Dural Tap and PDPH

Accidental dural puncture may occur with the epidural needle, in which case there is at least a 75% chance of a post dural puncture headache (PDPH) developing. The dura cannot be accidentally perforated with an epidural catheter, however the catheter can penetrate the arachnoid if the epidural needle has previously damaged the dura.

Headache usually develops 12 to 24 hours postpartum. Headache immediately following a dural tap may also occur especially if air is accidentally injected into the CSF using a loss of resistance to air technique before the dural tap is actually recognised.

**Diagnosis of accidental dural puncture**

If there is any doubt whether the fluid seen flowing back through the epidural needle is CSF or saline, the table below illustrates ways that CSF can be identified. The temperature can be assessed on the back of the anaesthetist's hand (with gloves removed), and other tests can be performed using a urine dipstick.

Table: Distinguishing Normal Saline and CSF

<table>
<thead>
<tr>
<th>N/Saline</th>
<th>CSF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>Warm</td>
</tr>
<tr>
<td>Cold</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.5-8.5</td>
</tr>
<tr>
<td>5-7.5</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>Nil</td>
</tr>
<tr>
<td>+ or trace</td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>Nil</td>
</tr>
<tr>
<td>+/-</td>
<td></td>
</tr>
</tbody>
</table>

**Management of accidental dural puncture in labour**

1. Either thread the epidural catheter through the punctured dural hole and use it as a subarachnoid catheter or re-site the epidural catheter in another interspace. **If using a subarachnoid catheter please label the spinal catheter clearly.**

2. **Whichever method is chosen, the anaesthetist must give every dose of local anaesthetic.** If the epidural catheter has been re-sited, use 10 ml of low dose epidural mixture for each epidural top-up. If the epidural catheter has been placed intrathecally, use 0.5 – 2ml of low dose epidural mixture for each top-up. Remember the dead space in the catheter and filter is 1 ml.

3. Inform anaesthetic senior colleague, obstetric registrar, midwife and patient of what has occurred and document this in the notes. Counsel patient of potential problems and management.

4. If no headache is present during labour, there is no need to proceed to an elective forceps at full dilation. Pushing at full dilation can be encouraged. Otherwise, if a headache is present, forceps delivery may be advised.
NB: If an intrathecal catheter has been used for labour and Caesarean section becomes necessary, discuss intrathecal top-up dose with on-call consultant.

Remember isobaric bupivacaine injected through a multi-orifice catheter may well produce a very different block to the hyperbaric solution injected via the pencil point needle that you are used to (See CEMD 97-99)

After delivery

1. Remove epidural catheter. Do NOT infuse saline through the catheter.
2. There is some evidence that leaving an intrathecal catheter in situ for 24 hours before removal can reduce PDPH rates to 6%.
3. If no headache is present, allow the patient to mobilise. Lying flat in bed will not prevent the incidence of post-dural puncture headache.
4. If a postural headache develops, encourage oral fluid intake, high caffeine intake (Pepsi Max!), oral analgesics and bed rest.
5. Consider blood patch (20 - 30ml of the patient’s blood through an epidural needle) after 24hrs postpartum. Early blood patch may be ineffective. Blood patch via a re-sited epidural catheter may also be ineffective due to poor spread through the multi-holed epidural catheter. A blood patch should certainly not be performed simply by injecting blood (an excellent culture medium) through an original catheter which has been left in situ, because there is, theoretically, an excess risk of infection.


Blood Patch

A blood patch should be considered for any patient with symptoms of a spinal headache following a dural tap or spinal anaesthesia. Perform the blood patch more than 24 hours postpartum if possible, since an early blood patch may be ineffective.

A spinal headache is characterised by a throbbing frontal or retro-bulbar pain which is relieved by lying flat and IVC compression and worsened by sitting or standing, it may be accompanied by occipital pain, neck-ache and tinnitus. However, all sorts of neurological symptoms have been ascribed to dural tap and cured by blood patching, therefore an atypical presentation may well occur.

Procedure: preferably in evening so following hours are spent quietly:

1. Always consult an anaesthetic consultant before proceeding
2. The patient must be afebrile – otherwise do not perform a blood patch.
3. Ask the patient to pass urine and feed the baby before the procedure.
4. Patients should be brought up from the post-natal ward on their bed, preferably in the afternoon, having remained supine for 2 hours before hand.
5. Give a full explanation to the patient of the reasons for performing a blood patch. Explain that it is successful 60-70% of the time and that there may be pain referred to the leg or hip as well as back pain during and immediately after the procedure.
6. Two people are needed, scrubbed, masked and gowned. Perform an epidural as close to the original puncture site as possible, ideally one interspace below. MRI scans have shown that a blood patch spreads twice as far cranially as it does caudally and over 3 to 5 segments. Clot resolution occurs in 7 hours. When the epidural space has been found, the second operator takes 20 mls of the patient’s blood aseptically.
7. Inject 20 mls of blood slowly. Pain due to arachnoid irritation may occur, but persevere. The larger the volume the better the result. Flush the epidural needle with 2 mls of saline after the injection of blood, prior to the removal of the epidural needle. If there is any remaining blood, send for blood culture.
8. Ask the patient to lie flat for 2 hours. Then cautiously mobilise, if she wishes.
9. Check the temperature regularly for 24 hours.
10. If the headache does not resolve after a blood patch, refer to a consultant. If the headache reoccurs after an initial successful blood patch, refer to a consultant. A 2nd blood patch may be needed.

The use of a blood patch does not affect the success of a subsequent epidural block.

11. Prescribe Lactulose. Advise the patient to avoid straining, heavy lifting and the violent motion of some fairground rides, which have been known to dislodge a blood patch up to six months after it was applied!
12. Advise the patient that if the headache recurs after she has been discharged, she should contact the Delivery Suite or the on-call anaesthetist: she may telephone/bleep for advice 24 hours a day, if worried/queries.
13. Write a discharge letter to the GP