

Labour Analgesia

Definition of labour

- Series of events that takes place in female genital organs in an effort to expel the viable product of conception out of the womb through the vagina into the outer world is called labour.

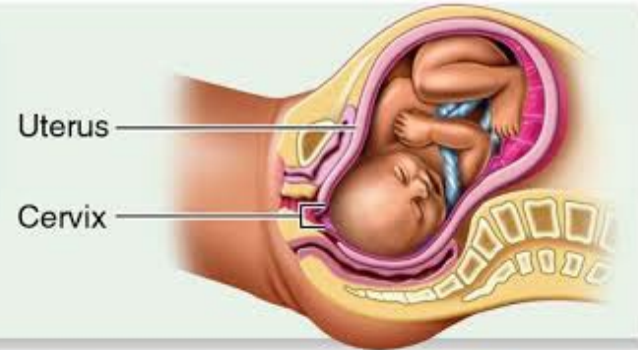
Stages of labour

First stage: From onset of regular uterine contraction to full dilatation of cervix.

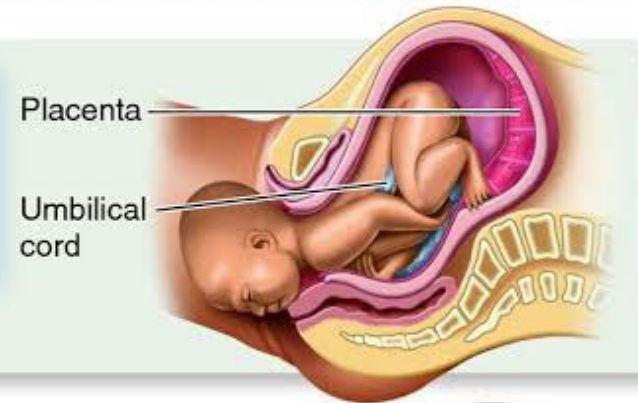
Second stage: From full dilatation of cervix to delivery of fetus.

Third stage: From delivery of fetus to delivery of placenta.

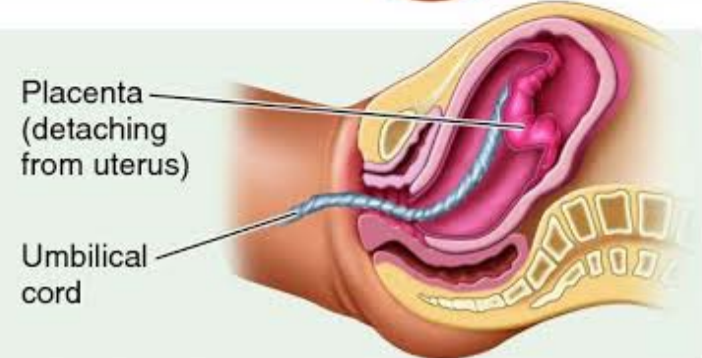
Stage 1:
The cervix relaxes, causing it to dilate and thin out.



