

# PAIN RELIEF IN LABOUR

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## INTRODUCTION

The use of epidural has steadily increased in our country over the past few years. With more expertise in the siting of epidural space and catheter insertion, our anaesthesiologists now judge the different techniques of anaesthesia available to them for a particular patient. The pain relief in labour has not been so fortunate, and the progress made has been a slow process. A number of factors may be involved in comparatively lower acceptance of this useful modality by our population, including social customs and taboos, the relative lack of public awareness, fear of unknown, lack of organized maternity services and the inability or unwillingness on the part of gynaecologists to spare extra time and effort for epidural recipients. The trend is likely to change positively in the days to come. In the following pages salient features of the practical aspects of painless labour are presented.

## **LUMBAR EPIDURAL ANALGESIA IN LABOUR**

### **Selection of Patients for Epidural analgesia**

Any patient in labour or having labour induced may be considered for epidural analgesia.

**Epidural analgesia is particularly indicated in the following circumstances:**

- For pain relief during trial of labour or prolonged labour
- Pre-eclampsia
- Fetus at risk: e.g. in pre-eclampsia, diabetes mellitus, chronic renal disease, prematurity, postmaturity.
- Breech delivery or multiple births
- Maternal cardiac, cerebrovascular or respiratory disease
- Patient's request or particularly painful labour
- Intra-uterine death or known congenital anomaly of fetus
- Awake caesarean section or forceps delivery

It is more often employed in women who are undergoing induced labour, especially if they are primigravidae, than in spontaneous labour. It is important that the selection of mothers to have epidural analgesia is made as early as possible to avoid the problem of epidural insertion in advanced labour and the adverse effects of pethidine on mother and baby.

## CONTRA-INDICATIONS

- Local sepsis, pelvic or peritoneal infection, septicemia
- Anticoagulant therapy or bleeding diathesis
- Haemorrhage or hypovolaemia
- Severe spinal abnormality
- Patients with these problems should be referred for consultant anaesthetist's opinion in the Day Surgery Unit
- Some neurological diseases
- Objection by the mother
- Lack of trained staff to provide safe care

## PREPARATION OF THE OBSTETRIC PATIENT FOR EPIDURAL ANALGESIA.

Thorough preparation before the start of the procedure is mandatory to avoid later complications and the trouble.

1. Before insertion of an epidural catheter the procedure and effects must be explained to the patient.
2. The patient should empty her bladder.
3. She should be on a suitable firm tilting obstetric bed.
4. A blood pressure cuff is placed on the patient's upper arm and the reading noted.
5. An intravenous line should be inserted into a suitable forearm vein.
6. Ephedrine must be readily available (30 mg

ampoules, ephedrine for injection).

**Equipment:** Following equipment must be available and checked;

- Oxygen administration equipment
- Suction apparatus
- Resuscitation equipment and drugs, must all be checked and readily available
- Epidural pack
- Regional anaesthesia pack (Sterile)
- Alcoholic betadine solution
- Lignocaine injection
- Plastic spray dressing
- Disposable syringes of different sizes

The patient should be positioned in the left lateral position with her back near the edge of the bed (or the right lateral if left-handed). The sitting position should be reserved for very obese mothers. Epidural and spinal analgesia/anaesthesia must be performed using full aseptic precautions. The operator scrubs up and wears gown and gloves, then cleans the patient's back with antiseptic solution and drapes up. Any excess of spirit should be wiped off or allowed to dry before proceeding.

1%(or 2%) lignocaine is used to produce a skin wheal over the chosen lumbar interspace with a 25-gauge needle, then infiltrated down to the ligaments. Care should be taken to keep the Tuohy needle perpendicular to the patient's back and directed slightly towards the head. Once the Tuohy needle has entered the supraspinous ligament the stylet is withdrawn and a syringe with a free-moving plunger or a loss of resistance device attached, so that the loss of resistance can be used to identify entry into the epidural space. The siting of the needle in the epidural space is confirmed by the easy injection of sterile saline through the needle and the absence of escaping fluid when the syringe is detached. The catheter should then be threaded through, leaving 5 cm in the epidural space. If there is difficulty introducing the catheter it must never be withdrawn through the needle as this can shear off or damage the tip, so that it could break subsequently. If the catheter has to be withdrawn the needle must be withdrawn with it as well.

