Worcestershire Acute Hospitals NHS Trust

Vaginal Operative Delivery

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Key Documents Owner/Lead:	Dr Hillman	Consultant Obstetrician
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Key Amendments

Date	Amendments	Approved by

Classification for 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 degrees)
Fetal head is at or on the perineum

Low: Leading point of the skull (not caput) is at station plus 2 cm or more and not on the pelvic floor
Two subdivisions:
(a) rotation of 45 degrees or less from the OA position
(b) rotation more than 45 degrees from the OA position (including OP)

Mid-cavity: Fetal head is 1/5 palpable per abdomen
Leading point of the skull is above station plus 2 cm but not above the ischial spines
Two subdivisions:
(a) rotation of 45 degrees or less from the OA position
(b) rotation more than 45 degrees from the OA position (including OP)

Indications for operative vaginal delivery

Operators should be aware that no indication is absolute and each case should be considered individually.

Operative intervention is used to shorten the second stage of labour.

Type Indication

- Fetal: Presumed fetal compromise
- Maternal: Medical indications to avoid Valsalva (e.g. cardiac disease Class III or IV, a hypertensive crises, cerebral vascular disease, particularly uncorrected cerebral vascular malformations, myasthenia gravis, spinal cord injury)
- Inadequate progress: Nulliparous women: lack of continuing progress for three hours (total of active and passive second stage labour) with regional anaesthesia, or two hours without regional anaesthesia

  Multiparous women: lack of continuing progress for two hours (total of active and passive second stage labour) with regional anaesthesia, or one hour without regional anaesthesia
- Maternal fatigue/exhaustion

Instrumental delivery of fetal head during caesarean section:

- Wrigley's forceps / Caesarean specific Kiwi cup may be required to assist in the delivery of fetal head. This should only be attempted by an experienced operator as there is risk of uterine and fetal trauma.
- The type of instrument used should clearly be documented in the notes.

Contraindications for operative vaginal delivery

- Fetal bleeding disorders (e.g. alloimmune thrombocytopenia) or a predisposition to fracture (e.g. osteogenesis imperfecta) are relative contraindications to operative vaginal delivery. However, there may be considerable fetal risk if the head has to be delivered abdominally from deep in the pelvis.
- The risk of vertical transmission of hepatitis C virus appears to be related to the level of viraemia in the pregnant mother and not to the route of delivery. However, it is sensible to avoid difficult operative delivery where there is an increased chance of fetal abrasion or scalp trauma, as it is to avoid fetal scalp clips or blood sampling during labour.
- The vacuum extractor is contraindicated with a face presentation.
- RCOG recommends avoiding the use of vacuum below 34 weeks because of the susceptibility of the preterm infant to cephalohaematoma, intracranial haemorrhage and neonatal jaundice. There is insufficient evidence to establish the safety of the vacuum at gestations between 34 and 36 weeks. From 36 weeks onwards, it is safe to perform a vacuum delivery.
- Forceps and vacuum extractor deliveries before full dilatation of the cervix are contraindicated. There are a few exceptions which include a prolapsed cord at 9 cm in a multiparous woman or a second twin.

Essential criteria for safe operative vaginal delivery

Safe operative vaginal delivery requires a careful assessment of the clinical situation, clear communication with the mother and healthcare personnel and expertise in the chosen procedure.

Prerequisites for operative vaginal delivery:

- Staff:
  - The operator must have the knowledge, experience and skills necessary to use the instruments and manage complications that may arise. Operator must be of ST4 or above grade to perform the procedure independently.
  - For all the trials of instrumental deliveries in theatre Senior obstetrician (consultant / staff grade doctor or ST6/7) should be present in theatre as there is a high risk of failure and complicated delivery. During normal working hours (0800 till 2000 during the week, and 0800 till 1300 at weekends), the consultant should be present in theatre for all trials.
  - Adequate facilities and back-up personnel are available.
  - Back-up plan in place in case of failure to deliver.

- Anticipation of complications that may arise (e.g. shoulder dystocia, postpartum haemorrhage).
- Personnel present who are trained in neonatal resuscitation.

- Full abdominal and vaginal examination:
  - Vertex presentation.
  - Head is ≤ 1/5 palpable per abdomen.
  - Cervix is fully dilated and the membranes ruptured.
  - Determination of the exact position of fetal head is crucial in application of any instrument and traction. The fontanels and sutures are used to determine the position.

- Mother:
  - **Informed consent must be obtained and a clear explanation given. Written consent to be taken in most cases unless there is an acute emergency where verbal +consent will suffice.**
  - Appropriate analgesia is in place, for mid-cavity rotational deliveries this will usually be a regional block. A pudendal block may be appropriate, particularly in the context of urgent delivery.
  - Maternal bladder has been emptied recently. Indwelling catheter should be removed or balloon deflated.
  - Regular uterine contractions are required so the traction can be applied during contractions.
  - Aseptic techniques.

Where should operative vaginal delivery take place?

Operative vaginal births that have a higher risk of failure should be considered a trial and conducted in operation theatre.

An experienced operator (consultant or a senior middle grade doctor) should be present from the outset for all attempts at rotational or trial of instrumental deliveries.

Higher rates of failure are associated with:

- maternal body mass index greater than 30
- estimated fetal weight greater than 4000g or clinically big baby
- occipito-posterior position
- mid-cavity delivery or when 1/5 head palpable per abdomen

What instruments should be used for operative vaginal delivery?