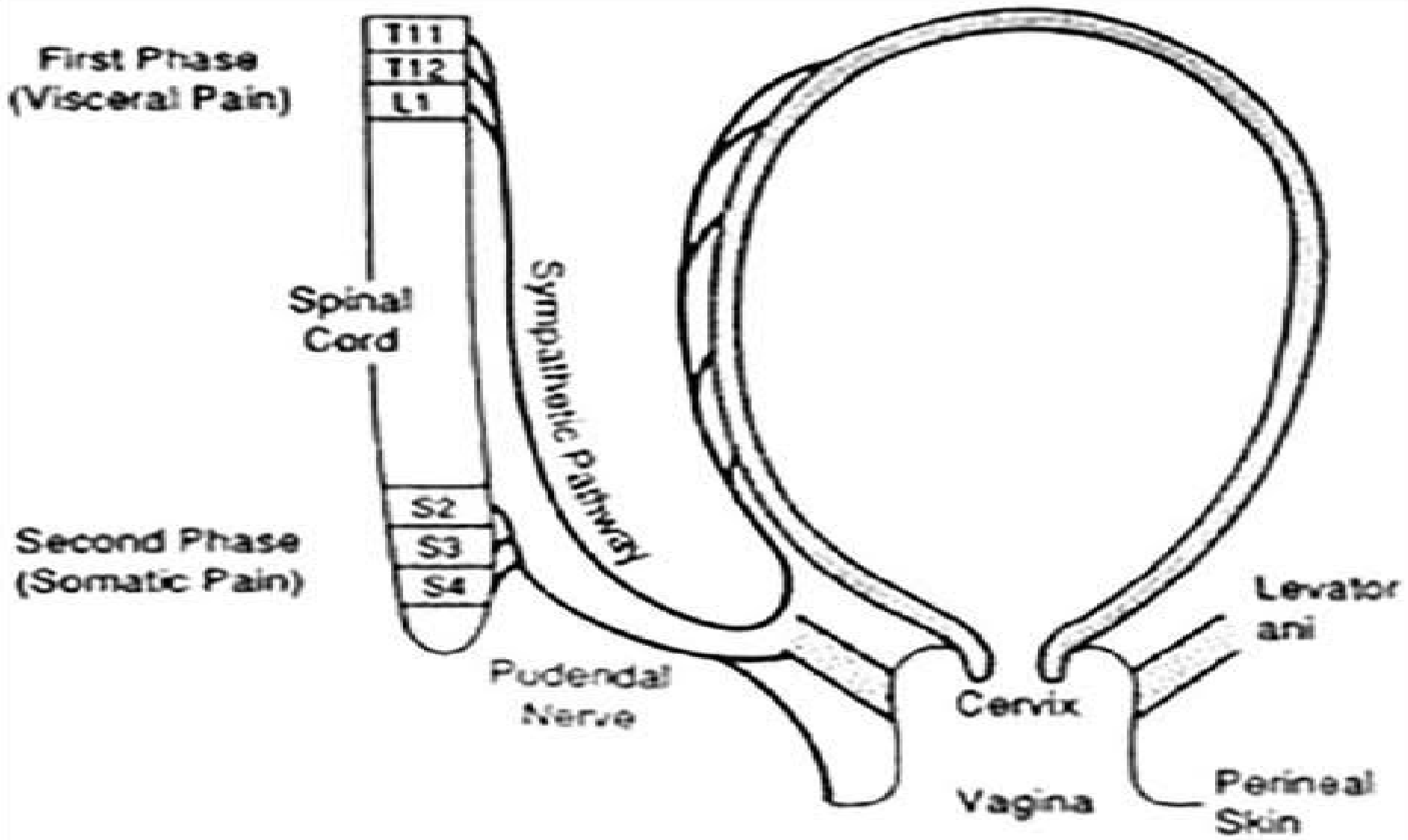
Stage 2:
Uterine contractions increase in strength and the infant is delivered.



Stage 3:
The placenta is expelled.



