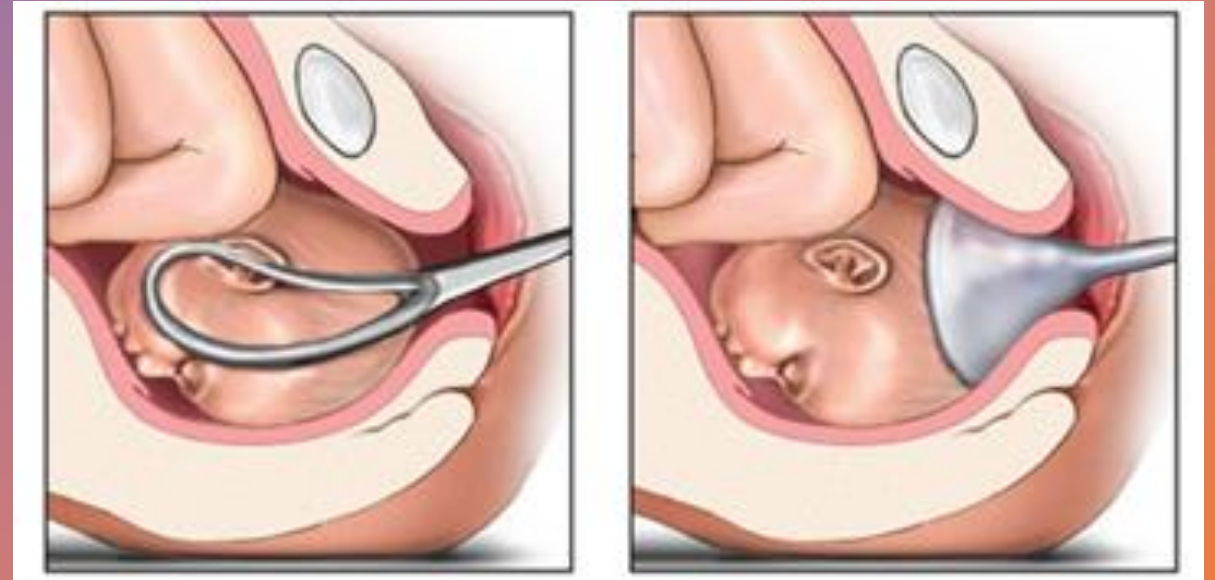


Assisted vaginal delivery

Dr Lubna Batayneh

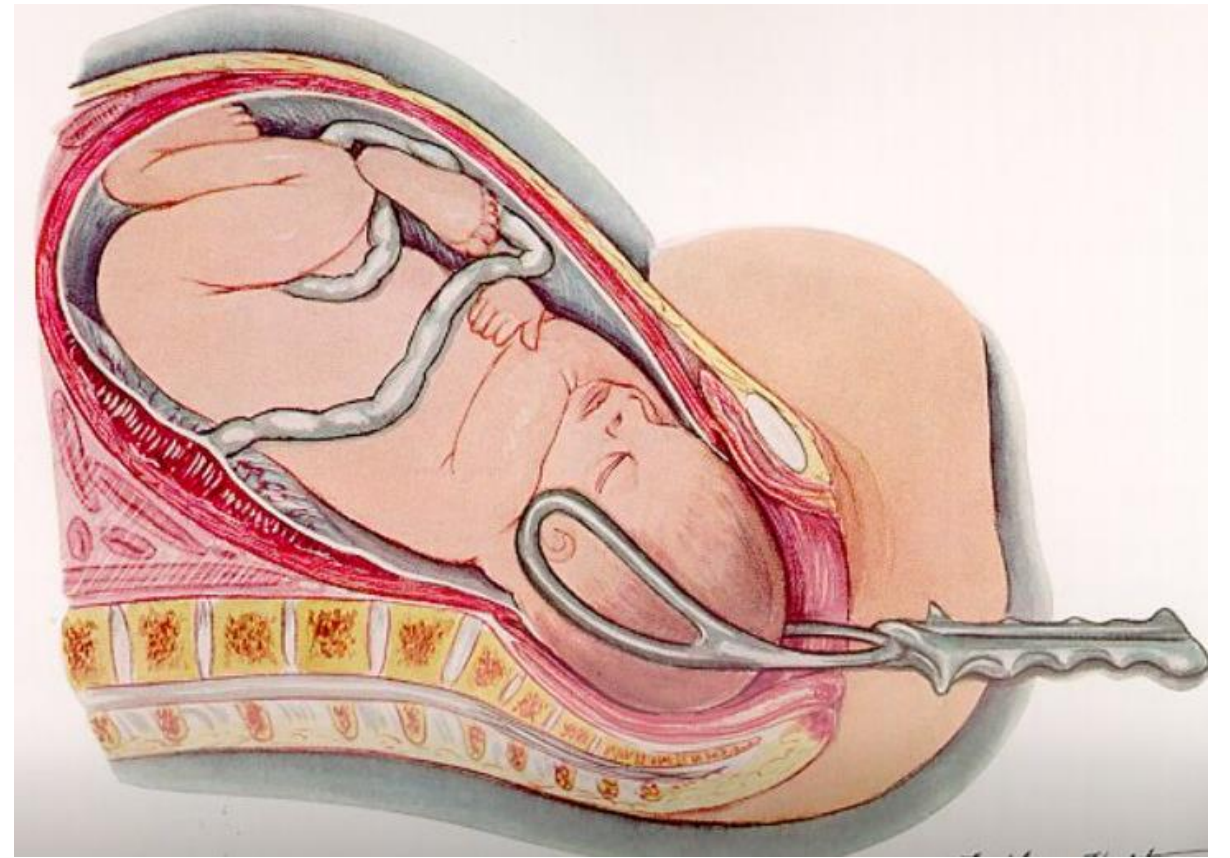
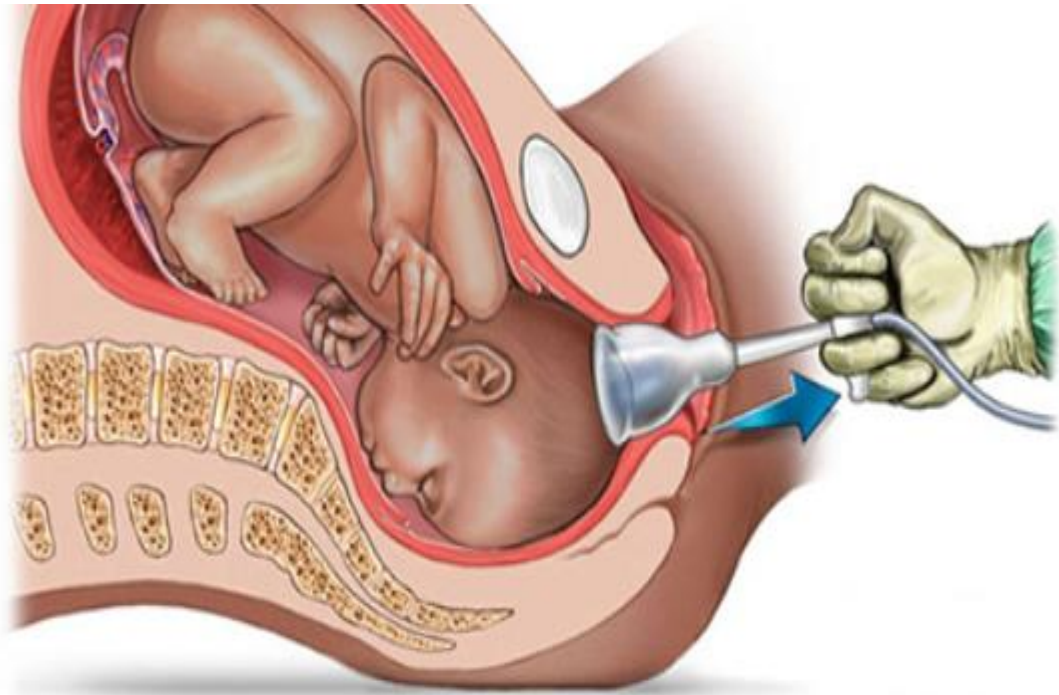
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Vacuum extraction



Forceps

Overview

- Assisted vaginal delivery refers to vaginal birth with the use of any type of forceps or vacuum extractor (ventouse)
- The terms assisted vaginal delivery, instrumental delivery, and operative vaginal delivery are used interchangeably
- Between 10% and 15% of all women give birth by assisted vaginal birth

- The alternative choice of a caesarean birth late in the second stage of labour can be very challenging and result in significant maternal and perinatal morbidity
- Inform women that epidural analgesia may increase the need for assisted vaginal birth

- What reduces the need for assisted vaginal delivery?
 1. Encourage women to have continuous support during labour
 2. Encourage women not using epidural analgesia to adopt upright or lateral positions in the second stage of labour
 3. Encourage women using epidural analgesia to adopt lying down lateral positions rather than upright positions in the second stage of labour
 4. Recommend delayed pushing for 1–2 hours in nulliparous women

Indications

- **Maternal:**

1. Maternal exhaustion or distress
2. Medical indications to avoid Valsalva manoeuvre, including:
 - Cardiac disease NYHA class III or IV
 - Hypertensive crisis
 - Myasthenia Gravis
 - Proliferative retinopathy

- **Fetal:**

- Suspected/proven fetal compromise (cardiotocography pathological, abnormal fetal blood sampling result, thick meconium)

- **Inadequate progress:**

- Nulliparous women – lack of continuing progress for 3 hours (total of active and passive second-stage labour) with regional analgesia or 2 hours without regional analgesia
- Parous women – lack of continuing progress for 2 hours (total of active and passive second-stage labour) with regional analgesia or 1 hour without regional analgesia

Contraindications

- Suspected fetal bleeding (hemophilia) disorders or a predisposition to fracture (osteogenesis imperfecta) are relative contraindications to assisted vaginal birth
- Extreme prematurity
- Suspected CPD
- A relative contraindication for the use of vacuum (but not forceps) is gestational age < 34 weeks

