

## Coma and Focal Neurologic Signs after Outpatient Plastic Surgery

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### OBJECTIVES

Participants will discuss and understand: 1) How to evaluate and prepare patients prior to outpatient surgery; 2) The differences between objective and subjective effects of psychoactive drugs; 3) Choice of sedation versus general anesthesia; 4) Appropriate monitoring and rational use of drugs guided by pharmacodynamic and pharmacokinetic properties; 5) Common and uncommon complications in MAC cases

### STEM CASE - KEY QUESTIONS

A 26-year old woman with a history of asthma, seizures and non-insulin dependent diabetes mellitus is scheduled for blepharoplasty under monitored anesthesia care (MAC). The surgery will take place in an outpatient plastic surgery clinic covered by a MD/CRNA group which just hired you, fresh out of residency training. The plastic surgeon always sends his patients to an internist a few days before surgery. The internist always prescribes promethazine and diazepam for premedication. When and how are you going to perform the preoperative assessment?

She is 76 Kg, 162 cm. Her neck is short. How do you evaluate her airway? Which features in her airway assessment are most important to decide between MAC or general anesthesia?

She is sleepy but starts to cry and states that she feels very nervous. How do you evaluate her sedation state? What do you do next?

The surgeon insists that the surgery should be performed with MAC because his trusted CRNA has been doing it that way for many years with excellent results. You agree to proceed with a propofol infusion and intermittent doses of fentanyl. How are you going to titrate these drugs? Are you going to use a BIS monitor? The surgeon tells you that his CRNA used propofol and ketamine. Will you change your plan?

Oxygen saturation stays above 95% with supplemental oxygen via nasal prongs but capnography fails 40 minutes into the case. How do you monitor her respiratory status?

The surgeon complains that the patient is moving during surgery. How do you respond?

You suspect your patient is experiencing airway closure. How do you evaluate and intervene? Oxygen saturation stays at 95%. Does she have bronchospasm?

At the end of a 3 hr surgical procedure your patient is unresponsive. Her respiratory rate is 1 to 3 breaths/min. Oxygen saturation is 95% with 3 L/min oxygen via nasal prongs. What do you do next? Do you administer naloxone? Flumazenil? Physostigmine? Do you intubate the patient? Are you going to order laboratory tests? Thirty minutes later your patient is still somnolent but responds to shoulder tapping. You perform a neurologic examination and find a left side plantar reflex (Babinski). What do you do next?

### **PROBLEM BASED LEARNING DISCUSSION**

In the 21st century a broad spectrum of surgical patients will undergo thousands of different procedures in freestanding facilities, under sedation or anesthesia. We will discuss challenges, controversies and complications arising in this unique environment.

Cancellations, complications and patient anxiety can be minimized by preoperative assessment. In outpatient surgery, preoperative assessment strategies include visits to the facility or office, telephone interviews, review of health survey or computer assisted evaluation prior to the day of surgery. Preoperative assessment has also been performed only on the day of surgery. Each of these strategies has advantages and disadvantages which will be discussed by the participants.

The patient has a past medical history of asthma, seizures and non-insulin dependent diabetes mellitus. The impact of preoperative diseases on the incidence of perioperative complications in outpatient surgical procedures has been reported in studies with several thousand patients and will be discussed by the participants.

Anatomic features influence the likelihood of upper airway obstruction. Anesthetic drugs also increase upper airway resistance and may lead to airway obstruction. Several other clinical factors also need to be considered when planning airway management during sedation and anesthesia. A clear airway can be maintained with or without devices which include tracheal intubation, laryngeal mask airway and others. Participants will discuss anatomic, pharmacologic and clinical issues impacting airway management.

Participants will discuss the pervasive confusion concerning objective and subjective effects of psychoactive drugs. The objective effects are assessed by observers and described in terms relating patients' responses to stimulation, such as the Observer's Assessment of Sedation Scale. The subjective effects relate to patients' feelings and may be more difficult to determine.

The surgeon believes that he is "the captain of the boat" and you should do what he says. Participants will discuss professional interactions among health care providers

Fentanyl, alfentanil, ramifentanil, propofol, midazolam and ketamine have been used to provide sedation and analgesia. Appropriate administration of these drugs requires an understanding of their pharmacodynamic and pharmacokinetic properties, including how they interact when administered concomitantly.

Participants will discuss how to use pulse oxymetry, capnography, precordial stethoscope and clinical observations to monitor oxygenation and ventilation during MAC.

The performance of surgical procedures under sedation requires patient acceptance, cooperation and adequate clinical characteristics. General anesthesia may be a safer choice in many instances. Participants will discuss the issues involved in formulating an anesthetic plan with particular emphasis on the safe administration of monitored anesthesia care (MAC).

Delayed awakening or coma after sedation or anesthesia may be attributed to several causes, including excessive administration of anesthetic drugs, patient self-medication, hypoxia, hypercarbia, hyponatremia, hyperglycemia, hypoglycemia, uremia, liver failure, extremes of body

temperature, seizures, stroke or hysteria. Coma after sedation is a serious complication which may be related to patients' diseases and/or to clinical errors. Participants will discuss how to evaluate and manage impaired central nervous system function after sedation and anesthesia.

#### **REFERENCES**

- 1-Apfelbaum JL: Current controversies in adult outpatient anesthesia. 53<sup>rd</sup> Annual Refresher Course Lectures, Clinical Updates and Basic Science Reviews Program-ASA 152, 2002
- 2-Sa Rego MM, White PF: Monitored anesthesia care. In Miller RD (ed): Anesthesia, 5<sup>th</sup> ed: Philadelphia, Churchill Livingstone, 2000, p 1452.
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- 4-Culley DJ, Crosby G: Impaired central nervous system function. In Benumof JL, Saidman LJ (eds): Anesthesia & perioperative complications, 2<sup>nd</sup> ed: St. Louis, Mosby, 1999, p 357.
- 5-Nunn JF: Applied Respiratory Physiology, 4<sup>th</sup> ed: Oxford, Butterworth-Heinemann, 1993, p 518.

#### **LEARNING SUMMARY**

Participants will discuss and understand: 1) How to evaluate and prepare patients prior to outpatient surgery; 2) The differences between objective and subjective effects of psychoactive drugs; 3) Choice of sedation versus general anesthesia; 4) Appropriate monitoring and rational use of drugs; 5) Common and uncommon complications in MAC cases.