
PART II

Anesthesia

5. Basics of Anesthesia for the Aesthetic Surgery Patient

Aaron M. Kearney, Sammy Sinno, Anmol Chattha
See *Essentials of Aesthetic Surgery*, pp. 59–84

SURGICAL JUDGMENT

1. What is one of the advantages of total intravenous anesthesia (TIVA)?

- A. Simple administration.
- B. Lower cost.
- C. Easier titration of depth.
- D. Reduced incidence of postoperative nausea and vomiting (PONV).
- E. Does not require an anesthesiologist to be present.

RISK FACTORS

2. Which of the following comorbidities indicates a patient who is not suitable for general anesthesia in an ambulatory surgical center or office?

- A. End-stage renal disease (ESRD).
- B. Atrial fibrillation.
- C. Paraplegia.
- D. Peripheral vascular disease.
- E. Mild obstructive sleep apnea (OSA).

PREOPERATIVE TESTING

3. Which of the following is an accurate statement regarding hCG testing in females undergoing aesthetic surgery?

- A. Urine hCG must be obtained for all premenopausal females prior to undergoing surgery.
- B. Anesthetic exposure in pregnant females is significantly linked to spontaneous abortion and premature birth.
- C. The American Society of Anesthesiologists recommends “offering” rather than “requiring” hCG testing.
- D. A point of care (POC) urine hCG test is not a reliable test before surgery.
- E. Preoperative hCG testing is positive in 4% of cases.

RISK FACTORS

4. Which of the following factors is a reason to obtain a preoperative electrocardiogram (ECG) in a patient?

- A. Any patient over the age of 60.
- B. Diabetes mellitus on metformin.
- C. Renal insufficiency.
- D. End-stage liver disease.
- E. Patient with body mass index (BMI) of 33.

RISK FACTORS

5. Which of the following is one of the Revised Cardiac Risk Index (RCRI) risk factors?

- A. Peripheral artery disease with history of bypass.
- B. Cerebral vascular disease with history of stroke or transient ischemic attack.
- C. Poorly controlled hypertension.
- D. Obesity.
- E. Active smoking.

RISK FACTORS

- 6. What is the threshold level of metabolic equivalents (METs), below which functional status is considered poor?**
- A. 2 METs.
 - B. 4 METs.
 - C. 6 METs.
 - D. 8 METs.
 - E. 10 METs.

RISK FACTORS

- 7. Which of the following tasks approximates 4 METs, if the patient can carry out the task without becoming short of breath?**
- A. Eating, dressing, or using the toilet.
 - B. Climbing a flight of stairs.
 - C. Walking two blocks on level ground at 2 to 3 miles per hour.
 - D. Participating in moderate recreational activities, such as golf or bowling.
 - E. Running a marathon.

PHARMACOLOGY

- 8. To which class of drugs does dexmedetomidine belong?**
- A. Opiate agonist-antagonist.
 - B. Benzodiazepine.
 - C. Phencyclidine.
 - D. Alpha-2-adrenergic agonist.
 - E. Alkylphenols.

SURGICAL JUDGMENT

- 9. Which of the following responses to stimulation indicates “moderate sedation”?**
- A. Normal response to verbal stimulation.
 - B. Reflex withdrawal to pain.
 - C. Purposeful response to verbal or tactile stimulation.
 - D. Purposeful response with repeated or painful stimulation.
 - E. Swallow or gag reflex present.

SURGICAL JUDGMENT

- 10. Which of the following is the most common injury in the operating room related to positioning?**
- A. Thermal injury.
 - B. Corneal abrasion.
 - C. Pressure sore.
 - D. Peripheral neuropathy.
 - E. Postoperative vision loss (POVL).

RISK FACTORS

- 11. Which of the following is a risk factor for postoperative nausea and vomiting (PONV)?**
- A. Male gender.
 - B. Female gender.
 - C. Smoking.
 - D. Total intravenous anesthesia.
 - E. High BMI patients.

PHARMACOLOGY

- 12. Which of the following is the drug of choice for malignant hyperthermia?**
- A. Sodium bicarbonate.
 - B. Sodium dantrolene.
 - C. Flumazenil.
 - D. Furosemide.
 - E. Naloxone.

