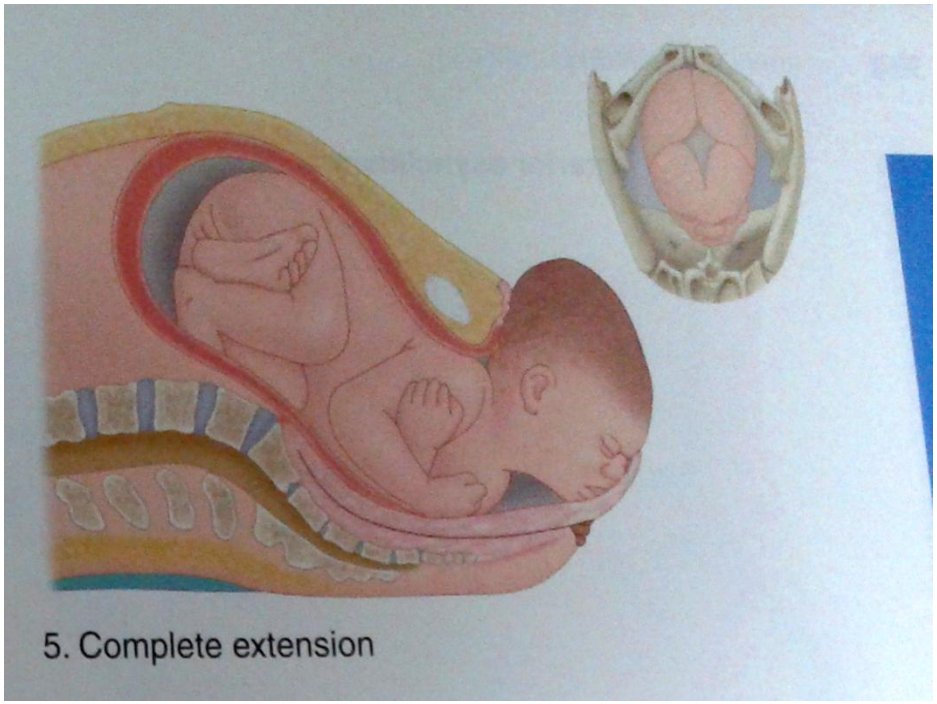
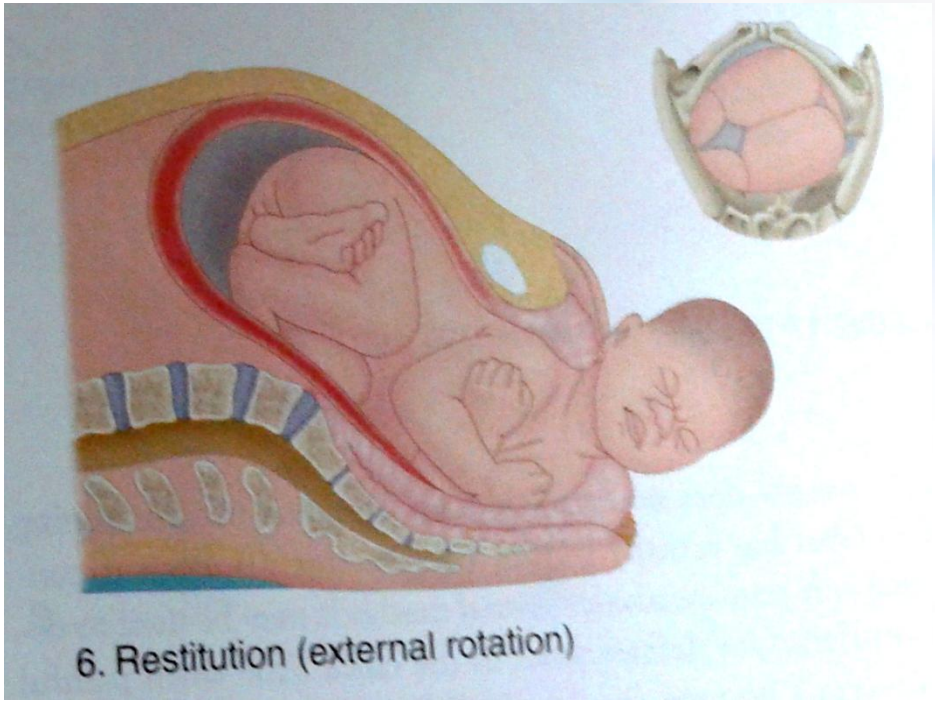
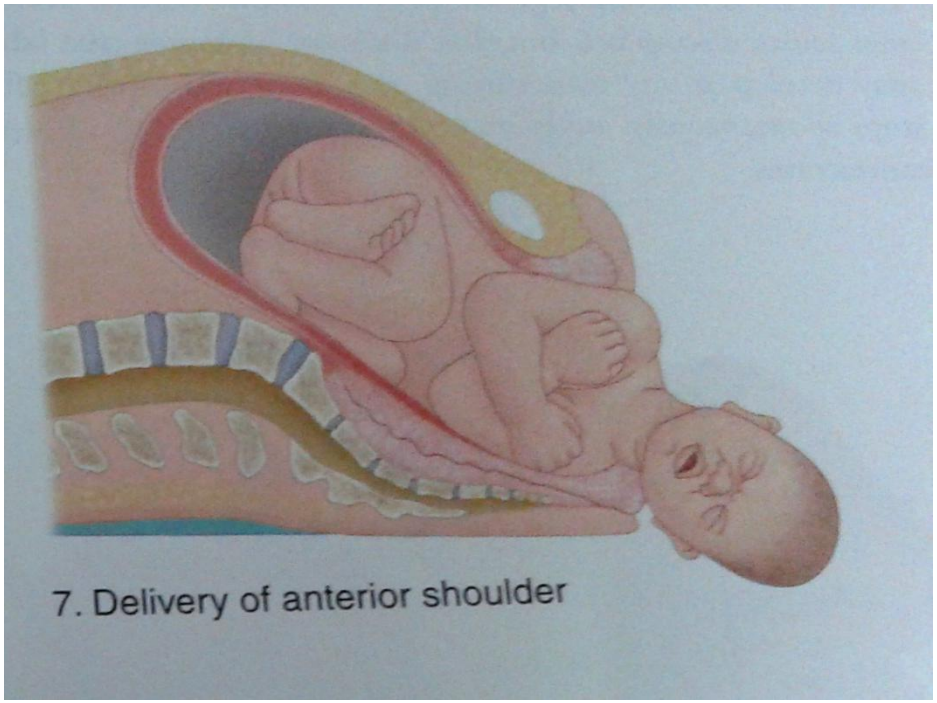
Mechanisms of labor(5-6)

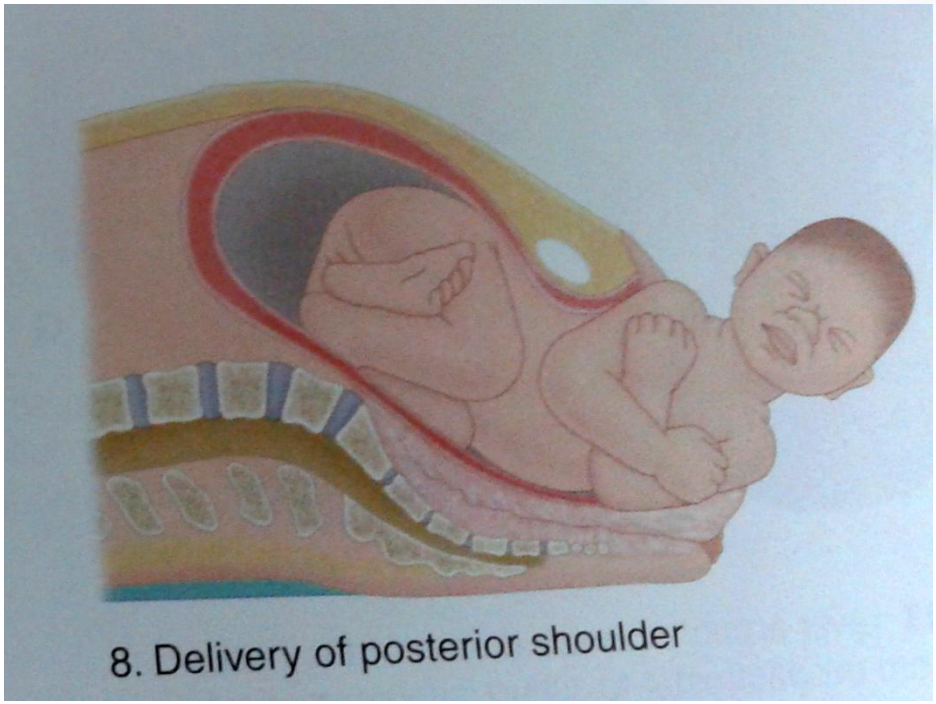

5. Complete extension


6. Restitution (external rotation)

Mechanisms of labor(7-8)



7. Delivery of anterior shoulder



8. Delivery of posterior shoulder

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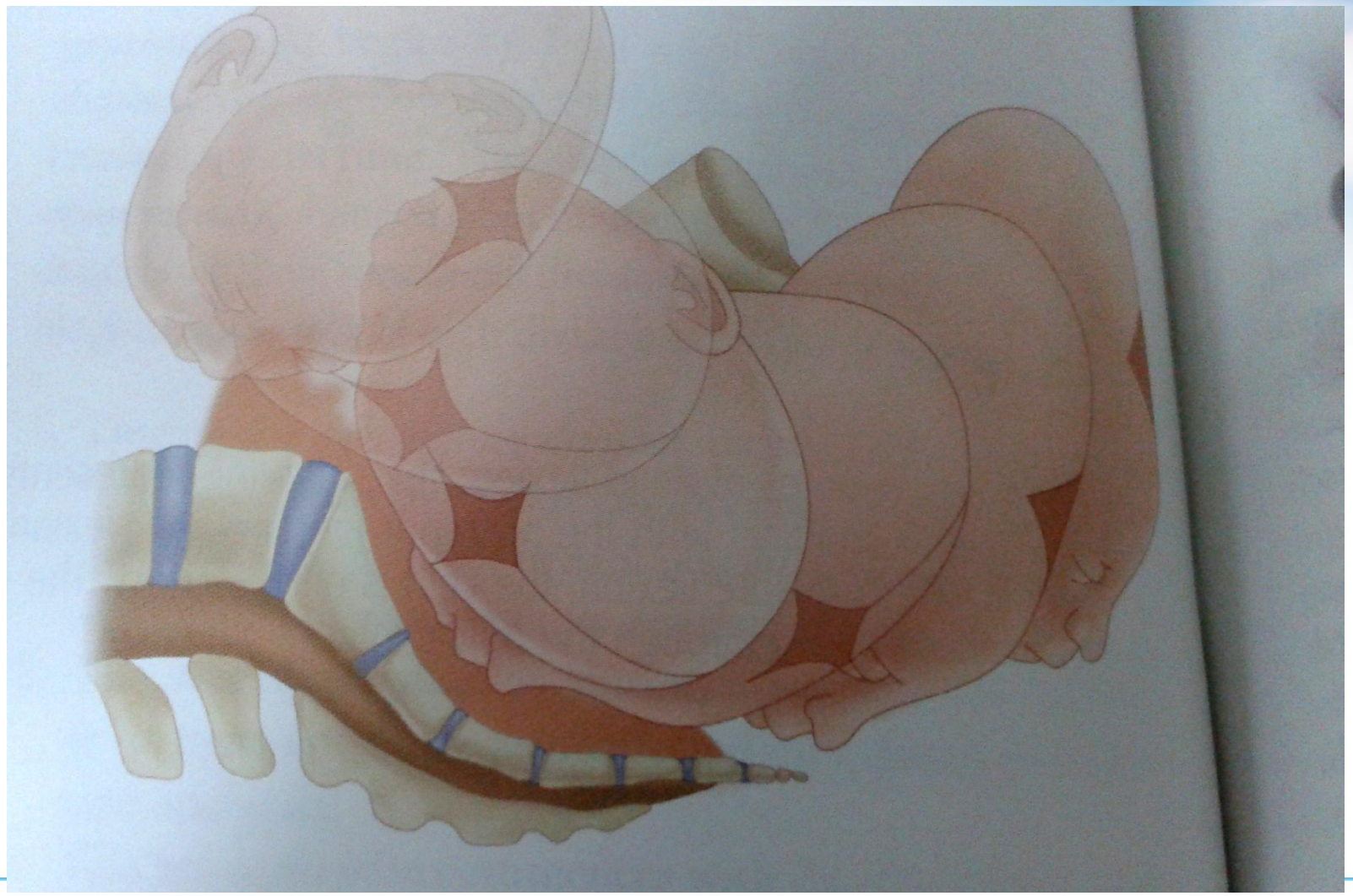
Mechanisms of labor for left occiput anterior position



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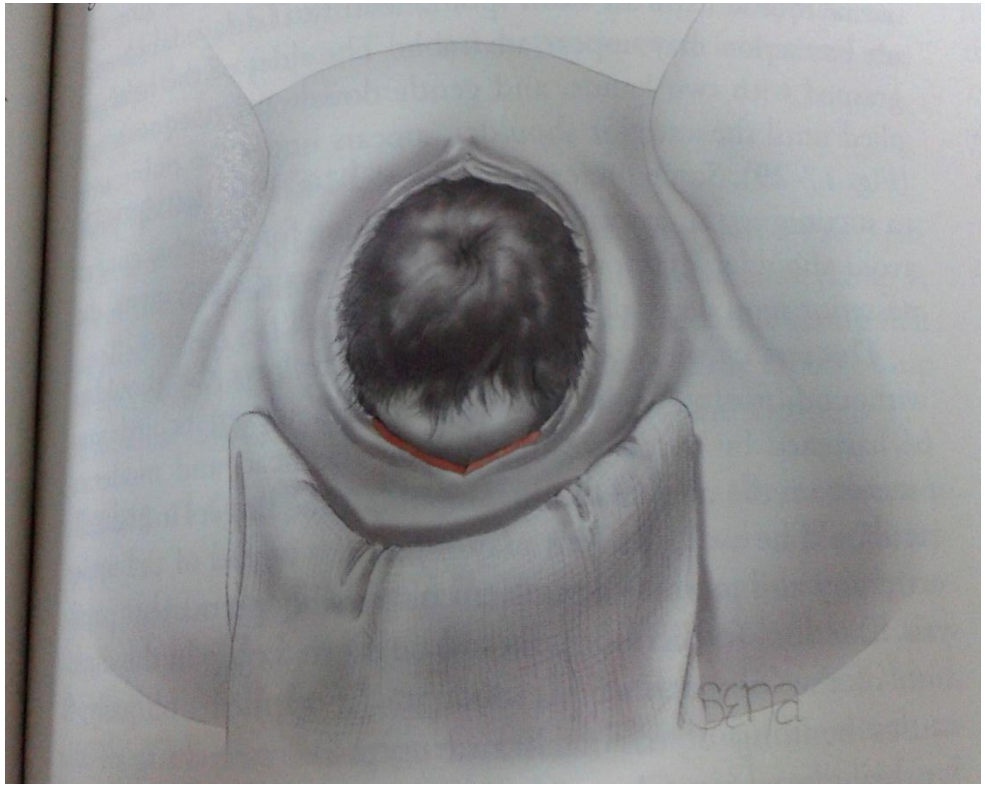
Delivery of the head



The occiput is being kept close to the sympysis by moderate pressure to the fetal chin at the tip of the maternal coccyx.

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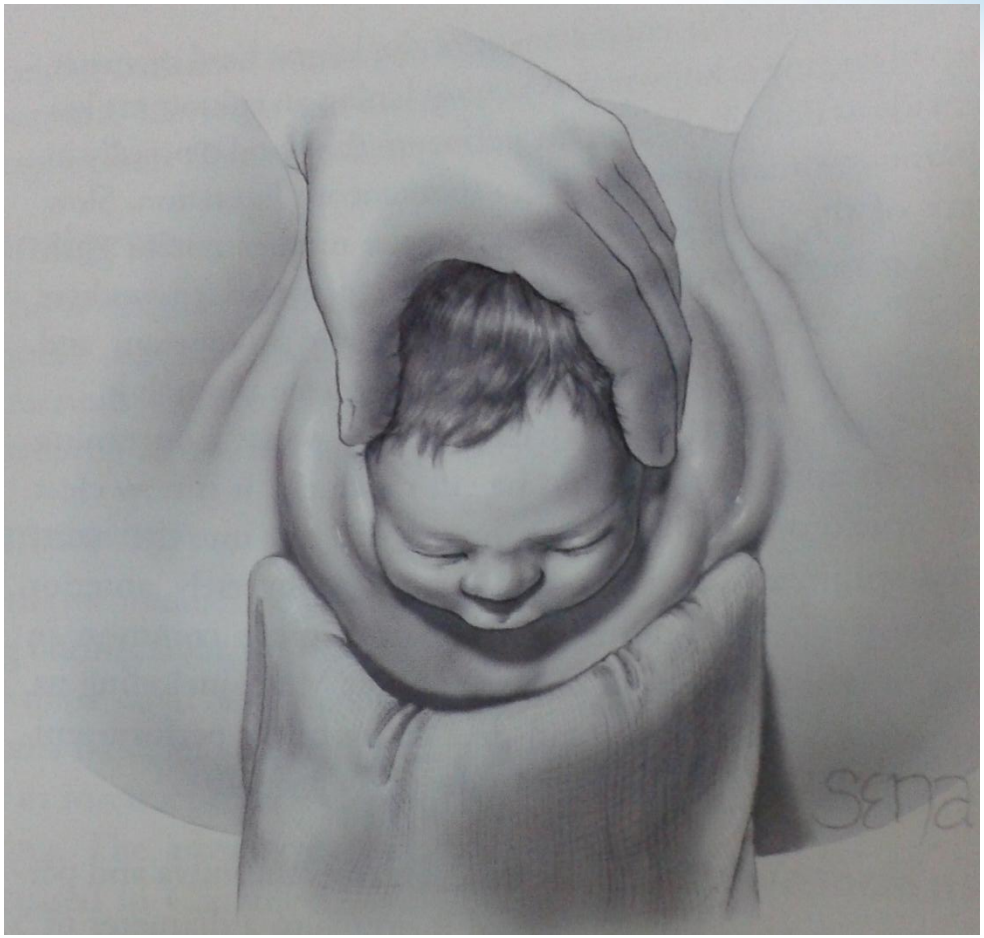
Delivery of the head



The mouth appears over the perineum.

