Analgesia in labour

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The method of pain relief is to dependent on the

Previous obstetric record of the woman,

The course of labour ,

The anticipated duration of labour.

Non-pharmacological methods

Supportive birth partner,

Relaxation in warm water during the first stage of labour.

Breathing exercises,

Homeopathy,

Acupuncture ,

Hypnosis,

Transcutaneous electrical nerve stimulation (TENS)

Analgesics

There are 2 main categories of commonly used analgesics:

- Systemic non opioid analgesics(acetaminophen, aspirin and nonsteroidal anti-inflammatory drugs [NSAIDs]).

Opioid analgesics (eg, morphine, codeine, meperidine).

Analgesics

Acetaminophen, a non salicylate similar to aspirin in analgesic potency, has efficacy and safety at all stages of pregnancy in standard therapeutic doses.

Aspirin, has potential risks, as it inhibits platelet function and can contribute to maternal and fetal bleeding.

Overall, large trials demonstrate low-dose aspirin's relative safety and generally positive effects on reproductive outcomes.

Nonsteroidal anti-inflammatory drugs

Known to relieve pain through peripheral inhibition of cyclooxygenase and hence inhibition of prostaglandin synthetase.

They include drugs such as ibuprofen, naproxen.

Use of NSAIDs in late pregnancy is associated with a substantial increase in the risk of premature ductal closure.

Pharmacological methods

Opiates, such as pethidine and diamorphine,

Side-effects of opioid analgesia.

Nausea and vomiting (they should always been given with an antiemetic).

Maternal drowsiness and sedation.

Delayed gastric emptying (increasing the risks of general anaesthesia).

Short-term respiratory depression of the baby.

Possible interference with breastfeeding.

Opiates

Opiates given as intramuscular injections.

Alternative is a subcutaneous or intravenous infusion by a patient-controlled analgesic device (PCA).

The woman, by pressing a dispenser button, determine the level of analgesia she requires.

If a very short-acting opiate is used, the opiate doses can be timed with the contractions.

Inhalational analgesia

Nitrous oxide (NO) in the form of Entonox (an equal mixture of NO and oxygen).

It has a quick onset,

A short duration of effect ,

More effective than pethidine.

Side-effects:

Light-headedness,

Nausea

Entonox

Not suitable for prolonged use ,
Hyperventilation may result in
hypocapnoea,
dizziness ,
Rarely, tetany and fetal hypoxia.

It is most suitable later on in labour or while awaiting epidural analgesia.

Epidural analgesia

Epidural (extradural) is the most effective analgesia in labour.

The decision to have an epidural sited should be a combined one between the woman, her midwife, the obstetric team and the anaesthetist.

The woman must be informed about the benefits and risks.

What is an epidural?

An epidural is a way to deliver an anaesthetic so that it stops pain signals travelling from the spine to the brain.

It involves injecting a small amount of anaesthetic into the epidural space of the spine.

The epidural space is filled with fluid and surrounds the spinal cord.

Nerves that carry pain signals from the body to the brain (spinal nerves) connect to the spinal cord in certain places.

Epidural.

The anaesthetic numbs the spinal nerves, blocking the pain signals.

During labour, the anaesthetic is injected into the lumbar area.

A single injection is often not enough to last throughout the entire birth, a catheter is usually put in and then attached to the woman's back.

