Pain relief for labour

We offer epidural analgesia for relief of pain associated with labour and assisted delivery. Epidurals are described in detail below.

As a matter of routine, we do not offer the combined spinal/epidural technique in labour. We do however aim for sensory and not motor loss, allowing mobility in the bed.

We do not recommend the use of spinal analgesia for pain relief. Conduct of spinal analgesia is contraindicated in places where full monitoring and resuscitation facilities are not available. The risks associated with spinal blockade outside theatre are too high.

Epidural analgesia – general considerations

Response time

We offer a 24-hour ‘on-demand’ service for pain relief in labour.

The relevant professional standard is:

Where a 24-hour epidural service is offered, the time from the anaesthetist being informed about an epidural until being able to attend the mother should not normally exceed 30 minutes, and must be within one hour except in exceptional circumstances.

You must attend promptly. If you anticipate that the response time will exceed 30 minutes you should inform the midwife and consider calling the senior resident anaesthetist for assistance. Calls to the senior resident anaesthetist must be made by you or on your express instruction. Do not delay epidural analgesia unnecessarily when there are nearby anaesthetists who could help.

Indications

The most common indication for epidural analgesia is maternal request but there may be instances when epidural analgesia is preferred for medical reasons. These include:

- Pre-eclampsia
- Multiple pregnancy.
- Breech presentation for vaginal delivery.
- Diabetes mellitus.
- Respiratory disease e.g. asthma.
- Cardiovascular disease.
- Sickle cell disease.
- Premature labour.
- Prolonged labour.
- Intrauterine growth retardation.
- Intrauterine death
- Anticipated instrumental delivery.

Contraindications

- Unwilling patient.
- Coagulopathy or anticoagulation
- Local sepsis at the epidural site.
- Septicaemia as evidenced by pyrexia (above 37.5°C or if symptomatic) unless the cause is known (e.g. Cervagem pessaries).
- Raised intracranial pressure (not benign intracranial hypertension).
- Uncorrected hypovolaemia.
- Fetal distress until fetal blood sample performed or obstetric confirmation given.
- Inadequate staff to look after the mother.

Relative contraindications (discuss with a more senior anaesthetist)

- Technical difficulties e.g. previous back surgery, kyphoscoliosis, and gross obesity.
- Neurological disorders.
- Potential severe haemorrhage e.g. placenta praevia.

A consultant anaesthetist should have seen women with complex medical disorders antenatally, following which a plan is made and recorded in the medical case notes. Find the plan and follow it.

Desirable block

You should aim to relieve the pain of labour:

- For humane reasons of itself.
- To reduce maternal anxiety, especially fear of the next pain.
- To reduce the severe physiological stress for mother and fetus that follows pain.

You should aim to avoid:

- Gross motor blockade, unless specifically indicated.
- Complete sensory loss, which interferes with the mother's ability to be a full partner in the delivery of her child.

The therapeutic target is bilateral sensory block to T10.
The ideal block relieves that component of pain for which she sought relief in the first place, and no more.

**Aortocaval compression**

Avoid aortocaval compression. Patients with epidurals are nursed in full lateral position, supine with an obstetric wedge, or sitting up more than 30 degrees.

**Epidural analgesia and the progress of labour**

This has been the subject of much anxiety. However, it is possible to come to a modern consensus position [ii].

- Epidural analgesia does not cause an increase in the caesarean section rate.
- Epidural analgesia may cause an increase in the rate of instrumental deliveries. This may be through the prolongation of the second stage of labour or it may be because it reduces concerns about the pain of instrumental delivery and thus biases obstetricians to the use of instruments.
- There is no evidence to support the withdrawal of the epidural in the second stage.
- It may be possible to mitigate the impact on the rate of obstetric intervention by keeping the dose of local anaesthetic to the minimum amount required to provide analgesia.

