Epidural – Standard procedure for Anaesthetists including:

Midwifery care of a woman with an epidural

Anaesthetic management of Dural Puncture during epidural insertion

Midwifery management of dural puncture

Overview: The aim of an epidural for labour is to provide adequate analgesia without significant side effects. However, performing an epidural will turn any low risk labour into a potentially high risk one. Any epidural can cause life threatening side effects.

- After a woman requests an epidural for labour a decision should be made as to whether this is appropriate.
- The woman should be given the opportunity to read the epidural information sheet which is present in each delivery room.
- The midwife in charge of labour ward should be informed to be certain that there are sufficient staff to care for a woman with an epidural.
- An epidural should not be commenced unless there will be one-to-one care available.
- If at any time during the labour this cannot be provided the consultant anaesthetist should be informed before any further top-up doses are given.
- The anaesthetist will ensure there is a midwife to care for the mother and that a CTG has been performed for 10 – 20 minutes prior to insertion.
- If there are any non-reassuring aspects of the fetal heart rate or it is not possible to record one due to maternal discomfort ensure that the obstetric registrar is aware of the request for analgesia in order that an assessment of fetal wellbeing can be made.
- The anaesthetist will introduce themselves and take a brief history to be certain that there are no contraindications. They will check through the notes to see if the woman has seen an anaesthetist antenatally. There will then be a plan for analgesia and anaesthesia. They will explain the procedure and the potential problems and complications.
• Verbal consent will then be obtained and recorded in the notes.

**Absolute contraindications:**

• Patient refusal
• Infection at site of insertion
• Obvious sepsis associated with cardiovascular instability or reduced level of consciousness
• Clotting disorders – coagulopathy, thrombocytopenia, heparin therapy (if within the specified danger period after a dose). Please refer to guideline on regional techniques in presence of clotting disorders
• Raised intracranial pressure
• Known spina bifida associated with gross abnormality of the lumbar spine
• Known allergy to amide local anaesthetic solutions or opioids.

There are a number of other conditions where senior help should be sought and the woman should be informed of increased difficulty:

• Previous spinal surgery (especially for correction of scoliosis)
• Prolapsed intervertebral discs
• Scoliosis
• Morbid obesity – BMI above 35. (Women with a BMI above 40 should have been seen in the antenatal clinic.)
• Existing neurological disorders.

The following points should be discussed and noted on the epidural chart (if the woman is very distressed the first two at least should be stressed)

• Patchy block or failure
• 1/100 chance of headache
• Technique involved
• Change in sensation
• Hypotension
• **Possible** effect on labour and increased risk of instrumental delivery
• Need for urinary catheter during labour
• Numbness & heavy legs
• Bruised back
• Use of fentanyl
Epidural – standard procedure for anaesthetists (combined)

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- Nausea
- Risk of neurological damage (1:12,000)
- Document this in the notes on the epidural chart
- There are written advice leaflets, which the mother should be given to read (preferably during pregnancy or early in labour)

Midwifery tasks pre-procedure

- A 20 minute CTG should be performed prior to the insertion of an epidural
- Site venflon (at least 16 gauge) and commence an intravenous infusion of Plasma-Lyte 148. This should run freely but can be discontinued but not disconnected.
- Record vital signs
- Check blood results are available in women with significant PET i.e. platelets
- If the labour ward anaesthetist (142) is unable to attend the labour ward co-ordinator should liaise with the duty labour ward consultant anaesthetist (149) or the theatre anaesthetist (147). Ideally an anaesthetist should attend within 30 minutes of a request. Please inform the labour ward anaesthetist if any other anaesthetist has been contacted.
- During the procedure the midwife should assist the anaesthetist when necessary.

Procedure

- Standard equipment: Portex minipack, RBH dressing pack
- Performing a regional technique is a sterile procedure;
  - The anaesthetist should scrub, wear a gown, hat, gloves and mask and prepare the skin with Chlorhexidine 0.5% in spirit
- The anaesthetist will site the epidural using careful sterile technique.
- The catheter should never be withdrawn through the Tuohy needle as this may cause the catheter to be sheared off and left within the epidural space.
- In the event of a dural puncture with either needle or catheter please refer to the dural puncture guideline
- If a bloody tap is performed with the needle it should be removed and the insertion repeated.
- If blood appears down the catheter it should be withdrawn and flushed with saline until no blood can be aspirated. If there is then less than 3 cm of catheter in the epidural space it should be removed completely and the procedure repeated
- If you are unable to site the epidural within 20 minutes please ask the midwife to contact the 3rd on call (bleep 147) or the consultant (149: Monday to Friday 8 - 6). Do not keep on with multiple attempts. Allow the woman a chance to sit up and catch her breath
If there has been evidence of a non-reassuring CTG prior to commencing epidural placement attempts should be made to ‘listen in’ to the fetal heart every 5 minutes.