Technique

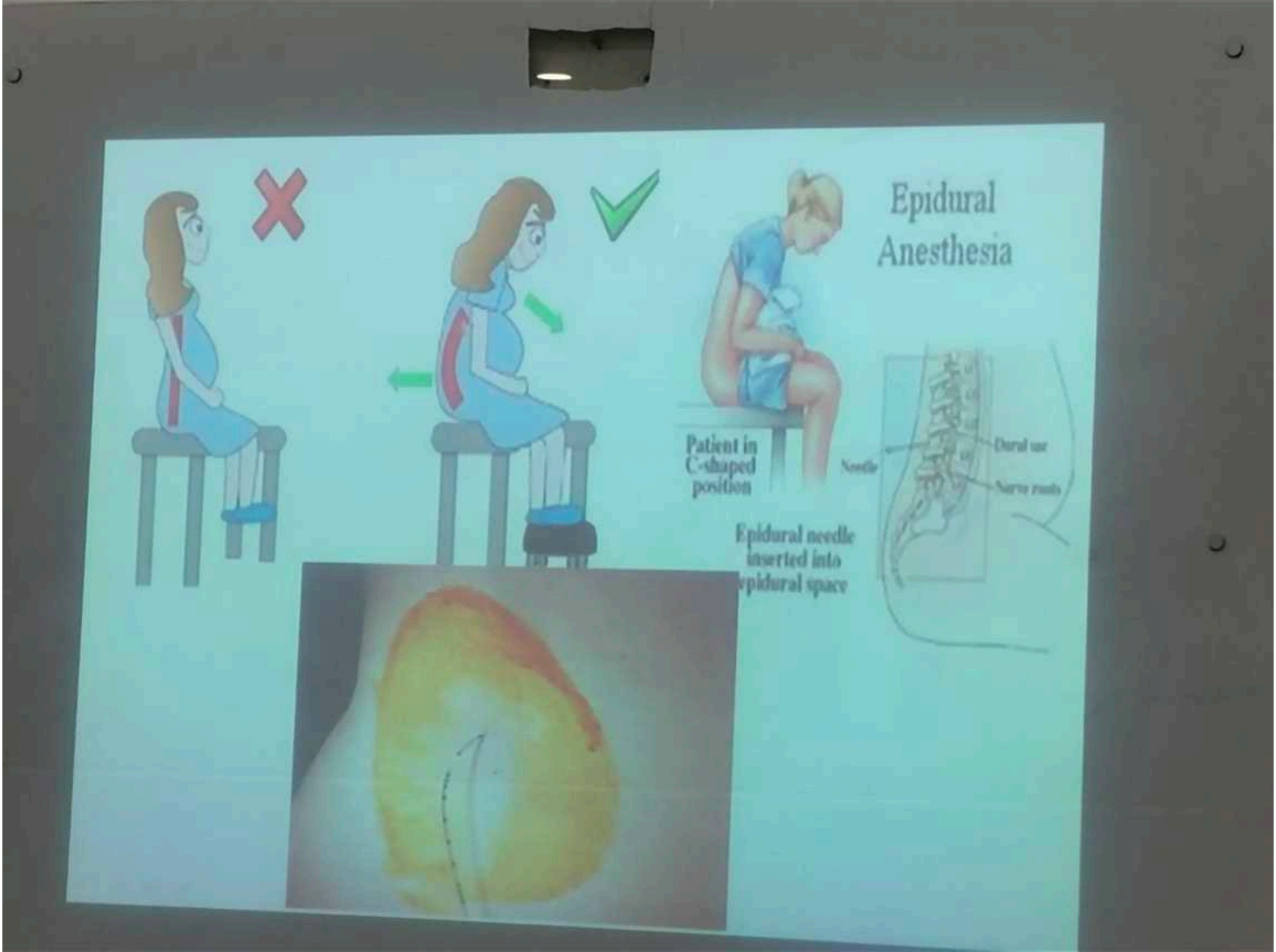
The woman's back is cleansed,

Local anaesthetic is used to infiltrate the skin.

The woman position may be 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.