Physiology of labour pain



Mechanism of labour pain

1. Uterine contraction result in myometrial ischemia



Release bradykinin, histamine, serotonin



Pain

2. Stretching and distention of lower uterine segment & cervix



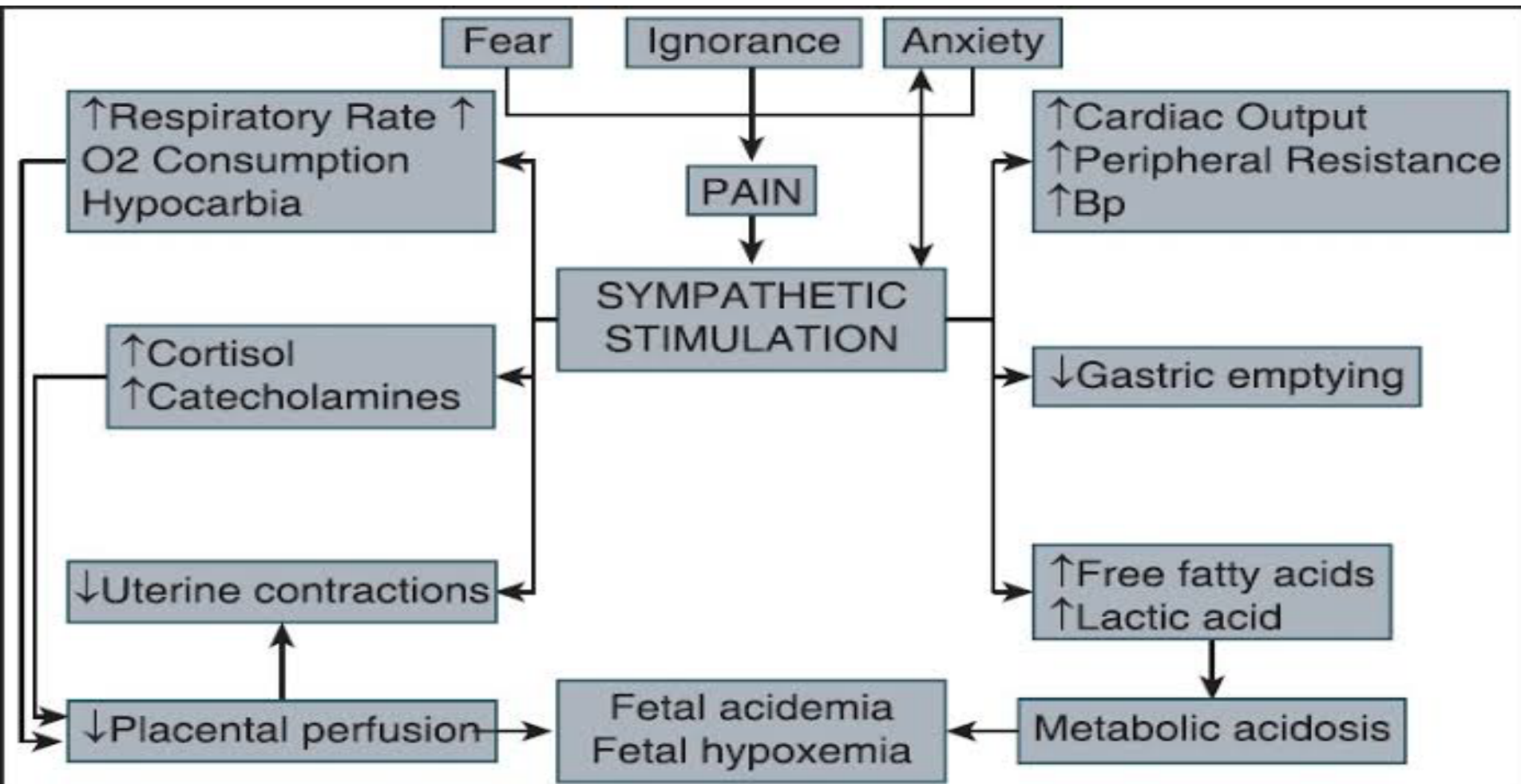
Stimulate mechanoreceptors



Pain

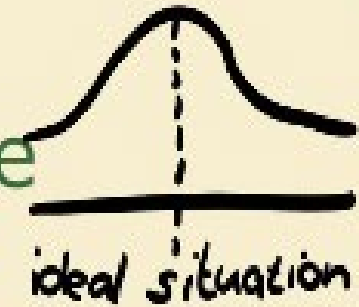
Adverse sequelae of labour pain

Pain during labour provides a noxious and unpleasant stimulus which may provide deleterious to the mother and fetus



The ideal labour analgesia technique

The ideal labour analgesic technique



- is safe for both the mother and the infant,
- does not interfere with the progress of labor and delivery,
- provides flexibility in response to changing conditions,
- provides consistent pain relief,
- has a long duration of action,
- minimizes undesirable side effects (e.g., motor block), and
- minimizes ongoing demands on the anesthesia provider's time.

Techniques of labour analgesia

Non-pharmacological

1. Psychoprophylaxis

Breathing exercise

Duola

2. Hypnosis

3. TENS

4. Acupuncture and Acupressure

5. Hydro therapy

6. Miscellaneous

Yoga

Music therapy

Pharmacological

1. Inhalation analgesia

N₂O:O₂ ,

Ether, trilene

Halogenated compounds like

Enflurane, isoflurane, sevoflurane

2. Parenteral analgesia

Opioids: pethidine, pentazocine, fentanyl

Remifentanyl, sufentanyl, , meperidine , butorphanol and nalbuphine.

