



Sultanate of Oman
Ministry of Health
The Royal Hospital
Department of Obstetrics and Gynecology

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Title: PAIN MANAGEMENT IN LABOR

1.0 Introduction:

Pain in labor must be managed as part of total plan of action. Pain should be dealt with before it becomes unbearable

2.0 Nonpharmacological methods – useful in first stage of labor mainly in latent or early active phase

Therapy	Consideration
Breathing and relaxation	May significantly reduce pain Does not adversely affect maternal or newborn outcomes
Transcutaneous electrical nerve stimulation (TENS)	May be helpful for women in latent first stage ⁹ Has not been found to be helpful for women in active labor No effect on analgesia use

3.0 Pharmacological

Stage and progress of labor, woman's coping ability, weight and her birth plan should be assessed prior to prescribing and administering analgesia.

3.1 Nonsteroidal analgesics (NSAIDs)– I/V paracetamol 1 gm infusion useful in latent phase of labor. In active phase of labor stronger narcotic analgesia is preferred.

3.2 Opioids – Morphine and Pethidine Analgesia

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Pethidine (Mepheridine)

1 mg -1.5 mg/kg

<p>+ Phenergan 25 mg 1.M or Metoclopramide 10 mg 1.M</p>	<p>This dose can be repeated 2-3 hourly</p> <p>Patient should be examined prior to second dose as she may be delivering soon</p> <p>Antidote Naloxone to be available for neonate if needed</p> <p>To be used to counteract nausea.</p> <p>Phenergan can reduce the effects of pethidine, also the effect of phenergan can last for 4-6 hours, therefore no need to repeat with frequent doses of pethidine.</p>
	<p>In severe pre-eclampsia, pethidine to be avoided instead Morphine inj. can be used.</p>
<p>Morphine:</p>	<p>can be used in cases of IUFD or fetuses that are not monitored in labor due to congenital anomalies.</p> <ul style="list-style-type: none"> - 0.1 mg/kg or (5-10 mg) - can be repeated 4-6 hours - Antiemetic to be given at the same time.
<p>Benefit / risk of Opioids</p>	<ul style="list-style-type: none"> • Provides limited pain relief during labour • Side-effects of maternal drowsiness, nausea and vomiting • Newborn – no clear evidence of adverse effects <ul style="list-style-type: none"> - may have respiratory depression and drowsiness which may interfere with breastfeeding - Morphine preferred to Pethidine as the metabolite of IM Pethidine has a longer half life in the newborn, (up to 62 hours) compared to IM Morphine (up to 13.9 hours) - Pethidine has been associated with impaired breast feeding behaviour
<p>Clinical practice points</p>	<ul style="list-style-type: none"> - Administer with an anti-emetic - Due to duration of action – avoid administration if birth is anticipated within 4 hours

- Water immersion is not recommended within 4 hours of opioid administration or if feeling drowsy
- Following administration – observe woman and newborn for side effects

3.3. Inhalational Analgesics - Nitrous oxide

<p>Nitrous oxide (N₂O) (a 50:50 mixture of oxygen and nitrous oxide)</p>	<ul style="list-style-type: none"> • Valuable at the end of 1st stage and early in 2nd stage. • Inhalation should begin shortly before the anticipated start of next contraction for maximum benefit to be obtained by the patient.
<p>Benefit / risk</p>	<ul style="list-style-type: none"> • Acts quickly and is rapidly eliminated • Does not affect fetus • Can be used with water immersion • May reduce pain sensation • Associated with nausea, vomiting, dizziness, euphoria, disorientation, generalized tingling and sedation • Effectiveness is variable • it may make her feel nauseous and light-headed

3.4 Epidural Analgesia

Experienced anesthetist to perform this procedure. For details of procedure please refer to the section on epidural analgesia in labor

