

Operative vaginal delivery

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Members of the guideline group

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Abbreviations

C/S – Caesarean section

DM – Diabetes mellitus

PPH – Post Partum Hemorrhage

OASIS – Obstetric anal sphincter injuries

OA – Occiput anterior

OP – Occiput posterior

Procedure for ventouse/vacuum delivery

Indications

Foetal

- Evident signs of asphyxia (scalp-pH < 7.20, scalp-lactate > 4.8 mmol/L, significant STAN-event during 2. Stage of labour, persistent bradycardia)
- Suspicion of asphyxia

Maternal

- Failure to progress (dystocia) during 2. Stage of labour, when other treatment measures have been unsuccessful (Oxytocin-stimulation, change of position etc.)
- Maternal exhaustion
- Attempt to shorten 2. Stage of labour due to medical conditions, where Valsalva is contraindicated (e.g. heart disease NYHA class 3-4, hypertensive crisis, myasthenia gravis, patients with spinal cord injuries and associated risk of autonomous dysreflexia, proliferative retinopathy (DM), Marfans syndrome with a dilated aorta)
- Maternal request (extended informed consent)

Pre-considerations

- Knowledge on parity, gestational age, estimated foetal weight and potential risk factors like previous C/S, induction of labour, meconium, intrapartum fever and cephalic oedema
- Cephalic presentation
- Rupture of membranes and full dilatation of the cervix

- Max. 1/5 of caput palpable by external abdominal examination
- Lowest cephalic point (bone) not above inter spinal point (except for twin B)
- Knowledge about rotation of foetal head, identification of flexion point. When in doubt consider ultrasound confirmation
- Empty bladder
- Appropriate analgesia (boost epidural block, pudendal block, infiltration, gel or spray local analgesia) unless time does not allow for this
- Optimize contractions when necessary (Oxytocin)
- Informed consent
- Skilled doctor in charge as the operator
- Have a back up plan for failed procedure (C/S) and for foreseeable complications (shoulder dystocia, PPH, OASIS)

Contraindications

- Chin- and face foetal presentation
- Suspected foetal haemophilia/thrombocytopenia (alloimmune thrombocyte immunisation)

Relative contraindications

- The safety of ventouse delivery before week 36+0 remains unclear, but the procedure related risk is considered to be reversely correlated with GA and estimated foetal weight. Only doctors with specialist skills should perform ventouse delivery before week 36+0, and extraordinary precaution must be applied.
- Ventouse delivery before week 34+0 is generally not recommended unless special circumstances exist.
- Genetic predisposition for bone fracture (e.g. osteogenesis imperfecta)

Procedure

Preparations

- The patient is positioned in order to allow the operator a full view of the perineum
- Make sure the bladder is empty
- The vacuum is assembled, tested and lubricated
- Analgesia is offered and given. May be avoided with asphyxia, if procedure and delivery is delayed inappropriately hereby
- With suspected asphyxia and/or difficult/prolonged delivery the paediatrician and/or anaesthesiologist should be present
- Clear division of responsibilities amongst the treating team (midwife and doctor) - who supports the perineum and delivers the shoulders

Choice of instrument

- With exit ventouse the soft cup is the instrument of choice (Silicone, Silk or soft Kiwi)
- With medium or high stage ventouse delivery, cephalic edema and/or failure of full rotation the hard cup (Malmstrøm, Bird, Kiwi/Omnocup) is the instrument of choice
- With occiput posterior (OP) the hard cup is the instrument of choice, preferably with side spigot (Bird posterior) or Kiwi cup

- With preterm instrumental delivery the Silicone cup is preferred and possibly applied with reduced vacuum pressure.

Manual procedure

1. Abdominal and vaginal examination as described above
2. The centre of the cup is placed on the flexion point in the sagittal axis (3 cm in front of the triangular fontanel, on the sagittal suture)
3. Check for interposed maternal tissue
4. Vacuum is successively increased to 0.8 kg/cm² whilst checking for interposed tissue. With prematurity consider lowering the vacuum pressure
5. Document time for first pull and have someone count out loud the number of tractions applied
6. First pull must secure the flexion of the caput (downwards pull with OA and slightly more upward with OP)
7. Now pulling must follow the pelvic anatomic axis
8. Caput must progress with each pull. With no progression, the procedure must be abandoned and the caput may be pushed back before C/S is planned and performed. Timing of C/S must take into consideration the condition of the baby. Usually a grade 2 (delivery within 30 minutes) C/S is appropriate if the reason for ventouse delivery was failure to progress and the foetal heart rate is reassuring.
9. Episiotomy only by indication
10. Perineum must be supported manually when caput is in the cutting passing the perineum
11. The vacuum must be released and the cup removed when the caput is delivered if not before

Usefull link:

<https://stratog.rcog.org.uk/tutorial/vacuum-extraction/real-life-ventouse-4767>

Time frame

- With asphyxia the baby should be delivered within 15 minutes. The number of pulls should only under certain circumstances exceed 3.
- On maternal indication and with reassuring foetal heart rate, under normal circumstances, the baby should be delivered within 20 minutes. The number of pulls should not exceed 3 for descent of the caput and 3 for passing the perineum.
- When the procedure is passed on to a more senior doctor the total time frame and/or number of pulls for safe delivery should not be exceeded.
- The cup may be reapplied twice if detachment occurs on the condition that no foetal scalp injuries are present. Reconsider whether the requirements for safe operative vaginal delivery are still present.