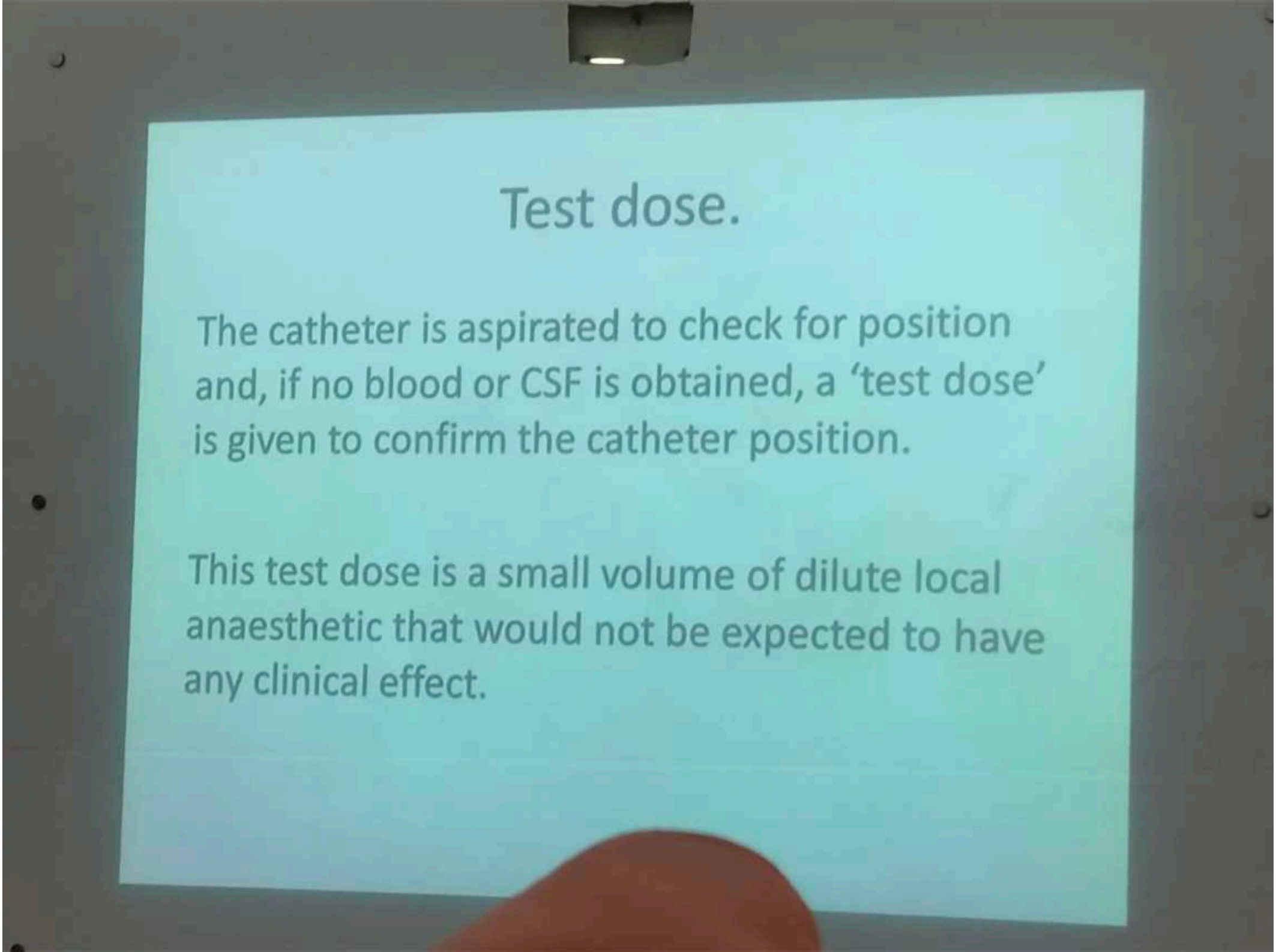
Aseptic technique is used.

