



## COSMETIC SURGERY-ANAESTHESIA USED

**Dr. Tanvi  
Bharadwaj**

D.N.B Resident Department Of Anaesthesiology N.D.M.C And Hindurao Hospital  
New Delhi

**Dr. Puneet Kumar\***

M.ch Resident Department Of Plastic Surgery Patna Medical College Patna. \*Corresponding  
Author

**ABSTRACT** **AIMS AND OBJECTIVES:** After studying this article, the doctor should be able to recognize the anesthetic choices for day care procedures along with the various medications used plus the complexities of providing safe anesthesia to patients for cosmetic surgery. **SUMMARY:** Just as plastic surgeons develop areas of specialization to better care for their patients, anesthesiologists have specialized in outpatient plastic surgery, both cosmetic and reconstruction. The methods utilized are similar to other procedures but incorporate specific techniques that aim to better relieve preoperative anxiety, induce and awaken patients more smoothly, and minimize postoperative sequelae of anesthesia such as nausea and vomiting. It is important that plastic surgeons understand these techniques since they are the ones who are ultimately responsible for their patients' care. The following is a review of the specific considerations that should be given to ambulatory plastic surgery patients and the techniques used to safely administer agreeable and effective anesthesia

**KEYWORDS :****INTRODUCTION**

With the enormous number and variety of cosmetic procedures performed all over, careful clinical decision making for the safe and effective administration of anesthesia for patients undergoing cosmetic surgery is important. Furthermore, many cosmetic procedures are performed in a daycare setting, reinforcing the need to consider everything to ensure patient safety. Today, patients are discharged home after the day care surgery. Thus, the anesthetic technique is considered as important as the surgery itself. The technique of anaesthesia used may impact both the quality and the quantity of recovery time.

The plastic surgeon is ultimately responsible for managing the patient's expectations of the perioperative period. Therefore, the surgeon should understand some of the anesthetic methods, drugs, and/or possible sequelae and both physicians must understand and appreciate what the other will need to perform the procedure safely.

**PREOPERATIVE DISCUSSION**

An anesthetic complication during cosmetic surgery is rare due to the rigorous screening process a patient should undergo before any elective procedure. The patient should be medically optimized before receiving any type of anesthesia ranging from general anesthesia through monitored anesthesia care. In preparing a patient for surgery, it is useful to classify him or her by the American Society of Anesthesiologists' Physical Status Score. In addition to a thorough history and physical examination, laboratory screenings are often required. Commonly ordered tests include hemoglobin and hematocrit, electrolytes, blood glucose, urinalysis, an electrocardiogram, and a pregnancy test for women within child-bearing age. The choice of which test to order should be directed by the history and physical examination.

**PREOPERATIVE PROTOCOL**

All patients should be instructed to abstain from solid food 8 hours before surgery and clear liquids 2 hours before surgery. The history of this recommendation likely comes from a report published in 1946 by Mendelson, who noted a high incidence of pulmonary aspiration in obstetric patients undergoing general anesthesia. A more concrete recommendation was published by the American Society of Anesthesiologists Task Force on Preoperative Fasting in 1999. They recommend a minimum fasting period for clear liquids of 2 hours and a minimum of 6 hours for milk or a light meal. They further recommend a fasting period of 8 hours for patients who have ingested any meal containing fried or fatty foods. Since it is easiest and safest to adopt a single non per oral rule before elective surgery, 8 hours is the most appropriate, since it covers all foods and liquids. In addition to urging a patient to get plenty of rest the night before the procedure, the surgeon should consider prescribing a medication that provides somnolence. It is common for patients to feel anxiety and apprehension before surgery. A preoperative benzodiazepine is a suitable choice because in addition to inducing somnolence, this class of drug is also associated

with anxiolysis. In fact, many plastic surgeons treat preoperative anxiety prophylactically. Anxiolytic medications such as alprazolam; or lorazepam can be prescribed to patients 1 to 3 days before the procedure in doses of 0.25 to 0.50 mg th daily HS. In addition, clonidine, an alpha- decompressed for abdominal procedures. Positioning 2 agonist given in doses of 0.1 to 0.2 mg orally the morning of surgery, has been shown to be dually beneficial by both decreasing blood pressure and providing a degree of sedation.

Informed consent for the surgical procedure should be obtained in advance of the surgery. Ultimately, procedures performed on a well-relaxed patient will more than likely be much smoother than those performed on an irritable and anxious patient.

