Review of Current Safety Guidelines in Outpatient Anesthesia Based on Peer Reviewed Published Literature

Przegląd bieżących wytycznych bezpieczeństwa dotyczących znieczuleń pacjentów ambulatoryjnych na podstawie zweryfikowanej opublikowanej literatury

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The Cosmetic Surgery Safety Task Force, 2012 American Academy of Cosmetic Surgery (AACS) Review of Anesthesia Safety for the Cosmetic Surgeon

The following is a brief summary of the article published in the American Journal of Cosmetic Surgery in June of 2013 and presented at the 30th AACS Annual Scientific Meeting in Florida.

The information was primarily taken from the peer-reviewed literature and guidelines produced by various accreditation agencies, including: American Accreditation Association for Ambulatory Health Care (AAAHC), American Medical Association (AMA), American Society of Anesthesiologists (ASA), American College of Surgeons (ACS) with an emphasis on the literature reflecting the highest available levels of evidence.

Different types of anesthesia are administered by the cosmetic surgeon and their support staff. The brief definitions are as follows:

– **Local anesthesia** – Dose adjusted to weight
– **Minimal Sedation** – Drug induced state during which patient responds normal to verbal command and does not lose protective reflexes
– **Moderate Sedation** – drug induced state depression of consciousness but patient maintains airway and cardiovascular function.
– **Deep Sedation** – Drug induced state in which patient cannot easily be aroused. May need assistance on maintaining patent airway.
– **General Anesthesia** – Patient is not arousable needs assistance in maintaining patent airway.

The preoperative evaluation is the clinical assessment that precedes the delivery of anesthesia care for cosmetic surgery. This assessment includes the history and the physical examination as well as relevant available laboratory information. In combination these provide necessary information to help the cosmetic surgeon and anesthesia personnel make key decisions regarding anesthesia choices. This information also guides intraoperative and postoperative management. Although there have been no controlled trials of the clinical impact of performing pre-anesthesia medical record review or physical exam, such a practice is strongly recommended by accrediting agencies and by common practice within the guidelines of standards of care.

Although no controlled trials addressing the timing of the pre-anesthesia evaluation were found, survey opinions from expert consultants and a random sample of American Society of Anesthesiologist (ASA) members revealed that most consultants and ASA members agree that for medium to high surgical invasiveness, the initial assessment should be done before the day of surgery. For low surgical invasiveness, most consultants and ASA members agree that the initial assessment may be done on or before the day of surgery.

Preoperative testing should be based on comorbidities, medications and anticipated blood loss. Here are some of the common tests that may be ordered and their indications:

– **Hgb/HCT** – Indications: history of fever, anemia, weight loss, liver disease and bleeding disorder
– **HgbA1C** – Average blood glucose levels over previous months. The society of Ambulatory Anesthesia concluded that there are insufficient data to specifically recommend the level of preoperative fasting

glucose or HgbA1c level above which elective surgery should be postponed. The American Diabetes Association recommends a target HgbA1c<7% Pre-prandial blood glucose 90-130 mg/dL, Post-prandial glucose level 180 mg/dL. Diabetics should be scheduled as first case of the day.

Other preoperative testing may be Chest X-ray, Serum chemistry, Urine Testing, Coagulation studies. in all premenopausal menstruating women Serum human chorionic gonadotropin (HCG) or Urine HCG.

Other factors to consider at the preoperative evaluation: Studies have shown no effect of age on unanticipated hospital admission or postoperative complications. Obesity has been shown to increase likelihood of wound infection, respiratory complications and DVT. Patients with obstructive sleep apnea need particular attention due to increased risk of airway obstruction and respiratory depression. The Cosmetic Surgery Safety Task Force recommends that patients with known obstructive sleep apnea should be identified with an alert on their chart. During the recovery period they should be monitored closely. If they use a consistent positive airway pressure machine it should be available during the recovery period. The amount of narcotics medication prescribed for the postoperative period should be limited and closely monitored.

