Worcestershire Acute Hospitals NHS Trust

Dural Puncture - Management of headache

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Key Amendments

Date	Amendments	Approved by
20th March 2023	Added PDPH information including diagnosis, immediate and conservative management.	B.Allen Anaesthetics and Theatre Governance/ SCSD Governance

BEST PRACTICE POINTS

All women who experience an accidental dural puncture (ADP) with an epidural needle or a post-dural puncture headache (PDPH) after spinal anaesthesia should be reviewed daily by the anaesthetic team; and follow-ups should continue until the headache resolves.

A medical history should be taken and an examination performed to exclude other possible causes of a postnatal headache. Before discharge, clear safety netting advice should be provided along with relevant contact details to patients so that they can get in back in contact should symptoms develop. Appropriate follow-up should be organised for any women who experiences ADP or PDPH.

An epidural blood patch should be considered in a patient with a persisting moderate severe headache following definite or suspected dural puncture.
The headache should be typical of a post dural puncture headache, which is relieved by lying flat.

If the diagnosis is in doubt there should be discussion with a radiologist and/or neurologist to consider MRI/CT of the head and spine to exclude other causes of headache.
Preferably 48 hours should have elapsed since the dural tap.
The patient must be apyrexial (<37.5 Celsius).
The patient should be fully informed of the risks and benefits associated with epidural blood patch.

The procedure should be performed by two anaesthetists, one of whom should be a consultant or senior SpR (see 'Technique').
The most senior anaesthetist should perform the epidural itself.
Full aseptic precautions must be taken.
Patients must remain flat for a minimum of 2 hours after the procedure.
All patients should be followed up after 3-4 hours and again the following day (by telephone if at home).

Post dural puncture headache (PDPH)

A PDPH is defined as a headache occurring within 5 days of a lumbar puncture (spinal), accidental dural puncture (ADP) or following an epidural, and its caused by cerebrospinal fluid (CSF) leakage though the dural puncture.

It is described as:

- Often a frontal occipital headache
- Usually develops at 24 48 hours after the procedure, with 90% occurring within 3 days.
- Postural worse in the upright position and eases when supine
- Associated symptoms
    - Neck stiffness
    - Photophobia
    - Tinnitus
    - Visual disturbances
    - Cranial nerve palsies

- Gutsche's test abdominal compression with the hand under the right costal margin whilst the mother is sitting may relieve the headache temporarily. This is a result of directed liver pressure leading to blood moving into epidural venous plexus and temporarily increasing epidural space pressure and pushing CSF toward the head.

The incidence of a PDPH in obstetrics is thought to be:

- 1.2 3% following a spinal
- < following an uneventful epidural
- 50 85% following an ADP epidural

A PDPH usually improves within 2 weeks, or after sealing with an epidural blood patch.

Immediate management

If accidental puncture occurs with epidural needle and CSF flows out, consider:

1.) Threading an epidural catheter through the dura into the subarachnoid space, leaving 2 3cm inside. There is no evidence that this can reduce the risk of the patient having a PDPH, but this "spinal catheter" could be used if the epidural was particularly difficult to insert. It should be clearly labelled as "and NOT EPIDURAL All top ups must be given cautiously by an anaesthetist 1 2ml 0.1% bupivacaine 2mcg/ml fentanyl

2.) Re site the epidural in an adjacent space, consider getting experienced help if appropriate.

NB. There is an increased incidence of unexpectedly high block with epidurals following dural puncture so caution and close monitoring of spread is advised.

- Inform the patient and midwife caring for the patient
- Inform the on call anaesthetist and consultant obstetric anaesthetist.

Conservative management

Aims to relieve symptoms whilst waiting for the dural tear to heal by itself usually for mild moderate symptoms.

1. Bed rest although useful to relieve symptoms is not recommended due to increased VTE risk.

2. Ensure hydration Normal hydration should be maintained, do not chase excessive hydration.

3. Simple oral analgesia regular paracetamol ibuprofen should be o ffered and continued if appropriate until headache resolution.

4. Short term opioid analgesia offered for moderate severe PDPH if simple analgesia is ineffective, long term therapy >72 hours not recommended.

5. Caffeine limited evidence exists for the use of caffeine, for 24 hours only. Oral therapy up to 300mg with a maximum suggested 900mg in 24 hours,

Epidural blood patch:

Background:
An epidural blood patch (EBP) using autologous blood, is thought to work acutely by exerting a mass effect within the epidural space, raising CSF pressure, and then by effectively 'patching' the dural tear, reducing CSF leakage and allowing regeneration of CSF within the subarachnoid space. However, the majority of clot resolution occurs by 7hrs. Success rates vary from 33% - 98% depending on the study. Overall success rates are probably in the region of 50% complete relief after 1 blood patch, and 75% complete relief after 1 or 2 EBPs. A significant remainder will have partial relief.