**What to use for the first dose;**
- 10ml 0.1% bupivacaine + 2mg/ml fentanyl
- The aim is to identify either intrathecal or intravascular placement and to be suspicious of this possibility with every dose.

**Test dose procedure**
- During injection of the first dose of local anaesthetic solution directly question the woman about any strange sensations. Ask about funny tastes in the mouth or warmth in her bottom.
- Ask about the intensity of the subsequent contractions. There should be no change in the next two or three.
- Ask about ability to move legs.
- Measure blood pressure, pulse rate and fetal heart rate. If there is a precipitous change in any of these have a high level of suspicion of an intrathecal placement. Do not give any further doses
- Wait at least 5 minutes, preferably 10, before giving any further local anaesthetic solution.
- Once the epidural is effective enter details in the record book and on the audit computer.

**What to prescribe for top-ups;**
- Low dose: 0.1% bupivacaine + 2mg/ml fentanyl 10ml + 10ml, hourly prn during labour
- 0.25% bupivacaine 4ml + 6ml once only for instrumental delivery

Do not prescribe 0.5% Bupivacaine. This may cause profound falls in blood pressure.
**Midwifery care of a woman with an epidural**

**Immediate**

- At no time should the woman be left unaccompanied. A midwife should remain present in the room for at least 20 minutes after each top-up dose.
- If at any time it becomes impossible to provide one-to-one midwifery care the consultant anaesthetist should be informed and no further doses administered.
- Continuous fetal monitoring with CTG – may be with abdominal transducer or FSE
- Record pulse, blood pressure and fetal heart at 5 minute intervals for 20 minutes
- Document findings on the epidural chart
- Efficacy of the epidural in providing analgesia should be noted on the chart as should any actions taken
- Inform anaesthetist of recordings
- The midwives will administer up to 20 ml of the 0.1% Bupivacaine plus 2 mcg/ml fentanyl for top-ups as detailed before. If no top-ups are required after this, observations should all be done hourly.

**Care in Labour**

- Continuous fetal monitoring with CTG until delivery
- Record pulse and blood pressure on the partogram
- Monitor effectiveness of the epidural and inform the anaesthetist of any problems
- Bladder care – an epidural will prevent the ability to pass urine. As pelvic floor tone is progressively lost during labour with repeated 'top-ups' the bladder will become enlarged. This will delay the progress of labour. The bladder care guideline states that urinary catheterisation should be performed at the same time as the epidural is instituted. It can be performed at the time of the next vaginal examination provided this is within two hours.
- At no time should the woman be allowed to lie fully supine. She should be sitting fully upright or in the full lateral position. If a vaginal examination is performed a wedge should be used to ensure uterine displacement but the woman should be in this position for the shortest possible time.
- Top-ups may be given as prescribed by a midwife who holds a "top-up" certificate
- Pressure area care: Women with functioning epidurals are at risk of developing pressure ulcers. This risk should be minimised by encouraging changes in the woman’s position, moving the toco monitoring belts and by ensuring that she is not sitting on wet or creased sheets. Make sure that the Waterlow score is updated at the point of insertion to reflect the neurological impairment when an epidural is sited.
Top-up by Midwife
- Check the prescription in the epidural record is complete
- Check pre-loaded low dose syringe (bupivacaine 0.1 % & fentanyl 2mgs) with a second midwife
- Check the position of the catheter
- Administer 10mls low dose mix when the patient is contraction free
- After 5 minutes check the pulse, blood pressure and fetal heart rate and record in top-up chart
- Assess any immediate change in power in the legs, improvement in pain relief or warmth in the perineum
- Administer the remaining 10ml of low dose mix
- Record pulse, blood pressure and fetal heart rate at 5 minute intervals for 20 minutes
- Assess efficacy of top-up. Inform anaesthetist if analgesia is inadequate after half an hour.
- Document top-up and sign the chart

Post Delivery - Epidural care
- Remove the dressing
- Remove the epidural catheter and check that it is complete by looking for the blue tip
- Apply dressing spray and a plaster
- Document in the notes that the catheter is complete. Complete the documentation on the epidural page.