Safety criteria

- Safe assisted vaginal birth requires a careful assessment of the clinical situation, clear communication with the obstetrician, and expertise in the chosen procedure
- This includes maternal preparation, full abdominal and vaginal examination, and preparation of the staff

Maternal preparation

1. Clear explanation given and
2. Informed consent taken (usually verbal) and documented in women's case notes
3. Appropriate analgesia is in place
4. Maternal bladder has been emptied
5. Indwelling catheter has been removed or balloon deflated
6. Aseptic technique

Prerequisites in abdominal and vaginal examination

1. Head is $\leq 1/5$ palpable per abdomen
2. Cervix is fully dilated
3. Membranes ruptured
4. Vertex presentation
5. Station at level of ischial spines or below
6. Exact position of the fetal head has been determined (for proper placement of the instrument)
7. Pelvis is deemed adequate

Preparation of staff

1. Operator has the knowledge, experience and skill necessary
2. Adequate facilities are available (equipment, bed, lighting) and
3. Access to an operating theatre for CS to be performed within 30 minutes in case of failure to deliver
4. Anticipation of complications that may arise (e.g., shoulder dystocia, perineal trauma, postpartum haemorrhage)
5. Personnel present who are trained in neonatal resuscitation

High risk of failure

1. Maternal obesity (BMI > 30)
2. Estimated fetal weight > 4 kg or clinically big baby
3. Occipitoposterior position
4. Mid-cavity delivery or when 1/5th of the head palpable per abdomen

Choice of instrument

- The choice of instrument should be based on a combination of indication, experience and training.
- The aim should be to complete the delivery successfully with the lowest possible morbidity and, where appropriate, the preferences of the mother should be taken into account

Classification

Outlet	Fetal scalp visible without separating the labia Fetal skull has reached the perineum Rotation does not exceed 45°
Low	Fetal skull is at station + 2 cm, but not on the perineum Two subdivisions: <ol style="list-style-type: none">1. Non-rotational $\leq 45^\circ$2. Rotational $> 45^\circ$
Mid	Fetal head is no more than one-fifth palpable per abdomen Leading point of the skull is at station 0 or + 1 cm Two subdivisions: <ol style="list-style-type: none">1. Non-rotational $\leq 45^\circ$2. Rotational $> 45^\circ$

Vacuum

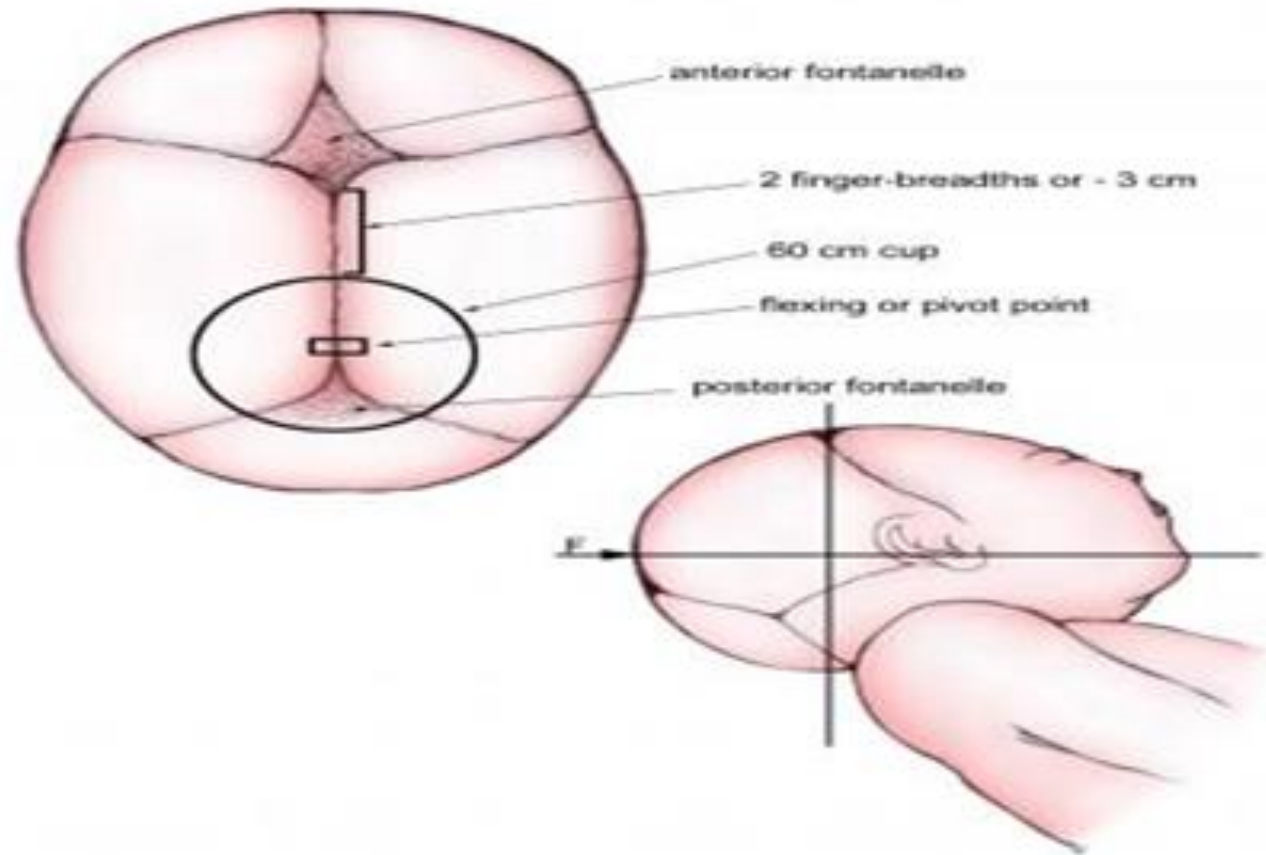
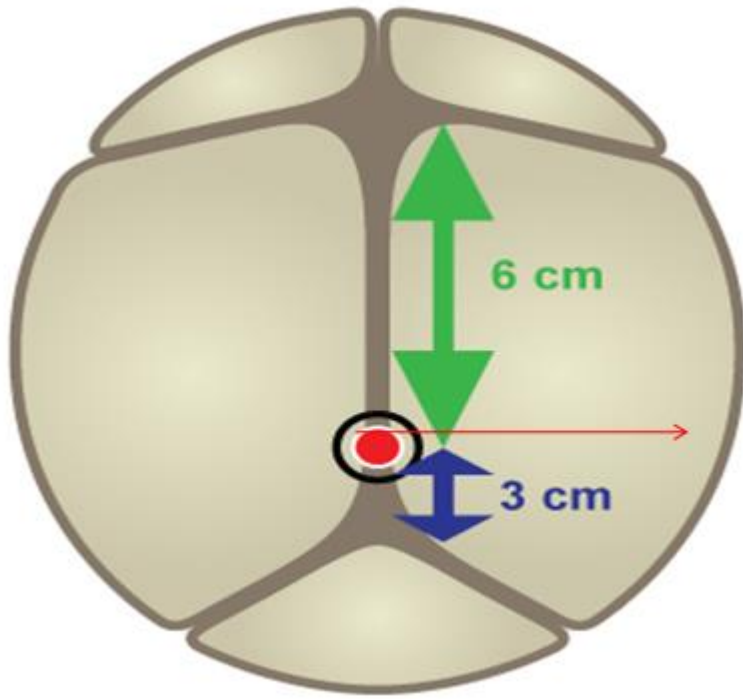
- Traction of fetal head by creating negative pressure through a suction cup applied to the head
 - Metal cup
 - Silicone rubber cup
 - Omnicup (Kiwi vacuum system)

