Anaesthesia for Caesarean Section

Key Points

- Regional anaesthesia should be used for Caesarean Section if there are no contraindications and time permits.
- Antibiotics and uterotonics should be given after communication with the obstetricians.
- Close attention should be given to the mother’s blood pressure prior to delivery of the baby.
- Regional blocks should be checked very carefully, and if not adequate, other options should be discussed with the patient and obstetricians.
- Post operatively the patient should only be transferred to PACU (WP, FP) or a LW room (WP) if it is safe to do so.
- Adequate pain relief, fluids, VTE prophylaxis, anti-emetics and oxygen (where necessary) should be prescribed on the drug chart.
- A TAP block may be given after a Caesarean Section, where a regional anaesthetic has not been possible.

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Version Control Sheet

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Related Documents

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1. CLASSIFICATION OF URGENCY

1.1 This classification has been endorsed by the RCOG and the OAA.\(^1\)

1.2

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<tr>
<th>Category</th>
<th>Emergency</th>
<th>Immediate threat to life of woman or fetus</th>
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<td>Category</td>
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<td>3</td>
<td>Scheduled</td>
<td>Needing early delivery but no maternal or fetal compromise</td>
<td>Needing early delivery but no maternal or fetal compromise</td>
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<td>Category</td>
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<td>Deliver at a time to suit the woman and maternity team</td>
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Also see ‘Caesarean Section (including Enhanced Recovery) at WPH & FPH’

2. PREOPERATIVELY

2.1 The Obstetric Anaesthetist on call should check the anaesthetic machine in the obstetric theatre(s) (location is site dependent) and all associated equipment (including range of laryngoscopes, tubes and bougies) daily. Emergency drugs are drawn up by the ODP in conjunction with the Obstetric Anaesthetist (W XP) or the duty Obstetric Anaesthetist (FPH) and kept in the fridge in theatre.

2.2 Patients should be fully pre-assessed wherever possible. At the very least, past medical history and allergies should be elicited, as well as an assessment of the airway. The plan for anaesthesia should be discussed in as much detail as possible with the patient. Elective CS patients should ideally be assessed 2-3 days beforehand by the LW Anaesthetist when prompted to do so by the MAC midwife (W XP) OR are seen in the pre-assessment clinic on Thursdays or Fridays the week before ELCS (FPH).

2.3 Regional anaesthesia should be used if there are no contraindications and time permits. For general anaesthesia, airway protection with RSI and ETT should be considered for all pregnant woman at >13weeks (depending on the history of reflux, abdominal size and other risk factors), and is required for >18weeks or <2days after delivery.

2.4 All patients awaiting a caesarean section (CS) should be given antacid therapy\(^2\).

3. GENERAL CONDUCT FOR CAESAREAN SECTION

3.1 Monitoring (NIBP, SpO2, ECG) and intravenous access (ideally 16G or larger) should be established once the patient has been checked in theatre or anaesthetic room. Fluid should be started if not already initiated, in order to avoid hypotension.\(^2\)

3.2 After delivery of the baby give either:

- Carbetocin 100mcg slowly iv after discussion with the obstetric team if there is a risk of post-partum haemorrhage. Remember that a peak effect does not occur until 4 minutes after administration.

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- OR 5 units of syntocinon and (if required) an infusion of 40iu syntocinon in 500ml saline over 4 hours via pump (or in 50ml of saline if the patient is pre-eclamptic and large fluid volumes need to be avoided).

3.3 Analgesia should preferably be given by the regional route (epidural or spinal diamorphine);2-4 additional iv paracetamol can be given along with PR (with the patient’s consent) diclofenac. If no regional route is available iv morphine should be used. In the rare event of a morphine allergy, iv oxycodone or fentanyl can be used. TAP blocks should be performed for those patients without a regional block in situ (see below).

If an epidural has been sited, ensure it has been removed at the end of surgery, unless there is a good reason to keep it in.

3.4 Intravenous antibiotics should be given pre-delivery, as follows:

<table>
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<th>Routine antibiotics</th>
<th>Cefuroxime 1.5g</th>
<th>Metronidazole 500mg</th>
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<tr>
<td>Penicillin Allergic</td>
<td>Clindamycin 600mg + Gentamicin 240mg iv (if booking weight &lt;60kg or creatinine clearance &lt;30ml/min use 160mg)</td>
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3.5 The importance of good documentation is vital. It can be crucial for later litigation.

