Pain relief in labor

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Pain relief in labor

- There is a social and cultural dimension to the provision and uptake of analgesia in labor. Some women prefer and others do not prefer analgesia in labor.
- pain relief should give tailored advice according to the needs and priorities.
- The method of pain relief is to some extent dependent on the previous obstetric record of the woman, the course of labour and also the anticipated duration of labor.
- Although the final decision rests with the woman, there are certain circumstances in which particular forms of analgesia are contraindicated and should not be offered.

Non-pharmacological methods

1. One-to-one care in labor from a midwife alongside a supportive birth partner has been shown to reduce the need for analgesia.
2. Relaxation and breathing exercises may help the woman to manage her pain. Prolonged hyperventilation can make the woman dizzy and can cause alkalosis.
3. Homeopathy, acupuncture and hypnosis are sometimes employed, but their use has not been associated with a significant reduction in pain scores or with a reduced need for conventional methods of analgesia.

Non-pharmacological methods

4. Relaxation in warm water during the first stage of labor often leads to a sense of wellbeing and allows women to cope much better with pain. The temperature of the water should not exceed 37.5°C.

5. Transcutaneous electrical nerve stimulation (TENS) works on the principle of blocking pain fibres in the posterior ganglia of the spinal cord by stimulation of small afferent fibres (the 'gate' theory). Usually used in latent phase. It does not have any adverse effects, but is often disappointing.

Pharmacological methods

OPIOID ANALGESIA

- **Opiates**, such as pethidine and diamorphine, are still used in most obstetric units and indeed can be administered by midwives without the involvement of medical staff. This may be one of the reasons for their popularity. They should be available in all birth settings but they provide only limited pain relief during labor and furthermore may have significant side-effects.

Pharmacological methods

Side-effects of opioid analgesia

1. Nausea and vomiting (they should always been given with an antiemetic).
2. Maternal drowsiness and sedation.
3. Delayed gastric emptying (increasing the risks of general anaesthesia).
4. Short-term respiratory depression of the baby.
5. Possible interference with breastfeeding.

Pharmacological methods

OPIATE ADMINISTRATION:

- Opiates tend to be given as intramuscular injections; however, an alternative is a subcutaneous or intravenous infusion by a patient-controlled analgesic device (PCA). This allows the woman, by pressing a dispenser button, to determine the level of analgesia that she requires. If a very short-acting opiate is used, the opiate doses can be timed with the contractions. This method of pain relief is particularly popular among women who cannot have an epidural and find non- pharmacological options insufficient.

Inhalational analgesia

Nitrous oxide (NO) in the form of Entonox®

- An equal mixture of NO and oxygen, is available on most labor wards.
- It has a quick onset, a short duration of effect and is more effective than pethidine.
- It may cause light-headedness and nausea.
- It is not suitable for prolonged use from early labor because hyperventilation may result in hypocapnoea, dizziness and, rarely, tetany and fetal hypoxia.
- It is most suitable later on in labor or while awaiting epidural analgesia.

Epidural analgesia

- Epidural (extradural) analgesia is the most reliable means of providing effective analgesia in labor.
- Failure to provide an epidural is one of the most frequent causes of upset and disappointment among laboring women.
- The epidural service must be well organized to be effective, and fortunately resources are now available in most hospital settings so that a significant delay in the placement of an epidural is unusual.

Epidural analgesia

- The **decision** to have an epidural sited *should be a combined one between the woman, her midwife, the obstetric team and the anesthetist*.
- The woman must be informed about the benefits and risks and the final decision in most cases rests with the woman unless there is a definite contraindication.
- It is important to *warn the woman that she may lose sensation and movement in her legs temporarily*, and that intravenous access and a more intensive level of maternal and fetal monitoring will be necessary, for example with continuous EFM (the CTG).