**Technique for epidural analgesia in labour**

**Fluid infusions**

Administration of a fluid preload is traditional but is not necessary to prevent hypotension, particularly with low dose epidurals [iii]. Preload may decrease uterine activity [iv]. We suggest a preload of 500 mL for women who have fasted or those with fetal compromise [v]. Otherwise it may be most convenient to flush the cannula and attach fluids when the block has been performed.

There are few indications for intravenous fluids other than Hartmann’s solution to be used in labour but examples are:

- Dextrose and insulin, in the insulin dependent diabetic patient (use Hartmann’s solution in addition).
- 0.9% saline in those with homozygous sickle cell disease.
- Rarely, 20% albumin in severe pre-eclampsia.

Maternal ketosis is an indication for fluid rehydration with isotonic fluids, not an indication for the administration of glucose in labour.

**Performing the block**

1. When an epidural is requested you should ascertain that there are no contraindications to epidural analgesia, explain the procedure briefly to the mother and obtain verbal consent consistent with the mother’s condition
2. Note the blood pressure prior to performing the epidural.
3. Insert an intravenous cannula (14 SWG or 16 SWG) with lidocaine analgesia and take venous bloods if needed. When appropriate, attach an intravenous infusion of Hartmann’s solution (1000 mL) set running at a rate to go in over about eight hours.
4. The patient should then be positioned either in the left lateral or sitting positions according to the anaesthetist and mother’s preferences. The epidural should be sited using the technique with which you practice safely and effectively.
5. Do not use a green 21 SWG needle to give subcutaneous analgesia – it is 40 mm long. Both intradermal and subcutaneous infiltration can be given with the same blue 23 SWG needle (25 mm long).
6. Loss of resistance to saline is the recommended technique, which you should learn and use. The use of air is associated with an increased rate of accidental dural puncture, ascending back pain, intense and immediate headache, convulsions, patchy block and air embolus [vi].
7. You should secure the catheter in place leaving 3-4 cm in the epidural space; 4 cm is preferred. Use a small amount of Opsite spray and allow drying before fixing the covering large Opsite dressing, without using swabs. This is secure and allows full inspection of the site. The standard order is for packs with Lockit clamps and you should use these to reduce catheter migration [vii]. Take care not to trap the catheter under the clip as this will lead to total obstruction. It is good practice to inject a little of the test dose with the clamp down but without the dressings and tapes.
8. Maintain fetal monitoring using cardiotocography during the insertion of the epidural.
9. Avoid supine hypotension.
10. If you have difficulty siting the epidural, call for help. Do not persist in fruitless attempts.

**Test doses**

11. Make time and give time for test doses to work. Make time by injecting early; do not delay with lots of careful sticking down instead of giving the test dose. Give time by waiting the recommended periods.
12. Maintain maternal and fetal monitoring during the test dose.
13. See below for recommended test doses. The doses give the same amount of local anaesthetic as should produce subarachnoid block, and will reliably do so [viii]. Allow time for it to gain its full effect and to ascertain whether the catheter has inadvertently been placed in the subarachnoid space or a blood vessel. If the patient can then plantar flex her feet with normal power the test dose has not been accidentally injected intrathecally.
14. Although the catheter should always be aspirated prior to administering a dose, the non-appearance of blood does not exclude intravenous catheter placement.
Two strategies for epidural analgesia

Traditionally, epidurals are associated with complications due to high doses of neuraxial local anaesthetic, such as higher rates of instrumental delivery, muscular weakness and lower body numbness. These may be avoided through the use of low-dose epidurals (the evidence is not clear on the reduction of instrumental delivery rates), in combination with neuraxial opioids. Ideally then, traditional plain 0.25% bupivacaine would be reserved for exceptional use when indicated to resolve a particular problem.

Pragmatically, actual administration of prescribed drugs has to be taken into account. A theoretically superior strategy may fail in practice. Most of the midwives are able to top up an epidural but usually only with undiluted single-drug local anaesthetic (there is no legal or procedural prohibition on midwives using the mixed ampoules). Consequently, we suggest two strategies to guide epidural analgesia.