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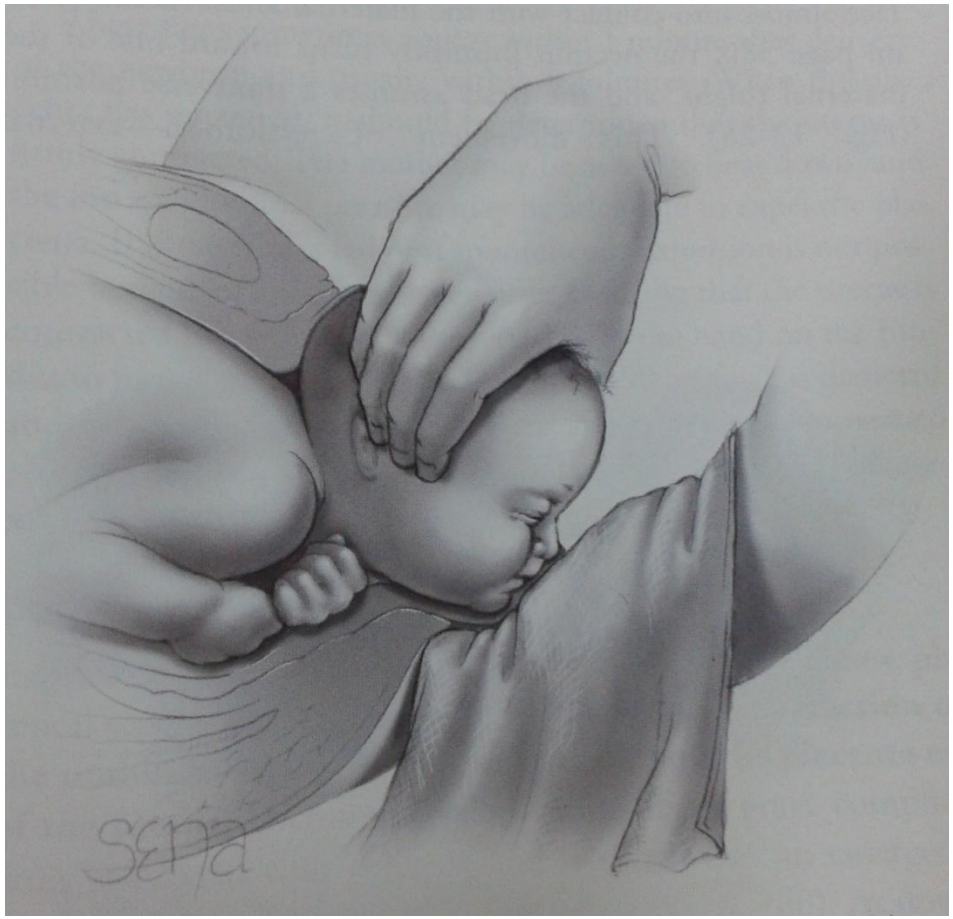
Delivery of the head



Near completion of the delivery of the fetal head by the modified maneuver.

Moderate upward pressure is applied to the fetal chin by the posterior hand covered with a sterile towel, while the suboccipital region of the fetal head is held against the symphysis.

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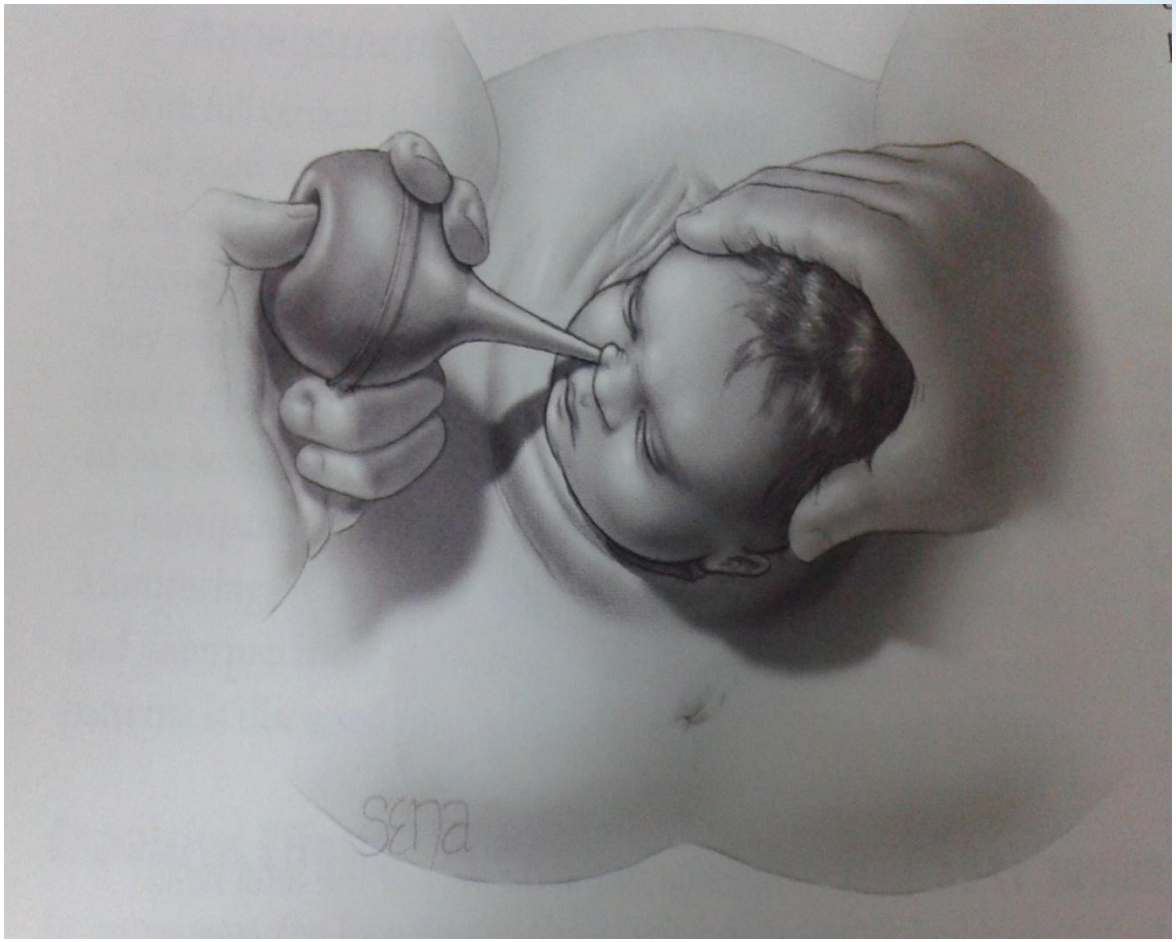
Delivery of the head



Aspirating the nose and mouth immediately after delivery of the head.

The stage of labor

- Labor and delivery are divided into three stages. Each stage involves different concerns and considerations.
- Stage 1 begins with the onset of labor and lasts until dilation and effacement of the cervix are completed.
- Stage 2 is from the time of full dilation until delivery of the infant.
- Stage 3 begins after delivery of the infant and ends with delivery of the placenta.

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Stage 1

ranges from the onset of labor until complete dilation of the cervix has occurred.

An average time:

10 to 12 hours in a nulliparous patient

6 to 8 hours in a multiparous patient

. **The range of normal limits:**

6 hours up to 20 hours in a nulliparous patient

2 to 12 hours in a multiparous patient

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Stage 1 is divided into

- The latent phase ranges from the onset of labor until 3 or 4 cm of dilation.
- The active phase follows the latent phase and extends until greater than 9 cm of dilation.
- A third phase is often delegated at this point called deceleration or transition phase as the cervix completes dilation.

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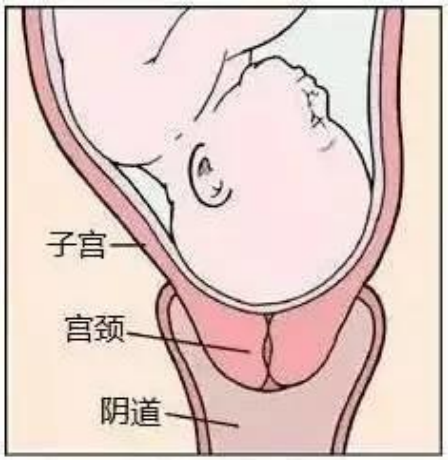
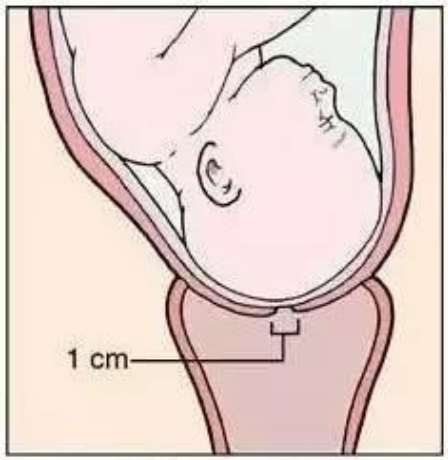
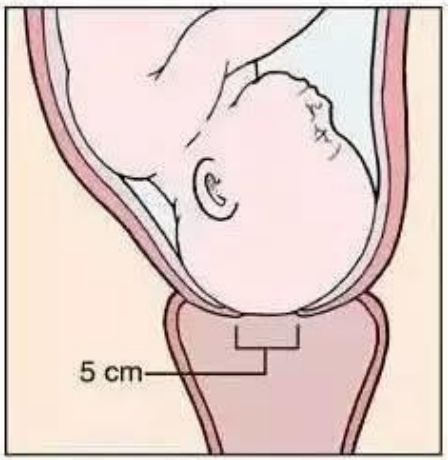
Stage 1



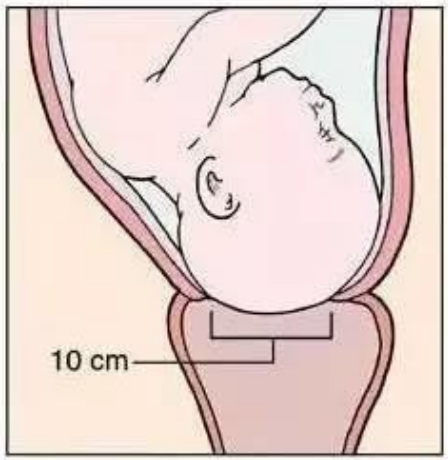
1. 子宫收缩，宫口闭合



2. 宫颈管消失，宫口开大到1厘米

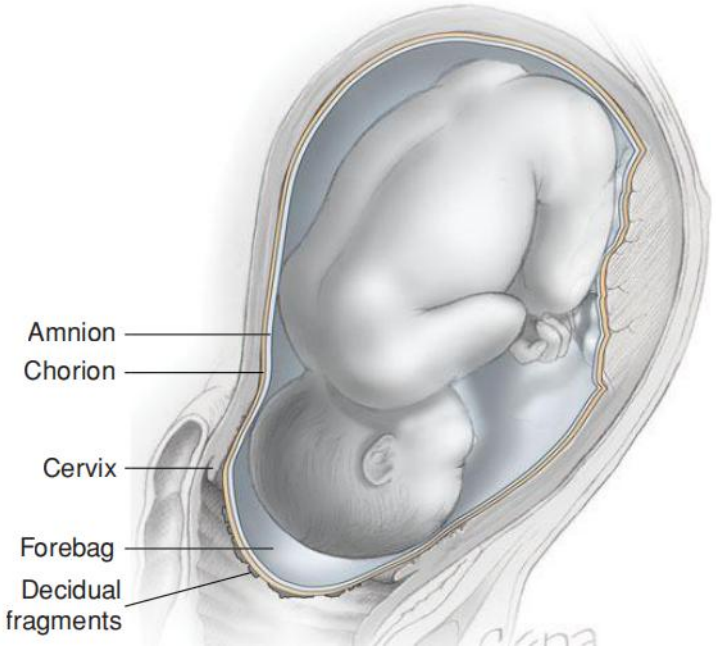


3. 空口开全至5厘米



4. 宫口开全至10厘米

Physiology of Labor



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Stage 2

- Completely dilated cervix **to** delivery of the infant

The range of normal limits:.

	nulliparous patient	multiparous women
With epidural	<3 Hours	<2 Hours
Without epidural	<2 Hours	<1 Hour

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Stage 3

- From the infant ’s delivery to completely delivery of the placenta.

The range of normal limits:.

- usually within 5 to 10 minutes of delivery of the infant;
- up to 30 minutes is usually considered within normal limits.

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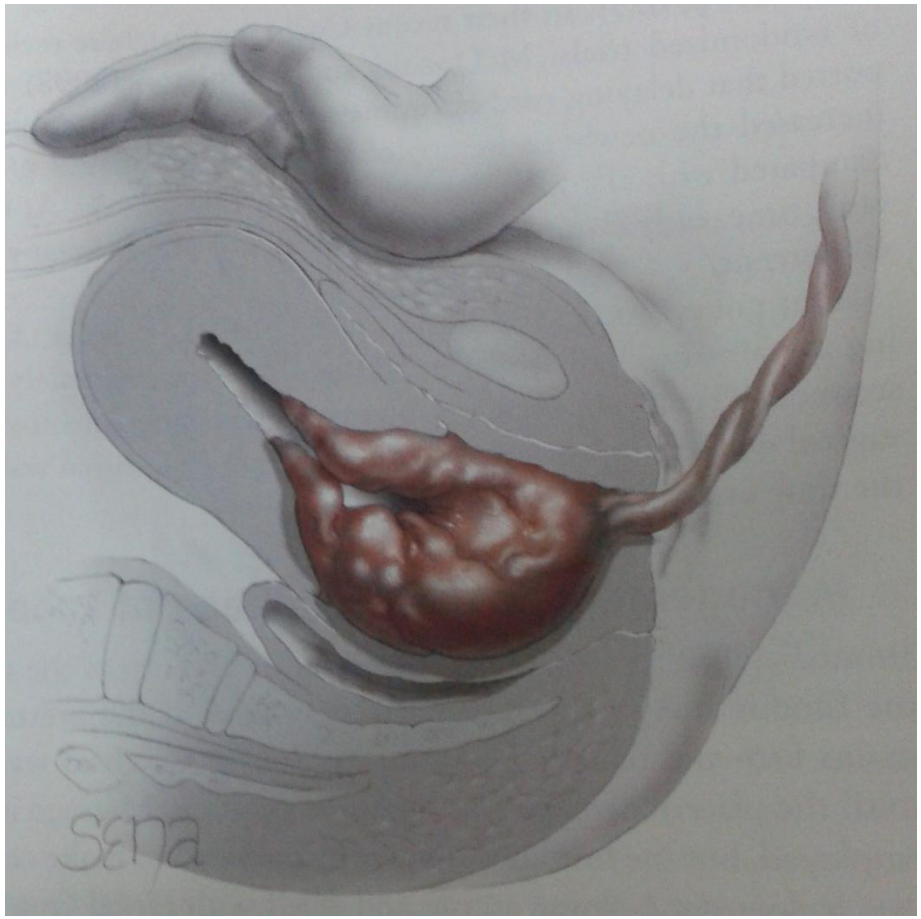
Delivery of the placenta



Expression of placenta.

As the placenta leaves the uterus and enters the vagina, the uterus is elevated by the hand on the abdomen while the cord is held in position, the mother can aid in the delivery of the placenta by bearing down. As the placenta reaches the perineum, the cord is lifted, which in turn lifts the placenta out of the vagina.

Note that the hand is not trying to push the fundus of the uterus through the birth canal!