Indications:
A post dural puncture headache is usually benign and self -limiting. However, untreated it may last weeks or even months. In addition, a few cases of subdural haematoma have been reported. Therefore, any patient with a postural headache, after known or suspected dural tap, and in whom other causes of headache have been excluded, may be considered for an EBP, particularly if the headache is moderate or severe, is affecting a mother 's ability to perform daily activities or care for their baby.

Contraindications:
- Patient with signs of bacteraemia (e.g. temp > 37.5 Celsius and raised white cell count / C-reactive protein).
- Infection at or near the site of proposed injection.
- Coagulopathies.
- Patient refusal.

Timing:
The evidence for prophylactic blood patch is contradictory and should not be performed. Local anaesthetic in the epidural space may be anticoagulant and reduce the efficacy of the EBP.
Delaying an epidural blood patch for 48 hours after the dural tap has been associated with a higher success rate and is to be recommended.

Complications:
The main complications associated with a EBP are:

>10%:

- Backache. Backache tends to occur in 50% of patients during the procedure and over 80% report back pain in the following 24 hours. This is probably due to the pressure effect of the blood and the tracking of the injected blood into the subcutaneous tissues.
- Failure to work or recurrence of PDPH

~ 1%:

- Repeat dural tap

Rare:

- Nerve damage (temporary ~ 1:1000, permanent ~ 1: 13000)

Other rare but serious complications, limited to the occasional case reports, include:

- Epidural abcess
- Lumbovertebral syndrome
- Arachnoiditis
- Acute meningeal irritation
- Deterioration of mental status and seizures
- Subdural haematoma
- Acute exacerbation of PDPH
- Transient bradycardia.

The practice of taking blood cultures at the time of EBP or giving prophylactic antibiotics is controversial and not performed in over 50% of units in the UK. Blood is not routinely taken for cross match in this Trust.

TECHNIQUE:
Ensure that the headache is typical of a post dural puncture headache, and exclude other causes.

- Preferably wait 48hrs from the time of the dural tap.
- Ensure the patients temperature < 37.5 degrees Celsius.
- Ensure the patient has not received anticoagulant drugs
- Obtain full informed consent – in particular:
    - Success rate approximately 50% after 1 patch rising to 75% after 2.
    - Risk of repeat dural puncture
    - Risk of backache – 20 to 35% will have backache lasting at least 48hrs
    - Risk of infection
- Procedure to be carried out in theatre or the anaesthetic room.
- 2 anaesthetists (at least 1 consultant or senior SpR)
- Record temp, pulse, BP, monitor SpO2 and insert an iv cannula.
- Ideally place the patient left lateral

Full aseptic precautions for both operators

Insert Tuohy needle into the epidural space one space below or at the level of the original dural tap (blood tends to travel cephalad to a greater extent than caudad, even in the sitting position)

2nd operator to take 20mls blood, pass to 1st operator; inject slowly into the epidural space. Stop injecting if pain occurs, restarting once pain has subsided. Aim to inject as much of the 20mls as possible (success rates may be higher with higher volumes)

Flush the Tuohy needle with 0.5mls of Saline, and reinsert the stylet before withdrawing the Tuohy; this reduces the trail of blood in the subcutaneous tissues and may reduce backache and bruising afterwards.

Turn the patient on their back and maintain supine for a minimum of 2 hours, gradually sitting up over the following 2 hours. Remaining flat for at least 2 hours increases the efficacy of the blood patch The patient may then mobilise and go home.

The patient should be given the pre-printed template letter attached to the PDPH document (appendix A pages 7-8). The Pre-printed GP letter attached to PDPH follow up document (Appendix 1 pages 9-10) should be completed and given to Maternity ward clerk who will send to registered GP.

Anaesthetist to use the PDPH follow up form when assessing any post-partumm woman with a suspected PDPH. When patient discharged from Anaesthetic care/home, give completed PDPH document to Maternity ward clerk who will arranged scanning to electronic notes.

Follow up:

Advise the patient to avoid heavy lifting or straining at stool (prescribe a laxative if necessary) for 2 days.

Advise the patient to contact the resident obstetric anaesthetist (Bleep 701 via main hospital switchboard if headache returns, backache does not resolve or becomes much worse, or neurological symptoms develop e.g. motor, bladder or bowel dysfunction.

If headache persists, a second blood patch should be considered but only after consultation with Consultant Anaesthetist. Persisting headaches should be treated with a high level of suspicion and arrangements for a CT scan considered to exclude an alternative neurological cause.

Review the patient the following day (by telephone if at home) Asides safety netting and reference to Epidural discharge leaflet (Appendix 2), no further follow up is required unless patient requests.
Ongoing issues will usually require GP review and possibly Neurology outpatient review.

Appendices:

Appendix 1 - Post Dural Puncture Headache Follow Up

Appendix 2 - PNW1 Patient information after Epidural Spinal