Infusion dosing.

1. This is indicated for women in earlier labour who do not currently have strong pain.
2. Obtain two premixed bupivacaine and fentanyl 10 mL ampoules and one prefilled 50 mL syringe. They all contain bupivacaine 1 mg mL\(^{-1}\) and fentanyl 2 µg mL\(^{-1}\). Use one 10 mL ampoule for the test dose (ten minutes needed) and a further 10 mL ampoule to establish the block [ix]. Attach the syringe using a yellow infusion line (do not use a clear line as it could be confused with a Syntocinon or other intravenous infusion) and give a further 10 mL bolus if the epidural has not produced satisfactory pain relief after ten minutes. Then commence the infusion at 10 mL h\(^{-1}\), and prescribe an allowed range of 0–16 mL h\(^{-1}\). You may need to give further 10 mL bolus doses from the pump if the first 20 mL has not satisfied the patient, to a total of 40 mL. This would be indicated so long as the initial dosing has some effect but does not produce maternal satisfaction. Generally, breakthrough pain is better treated with a further bolus than with an increase in the infusion rate.

Bolus dosing.

3. This is indicated for women in later labour who have strong pain that needs relieving, particularly if that pain extends into sacral areas.
4. Use 3 mL lidocaine 2% (without adrenaline) for the test dose – five minutes needed. The first dose to establish the block is 20 mg bupivacaine (8 mL 0.25% bupivacaine) and 100 µg fentanyl (2 mL) made up to 20 mL with saline 0.9%. Subsequent top-ups are 10 mL bupivacaine 0.25% given in divided doses (not exceeding 15 mg bupivacaine per 5 minutes) immediately on the return of pain sensation, and usually the fentanyl dose should be repeated after three hours or so. This method is useful for mothers who are close to delivery and who will not receive large mass amounts of local anaesthetic.

Be prepared to switch between the two strategies if necessary in order to deliver satisfactory pain relief. Whichever method of administration is used, keep the bupivacaine dose within 2 mg kg\(^{-1}\) in any four-hour period.

Documentation and records

The epidural chart is on the back of the Obstetric Anaesthesia Procedure Record. You should record details of the technique used and the prescription made. File the chart in the patient’s medical record, under Anaesthesia.

Prescriptions

You should sign the boxes on the epidural chart to prescribe subsequent doses to be administered by the midwife.

The standard prescription for low dose bolus is:

| 10 mL – bupivacaine 10mg + fentanyl 20 µg – in sitting or lateral position for analgesia in labour | 40 minutes |

The standard prescription for a stronger bupivacaine bolus is:

| 10 mL 0.25% bupivacaine (25 mg total) – in sitting or lateral position for analgesia in labour | one hour |

You should also allow for instrumental delivery in the delivery room:

| 10 mL 0.5% bupivacaine (50 mg total) – in sitting or lateral position for analgesia in assisted delivery | once only |

If the patient is to receive an infusion:

- Sign the infusion line also and give a dose range (suggested 0–16 mL h\(^{-1}\)).
- Prescribe the infusion as a p.r.n. syringe on the drug chart. Without this the midwives cannot change the syringes.

During topping-up the blood pressure should be checked at 0, 5 and 10 minutes. Blood pressure readings and the efficacy of the first top-up should be recorded on the epidural chart. If there have been no problems, subsequent top-ups may be administered by the midwife to your prescription. The midwives will top up when analgesia is below T10 on assessment.

Bupivacaine should not be given in concentrations exceeding 0.25% during the first stage of labour unless specifically indicated. Do not allow the bupivacaine dose to exceed 2 mg kg\(^{-1}\) in a four-hour period.

Inadequate epidural analgesia

Many problems can be anticipated and resolved through regular review of the patient and regular block assessment. You will need to keep in close liaison with the midwife caring for the mother.