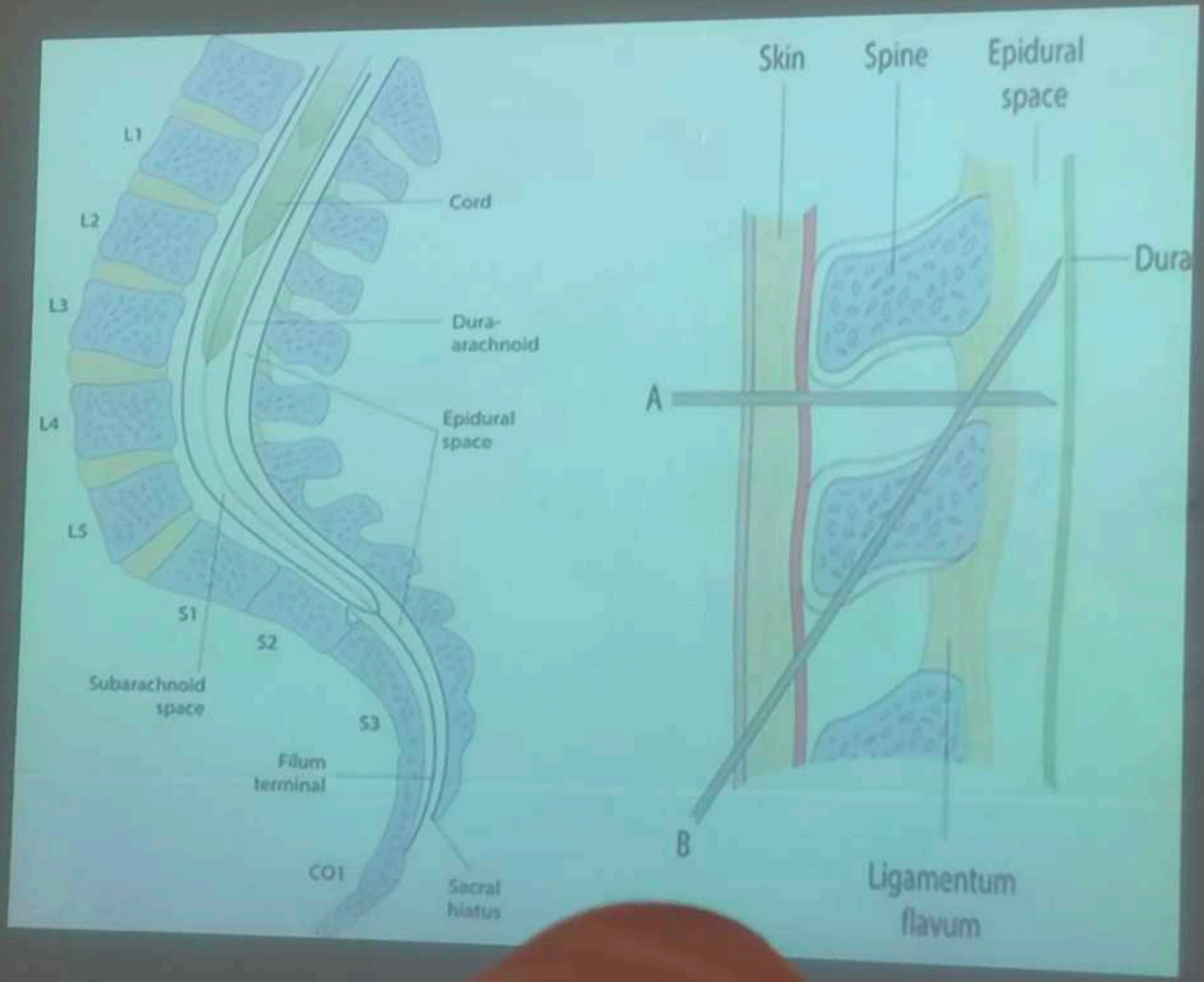

Epidural Anesthesia
Patient in C-shaped position
Needle
Dural sac
Nerve roots
Epidural needle inserted into epidural space

Technique

The epidural catheter (thin plastic tube) is pushed forward into the epidural space using a special needle.

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.


Test dose.
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.
This test dose is a small volume of dilute local anaesthetic that would not be expected to have any clinical effect.


