

Operative vaginal delivery

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Operative vaginal delivery

- Operative vaginal delivery (OVD) refers to a vaginal birth with the use of any type of forceps or vacuum extractor (ventouse).
- Instrumental delivery, assisted vaginal delivery and OVD are used interchangeably.

Goal

- OVD is to expedite delivery with a minimum of maternal or neonatal morbidity.
- 10% and 15%
- Nulliparous women is as high as 30%

History of forceps delivery

- 1500 BC instruments was initially limited to the extraction of dead foetuses via destructive techniques

Indications for OVD

- **Fetal**

Suspected fetal compromise

CTG pathological

abnormal pH or lactate on fetal blood sampling

thick meconium

Indications for OVD

- **Maternal**

- Prolong second stage of labour

 - Nulliparous women –3 hours with regional anaesthesia

 - 2 hours without regional anaesthesia

 - Multiparous women –2 hours with regional anaesthesia

 - 1 hour without regional anaesthesia

- Maternal exhaustion/distress

- Medical indications to avoid prolonged pushing or valsalva

 - (e.g. cardiac disease, hypertensive crisis, cerebral vascular disease, particularly uncorrected cerebral vascular malformations, myasthenia gravis, spinal cord injury)

Indications for OVD

- **Combined**

Fetal and maternal indications for assisted vaginal delivery often coexist.

The threshold to intervene may be lower where several factors coexist

Classification of operative vaginal delivery

Outlet	Fetal scalp visible without separating the labia* Fetal skull has reached the pelvic floor Sagittal suture is in the antero-posterior diameter or right or left occiput anterior or posterior position (rotation does not exceed 45°) Fetal head is at or on the perineum
Low	Leading point of the skull (not caput) is at station plus 2 cm or more but not on the pelvic floor Two subdivisions: (a) rotation of 45° or less; (b) rotation more than 45°
Mid	Fetal head is no more than 1/5 palpable per abdomen, usually 0/5 Leading point of the skull is above station plus 2 cm but not above the ischial spines (station 0 to +1) Two subdivisions: (a) rotation of 45° or less; (b) rotation of more than 45°
High	Not appropriate, therefore not included in classification (station -1 or above)

Contraindications

- A high fetal head two-fifths palpable abdominally with station above the ischial spines
- before full dilatation of the cervix
- **The ventouse**
- Should not be used in gestations of less than 34 completed weeks (relatively contraindicated at gestational ages 35–36 weeks).
- Face or breech presentation

Choice of instrument

- Indication, experience and training.
- Aim should be to complete the delivery successfully with the lowest possible morbidity .
- Where appropriate, the preferences of the mother should be taken into account.

Safety criteria for operative vaginal delivery

Full abdominal and vaginal examination

- Head is $\leq 1/5$ palpable per abdomen (in most cases 0/5 palpable)
- Cervix is fully dilated
- membranes ruptured
- Station at level of ischial spines or below (0/+1/+2/+3)
- Exact position of the head so correct placement of the instrument can be achieved
- Caput and moulding is no more than moderate
- Pelvis -adequate

Preparation Of Mother

- Explanation & Informed Consent
Trust & full cooperation
- Appropriate Anaesthesia
Regional Block , Pudendal Block ,Perineal Block(May Be Sufficient
For Low-pelvic Or Outlet Delivery)
- Maternal bladder -emptied recently
- Aseptic technique

- **Operator** knowledge, experience and skill necessary
- Adequate **facilities** are available (appropriate equipment, bed, lighting) and access to an operating theatre
- **Back-up plan** in place in case of failure to deliver:

- For midpelvic deliveries, **theatre staff** should be available immediately to allow a caesarean section to be performed without delay (<30 minutes)
- **Senior obstetrician** should be present if a junior obstetrician is conducting the delivery
- **Anticipation of complications** that may arise (e.g. Shoulder dystocia, perineal trauma, postpartum haemorrhage)
- Personnel present that are trained in **neonatal resuscitation**

	forceps	ventouse
anal sphincter injury	8%	3-4%
maternal pelvic floor trauma	more	less
perineal pain at 24 hours	more	less
morbidities for the baby	lacerations and facial palsy with forceps.	Cephalohaematoma (subperiosteal bleed). Retinal haemorrhage.
Low 5 minute Apgar scores	same	same

	forceps	ventouse	
Use of maternal regional/general anaesthesia	more	Less	
Delivery by caesarean section	same	same	
failure rate	5% or less	10-20%	

Procedure

- **Evaluation**
- Abdominal and vaginal examination
- Fetal lie, presentation, engagement, station, position, attitude and degree of caput or moulding
- Careful pelvic examination ('mechanical' contraindications)

Analgesia & Position

- Analgesic requirements are greater for forceps than for ventouse delivery
- regional analgesia
- A pudendal block with perineal infiltration
- Perineal infiltration with local anaesthetic.
- Lithotomy position.