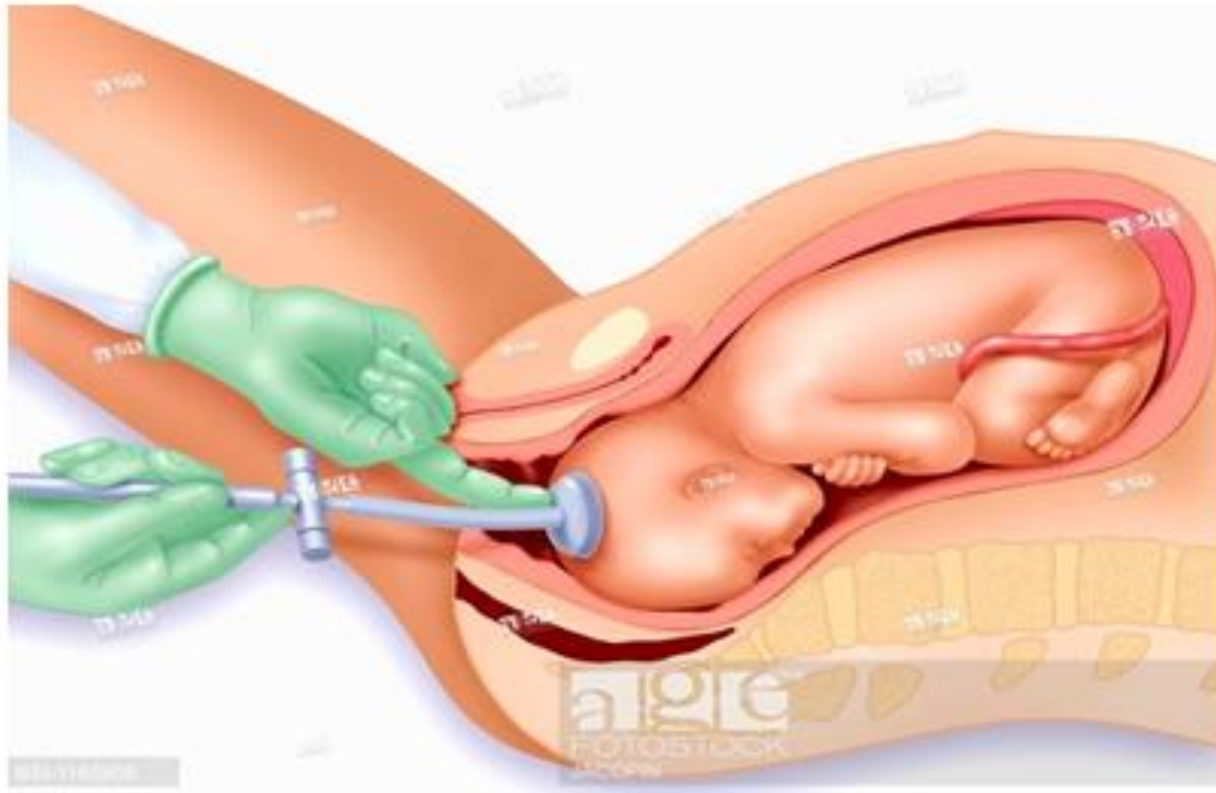


Technique

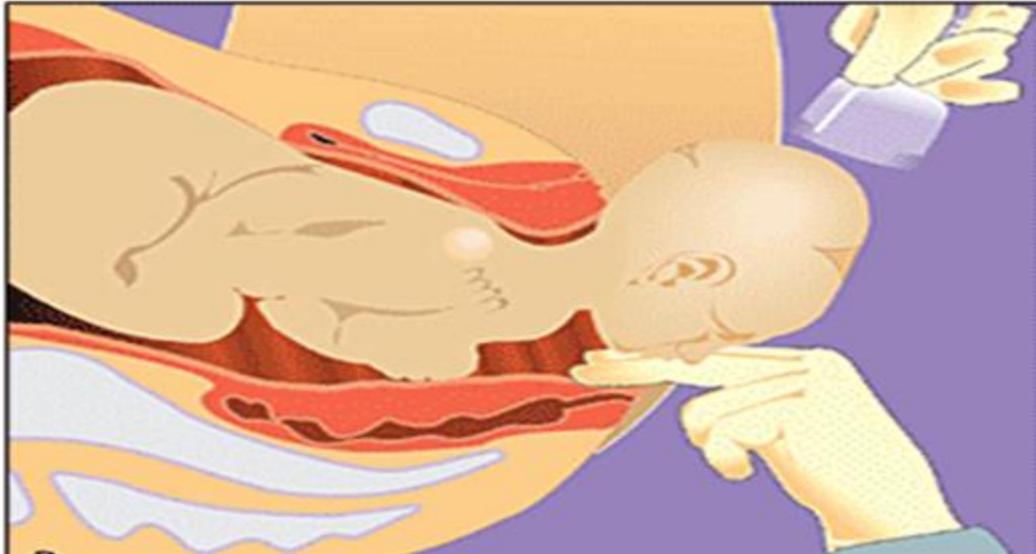
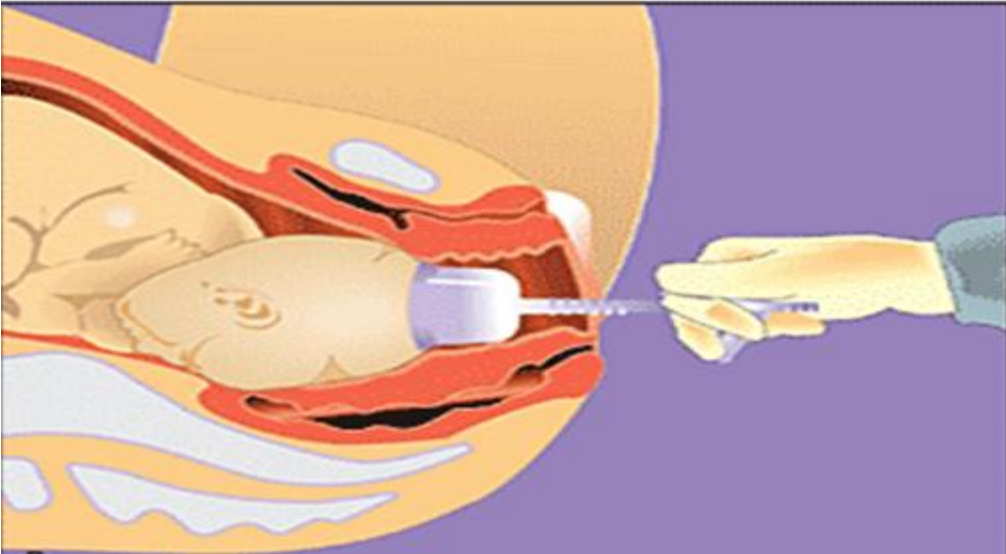
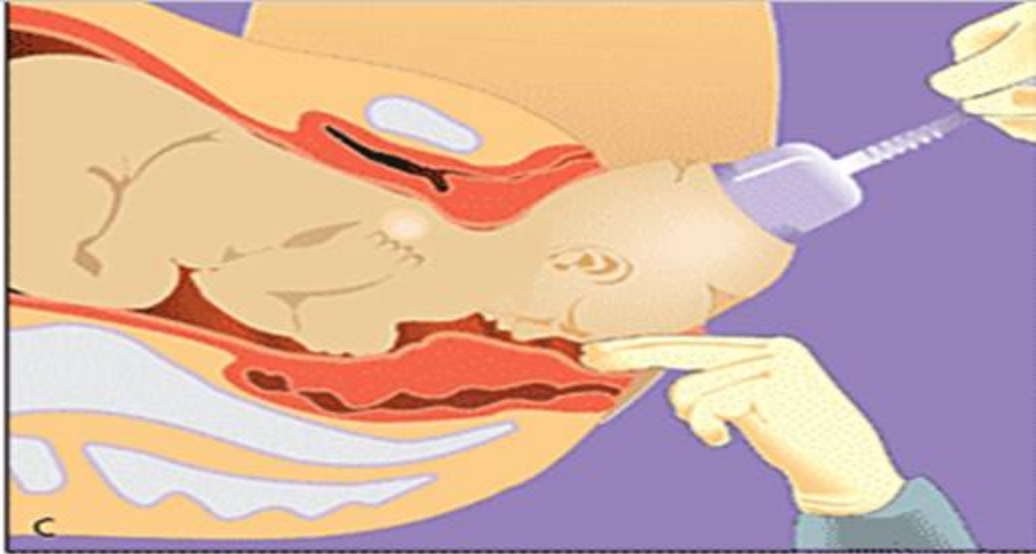
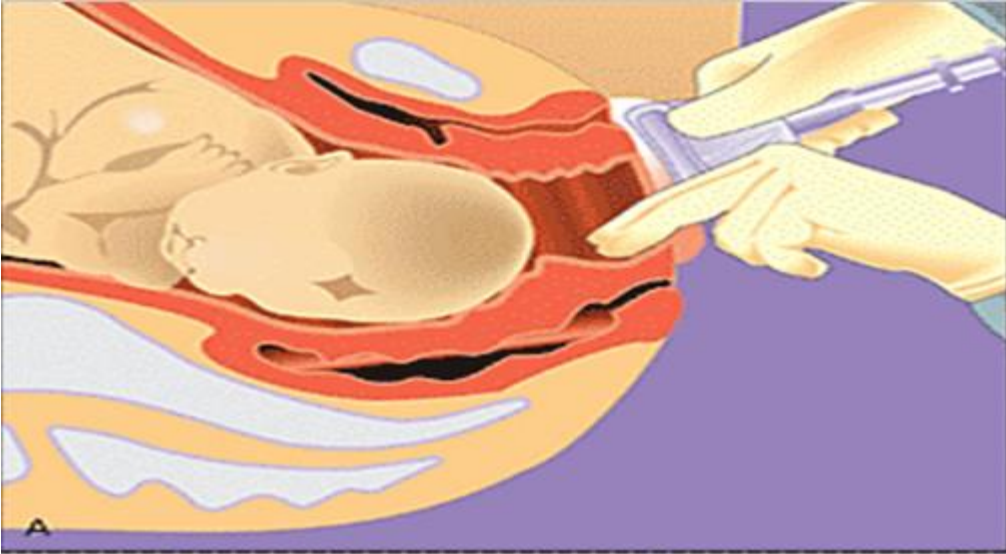
1. Determine the position of the head
2. Insert the cup into the vagina
3. Ensure that no maternal tissues are trapped by the cup
4. Apply the cup to the flexion point
5. Pull during a contraction with a steady motion, keeping the device at right angles to the plane of the cup
6. Remove the cup when the fetal jaw is reachable

