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Problems Associated with Spinal Anesthesia
Medications for Spinal Anesthesia
Summary of Spinal Anesthesia for Cesarean Section
Contraindications for Spinal Anesthesia
for Cesarean Section

Problems Associated with Epidural Anesthesia
Complications of Epidural Anesthesia
Contraindications for Epidural Anesthesia
Local Anesthetics for Epidural Anesthesia
Summary of Epidural Anesthesia for
Cesarean Section
Cardiovascular Complications of
Bupivacaine and Neurological
Complications of 2-Chloroprocaine
Differences Between Spinal and Epidural
Anesthesia for Cesarean Delivery

Maternal Aspiration
Airway Management

Regional Anesthesia
General Anesthesia

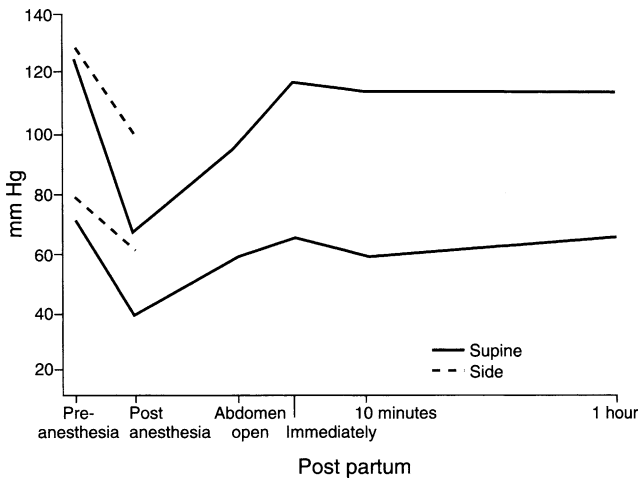
Underlying Physiology
Pharmacological Effects



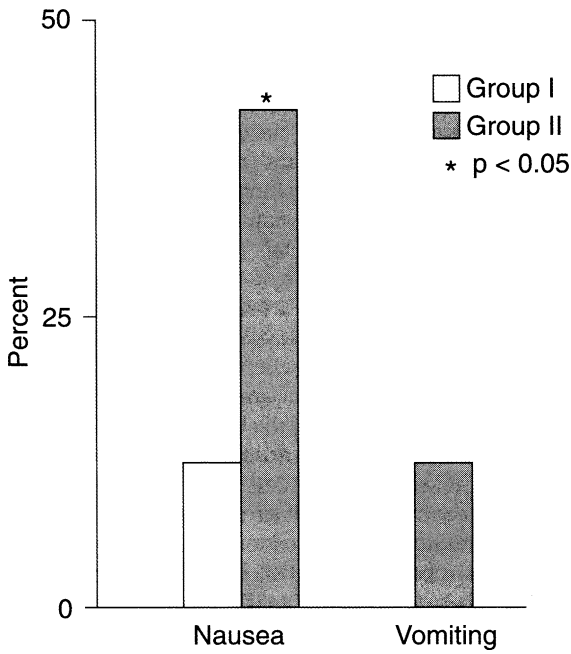
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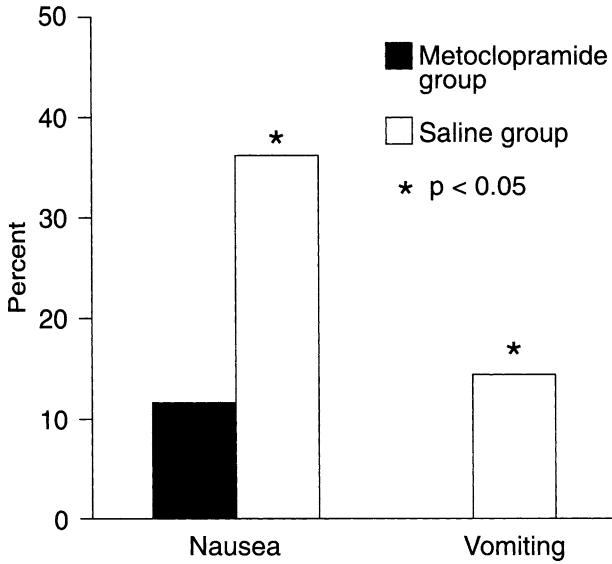
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12-1. Effect of maternal blood pressure during cesarean section under spinal anesthesia. (Adapted from Ueland et al.⁶)



12-2. Incidence of nausea and vomiting with intravenous droperidol following delivery of the fetus during cesarean section (group 1-droperidol, group 2-saline).²⁹



12-3. Incidence of nausea and vomiting with intravenous metoclopramide following delivery of the fetus during cesarean section. (Adapted from Chestnut.³¹)

12-1. Medications for Spinal Anesthesia

D	C	D	A
0.5% tetracaine in 5% dextrose		90-120 min	
5% lidocaine in 7.5% dextrose in water		45-60 min	
0.75% bupivacaine in 8.5% dextrose in water		90-120 min	
0.5% bupivacaine in 8.0% dextrose in water		90-120 min but not yet approved by FDA	
5% meperidine in 10% dextrose, same volume to make it hyperbaric		45-50 min	

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12-2. Local Anesthetics for Cesarean Delivery

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Pregnant animals were found to be more sensitive than non-pregnant animals to the cardiotoxic effects of bupivacaine. Cardiac resuscitation following bupivacaine toxicity was much more difficult than in the case of lidocaine

As a rule, the cardiovascular system is more resistant than the CNS to local anesthetic.

