

Postpartum Epidural Complications

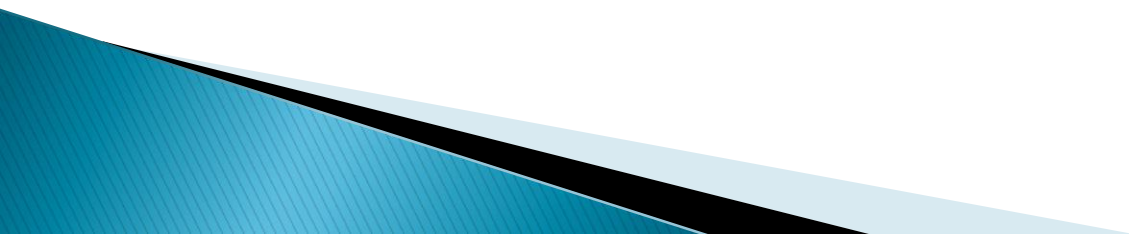
1 – urinary retention

2 – post-dural puncture headache

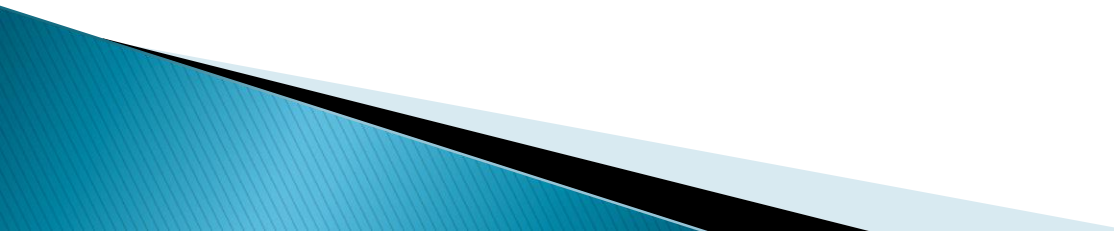
Dr. Hantoushzadeh



Urinary retention

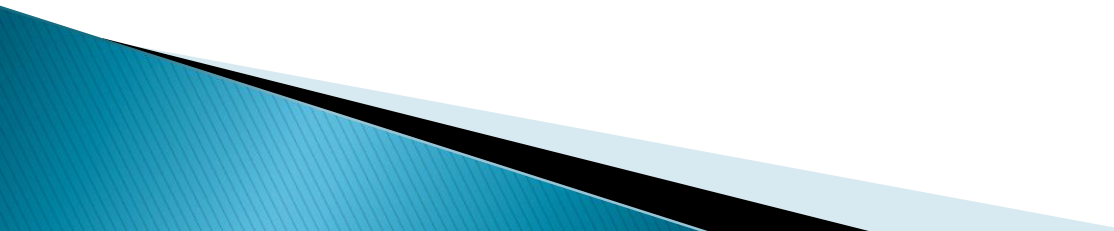


Etiology

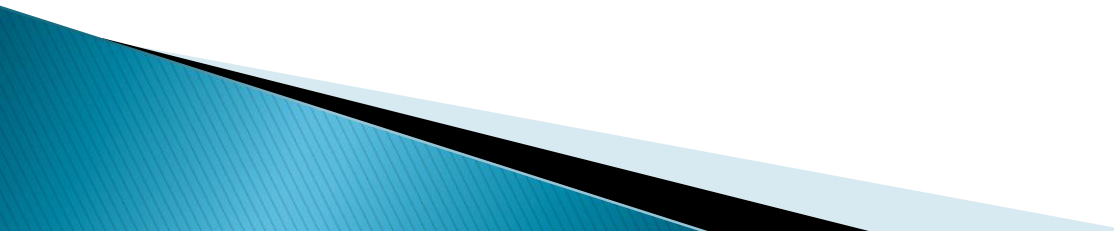
- ▶ The use of regional analgesia (for labour or surgery) may cause neurological deficits, such as impaired reflex mechanism, voluntary relaxation of the sphincter urethrae, periurethral and pelvic floor muscles, all of which can lead to micturition difficulties.
 - ▶ Detrusor muscle function and contractility impairment may result from massive over distension of the bladder.
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- ▶ **Urinary retention is a possible side effect of both neuraxial analgesia and anesthesia.**
- ▶ **Both neuraxial local anesthetics and neuraxial opioids can cause decreased ability to sense a full bladder and to void.**
- ▶ Small observational and randomized trials have reported an association between ELA and intrapartum or postpartum urinary retention, though a cause and effect relationship has not been proven, and postpartum bladder dysfunction is common in patients who have no anesthesia.
- ▶ Urinary retention may be less common with the low concentration epidural solutions that are commonly used, compared with the higher concentration solutions that were used in the past.
- ▶ In one trial, more patients randomly assigned to low dose labor analgesia (0.1% bupivacaine with fentanyl) were able to void spontaneously than those who received more concentrated epidural solutions (0.25% bupivacaine) (32 percent versus 11 percent).
- ▶ Bladder distention should be considered if patients complain of breakthrough pain during labor analgesia, and bladder catheterization should be performed as necessary.

Recommendation

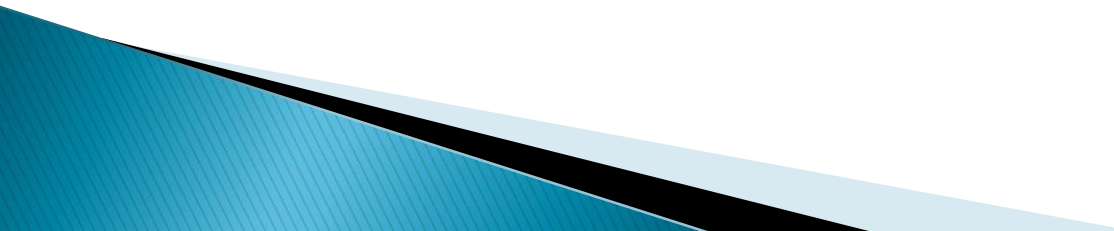
- ▶ National Institute for Health and Care Excellence recommends the urinary catheter should be removed once the women are mobile after a regional anaesthetic but no sooner than 12 hours after the last epidural top up dose
 - ▶ Royal College Obstetricians Gynaecologists recommends that 'no postoperative or post delivery patient should be left more than 6 hours without voiding or catheterisation.
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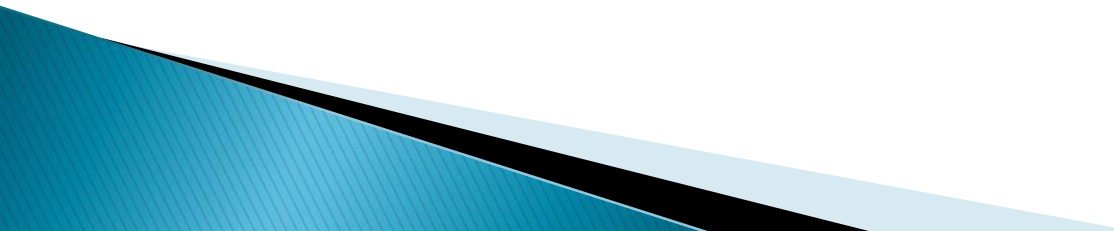
- ▶ National Institute for Health and Clinical Excellence recommends that women who have not voided by 6 hours postpartum should be encouraged to micturate using measures such as taking a warm bath or shower. If these measures are not immediately successful; bladder volume should be assessed and catheterisation considered as an urgent action.

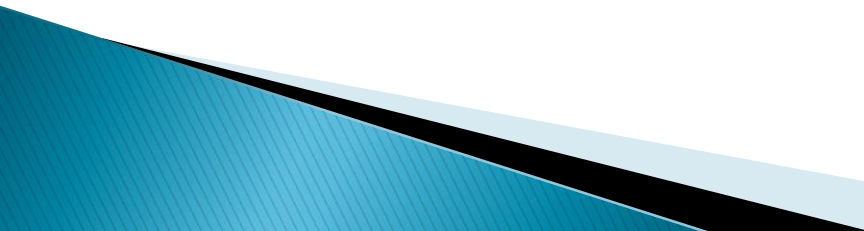
- ▶ Royal College Obstetricians Gynaecologists recommends: The timing and volume of the first void urine should be monitored and documented, as a minimum. The post void residual urine should be measured if UR is suspected.
 - ▶ Women should be offered physiotherapy directed strategies to prevent urinary incontinence.
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Key points

1. Midwives , nurse and medical staff should be aware of:
 - ▶ The risk factors associated with overt and covert urinary retention
 - ▶ Women with preexisting voiding difficulties
2. All women should be closely monitored and encouraged to void within four to six hours postdelivery or removal of the urinary catheter as early identification is the key to management of urinary retention.

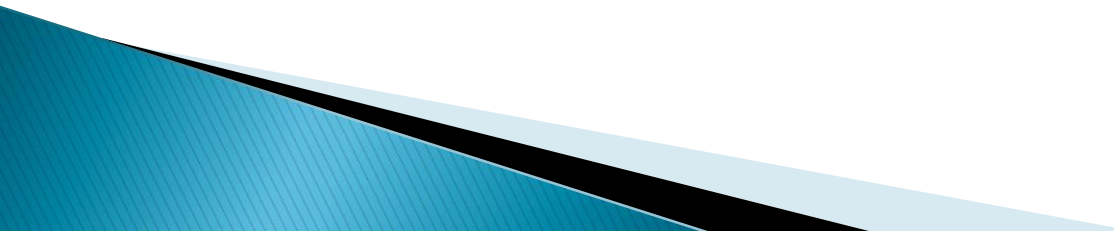
3. The timing of the first two voids post delivery or removal of the catheter should be recorded. It is recommended that the first two volumes of urine passed are measured
 4. Symptoms of voiding dysfunction should be treated with conservative measures, which includes advice on how to manage difficulty emptying the bladder
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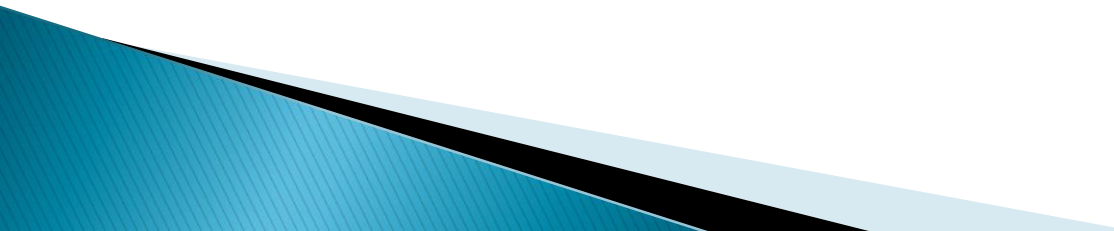
5. Ensure adequate pain relief is given and check the perineum in obstetric patients for trauma.
 6. Postoperative or post delivery women should not be left more than six hours without voiding and, if unable to void spontaneously, urinary retention should be suspected and the abdomen palpated for a distended bladder.
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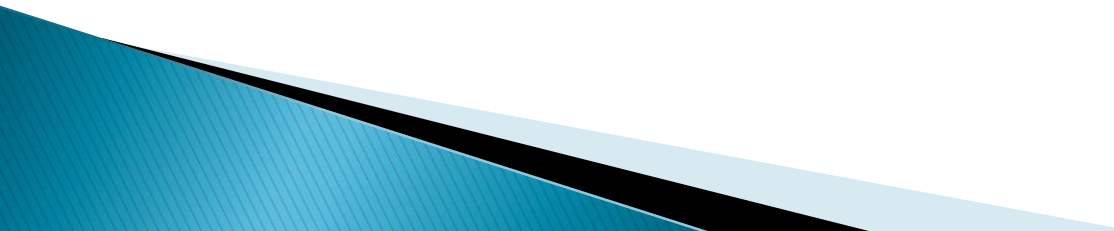
7. Confirmation of retention should be made by a bladder scan or by catheterization and the residual urine volume measured
 8. All staff performing bladder ultrasound assessments should do so only after completing competency based training.
 9. Measurement of residual urine should be made with a size 12–14 single use urinary catheter, ideally within five minutes of bladder emptying to accurately measure the post void residual. If there is a time delay of more than 15 minutes it will not be an accurate post void residual.
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10. Once the catheter is in situ, allow the bladder to drain for up to 10 minutes or until the urine stops flowing. Use gravity to assist drainage by keeping the catheter below the level of the bladder and without kinks in the tube..

9. The catheter should be removed once the woman is mobile and preferably during the morning hours after 6 am to facilitate the measurement of first two voids.



10. On insertion of an indwelling catheter, a specimen of urine should be obtained and screened for Microbiology
 11. Fluid intake and output charts must be completed for women with urinary retention, and each woman should be encouraged to drink for thirst up to two litres (2.7 litres if breastfeeding) of fluid in a 24 hour period.
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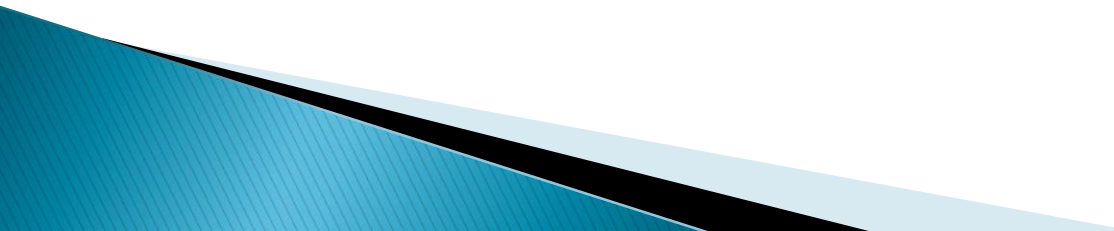
14. Women who have ongoing voiding difficulties should be educated in the use of self-intermittent catheterisation (SIC).
 15. Women diagnosed with urinary retention must be referred promptly to the physiotherapist/bladder care nurse/midwife for advice and support
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16. All women diagnosed with urinary retention who require SIC must receive a outpatient follow-up appointment with the obstetrician within two weeks. Women with ongoing voiding dysfunction should be referred to a Urogynaecologist or Urologist and bladder care support nurse if required.

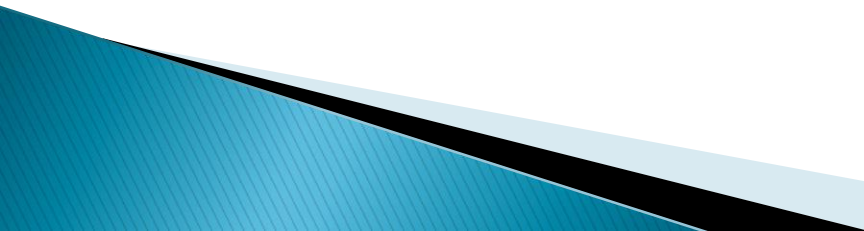
Headache



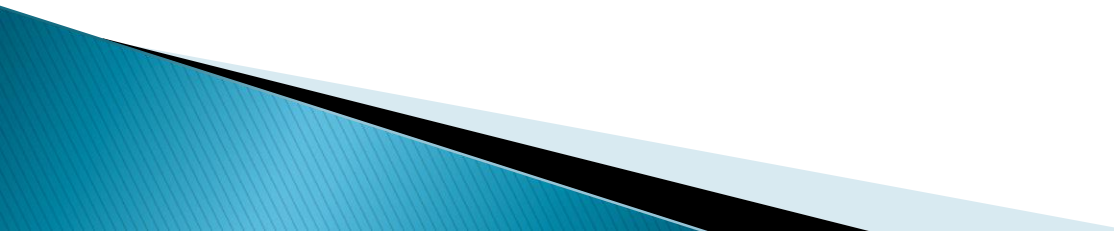
Description

- ▶ Postpartum headache is described as a complaint of headache and neck or shoulder pain in the first 6 weeks after delivery.
 - ▶ It is one of the most common symptoms with up to 39% of parturients experiencing headache in the first postpartum week.
 - ▶ post-dural puncture headache (PDPH) is a complication of regional anaesthesia.
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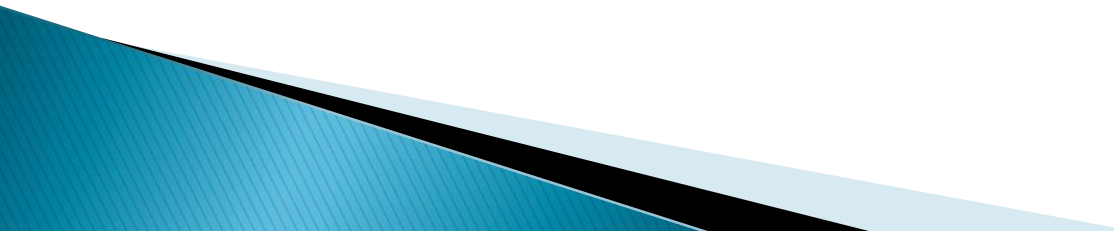
Differential diagnosis and incidence of postpartum headache

- ▶ Non-specific/tension headache
 - ▶ Migraine
 - ▶ Pre-eclampsia/eclampsia
 - ▶ Post-dural puncture headache
 - ▶ Cortical vein thrombosis
 - ▶ Subarachnoid haemorrhage
 - ▶ Posterior reversible leucoencephalopathy syndrome
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Cont...

- ▶ Space-occupying lesion—brain tumour
 - ▶ subdural haematoma
 - ▶ Cerebral infarction/ischaemia
 - ▶ Sinusitis
 - ▶ Meningitis
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Post-dural puncture headache

- ▶ Most treatment options relieve the symptoms of PDPH by attempting to replace lost CSF, minimize cerebral vasodilatation, or seal the dural puncture site.
 - ▶ Treatment options can be divided into conservative, pharmacological, and EBP.
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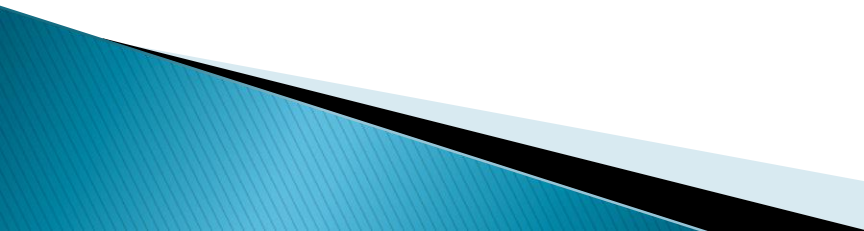
EXECUTIVE SUMMARY OF RECOMMENDATIONS

- ▶ All women who experience dural puncture with an epidural needle or post-dural puncture headache after a spinal block should be reviewed daily by a member of the anaesthetic team.
- ▶ When a woman experiences post-dural puncture headache, follow-up should continue until the headache resolves. Furthermore, any case of suspected obstetric post-dural puncture headache should be referred for anaesthetic assessment and reviewed by the anaesthetic team within 24 hours.
- ▶ A medical history should be taken and a physical examination performed to exclude other potential causes of postnatal headache. Before hospital discharge, women who have experienced dural puncture with an epidural needle or post-dural puncture headache should be given information on symptoms that require further medical assessment and on whom they should contact.
- ▶ Appropriate follow-up after discharge from hospital should be arranged for any woman who experiences dural puncture with an epidural needle or obstetric post-dural puncture headache.

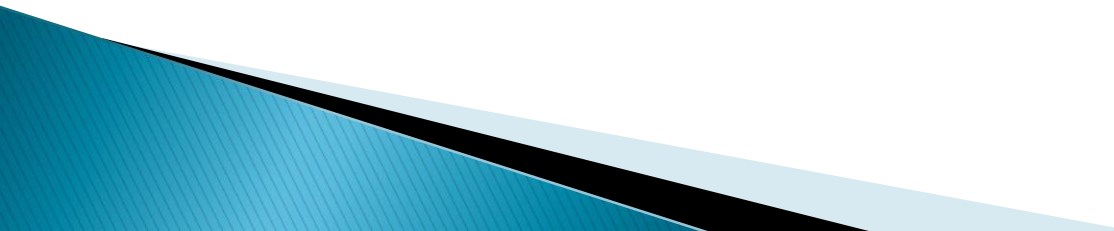
CONSERVATIVE TREATMENT

- ▶ **Bed rest**
 - ▶ Although most women gain some relief from obstetric post-dural puncture headache when supine, the effect may be transient. Prolonged bed rest is not recommended as it may increase the risk of thromboembolic complications.
 - ▶ **Oral fluids**
 - ▶ Normal hydration should be maintained but there is no evidence of benefit from excessive fluid administration in the treatment of obstetric post-dural puncture headache.
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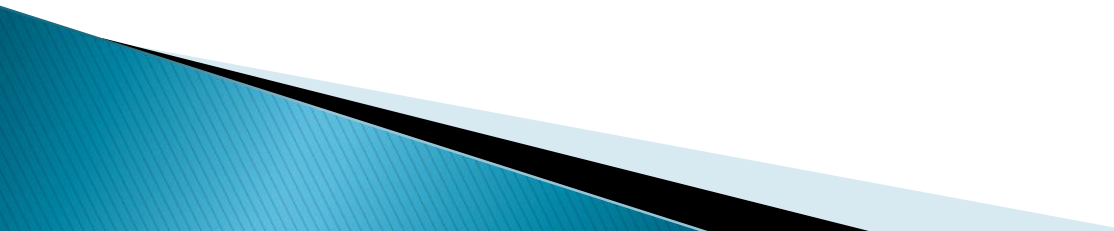
- ▶ **Intravenous fluids**
 - ▶ In the treatment of obstetric post-dural puncture headache, intravenous fluids need only be used to prevent dehydration when adequate fluid cannot be taken orally.
 - ▶ **Abdominal binders**
 - ▶ There is currently insufficient evidence to recommend the use of abdominal binders in the treatment of obstetric post-dural puncture headache.
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PHARMACOLOGICAL MANAGEMENT

- ▶ **Simple oral analgesia**
 - ▶ Regular oral analgesia should be offered to women with postnatal headache.
 - ▶ **Opioid analgesia**
 - ▶ Opioid analgesia may be offered to women with obstetric post-dural puncture headache if simple oral analgesia is ineffective but long-term therapy is not recommended.
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Caffeine

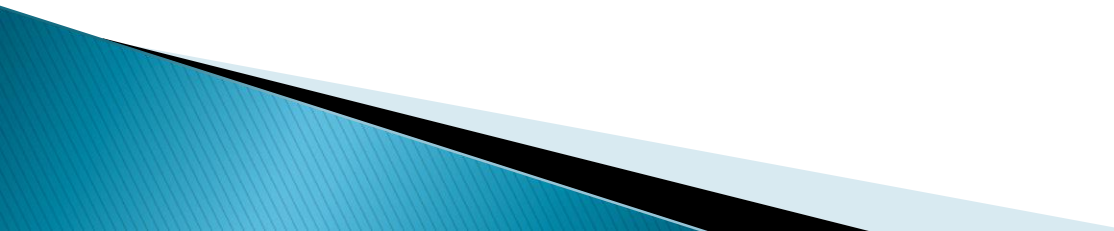
- ▶ There is limited evidence to support the use of caffeine in the treatment of obstetric post-dural puncture headache. If used, treatment with caffeine should not exceed 24 hours, oral therapy is preferred and doses should not exceed 300 mg with a maximum of 900 mg in 24 hours.
- ▶ A lower maximum dose of 200 mg in 24 hours should be considered for women who are breastfeeding particularly those with low birth weight or premature infants. Women receiving caffeine therapy should have their intake of caffeinated drinks monitored and the recommended daily dose should not be exceeded.

- ▶ **Other theophyllines**
 - ▶ There is currently insufficient evidence to recommend the use of theophylline or aminophylline in the treatment of obstetric post-dural puncture headache.
 - ▶ **ACTH and analogues**
 - ▶ There is currently insufficient evidence to recommend the use of ACTH and its analogues in the treatment of obstetric post-dural puncture headache.
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- ▶ **Steroids**

- ▶ There is currently insufficient evidence to recommend the use of hydrocortisone, dexamethasone or methylprednisolone in the treatment of obstetric post-dural puncture headache.

- ▶ **Triptans**

- ▶ There is currently insufficient evidence to recommend the use of triptans in the treatment of obstetric post-dural puncture headache.
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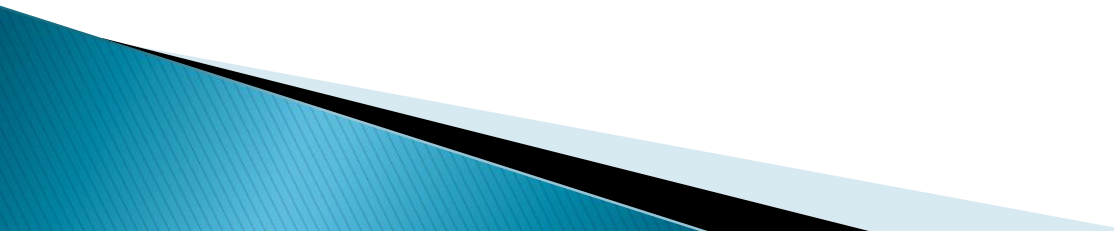
- ▶ **Gabapentinoids**

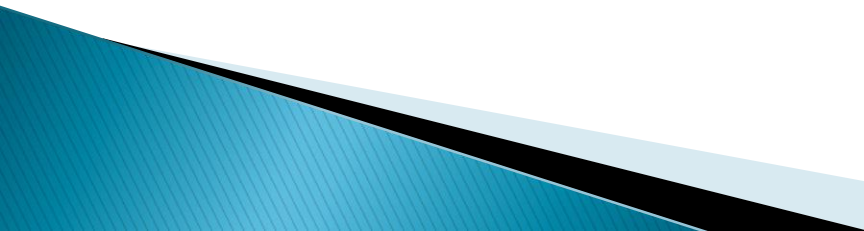
- ▶ There is currently insufficient evidence to recommend the use of gabapentinoids in the treatment of obstetric post-dural puncture headache.

- ▶ **Other medications**

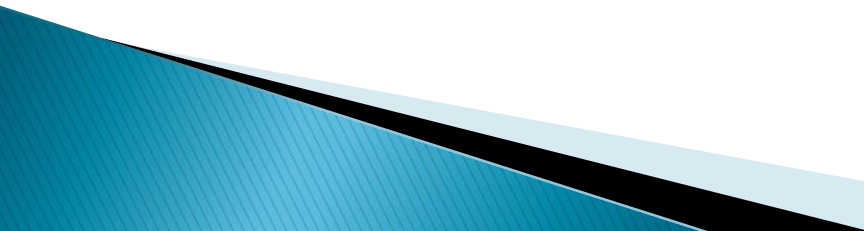
- ▶ There is currently insufficient evidence to recommend the use of desmopressin, methylergonovine, ondansetron or neostigmine and atropine in the treatment of obstetric post-dural puncture headache

INVASIVE PROCEDURES

- ▶ **Acupuncture**
 - ▶ There is currently insufficient evidence to recommend the use of acupuncture in the treatment of obstetric post-dural puncture headache.
 - ▶ **Greater occipital nerve blocks**
 - ▶ There is currently insufficient evidence to recommend the use of greater occipital nerve blocks in the treatment of obstetric post-dural puncture headache.
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- ▶ **Sphenopalatine ganglion blocks**
 - ▶ There is currently insufficient evidence to recommend the use of sphenopalatine ganglion blocks in the treatment of obstetric post-dural puncture headache.
 - ▶ **Epidural morphine**
 - ▶ There is currently insufficient evidence to recommend the use of epidural morphine in the treatment of obstetric post-dural puncture headache.
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EPIDURAL FLUID ADMINISTRATION

- ▶ **Epidural crystalloids**
 - ▶ There is currently insufficient evidence to recommend the use of epidural crystalloid infusions in the treatment of obstetric post-dural puncture headache. Epidural saline bolus administration may improve symptoms but the effect is usually transient.
 - ▶ **Dextran**
 - ▶ There is currently insufficient evidence to recommend the use of epidural dextran infusion in the treatment of obstetric post-dural puncture headache.
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- ▶ **Hydroxyethyl starch**

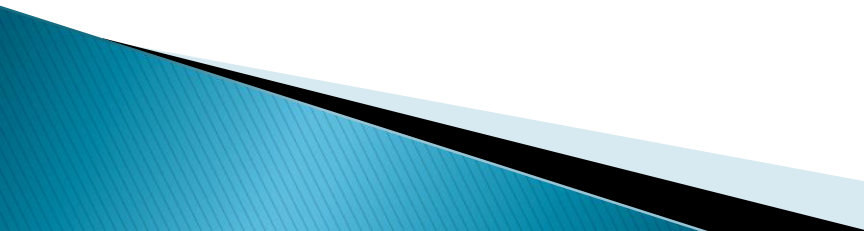
- ▶ There is currently insufficient evidence to recommend the use of epidural hydroxyethyl starch infusion in the treatment of obstetric post-dural puncture headache.

- ▶ **Gelatin**

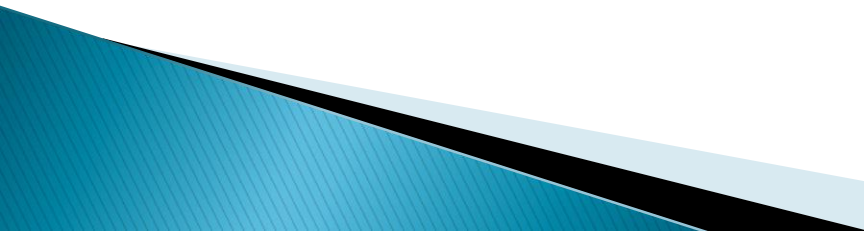
- ▶ There is currently insufficient evidence to recommend the use of epidural gelatin in the treatment of obstetric post-dural puncture headache.

- ▶ **Fibrin glue**

- ▶ There is currently insufficient evidence to recommend the use of epidural fibrin glue in the treatment of obstetric post-dural puncture headache.

- ▶ **How effective is an epidural blood patch in obstetric post-dural puncture headache?**
 - ▶ Multiple factors are likely to affect the success of an epidural blood patch. Although success rates of over 90% have been reported in older observational studies, more recent evidence suggests that complete and permanent relief of symptoms following a single epidural blood patch is only likely to occur in up to one third of cases where headache follows dural puncture with an epidural needle. Complete or partial relief may be seen in 50–80%. In cases of partial or no relief, a second epidural blood patch may be performed after consideration of other causes of headache.
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- ▶ **What is the optimum time to perform an epidural blood patch?**
- ▶ Women should be informed that performing an epidural blood patch within 48 hours of dural puncture is associated with a reduction in its efficacy and a greater requirement for a repeat epidural blood patch. However, in severe obstetric post-dural puncture headache, an epidural blood patch within 48 hours of dural puncture may be considered for symptom control although it may need to be repeated

- ▶ **What investigations should be performed to aid diagnosis before performing an epidural blood patch?**
 - ▶ If the diagnosis of obstetric post-dural puncture headache is strongly suspected, there is no evidence that imaging is needed before performing an epidural blood patch. If the headache changes in nature, neurological signs develop, conscious level reduces, headache is atypical in nature, or when two epidural blood patches have been unsuccessful, urgent consideration should be given to further investigation and imaging.
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- ▶ **What practical steps should be completed before an epidural blood patch is performed?**
- ▶ Before performing an epidural blood patch, written information should be offered to women to aid the consent process. As an epidural blood patch is a therapeutic intervention written consent is recommended. An appropriate time should elapse before an epidural blood patch is performed for women receiving anticoagulants. Maternal systemic infection and 'red-flag' symptoms suggesting an alternative diagnosis should be excluded.

What are the risks of an epidural blood patch?

- ▶ *Repeat dural puncture: The risk of further inadvertent dural puncture during an epidural blood patch should form part of the consent process.*
- ▶ *Back pain: Back pain during an epidural blood patch may occur in 50% of women. Twenty four hours after an epidural blood patch, over 80% of women may experience back pain. This may continue for several days but severity usually decreases over a few days with resolution for most by four weeks. There is no evidence to support increased rates of chronic back pain after an epidural blood patch. As back pain both during and after an epidural blood patch is common, and in some cases severe, it should be discussed as part of the consent process.*
- ▶ *Neurological complications: Neurological symptoms may occasionally develop after an epidural blood patch. Their exact incidence is unknown. The relationship between an epidural blood patch and neurological symptoms may not be causative. Given the severity of some neurological symptoms, their development should be discussed as part of the consent process for an epidural blood patch.*

- ▶ **Are there risks to not performing an epidural blood patch?**
- ▶ There is currently insufficient evidence to suggest that an epidural blood patch reduces the risk of chronic headache, chronic back pain, cranial subdural haematoma, cerebral venous sinus thrombosis or improves outcome in cranial nerve palsy in women with obstetric post-dural puncture headache.
- ▶ **At which level should an epidural blood patch be performed?**
- ▶ The major effect of an epidural blood patch appears to be within a few segments of the site of injection. Blood injected during an epidural blood patch spreads predominantly cranially. It is therefore recommended that an epidural blood patch is performed at the same level or one space lower than that at which the original dural puncture occurred.

- ▶ **Is ultrasound or radiological guidance of benefit when performing an epidural blood patch?**
 - ▶ There is currently insufficient evidence to recommend the routine use of ultrasound or radiological guidance when performing an epidural blood patch. 6

 - ▶ **How much blood should be injected?**
 - ▶ A volume of blood of 20 mL is recommended when performing an epidural blood patch. Injection should stop before 20 mL is injected if not tolerated by the patient.
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EPIDURAL BLOOD PATCH

- ▶ **What is the role of an epidural blood patch in the management of obstetric post-dural puncture headache?**
- ▶ When conservative therapy is ineffective in the management of obstetric post-dural puncture headache and the woman experiences difficulty performing activities of daily life and caring for her baby, treatment with an epidural blood patch should be considered.

Up to date

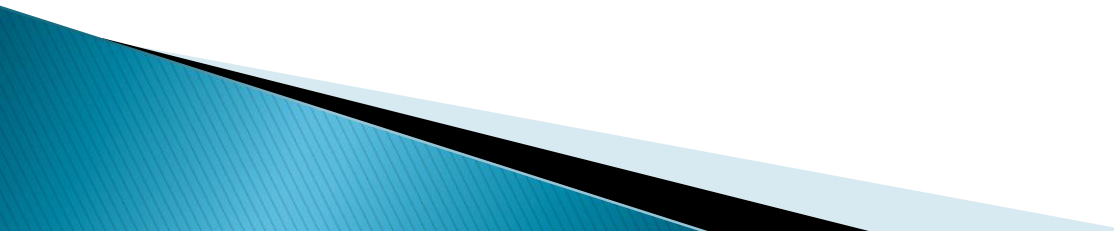
- ▶ **Post dural puncture headache — Post dural puncture headache (PDPH; also called spinal headache or post lumbar puncture headache) is a positional headache (ie, worse when**
- ▶ **the patient sits or stands) that occurs because of leakage of cerebrospinal fluid (CSF) through a dural puncture. PDPH may occur after spinal anesthesia (ie, intentional dural puncture)**
- ▶ **or after unintentional dural puncture (UDP) with an epidural needle. The mechanism of headache after CSF leak is unclear, but appears to involve cerebral vasodilation and/or traction on intracranial structures.**

Up to date

- ▶ **Incidence** – The rate of PDPH after dural puncture varies widely across patient populations; young pregnant women with a low body mass index (BMI) are at highest risk.
- ▶ A meta-analysis of 51 randomized and observational studies of PDPH in over 300,000 obstetric patients reported a risk of UDP of 1.5 percent, with a risk of PDPH of approximately 52 percent after UDP.
- ▶ The risk of PDPH after dural puncture with a spinal needle was 1.5 to 11.2 percent, and varied with the size and type of spinal needle.

Up to date

- ▶ **Treatment – Most PDPHs will resolve in 7 to 10 days if untreated. Conservative management with symptomatic therapy (eg, oral analgesics, caffeine) may be indicated if the patient does not desire epidural blood patch (EBP) or if the headache is not severe.**
- ▶ **Epidural blood patch – The classic treatment for severe, debilitating PDPH is EBP. The initial blood patch gives complete or partial relief in 95 percent of obstetric patients**
- ▶ **with PDPH, but the headache may recur. In one series, headache recurred in 31 percent of parturients who had an EBP for PDPH, and 28 percent received more than one EBP.**
- ▶ **EBP is performed by injecting the patient's blood into the epidural space to form a clot over the dural defect. EBP is thought to work by two mechanisms, initially by increasing the subarachnoid CSF pressure, and later by forming a fibrin plug that seals the hole in the dura and prevents further CSF leak.**

- ▶ **Should blood cultures be sent when performing an epidural blood patch?**
 - ▶ There is currently insufficient evidence to recommend that blood cultures should be sent routinely when performing an epidural blood patch. There is insufficient evidence to recommend the administration of antibiotics when performing an epidural blood patch. An epidural blood patch should not be performed in the presence of maternal systemic infection.
 - ▶ **How should a patient be managed immediately after an epidural blood patch?**
 - ▶ There is currently insufficient evidence to recommend for how long women should remain in bed following an epidural blood patch or in what precise position. It is recommended that regular observations of maternal pulse, blood pressure and temperature are recorded following an epidural blood patch.
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What are the indications to perform a repeat epidural blood patch?

- ▶ A second epidural blood patch may be performed once other causes of headache have been excluded. Where the diagnosis of obstetric post-dural puncture headache is likely and an epidural blood patch has produced resolution of symptoms but the headache subsequently returns, a second epidural blood patch may be offered as it is likely to be of benefit. If an epidural blood patch has produced some improvement in symptoms but headache persists, a second epidural blood patch can be considered as it may be of benefit. In cases where an epidural blood patch has no effect on headache, or if the diagnosis of obstetric post-dural puncture headache is less certain, or if the nature of headache has changed, discussion with other specialties including obstetrics, neurology and neuroradiology should take place before a second epidural blood patch is performed. If two epidural blood patches have failed to relieve symptoms, other causes of headache must be considered and involvement of other specialties is recommended before performing a third epidural blood patch. There is insufficient evidence to state the optimum timing of a repeat epidural blood patch in terms of efficacy and safety.