- The operator should choose the instrument most appropriate to the clinical circumstances and their level of skill. Forceps and vacuum extraction are associated with different benefits and risks.
- Forceps should be used for the aftercoming head of the breech and in situations where maternal effort is impossible or contraindicated.

- **Rotational delivery**: The options available for rotational delivery include Kielland forceps, manual rotation followed by direct traction forceps or rotational vacuum extraction. Rotational deliveries should be performed by experienced operators, the choice depending upon the expertise of the individual operator.

  Rotational delivery with the Kielland forceps carries additional risks and requires specific expertise and training.

  Alternatives to Kielland forceps include manual rotation followed by direct traction forceps or rotational vacuum extractor.

  The Kiwi OmniCup® (Clinical Innovations, Murray, UT) vacuum device has been reported to be both safe and effective for rotational and non-rotational operative vaginal delivery in non-trial settings.

The relative merits of vacuum extraction and forceps have been evaluated in a Cochrane systematic review of nine RCTs, involving 2849 primiparous and multiparous women.

Vacuum extractor compared with forceps is:

- more likely to fail at achieving vaginal delivery OR 1.7; 95% CI 1.3–2.2
- more likely to be associated with cephalhaematoma OR 2.4; 95% CI 1.7–3.4
- more likely to be associated with retinal haemorrhage OR 2.0; 95% CI 1.3–3.0
- more likely to be associated with maternal worries about baby OR 2.2; 95% CI 1.2–3.9
- less likely to be associated with significant maternal
- perineal and vaginal trauma OR 0.4; 95% CI 0.3–0.5
- no more likely to be associated with delivery by caesarean section OR 0.6; 95% CI 0.3–1.0
- no more likely to be associated with low 5-minute Apgar scores OR 1.7; 95% CI 1.0–2.8
- no more likely to be associated with the need for phototherapy OR 1.1; 95% CI 0.7–1.8.

The careful well-trained operator will select the instrument best suited to the individual circumstances.

Complication of Operative vaginal delivery:

- Operative vaginal delivery should not be attempted unless the criteria for safe delivery have been met.
- Operative vaginal delivery should be abandoned where there is no evidence of progressive descent with each pull or where delivery is not imminent following three pulls of a correctly applied instrument by an experienced operator. For a ventouse delivery, the procedure should also be abandoned after two 'pop-offs'.
- Vacuum and forceps delivery can be associated with significant complications, both maternal and fetal. Two maternal deaths have been described in association with tearing of the cervix at vacuum delivery and a further maternal death recorded following uterine rupture in association with forceps delivery.

- Neonatal intracranial and subgaleal haemorrhage are life-threatening complications of particular concern. However, risks increased significantly among babies exposed to attempts at both vacuum and forceps delivery.

Adverse outcomes, including unsuccessful forceps or vacuum delivery, should trigger an incident report as part of effective risk management processes.

Paired cord blood samples should be processed and recorded following all attempts at operative vaginal delivery.

Is there a place for sequential use of instruments?

- If there is an obvious descent of the head with the ventouse but the cup becomes dislodged or suction appears to be lost forceps may be applied to assist in delivery of the head
- The use of sequential instruments is associated with an increased risk of trauma to the infant. However, the operator must balance the risks of a caesarean section following failed vacuum extraction with the risks of forceps delivery following failed vacuum extraction.
- The use of outlet forceps following failed vacuum extraction may be judicious in avoiding a potentially complex caesarean section.
- The sequential use of instruments should not be attempted by an inexperienced / junior operator without direct supervision and should be avoided wherever possible.

When should the procedure be abandoned?

- Consider abandoning the procedure when there is no descent of the fetal head after appropriate traction with the instrument
- If an operative vaginal delivery is abandoned, and conversion to Caesarean section occurs, doctors trained in using the Fetal Pillow should consider inserting the device prior to performing the Caesarean section.

What is the role of episiotomy for operative vaginal delivery?

- A multicentre pilot randomised controlled study failed to provide conclusive evidence for routine episiotomy. The incidence of obstetric anal sphincter injury was similar in both groups where there was routine and restrictive use of episiotomy. The anal sphincter tears rate was low overall for vacuum deliveries.
- In a UK study episiotomy did not appear to protect against obstetric anal sphincter injury in vacuum extraction (4.3% with episiotomy versus 5.5% without episiotomy) and forceps delivery (11.7% versus 10.6%). However, episiotomy was associated with a greater incidence of postpartum haemorrhage.
- In the absence of robust evidence to support routine use of episiotomy in operative vaginal delivery, restrictive use of episiotomy, using the operator's individual judgement, is supported.

Documentation

In addition the following should be clearly documented:

- Indication and place of instrumental delivery

- All that is included in essential criteria above (all separately documented)
- Type of instrument used
- If sequential instruments used
- If the suction cup was removed or it came off spontaneously
- Number of tractions
- Evidence of descent with traction
- Pressure during vacuum tractions
- Any obvious trauma to baby (bruise / laceration)
- Time of delivery of baby's head
- Condition of baby at birth
- Paired cord gases
- Estimated blood loss

What analgesia should be given after delivery?

Regular paracetamol and diclofenac should be considered after an operative vaginal delivery in the absence of contraindications.

Regular paracetamol and diclofenac has been shown to be beneficial after caesarean section and for perinea pain. They should be considered (in the absence of contraindications) after an operative vaginal delivery.