During subsequent conduct of epidural analgesia the pregnant woman must never be allowed to lie flat on her back, because of the risk of vena caval compression and supine hypotension. Left lateral tilt is adopted with a pillow under the right hip of the patient.

Oral fluids can be administered as per the labour

ward protocol.

**COMMON REGIMENS:** Some commonly employed analgesic regimens are presented for the guidance of the novice.

1. Early labour, or a mother who is not in severe pain

a. To Establish Analgesia

12-15 ml 0.0625% bupivacaine + 2 µg/ml fentanyl

b. To Maintain Analgesia

Infuse the above solution at 10-12 ml/hr. if the mother particularly wishes to remain mobile – consider using 0.0625% bupivacaine + 2.65 µg/ml fentanyl. Commence the infusion 30-45 minutes after initial dose.

2. Established labour with painful contractions

a. To Establish Analgesia:

10-15ml Bupivacaine + 2.0 µg/ml fentanyl

b. To Maintain Analgesia:

Infuse the above solution at 10-12 ml/hr. If the mother particularly wishes to remain mobile – consider using 0.0625% bupivacaine + 2.65 µg/ml fentanyl. Commence the infusion 30-45 minutes after initial dose.

3. Advanced labour (cervical dilatation >8cm), or a mother in severe pain

a. To Establish Analgesia:

Epidural

10 ml 0.25% bupivacaine + 50 µg fentanyl (1 ml)

Administer in increments of 4 ml + 7ml

Combined Spinal Epidural (CSE) His preferable in advanced labour to achieve rapid onset of analgesia.

16 G Tuohy needle

27 G Whitacre needle

Spinal analgesia is produced by injecting 0.25% bupivacaine 2ml. Then epidural catheter is inserted and a loading dose of 10-12ml of 0.0625% bupivacaine is injected through it.

0.25% bupivacaine-1 ml

Saline- 0.5 ml

Total Volume- 2 ml

b. To Maintain:

Infuse 0.1% bupivacaine + 2.0 µg/ml fentanyl at a rate of 10-12 ml/hr.

4. Supplemental pain relief for inadequate analgesia

Inject 10 ml of the chosen infusion slowly. Consider adding an extra 50 µg fentanyl if there is perineal pain (e.g. persistent occipito-posterior position)

\* Check the epidural catheter, has it come out?

\* If analgesia is still unsatisfactory, resite the epidural

For all infusions: assess motor & sensory block hourly.

Adjust infusion rate to maintain a sensory block to cold sensation at T8-T10

Infusions are changed by the on call anaesthetist.

## PREPARATION OF EPIDURAL INFUSION

1. Syringe Pumps with 50 ml syringe

**a. 0.0625% bupivacaine+ fentanyl 2 µg/ml**

0.25% plain bupivacaine	10ml
Fentanyl	100 µg
Normal saline	28 ml
Total	40 ml

**b. 0.1 % bupivacaine + fentanyl 2 µg/ml**

0.5% plain bupivacaine	10 ml
Fentanyl	100 µg
Normal saline	38 ml
Total	50 ml

Note: - If fentanyl or bupivacaine is not available, one can use 2% Lignocaine 10-12 ml and through epidural catheter 5-7 ml 1-2% lignocaine can be used as "top up"

## REGIONAL BLOCKS FOR LSCS

### **A: ELECTIVE AND SEMI-URGENT**

(This is an obstetric decision. More than 30 min available between the decision to do LSCS and the actual delivery of the baby)

#### **TECHNIQUE I: EPIDURAL**

- Prepare epidural solution 20 ml 0.5% bupivacaine  
2 ml (100 µg) fentanyl  
1 ml 1:10, 000 Adrenaline

- 14 or 16 G IV cannula

- 1 L Hartmann's solution running, followed by 500 ml as the block is establishing

Step 1: Site the epidural and insert the catheter

Step 2: Inject 3 ml of epidural solution as test dose

Step 3: Inject the remaining solution slowly over next 5 minutes

Step 4: Check the block height at 10 minutes. It should be possible to insert a urinary catheter at this time.