Contingency planning

- Potential for failure with the chosen instrument and the operator must have a back-up plan
- Failed vacuum delivery with low-pelvic forceps
- Failed or abandoned forceps delivery will almost always result in caesarean section
- Risk of shoulder dystocia occurring after successful delivery of the fetal head should be considered,
- Should the potential for postpartum haemorrhage (PPH)
- As a consequence, the operator must develop the skills necessary to anticipate such events and to manage the consequences in a logical and calm manner.

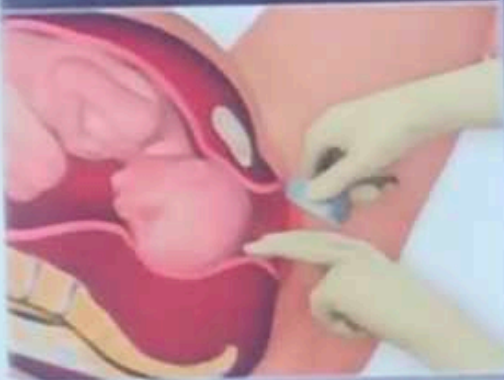


- **Ventouse/vacuum extractors**

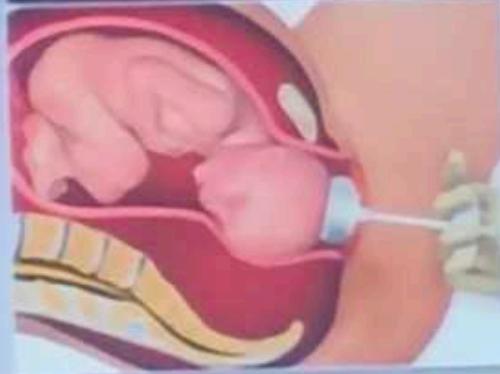
- The basic premise of vacuum extraction is that a suction cup, of a silastic or rigid construction, is connected, via tubing, to a vacuum source

Vacuum Delivery

1. Insert vacuum into birth canal



2. Position vacuum on baby's head



3. Pull baby through birth canal with vacuum assistance



4. Remove vacuum and continue to deliver baby



Technique

- Flexion point is vital. This is located at the vertex, which, in an average term infant, is on the sagittal suture 3 cm anterior to the posterior fontanelle and thus 6 cm posterior to the anterior fontanelle. The centre of the cup should be positioned directly over this.
- Operating vacuum pressure for nearly all types of device is between 0.6 and 0.8 kg/cm
- Increase the suction to 0.2 kg/cm² first and then to recheck that no maternal tissue is caught under the cup edge

Technique

- Traction .Along the axis of the pelvis crowning phase
- No more than two episodes of breaking the suction 'pop-offs' in a vacuum delivery,
- Maximum time from application to delivery should ideally be less than 15 minutes
- Rotation is achieved by the natural progression of the head through the pelvis.

*NOT
To Do...*

- The position of the fetal head is unknown.
- There is a significant degree of caput that may either preclude correct placement of the cup or, more sinisterly, indicate a substantial degree of CPD.
- The operator is inexperienced in the use of the instrument.

