BEST PRACTICE POINTS

1. An epidural blood patch should be considered in a patient with a persisting moderate / severe headache following definite or suspected dural puncture.

2. The headache should be typical of a post dural puncture headache, which is relieved by lying flat.

3. 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.

4. Preferably 48 hours should have elapsed since the dural tap.

5. The patient must be apyrexial (<37.5 Celsius)

6. The patient should be fully informed of the risks and benefits associated with epidural blood patch

7. The procedure should be performed by two anaesthetists, one of whom should be a consultant or senior SpR (see ‘Technique’)

8. The most senior anaesthetist should perform the epidural itself.

9. Full aseptic precautions must be taken.

10. Patients must remain flat for a minimum of 2 hours after the procedure.

11. All patients should be followed up after 3 – 4 hours and again the following day (by telephone if at home).
**EPIDURAL BLOOD PATCH**

**Background:**

An epidural blood patch was first described by Gormley in 1960, using 2-3mls of autologous blood. It 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 56% - 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.

The most recent Cochrane review states that ‘according to current evidence, clear conclusions cannot be drawn about the advantage of preventative epidural blood patch over other treatments. The use of epidural blood patch after the onset of the headache, however, showed benefit over conservative treatment.’

Despite the review concluding that ‘too few patients have been included in randomised trials to allow a reliable assessment of the potential benefits and harms of the technique’ the high success rate and low incidence of complications have established it as the definitive treatment for PDPH across the UK.

**Indications:**

A postdural 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.

**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 are:

>10%:
- Backache: Backache tends to occur in 20-35% of patients and usually lasts 48hrs, although it has been described up to 27 days. 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 abscess
- 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.
**TECHNIQUE:**

- Ensure that the headache is typical of a postdural puncture headache, and exclude other causes.
- Preferably wait 48hrs from the time of the dural tap.
- Ensure the patients temperature < 37.5 degrees Celsius.
- 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) – the most senior anaesthetist should carry out the epidural.
- Record temp, pulse, BP, monitor SpO₂ and insert an iv cannula.
- Ideally place the patient left lateral
- **Full aseptic precautions for both operators**
  - One epidural pack plus extra sterile swabs, syringes etc.
  - 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)
  - 2\textsuperscript{nd} operator to take 20mls blood, pass to 1\textsuperscript{st} 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 reinset 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. It may be easier to keep the patient and her baby on CDS for this time. The patient may then mobilise.
  - A standardised letter (in the PDPH file, kept in the anaesthetic room, Theatre A, CDS) should be sent to the patient’s GP.

**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 anaesthetist on CDS (Bleep 9035) if headache returns, backache does not resolve or becomes much worse, or neurological symptoms develop e.g. motor, bladder or bowel dysfunction.
- Review the patient after 3-4 hours, and the following day (by telephone if at home)
- Phone call follow up at 2 weeks and 10 weeks post EBP if possible

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Document all follow up information on the audit proforma, kept in the PDPH file.
Monitoring and Audit:

1. A PDPH audit proforma should be completed for all cases of known of EBP.
2. Audit forms will be collated by the lead obstetric anaesthetist, or by a nominated deputy, who will produce an annual report detailing the incidence of dural puncture / post dural puncture headache requiring epidural blood patch.
3. The report will be presented to an Anaesthetic Clinical Governance meeting on a yearly basis and / or disseminated to all consultant obstetric anaesthetists.
4. The lead obstetric anaesthetist will investigate any variations from recommended practice and an action plan will be developed to address any deficiencies if necessary.

References: