Epidural NM no comment Ready

EPIDURAL ANALGESIA (EA)

**AIM**
- To provide safe continuous analgesia during labour
- Can be achieved by:
  - continuous infusion of a dilute mix of local anaesthetic and opioid
  - patient controlled epidural analgesia (PCEA)
  - intermittent boluses of local anaesthetic solution +/- opioid

| To avoid increased incidence of side effects, use of high doses of intermittent boluses (e.g. bupivacaine 0.25%) is discouraged |

**INDICATIONS**
- Maternal request
- Epidural is a useful method of controlling blood pressure and providing analgesia but may be contraindicated in low platelet count
- Morbidly obese women to facilitate labour and delivery
- Some cardiovascular conditions e.g. cardiomyopathy, mild to moderate valvular heart disease. If in any doubt, discuss with consultant obstetric anaesthetist

**CONTRAINDICATIONS**

**Absolute**
- Patient refusal despite informed discussion
- Local sepsis at site of injection
- Systemic sepsis (with evidence of raised WCC and CRP in addition to systemic signs and symptoms)
- Known hypersensitivity to local anaesthetic drugs
- Coagulopathy – see Investigations
- After administering prophylactic LMWH – do not insert epidural for at least 12 hr after last dose. Catheter may be removed 4 hr after a dose
- After administering therapeutic LMWH – do not insert or remove epidural catheter for at least 24 hr after last dose

**Relative**
- Haemorrhage, hypovolaemia. Correct before regional analgesia
- Severe fetal distress
- Diseases of the CNS. Discuss with consultant obstetric anaesthetist
- Some types of cardiac disease (e.g. severe aortic stenosis, severe pulmonary hypertension, severe cardiomyopathy). Discuss with consultant obstetric anaesthetist

**PREPARATION**

**Patient**
- Explain technique, and risks and benefits
- Obtain and document verbal consent
- Obtain IV access

**Investigations**
- In pre-eclamptic women, check FBC. If platelet count <100,000 – APPT, INR
- Intra-uterine death >1 week: detailed coagulation profile including D-dimer and fibrinogen levels
- In septic woman: WCC and CRP in addition to FBC

**Equipment**
- Epidural trolley with:
  - epidural pack (16 G/18 G Tuohy needle) or 19 G/23 G catheter
  - yellow epidural infusion lines labelled with yellow label from pack
  - sterile gown, gloves, hat and mask
  - chlorhexidine skin preparation 0.5%
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- Use specific epidural pumps with locking ability

**Optional equipment**
- CSE pack/spinal needles 25G

**Drugs**
- Lidocaine 1%
- Standard mixture (bupivacaine 0.1% with fentanyl 2 microgram/mL) or a bag of 0.1% bupivacaine and fentanyl ampoule for mixture preparation (or pre-mixed product, according to local practice)
- L-bupivacaine (0.25 and 0.5%) (for bolus administration in second stage of labour)
- Sodium chloride 0.9%
- Have vasopressors handy

**INSERTION OF EPIDURAL**
- Use full aseptic technique wearing gloves, gown, hat and mask
- Clean insertion site with alcoholic chlorhexidine gluconate solution and allow to air dry
- Evidence suggests that loss of resistance to saline is a better technique than loss of resistance to air
- If technical difficulty, seek help early or consider alternative analgesia e.g. remifentanil PCA

**ESTABLISHING AND MAINTAINING EPIDURAL ANALGESIA**
- Epidural prescribed will depend on whether infusion, PCEA or bolus is being used

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**There are three procedures for providing epidural analgesia, continuous infusion, PCEA and bolus administration. Follow appropriate option for your Trust – see below**

**Drug used for all 3 procedures**
- Mixtures of low concentration of local anaesthetic (e.g. bupivacaine 0.1% or levobupivacaine) with an opiate (e.g. fentanyl 2 microgram/mL)
- This mixture is used for all test doses and for establishing analgesia in labour

**Test dose for all epidural procedures**
- Administer a test dose of 3–5 mL from the epidural solution that is to be used as the first dose (e.g. bupivacaine 0.1% and fentanyl 2 microgram/mL) and wait for five min to check for rapid onset of sensory changes and significant decrease in blood pressure

**Procedures for establishing analgesia in labour**

**Procedure for continuous infusion of dilute mix of local anaesthetic and opioid**
- After verification of correct catheter placement, administer loading dose (usually 10–15 mL of the mixture)
  - then commence an infusion rate of 10–12 mL/hr for maintenance
  - rate may be increased up to 15 mL/hr and rescue analgesia may be provided by a single bolus of 10 mL of the infusion mixture. Can be administered by midwife via pump

**Procedure for use of PCEA**
- Anaesthetist will set up the machine
- Administer the first 10 mL bolus dose of mixture
- Set patient administered bolus of 10 mL infusion. Set a bolus lockout of 24 min
- Commence a background infusion rate of 5 mL/hr of the mixture
- **Do not give** first patient administered dose before 30 min after first therapeutic dose. **Do not give PCEA handset to woman until 30 min after infusion commenced**
- if pain relief remains ineffective after two boluses, request duty anaesthetist to assess woman

**Procedure for bolus epidural top-up**
- Anaesthetist will administer first bolus dose of epidural (10–15 mL of the drug mixture) after the test dose
Subsequent boluses are 10 mL of mixture administered by either midwife or anaesthetist.

**Top-up by midwife**
- Midwife will check each prescribed top-up (10 mL of drug mixture) with another qualified professional before administering. Following administration, both will sign and record on regional anaesthesia chart or as per Trust policy.

**INTRAPARTUM CARE**
- **Monitor:**
  - pulse, blood pressure, respiratory rate, sensory, motor block and conscious level – as per local practice
  - Continuous electronic monitoring when receiving epidural blockade throughout labour
  - Maintain venous access for as long as epidural analgesia is maintained

**Positioning**
- Do not allow woman to lie flat on her back and encourage her to change position regularly

**Risk assessment for mobilising with low-concentration high-volume epidural (prepared mixture – bupivacaine 0.1% with fentanyl 2 microgram/mL)**
- Once woman has adequate analgesia, a risk assessment is appropriate. Assess sympathetic, sensory and motor block by the following:
  - ability to raise each leg from bed for at least five sec
  - ask if she feels capable of weight bearing
  - ask woman to place her feet on the floor. If feet feel like ‘cotton wool’ this usually means it is not safe to walk
  - assess deep knee bending while weight bearing

| Two people must support woman while assessment is carried out |

**Bladder care**
- Epidural analgesia may make passing urine difficult and woman may not be aware of a full bladder. Encourage her to void her bladder every 2–4 hr

**Diet and fluids**
- Acceptable drinks include water, tea, coffee and squash and non-fizzy isotonic sports glucose
- Oral ranitidine 150 mg every 6–8 hr while in labour

**Epidural management during second and third stage of labour**
- Do not withhold epidural analgesia in second stage
- Usual dose for second stage of labour is 10 mL bupivacaine 0.25% via epidural catheter.
- Do not leave woman unattended for 20–30 min after bolus
- Maintain epidural analgesia until perineal suturing has been performed

**EPIDURAL CATHETER REMOVAL**
- Do not remove for at least 4 hr after prophylactic LMWH administration
- Ensure normal FBC and clotting profile in women with severe PET and after a massive bleed before removal
- Unless otherwise directed by anaesthetist, remove just before discharge back to ward
- Pull firmly on catheter, but do not use excessive force – catheter should come out easily with minimal resistance
- Remove catheter and check blue tip is complete
- Document removal of catheter and whether tip intact
- Inform anaesthetist of any problems

**TRANSFER BACK TO WARD**
- Before transferring to ward, midwife should:
  - ensure vital signs are normal
  - adequate return of motor power to legs – if not, contact anaesthetist
COMPLICATIONS AND MANAGEMENT

Incomplete block
- Check – has the catheter fallen out?
- Is there a leak/disconnection?
- Try bolus of standard mix or stronger solution as indicated

Unilateral block
- Anaesthetist may consider pulling catheter back 1–2 cm and try another dose with the painful side dependent. Optimum is 3–4 cm of catheter in epidural space
- If still not effective, consider resiting epidural

Missed segment, patchy block
- Try using 5 mL levobupivacaine 0.25%
- If block patchy and high, consider possibility of a subdural block – see Accidental dural puncture below
- If still not effective, consider resiting epidural