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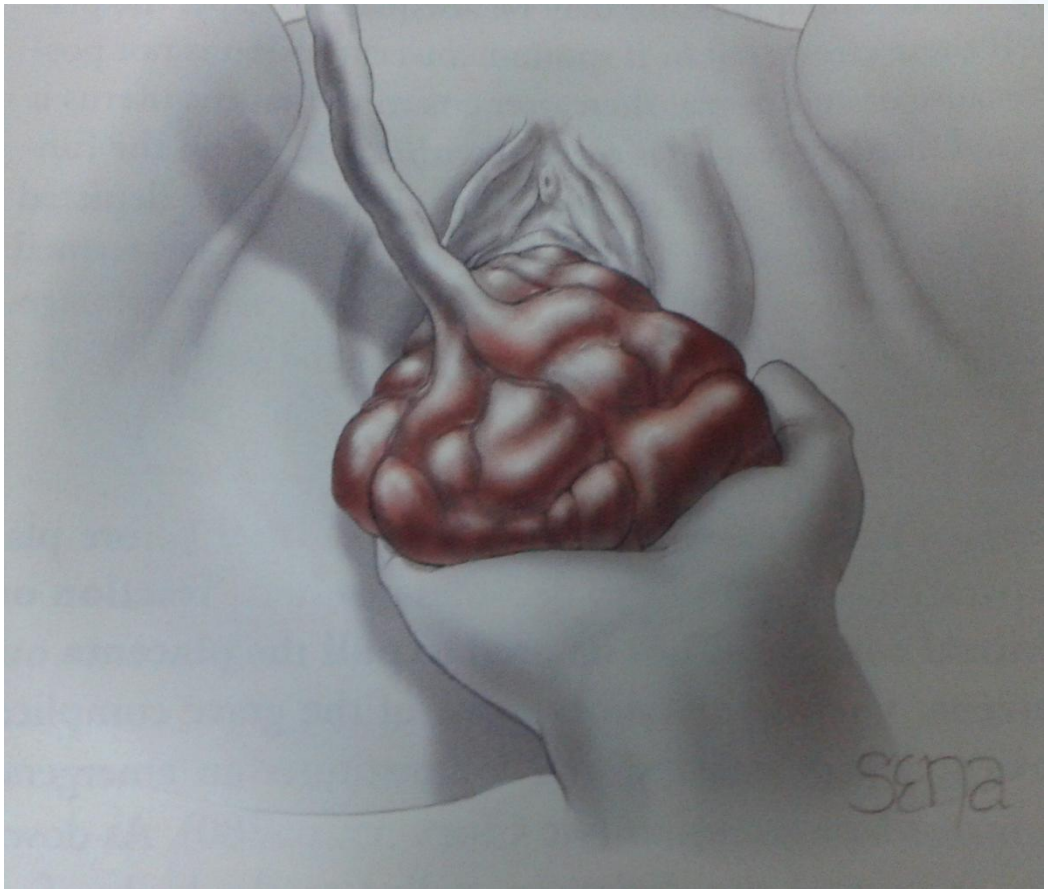
Delivery of the placenta



The placenta is removed from the vagina by lifting the cord.

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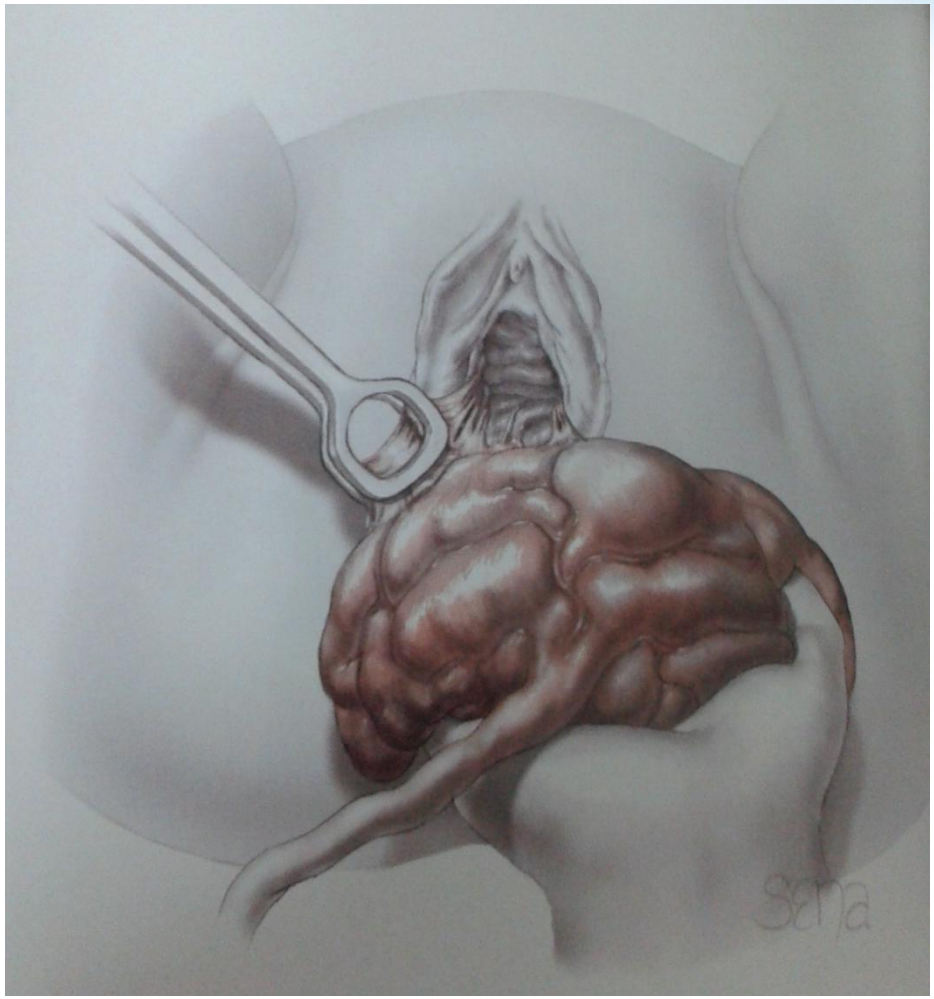
Delivery of the placenta



Membrances that were somewhat adherent to the uterine lining are seperated by gental traction with a ring forceps.

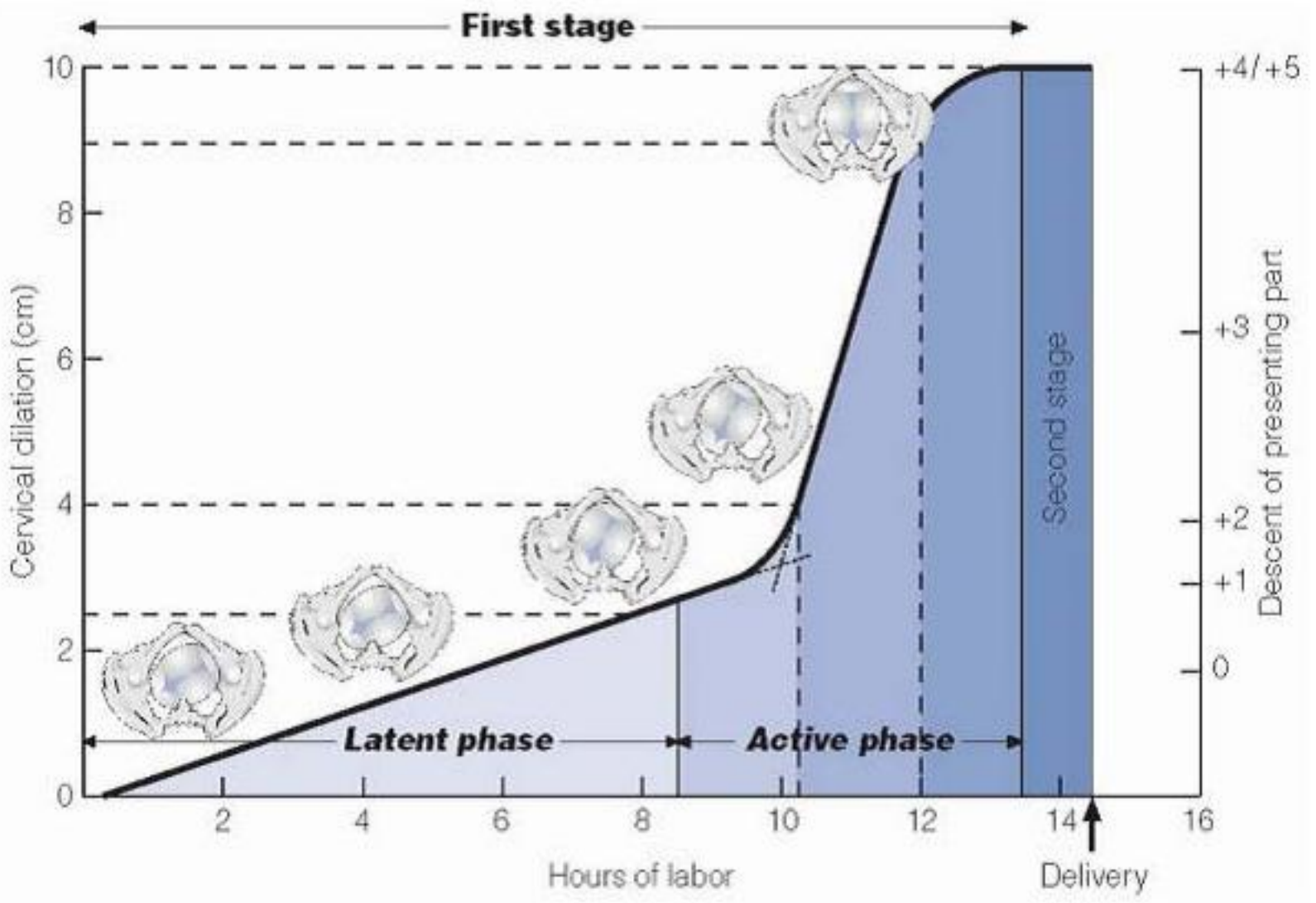


Diagram: The progress of rotation of OA presentation in the successive stages of labor.

New ideas about labor stage and phase

Hendricks and colleagues, their differences included:
absence of a latent phase: they observed that the cervix dilated and effaced slowly during the 4 weeks preceding labor. They contended that the *latent phase actually* progressed over several weeks
no deceleration phase
dilatation at similar rates for nulliparas and multiparas after 4 cm.

Monitor during labor

Fetal electronic monitor

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Fetal electronic monitor

- Since the advent of electronic fetal monitoring, auscultation is rarely used.
- Now, electronic fetal monitoring is common around the world.
- Electronic fetal monitor consists of a fetal heart probe， a tocometers and a host computer.

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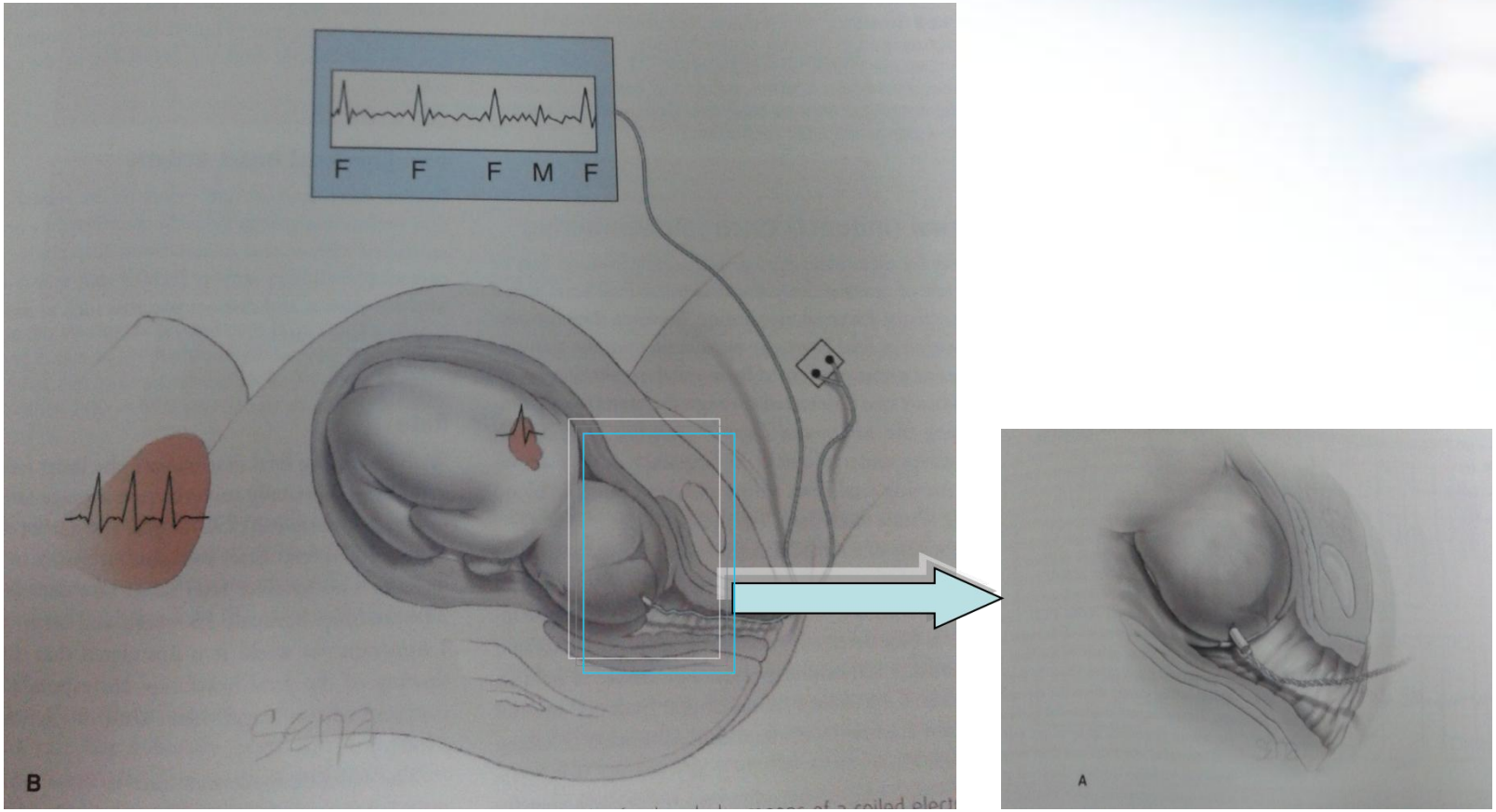
Fetal internal electronic monitor



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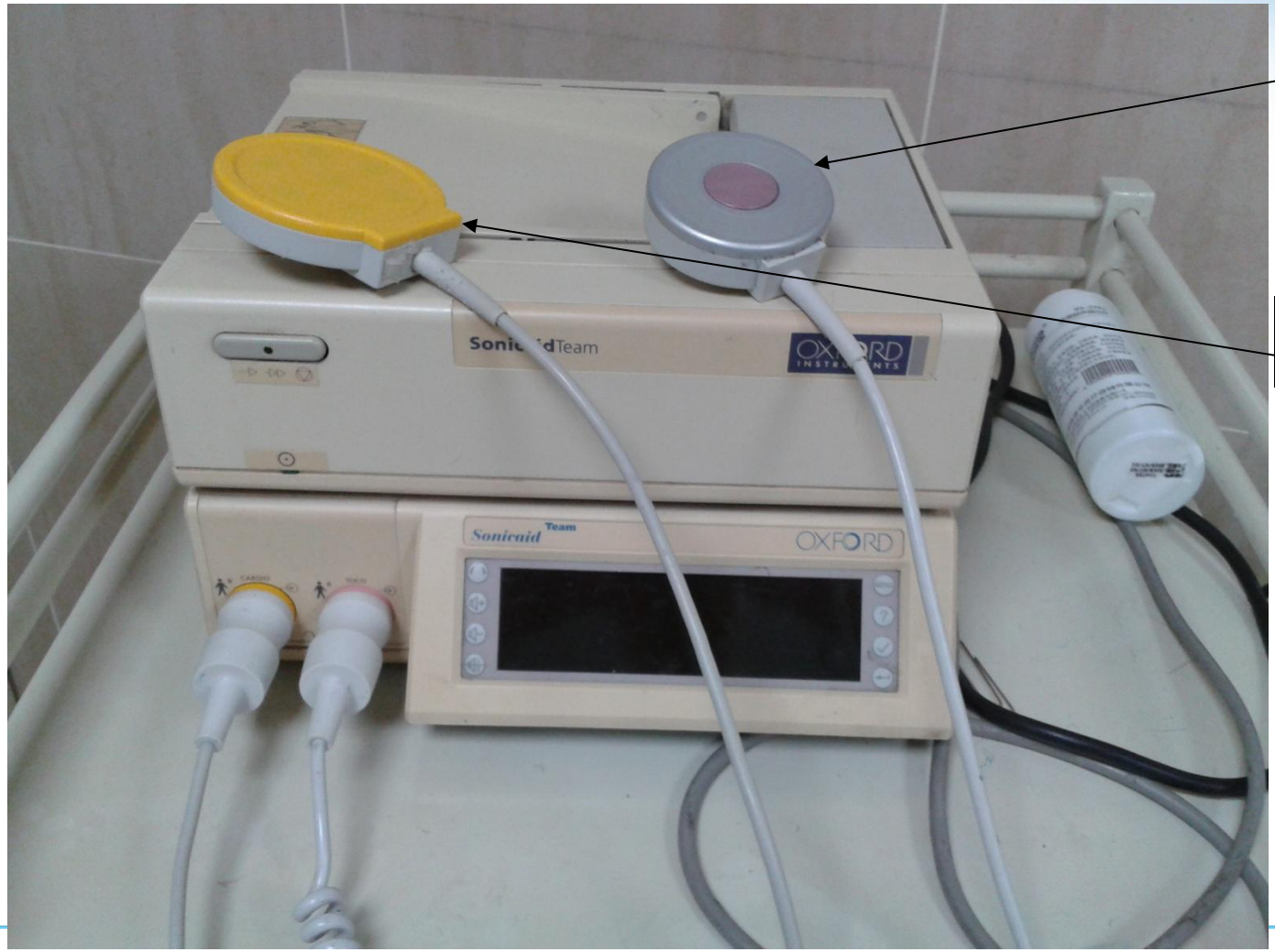
Fetal external electronic monitor



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Fetal external electronic monitor

- External tocometers record the frequency and pressure of contractions.
- Fetal heart probe record the fetal heart rate tracing.
- The relation of the fetal heart rate tracing and contractions reflect the fetal intrauterine well-being.

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Fetal electronic monitor

Non stress test: the fetal heart rate variability without contraction.

- The baseline rate is 110-160 beats per minuter.
- The fetal heart rate variability (the moment to moment variation from the baseline) is moderate (5 to 25 beats per minute of variation).

Fetal electronic monitor

- There should also be at least three to five cycles per minute of the heart rate around the baseline.
- A tracing can be considered formally reactive if there are at least two accelerations of at least 15 beats per minute over the baseline that last for at least 15 seconds within 20 minutes.