L1
L2
L3
L4
L5
S1
S2
S3
CO1
Cord
Dura-
arachnoid
Epidural
space
Subarachnoid
space
Filum
terminal
Sacral
hiatus
Skin
Spine
Epidural
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A
B
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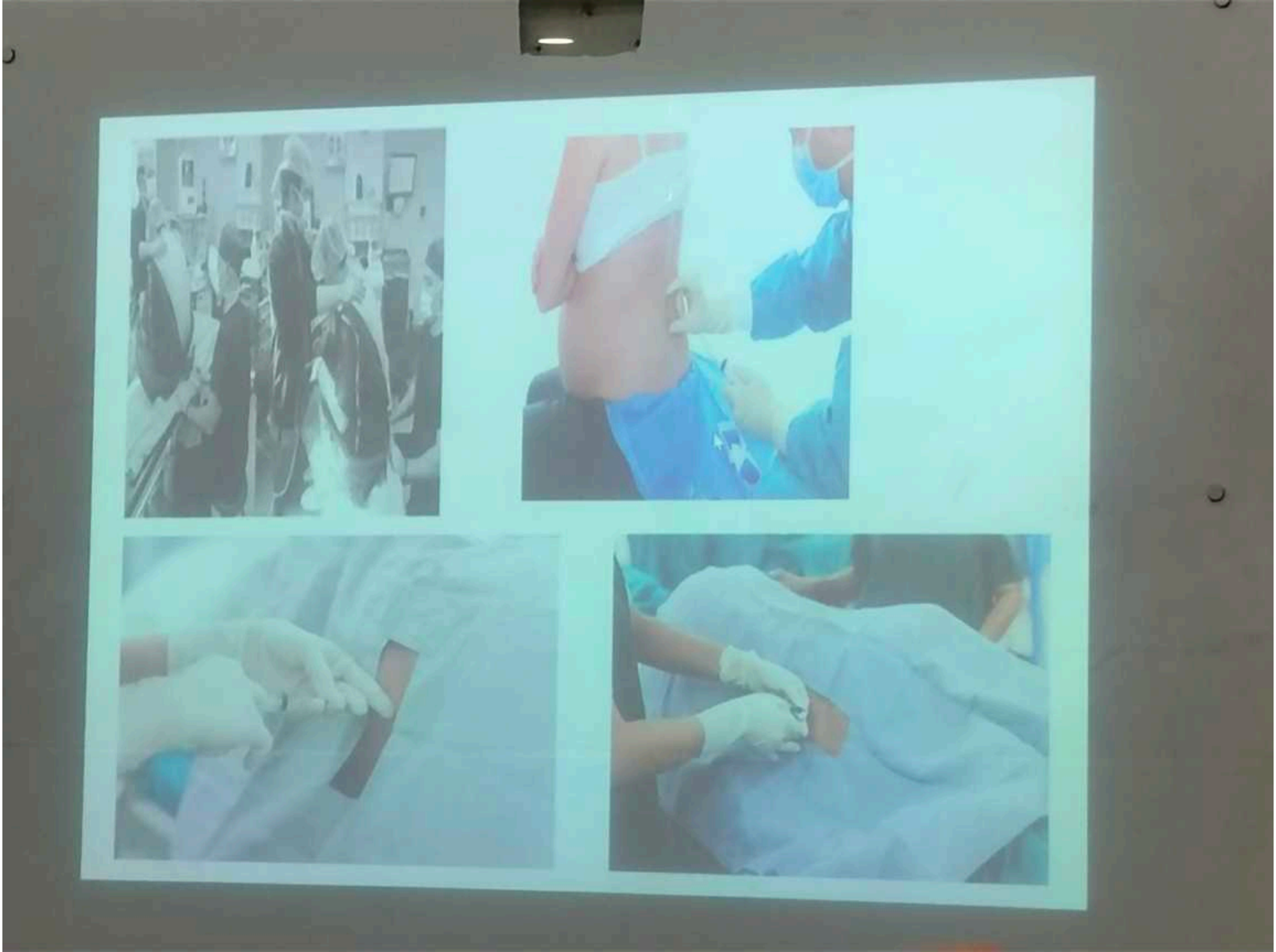

Epidural.

If it has no effect on sensation in the lower limbs, the catheter is correctly sited.

If, however, there is a sensory block, leg weakness and peripheral vasodilatation, the catheter has been inserted too far and into the subarachnoid (spinal) space.

Epidural.

Inserting the normal dose of local anaesthetic into the spinal space by accident would risk complete motor and respiratory paralysis.

If none of these 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.

Epidural.

After the loading dose is given, the mother should be kept in the right or left lateral position.

Her blood pressure should be measured every 5 minutes for 15 minutes.

A fall in blood pressure may result from the vasodilatation caused by blocking of the sympathetic tone to peripheral blood vessels.

Hypotension.

This hypotension is usually short lived, but may cause a fetal bradycardia due to redirection of maternal blood away from the uterus.

It should be treated with intravenous fluids and, if necessary, vasoconstrictors such as ephedrine.

The mother should never lie supine, as aorto-caval compression can reduce maternal cardiac output and compromise placental perfusion.

Hourly assessment of the level of the sensory block using a cold spray is critical in the detection of a block that is creeping too high and risking respiratory compromise.

Regional analgesia can be maintained throughout labour with either intermittent boluses or continuous infusions.

Epidural.

Reducing the rate of an epidural infusion in the second stage may increase the maternal awareness to push, but care should be taken that the analgesic effect is not compromised.