Epidural analgesia

- The **effect of epidural analgesia on labor duration and the operative delivery rate** has been a controversial issue. The evidence is now clear that epidural analgesia does **not** increase caesarean section rates. However, the second stage is longer and there is a greater chance of instrumental delivery, which may be lessened by a longer passive second stage awaiting a maternal urge to push.

Indications and contraindications for epidural analgesia

- **Indications**

1-Prolonged labor/oxytocin augmentation. 2- Maternal hypertensive disorders.

3- Multiple pregnancy. 4- Selected maternal medical conditions.

5- A high risk of operative intervention.

- **Contraindications**

1- Coagulation disorders (e.g. low platelet count). 2- Local or systemic sepsis.

3- Hypovolaemia.

4- Logistical: insufficient numbers of trained staff (anaesthetic and midwifery).

Complications of epidural analgesia

1. **Accidental dural puncture (incidence <1% of cases):**

- If the subarachnoid space is accidentally reached with an epidural needle, this may allow leakage of cerebrospinal fluid (CSF) and results in a 'spinal headache'. This is characteristically experienced on the top of the head and is relieved by lying flat and exacerbated by sitting upright.
- If the headache is severe or persistent, **a blood patch** may be necessary. This involves injecting a small volume of the woman's blood into the epidural space at the level of the accidental dural puncture. The resulting blood clot is thought to block off the leak of CSF.

Complications of epidural analgesia

2- Bladder dysfunction can occur if the bladder is allowed to overfill because the woman is unaware of the need to micturate, particularly after the birth while the spinal or epidural is wearing off. Overdistension of the detrusor muscle of the bladder can permanently damage it and leave long-term voiding problems.

To avoid this, *catheterization of the bladder should be carried out* during labor if the woman does not void significant volumes of urine spontaneously.

Complications of epidural analgesia

3- Hypotension can occur with epidural analgesia, although it is more common with spinal anesthesia. It can usually be rectified with fluid boluses, but may need vasopressors. Occasionally, maternal hypotension will lead to fetal compromise (see below).

Complications of epidural analgesia

4- Accidental total spinal anaesthesia *(injection of epidural doses of local anaesthetic into the subarachnoid space)* causes severe hypotension, respiratory failure, unconsciousness and *death if not recognized and treated immediately*.

The mother requires intubation, ventilation and circulatory support. Hypotension must be treated with intravenous fluids, vasopressors and positioning of the woman onto her left side. In some cases, urgent delivery of the baby may be required to overcome aorto-caval compression and so permit maternal resuscitation.