If using an infusion, less serious problems can be treated with a 5 mL bolus from the pump.

Missed segments

1. You should consider the diagnosis when there is persistent pain in one place following epidural administration.
2. Inspect the insertion site.
3. Lay the patient on the unblocked side and give a further top-up of 8 mL 1% lidocaine, with up to 100 µg fentanyl (do not exceed 100 µg fentanyl in the first two hours and then 100 µg fentanyl in each four hours). If this is not effective pull out the catheter by 1 cm or until only 3 cm is in the space and top up again.

4. Do not persist in trying to rescue an inadequate epidural. Discuss the situation with the mother and propose resiting the catheter as an early option. Record catheter resittings on the procedure record.

Perineal and suprapubic pain
This can be difficult to treat particularly if the fetus is in the occipito-posterior position. Bolus using 0.25% bupivacaine with up to 50 µg fentanyl. This may be repeated (do not exceed 100 µg fentanyl in the first two hours and then 100 µg fentanyl in each four hours). The mother should be in the left lateral position for the bolus.

If this does not work then consider resiting the epidural lower down the spine.

Problematic epidurals

Unusually deep epidural space
Extra long epidural needles, required in about 1:1,000 epidurals, are available: ask the ODP.

Bloody taps
1. Flush the cannula and withdraw until no further blood appears on aspiration.
2. If there is a sufficient amount of catheter in the epidural space (2.5 to 3 cm) proceed carefully with the test dose.
3. Failing this, resite the epidural either in the same space or another.
4. Two bloody taps in the same space indicate choosing another space.
5. Always aspirate before giving any top-up.

Unintentional dural puncture (‘dural tap’)
These guidelines relate to the management of women in whom inadvertent puncture of the dura has occurred during insertion of an epidural for analgesia or surgery. There are two alternative strategies from which you must choose. You should make the choice in consultation with more senior anaesthetists as described, and after as much discussion with the mother as is appropriate.

5. If the Tuohy needle has caused the tap, consider giving a single bolus of 1.0 mL bupivacaine 0.25% (2.5 mg) with or without 0.5 mL fentanyl (25µg). Put the stilette back into the Tuohy needle while you draw up the spinal injection. You must use a filter needle. You may give this single dose without calling senior help so long as you are a specialist registrar of year three or above.

First alternative: resite the epidural
1. Once dural tap has occurred, you should usually site an epidural in an alternative lumbar interspace.
2. In the event of successive dural taps, abandon epidural analgesia and anaesthesia and consider alternative methods including repeated subarachnoid block as below.
3. On resiting the epidural, you should administer a test dose and first top-up dose of local anaesthetic. When you are happy that satisfactory analgesia has resulted and that the distribution of the block, determined by cutaneous testing, is appropriate for the volume of anaesthetic given, the epidural may continue. All bolus top-ups must be administered by an anaesthetist. An acceptable alternative is to use a dilute infusion (no more than bupivacaine 1 mg mL$^{-1}$) with hourly monitoring by an anaesthetist.
4. The prescription for local anaesthetic should limit each increment of a top-up to no more than 12.5 mg bupivacaine (12.5 mL 0.1% or 5 mL 0.25%), each increment being separated by at least 5 minutes. Explicit instructions must be recorded indicating when the anaesthetist should be called:
   - If hypotension occurs.
   - If pain disappears too quickly and after a small volume.
   - If the mother complains of any difficulty with breathing or swallowing.

