



Department of Anesthesia Techniques
Title of the lecture: - Regional Anesthesia
(epidural)



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Regional Anesthesia (epidural) (1)

(Practical Anesthesia)

3^{ed} stage

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Regional anesthesia

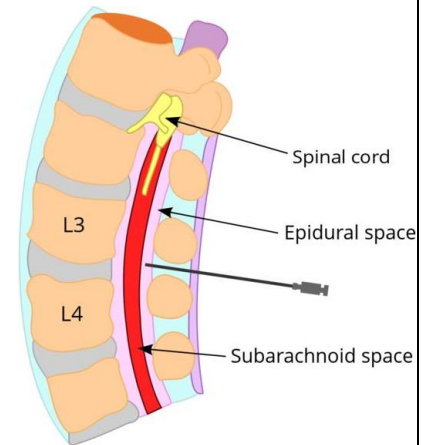
a local anesthetic given to a specific region of your body, leading to numbness or pain relief for patients to do operations.

Types of regional anesthesia

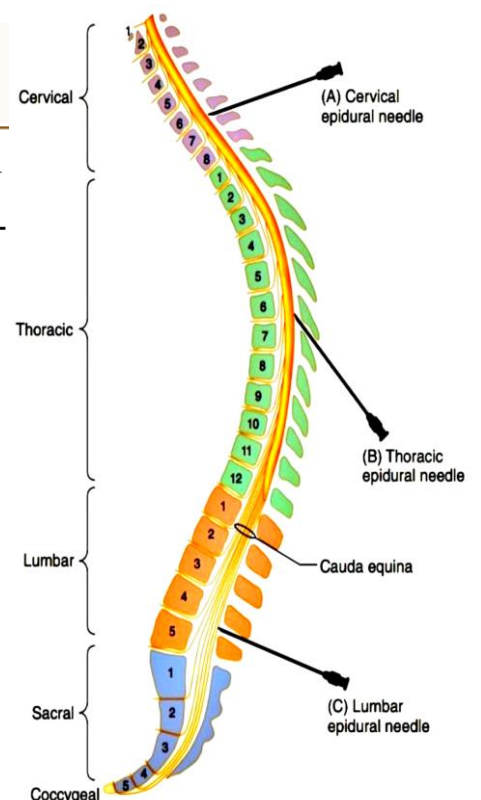
1. spinal anesthesia (also called subarachnoid block)
2. epidural anesthesia
3. peripheral nerve blocks

epidural anesthesia: - anesthesia involves the injection of medication into the “epidural space.”

spinal anesthesia: - injection in subarachnoid space where CSF present to inhibit conduction in nerve roots.



Epidural anesthesia (EA)	Spinal anesthesia (SA)
Larger dose than SA	Smaller dose than EA
Approximately 25–30 minutes	Approximately 5 minutes
Anywhere along the vertebral column	Lumbar only (mostly below the L2 vertebral body)
Not as good as SA	High
Possible, can be continued postoperatively via a catheter	Generally, a single-shot injection
Adjustable, prolonged	Brief, usually 2–4 hours

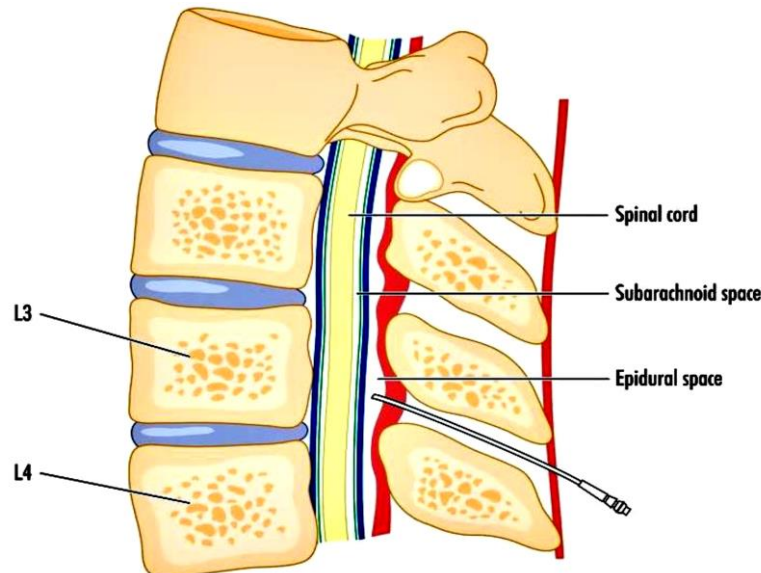


Advantages of epidural anesthesia:

1. Avoidance of Dural puncture.
2. Catheter technique, allows control over onset, extent and duration of blockade.
3. Used for peri- and postoperative analgesia, analgesia following chest trauma, obstetric analgesia and anesthesia, and treatment of chronic pain.
4. Selective site and block.

Disadvantages of epidural are:

1. The induction of epidural anesthesia is slower
2. Slower onset of anesthesia in the epidural space.
3. larger volume of local anesthetic is used,
4. High risk of local anesthetic toxicity if a vein is entered with the needle or catheter.



The epidural set is consisting of:

1. Tuohy needle,
2. Syringe,
3. Epidural catheter,
4. Connector,
- 5- Filter.



Epidural Catheters: Epidural catheters is a catheter of 19- or 20-gauge is introduced through a 17- or 18-gauge epidural needle to the epidural space, it useful for intraoperative epidural anesthesia and/or postoperative analgesia.

Methods to detect of epidural space

1. The loss of resistance techniques: As the tip of the needle just enters the epidural space, there is a sudden loss of resistance, and injection is easy.



2. Hanging drop techniques: requires that the hub of the needle be filled with solution as the tip of the needle enters the epidural space, it creates negative pressure, and the drop of fluid is sucked into the needle.
3. modern epidural set is consisting of EPI detection for detect epidural space by monitoring the negative pressure of epidural space (blue = out, green =in).



Anesthetic agent for epidural anesthesia:

- Duration of the procedure, lidocaine, and mepivacaine for short procedure and bupivacaine 0.5% levobupivacaine, for long
- Addition opioid i.e fentanyl 50-100 μ g or Morphine 2-5 mg for increase analgesia
- Addition adrenaline 5 μ g/mL for increase duration of epidural anesthesia.

Equipment:

1. Epidural set.
2. Lidocaine 1.5 %, 5 mL for skin infiltration.
3. Lidocaine 1.5 % with epinephrine 1:200,000, 5 mL amp. For epidural test dose.
4. Povidone-iodine solution.

Technique:

1. Start a peripheral intravenous line (cannula).
2. Position patient in the seated or lateral decubitus position or sitting position.
3. Prepare the back with povidone-iodine solution.
4. Palpate the spinous processes.
5. After the skin and subcutaneous tissues are anesthetized with local anesthetic, introduce the Tuohy needle into the lower part of the interspace and advance for about 2-3 cm until the needle is firmly placed in the interspace.

6. Attach the glass syringe (prefilled with air or saline 2 mL) to the needle and continue advancing in slow increments, frequently checking for loss of resistance.
7. If performing a single shot procedure, inject the medication and remove the needle.
8. If placing a catheter, gently advance the catheter through the needle for about 4-5 cm and then remove the needle.
9. Connect a connector to the end of the catheter and remove the sterile drape.
10. Secure the epidural catheter to the patient's back.

Agents for epidural anesthesia.

Agent	Concentration	Onset	Sensory Block	Motor Block
Chloroprocaine	2%	Fast	Analgesic	Mild to moderate
	3%	Fast	Dense	Dense
Lidocaine	≤1%	Intermediate	Analgesic	Minimal
	1.5%	Intermediate	Dense	Mild to moderate
	2%	Intermediate	Dense	Dense
Mepivacaine	1%	Intermediate	Analgesic	Minimal
	2–3%	Intermediate	Dense	Dense
Bupivacaine	≤0.25%	Slow	Analgesic	Minimal
	0.5%	Slow	Dense	Mild to moderate
	0.75%	Slow	Dense	Moderate to dense
Ropivacaine	0.2%	Slow	Analgesic	Minimal
	0.5%	Slow	Dense	Mild to moderate
	0.75–1.0%	Slow	Dense	Moderate to dense