- ▶ **Does an epidural blood patch affect the success of a subsequent neuraxial technique?**
- ▶ Evidence of an effect of an epidural blood patch on the success of subsequent neuraxial blockade is equivocal. All studies that have assessed the effect have methodological flaws. Current evidence is insufficient to comment on whether an epidural blood patch affects outcome of subsequent neuraxial blockade.
- ▶ **How should patients who have undergone an epidural blood patch be followed up?**
- ▶ Women who receive an epidural blood patch should be reviewed by an anaesthetist within four hours of the procedure. Women who are discharged home on the day of an epidural blood patch should be contacted the following day. Women who remain in hospital should be reviewed daily until discharge or until symptoms resolve. Before discharge, women should be given verbal and written advice on when to contact the hospital should their headache return or other symptoms develop. Information on obstetric post-dural puncture headache and epidural blood patch should also be given to the woman's general practitioner and community midwife.

Up to date

- ▶ **Sphenopalatine ganglion block – A novel noninvasive approach to treating PDPH using an old technique, transnasal sphenopalatine ganglion block (SPGB), has been described in case reports and case series.**
- ▶ Although there are no prospective trials comparing this treatment with other treatments of PDPH, because it is low-risk, the author offers SPGB to all patients with PDPH.
- ▶ He suggests it particularly for patients who do not desire a blood patch, or for whom a blood patch is relatively or absolutely contraindicated.

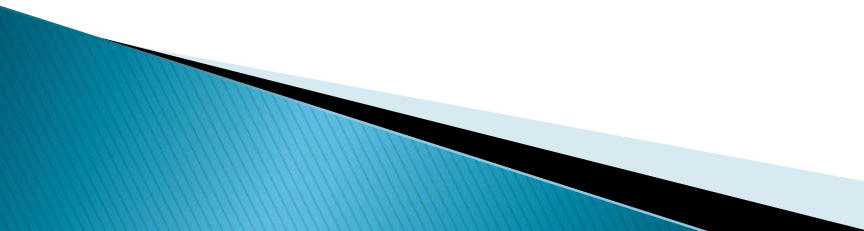
Up to date

- ▶ Other therapies to treat or prevent PDPHs have not been consistently efficacious.
- ▶ **Prophylactic epidural blood patch – An EBP may be performed prophylactically, before a headache occurs after an inadvertent dural puncture. Blood is injected into the**
- ▶ **epidural catheter prior to its removal after delivery. The efficacy of prophylactic EBP is unclear.**
- ▶ **Spinal catheter – Threading an epidural catheter into the intrathecal space at the time of UDP has been advocated to reduce the incidence of PDPH.**
- ▶ **We do not routinely place an intrathecal catheter after UDP, but place intrathecal catheters selectively (eg, after a difficult epidural procedure). The efficacy of intrathecal catheter placement has not been established in randomized controlled trials, and most studies have reported no benefit of intrathecal catheter placement.**

Conservative treatment

- ▶ Symptoms of PDPH can be controlled in the hope that the hole in the dura will seal spontaneously.
- ▶ Patients are advised to bed rest, maintain hydration, and to take simple analgesics, such as paracetamol and NSAIDs.
- ▶ When a dural puncture is made by a small-bore spinal needle, conservative treatment may be effective.
- ▶ However, the young obstetric patient is particularly at risk of debilitating PDPH and conservative measures may not be effective, especially when a dural puncture is made with a large-bore epidural needle.

Pharmacological treatment

- ▶ **Caffeine**
 - ▶ Caffeine is a cerebral vasoconstrictor and has been prescribed for the treatment of PDPH.
 - ▶ However, it remains controversial with no strong evidence to support its use and its benefits may only be transient.
 - ▶ In addition, it is not without risk. It is a potent central nervous stimulant which reduces seizure threshold and it should not be prescribed for long-term therapy.
 - ▶ Nevertheless, many anaesthetists encourage parturients with PDPH to drink highly caffeinated beverages in the hope that this will provide some symptomatic relief.
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Up to date

5HT-Agonists

- ▶ Sumatriptan is a serotonin-receptor agonist and a cerebral vasoconstrictor.
- ▶ It is widely used for the treatment of migraine. Findings from case reports suggest that it may be effective when given as a subcutaneous injection, but randomized controlled trials have not shown benefits from using this agent. More recent data suggest that 5-HT_{1b/1d} agonists such as frovatriptan may be more effective cerebral vasoconstrictors.

Up to date

Adrenocorticotrophic hormone

- ▶ Adrenocorticotrophic hormone may increase CSF production but has yet to be recommended as a therapy for PDPH. A small randomized clinical trial has shown no difference in the severity of headache or requirement of EBP.

Epidural saline or dextran 40

- ▶ Historically, these have been infused via the epidural catheter and used with some benefit in the past, especially in patients in whom EBP was contraindicated. Theoretically, the effects are thought to be similar to blood, raising the epidural pressure, reducing CSF leakage, and resolving headache. Recent reviews have concluded treatment to be transient or ineffective for the management of PDPH.

Epidural blood patch

- ▶ A recent Cochrane review has concluded that therapeutic EBP is beneficial compared with conservative treatment for PDPH. It remains the gold standard treatment for persisting PDPH, but success rates are often exaggerated.
- ▶ Although initial pain relief from an EBP is quite high, many women experience a recurrence. Consequently, women should be advised that the chance of complete cure from a single EBP is ~50%, and in up to 40% of cases, a second EBP may be required.

- ▶ Most patients report almost instantaneous relief of headache but may complain of neck or backache for 24 h.
 - ▶ If the first procedure fails, a second may be attempted but it is important to consider other diagnoses and when in doubt organize appropriate investigations and referral.
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