Urinary Catheter Care –see Bladder care guideline
- Consider removing the catheter when the patient regains full sensation and is able to perform a ‘pelvic floor exercise’
- Advise the patient on voiding urine – to report to midwife when she empties her bladder for the first time
- Advise the patient to note if she is passing large or small amounts of urine
- If passing small amounts examine her abdomen to palpate for a distended bladder due to retention. The small volumes represent overflow incontinence. Consider re-catheterisation
- Inform the medical team of any urinary problems

Mobilisation
- The patient may stand when she is able to perform a straight leg raise with both legs. If she is then able to do a deep knee bend she may mobilise with assistance
- Assist to the shower if she wants one
Observations
- Record temperature, pulse, blood pressure
- Document when the patient passes urine

Transfer to the postnatal ward
- Ensure that the ward staff are aware that the patient has had an epidural and whether or not she has voided urine since delivery
- Inform staff if there is still a urinary catheter in place

Anaesthetic care
Do not rely on the midwives to have the time to tell you about ineffective epidurals. Keep an eye on the board and try to regularly review any women with epidurals, particularly those who are making slow progress. They may be heading for instrumental deliveries or Caesarean sections, so the anaesthetist needs to be sure that the epidural is working.

Detection of intrathecal or intravenous placement
- 10ml 0.1% bupivacaine + 2mg/ml fentanyl
- The aim is to identify either intrathecal or intravascular placement and to be suspicious of this possibility with every dose.

Factors that will produce an exaggerated response to the above doses.
- The height of the patient: reduced stature will produce a higher block for a smaller volume
- The shape of the patient: a high BMI and particularly a large uterus, e.g. multiple pregnancy, will produce a more profound block.
- If there is any fluid in the epidural space e.g. saline or local anaesthetic. Epidural compression of the subarachnoid space will cause a higher block. In this situation the test dose should be given more cautiously. This is why the epidural top-ups are: 10 + 10 ml of 0.1% bupivacaine or 4 +6 ml of 0.25% bupivacaine.
- Any element of aortocaval compression will result in a higher level of block.
- Nature of the fluid in the epidural catheter: when giving a test dose of a small volume (2-4ml), the nature of the solution in the epidural cannula must be taken into account. If local anaesthetic has been used then a measured dose of 10mg will suffice. If saline has been used then an extra 1 ml of local anaesthetic should be injected to allow for the fact that the first ml will be saline. It is very important that the test dose has entered the epidural space and is not remaining in the catheter.
- Consider what has come out of the lower end of the catheter not what you have but in the top end.
If there is any doubt that the catheter may be subarachnoid, slower incremental top-ups given by the anaesthetist until 15 mg of bupivacaine has been given is a safer option.

Detecting intravascular placement:
Intravascular placement is more difficult to detect as a local anaesthetic dose may have little systemic effect. Different workers have tried the addition of different agents such as adrenaline but all have disadvantages.

The safest course of action is:
- Observe for blood or CSF after insertion
- Aspirate gently for blood or CSF before every injection
- Inject extremely slowly while maintaining eye and verbal contact with the mother and looking for symptoms and signs of either subarachnoid block or systemic toxicity.
- Wait 10 minutes before giving any further local anaesthetic.
- Remember the wise words in Bruce Scott's editorial about test doses "Never believe a negative one"

Management of total spinal block:
- Position patient on left side
- Administer O2 with bag and mask
- Call obstetric registrar/consultant and consultant anaesthetist as early as possible
- Assistant performs cricoid pressure if patient not protecting her airway
- Give IV fluids rapidly
- Give phenylephrine and atropine or adrenaline as indicated.
- Monitor BP, pulse and SaO2
- Intubate patient if paralysis of respiratory muscles occurs
- If not already delivered an emergency LSCS will be likely
- Remember to keep her asleep until respiration adequate and extubation possible
- Liaise with ICU.

How to improve an epidural which is not fully effective
It is important to be kind however disappointed and frustrated you are; remember it is worse for the mother.
- Ask the mother where she can still feel pain
- Check the level with ethyl chloride or ice and document
- Has the epidural ever worked?
- Is the problem that labour has progressed to involve the sacral segments?
- Has the catheter moved?
- Examine the epidural site; is the catheter still in place? Is it leaking?
- If you are satisfied that the catheter has not shifted then you need to determine whether the epidural is still functioning. In order to do this, feel the mother's feet?

If both are warm:
- Epidural is likely to still be functioning, then possibilities to consider are:
  - Full bladder? - suggest catheterisation
  - Suprapubic pain - be wary of uterine scar pain in the mother with a previous section.
  - Rectal pressure - common with OP position and difficult to get rid of. Try 50mcg of fentanyl in 5ml saline via the epidural.

If one is cold and clammy:
- give top-up with mother lying on the cold side
- Consider with drawing the catheter 1cm.

If these efforts are unsuccessful then re-site.
- If both are cold and clammy: give top-up and reassess.

If no improvement then re-site.

This is especially important if the woman is likely to need an operative delivery. There is a very high rate of conversion to general anaesthesia where an inadequate block for labour.

Don’t agonise over a poor epidural. Assess the situation and the need for pain relief. If in doubt re-site it. If you know or suspect it may be difficult you should ask for more senior help.

Follow up

All women who have had an epidural must be followed up post delivery. The list of all women who have had an anaesthetic intervention can be generated from the obstetric anaesthetic database.
**Anaesthetic management of Dural Puncture during epidural insertion**

**Immediate Management**
- Re-site the epidural in an adjacent space. Consider getting more experienced help if appropriate.
- It has been recommended by some that it is worth converting the failed epidural into a spinal. Either by giving a “single shot” of local anaesthetic direct through the Tuohy needle or by placing the epidural catheter into the subarachnoid space. This could then be used for continuous analgesia by giving very judicious top ups. 1 ml of 0.1 % bupivacaine + 2 mcg/ml fentanyl (Low dose mixture), using a 2 ml syringe to measure the dose.

**N.B. The epidural catheter must be very carefully marked and all top ups must be given by the anaesthetist and very closely supervised.**

I would consider using this technique if the epidural was very necessary and/or you think it is going to be very difficult to re-site the epidural. If in doubt seek experienced help.

- Once good analgesia has been established, explain what has occurred and the planned management to the mother. Make sure that the midwife and obstetrician are fully aware.

- **ALL** top-ups must be done slowly in fractionated doses by the duty anaesthetist.
- NB. There is substantially increased incidence of unexpectedly high blocks with epidurals following dural puncture. Therefore the spread of the block must be closely monitored.

- Keep the epidural well topped up until the head is on the perineum. When it is visible allow pushing to try and achieve a normal delivery, if possible.

- If an instrumental delivery or Caesarean Section is needed top ups should be in very small incremental doses.

**Following delivery**

Make sure that there is a copy of the [Dural puncture care pathway](#) in the notes. This helps guide nursing care. Consider either of the options below.

1. Remove the epidural catheter and allow the mother to return to the ward and mobilise as normal. If she gets a headache she should be encouraged to rest as much as she needs to obtain relief. She needs daily review by anaesthetic staff to decide best management plan.

2. If the epidural was extremely difficult to site we might consider a prophylactic blood patch down the epidural cannula. This will need discussion with one of the consultant obstetric anaesthetists. If this is not possible then just treat as in 1. This would not be advisable if there had been any hint of a pyrexia or prolonged rupture of membranes.
Inform

- The patient about the future management.
- Midwives and obstetricians
- Incoming on call obstetric anaesthetist so that the patient may be reviewed daily until fit for discharge.
- Consultant obstetric anaesthetist must be informed as early as possible

Record in the notes that there has been a dural puncture. There is **Dural puncture care pathway** which should be used by the midwives to aid the nursing care of these women. It covers the following:

- Mobilisation as she feels able but if she gets a headache then she should lie flat in bed as much as she needs in order to achieve relief.
- TED stockings and heparin should be used as prophylaxis against venous thromboembolism.
- Analgesics should be prescribed and given regularly if a headache occurs. Non-steriodals or paracetamol work better than opiates in controlling dural puncture headache.
- Stool softeners should be prescribed e.g. lactulose 10 mls BD.
- Encourage her to drink especially caffeinated drinks.
- Consider an abdominal binder if the headache is relatively mild. Contact the physiotherapy department who will arrange it.
- Arrange that she has a single room.
- Daily review by the duty obstetric anaesthetist or consultant until the headache has gone. Do not allow her to go home with a headache.
- She must be treated with kindness and understanding by all staff. She will require a lot of help both for herself and with the care of her baby. It is a horrible headache and they quickly become depressed and demoralised.

