

MATERNITY GUIDELINES

Operative Delivery – Ventouse, forceps and LSCS

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1. Roles and responsibilities of staff

Medical staff must be appropriately trained before undertaking any operative procedures. The level of training will be agreed upon by the obstetric team and Deanery. Supervision will be provided for junior obstetric staff in training.

For any operative procedure there must be documentation of why the procedure is indicated. A back-up plan in place in case of failure to deliver should be made together with anticipation of complications that may arise (e.g. shoulder dystocia, postpartum haemorrhage).

The decision to perform a lower segment caesarean section (LSCS) will be decided at Specialist Trainee 6 to 7, post-CCT or Consultant level with the exception of the rare situation where a delay may significantly compromise maternal or fetal outcome (e.g. cord prolapse).

Midwives must be capable of providing clinical assistance where necessary and support for the parents.

2. Classification of Operative Vaginal Delivery

Outlet – fetal scalp visible without separating labia, fetal skull on pelvic floor, sagittal suture in antero-posterior diameter or right or left occiput anterior or occiput posterior, fetal head is at or on the perineum.

Low – leading point of skull (not caput) is at station +2

Two subdivisions:

- Rotation of 45 degrees or less from occipito-anterior position
- Rotation of more than 45 degrees from occipito-posterior position

Mid – fetal head is no more than 1/5th palpable per abdomen, leading point of skull is above station +2 but not above the ischial spines.

Two subdivisions:

- Rotation of 45 degrees or less from occipito-anterior position
- Rotation of more than 45 degree from occipito-posterior position

High – not included in classification as operative vaginal delivery is not recommended when head is 2/5th or more palpable per abdomen and presenting part above ischial spines.

3. Vacuum Extraction

Indications for the use of Ventouse

These may be as follows:

- Delay in the second stage
- Fetal distress in the second stage
- Maternal exhaustion or distress
- Maternal conditions requiring a short second stage

3.1. Pre-Requisites for a Vacuum Extraction

These include the following:

- Full clinical assessment
- Full dilatation, engaged head and ruptured membranes
- Cephalic presentation
- Good contractions
- Presenting part (head) must be 1/5th palpable or less abdominally

In addition to the above, ensure:

- Full assessment of patient records and personal birth preferences
- Effective analgesia
- Assessment of partogram and CTG
- Clear communication with midwife, patient and birthing partner
- Explain the steps of the procedure, risks versus benefits, discuss the chignon created by ventouse
- Obtain verbal consent and record this in the notes

3.2. Contra-indications for delivery with Ventouse

- Face presentation
- Gestation less than 34 weeks (caution between 34-35+6/40)

- Caution needed if there is active bleeding from a fetal blood sampling site or multiple attempts at FBS
- Presenting part (head) 2/5th or more palpable abdominally
- Inexperienced operator without supervision.

3.3. Types of cup:

Metal

- **OA:** This may be chosen if the 2nd stage is prolonged in the OA position. It may also be used if the head is slightly deflexed.
- **OP:** This may be used for posterior positions, particularly those with significant deflexion.
- **Silicone** - This may be used with any well-flexed cephalic presentation as long as the baby is of average size, there is minimal caput and the presenting part is well below the ischial spines. It is not appropriate to use where there is malrotation (OT or OP) or mid cavity (at spines or above) as the degree of traction and lack of chignon make it ineffective in such circumstances.
- **Kiwi™ OmniCup** – This disposable vacuum cup is reported as both safe and effective for rotational and non-rotational operative vaginal deliveries. Evidence suggests that with the correct training and application over the flexion point that this ventouse cup is a highly effective instrument.

The accoucher should use the most appropriate instrument and the one most likely to achieve a vaginal delivery dependent upon each case and their own level of expertise and experience.

3.4. Delivery

- Ensure empty bladder prior to delivery (in-out catheter if necessary) and remove indwelling catheter if relevant.
- Abdominal examination should be performed to estimate fetal size and to ensure that the head is fully engaged.
- Place the woman in the lithotomy position.
- A Pudendal block and perineal block may be necessary in case of episiotomy.
- Dense epidural top-up should be avoided as this may prevent the woman from being able to push.