Studies have shown that patients with low-grade or distant cardiovascular symptoms (e.g., angina pectoris or previous myocardial infarction occurring more than 6 months before treatment and stable) are suitable candidates for ambulatory cosmetic surgery, whereas those with more severe conditions (e.g., active angina, prior myocardial infarction within the past 6 months) are not. According to the College of Cardiology/American Heart Association guidelines, patients with active cardiac conditions should be evaluated and their treatment should be optimized before non-cardiac surgery. Patients with existing cardiac pacemakers or implantable cardioverter-defibrillators can be treated safely in consultation with the cardiologist and device manufacturer. In general, continuing or discontinuing anticoagulant and antiplatelet medications before cosmetic surgery depends on the medical necessity of the agents for preventing cardiovascular events, thereby warranting consultation with a cardiologist, a hematologist, or an internist.

Malignant hyperthermia is a rare genetic disorder. Persons susceptible to malignant hyperthermia can undergo ambulatory surgery, provided that non-triggering anesthetics are used. Inhalation anesthetics and succinylcholine should be avoided. Temperature should be monitored for a minimum of 2.5 hours post op. Pre-treatment with dantrolene is not recommended. It is the standard of care that the office will have sufficient equipment, supplies, trained personnel and transfer and emergency protocols.

Performing multiple cosmetic procedures in concert has been proven safe in multiple studies in an ambulatory setting; however there may be increased likelihood of complications and prolonged recovery. With regard to the duration of the procedure, a prospective study by British plastic surgeons found increased morbidity with operative time longer than 6 hours. Duration of surgery alone is not a major determinant of post-operative morbidity but the type of surgery and the patient's general health are more important predictors of outcome.

The recommended monitoring is variable with each level of anesthesia. But with deep sedation or general anesthesia the following are recommended by the ASA: Qualified provider and support team, supplemental oxygen, positive pressure ventilation (Ambu bag), suction, sequential compression devices/TED hose, pulse oximeter (Spo2), continuous monitoring , NIABP, ECG continuous monitoring, bladder catheter (4 hours or greater), exhaled CO2, Warming blanket (optional).

To prevent errors and surgical mistakes in the operating room the panel strongly recommends the use of a surgical check list. The World Health Organization checklist identifies 3 phases of an operation: before the induction of anesthesia (sign in), before the skin incision is performed (time out), and before the patient leaves the operating room (sign out). In each phase, a checklist coordinator must confirm that the surgical team has completed the listed tasks before the operation proceeds.

Operating room fires occur as a result of 3 components that are always present in an operating room: an oxygen-enriched environment, combustible materials, and an ignition source. These are each closely related to anesthesia, surgical draping, and such things as electrocautery or laser use. Current recommendations from the Anesthesia Patient Safety Foundation and the Emergency Care Research Institute focus on 3 specific fire reduction strategies: 1. Open oxygen delivery should be used during procedures on the head, face, neck, and upper chest. 2. Follow specific recommendations regarding the use of supplemental oxygen during such procedures. 3. Implementation of a preoperative time-out is strongly recommended to assess risk potential for every patient and surgery. Of greatest importance are the recommendations regarding the use of supplemental oxygen, a common necessity in cosmetic surgery using sedation. The groups strongest recommendation is to discontinue the use of 100% supplemental oxygen during head, face, neck, and upper chest surgery.

The Cosmetic Surgery Safety Task Force strongly believes that continued appropriate perioperative observation and monitoring and use of predetermined discharge criteria decrease the likelihood of adverse outcomes for moderate sedation, deep sedation, and general anesthesia. The patient needs to be monitored after sedation or GA until the discharge criteria are met. This is the responsibility of the surgeon, his or her designee and the anesthesia staff. Furthermore, the facility needs to have immediate availability of emergency resuscitation equipment and supplemental oxygen.

Reversal agents – (Flumazenil, Naloxone) if administered in recovery, continue monitoring long enough to ensure the sedation and cardiorespiratory depression does not recur.

The discharge criteria should be designed to minimize the risk of central nervous system or cardiorespiratory depression after discharge from observation by trained personnel. Patients should be alert and oriented and vital signs should be stable and within acceptable limits. The use of Aldrete scoring systems may assist in documenting fitness for discharge although other systems may be useful as well.