Forceps delivery

Indications

- Trapped foetal head with breech delivery
- Face presentation with the chin anterior and forehead presentation

- Macerated foetus
- In addition all the above mentioned indications for ventouse delivery, if the doctor is skilled in forceps delivery
- In the following clinical situations forceps delivery may be superior to ventouse:
 - Prematurity (< 34+0)
 - Maternal condition that precludes active pushing, as the traction force of the forceps is superior and can be applied without active pushing
 - (Blood borne viral infections (Hepatitis B, C and HIV))

Pre-considerations

- The doctor is required to have the necessary skills training and experience to operate a forceps delivery.
- Knowledge on parity, gestational age, estimated foetal weight and potential risk factors like previous C/S, induction of labour, meconium, intrapartum fever and cephalic oedema.
- Cephalic presentation.
- Rupture of membranes and full dilatation of the cervix.
- Max. 1/5 of caput palpable by external abdominal examination.
- Lowest point of the caput (bone) not palpable above inter spinal plane (except for twin B).
- Knowledge about rotation of foetal head and identification of the flexion point. When in doubt consider ultrasound confirmation.
- Empty bladder.
- Appropriate analgesia (booster of epidural blockade, pudendal block, infiltration, gel, or spray analgesia) unless time does not allow it for foetal reasons.
- Optimize contractions when necessary (Oxytocin).
- Informed consent.
- Skilled doctor in charge as operator.
- Have a back up plan for failed procedure (C/S) and for foreseeable complications (shoulder dystocia, PPH, OASIS).

Contraindications

- Same as ventouse except for face/forehead presentation (chin anterior)
- Suspected foetal haemophilia/thrombocytopenia (alloimmune thrombocyte immunisation)
- Genetic predisposition for bone fracture (e.g. osteogenesis imperfecta)

Relative contraindications

- Forceps are applicable with prematurity. No evidence exists as to the lowest GA for safe forceps delivery. With extreme prematurity extraordinary precaution must however be applied in traction force

Types of forceps

<https://stratog.rcog.org.uk/tutorial/forceps/types-of-forceps-4968>

Procedure

Below is a description of cephalic forceps delivery. Forceps breech delivery and forceps delivery with C/S are both special indications described in detail in other guidelines.

- Informed consent is obtained, adequate analgesia is established (epidural boost, pudendal blockade, infiltration analgesia or low spinal blockade), bladder is emptied and detailed vaginal examination is performed.
- If the sagittal suture is not in the mid-sagittal axis the procedure should be abandoned or it should be postponed till rotation is obtained either manually or using ventouse
- Forceps blades are assembled to ensure that they match and can be easily locked without resistance.
- The following description is primarily for right-handed persons:
- The handle of the left blade is softly held by the left hand and the right hand is introduced between the vagina and the foetal head. Now the blade is introduced between the hand and the foetal head having the fingertips pointed towards the foetal ear. The blade is now introduced along the side of the foetal head, as this is essential for the blades to be able to lock. It is essential that no maternal tissue be interposed.
- The blade is introduced in a circular sliding movement with the handle slowly moving downward. There must be no resistance during the introduction of the blade.
- The right blade is introduced with the doctor's right hand on the blade handle assisted by the left hand in the vagina. Again make sure that no maternal tissue is interposed and that there is no resistance.
- WITHOUT RESISTANCE the blades should now be assembled and locked in the mid-sagittal axis
- Make sure that the sagittal suture is palpable right between the two blades and that there is room for a finger tip between the foetal head and the handles of the forceps. If the blades cannot be assembled without resistance the procedure should be abandoned or placement of the blades repeated from scratch.
- It is recommended that a medio-lateral episiotomy is applied unless there appears to be enough space to allow for safe delivery. Traction direction is essentially the same as for ventouse, i.e. downward until the neck is free of the symphysis (OA) and then gradually upward.
- It is essential that the operator appreciate the great traction force that is applied and approves that there is no inborn safety measure for undue traction force like in the ventouse (detachment).
- It is crucial that the operator collaborates with the woman and synchronizes the tractions with her contractions.
- The procedure should be abandoned immediately if there is resistance and failure to progress.

Useful links:

<https://stratog.rcog.org.uk/tutorial/forceps/video-of-forceps-simulation-4987>

<https://stratog.rcog.org.uk/tutorial/forceps/video-of-real-life-forceps-delivery-4988>

Time frame

- With asphyxia the aim is have the baby delivered within 15 minutes. Only under special circumstances should the number of tractions exceed 3.
- On maternal indication and with reassuring foetal monitoring the baby should be delivered within 20 minutes, unless special circumstances are present.
- Number of tractions for descent of the caput should not exceed 3.
- Dependent on the operator the forceps may be used to assist the foetal head through the perineum or may be removed to let the foetal head pass spontaneously.
- If the procedure is passed on to a more senior operator this does not allow for an increase in numbers of tractions and/or extended time to carry out the procedure.
- With lack of progression, the preconditions for OVF should be re-evaluated and abandoning the procedure should be considered carefully.