Perineal pain
- Give bolus of 10 mL of infusion mixture
- If pain persists, try topping up with 50–100 microgram fentanyl in 4–5 mL levobupivacaine 0.25%. Otherwise use 10 mL levobupivacaine 0.25%
- If inadequate analgesia after bolus, anaesthetist to review

Breakthrough pain through a good block
- Consider uterine rupture or abruption
- Assess woman and progress of labour

HIGH CONCENTRATION TOP-UPS

Caution: This type of epidural top-up has a higher rate of hypotension, significant intravascular injection, difficulty in pushing and instrumental delivery

Indications
- Has a role in managing inadequate analgesia, premature desire to push and instrumental delivery

Administration
- Requires levobupivacaine 0.25% or lidocaine 2% (dose dependent on circumstances and anaesthetist assessment)
- Care for woman on bed and encourage to change position regularly

COMPLICATIONS

Total spinal and unanticipated high block
- Can occur after first dose of epidural or any time during labour
- Monitor as per local protocol

It is an acute emergency, characterised by:
- Rapidly progressive sensory and motor block of legs and arms
- Severe hypotension and bradycardia
- Reduced or absent respiration
- Altered level of consciousness
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Management
- Relieve aortocaval compression by left lateral displacement of the uterus – manually or with a wedge
- If CPR not required, full lateral position
- Use ABC approach
- Administer 100% oxygen and, if respiration inadequate or woman has lost consciousness, be ready to intubate
- Cardiovascular support in the form of fluids, vasopressors (phenylephrine, ephedrine, adrenaline)
- In case of cardiac arrest or severe cardiac depression, initiate CPR – see Cardiopulmonary resuscitation guideline
- If no return of spontaneous circulation, consider peri-mortem caesarean section within 5 min
- After successful resuscitation, woman must be managed by on-call consultant (if not already there)

Intravascular injection of local anaesthesia
- Arises as a result of incorrect site of administration (IV) or incorrect dose administered

Symptoms and signs
- Peri-oral numbness, difficulty speaking
- Tinnitus
- Dizziness
- Restlessness
- Dysrhythmia (bradycardia, VT and VF)
- Hypotension
- Convulsions
- Loss of consciousness

Management
- Stop injecting drug
- Commence resuscitation, all principles of basic and advanced life support apply
- Summon help immediately
- If lateral tilt of 15–30 degrees cannot be applied, manually displace uterus
- Give benzodiazepine, thiopental or propofol in small incremental doses
- Bag-mask ventilate with 100% oxygen before intubation

Resuscitation unsuccessful
- Prepare for caesarean section
- Early use of 20% intralipid IV 1.5 mL/kg bolus or per local protocol, followed by an infusion of 0.25 mL/kg/hr
  - if not effective, repeat twice 5 min apart
  - if CVS stability not achieved, double infusion dose to 0.5 mL/kg/min
- Recovery after a cardiac arrest will take >1 hr
- Consider drawing blood for analysis

Accidental dural tap
- See local guidelines
- Incidence of dural puncture whilst siting an epidural is 0.6–12%
- Overall incidence of post dural puncture headache (PDPH) following inadvertent dural puncture is 75%

If recognised at time of insertion
- Leave catheter intrathecaly for at least 24 hr or re-site
- Label clearly as a spinal/intrathecal catheter
- Give 1 mL bupivacaine 0.25% with fentanyl 25 microgram. Alternatively, use 2 mL of the infusion mixture. Flush with 2 mL sodium chloride 0.9% after every top-up
- Subsequent boluses must be 2 mL of the infusion mixture administered by anaesthetist only
Monitor
- Regular BP. Keep vasopressors handy
- Keep woman on labour ward until catheter removed

**If intrathecal catheter placement difficult, seek senior help or provide alternative methods of analgesia e.g. remifentanil PCA**

Follow-up after dural puncture
- Discuss dural puncture with woman
  - assess for symptoms of PDPH and treatment options available with attendant risks and benefits
- Provide information leaflet (if available locally)
- Ensure details recorded in audit book or according to local practice
- Monitor daily as in-patient for at least 3 days