Second alternative: use repeated bolus subarachnoid block

Do not drain more than a few drops of cerebrospinal fluid.
1. Alternatively, deliberately place the catheter in the subarachnoid space, inserted 2 cm into the subarachnoid space, secure it and label it as a subarachnoid catheter. Then proceed as below for a catheter tap.
2. If the catheter causes the dural tap, secure it and label it without giving any drugs. You must inform the consultant anaesthetist on call and the senior resident anaesthetist before administering a subarachnoid dose.
3. Remember to fit the particle filter. Check that the intravenous infusion is running and that ephedrine is ready to administer, and that the patient is in the left lateral or supine wedged position.
4. Administer 1 mL bupivacaine 0.25% (2.5 mg) (with fentanyl 25 µg if this is the first dose) and flush with 1.5 mL 0.9% saline. Achieve satisfactory analgesia (usually S5 to T10) with further flushed increments of 0.5 mL bupivacaine 0.25% at 5-minute intervals with careful monitoring.
5. The maximum subarachnoid dose of fentanyl over any time period is 25 µg.
6. You must administer all doses and under no circumstances whatsoever are you allowed to leave the labour ward while a subarachnoid catheter technique is in progress.
7. The patient must not be allowed to sit up. This may result in a high block.
8. For caesarean section or other operative procedures except as below, with the patient in a lateral or wedged supine position, administer 0.5 mL to 1.0 mL increments of hyperbaric bupivacaine 0.5% until surgical
anaesthesia is achieved. The dose should be adjusted to the existing block. The maximum dose is 4.0 mL bupivacaine and fentanyl may not be given.

9. For outlet forceps delivery 1.0 mL to 2.0 mL hyperbaric bupivacaine 0.5% should be used in the sitting position. Fentanyl may not be given.

Delivery and the postnatal period

Once the mother is comfortable, an explanation of the events that have occurred and the implications for her should be given and recorded in the notes. Make a clear plan of action and record it. Communicate with the midwives and the obstetricians.

It is not necessary for the mother to lie on her side throughout labour; she may sit up if she wishes to. Elective instrumental delivery is not specifically indicated following dural tap, although long and strenuous pushing should be avoided.

The duty anaesthetist should review the mother twice daily and advise on further action, including epidural blood patch or NSAIDs, which may be necessary should the mother develop a persistent post-dural puncture headache.

See page [Error! Bookmark not defined.] for the diagnosis and management of post-dural puncture headache.

Hypotension and epidural block

Hypotension is defined as a decrease in systolic blood pressure by 20% from the initial reading and is often accompanied by symptoms of dizziness and nausea in the mother. It is accentuated by aortocaval compression or hypovolaemia from whatever cause (e.g. dehydration, blood loss). This guideline is appropriate in the case where a metaraminol infusion is not already in progress during the establishment of regional anaesthesia.

On making the diagnosis you should:
1. Administer supplemental oxygen.
2. Place the mother in the left lateral position.
3. Run in fluids appropriate to the pulse rate and blood pressure.
4. If she is still hypotensive, administer ephedrine boluses intravenously, starting with 6 mg.
5. Notify the midwife.
6. Check the block level (motor and sensory) and seek other causes of hypotension.
6. Do not use metaraminol infusions outside the maternity theatres.

Total spinal block or high block

See page [Error! Bookmark not defined.]

Subdural block

1. This is indicated by the following signs:
   • The block spreading high over 20-30 minutes, sometimes to cervical dermatomes.
   • Nasal stuffiness and Horner’s Syndrome.
   • Patchy sensory block and sacral sparing.
   • Minimal motor block.
   • Relative maintenance of blood pressure.
2. Respiratory embarrassment may indicate airway support and mechanical ventilation, as for total spinal anaesthesia.
3. Subdural block is due to the separation of the arachnoid mater from the dura mater and is dangerous because a bolus injection down the catheter may rupture the arachnoid and produce a subarachnoid block.
4. You should inform the senior resident anaesthetist and remove the ‘epidural’ catheter. Resite it at a different place.
5. You should administer all further epidural doses, cautiously and with vigilance.
6. In the event that spinal anaesthesia is needed, reduce the dose of bupivacaine by one third unless the effects of the subdural block have completely disappeared. Inform the senior resident anaesthetist prior to doing the spinal anaesthetic.

