



**Department of Anesthesia Techniques**  
**Title of the lecture: - Anesthesia for obstetrics**  
**& gynecology**

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# **Anesthesia for obstetrics & gynecology**

(Practical Anesthesia)

3<sup>ed</sup> stage

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# Obstetric anesthesia

## *Physiological changes in pregnancy*

**Respiratory changes:** Progesterone exerts a stimulant action on the respiratory centre and carotid body receptors...

- 1- ↑ O<sub>2</sub> consumption 20%, lead to ► ↑ Tidal volume, lead to ► (uptake inhalational agents is faster).
- 2- ↓ Functional residual capacity, lead to ► ↓ O<sub>2</sub> reserves, lead to ► (increased risk of hypoxia and apnea).
- 3- ↑ arterial PaO<sub>2</sub> slight, arterial PaCO<sub>2</sub> ↓

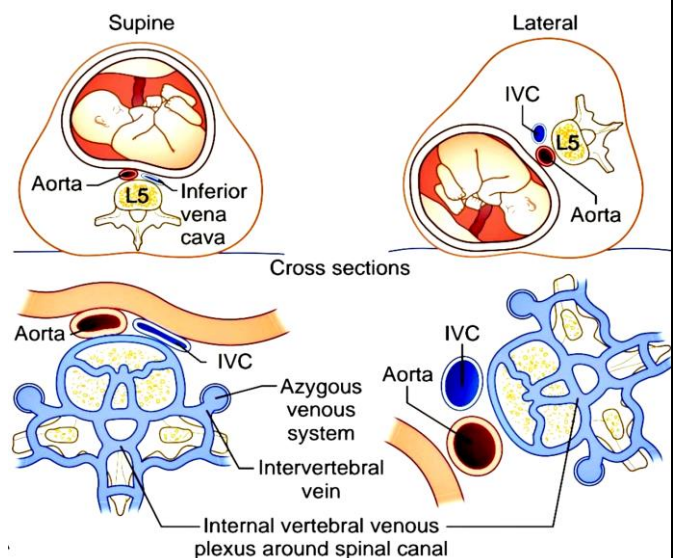
**CVS changes:** 35% ↑ body volume

- Increase 20%–50% Stroke volume
- Increase 40%–50% Cardiac output by third trimester
- Increase 20%–30% Heart rate
- Decrease 20% Systemic vascular resistance
- Decrease Systolic and Diastolic blood pressure

## **Aortocaval compression**

When a pregnant woman lies supine, arterial pressure decreases because the uterus compresses the inferior vena cava, reducing venous return and cardiac output. It is significant from 20 weeks.

Prevented or relieved by left tilt or lateral position is required in some cases.



## **Gastrointestinal changes:**

All women in labor must be treated as having a full stomach and an increased risk for pulmonary aspiration of gastric contents for several causes:

- 1- Increase progesterone levels causes smooth muscle relaxation.
- 2- A reduction in lower esophageal sphincter pressure.
- 3- Enlarging uterus causes increase intra gastric pressure and this increase gastroesophageal reflux during pregnancy.

## Antacid prophylaxis

- ♣ Ranitidine 150mg orally, 2hr and 12hr before surgery. In emergency case giving 50mg IV slow.
- ♣ Metoclopramide 10mg orally, 2hr before surgery. In emergency case giving 10mg IV slow.
- ♣ A total of 30mL of 0.3M sodium citrate immediately before induction of GA.

## Analgesia for labour

A. There are numerous techniques that help mothers in labour. These include:

- ♣ Prepared childbirth.
- ♣ massage, warm water baths.
- ♣ and transcutaneous electrical nerve stimulation (TENS).

B. The three most commonly used types of analgesic agents in labour. These include:

1. Inhaled N<sub>2</sub>O: is the most commonly used inhalational agent, but complete analgesia is never attained.
2. Opioids: fentanyl or remifentanyl patient control analgesia (PCA) may be more beneficial than pethidine.
3. Regional techniques (epidural, Combined spinal/epidural) analgesia for labour is remains the most effective form of pain relief for labour.