If the block fails to extend, consider injecting another 10 ml of 0.25% bupivacaine (Remember: toxic dose for bupivacaine is 2 mg/kg)

#### **TECHNIQUE II: CSE (Combined Spinal Epidural)**

- 14 or 16 G IV cannula
- 1 L Hartmann's solution running
- Left lateral position

Step 1: Site the epidural

Step 2: Spinal with a 27 G, 120 mm needle (Whitacre) through the epidural needle

- 2.0 to 2.5 ml heavy bupivacaine + 0.25 mg Diamorphine

- Aspirate at the end of injection

- 6-9 mg ephedrine iv prophylactic

(N.B. Some speed is required after this step to gain optimum fixation of the anaesthetic solution!)

Step 3: Epidural catheter insertion, fixation etc. (Do not give a test dose)

Step 4: Turn the patient on her back and then immediately to right lateral position

Step 5: Give 100 µg Fentanyl undiluted through the epidural catheter, flush with saline (only if mother has not received intrathecal opiates)

Step 6: After 5-10 min, check the sensory level and decide whether spinal is adequate

If you need to use the epidural catheter to increase the block height:

- 3 ml of 0.5% bupivacaine with adrenaline

- Check the levels after 5 min.

- Up to 20 ml of 0.5% bupivacaine with adrenaline can be used to get the desired level of block height.

(This amount is only necessary if the spinal has completely failed)

- Preferably use 4-6 ml at a time

### **TECHNIQUE III : SINGLE-SHOT SPINAL ANAESTHESIA FOR LSCS**

Site a large bore intravenous cannula (16G) and infuse 1 L of crystalloid solution during the preparation and induction of the block, to avoid hypotension.

Perform the block in the right or left lateral position. However, the sitting position may be preferable if the patient is obese or is in severe pain and unable to remain still.

A 25G or 27G pencil point spinal needle should be used. 2.0-3.0 ml of heavy bupivacaine 0.5% will be required to achieve adequate analgesia. To prevent visceral pain, the local anaesthetic should be supplemented with 25 mg fentanyl or 0.25 mg diamorphine (if available).

Spinal anaesthesia for Caesarean section can cause significant hypotension, and mothers should be given prophylactic 6-9 mg ephedrine IV (if available). Further increments of ephedrine should then be administered as required. Metaraminol 0.5 mg should be considered if the mother develops tachycardia. Oxytocin 10 units should be considered, and 20-30 U should be infused in 500 ml saline during the first postoperative two hours. Post-op analgesia may include regular (not PRBN) diclofenac (50 mg-8 hourly) and parenteral morphine / diamorphine as required.

### **CONTRA-INDICATIONS TO SPINAL ANAESTHESIA**

- Pre-eclampsia / eclampsia
- Essential hypertension
- Severe APH
- Placenta praevia
- Infection:- Pyrexia
- Chorio-amnionitis
- Local skin sepsis
- Genital herpes
- Prolonged rupture of membranes (more than 24 hr)

### **B. EMERGENCY LSCS FOR PATIENTS WITH EPIDURAL IN SITU**

Check and note the block height with patient in lateral position

Inject 15 ml of 0.5% bupivacaine with adrenaline or 0.75% ropivacaine if the block height is below T 10.

Inject over 5 minutes. If the block is above T 10, inject only 10 ml to start with and further 5-10 ml as required.

If there is no sacral block, the loading can be achieved with 20-25 degree head-up tilt in either lateral position, depending upon the block characteristics.

Usually the patient is ready for surgery in about 10-12 minutes.

### **C. 'STAT' LSCS IN MOTHERS WITHOUT ESTABLISHED EPIDURAL ANALGESIA**

'Stat' means a time of <20-30 minutes from decision to delivery.

Decision is made by the anaesthesiologist regarding the choice of anaesthesia. You may choose whatever method of anaesthesia you are most confident with.