3.5. Technique

- Identify position and choose correct cup.
- Connect to pump and ensure there are no leakages prior to commencing the delivery.
- **If a rubber cup** is used it should be applied by folding cup and gently inserting into the vagina from above downwards. A gentle twist will ensure that the cup is inserted over the flexion point.
- **If a metal cup** is used it should be lightly lubricated and inserted sideways in to the vagina. To ensure that the cup is correctly placed the chain should be placed over the flexion point, which will result in the vacuum pipe lying centrally.
- Raise suction pressure to 0.2 kg/cm². Check no maternal tissue under edge of cup.
- Quickly raise pressure to 0.8 kg/cm² and wait 2 minutes to allow chignon to form.
- The Kiwi OmniCup has similar pressure markings and should quickly be raised to a suction pressure in the Green Zone on the pressure gauge (between 450-600mmHg).

- One hand should rest on the bell of the cup whilst the other applies traction.
- Traction should occur along the pelvic axis throughout the contraction.
- **Ideally a maximum of three pulls** with three consecutive contractions and woman pushing. If there is evidence of good progress and an acceptable fetal heart rate, the procedure may be continued for up to 15-18 minutes or up to 6 contractions in total.
- The cup should be reapplied no more than once (after one detachment the Senior Obstetrician should be called for management review).
- The fingers on the head will promote flexion.
- As the head crowns the decision to perform an episiotomy is made. Episcissors are available to use.

3.6. Delivery with the posterior metal cup

- This cup may be used when the head is deflexed in the occipito-posterior position.
- It should be applied as far back on the head as possible in the midline over the occiput, aiming for the flexion point.
- To achieve a good placement of the cup it is sometimes useful to try to flex the head.
- Once correctly positioned the vacuum can be started.
- The first pull will attempt to flex the head. Once flexion has been achieved the presenting diameter becomes less.
- The traction will then be along the pelvic axis, and the delivery may be completed by a standard spontaneous rotation with maternal effort and gentle assistance.

Do not twist the cup to rotate the baby, this will injure the scalp.

ONLY REAPPLY A VENTOUSE CUP ONCE, i.e. if cup slips off twice do not apply for a third time.

A senior obstetrician will make the decision regarding any trial of ventouse in theatre or if there is to be an attempt at sequential forceps delivery following a failure with the ventouse. There will be times that a ST2-5 Trainee will make these decisions in the emergency situation but the opinion and guidance of a ST6 or above Obstetrician should be summoned to offer support and guidance. The justification for double instrumentation must be clearly documented in the notes.

4. Forceps

4.1. Indications for Forceps delivery

These include the following:

- Fetal distress in the second stage of labour
- Delay in the second stage of labour
- Maternal exhaustion or distress
- Breech presentation: for the after-coming head
- Conditions in which pushing is undesirable: dural tap, moderate to severe hypertension

4.2. Prerequisites for Forceps delivery

- Full clinical assessment, to include:
- Identification of presentation and position
- No appreciable cephalo pelvic disproportion (CPD)
- Full dilatation of the cervix
- Head \leq 1/5th palpable abdominally
- Effective analgesia

4.3. Contraindications

- Presenting part (head) $>$ 1/5th palpable abdominally
- Inexperienced and unsupervised operator

4.4. Management

- Ensure adequate anaesthesia
- Ensure empty bladder prior to delivery (in-out catheter if necessary)
- Remove indwelling catheter if relevant

If the head does not advance with steady traction, the attempt should be abandoned and the baby delivered by caesarean section. The sequential use of instruments should be avoided.

Assisted delivery is often commenced due to an abnormal CTG. Fetal blood sampling should be considered if there are predicted to be technical difficulties or any delays to delivery.

The decision for delivery in the labour room or theatre will be made by the obstetrician. This will depend on the clinical picture together with potential difficulties and staff preference. The patient must be involved in all decision-making processes.

5. Steps Following any Instrumental Delivery

- Check paired cord gas pH
- Active management of third stage
- Thorough vaginal examination
- Prescribe pain relief
- Assess need for indwelling catheter (recommended if regional anaesthesia used.)
- Complete instrumental delivery proforma within Birth Notes including any injury to scalp, skull or face using diagrams
- Document all timings including the decision to delivery interval
- Explain events to parents
- Individualised management plan to be written for all women and include this in midwifery SBAR tool

6. Triggers for Risk Management

- Cord pH $<$ 7.10
- Admission to NICU
- Sequential use of instruments
- Apgar less than 7 at 5 minutes
- Shoulder dystocia

- Postpartum haemorrhage > 1500mls
- Significant neonatal birth injuries (egg, cephalhaematoma, subgaleal haemorrhage, skull fracture, severe skin abrasion, not minor marks/bruises)
- 3rd/4th degree tears

In the event of a serious incident or unexpected neonatal outcome the duty consultant should be informed at some stage to provide support to both the patient and the obstetrician and to make them aware of the risk event. This will facilitate care planning and communication between obstetric and neonatal teams to ensure the best possible care is provided for the infant and family.