Flexion point





360° check should be performed to ensure that the pelvic tissue of the mother (cervix or vagina) or umbilical cord .
is not trapped in the vacuum cup



Failure

- Head does not descend with each pull
- Head is not delivered after 3 pulls
- Head is not delivered after 20 minutes
- The cup slips off the head with maximum pressure

Complications

1. Scalp lacerations
2. Cephalohematoma
3. Subgaleal hematoma
4. Intracranial/retinal hemorrhage
5. Hyperbilirubinemia/ jaundice



Cephalohematoma:
limited to suture line

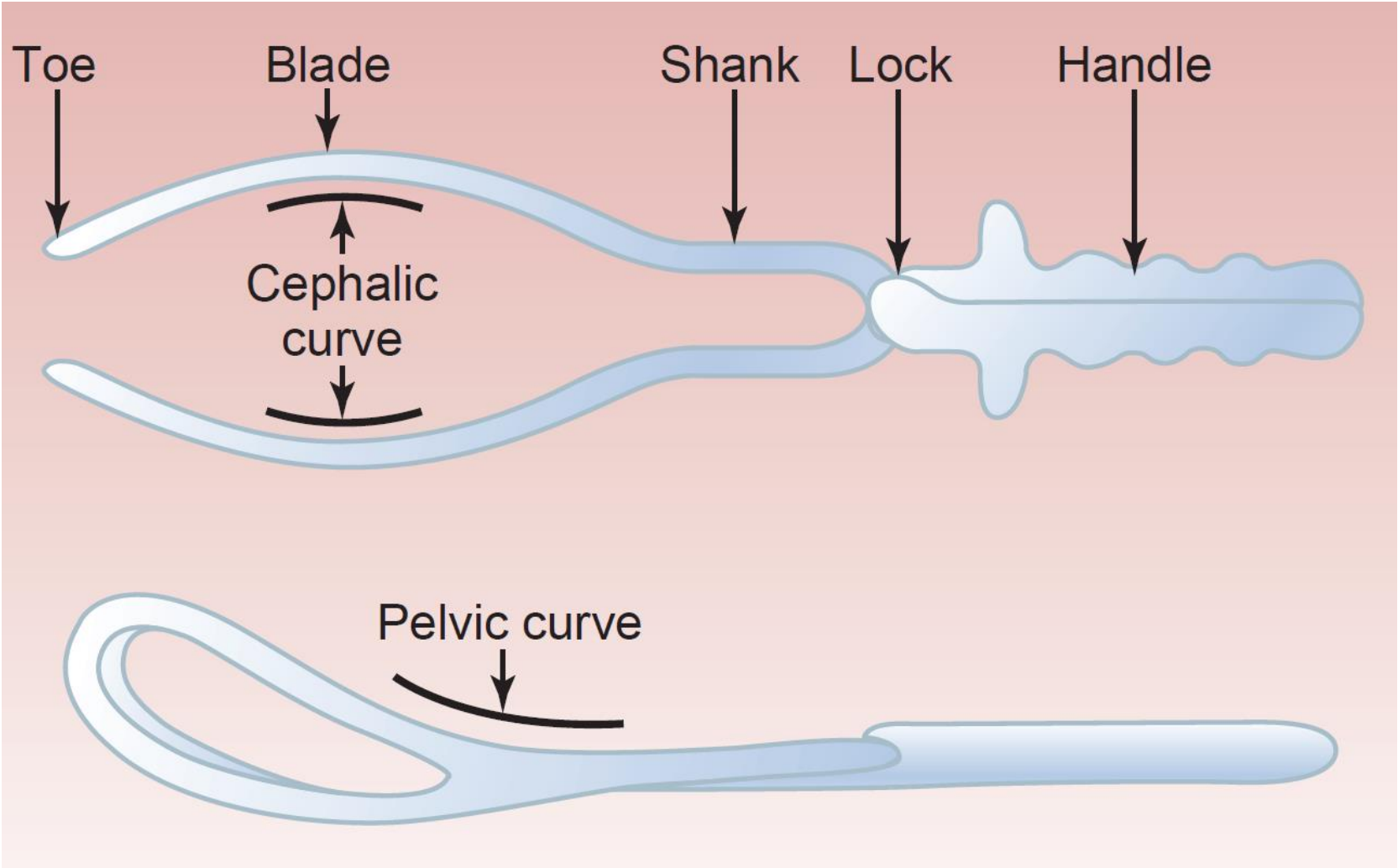


Subgaleal hematoma:
crosses suture line

Forceps

- Forceps are metal instruments used to provide traction, rotation, or both to the fetal head when the expulsive efforts of the mother are insufficient to accomplish safe delivery of the fetus.





- Generally, an obstetric forceps consists of 2 mirror-image metal instruments that are articulated or 'locked'
- The **blades** of the forceps are maneuvered to catch the fetal head, after which traction is applied to affect delivery
- The blades have a **cephalic curve** designed to conform to the curvature of the fetal head while **pelvic curve** of classic forceps approximates the shape of the birth canal.

Technique

1. Identify and apply blades

- The left blade is inserted before the right
- Inserted between the fetal head and fingers of the operator's right hand to protect the vaginal wall from the blades
- Right blade applied in the same fashion