Regional anaesthesia should be continued until after completion of the third stage of labour, including repair of any perineal injury.

Epidural analgesia

Warn the woman that she may lose sensation and movement in her legs temporarily.

More intensive level of maternal and fetal monitoring will be necessary, for example with continuous EFM (the CTG).

Epidural analgesia does not increase caesarean section rates.

Second stage is longer .

Epidural analgesia

Increase chance of instrumental delivery, which may be lessened by a longer passive second stage awaiting a maternal urge to push.

An epidural will limit mobility and for this reason, it is not ideal for women in early labour.

Women in severe pain, even in the latent phase of labour, should not be denied regional anaesthesia. Neither is advanced cervical dilatation a contraindication to an epidural.

Indications for epidural analgesia

Prolonged labour/oxytocin augmentation.

Maternal hypertensive disorders.

Multiple pregnancy.

Selected maternal medical conditions.

A high risk of operative intervention.

Contraindications

Coagulation disorders (e.g. low platelet count).

Local or systemic sepsis.

Hypovolaemia.

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

Complications of epidural analgesia

Spinal headache;

If the subarachnoid space is accidentally reached with an epidural needle, this may allow leakage of cerebrospinal fluid (CSF).

Characteristically experienced on the top of the head and is relieved by lying flat and exacerbated by sitting upright.

Spinal headache

Blood patch if the headache is severe or persistent.

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.

Bladder dysfunction

Occur if the bladder is overfilled, the woman is unaware of the need to micturate, particularly after the birth while the spinal or epidural is wearing off.

Over distension of the detrusor muscle of the bladder can permanently damage it and leave long-term voiding problems.

Catheterization of the bladder should be carried out during labour if significant volumes of urine are not voided.

Hypotension

Can occur with epidural analgesia, although it is more common with spinal anaesthesia.

Treated with intravenous fluids, vasopressors and positioning of the woman onto her left side.

Occasionally, maternal hypotension will lead to fetal compromise.

Accidental total spinal anaesthesia

Injection of epidural doses of local anaesthetic into the subarachnoid space.

It causes

Severe hypotension,

Respiratory failure,

Unconsciousness

Death if not recognized and treated immediately

Treatment

The mother requires intubation, ventilation and circulatory support.

Hypotension must be treated.

In some cases, urgent delivery of the baby may be required to

Overcome aorto-caval compression and permit maternal resuscitation.

Complications

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

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

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

Spinal anaesthesia

A spinal block is considered more effective than 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 anaesthetic is injected, after which the spinal needle is withdrawn.

Spinal anaesthesia

Used as anaesthesia for

Caesarean sections,

Trial of instrumental deliveries (in theatre),

Manual removal of retained placenta,

Repair of difficult perineal and vaginal tears.

Spinals are not used for routine analgesia in labour.

Spinal Block Complications

Spinal shock.

Cauda equina injury. (nerve roots)

Cardiac arrest.

Hypothermia.

Broken needle.

Bleeding or swelling resulting in hematoma, with or without subsequent neurological sequelae due to compression of the spinal nerves

Spinal Block Complications

Infection: immediate within six hours of the spinal anaesthetic manifesting as meningitis or late, at the site of injection, in the form of pus discharge, due to improper sterilization of the Lumbar Puncture set.

Post dural puncture headache or post-spinal head ache

Nausea or vomiting

Spinal Block Complications

New or worsening tingling or numbness below waist

Pruritus (itching)

Back pain

Hypotension

Breathing difficulties.

Spinal vs Epidural: Differences

The spinal block is a single shot and a one-time administration of anaesthetic medication.

The epidural places a direct line into the spine through which medication can be fed. Amounts given can be less or more depending on the need and time elements of a procedure.

In contrast, the spinal block medicine will work as long as it lasts, which is about one to two hours.

Spinal vs Epidural: Differences

The epidural is favoured for any surgical or medical procedures that might exceed a couple of hours in length.

Spinal blocks may be preferable as a temporary relief or during surgeries that are very short in duration. Should more medication be required, another block would be necessary.

Combined spinal–epidural (CSE) analgesia

This technique has the advantage of producing a rapid onset of pain relief and the provision of prolonged analgesia.

The initiating spinal dose is relatively low, therefore is a viable option for pain relief in labour.