Precautions with Infection

Scalp lacerations or abrasions can potentially increase the risk of transmission with HIV, Hepatitis B and C. 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 a potentially difficult instrumental delivery where possible in such cases.

Decision to delivery interval

- Fetal distress – delivery as soon as possible along similar timings to a Category 1 Caesarean section.
- All other circumstances such as failure to progress in 2nd stage and maternal exhaustion - deliver ideally within the hour.

Prophylactic antibiotics

A large national study (Anode trial) showed a 50% reduction in perineal infections when given 1 dose of IV antibiotics following an instrumental delivery (20% compared with 10%). Therefore:

- **All women should be offered a single dose of 1.2g IV co-amoxiclav within 6 hours of delivery to reduce the risk of postpartum infections.**
- Patient with a penicillin allergy will require a suitable alternative as per the delivering doctor's recommendation.

7. Caesarean Section (LSCS)

Caesarean sections are classified according to the Royal College of Obstetricians and Gynaecologists classification for caesarean section:

Emergency LSCS Category I	Immediate threat to life of woman or fetus e.g. major haemorrhage, cord prolapse, severe fetal bradycardia In these cases the baby should be delivered within 30 minutes of the decision being made.
Urgent LSCS Category II	Maternal or fetal compromise, which is not immediately life-threatening. Delivery time is expected to be within 75 min. However, prioritisation of care may influence the interval between decision and delivery time.
Scheduled LSCS	Needing delivery but no maternal or fetal compromise

Category III Delivery time is expected to be within **24 hours**. However, prioritisation of care may influence the interval between decision and delivery time.

**Elective LSCS
Category IV** At a time to suit the patient and maternity team

The decision to perform a lower segment caesarean section (LSCS) will be made at ST6-7 trainee or consultant level with the exception of the rare situation where a delay may significantly compromise maternal or fetal outcome (e.g. cord prolapse).

7.1 Maternal request for CS

When a woman requests a CS because she has anxiety about childbirth, offer referral to general antenatal clinic. Referral to perinatal mental health team for support to help her address her anxiety in a supportive manner may be required but not for all.

For women requesting a CS, if after discussion and offer of support (including perinatal mental health support for women with anxiety about childbirth), a vaginal birth is still not an acceptable option, consider the offer of a planned CS.

An obstetrician unwilling to perform a CS should refer the woman to another obstetrician for a second opinion. UHP reserves the right to refuse maternal request CS if a consensus opinion is that the service cannot provide the CS safely or the maternal risks of CS far outweigh the benefits of vaginal delivery.

Inform the woman that in the event of her entering spontaneous labour prior to the planned date of CS, a discussion will take place with a senior obstetrician to weigh up the options of a vaginal birth or emergency CS depending on individual circumstances at that time.

7.2 Management

Timing of planned CS

The risk of respiratory morbidity is increased in babies born by LSCS before labour, but this risk decreases significantly after 39 weeks. Therefore planned LSCS should not routinely be carried out before 39 weeks.

Consider the use of terbutaline for preterm LSCS with SRM, particularly if breech or transverse to protect the after-coming head. The dose is 250mcg S/C 20 min prior to operation.

7.3 Preparation in Theatre:

- All women undergoing LSCS should receive antibiotic prophylaxis in theatre. This should be given before knife to skin (within 60 minutes):
 - Co-Amoxiclav 1.2gms should be given as a bolus dose IV.
 - Women who have sensitivity to penicillin may be given 1.5g Cefuroxime and 500 mg of Metronidazole IV.
 - If there is a high risk of anaphylaxis to penicillin: then they should receive 400mg of Teicoplanin, 500mg of Metronidazole and 240mg of Gentamicin
 - Microbiology advice should be sought if these are not suitable
- Only if absolutely necessary the woman should have the supra-pubic hair removed using clippers (hair removal can increase SSI risk).
- A large bore peripheral line should be established.
- Women should be offered antacids or drugs to reduce gastric volumes and acidity before LSCS.