Answers

SURGICAL JUDGMENT

1. What is one of the advantages of total intravenous anesthesia (TIVA)?

D. Reduced incidence of postoperative nausea and vomiting (PONV).

Total intravenous anesthesia can be helpful in patients with a history of severe postoperative nausea and vomiting. However, it is more complex to administer and is more expensive than traditional general anesthesia. Usually, it has a better patient experience after surgery. However, it still requires an anesthesiologist to administer.^{1,2}

REFERENCES

1. Blakely KR, Klein KW, White PF, et al. A total intravenous anesthetic technique for outpatient facial laser resurfacing. *Anesth Analg* 1998;87:827
2. Barinholtz D. Intravenous anesthesia for cosmetic surgery. In: Friedberg BL, ed. *Anesthesia in Cosmetic Surgery*. New York: Cambridge University Press; 2007

RISK FACTORS

2. Which of the following comorbidities indicates a patient who is not suitable for general anesthesia in an ambulatory surgical center or office?

A. End-stage renal disease (ESRD).

ESRD is a contraindication to undergoing general anesthesia in an ambulatory surgical center or office. Patients with well-controlled atrial fibrillation (as opposed to those with higher-grade arrhythmias or who have permanent pacemakers/implantable cardioverter-defibrillators), paraplegia, peripheral vascular disease, and those with mild OSA may be appropriate to undergo general anesthesia in these settings. Severe OSA would be a red flag to undergoing general anesthesia in an ambulatory surgical center or office.¹

REFERENCE

1. Kataria K, Cutter TW, Apfelbaum JL. Patient selection in outpatient surgery. *Clin Plast Surg* 2013;40:371

PREOPERATIVE TESTING

3. Which of the following is an accurate statement regarding hCG testing in females undergoing aesthetic surgery?

C. The American Society of Anesthesiologists recommends “offering” rather than “requiring” hCG testing.

hCG testing is institution dependent. The American Society of Anesthesiologists does not specifically recommend obtaining hCG testing in all females but does recommend offering the test to patients. Evidence is mixed regarding the effect of anesthetics on pregnant females. A POC urine hCG test is a reliable preoperative test. Positive pregnancy tests have been reported in 0.3 to 1.3% of premenopausal menstruating females.^{1,2}

REFERENCES

1. Committee on Standards and Practice Parameters, et al. Practice Advisory for Preanesthetic Evaluation. An updated report by the American Society of Anesthesiologists Taskforce on Preanesthesia Evaluation. *Anesthesiology* 2012;116:522
2. Choosing wisely: an initiative of the ABIM Foundation. Available at www.choosingwisely.org

RISK FACTORS

4. Which of the following factors is a reason to obtain a preoperative electrocardiogram (ECG) in a patient?

C. Renal insufficiency.

Renal insufficiency is a component of the Revised Cardiac Risk Index and is an indication to obtain a preoperative electrocardiogram (ECG) within 6 months of surgery. Age alone is not a reason to obtain an ECG. Diabetes on insulin is another reason to obtain an ECG, but diabetes controlled with oral medication is not. Obesity is not a direct indication to obtain an ECG as well.^{1,2}

REFERENCES

1. Cohn SL, Fleisher LA. Evaluation of cardiac risk prior to noncardiac surgery. Available at <https://www.uptodate.com/contents/evaluation-of-cardiac-risk-prior-to-noncardiac-surgery>
2. Committee on Standards and Practice Parameters, et al. Practice Advisory for Preanesthetic Evaluation. An updated report by the American Society of Anesthesiologists Taskforce on Preanesthesia Evaluation. *Anesthesiology* 2012;116:522

RISK FACTORS

5. Which of the following is one of the Revised Cardiac Risk Index (RCRI) risk factors?

B. Cerebral vascular disease with history of stroke or transient ischemic attack.

Cerebral vascular disease is one of the components of the RCRI. The rest of the above are not.¹

REFERENCE

1. Cohn SL, Fleisher LA. Evaluation of cardiac risk prior to noncardiac surgery. Available at <https://www.uptodate.com/contents/evaluation-of-cardiac-risk-prior-to-noncardiac-surgery>

RISK FACTORS

6. What is the threshold level of metabolic equivalents (METs), below which functional status is considered poor?

B. 4 METs.

Patients with less than 4 METs are considered to have poor functional status with increased risk of cardiopulmonary complications.^{1,2}

REFERENCES

1. Kataria K, Cutter TW, Apfelbaum JL. Patient selection in outpatient surgery. *Clin Plast Surg* 2013;40:371
2. Cohn SL, Fleisher LA. Evaluation of cardiac risk prior to noncardiac surgery. Available at <https://www.uptodate.com/contents/evaluation-of-cardiac-risk-prior-to-noncardiac-surgery>

RISK FACTORS

7. Which of the following tasks approximates 4 METs, if the patient can carry out the task without becoming short of breath?