Non-opioid: tramadol

Sedative & tranquiliser: diazepam, midazolam

Ketamine

3. Regional analgesia

Lumbar epidural

Caudal epidural

Spinal analgesia

Combined spinal-epidural

Walking epidural

4. Pudendal nerve block

5. Paracervical block

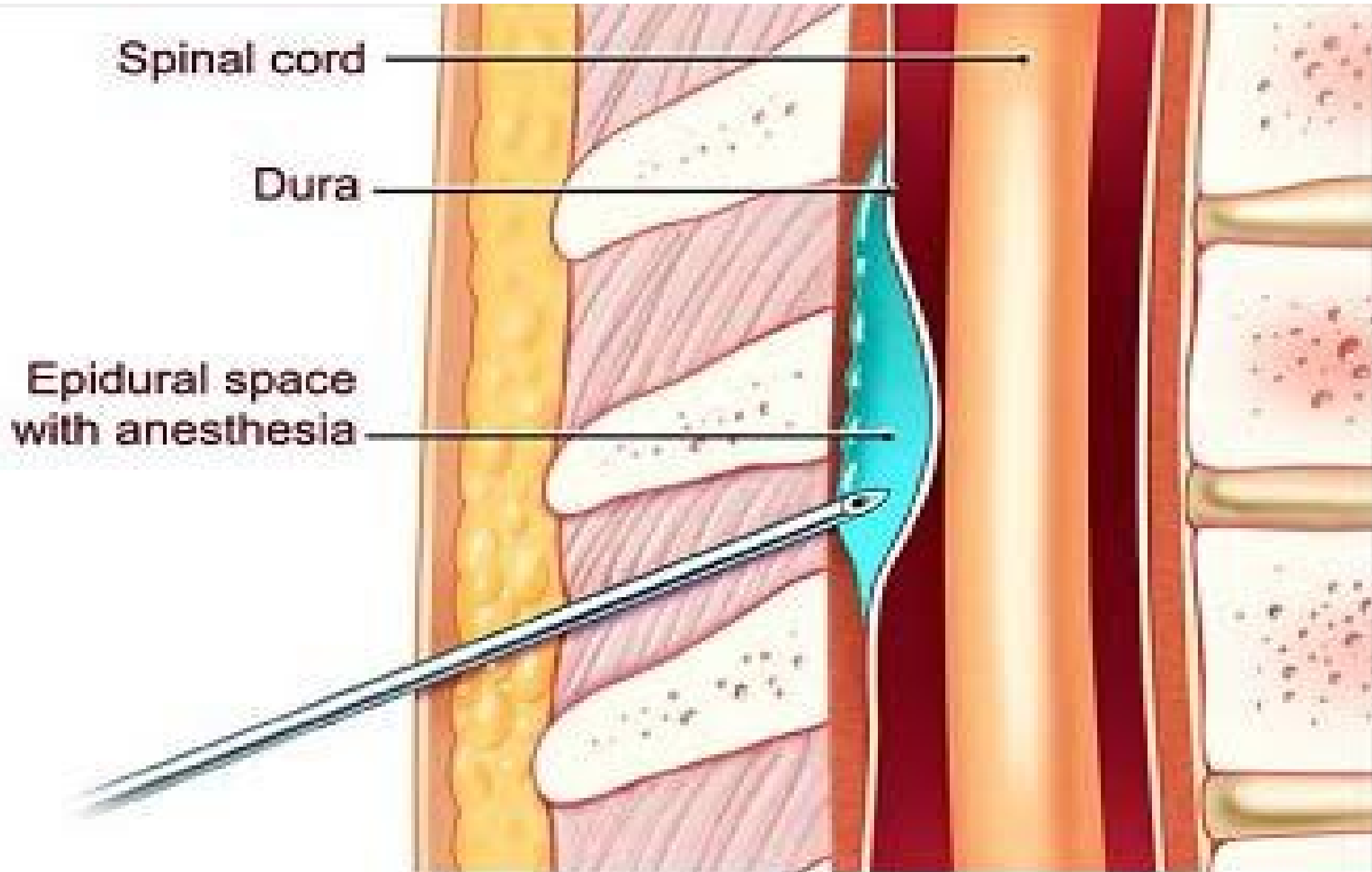
Regional analgesia

Neuraxial block:



Differences between Spinal and Epidural Anesthesia

Epidural Analgesia



Lumbar epidural analgesia

- Gold standard technique for pain control in obstetric
- Low dose of local anesthetics or opioid combinations are administered to provide a continuous T10 to L1 sensory block during first stage of labour.

Advantage:

- ✓ Safe and effective
- ✓ Without appreciable motor blockade
- ✓ Extended to provide surgical analgesia

Contraindications

Absolute contraindication:

- Declined by the women
- Inadequate midwifery staffing or training
- No CTG or inadequate monitoring of fetus
- Local infection at proposed site of injection
- Raised ICP
- Frank coagulopathy
- Uncorrected hypovolemia

Relative contraindication:

- Significant cardiac disease
- Some neurological disorder
- Some anatomical deformities, surgery or injuries in women's back
- Sepsis
- Suspicious or pathological CTG which has no obstetric review

Epidural technique

- ❖ Prepare, position, hydrate 500ml of IV fluid
- ❖ Insert catheter – initiate dosage dilute local anesthetics in 5ml increments with lipid soluble opioid
- ❖ TEST dose
- ❖ Assess levels, Monitor vitals.