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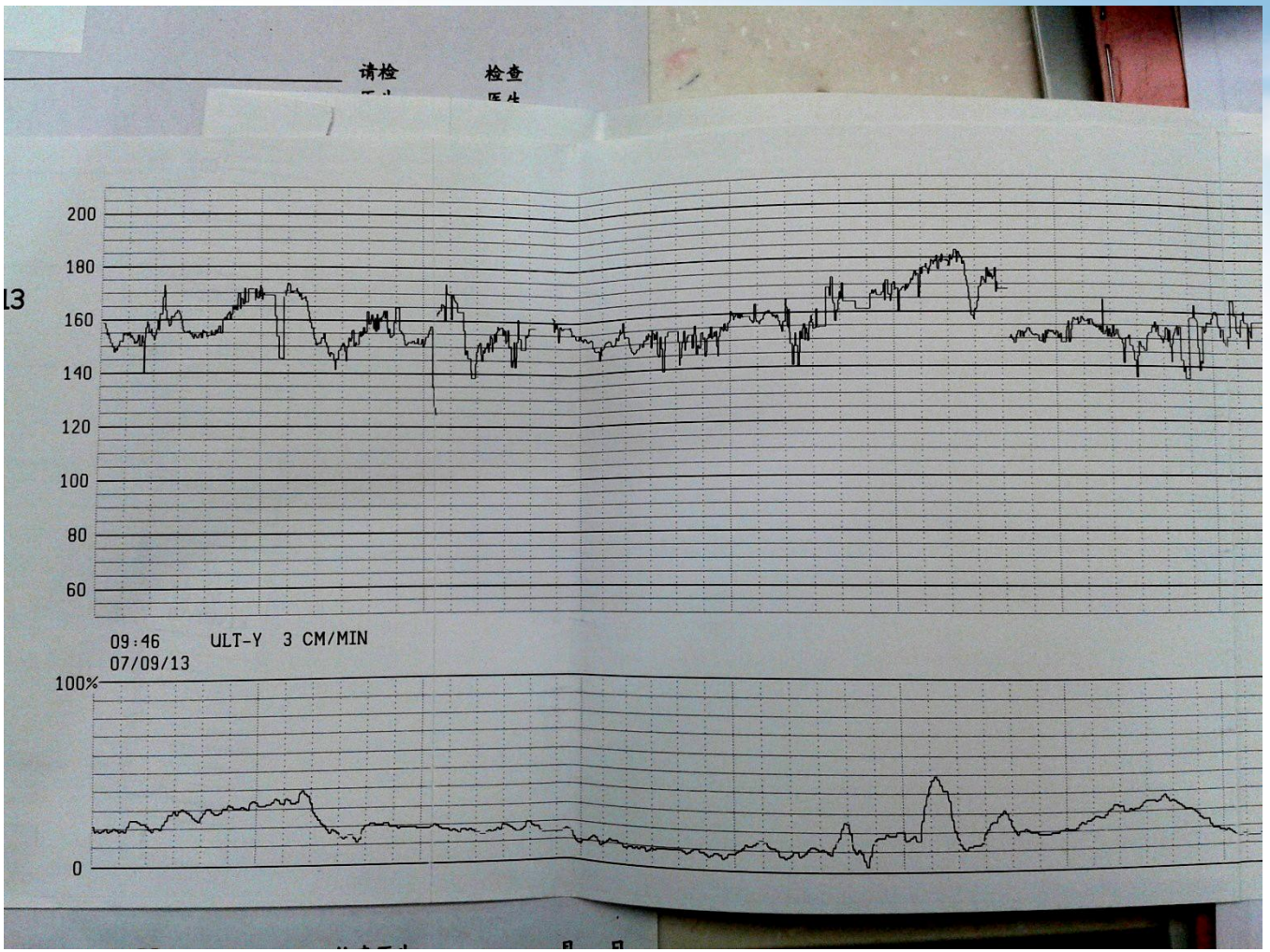
Non stress test(+)



Normal short- and long-term beat-to-beat variability

Fetal electronic monitor

- While a fetal heart rate tracing with minimal variability is not reassuring, this may also occur while the fetus is asleep or inactive.
- A flat tracing with absent variability is more worrisome and demands another test to determine fetal well-being.

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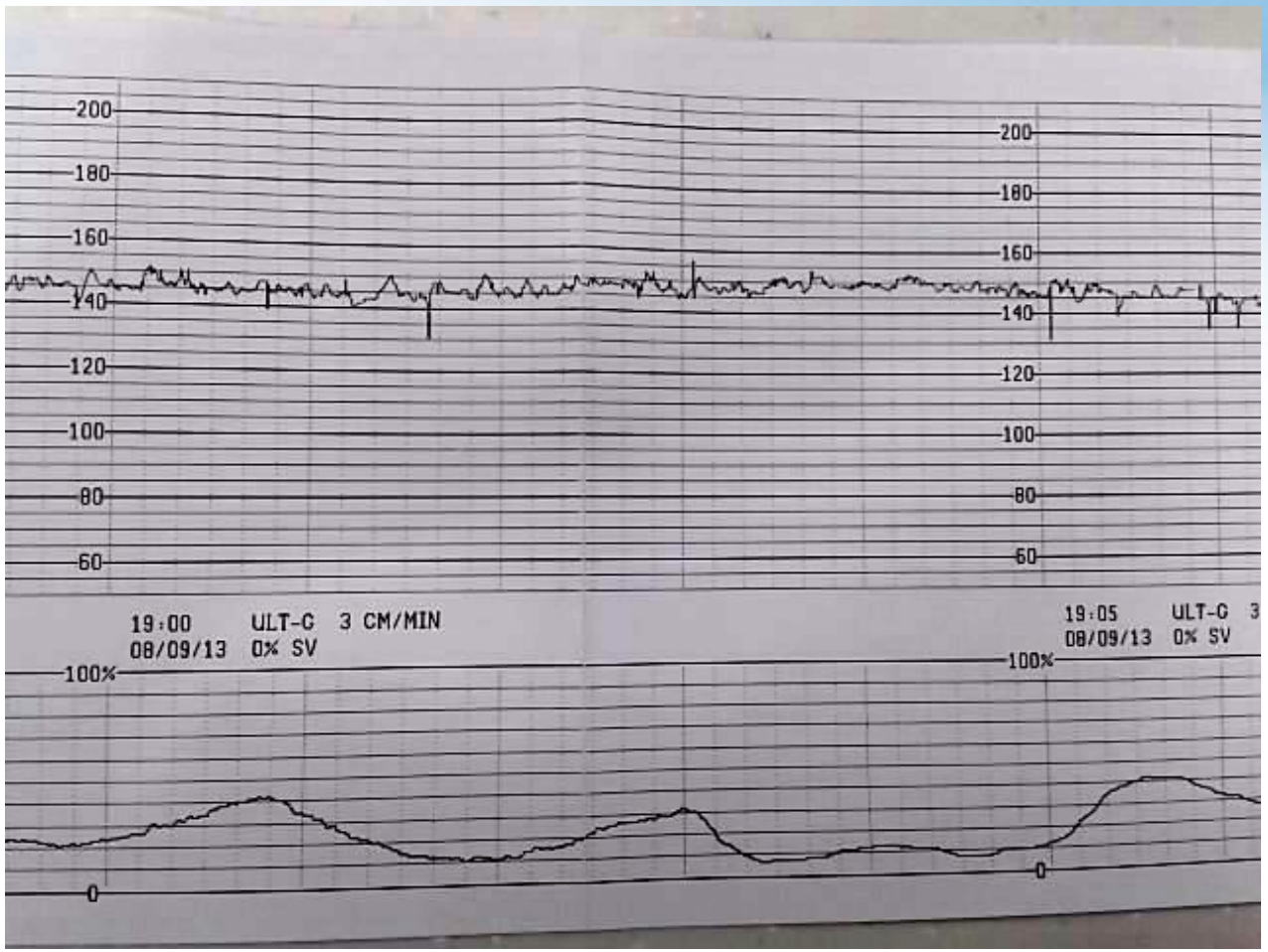
Non stress test(+-)



Reduced variability. This may occur during fetal sleep, following maternal intake of drugs, or with reduced fetal CNS function, as in asphyxia.

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Decelerations of the Fetal Heart Rate

- There are three types of decelerations: early, variable, and late.
- **Early decelerations** begin and end approximately at the same time as contractions.
- **Variable decelerations** can occur at any time and tend to drop more precipitously than either early or late decels
- **Late decelerations** begin at the peak of a contraction and slowly return to baseline after the contraction has finished.

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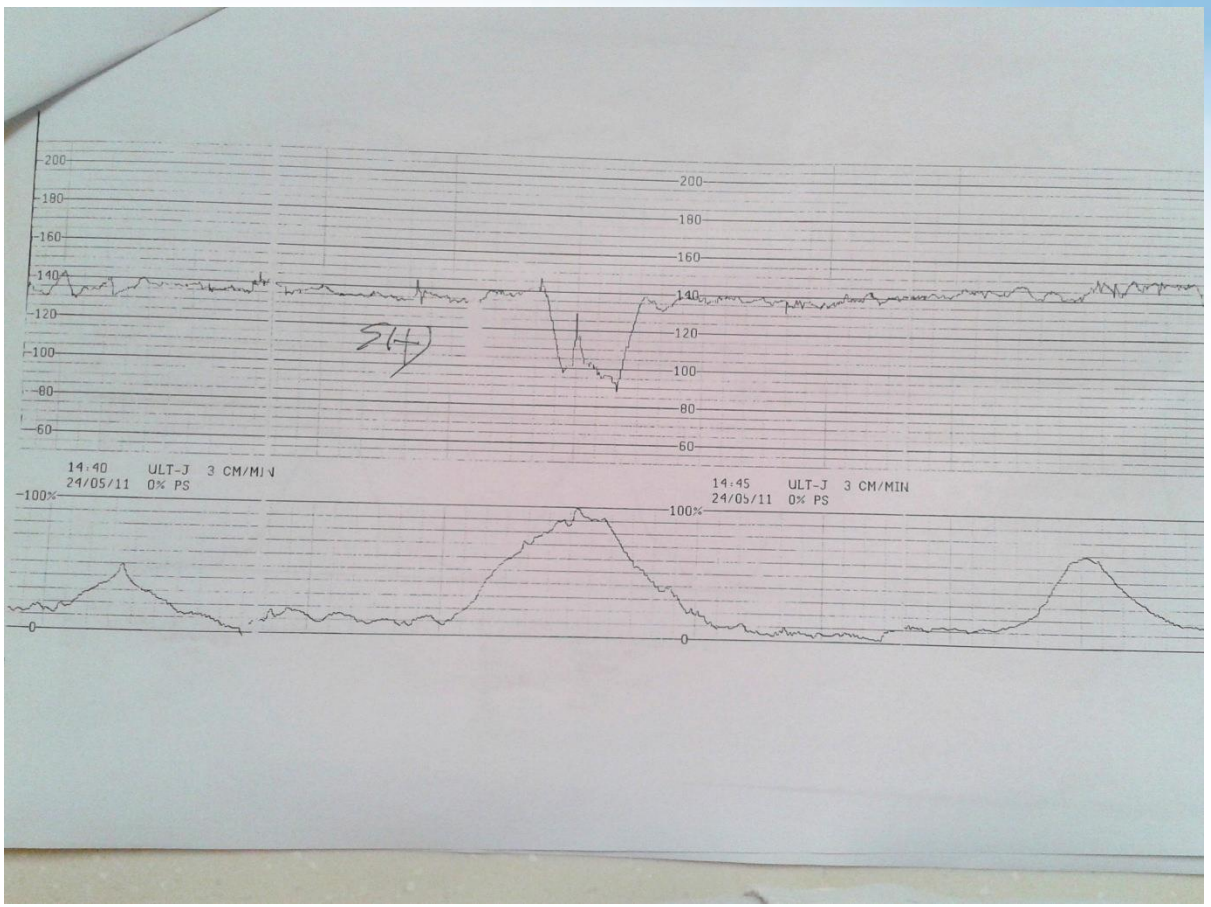
Early decelerations



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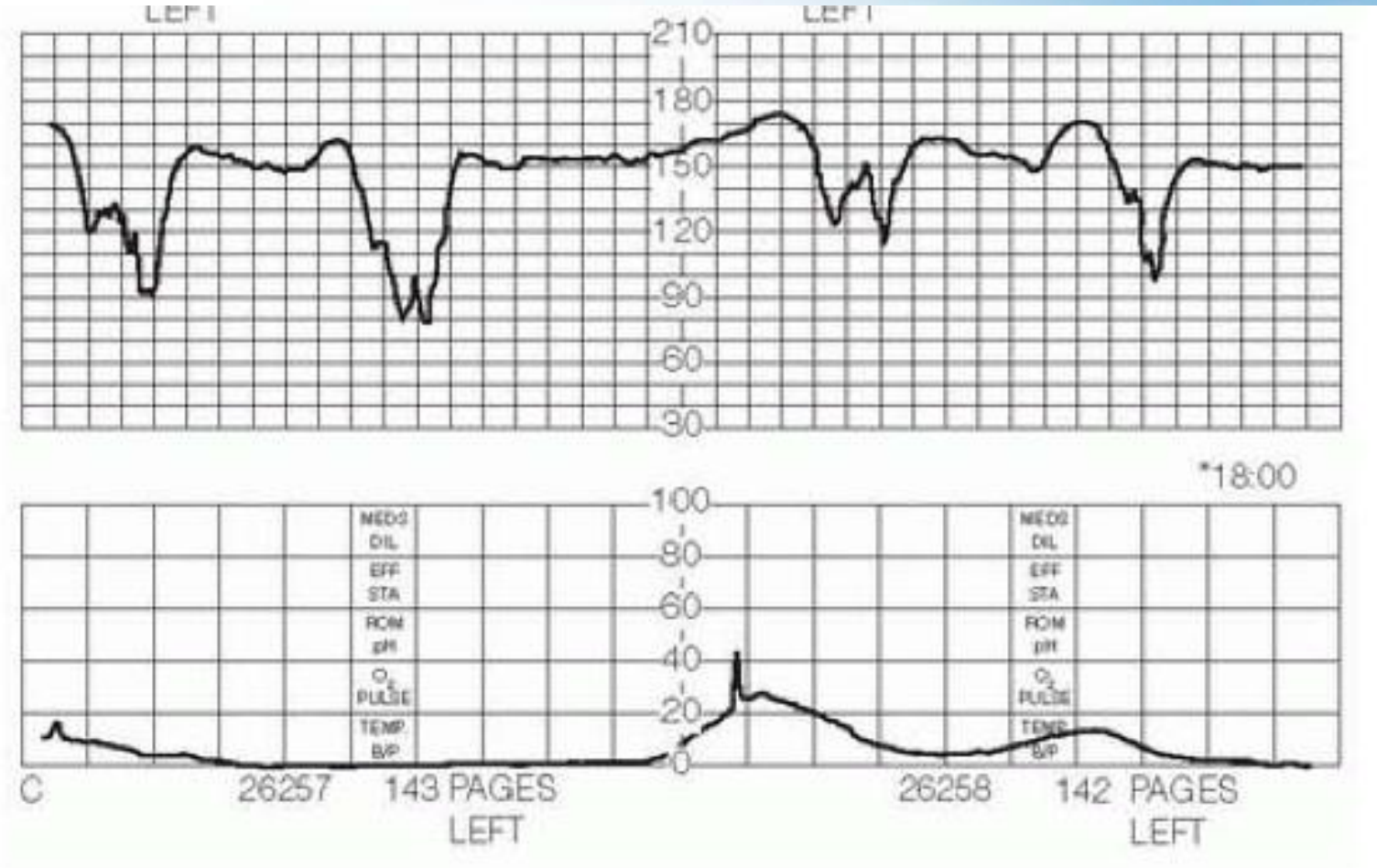
Variable decelerations



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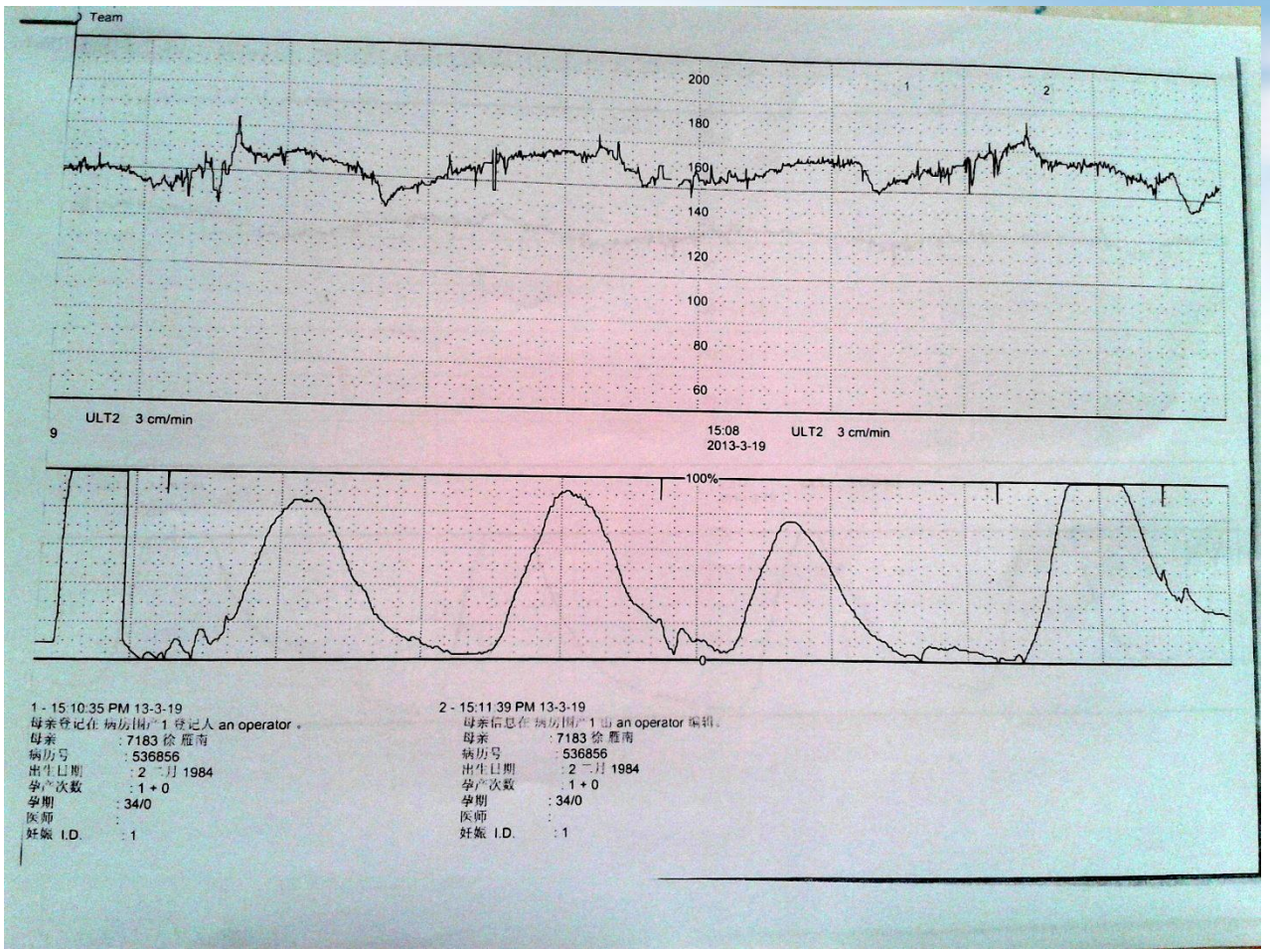
Late decelerations



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Fetal electronic monitor

- Repetitive early and mild variable decels are common during the second stage.

- The clinician can be reassured if these decels resolve quickly after each contraction and there is no loss of variability in the tracing.

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Fetal electronic monitor

- Repetitive severe late decels, bradycardias, and loss of variability are all signs of nonreassuring fetal status.
- If it is being used, the pitocin should be immediately discontinued until the tracing resumes a reassuring pattern.
- With these tracings, the patient should be placed on face mask O2, turned onto her left side to decrease inferior vena cava (IVC) compression and increase uterine perfusion.

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Fetal electronic monitor

- If a nonreassuring pattern does not resolve with these interventions, the fetal position and station should be assessed to determine whether an operative vaginal delivery can be performed.
- If fetal station is above 0 station (though many clinicians will require the fetus to be +2 station or lower) or the position cannot be determined, cesarean delivery is the mode of choice.

Operative Vaginal Delivery

Indications:

- a prolonged second stage
- maternal exhaustion
- the need to hasten delivery

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Operative Vaginal Delivery

- **Methods:**

  forceps delivery

  vacuum-assisted delivery

- Both are effective methods and have similar indications.
- The decision of which method to choose is generally based upon clinician preference and experience, though they carry slightly different risks of maternal and neonatal complications.

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Forceps delivery

The conditions for safe application of forceps include:

- full dilation of the cervix
- ruptured membranes
- engaged head at least +2 station
- absolute knowledge of fetal position
- no evidence of cephalopelvic disproportion
- adequate anesthesia
- empty bladder
- an experienced operator

Type of Procedure Classification

- **Outlet forceps**

1. Scalp is visible at the introitus without separating the labia
2. Fetal skull has reached pelvic floor
3. Sagittal suture is in anteroposterior diameter or right or left occiput anterior or posterior position
4. Fetal head is at or on perineum
5. Rotation does not exceed 45 degrees

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Type of Procedure Classification

- **Low forceps**

  Leading point of fetal skull is at station +2 or greater, but not on the pelvic floor

- **Mid forceps:** Station above +2 cm but head engaged

no longer considered a safe obstetric procedure

- **High forceps:** the fetal vertex above 0 station

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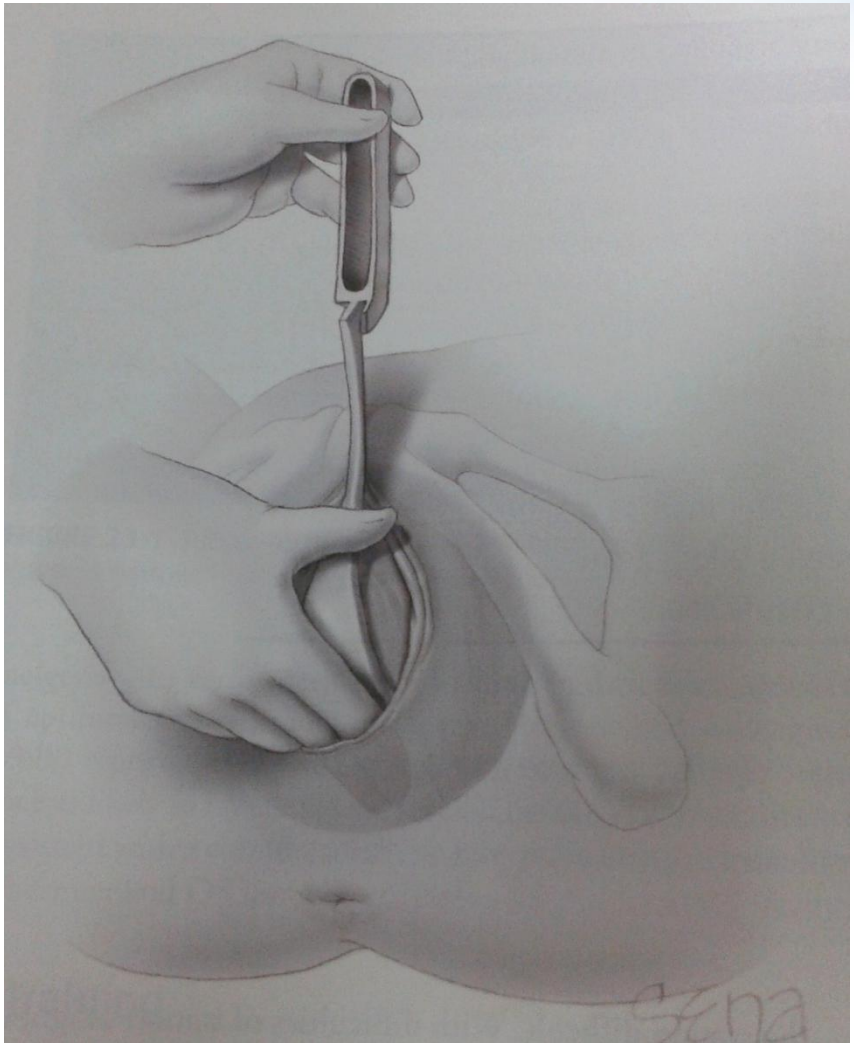
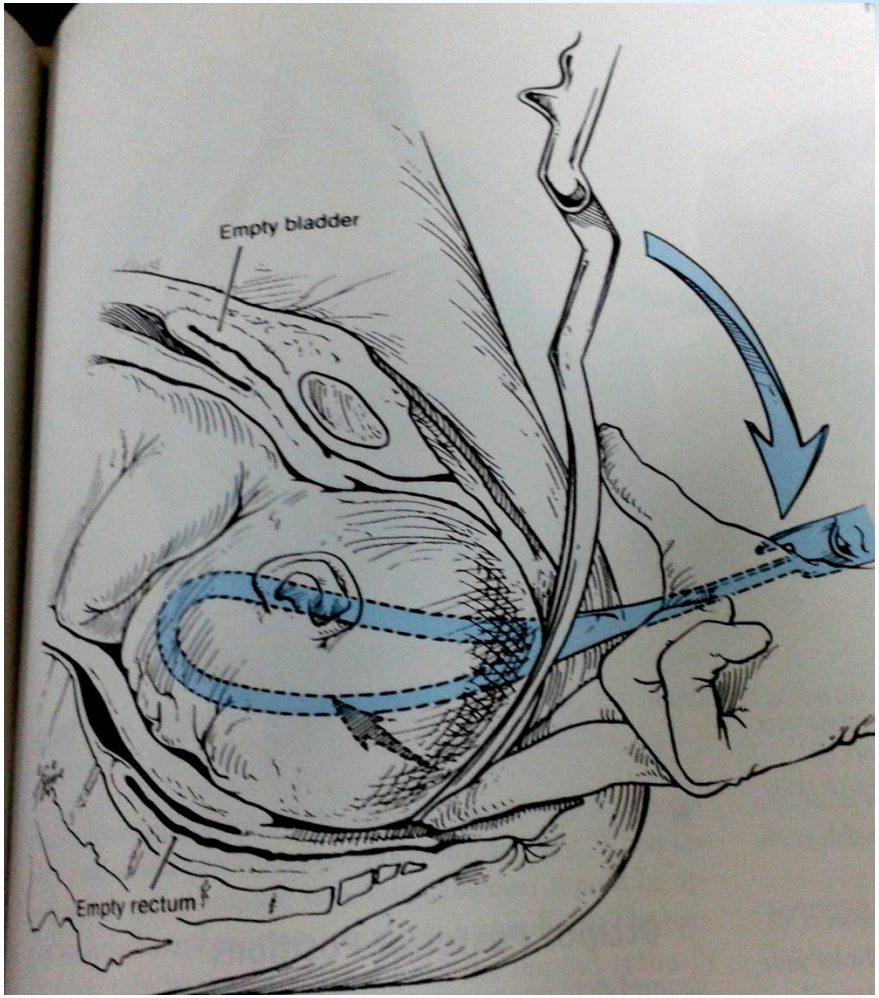
Procedures of forceps delivery



The left handle of the forceps is held in the left hand.

The blade is introduced into the left side of the pelvis between the fetal head and fingers of the operator's right hand.

Procedures of forceps delivery



Saginal view of first-blade application.

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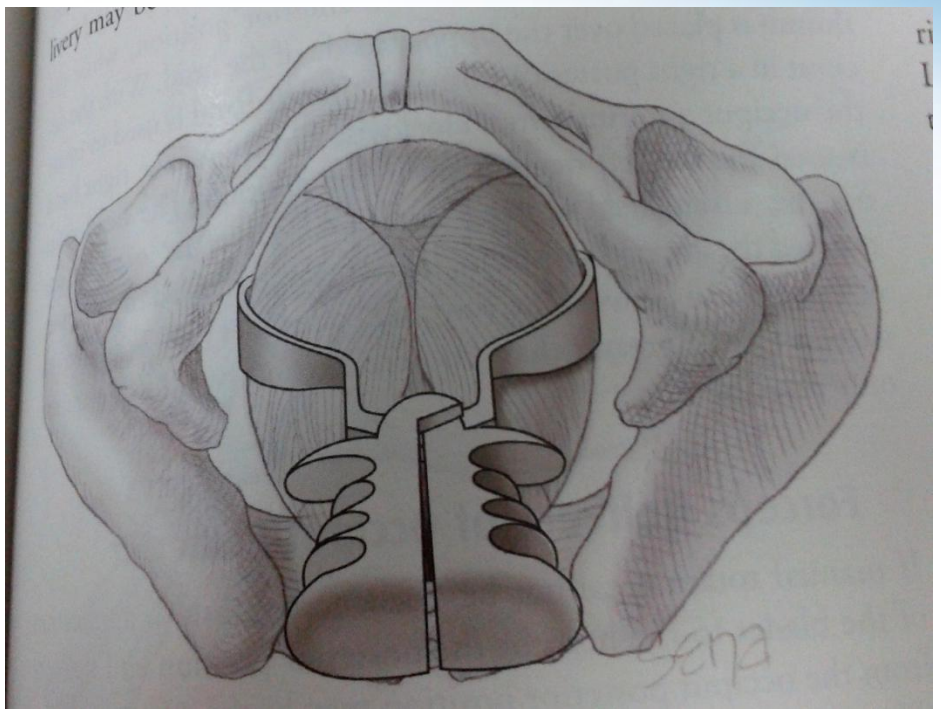
Procedures of forceps delivery



The vertex in now occiput anterior, and the forceps are symmetrically placed and articulated.

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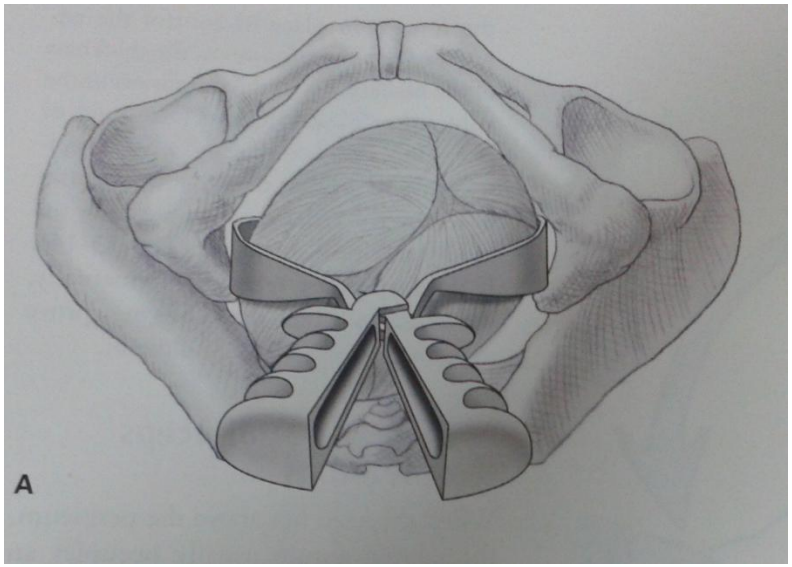
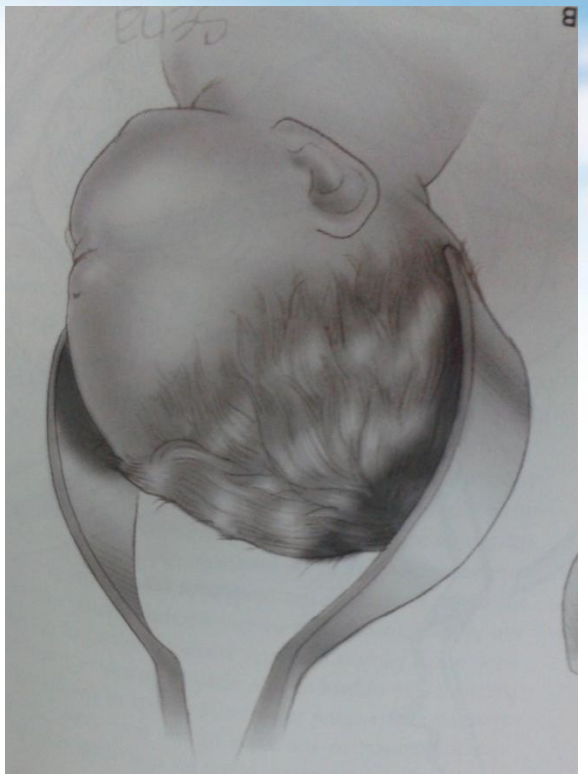
Procedures of forceps delivery





Incorrect application of forceps. A. One blade over the occiput and the other over the brow. Forceps cannot be locked. B. With incorrect placement, blades tend to slip off with traction.