Complications of epidural analgesia

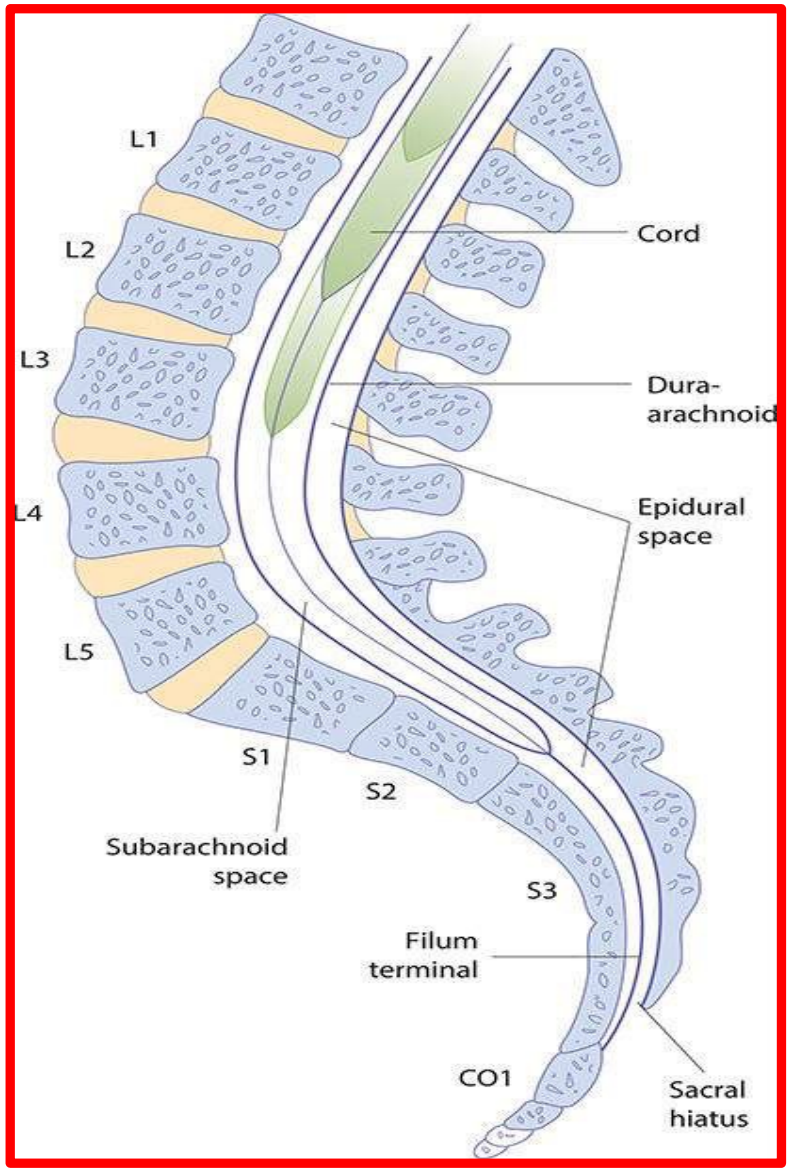
5- Spinal haematomata and neurological complications are rare, and are usually associated with other factors such as bleeding disorders.

6-**Drug toxicity** can occur with accidental placement of a catheter within a