WHEN? Commonly accepted criteria for placement:

1. No fetal distress
2. Good regular contractions 3-4 min apart and lasting about 1 min
3. Adequate cervical dilatation e.g. 3-4cm
4. Engagement of fetal head
5. Early epidural analgesia (before 5cm cervical dilatation) may interfere with uterine contractions and slow the progress of labour

Role of Midwife in Epidural Analgesia

- Support for the laboring woman
- Continuous monitoring of vital signs and fetal status
- Pain assessment
- Continues fetal heart rate monitoring
- Continuous epidural infusion monitoring

Epidural procedure

Pre procedure check:

- Take a history and confirm there are no contraindications.
- Ensure at least 20 minutes of normal CTG has been obtained and continue monitoring, vaginal procedure must be done prior to epidural procedure.
- Record a pre insertion HR, blood pressure, respiratory rate, temperature and fetal heart rate.
- Ensure midwife is trained in epidural management.
- Check blood test result if coagulopathy is suspected.
- Platelet should be greater than 80,000.

Con...

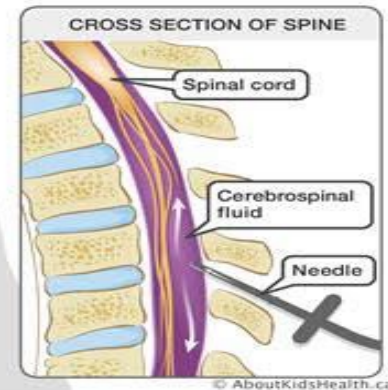
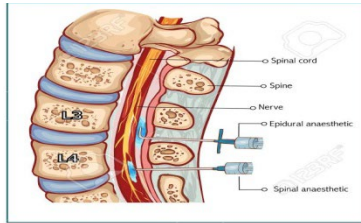
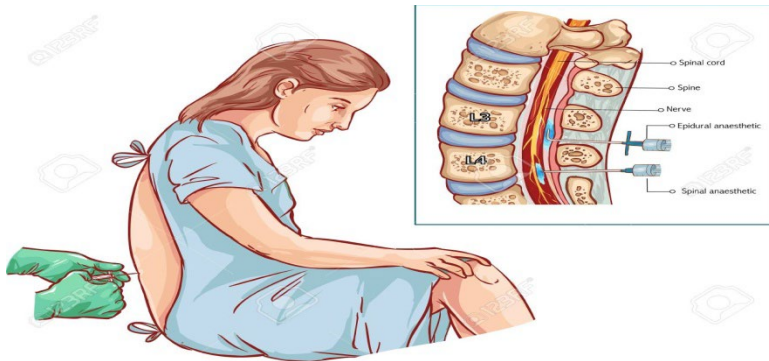
IV access:

- Insert a 18G cannula preferably on left side of the women and ensure it is patent (Epidural catheter must be fixed over women's right shoulder to reduce very serious risk of wrong drug delivery to patient).
- Have a crystalloid infusion available.

Con...

Patient positioning:

- Women is assisted by the nurse to adopt an optimum position: left lateral position or sitting position with feet supported on a tool, head flexed forward with elbow resting on pillow on knee.
- Examine insertion site before scrubbing up.



Con...

Aseptic technique:

- Use through hand washing with surgical scrub solution.
- Barrier measure should be applied including: cap, face mask, gown, sterile gloves and use a sterile drape.
- Consider eye protection

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 changed gloves if contaminated.
- If patient allergic use 10% povidone iodine solution

Con...

Insertion technique:

- In the lumbar region
- Infiltrate needle path with lidocaine
- Site epidural catheter with technique of your choice using normal saline for loss of resistance if possible.
- Long Tuohy needles 12cm and 14cm are available for obese women
- Leave 4 to 5cm catheter in space (consider leaving more in obese women)
- Aspirate catheter as in aid to confirm no cerebral spinal fluid or blood.
- Attach the antibacterial filter as all injection must be through this
- Secure with appropriate dressing
- The catheter should be clearly labeled as epidural line

Con...