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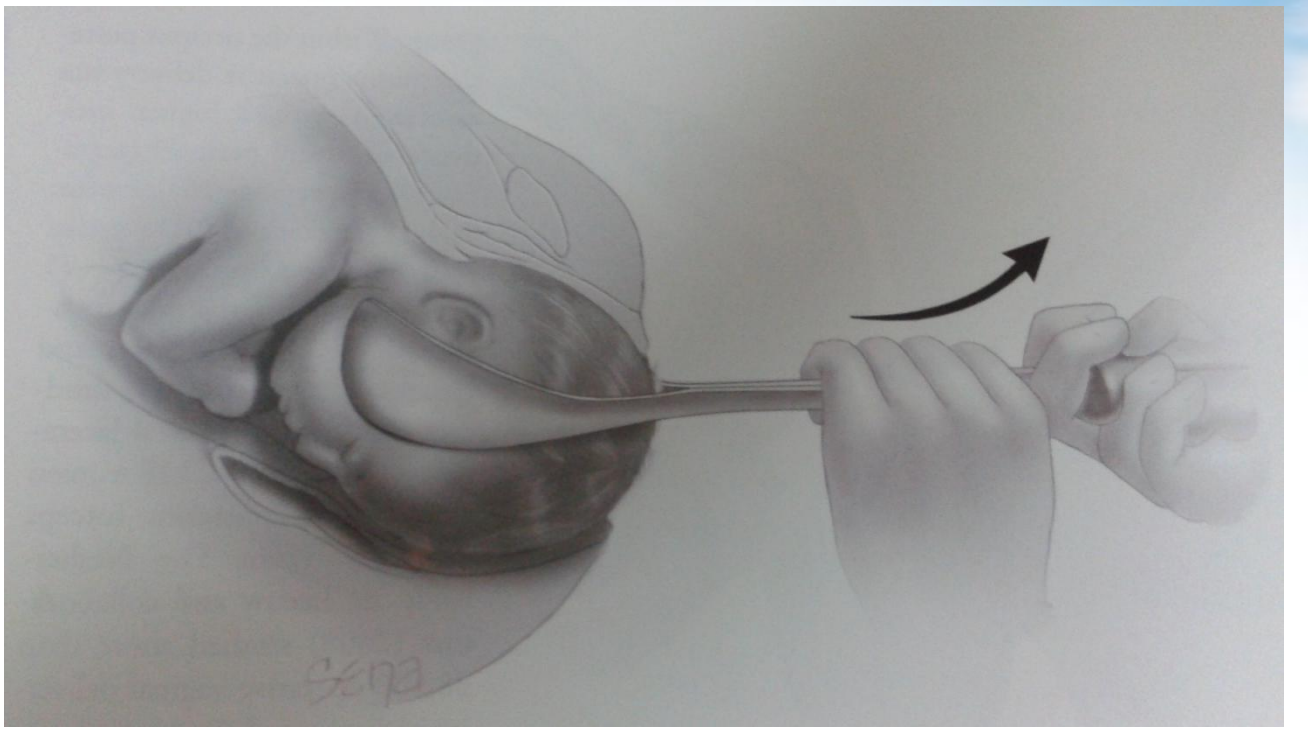
Procedures of forceps delivery



Correct traction of forceps: upward arching traction (arrow) is used as the head is delivered

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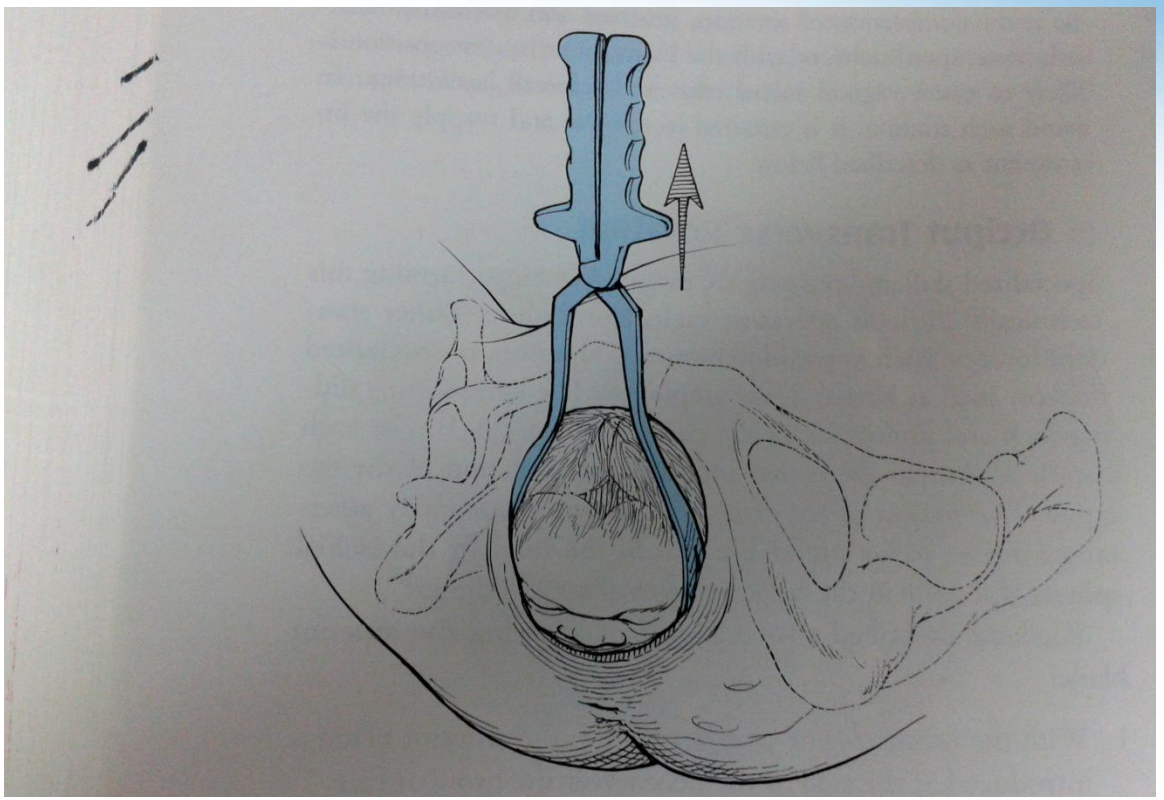
Procedures of forceps delivery



Upward traction (arrow) is continued as the head is delivered.

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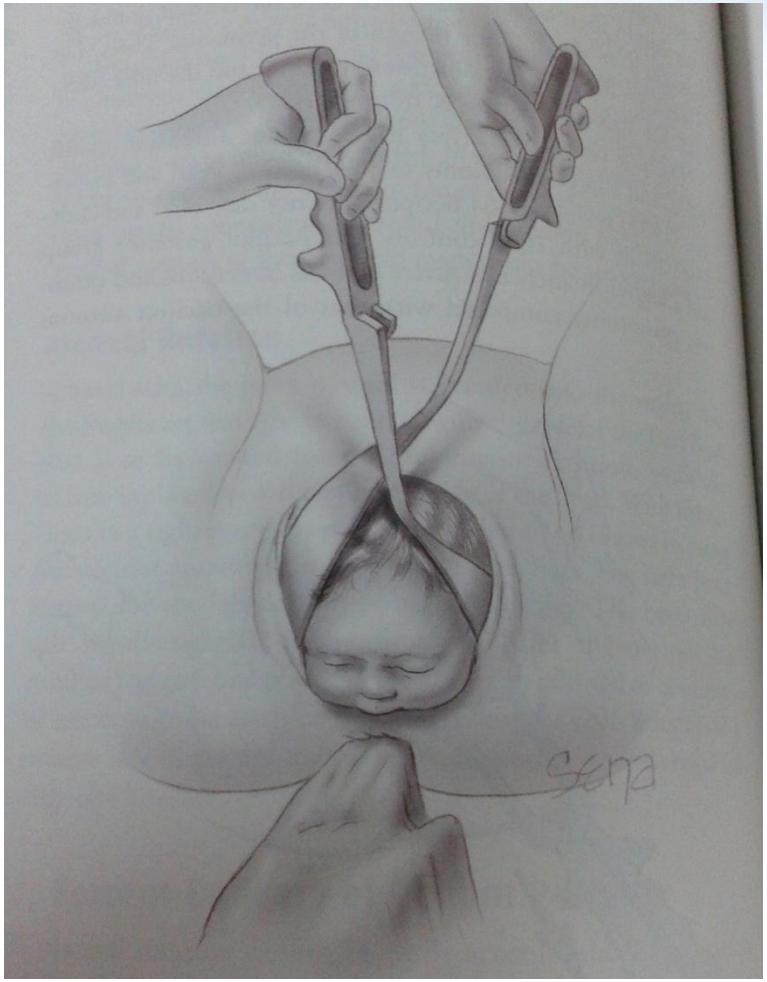
Procedures of forceps delivery



Forceps may be disarticulated as the head is delivered.

Modified Ritgen maneuver may be used to complete delivery of the head.

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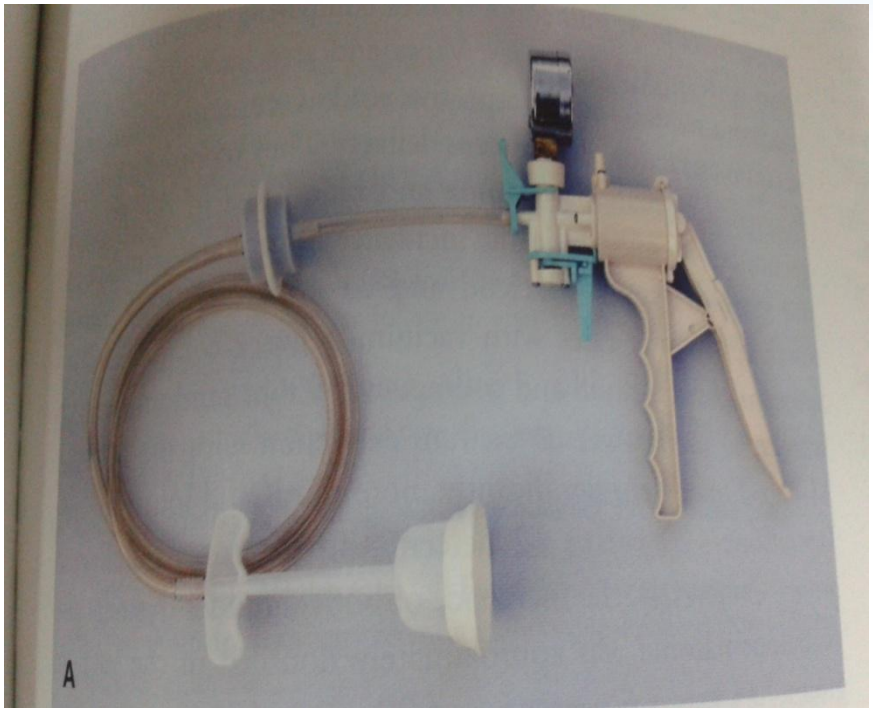
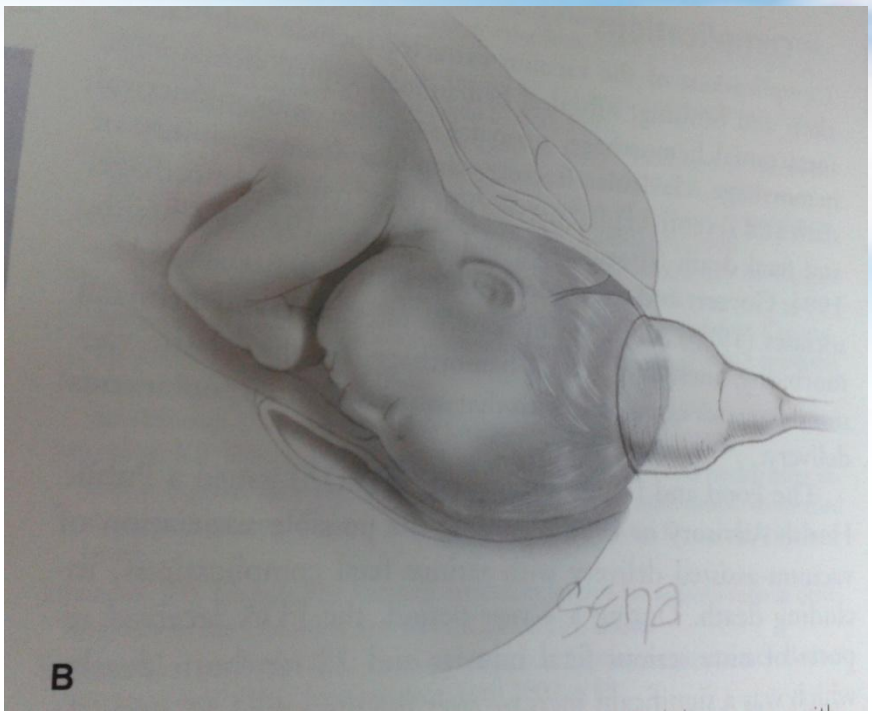
Vacuum-assisted delivery





Vacuum should never be chosen when position is unknown or the station is too high.

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Episiotomy

- **An episiotomy** is an incision made in the perineum to facilitate delivery.
- **Indications** for episiotomy include need to hasten delivery and impending or ongoing shoulder dystocia.
- There are **two common types of episiotomies**: median (or midline) and mediolateral.

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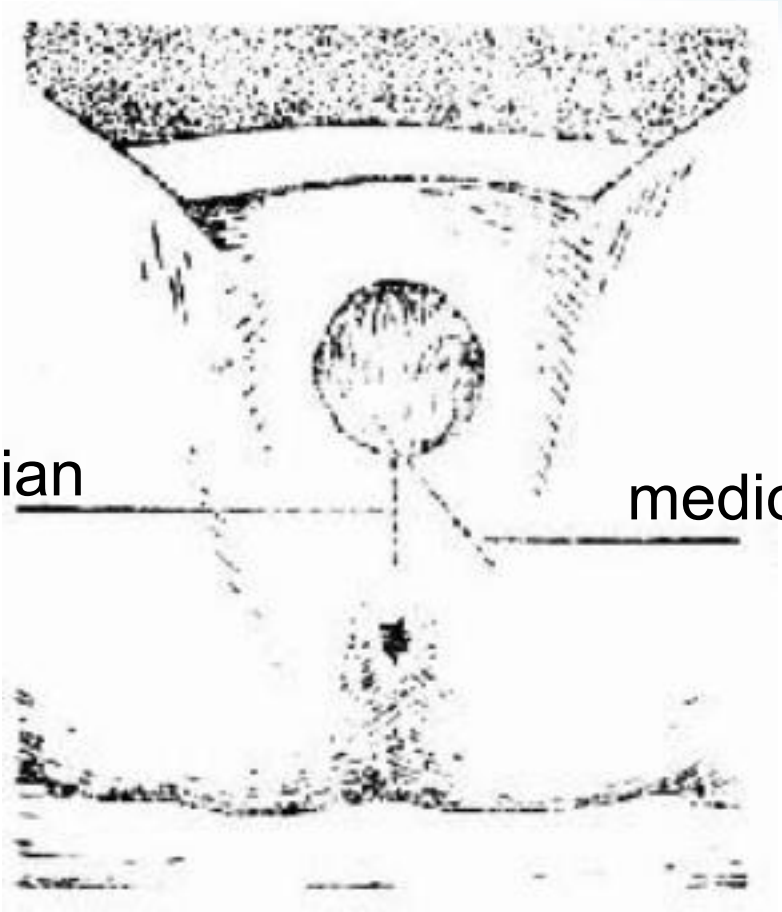
Episiotomy



median

mediolateral

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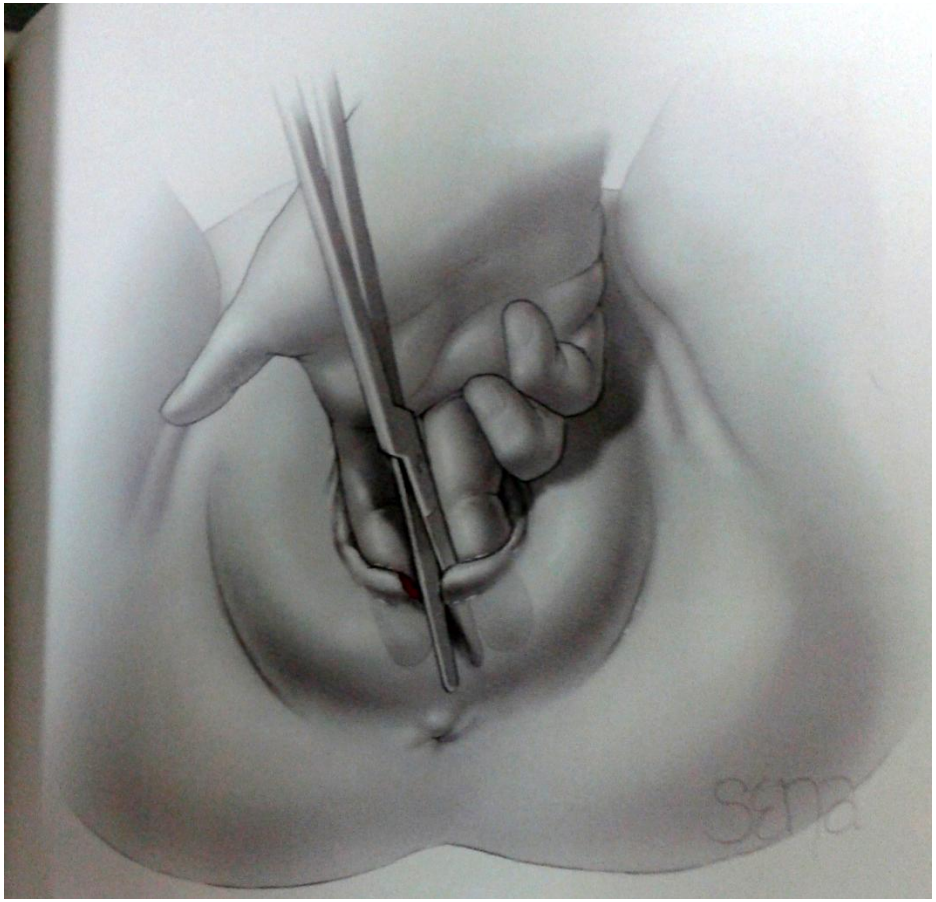
Episiotomy



Midline episiotomy being made.

Two fingers are insinuated between the perineum and fetal head, and the episiotomy is then cut vertically downward.

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Episiotomy

- **The median episiotomy**, the most common type used worldwide, uses a vertical midline incision from the posterior fourchette into the perineal body.
- **However**, evidence suggests that the rate of third- and fourth-degree lacerations increases with the use of routine midline episiotomy.
- **So, a relative contraindication for median episiotomy** is the assessment that there will be a large perineal laceration as episiotomies have been associated with higher risk of severe perineal lacerations.