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12-3. Differences Between the Spinal and Epidural Anesthesia for Cesarean Delivery

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	Advantages	
Simple, rapid, reliable		Lesser incidence of hypotension
Minimal drug exposure		Avoidance of dural puncture
		Provide anesthesia for longer duration
		Use for postoperative analgesia
	Disadvantages	
Hypotension		More complex procedure
Nausea and vomiting		Longer onset of time
Limited duration of action unless a continuous catheter technique is utilized		

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antacids sodium citrate or Bicitra avoids this problem. Nonparticulate



Parturients decrease arterial oxygen saturation faster than nonpregnant women (Table 12-4), and this is related to increased oxygen consumption and decreased functional residual capacity.

Norris and Dewan compared two methods of preoxygenation: 100% oxygen for

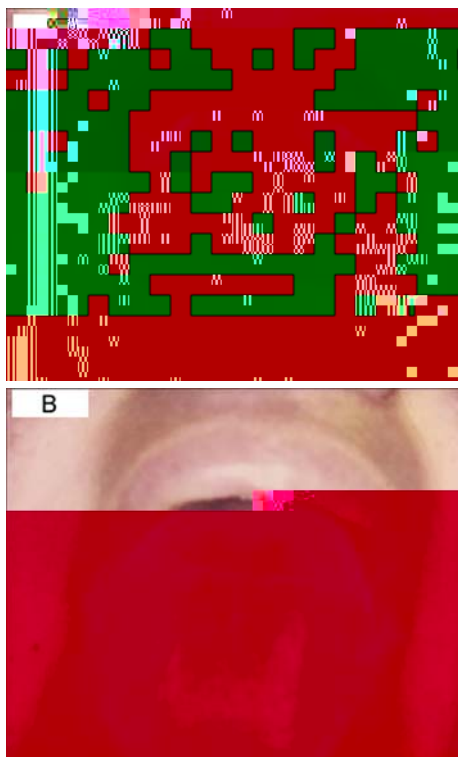
12-4. Maternal Oxygen Tension in Pregnant and Nonpregnant Patients Following Apnea

	B A	A A (1)	B A	A A (1)
PaO ₂ (mmHg)	473 ± 34*	334 ± 43*	507 ± 38	449 ± 40
PaCO ₂ (mmHg)	31.4 ± 2.4	40.4 ± 2.7	35.6 ± 1.8	44.3 ± 1.1
pH	7.41 ± 0.02	7.33 ± 0.01	7.45 ± 0.02	7.35 ± 0.01

< 0.05.

From Archer et al.¹⁵¹

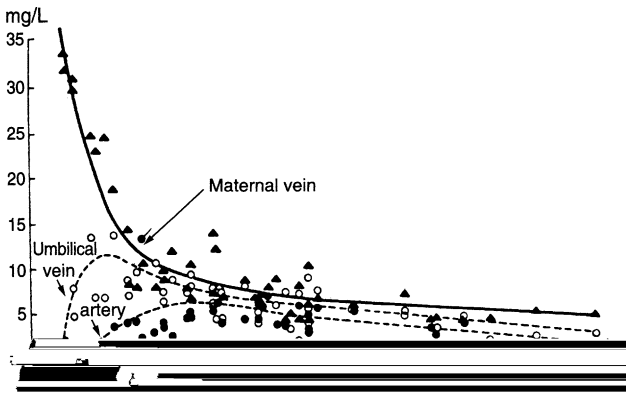
3 min vs. four maximal deep breaths in 30 s. The



12-7. Airway pictures (A) pre-labor (Samssoon's modification of Mallampati class 1 airway), and (B) post-labor

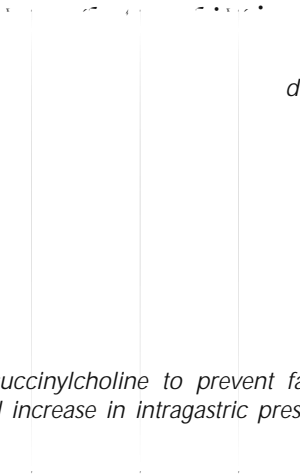


The concentration of umbilical vein blood remains lower than that of maternal vein blood;



12-12. Thiamylal concentrations in the maternal vein, umbilical vein, and umbilical artery. (From Kosaka et al.¹¹⁶ Used with permission.)

the concentration of umbilical artery blood is lower than that of umbilical vein blood. These gradients result from (1) a rapid decline in concentration of thiobarbiturate in maternal blood secondary to rapid redistribution, (2) nonhomogeneous distribution in the intervillous space, (3) extraction of thiobarbiturate from umbilical vein blood by the fetal liver, and (4) progressive dilution through shunting in the fetal circulation.



before the use of succinylcholine to prevent fasciculations and an associated increase in intragastric pressure

parturients rarely exhibit fasciculations after succinylcholine; succinylcholine produces inconsistent and unpredictable elevations in intragastric pressure; succinylcholine tends to increase lower esophageal sphincter pressure in association with increased intragastric pressure, and thus the barrier pressure remains essentially unchanged;

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Anesth Analg

Anesthesiology

Anesth Analg

Anesthesiology

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Anesthesiology

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Can J Anaesth

Epidural Analgesia