<p>Epidural Analgesia</p>	<ul style="list-style-type: none"> • Reduces the stress of labor by abolishing pain • Minimizes development of metabolic acidosis.
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Timing of Epidural Analgesia	<ul style="list-style-type: none"> • In early labor (i.e. less than 5 cm dilation) • Offer analgesia on an individualized basis regardless of cervical dilation.
Absolute contraindications	<ul style="list-style-type: none"> • Patient refusal or inability to tolerate procedure (due to short term immobility required during insertion) • Increased intracranial pressure from mass lesion • Infection at the needle placement site • Coagulopathy • Uncorrected maternal hypotension/ hypovolemia • Inadequate monitoring of fetus/Non availability of CTG • Anticoagulant therapy • Spina bifida occulta (unless MRI scan shows normal anatomy) • Lack of appropriate personnel to perform procedure and to monitor patient afterwards
Relative Contraindications	<ul style="list-style-type: none"> • Significant cardiac disease • Some neurological disorders • Some anatomical deformities, surgery or injuries to woman's back • Sepsis • Suspicious or pathological CTG which has not had obstetric review
Observations during labor	<ul style="list-style-type: none"> • Blood pressure check – supine and lying on side <ul style="list-style-type: none"> ○ Before the first dose and ○ subsequent top-ops ○ Every five minutes and 20 minutes and then ½ hourly. • Continuous fetal heart rate

	<ul style="list-style-type: none"> • Bladder function: sensation will be abolished and may not return sufficiently <ul style="list-style-type: none"> ○ Before a top-up to allow a patient to micturate normally. ○ If more than once catheterization is required, a Foley's catheter should be left in situ.
Second Stage Management:	<ul style="list-style-type: none"> • Vaginal examination needed to confirm the second stage as patient may not have bearing down sensation • Higher incidence of instrumental deliveries due to prolonged second stage. • Before a forceps delivery, prop up the patient and give the top-up (7-8 mls.) into epidural catheter- less volume may be needed if there is already an adequate block. • The sitting position may help to block the perineum. <ul style="list-style-type: none"> ○ Uterine sensation sympathetic - T 11, 12 ○ Cervical sensation para-sympathetic - S 2, 3, 4 ○ Perineum sensation somatic - S 2, 3, 4
Epidural Catheter removal	<ul style="list-style-type: none"> • The catheter is removed after third stage is complete, as instructed by anesthetist. • In cases of pre-eclampsia, epidural can be continued for 24 hours as it can reduce or minimize the dose of antihypertensive drugs • Thromboprophylaxis given at least 6 hrs later and that coagulation parameters are within normal range

4.0 Treatment of Side effects of Epidural Analgesia

Side Effects	Immediate	Follow up
Nausea	Metoclopramide -10 mg I/m or I/V	Every 4-6 hourly as needed
Pruritis	Diphenhydramine 25-30 mg orally / I/V or I/M every 4-6 hrly as needed	If no response after 2 doses then Naloxone 0.4 – 0.6 mg in divided doses (1 amp naloxone + 4 ml saline in 5 ml syringe and give 1 ml at 5 minutes interval)

Respiratory depression (RR below 4 breaths/ minute)	<ul style="list-style-type: none"> • Notify the duty Doctor • Administer 50 % Oxygen by Venturi mask • Naloxone 0.2 mg I/V stat 	<ul style="list-style-type: none"> • Bleep 1st on call Anesthetist • Discontinue Epidural infusion
Sedation	Reduce rate of epidural infusion by 50 % of the set flow rate	Bleep 1 st on call Anesthetist
Urinary Retention	Single time urinary catheter	
Persistent Pain	Inject 5-6 ml Bolus of 1% lignocaine without adrenalin through epidural catheter	<ul style="list-style-type: none"> • Increase rate of epidural infusion by 50 % of set flow rate • Bleep 1st on call Anesthetist
Parasthesia, numbness and motor weakness	Reduce the rate of epidural infusion by 50 % of the set flow rate	Bleep 1 st on call Anesthetist
Headache or Body ache/ Backache	Notify the duty Doctor	Paracetamol 200mg oral / I/V or I/M or P/R
Hypotension	Bolus 250 ml Ringer Lactate I/V	Ringer Lactate infusion 500 ml 4-6 hrly
Abnormal FHR	Stop epidural infusion	Can be restarted when FHR normal

Epidural Analgesia in Labor

1.0 Introduction

Epidural anesthesia in labor is managed by experienced anesthetists. They are informed by midwife or obstetrician on duty for the procedure.

Before establishing epidural analgesia, the anesthetist should explain the procedure and common complications

- • Accidental Dural Puncture & possibility of persistent headache
- • Association of Instrumental delivery
- • Possibility of Incomplete analgesia or repeat procedure if needed

- • Rare possibility of nerve damage and infection

2.0 Pre-anesthetic Evaluation - should ideally include

History including a maternal health and past anesthesia history, a relevant obstetric history.