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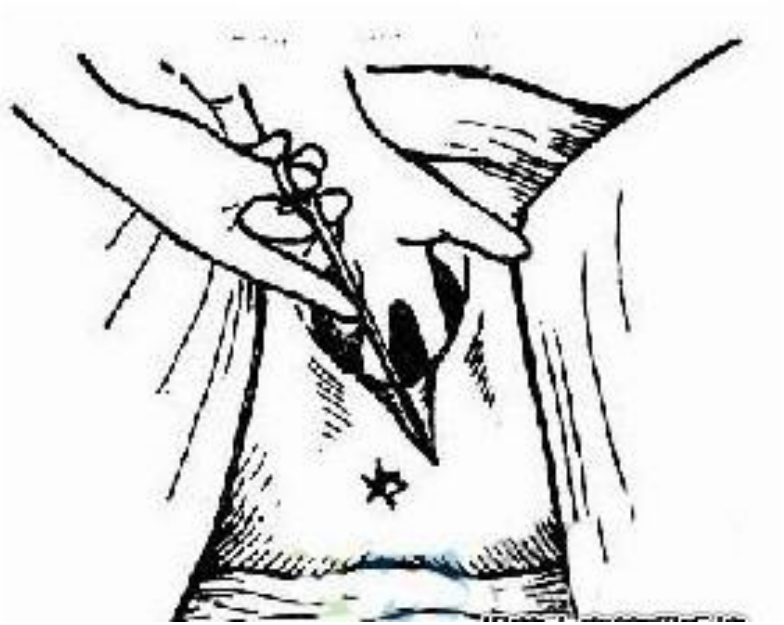
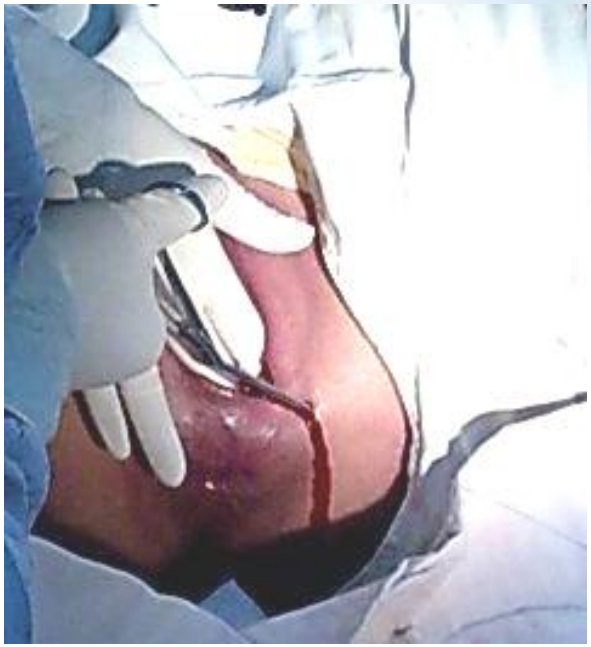
Episiotomy





Mediolateral episiotomy

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Episiotomy

The mediolateral episiotomy is an oblique incision made from either the 5 or 7 o'clock position on the perineum and cut laterally. It is used less frequently and reportedly causes more pain and wound infections.

However, mediolateral episiotomies are thought to lead to **fewer third- and fourth-degree extensions**, particularly in patients with short perineums or with operative deliveries

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Episiotomy

- **Once the episiotomy is cut,**
- **great care** should be taken to support the perineum around the episiotomy to avoid extension into the rectal sphincter or rectum itself.

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Laceration

- **Lacerations** are usually repaired after placental delivery.
- **A thorough examination** of the perineum, labia, periurethral area, vagina, anus, and cervix is performed to assess lacerations.

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Perineal Laceration

- The most common lacerations are perineal lacerations, which are described by the depth of tissues they involve.

✓ **A first-degree** laceration involves the mucosa or skin.

✓ **Second-degree** lacerations extend into the perineal body but do not involve the anal sphincter.

✓ **Third-degree** lacerations extend into or completely through the anal sphincter.

✓ **A fourth-degree** tear occurs if the anal mucosa itself is entered.

✓ **A rectal exam** should always be performed as occasionally a "button-hole" fourth degree laceration will be noted. This is a laceration through the rectal mucosa into the vagina, but with the sphincter still intact.

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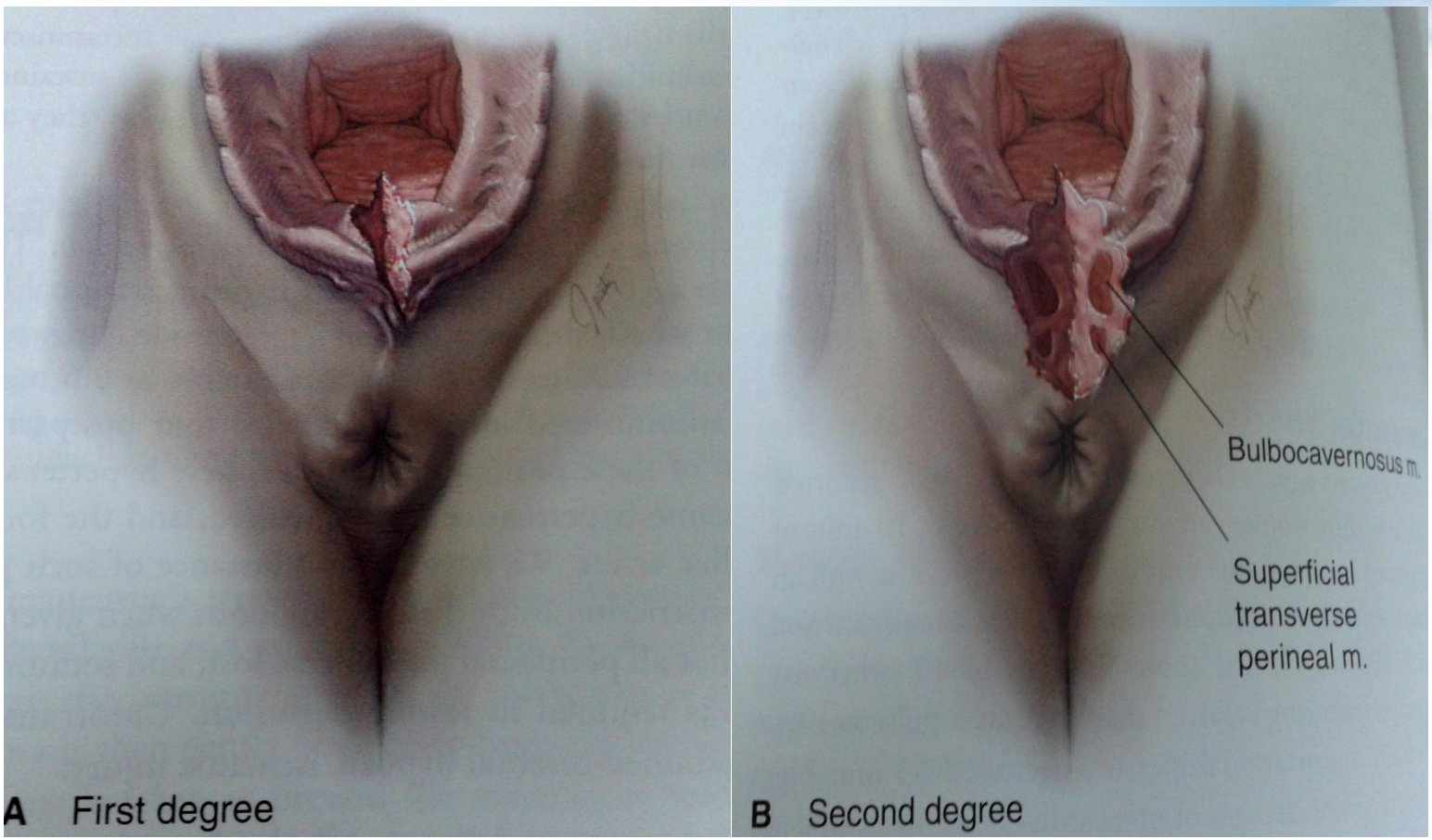
Perineal Laceration



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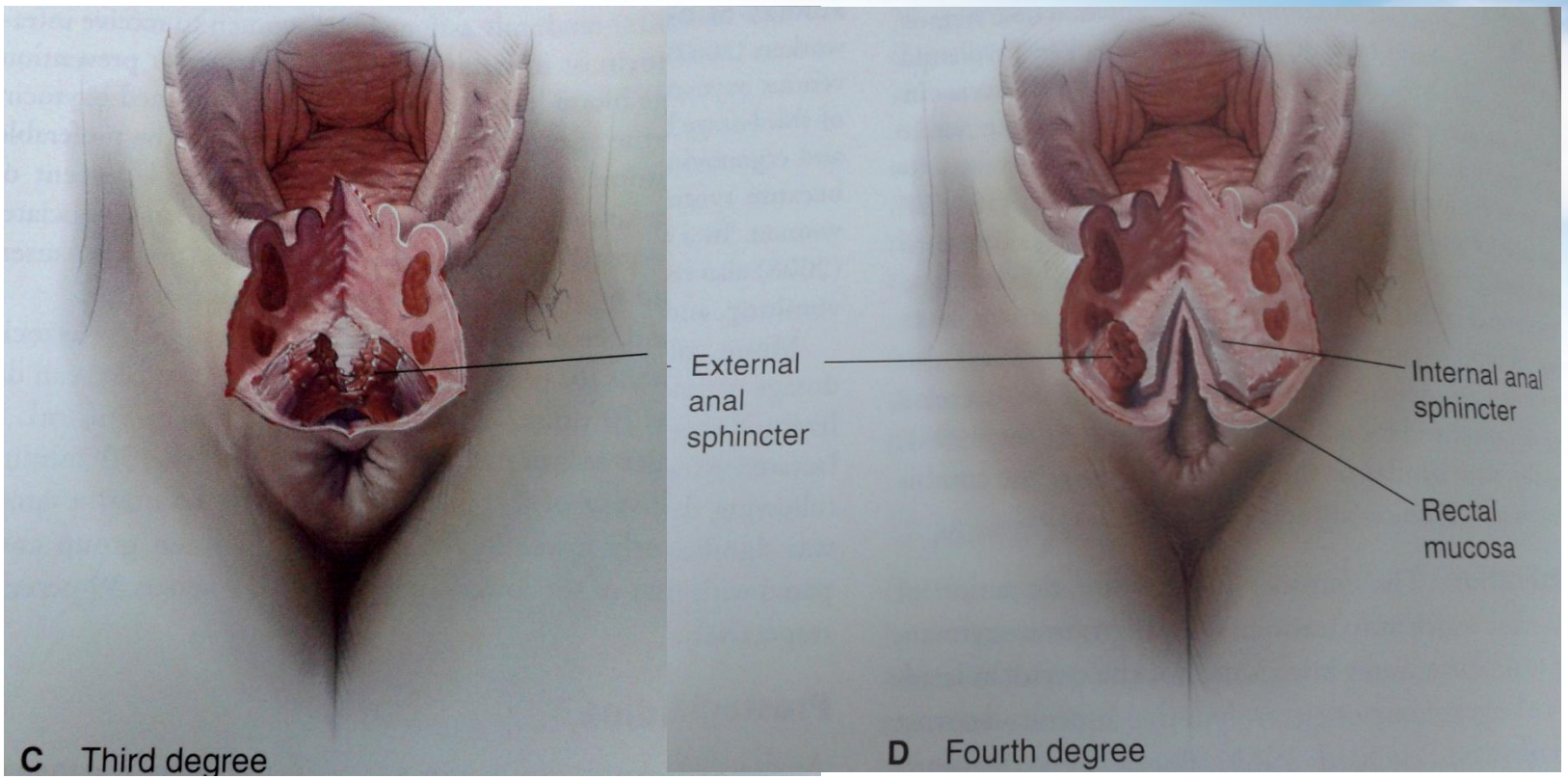
Perineal Laceration



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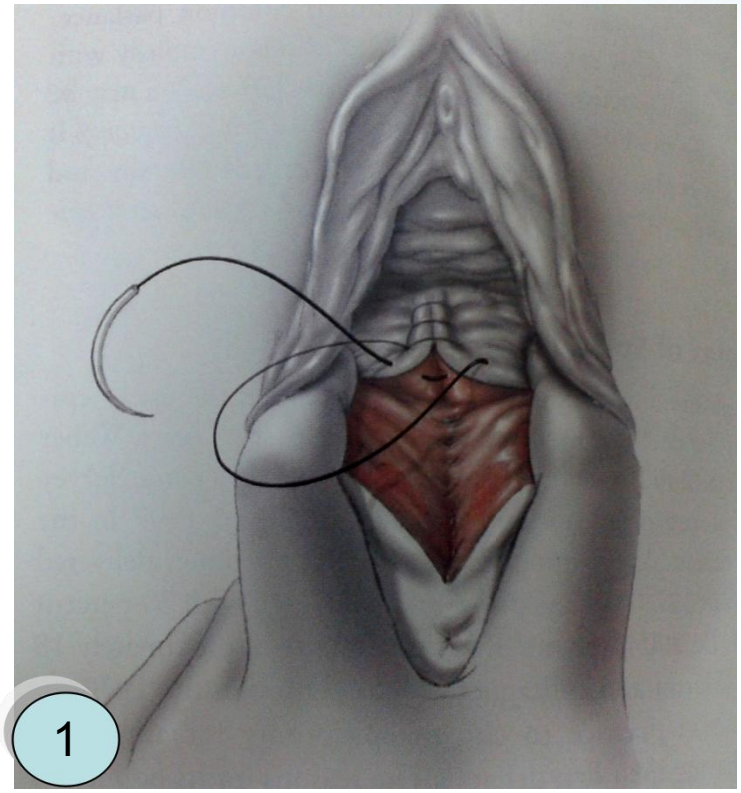
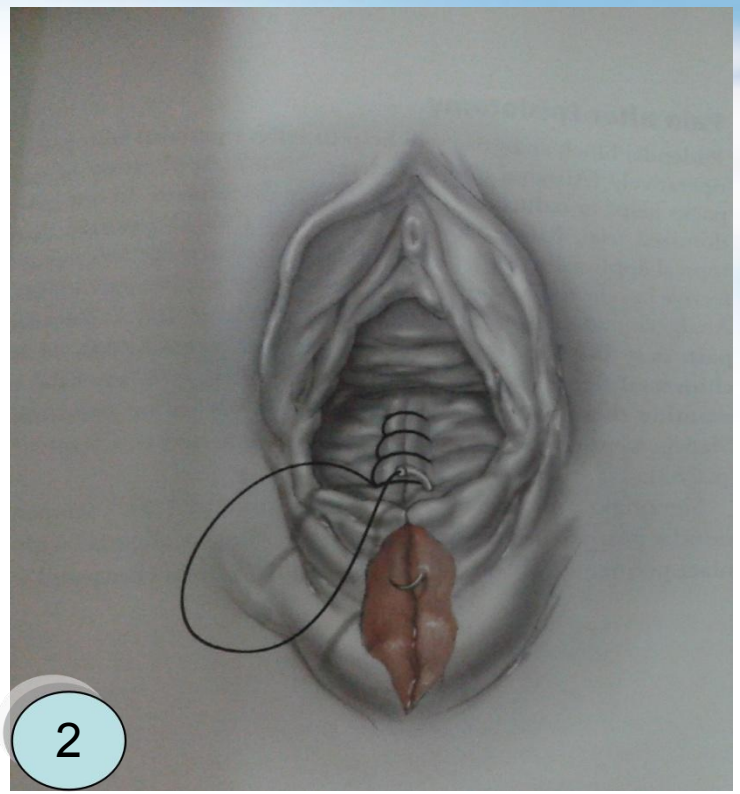
Perineal laceration repair





1.Absorbable 2-0 or 3-0 suture is used for continuous closure of the vaginal mucosa and submucosa.

2.The vaginal mucosa is repaired down to the level of the hymenal ring.

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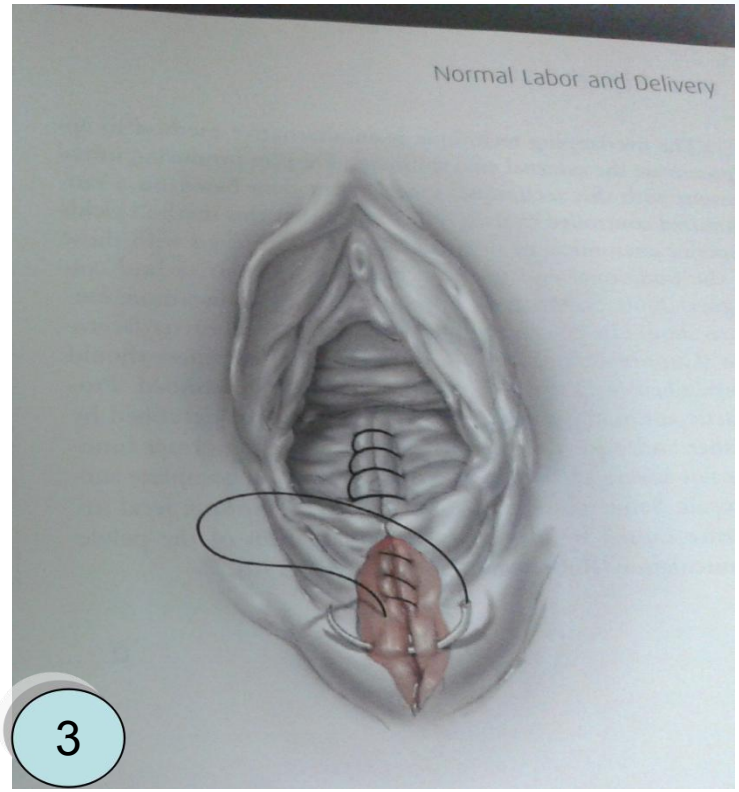
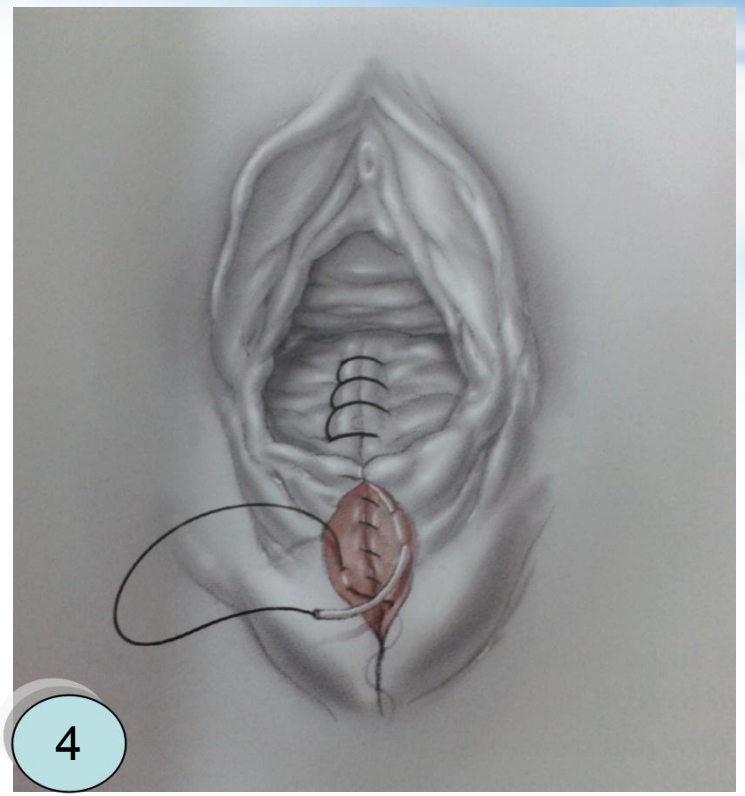
Perineal laceration repair