4. REGIONAL ANAESTHESIA

4.1 Full aseptic technique should be used.

The mother should be positioned in the sitting or left lateral position. If de novo, a spinal or CSE can be given below L3 and a mixture of hyperbaric 0.5% bupivacaine & 300-400mcg diamorphine should be injected into the CSF.2-4 The total volume of drug is at the discretion of the Anaesthetist (depending on the height of the mother, gestation, etc). A filter needle should be used to draw these up.

The blood pressure should be maintained using volume pre-loading (plasmalyte), and phenylephrine boluses or infusion, or ephedrine (2018 international consensus statement recommends phenylephrine by pump5). It should be monitored every 1-2mins initially. Left lateral tilt (at least 15°) should be maintained until delivery.2 The Obstetric WHO checklist should be carried out prior to KTS; briefly if it is a category 1 CS.

If the BP drops >20% of baseline or SBP <90mmHg, or the patient is symptomatic (dizzy, faint, nauseous or vomiting, sweaty or tachycardic), a bolus of a vasoconstrictor should be given. There should be an increase in the rate of infusion of phenylephrine. See ‘Hypotension during regional block in obstetric patients’.

If there is no urinary catheter in situ this can be inserted whilst waiting for the block to develop.

4.2 Checking the block:

1. The exact time of intrathecal injection should be noted and documented; a block which is suitable for a CS should develop by 20 minutes.
2. The patient should be asked during the injection if they feel any sensation of warmth in the back, buttocks or thighs; a lack of this may imply misplacement.
3. An ideal block for caesarean section should be:
   a. Sensory block (cold) S5 – T4
b. Sensory block (light touch) S5-T5
c. Motor block (ideally Bromage 3/4)

4. Bilateral sympathetic block (warm, dry feet) 

5. The time that the block is achieved should be noted and documented.

4.3 If the block height is inadequate, the following should be tried:

1. Trendelenberg position
2. If an epidural is in-situ, the block may be brought up with 2-4ml aliquots of 2% lidocaine

If the block is not adequate, surgery should not be started and the block should be repeated with a modified dose as appropriate. A GA should be carried out if there is fetal compromise, and time is of an issue or if repeated regional blocks are also inadequate. This decision should be guided by professional discussion with the Obstetricians.

5. EMERGENCY CAESAREAN SECTION

5.1 If practical, the woman should be seen by the Anaesthetist in her room, and the obstetric and medical history, anaesthetic history, allergies, medications, fasting status and potential airway issues should be established. If Category 1 CS, the woman should be transferred to theatre within 5 minutes and the Anaesthetist can establish the above information en-route or in theatre. A reassuring approach should be used, as the woman and her partner may be frightened.

If using a de-novo regional technique, the time should be observed by someone else, whilst you administer the block.

5.2 If an epidural is topped up in the labour room the Anaesthetist must not leave the patient under any circumstances.

Top up for an existing working epidural should be done using 10-20ml (in 5ml boluses) of any of the following:

1. Mixture of 10ml 2% Lidocaine + 10ml 0.5% Bupivacaine
2. 20ml 0.5% Bupivacaine
3. 2ml of preservative free sodium bicarbonate 8.4% is added to 20ml 2% Lidocaine. After gentle agitation, remove 2ml of solution and then add 0.1ml of 1:1000 adrenaline. This mixture has been shown to halve the onset time of anaesthesia when compared with Bupivacaine alone (7mins vs 14mins). This solution takes more time to make up, and so the ampoules and syringes should all be ready to prepare the mixture. The increased potential for drug error should be appreciated. The syringes and ampoules are now kept ready to use in the labour ward theatre in a box; this should be checked by the bleep carrier at the start of the shift.
4. If bicarbonate is not available; 20ml 2% Lidocaine and 0.1ml of 1:1000 adrenaline (1:200 000).
5. Epidural diamorphine (2.5-5mg) or morphine(3mg) (FPH) should be given towards the end of the operation.
6. Epidural fentanyl 100mcg may be given in order to speed the onset of the block and improve comfort.
6. PREVENTING & TREATING PAIN AT CAESAREAN SECTION

See ‘Prevention and Management of Inadequate Block’ guideline.

