General anesthesia for obstetrics

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Content

• History
• Indication
• Preparation
• Intraoperative management
• Placental transfer of drugs
• Drugs
History
History

- The history of the caesarean section is unsure
- Legend of emperor Caesar
- The word Caesarean probably comes from the latin word Caedaere = to cut
- Lex Caesarea
- Remaind an extremely dangerous procedure until late 19th century
Indications

• Labor is unsafe for the mother
• Labor is unsafe for the fetus
• Position
Preparation

- Aspiration
  1:400 versus 1:2000
- Failed intubation
  1:300 versus 1:2000

Aspiration and failed intubation are the major causes of maternal morbidity and mortality
Preparation

Aspiration

• Sodium citrate, other?
• Position
• Prepare for RSI
Preparation

Failed intubation

Factors that may contribute to difficulties:

• Airway edema
• Emergency situation
• Large breasts
Preparation (airway)

Assess airway

• Mouth opening, dentition
• Mallampati
• Temporomandibular joint mobility
• Neck mobility
• Short neck?
• Small mandible?
• Weight
Preparation Mallampati

Clase I  Clase II  Clase III  Clase IV
Preparation Mallampati
Preparation

• It is not always possible to predict difficult intubation
• Algorithm for difficult intubation
Algorithm
Failed intubation

Mask ventilation adequate
- No fetal distress: Wake up
- Fetal distress: Continue

Mask ventilation inadequate
- LMA
- Surgical airway

Alternative anesthesia
Algorithm

• Call for help, early!
• Emergency – make an onest assessment about your ability to oxygenate the mother, this is your priority!!
• Mask ventilation! patient die from hypoxi not the absence of an endotracheal tube
Scratch my foot
Preparation summary

• Check equipment
• Preanesthetic check, especially airway and risk for aspiration
• Dehydration?/blood loss?
• Assistant
• Position
• Iv-line
• Monitor, check vital signs.
• Preoxygenate
• RSI
Safety first!!
Intraoperative management

- Check vital signs
- Check for awareness
- Drugs: Efedrine, Long acting relaxant, opioids, oxytocin, (Metyl)-ergometrin, Reversal
- Aspirate gastric content
- Extubate when patient is awake
Intraoperative management

- Awareness – fetal depression
- Gas – uterine relaxation
- Reduced anesthetic requirement
- $O_2$ 50% + Nitrous oxide and:
  - Halothane 0,5%
  - Isoflurane 0,75%
  - Sevorane 1,0%
Placenta transfer of drugs

- Maternally administered anesthetics enter the fetus by **diffusion**

Diffusion depends on:
- **Diffusion constant**
- Membrane surface area
- Maternal drug concentration
- Fetal drug concentration
- Membrane thickness
Diffusion
Diffusion constant

Depends on:

• Molecular weight
• Protein binding
• Lipid solubility
• Degree of ionization
Placental transfer of drugs

Anesthetic drugs characteristics:

• Small molecules
• Not ionized
• High lipid solubility
• Incompletely protein bound
Placental transfer of drugs

- Anesthetic drug rapidly cross the placenta!
- Nb! Neuromuscular blocking drugs
Drugs

• Tiopental
• Cross the placenta rapidly
• 4-7mg/kg – no depression on the neonate
Drugs

- Ketamine
- Cross placenta rapidly
- 1-1.5mg/kg – no depression on the neonate
Drugs

- Propofol
- Cross placenta rapidly
- 2,0-2,5mg/kg – no depression on the neonate
Drugs

• Muscle Relaxants
• Do not cross placenta in clinically significant amounts
The end