**Notes:** Remember that acceptable analgesia for women in labour does not mean a complete absence of sensation.

## Caesarean section

Categories of urgency of Caesarean section	
<b>Category 1</b>	Maternal or fetal compromise with immediate threat to the life of mother or fetus
<b>Category 2</b>	Maternal or fetal compromise that is not immediately life-threatening
<b>Category 3</b>	No maternal or fetal compromise, but requires early delivery
<b>Category 4</b>	No maternal or fetal compromise. Delivery timed to suit mother and maternity services

## Regional anesthesia for Caesarean section

There are three techniques for neuraxial anesthesia:

- A. Epidural: most commonly used for women have labour epidural analgesia.
- B. Spinal: is the most popular technique for an elective Caesarean section.
- C. Combined spinal/epidural (CSE).

**Note:** The speed of onset of sympathectomy that occurs with spinal anesthesia or epidural) results in a greater fall in maternal cardiac output and BP.

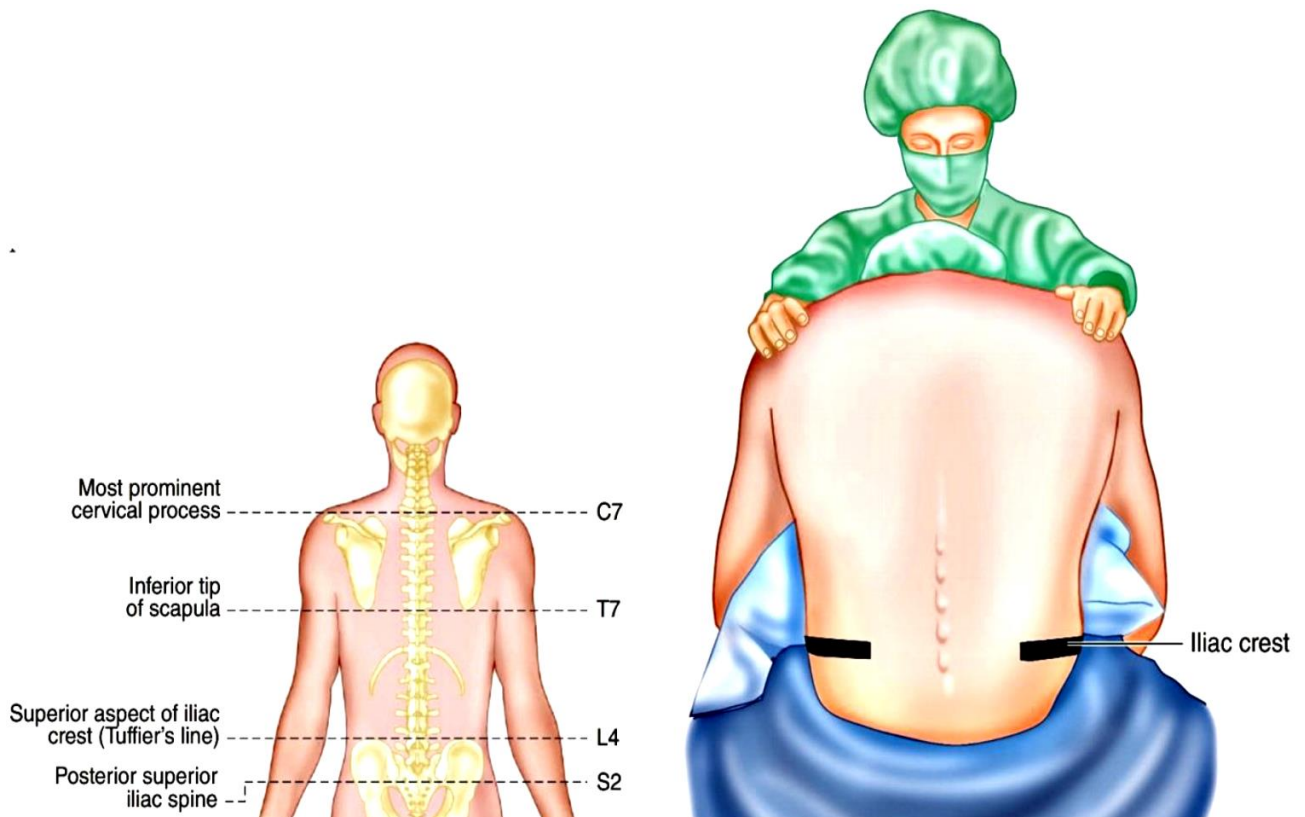
### Caesarean section: spinal

Spinal anesthesia is the most commonly used technique for elective Caesarean sections, hypotension is much commoner than with epidural anesthesia.

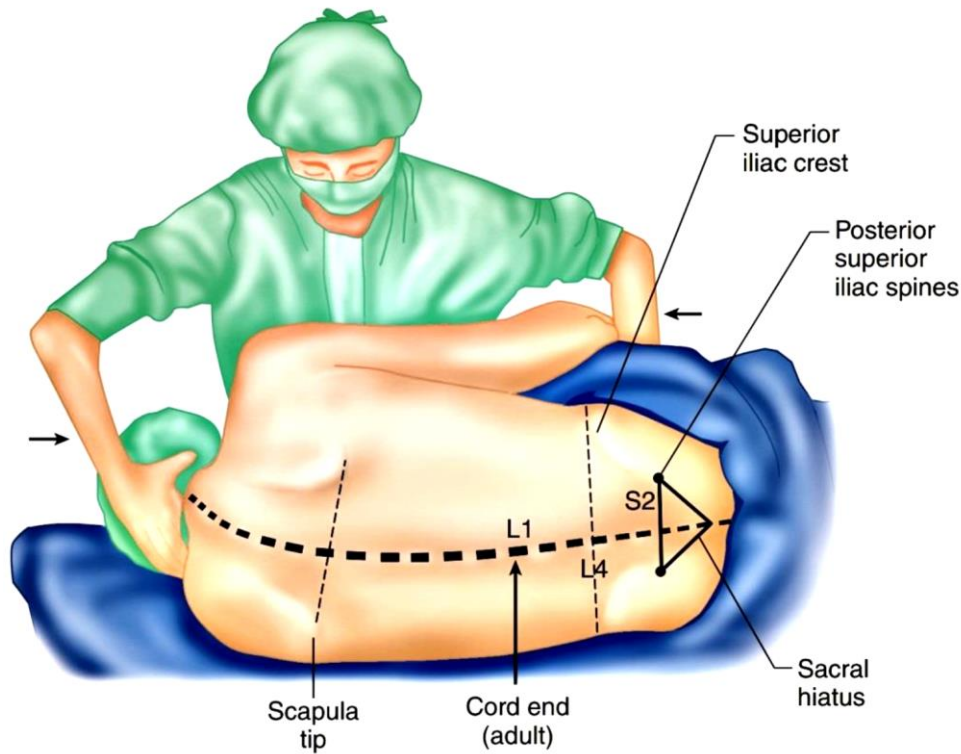
Spinal anesthesia for Caesarean section	
Disadvantages	Disadvantages
Quick onset	Single shot
Good-quality analgesia	Limited duration
Easy to perform	Inadequate analgesia is difficult to correct Rapid changes in BP and cardiac output

### Technique

- 1- History/examination/explanation and consent
- 2- Ensure that antacid prophylaxis has been given
- 3- Establish 16G or larger IV access. Start crystalloid co-load
- 4- Position the patient. A sitting position usually makes finding the midline easier.