Blood Patch

If the headache is severe or does not respond to conservative measures then a blood patch should be performed with full consent of the patient.

Precautions that should be taken for a blood patch.

- This must be done with an anaesthetic consultant
- Obtain consent and record in the notes
- It should be performed on the labour ward.
- The patient should be apyrexial.
- Both epiduralist and assistant should wear a hat and mask, perform a ‘surgical scrub’ and don a gown and gloves
- Once the epidural space has been located 30 mls of blood should be taken 20 mls given to the epiduralist and 10 mls put into blood culture bottles and sent immediately to bacteriology
10-20 mls of blood are injected into the epidural space slowly. Stop, if aching in her back becomes uncomfortable or painful.

Keep supine on labour ward for a minimum of one hour before allowing her to sit up.

She may return to the ward where she may mobilise gradually.

She must be reviewed the next day by the anaesthetist. If headache free she may return home. Give instructions to contact the ward if any recurrence or if she develops severe back ache, new numbness or weakness.

Please note: A dural puncture headache may take 24 - 48 hrs before it becomes apparent. It is usually frontal or occipital with or without neck pain. A cardinal feature is that it has a positional element to it. It is made worse by assuming an upright position, straining, coughing etc. and is relieved by lying down. There may be associated photophobia, nausea and muzziness of hearing. The mothers can find it debilitating and depressing.

N.B. not all headaches following delivery are necessarily caused by the anaesthetist.

**Midwifery management of dural puncture**

**Intrapartum – specific**

- All top-up epidural doses must be done by the duty anaesthetist
- The dural puncture must be noted on the unit white board and made known to the midwife in charge
- Monitor pulse, blood pressure, respiratory rate and fetal heart every five minutes for half an hour after each top-up
- Monitor the level of the epidural block using ethyl chloride spray. Report to the anaesthetist if the upper level is above T4.
- Report any difficulties in breathing
- Document all findings carefully
- Report any complaint of a headache
- The second stage should be managed according to the usual unit policy. There is no evidence that elective lift out forceps reduces the incidence of headaches.

All other care should be as for any epidural but particularly:

- Continuous fetal monitoring
- Bladder care
Post partum
There is a **Dural puncture care pathway** to assist with nursing care of these women
- Monitor Temperature, pulse, blood pressure four hourly
- Initially encourage usual mobilisation as normal
- Report complaints of headache to the anaesthetic team.
- If she develops a postural headache encourage supine bed rest
- Ensure regular analgesia
- Assistance with all activities of daily living including baby care and breast feeding
- Record in discharge letter that the patient has had a dural tap and a blood patch if relevant.
- She should be offered a follow up appointment in the anaesthetic clinic on Wednesday morning at six weeks postpartum or at a time that coincides with other hospital visits.

**Investigation of problems post-regional anaesthesia**

Did the woman have an epidural or a spinal?
Was any dyasaesthesia or paraesthesia noted on insertion?
Did she have a temperature during labour?
Did she develop a coagulopathy due to a pph or other cause?
Have her platelets been below 100 x 10^9/dL?
Has she been on Tinzaparin?
What date/time was the last dose down the epidural?
At what date/time was the spinal performed?

**Symptoms**
- Backache
- Numbness in legs or bottom
- **Weakness in legs**
- Unable to walk
- Unable to p/u
- Toilet paper feels odd

**Signs of spinal pathology**
- Tenderness over back
- Discharge from epidural site
- Pus from epidural site
- Extensive numbness in legs
- Extensive weakness in legs
- Abnormal gait
- Palpable bladder
- Reduced Perianal sensation
- Lax anal sphincter

Are symptoms getting better?
Are symptoms getting worse?
Contact:
- Consultant Obstetric Anaesthetist
- Neurologist
- Radiologist
- Consultant Anaesthetist on call
- Consultant Physician

Discuss with Radiology Consultant as to what is best imaging mode – likely to be an MRI but if not suitable myelography may be helpful.

If none of the above but any of the following present offer an appointment in the Anaesthetic Antenatal Clinic in six weeks

- Persistent numbness in feet
- Persistent weakness e.g. foot drop

If the latter offer review by physiotherapist

References:
2. Obstetric Anaesthetists Association Recommended minimum standards for obstetric anaesthesia services IJOA 1995;4:125 – 128

Author: Dr R Jones (consultant anaesthetist) May 2004
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