7. GENERAL ANAESTHESIA

7.1 Patients should be fully pre-assessed as much as time permits. In particular the airway should be assessed, and query should be made about past problems with anaesthetic. Laryngeal oedema should be anticipated in patients with pre-eclampsia. An explanation should be made about cricoid pressure and pre-oxygenation. The appropriate antacid regime should be given.

7.2 If the patient is high risk for the complications of a GA, the duty Consultant Anaesthetist should be contacted. Also see ‘Difficult & Failed Intubation at Caesarean Section’.

7.3

1. Induction should always be carried out in theatre with the scrub team and surgeon ready to operate immediately post induction. The urinary catheter should be sited prior to induction if not already in situ.
2. Category 1 patients should be transferred in the left lateral position and any syntocinon infusions that have been running for the augmentation of labour should be stopped.
3. In addition to the ODP, a second anaesthetist can be called for support; it may be useful in the case of a difficult intubation. DAS guidance suggests a videolaryngoscope should be immediately available.
4. Ensure iv access is adequate and fluids are running.
5. The patient should be positioned in the optimum position to intubate (ramped). The Oxford Pillow is available in the LW theatre (WP) or Obstetric Theatre (FP).
6. Pre-oxygenate for a full 3 minutes. Consider use of Optiflow or nasal cannula if difficult intubation is anticipated. The monitoring can be attached during this time (NIBP, SpO2, ECG and ETCO2). The presence of a capnography trace should be confirmed. The suction should be on and ready to use.
7. Cricoid pressure should be applied immediately prior to induction.
8. Thiopentone or propofol and suxamethonium (ensure adequate dose; may need more than 1 ampoule) should be administered. An opioid (inform paediatricians) or antihypertensive agent may be needed in case of pre-eclampsia. When fully relaxed, intubate and inflate the cuff. There should be evidence of: equal breath sounds and ETCO2 Surgery should not be started until you are happy with the airway.
9. Maintain anaesthesia with an inhalational anaesthetic. 100% oxygen may be beneficial if there is fetal distress.
10. A non-depolarising muscle relaxant may be given. The effect of inhalational agents on uterine contractility and the risk of awareness should be remembered.
11. After the cord is clamped give a sufficient dose of opioid e.g morphine (10-20mg may be required). If a working epidural is in situ, an opioid should be given via the epidural catheter (2.5-5mg of diamorphine (or morphine 3mg (FPH)).
12. At the end of surgery, the neuromuscular block should be reversed (be mindful when magnesium sulphate has been used). The patient should be extubated fully awake, in the sitting or left lateral position. They should be transferred to PACU with oxygen via a facemask.
13. Consider a Transversus Abdominis Plane (TAP) block for post-operative analgesia (see below).
9. POSTOPERATIVE CARE & PAIN RELIEF

9.1 All obstetric patients undergoing procedures in theatre under RA or GA are recovered as follows:

FPH: PACU
WXP: LW if regional procedure carried out in LW theatres, or PACU if GA given or Emergency CS

Good quality analgesia after any surgery leads to earlier mobilisation, fewer pulmonary and cardiac complications, a reduced risk of DVT and earlier return of gastrointestinal function. In new mothers, good analgesia can improve the ability to look after the newborn and facilitate breastfeeding. Postoperative analgesia starts at the time of CS.