- Catheterisation should be performed before surgery. An indwelling Foley's catheter should be used (the bar code should be recorded in the event of problems developing with the catheter). It must have a closed drainage system.
- Catheters can be removed at any time once fully recovered from GA and able to mobilise safely. Likewise, catheters should only be removed following epidural, spinal or CSE when the woman is mobile and sensation has returned.
- For category 1 or 2 LSCS procedures where there is fetal distress, intra-uterine resuscitation measures should be undertaken for transfer, including:
 - left lateral positioning
 - stopping oxytocin infusion
 - IV fluid bolus consideration of Terbutaline
- In theatre, the operating table should be kept in the left lateral tilt position until after the uterus is emptied.
- Women's preferences for birth, such as music or lowering the screen should be accommodated where possible.
- **In morbidly obese women with a panniculus, consider a higher skin incision to avoid the skin fold, after discussion with the women. This may potentially reduce the risk of a wound infection, although currently robust data is not available.**
- O-rings are available to improve access in women of high BMI. There are 2 sizes available but the smaller of the two is adequate for most women.

7.4 Third stage

- Delayed cord clamping is recommended depending on surgical preference and state of uterine bleeding – between 60 to 120 seconds seems ideal (avoid in twins or on the direction of the neonatologist).
- For elective Caesarean Sections (Cat 4), 100 micrograms Carbetocin IV should be administered as a single dose, to reduce third stage blood loss.
- For non-elective Caesarean Sections (Cat 1-3), 5 IU Oxytocin IV should be administered, with consideration for a 40 IU oxytocin infusion, depending on length of labour and uterine bleeding.
- The placenta should be delivered by controlled cord traction as far as possible. Manual separation of placenta significantly increases the risk of endometritis.
- Routine exteriorisation of uterus is not recommended due to increased incidence of pain but it can help to increase the field of exposure. If the uterus is to be exteriorised the anaesthetist must be informed before the procedure.

7.5 Closure

- The CAESAR trial ⁷ has shown that there are no advantages or disadvantages to any particular surgical techniques.
- The effects of different suture material are uncertain. Subcuticular skin sutures with the thinnest possible suture include Monosyn 4-0 (dissolvable) or Premilene 2-0 (removable). Interrupted, removable Premilene sutures may be considered for obese women or staples.
- Wound glue is also available in maternity theatres.
- The routine use of drains is not recommended. Pelvic and subcutaneous drains should be used where clinically indicated.

7.6 Wound dressings

- At the completion of the caesarean section the surgeon will apply a dressing, which is an absorbent, waterproof and bacteria proof film dressing using aseptic technique.
- Standard wound dressings are to be placed and left in situ over a wound for up to 5 -7 days, unless soaked through, in which case another absorbent, waterproof and bacteria proof film dressing should be applied following hand hygiene rules and appropriate PPE.
- PICO dressings are available for women over BMI 35, those with diabetes or any woman deemed at higher risk of wound infection. PICO dressings are left in situ for 7 days irrespective of the type of wound closure used.
- With a PICO dressing, the pump must be disconnected before the mother takes a shower. The end hangs loose and the pump is reconnected after a shower. Do not cover the white pad on the dressing with adhesive strips as this is the breathability area. The pump should be disconnected prior to removal of the dressing.

Category 1 caesarean section

- Establish IV line
- Take bloods for group and save
- Administer ranitidine, and sodium citrate as prescribed
- Neonatologist to be present at delivery.

7.7 Documentation requirements for LSCS

It is expected that the person making the decision for a LSCS will document the reasons clearly in the notes, and complete the Operative Details pages within the Birth Notes as soon after delivery as possible and file it in the designated place in the patient records. Any delays in category 1 or 2 LSCS should also be clearly documented together with the reason.

When the decision is made to perform a LSCS, a record should be made of all the factors that influence the decision, and which of these is the most influential. Verbal consent is sufficient for category 1 caesarean sections. This should be documented in the notes and communicated to theatre staff. Use of language line is mandatory when the patient does not understand English. Use of partner or relative for the purpose of interpretation is legally not permissible.

8 Consent

The Supreme Court ruling on the Montgomery case in 2015 emphasises the importance of a shared decision-making process between healthcare professionals and patients. Shared decisions can only occur if both partners have access to the same information and time to make a decision.

The implications of this ruling are that healthcare professionals must:

- Clearly outline the recommended management strategies and procedures to their patient, including the risks and implications of potential treatment options.
- Also discuss any alternative treatments
- Also discuss the consequences of not performing any treatment or intervention
- Ensure patients have access to high-quality information to aid their decision-making
- Give patients adequate time to reflect before making a decision
- Check patients have fully understood their options and the implications

- Document the above process in the patient's record

With these in mind, consent for operative delivery should be requested after providing pregnant women with evidence based information and in a manner that respects the woman's dignity, privacy, views and culture, whilst taking into consideration the clinical situation.