blood vessel. This is normally noticed by aspiration prior to injection.

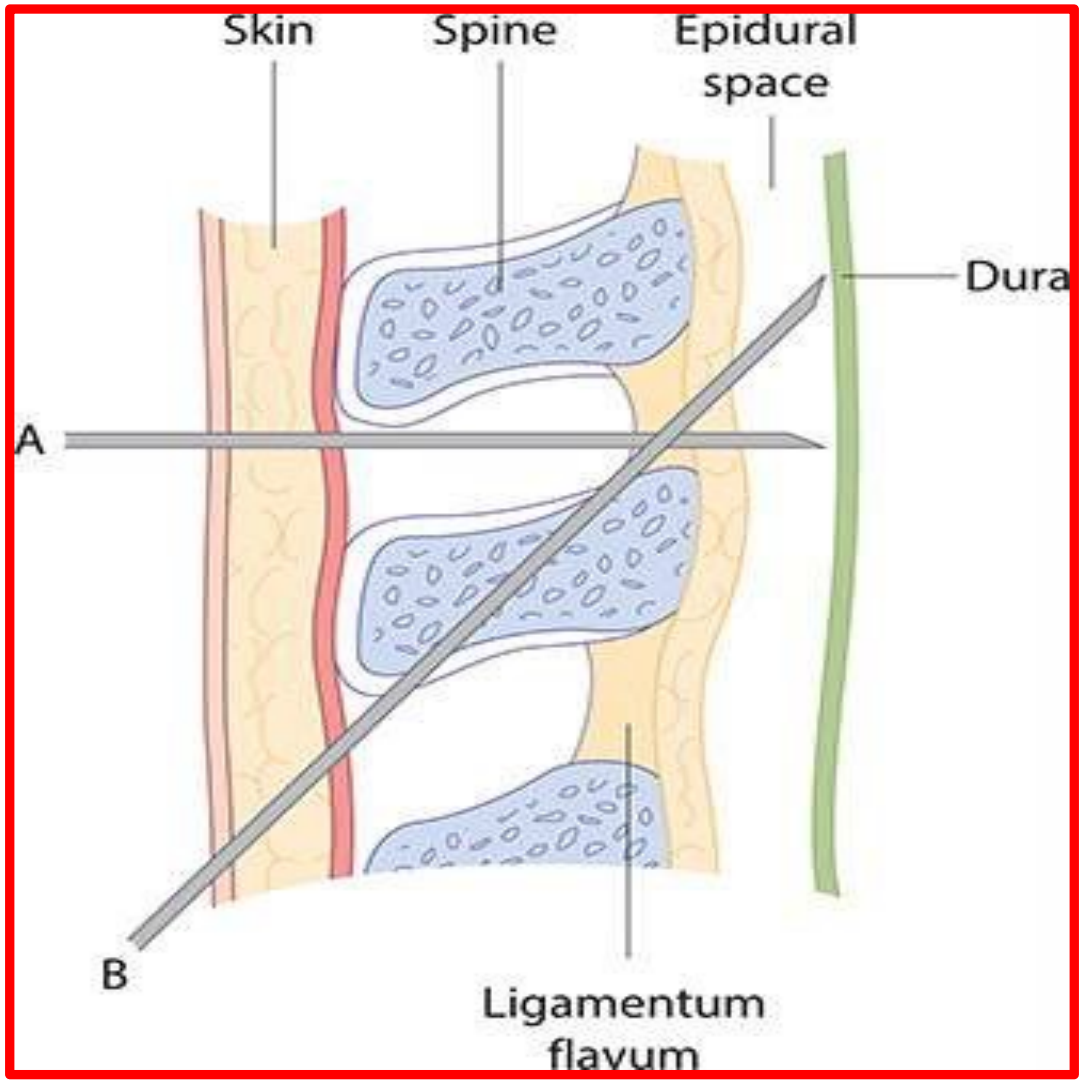
7-Short-term respiratory depression of the baby is possible because all modern epidural solutions contain opioids, which reach the maternal circulation and may cross the placenta.