### **BLOOD PROTOCOL FOR ELECTIVE CAESARIAN SECTION**

The blood should have been cross-matched before embarking upon an elective LSCS in the following conditions. The anaesthesiologist is the best judge regarding the amount of blood, and the decision is made in the light of general condition of the patient, her pre-operative Hb level, and the laboratory facilities available locally.

- Placenta praevia
- Anaemia (Hb <9.0)
- Previous postpartum Haemorrhage
- Multiple pregnancy
- Anticipated difficult Caesarian
  - a. More than 2 previous Caesarean section
  - b. Known fibroids
  - c. Previously difficult operation
- Women with antibodies that may cause delay in crossmatching

### **RECOMMENDATIONS FOR THE USE OF REGIONAL ANAESTHESIA / ANALGESIA IN MOTHERS RECEIVING PERIPARTUM ANTICOAGULANT / ANTITHROMBOTIC THERAPY:**

The following factors should be considered:

- Patient's history
- Current medications
- The specific anticoagulant
- Risk of stopping therapy

- Benefit of regional block

## THERAPEUTIC REGIMENS

### 1. Patient who is fully anticoagulated

Regional anaesthesia is contraindicated.

### 2. Patient on aspirin or other antiplatelet medication

The risk of spinal or epidural does not appear to be increased.

### 3. Patient on prophylactic anti-thrombotic regimens

*Unfractionated heparin*; 5000 U s/c (7,500 U in pregnancy)

- Allow at least 6 hours after last dose of heparin before performing regional anaesthesia or removing the epidural catheter.

- Subsequently first dose of heparin may be given 1 hour after epidural insertion or removal.

- In the event of a "bloody tap", wait 2 hours before the first/next dose of heparin.

*Low molecular weight heparin (LMWH)*

Enoxparin (Clexana) Dalteparin (Fragmin) Tinzaparin (Innohep)

- Needle/catheter placement is done at least 12 hours after the last dose of LMWH.

- Subsequent or first dose of LMWH should be delayed for at least 1 hour after needle/catheter placement.

- Free flow of blood down the needle/catheter warrants delay of hours before the next dose.

- Catheter removal should be delayed for at least 12 hours after dose of LMWH and subsequent administration should not occur for at least 2 hours after catheter removal.

## POSTOPERATIVE LMWH

Give the first dose at least 1 hour after insertion of the needle/catheter.

- Free flow of blood down the needle/catheter warrants a delay of 2 hours before the first dose.

- Catheter removal should be delayed for at least 12 hours after a dose of LMWH and subsequent administration should not occur for at least 2 hours after catheter removal.

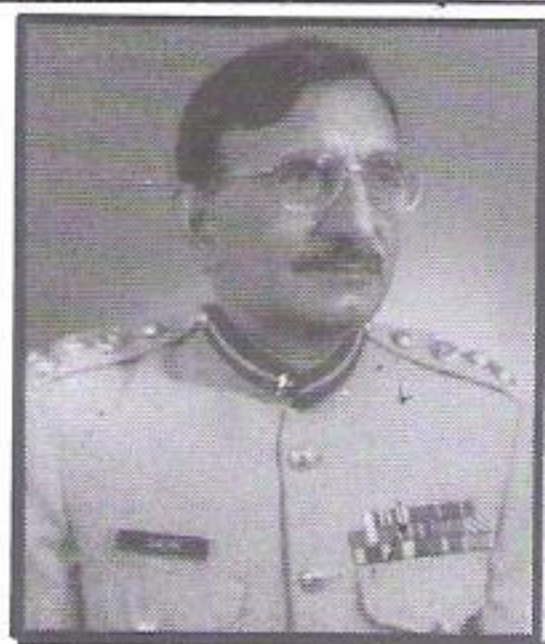
Mothers must be monitored for the following complaints, until the block has resolved.

- New back pain
- Localised tenderness
- Root pain
- Altered sensation
- Weakness/paralysis of the lower limbs
- Headache

In a mother who is receiving antithrombotic/anticoagulant therapy and who has or had an epidural catheter in situ must be reviewed by the anaesthetist.

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