To confirm there are no contraindications.

Focused physical examination includes airway, heart and lung examination

Examine the patients's back

Vital signs base line BP, HR, SPO2, RR, Temperature and Height, weight and BMI

Review of relevant laboratory and imaging studies

A routine platelet count is not necessary in the healthy parturient. It may be individualized and based on a patient's history (e.g., preeclampsia with severe features), physical examination, and medication history.

A Blood Type and Section

3.0 Preparation

- Ensure intravenous access
- Position patient with the help of an assistant (lateral decubitus or sitting)
- Initiate maternal blood pressure and fetal heart rate monitoring
- Skin preparation
- Use 0.5% chlorhexidine spray
- Spray the back and allow to dry before skin palpation or puncture
- Keep chlorhexidine well away from drugs and equipment to be used and change gloves if contaminated
- If patient allergic use a 10% povidone iodine solution

4.0 PROCEDURE

4.1 Aseptic technique

- Use thorough hand washing with surgical scrub solution
- Barrier measures should be applied including: cap, face mask, gown, sterile gloves and use of sterile drape
- Consider eye protection

4.2 Insertion Technique

- Preferred sites for epidural insertion are : (L2-3, L3-4, L4-5)
- Infiltrate needle path with lidocaine
- Site epidural catheter using 16 or 18 gauge needle with subsequent insertion of an 18 to 20 gauge flexible catheter with technique of your choice using normal saline for loss of resistance if possible
- Long Touhy needles 12cm and 14cm are available for obese women
- Leave 4-5cm catheter in space (consider leaving more in obese women)
 - ≤ 4 cm as this is associated with fewer missed segments. It is unacceptable to withdraw the catheter through the needle as this can result in the catheter shearing. Remove needle and then pull catheter back to required length
- Aspirate catheter as an aid to confirm no Cerebral Spinal fluid (CSF) or blood
- Attach the antibacterial filter as all injections must be through this
- Secure with appropriate dressing
- The catheter should be clearly labeled as 'epidural line'
- Consider asking for advice or help
 - if a dural tap is performed. (A consultant anesthetist should be informed within 24 hours),
 - If successfully epidural canula is not inserted within 20 minutes and If the patient is becoming distressed
 - If suspected an IV catheter and consider re-siting epidural.
- Safely dispose of sharps in appropriate container

4.3 Initial / test dose

- "Every dose is a test dose"
- Ensure maternal and fetal monitoring

- Give 3ml of 2% lignocaine with adrenaline as the test dose, and after 10 minutes test the block.
- Allow at least 5 minutes to pass before ensuring blood pressure is stable and giving further drug
- There should be no significant loss of power in legs
 - If the test dose is negative for intravascular and intrathecal placement, secure epidural catheter and position patient in the lateral position
 - Be aware of signs of local anesthetic toxicity. These may include: Light headedness, circumoral tingling, tinnitus, odd taste in mouth, seizures, cardiovascular collapse

4.4 Initial epidural dose

- After test dose give therapeutic dose : Total of 5-10 ml of 0.25% bupivacaine
- Administer 5–15 mL of local anesthetic solution in 5 mL increments (usually the low concentration of a local anesthetic combined with a lipid-soluble opioid e.g. 0.25%/0.125 % Bupivacaine and fentanyl)
- Measure and record maternal heart rate (HR), blood pressure (BP) and FHR at 5 minute intervals for first 10 minutes, 15– min for first one hour and every 30 min thereafter or until the patient is hemodynamically stable
- If there is hypotension (>20% fall or <1 100 mm Hg) give ephedrine 3-6 mg Iv every 2 mins till hemodynamically stable.
- Ice should be used to establish the extent of loss or reduction of cold discrimination (ethyl chloride should only be used if ice is unavailable).
- If there is excessive/rapid sensory or motor block (especially of S1), suspect Intrathecal placement. This should be evident in 10 minutes
- Assess and record the sensory level of the block hourly
 - The block should be assessed 20 minutes after completion of the establishing dose. Ask the patient if her pain relief is adequate. Fill in her pain scores on the epidural chart. The upper and lower dermatome levels on each side must be recorded on the anesthetic chart by the anesthetist. In practice, if S1 (the largest sacral nerve root) is blocked the rest of the sacral roots will be also, so formal testing of the perineum is unnecessary. Test the lateral borders of the feet (S1) for loss of cold discrimination. Both feet should be warm and dry.
 - If analgesia is inadequate after 30ml of solution over 40 minutes, ie. Pain scores remaining > 30-40, consider early re-siting of the epidural.
 - The anesthetist should be immediately available for review of the mother and management of initial complications for at least 20 minutes after initial dose

4.5 Maintenance epidural doses

- Infusion of 0.125% bupivacaine + fentanyl 2 µg/ml at 5-10 ml/hr

- Maintenance can be by intermittent top-ups of solution. This can be administered with the patient on the bed or sitting in a chair. BP and FHR should be monitored at 5 minute intervals for 10 min after each top-up.