Technique

- After detailed discussion, the woman's back is cleansed and local anaesthetic is used to infiltrate the skin. The woman may be in an extreme left lateral position, or sitting upright but leaning over. Flexion at the upper spine and at the hips helps to open up the spaces between the vertebral bodies of the lumbar spine. Aseptic technique is used. The epidural catheter is normally inserted at the **L2–L3, L3–L4 or L4–L5** interspace and should come to lie in the epidural space, which contains blood vessels, nerve roots and fat .



Sagittal section of the lumbosacral spinal cord.



Needle positioning for an epidural anaesthetic.

Midline (A) and paramedian (B) approaches.

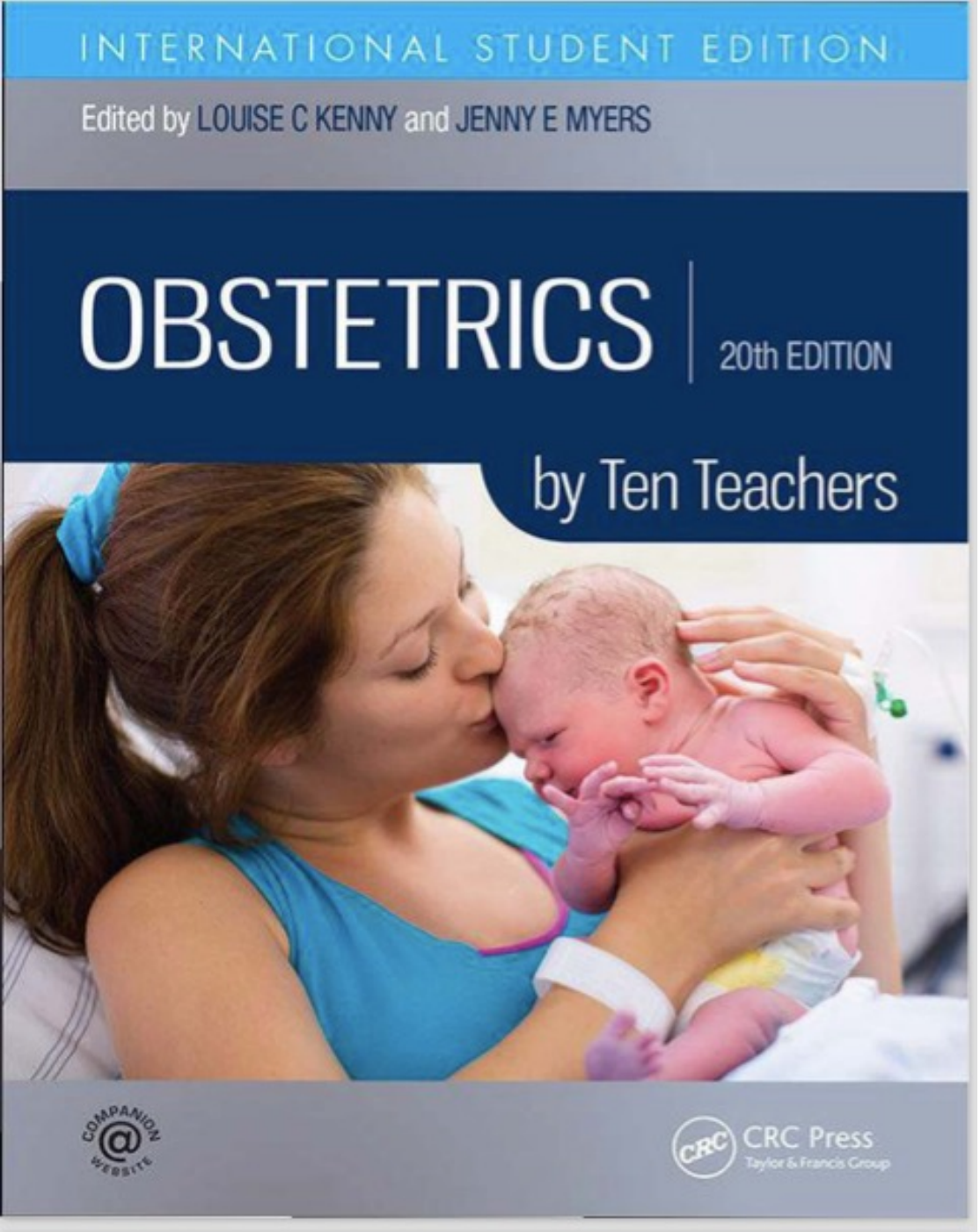
- The catheter is aspirated to check for position and, if no blood or CSF is obtained, a ‘test dose’ is given to confirm the catheter position.
- If none of complication signs is observed 5 minutes after injection of the test dose, a loading dose can be administered. The epidural solution is usually a mixture of low-concentration local anaesthetic (e.g. 0.0625–0.1% bupivacaine) with an opioid such as fentanyl.
- After the loading dose is given, the mother should be kept in the right or left lateral position, and her blood pressure should be measured every 5 minutes for 15 minutes.

Spinal anesthesia

- **A spinal block** is considered more effective than that obtained by an epidural, and is of faster onset. A fine-gauge atraumatic spinal needle is passed through the epidural space, through the dura and into the subarachnoid space, which contains the CSF.
- A small volume of local anesthetic is injected, after which the spinal needle is withdrawn.
- This may be used as anesthesia for caesarean sections, trial of instrumental deliveries (in theatre), manual removal of retained placenta and the repair of difficult perineal and vaginal tears.
- Spinals are not used for routine analgesia in labor.

Combined spinal-epidural (CSE)

- Combined spinal–epidural (CSE) analgesia has gained in popularity.
- This technique has the advantage of producing a rapid onset of pain relief and the provision of prolonged analgesia.
- Because the initiating spinal dose is relatively low, this is a viable option for pain relief in labor.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