Discussion and consent should be obtained between contractions and may be verbal, but written consent should be obtained for trial of instrumental delivery in theatre. Documentation of verbal consent must be recorded in the patient health record in the consent chapter of the birth notes, together with risks and benefits. It is usual to obtain written consent, using consent form 1 (adult), for LSCS. However, documented verbal consent is acceptable in an emergency. When considering a LSCS there should be discussion on the benefits and risks compared with vaginal birth specific to the woman and her pregnancy.

A competent pregnant woman who has capacity to consent is entitled to refuse the offer of treatment even when the treatment would clearly benefit her or her baby's health. Refusal of treatment needs to be one of the patient's options. If her refusal is likely to endanger her or her baby's wellbeing, the consultant must be informed of the situation and careful documentation is essential. Conversations should be witnessed by another member of the team.

Risks of instrumental delivery:

Maternal - Postpartum haemorrhage, vaginal tears, anal sphincter dysfunction, voiding dysfunction

Fetal – Forceps/vacuum cup marks, cephalo-haematoma, facial/scalp laceration, neonatal jaundice, retinal haemorrhage.

Serious Risks:

Maternal – 3rd/4th degree tear, extensive vaginal/vulval tear.

Fetal – Subgaleal haematoma, Intracranial haemorrhage, facial nerve palsy

Possible additional Procedures:

- Episiotomy
- Manoeuvres for shoulder dystocia
- Caesarean Section
- Blood Transfusion
- Repair of perineal tear
- Manual rotation

9 Care of the woman post LSCS

An individual plan of care must be devised and documented, in partnership with the woman (and her family).

Immediately following LSCS, women will be recovered by theatre nursing staff on a one-to-one basis until they have regained airway control, cardio-respiratory stability and are able to communicate.

Observations of respirations, blood pressure, pulse, pain and sedation should be performed every ½ hr for 2 hours, 1 – 4 hourly for 24 hours or until stable. The modified early obstetric warning score (MEOWS) chart must be used in the postnatal ward environment with escalation of any deterioration in condition to senior staff as appropriate.

Catheter

Removal of the urinary bladder catheter should be carried out once a woman is mobile after a regional anaesthetic.

Pain relief

If the woman has had intrathecal diamorphine, hourly observations of respiration rate, pain and sedation should continue for at least 12 hours.

Where patient controlled opioid analgesia is in use, observations must be continued for at least 2 hours post discontinuation of treatment.

Mobilisation

Flowtron boots can be used to minimise the risk of venous thromboembolism until the woman is mobile, however most women will just receive graduated elastic compression stockings and be advised to continue using them for up to 6-8 weeks post-delivery. Clexane should be considered post-delivery -all women will have a VTE risk assessment).

Diet

Food and drink can be commenced post-operatively when the woman wishes.

Prior to discharge home

Recommendations for VBAC for future pregnancy should be documented with the post-delivery instructions of the yellow Birth Notes. Additionally, discussion of future pregnancy and delivery should be undertaken by a doctor or midwife and should be documented in the purple Postnatal Notes for Mother. A vaginal birth after CS (VBAC) patient information leaflet must be provided together with other paperwork before leaving hospital.

10 Record keeping

It is expected that every episode of care be recorded clearly, in chronological order and as contemporaneously as possible by all healthcare professionals as per Hospital Trust Policy. This is in keeping with standards set by professional colleges, i.e. NMC and RCOG.

All entries must have the **date and time** together with **signature and printed name**.

Monitoring and Audit

Auditable standards:

- Appropriate person / level of training to perform procedure
- Informed consent documented in notes
- Was procedure abandoned as appropriate?

- Documented reason for performing category 1 or 2 LSCS by person making decision
- Was decision to delivery time appropriate?

Reports to:

- Maternity Assurance Committee – responsible for action plan and implementation of recommendations from audit
- Service Line Business Meeting

Frequency of audit:

- Continuous

Responsible person:

- CDS consultant / Clinical Risk Manager

Cross references

- Intrapartum Care - General principles of intrapartum care.
- Role of Midwife in Maternity Theatres and Post-operative care.
- Thromboprophylaxis and management of VTE
- Care of the Urinary bladder

References

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