2. Lock the blades

- Should articulate with ease

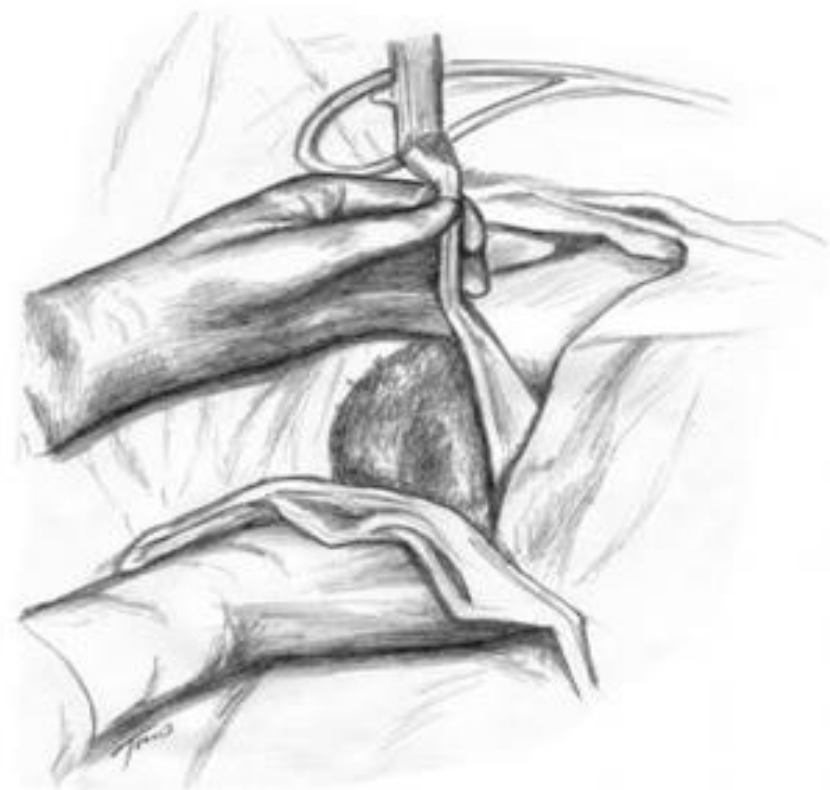
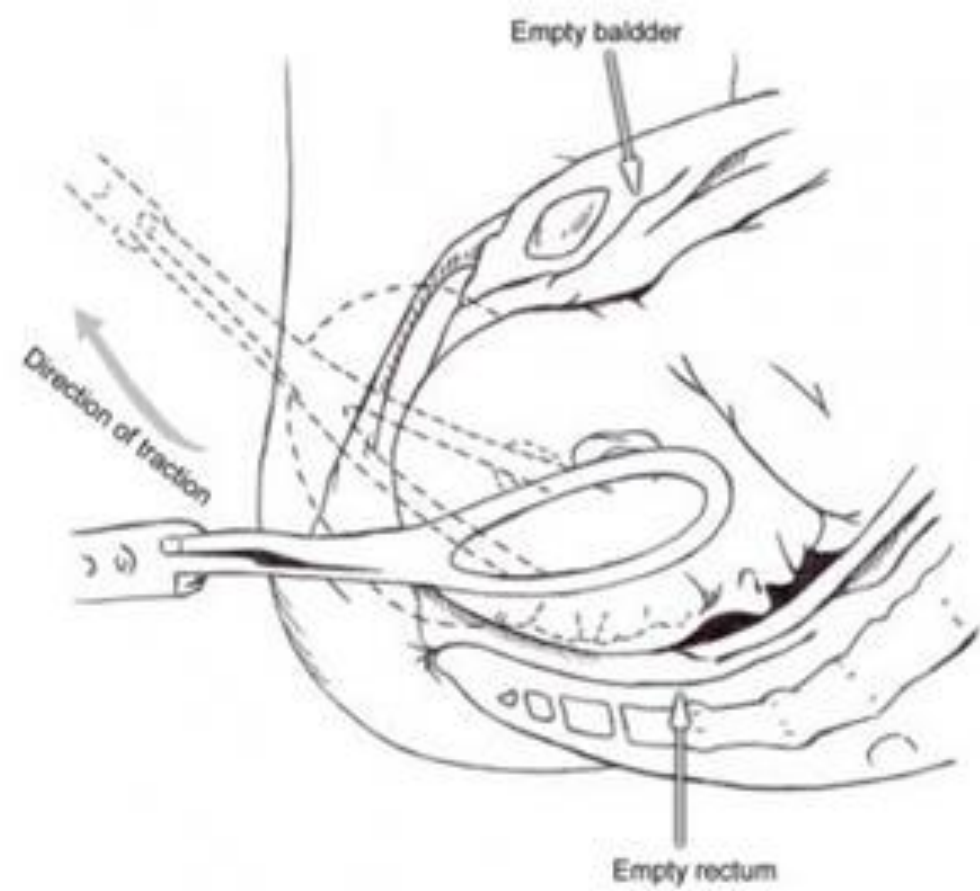


3. Check for correct application

- Sagittal suture in midline of shanks
- Cannot place more than one fingertip between the blade and fetal head

3. Apply traction

- Steady and intermittent
- Downward then upward
- Remove blades upon crowning



Failure

- When a deliberate attempt in vaginal delivery has failed to expedite delivery
- Fetal head does not advance with each pull
- Fetus is not delivered after 3 pulls
- Fetus is not delivered after 30 minutes

Complications

- **Maternal Risks**

- Perineal injury (extension of episiotomy)
- Vaginal and cervical lacerations
- Postpartum hemorrhage

- **Fetal Risks**

- Intracranial hemorrhage
- Cephalic hematoma
- Facial / Brachial palsy
- Injury to the soft tissues of face & forehead
- Skull fracture

Vacuum compared to Forceps

- Vacuum Disadvantages:
 - Less success rate in achieving vaginal birth
 - More likely to be associated with cephalhaematoma and retinal haemorrhage
 - More likely to be associated with maternal worries about baby
- Advantages:
 - Less likely to be associated with significant maternal perineal and vaginal trauma

Sequential use of instruments

- The use of sequential instruments is associated with an increased risk of trauma to the infant
- Obstetricians should be aware of the increased risk of obstetric anal sphincter injury (OASI) following sequential use of instruments
- However, the operator needs to balance the risks of a caesarean birth following failed vacuum extraction with the risks of forceps birth following failed vacuum extraction

Thank you!

- References:

1. Obstetrics by ten teachers
2. Hacker and Moore's essentials of obstetric and gynecology
3. Green-top Guideline No. 26 Assisted Vaginal Birth