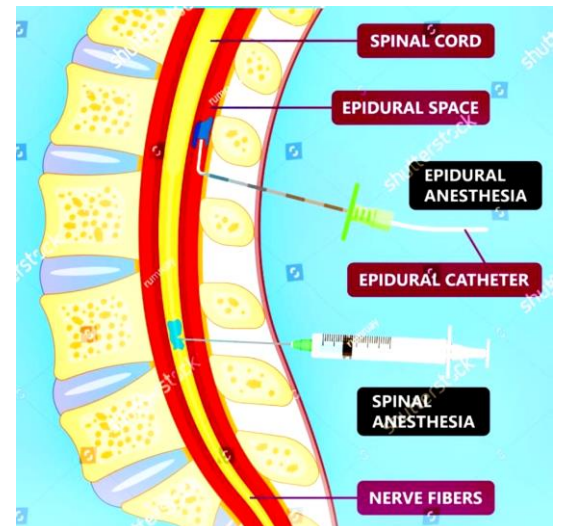


- A lateral position is associated with a slower onset of block; full lateral position is maintained until the block has fully developed.



- Perform spinal anesthetic at L3/4 interspace, using a 25G or smaller pencil-point needle. (The level of the iliac crests usually corresponds to the spinous process of L4.)
- Inject the anesthetic solution e.g. 2.5mL of 0.5% hyperbaric bupivacaine (Marcaine®) with 15 micrograms of fentanyl

After injection of the solution, move the woman to a supine position with a left lateral tilt or wedge. If supine hypotension occurs, increase the tilt ►► Start pressor infusion.



### Pressor agents:

Using prophylactic pressor agents is beneficial for both mother and fetus.

- ✓ phenylephrine (i.e. make up 10mg in 100mL of saline, and decant 20mL into a syringe)
- ✓ Start infusing at 30mL/hr., as the spinal solution is injected Give anticholinergic agents, as required. e.g Atropine

- ✓ Be careful with this technique in hypertensive individuals
- ✓ Ephedrine: initial dose 5-10 mg IV bolus.

## **Fluid**

A fluid preload was a traditional part of the anesthetic technique for regional anesthesia. It had two functions

1. To maintain the intravascular volume in a patient who is likely to lose 500–1000 ml of blood during operation.
2. To reduce the incidence of hypotension associated with regional anesthesia.

## **Caesarean section: general anesthesia**

The majority of complications relate to **the airway Failed intubation** is much more frequent in obstetric than non-obstetric anesthesia

### **Indications for GA include**

- 1- Maternal request
- 2- Urgent surgery
- 3- Regional anesthesia contraindicated or failed
- 4- Additional surgery planned at the same time as a Caesarean section

## **Technique**

1. History and examination. Airway assessment (mouth opening, Mallampati score, thyromental distance, neck mobility)
2. Antacid prophylaxis, including 30mL of 0.3M sodium citrate
3. Start monitoring
4. Position supine with a left lateral tilt or wedge
5. Pre-oxygenate for 3–5min or, in an emergency, with 8-10 VC breaths
6. Perform RSI with an adequate dose of induction agent (e.g. 5–7mg/kg of thiopental) or Propofol.
7. A 7.0 mm ETT is adequate for ventilation and may make intubation easier.
8. Ventilate with 50% O<sub>2</sub> in N<sub>2</sub>O. If severe fetal distress is suspected, then O<sub>2</sub> 75% O<sub>2</sub> or higher may be appropriate.
9. Use of the inhalational agent

## At delivery:

1. Give 2–5 IU of oxytocin IV bolus. If tachycardia must be avoided, then an IV infusion of 30–50IU of oxytocin in 500mL of crystalloid, infused over 4hr, is effective.
2. Administer opioid (e.g. 10–15mg of morphine} 100 micrograms of fentanyl), IV paracetamol, and IV diclofenac (unless contraindicated)
3. Ventilate with 35% inspired O<sub>2</sub> concentration in N<sub>2</sub>O. The inhalational agent can be reduced to 0.75 MAC to reduce uterine relaxation.
4. If a woman has eaten shortly before surgery, consider passing a large-bore or gastric tube to empty the stomach before extubation.
5. Extubate awake.
6. Give additional IV analgesia, as required.