9.2 Criteria for transfer to PACU/LW room

1. The woman is physiologically stable on departure from the operating theatre.
2. The airway is secure. It is the Anaesthetist’s responsibility to ensure that any ETT is removed safely.
3. If the general condition of the patient is poor, then adequate mobile monitoring of ECG, pulse oximetry and blood pressure should be used for transfer.
4. Supplemental oxygen is administered for transfer after GA or sedation.
5. The Anaesthetist has ensured that PACU is adequately staffed to receive the patient.
6. The Anaesthetist is responsible for ensuring safe transfer and must give a formal hand over to the PACU staff, including plans for postoperative care and analgesia. The woman must be clinically stable before the Anaesthetist leaves the woman.
7. The following should be prescribed on the drug chart as long as there are no contra indications:
   • Regular paracetamol 1g QDS
   • Regular NSAIDs: 50mg diclofenac TDS (WXP) OR ibuprofen 400mg QDS (can use 600mg ibuprofen QDS for first 48hrs - FPH)
   • Regular subcutaneous thromboprophylaxis according to weight of patient & TEDs after discussion with the obstetricians.
   • PRN oramorph 10-20mg 2-3hrly
   • PRN iv antiemetics (ondansetron +/-cyclizine)
   • PRN lactulose 15ml BD
   • PRN chlorpheniramine 4mg TDS orally
   • Consider PRN iv naloxone
   • Consider PRN oxygen (to maintain SpO2>94%)

The dose and timing of any relevant drugs given intra-operatively should be documented on the drug chart.

Codeine should not be prescribed for breast feeding mothers.

See ‘The care of women within the first 24 hours post caesarean section or other operative intervention’ Guideline at FPH.
See ‘Recovering Mothers in Maternity’ Guideline at WXP.
10. POST OP VISIT

10.1 Every patient should be visited the day (as early as possible) after their regional or general anaesthetic, or labour epidural. This visit should be documented as follows:

- **WXP:** in the Blue Care Pathway, in the epidural book and on the computer system (WP).
- **FPH:** on the follow up form and in the notes if there is a problem.

In particular the documentation in the notes should have the following if present:

- Issues with post-delivery analgesia
- Residual block: sensory or motor
- Presence of any headache
- Presence of urinary retention
- Any other complications thought to secondary to RA/GA

10.2 If any of these are present and felt to be anaesthesia-related, it should be flagged up to the Consultant covering labour ward. Symptoms, signs, differential diagnoses, investigations and a management plan should be documented in the main notes. Care should be taken to hand these patients over at every shift change. A handover of these patients between Consultants should also occur.

Also see ‘Caesarean Section Including Enhanced Recovery’ FPH & WXP
Also see ‘The care of woman within the first 24hrs post caesarean section or other operative delivery’ FPH
11. **TRANSVERSUS ABDOMinis PLANe BLOCKS FOR ANALGESIA AFTER CS**

11.1 The transversus abdominis plane (TAP) block is performed by introducing local anaesthetic into the plane between the fascia of the transversus abdominis muscle and the internal oblique muscle; it should be considered when it has not been possible to administer regional opioids. A recent systematic review and meta-analysis looked at a number of studies and found TAP blocks to be effective as part of a multimodal analgesia regime that excludes intrathecal morphine. The technique should be performed under ultrasound guidance as “blind” TAP blocks have been shown to have a high incidence of intraperitoneal placement.

11.2 **Contraindications**
- Patient refusal
- Sensitivity to local anaesthetics
- Local infection
- Large doses of local anaesthesia in the last four hours (e.g. epidural dosing, small patients). You should calculate the dose received by each patient and determine whether TAP blocks are feasible.

11.3 **Method**
- Ideally obtain informed consent for regional blockade prior to caesarean delivery (this may not be possible in a Category 1 CS)
- The block is carried out at the end of the CS once the wound dressing has been applied and prior to waking up the mother.
- Aseptic technique
- Draw up and label 2 sets of local anaesthetic (suggest 20mls of 0.35% bupivacaine for each side).
- Assemble equipment (suggested 5 or 10cm stimuplex needle depending on the size of the patient).
- With an in-plane technique pass your needle until it reaches the correct plane, aspirate and inject a few mls of local anaesthetic – you should see the planes separating. Continue to inject the rest of the solution.
- Remember intraoperative analgesic requirements are the same and immediate postoperative analgesic requirements are often significant.
11.4 Ultrasonic view of Location of Transverse Abdominis Plane Block

11.5 Drawing of Transverse Section through Abdominal Wall at the Level of the Lumbar Triangle of Petit

Figure 1. Line drawing of a transverse section through the abdominal wall at the level of the lumbar triangle of Petit (TOP).
12. REFERENCES


2. NICE Guidelines: CG132; Caesarean Section Pathway 2011