B. Climbing a flight of stairs.

Climbing a flight of stairs is the approximate equivalent of 4 METs. The rest of the mentioned activities require more or less effort. 1 MET = 3.5 mL O₂ uptake/kg/min which is the resting oxygen uptake in sitting position. Eating, dressing, or using the toilet is equivalent to 1 MET. Walking two blocks at 2 to 3 mph is a little less than 4 METs. Moderate recreational activity is approximately 8 METs and strenuous activity such as a marathon is >10 METs. It is a proxy to assess for cardiac risk and <4 METs is a concern for poor functional risk with worse cardiopulmonary complications perioperatively.^{1,2}

REFERENCES

1. Kataria K, Cutter TW, Apfelbaum JL. Patient selection in outpatient surgery. *Clin Plast Surg* 2013;40:371
2. Cohn SL, Fleisher LA. Evaluation of cardiac risk prior to noncardiac surgery. Available at <https://www.uptodate.com/contents/evaluation-of-cardiac-risk-prior-to-noncardiac-surgery>

PHARMACOLOGY

8. To which class of drugs does dexmedetomidine belong?

D. Alpha-2-adrenergic agonist.

Dexmedetomidine is an alpha-2-adrenergic agonist commonly used for sedation. The other classes of drugs are also used in sedation with different goals and responses.¹

REFERENCE

1. ASA continuum of depth of sedation: definition of general anesthesia and level of sedation/analgesia. Available at www.asahq.org.

SURGICAL JUDGMENT**9. Which of the following responses to stimulation indicates “moderate sedation”?****C. Purposeful response to verbal or tactile stimulation.**

Moderate sedation is defined by a purposeful response to verbal or tactile stimulation. Normal response implies minimal sedation, whereas repeated or painful stimulation implies that the patient is under deep sedation. Swallow or gag reflex is present in minimal sedation.¹

REFERENCE

1. ASA continuum of depth of sedation: definition of general anesthesia and level of sedation/analgesia. Available at www.asahq.org.

SURGICAL JUDGMENT**10. Which of the following is the most common injury in the operating room related to positioning?****D. Peripheral neuropathy.**

Peripheral neuropathies are the most common intraoperative injury related to positioning. Corneal abrasions are the most common intraoperative injury overall but are not related to positioning. Nerve injuries are the second most frequent liability claim in anesthesia practice. The other options are all rare or “never” events related to the perioperative period.^{1,2}

REFERENCES

1. Hansen J, Botney R. Safe patient positioning. In: Young VL, Botney R, eds. Patient Safety in Plastic Surgery. New York: Thieme Publishers; 2009
2. Cheney FW, Domino KB, Kaplan RA, et al. Nerve injury associated with anesthesia: a closed claim analysis. *Anesthesiology* 1999;90:1062

RISK FACTORS**11. Which of the following is a risk factor for postoperative nausea and vomiting (PONV)?****B. Female gender.**

Females are at higher risk for postoperative nausea and vomiting. Additional risk factors include non-smokers, prior history of PONV or motion sickness, postoperative opioids, age less than 50 years, and general anesthesia. Total intravenous anesthesia is protective against PONV. The literature does not support that high BMI patients are more likely to be at risk for PONV.¹

REFERENCE

1. Le TP, Gan TJ. Update on the management of postoperative nausea and vomiting and postdischarge nausea and vomiting in ambulatory surgery. *Anesthesiol Clin* 2010;28:225

PHARMACOLOGY**12. Which of the following is the drug of choice for malignant hyperthermia?****B. Sodium dantrolene.**

Dantrolene, or the new preparation Ryanodex, is the only effective treatment for malignant hyperthermia. Flumazenil is used to reverse benzodiazepine overdose. Naloxone is used to reverse narcotic overdose. It is important to know that these two drugs have half-lives shorter than the offending agent so watch out for re-narcotization or re-sedation. Sodium bicarbonate is used for multiple other indications but not for malignant hyperthermia. Furosemide is a diuretic.¹

REFERENCE

1. Litman RL, Flood CD, Kaplan RF, et al. Postoperative malignant hyperthermia: an analysis of cases from the North American Malignant Hyperthermia Registry. *Anesthesiology* 2008;109:825