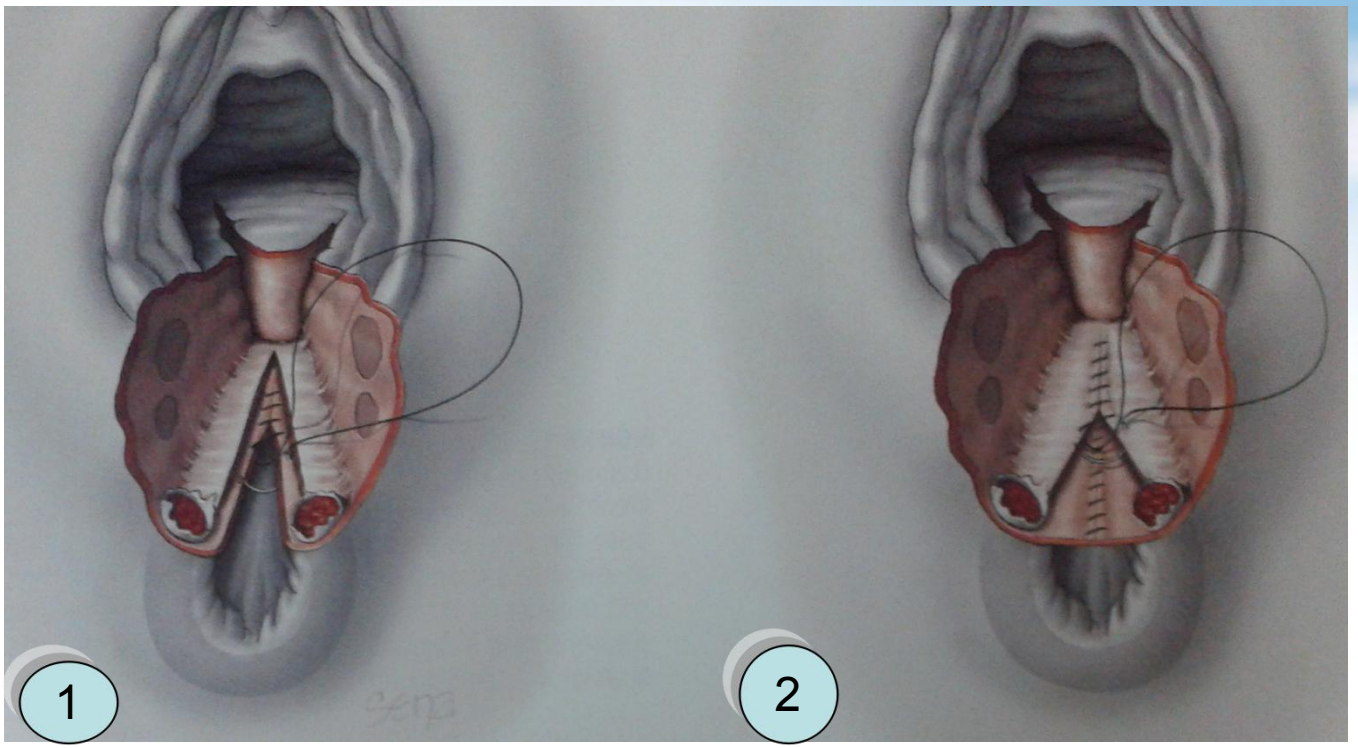




3, The subcutaneous tissue of the perineum is then brought together.

4, Finally, the skin of the perineum is reapproximated in a subcuticular fashion.

A fourth-degree perineal laceration repair

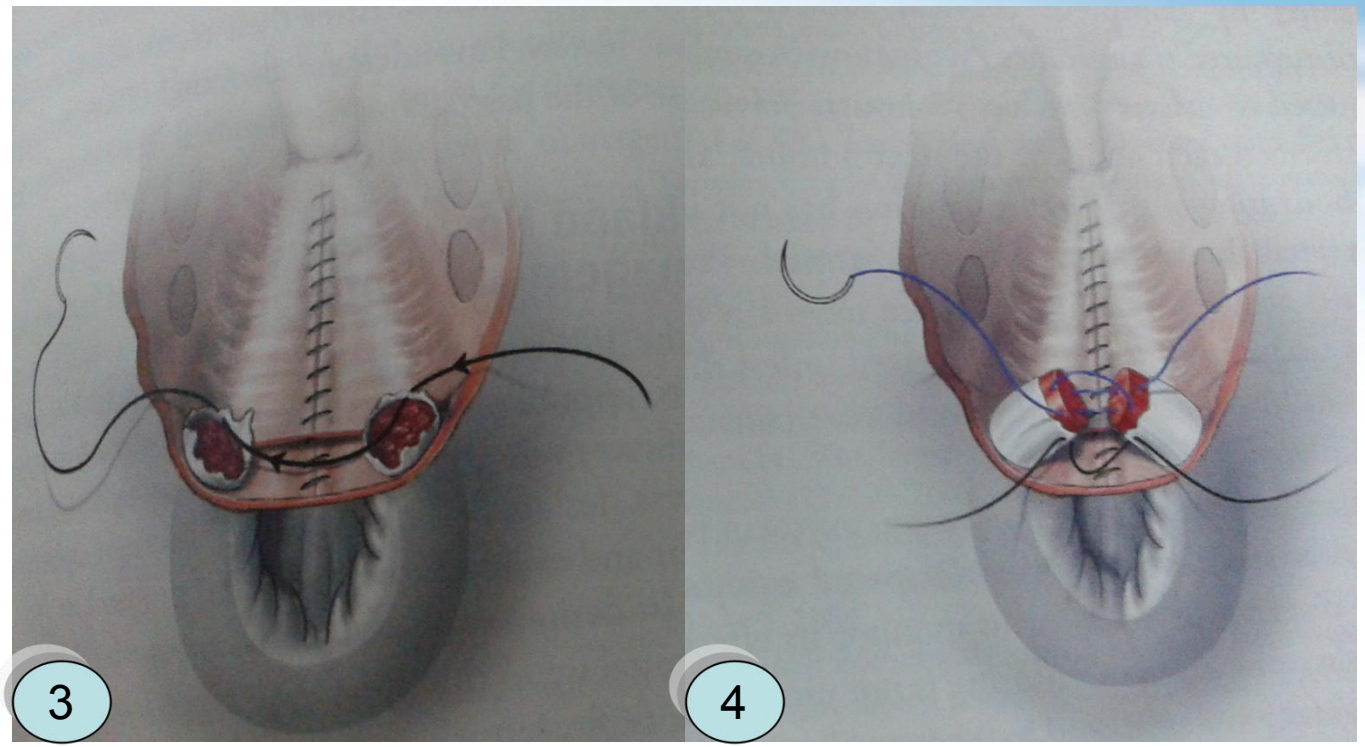


Layered repair of a fourth-degree perineal laceration.

1.The first layer is placed through the anorectal mucosa and submucosa tissue interrupted or continuously fashion using fine absorbable suture .

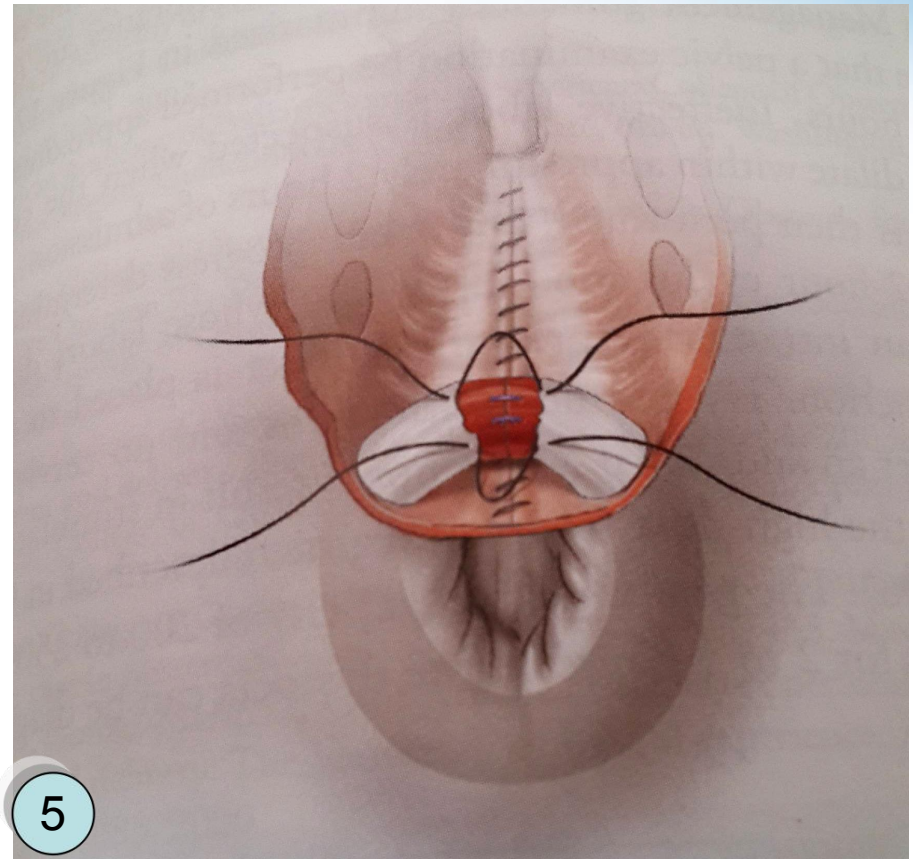
2.The second layer is placed through the rectal muscularis using 3-0 absorbable Vicryl suture in a running or interrupted fashion.

A fourth-degree perineal laceration repair



3,Suture through the posterior wall of the external anal sphincter (EAS) capsule.
4,Sutures through the EAS (blue suture) and inferior capsule wall.

A fourth-degree perineal laceration repair



5, Sutures to reapproximate the anterior and superior walls of the EAS capsule.

The remainder of the repair is similar to that described for a midline episiotomy .

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Obstetric anesthesia

Pudendal Block

- ✓ **The pudendal nerve** travels just posterior to the ischial spine at its juncture with the sacrospinous ligament.
- ✓ **With the pudendal block**, anesthetic is injected at that site, bilaterally, to give perineal anesthesia.
- ✓ **A pudendal block** is commonly used in the case of operative vaginal delivery with either forceps or vacuum.
- ✓ **It may be combined with local infiltration** of the perineum to ensure perineal anesthesia.

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Pudendal Block

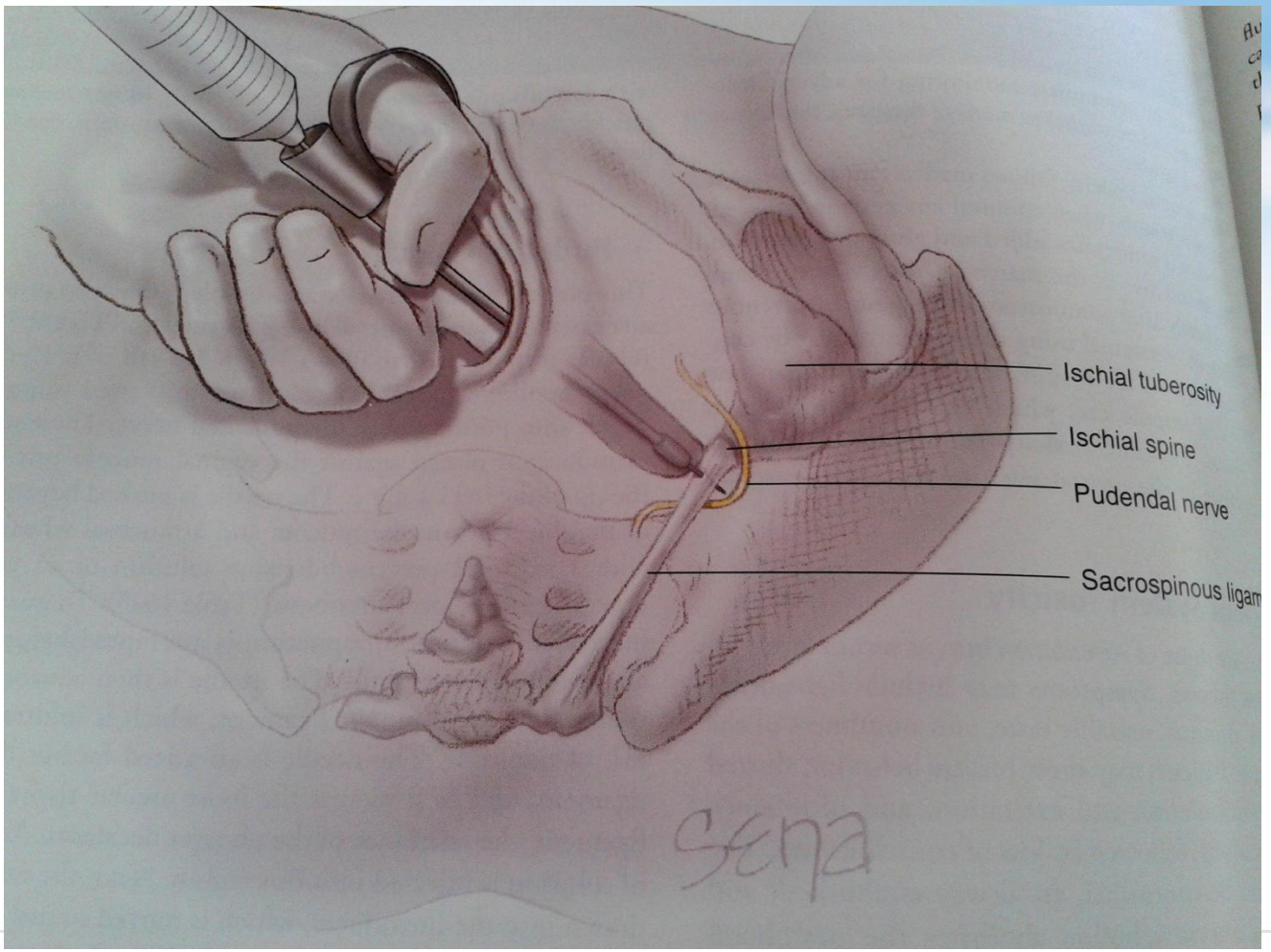

Figure 4-20 • Technique for transvaginal pudendal block.

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Local Anesthesia

- **In patients without anesthesia** who are going to require an episiotomy, with an anesthetic is used.
- **Local anesthetic** is also used before repair of vaginal, perineal, and periurethral lacerations.

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Epidurals

- **Labor accompanied pain**, and even very severe pain for some pregnant women.

- **Labor anesthesia** is a very important part during the normal delivery.

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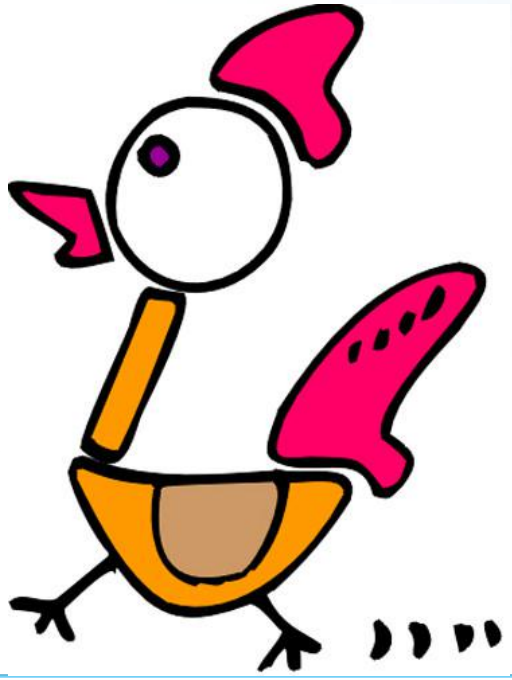
Doctor, Pain, Help……

Ok, Epidural.



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Epidurals

- **Epidurals** are commonly administered to patients **who wish to have anesthesia throughout the active phase and delivery of the infant**.
- **Many patients** worry about nerve damage and the pain of the epidural itself.
- **An early consult** with an anesthesiologist to help answer questions about the epidural can be reassuring.

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Epidurals

- **The epidural catheter** is placed in the L3-L4 interspace when the patient requires analgesia, although usually not until labor is deemed to be in the active phase.
- **Once the catheter is placed**, an initial bolus of anesthetic is given and a continuous infusion is started.
- The epidural does not commonly remove all sensation and can actually be detrimental to the stage 2 if it does so.
- However, if the patient requires cesarean delivery, the epidural can be bolused and usually provides adequate anesthesia.


Thanks!