Fluid preloading:

Initial dose:

Loading dose:

Epidural infusion:

Maintenance of epidural dose:

Con...

Pain score: Record hourly

- 0- No pain / unaware of contraction
- 1- aware of contraction but not distressing
- 2- contraction distressing
- 3- perineal pain

Inform anesthetist if pain distressing or unbearable

Motor score: Record hourly

- 0- full movement
- 1- partial weakness
- 2- very slight movement
- 3- no movement

Inform anesthetist for 2,3

Con...

Sedation score:

0-fully alert

1-Drowsy but easily aroused (responds to name)

2-Only aroused with difficulties(require shaking)

3-Unarousable

Warning signs:

Difficult in breathing

Difficult in rousing patient

Heaviness and tingling in arms & legs

Marked fall in BP and HR

Con...

Documentation:

- Document epidural insertion data in maternal notes using ' Yellow epidural sticker'
- Complete the obstetric audit form
- Ensure labeling of epidural mixture bag as ' for epidural use only' plus patient name, date of birth, hospital no and date and time of opening.
- Prescribe intravenous fluid on appropriate chart
- Prescribe epidural doses on the electronic drug chart

Con...

Removal of epidural catheters:

- Ensure timing is appropriate with regard to thrombo prophylaxis 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 record
- If there is unusual about the insertion site
- Once the epidural has been removed the women 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
- Monitor vital sign every 4 hours for 12 hours after removal of catheter

Con...

Complications:

- Dislodgement of catheters
- Hemodynamic instability-Hypotension & bradycardia
- Respiratory consequences
- Total spinal anesthesia
- Transient paraesthesias (5to 25%)
- Intravascular injection of local anesthetic drug
- Fetal bradycardia
- Neurological:
 - Accidental dural puncture with PDPH
 - Direct trauma to the spinal cord
 - Cauda equina syndrome
 - Adhesive arachoiditis
 - Thrombosis of the anterior spinal artery

Spinal analgesia

- ❖ Involve intrathecal injection of opioid, local anesthetics or more commonly mixture of both.
- ❖ Has the benefit of having the most rapid onset of analgesia.
- ❖ The most common modality used for labour the saddle block provides profound perineal analgesia with minimal hemodynamic side effect

Local anesthetic agents:

Lignocaine:

- Rapid onset
- Dense motor block
- Risk for cumulative toxicity

Bupivacaine:0.625%

- Good sensory block
- Minimal motor block
- No adverse effect on labour

Ropivacaine:

- Lower motor toxicity
- Less motor block
- Less toxicity

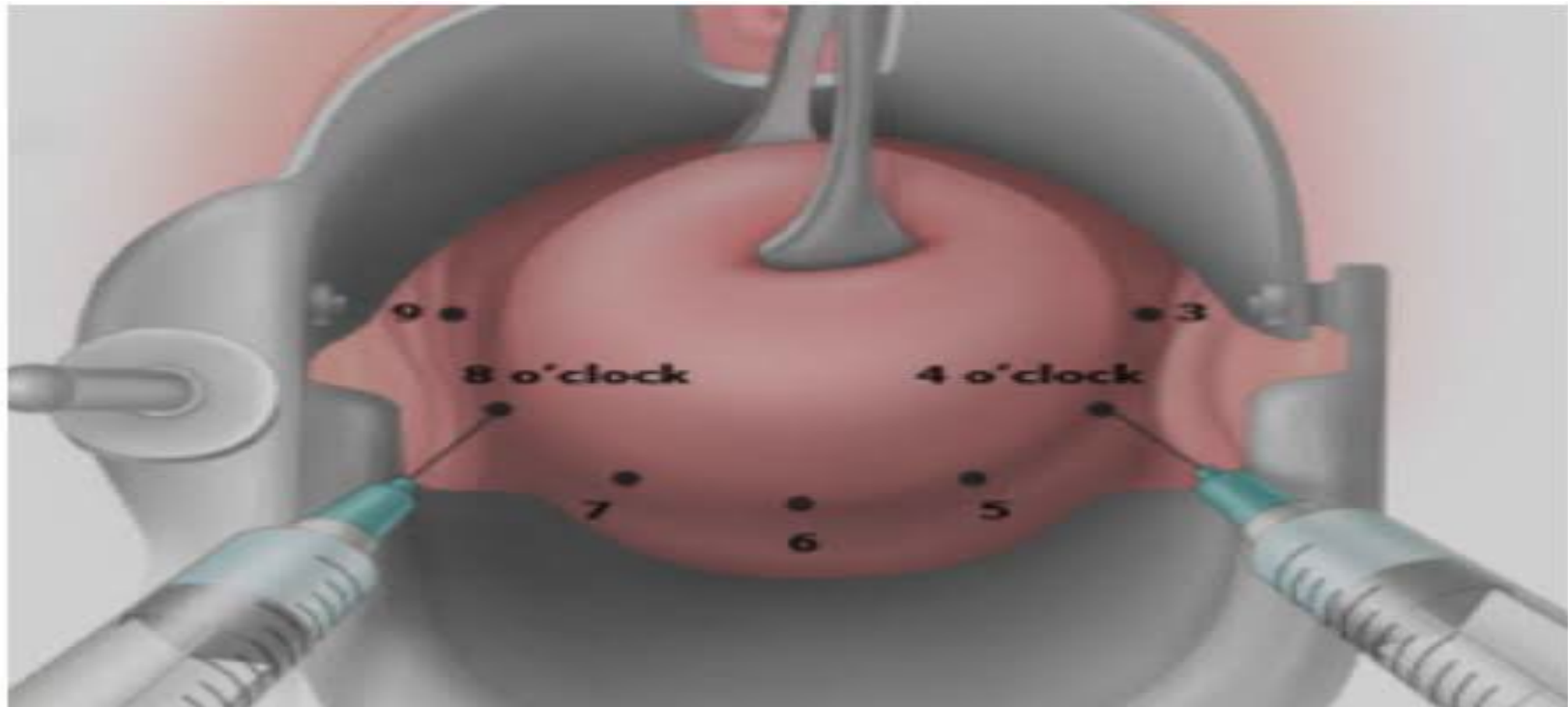
Choice of local anesthetics:

Rapid onset with minimal motor block

Para cervical block

Goal:

- Block transmission through para cervical ganglion which lies immediately lateral and posterior to cervicouterine junction
- Good for first stage of labour not for second stage
- 5 to 10 ml local anesthetic injected through a needle introduced into left or right lateral vaginal fornix near the cervix, at 4 o'clock & 8 o'clock position



Pudendal nerve block

- Lithotomic position
- Goal: to block the pudendal nerve distal to its formation by anterior division of S2-S4 but proximal to its division into terminal branches
- Needle introduce through vaginal mucosa and sacrospinous ligament just medial and posterior to ischial spine. Pudendal artery lies close proximity to pudendal nerve, must aspirate before and during injection of local anesthetics
- Timing: Immediately before delivery
- Repeated on both side



Systemic analgesic

Common agent:

1. Opioid
2. Sedative & tranquilizers as adjuncts to opioid
3. Ketamin

Inhaled labour analgesia

- Sub anesthetic concentration of inhalational anesthetic agent
- Patients remain awake with protective laryngeal reflexes
- Can be self administered, but require presence of self care provider to ensure an adequate level of consciousness

ENTONOX :

The most commonly used agent for inhaled analgesia, which is a mixture of 50% nitrous oxide and 50% oxygen premixed in cylinder. The mixture is stable under most conditions, but at very low temperature, the constituent gases separate.

Equipment for self administration with a mouth piece and face mask

Volatile Halogenated agent

The usual range of concentration of volatile inhalational agent administered with oxygen:

- Desflurane 0.2 %
- Enflurane 0.25 to 1.25%
- Isoflurane 0.2 to 0.25%
- Sevoflurane 0.8%-- commonly used during general anesthesia because of short onset and offset of action

Advantages:

- Easy to administer
- Satisfactory analgesia variable
- Minimal neonatal depression

Disadvantages:

- Decrease uterine contractility
- Risk of unconsciousness and aspiration
- Unpleasant test and high cost
- Difficulties with scavenging in labour room

Non pharmacological

Psychoprophalaxis:

Used in 1958 by Lamaze. In this pain relief is achieved by creating condition reflex in mother and educating her about the process of natural birth.

Hypnosis: Used in 19th century.

TENS(Transcutaneous electrical nerve stimulation): Once based on the theory that activation of the fast conducting A beta fiber by electrical stimulation close the gate for transmission of slow conducting A delta and C fiber.

Acupuncture:

Traditional form of Chinese medicine involving the insertion of needle at selected point to get analgesia.

Hydrotherapy:

Patient is asked to take shower or immerse in a large bath tub. It is said to decrease anxiety and pain.





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