- These can be given by appropriately trained nurses
- Vital signs monitoring and block level assessment should continue as for initial dose
- Prescribe intravenous fluids on the appropriate chart
- Prescribe epidural doses on the appropriate drug chart

- Monitor the fetal heart rate for 20–30 min after initiation of neuraxial block. May be associated with transient fetal bradycardia. Treatment includes relief of aortic caval compression, correction of maternal hypotension, supplemental oxygen, discontinuation of oxytocin, and fetal scalp stimulation

- The majority of the obstetric services practice continuous fetal heart monitoring following initiation of labor analgesia.

- Assess pain score and extent of sensory blockade
- Periodic assessment of sensory and motor block will aid in dose titration, optimizing analgesia and minimizing side effects.
- Record the vital signs and effects of epidural on the chart provided/ electronically.
- Initiate maintenance epidural analgesia as per protocol
- Complete the obstetric audit form

5.0 On-going care

- The anesthetist must attend the patient if the nurse is concerned about the epidural.
 - Problems may include: hypotension, high or low block level, inadequate analgesia, filter disconnections, blood in the catheter

5.1 Aspiration Prevention includes

5.1.2 Oral intake

- Solid foods should be avoided in laboring patients.
 - Clear liquids to be given e.g. water, fruit juices without pulp, carbonated beverages, clear tea, black coffee, and sports drinks.
 - The oral intake of moderate amounts of clear liquids may be allowed for uncomplicated laboring patients.
 - Laboring patients with additional risk factors for aspiration (e.g., morbid obesity, diabetes mellitus, and difficult airway) or patients at increased risk for operative delivery (e.g., non-reassuring fetal heart rate pattern) may have further restrictions of oral intake, determined on a case-by-case basis.

5.13 Antacids, H2-receptor Antagonists and Metoclopramide

All mothers having epidural analgesia for labor should be prescribed ranitidine 150mg 6hourly for the remainder of their labor.

6.0 Removal of epidural catheters

- Ensure timing is appropriate with regard to thromboprophylaxis and that coagulation parameters are within normal range
- Remove dressing and carefully withdraw catheter ensuring it is intact
- Check catheter and its integrity with a second person and document in records
- Notify the anesthetist if it is not intact and retain catheter for inspection
- If there is anything unusual about the insertions it alert the anesthetist
- Once the epidural has been removed the patient must be informed that she must not attempt to get out of bed unaided, even if she has the feeling coming back to her legs

7.0 Post-delivery care following regional analgesia in labor

- Return of motor power should be monitored by continuing observations of motor power until full recovery is present.
- Women should be advised not to get out of bed unaccompanied in the first instance. Postnatal falls in women who have had epidural or regional analgesia for labor should be reported via local incident monitoring systems, and monitored.

8.0 Risks epidural analgesia

Type of risk	How often does this happen?	How common is it?
Significant drop in blood pressure	One in every 50 women	Occasional
Not working well enough to reduce labor pain so you need to use other ways of lessening the pain Not working well enough for a	One in every 8 women	Common

caesarean section so you need to have a general anesthetic	One in every 20 women	Sometimes
Severe headache	One in every 100 women (epidural) One in every 500 women (spinal)	Uncommon
Nerve damage (numb patch on a leg or foot, or having a weak leg)	Temporary - one in every 1,000 women	Rare
Effects lasting for more than 6 months	Permanent - one in every 13,000 women	Rare
Epidural abscess (infection)	One in every 50,000 women	Very rare
Meningitis	One in every 100,000 women	Very rare
Epidural hematoma (blood clot)	One in every 170,000 women	Very rare
Accidental unconsciousness	One in every 100,000 women	Very rare
Severe injury, including being paralyzed	One in every 250,000 women	Extremely rare

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