Forceps

- *Types of forceps*

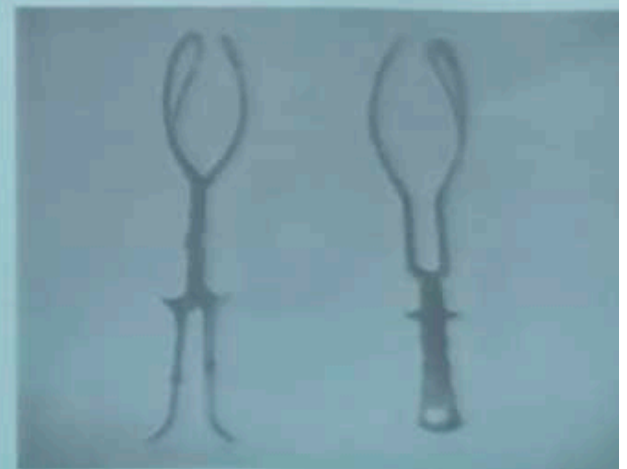
- Non-rotational forceps

Neville barnes or simpson forceps

Outlet. Or. Mid Cavity

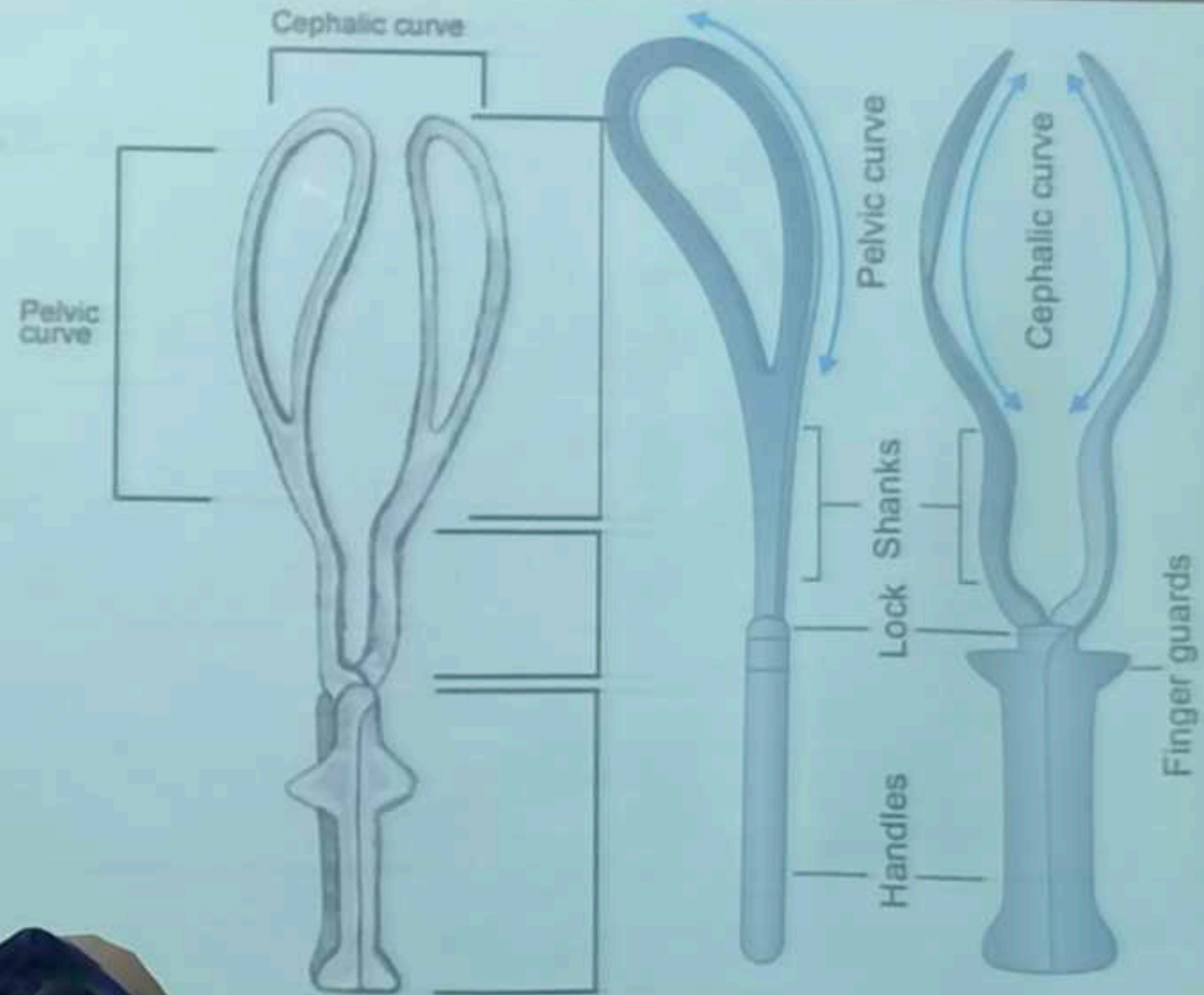
- Rotational forceps

Kielland forceps



Parts of forceps

- Two blades
- Shanks
- A lock
- Handles.



Technique

- Usual prerequisites
- Operator checks the pair of forceps
- Blades lock with ease
- Left blade is inserted
- The operator then articulates and locks the blades, checking their application before applying traction
- The axis of traction changes during the delivery and is guided along the 'J'-shaped curve of the pelvis
- As the head begins to crown, the blades are directed to the vertical and the head is delivered
- The majority of forceps deliveries will be completed in no more than three pulls.

Special considerations

Failure of the chosen instrument

- Choice of instrument
- Application of the instrument is wrong
- Position has been wrongly defined
- Fetus is large or maternal effort is poor.

- Outcomes for babies are worse with multiple or sequential use of instruments than if the instrument of first choice is successful
- Rates of third- and fourth-degree tears are higher when a second instrument is used
- Senior help should be sought immediately and a full re-evaluation

should take place, ideally in an operating theatre. In many cases, delivery by caesarean section will be the safer option for the fetus.

Complications

- Maternal and fetal complications.
- Traumatic vaginal delivery
- Third-degree perineal tears,
- PPH
- Cephalhematoma
- Intracranial injuries and subgaleal haemorrhage

KEY LEARNING POINTS

OVD should be classified according to the position and station of the presenting part.

Clinical assessment and confirmation that the safety criteria have been met are prerequisites for OVD.

Vacuum or forceps may be suitable depending on the clinical circumstances and operator's preference.

OVDs with a higher chance of failure should be conducted in an operating theatre.

Contingency planning is an essential part of any OVD.

Anticipation and early management of maternal and neonatal complications is essential.