**INTRAOPERATIVE TECHNIQUES**

Upon the patient's arrival to the hospital, surgery center, or office, both the anesthesiologist and cosmetic surgeon should confirm that no changes have occurred during the interval. After ensuring that all the required paperwork and consent forms are in order, the patient may be brought into the operating room. Before the induction of anesthesia, an intravenous line is inserted for administration of medications. Monitors are placed as outlined by standards set forth from the American Society of Anesthesiology and include a continuous electrocardiogram, a cycling blood pressure cuff, a pulse oximeter for oxygen saturation, an end-tidal carbon dioxide monitor, and a temperature probe. Compression boots should be placed on the calves before the induction of general anesthesia, as they have been shown to prevent the incidence of deep vein thrombosis in patients.

A bladder catheter is generally advisable for cases longer than 4 hours to safely manage fluid resuscitation, or to keep the bladder the patient on the operating room table should take into consideration the risk of permanent nerve injury from continuous pressure. The patient's position must allow the anesthesiologist to have adequate access to the airway in case there is a problem with ventilation.

Finally, the length of all cords of electrical surveillance and patient monitoring systems must be taken into account so that they do not cause distractions during the surgery. It is important to note that the temperature of the operating room is a vital consideration when planning a surgical procedure. Due to the vasodilatory nature and the direct inhibition of the hypothalamus caused by many anesthetic agents, all patients are susceptible to hypothermia or loss of body heat during surgery. This may result in platelet dysfunction and bleeding, enzymatic inactivity, cardiac dysfunction, or postoperative shivering. Hence, the ambient temperature of the operating room should be kept at a temperature that minimizes body heat loss and a warming blanket be used for longer procedures.

After the induction, every effort should be made to protect the patient's eyes from inadvertent injury. Closed eyes should always remain closed during surgery, especially in procedures on the face. To minimize the risk of corneal abrasion, a gentle ophthalmologic lubricant, with or

without antibiotic, should be placed in the lower fornix of each eye at the start of the procedure. Sterile tapes are also recommended to keep the eyelids closed if possible.

Both patients and surgeons are interested to know what role music has in the operating arena. In fact, much has been documented about the use of music before, during, and after surgical procedures. Numerous studies have found that patients who listen to music preoperatively and during operations requiring regional anesthesia are calmer and less preoccupied with the surgery than their counterparts. Furthermore, a similar study reported a measurable difference in heart and respiratory rates as well as blood pressures between patients undergoing ambulatory surgery who listened to music compared with those who did not. Most of the studies showed that listening to music allayed preoperative anxiety in patients and neither improved nor hindered the concentration of the surgeons performing the procedures. Thus, while helping patients moderate their anxiety, the use of music in the operating suite seems to simply be a matter of personal preference and precedent.

## GENERAL ANESTHESIA

“General anesthesia is defined as a controlled state of unconsciousness accompanied by a loss of protective airway reflexes. So, the patient may require respiratory or cardiovascular support. The insertion of an endotracheal tube after induction will allow control of ventilation. Throughout the surgical procedure, the patient is closely monitored to note any changes in physiologic status oxygen saturation, blood pressure, heart rate and rhythm, breathing rate and rhythm, and temperature).

General anesthesia can be divided into three phases: induction (when the patient loses consciousness), maintenance (when unconsciousness is maintained during the procedure), and emergence (when the patient regains consciousness). Accordingly, a smooth induction with minimal hypertension and tachycardia is desirable for cosmetic anesthesia. Before induction, the anesthesiologist should consider a number of premedications. Midazolam, a shortacting benzodiazepine, can produce sedative-hypnotic effects or can even induce anesthesia at very high doses. It is also characterized by its ability to cause amnesia, hypnosis, and the relaxation of muscles with relative celerity. In fact, the onset of sedation following intravenous administration of midazolam is usually within 3 to 6 minutes, though there is some degree of patient variability. As far as cardiac sensitivity is concerned, the use of midazolam is associated with decreases in mean arterial pressure, cardiac output, stroke volume, and systemic vascular resistance. Consequently, midazolam is contraindicated in patients with acute pulmonary insufficiency or severe chronic obstructive pulmonary disease.

Postoperative nausea and vomiting is a major concern with any anesthetic procedure. Preoperative antiemetics should be used to prevent postoperative nausea and vomiting following the use of numerous anesthetic agents, including narcotics and nitrous oxide. Alternative analgesics include local anesthetics, ketamine, and ketorolac. Granisetron (0.2 to 1 mg intravenously) and ondansetron (1 to 4 mg intravenously) are serotonin antagonists that reduce the autonomic neuroactivity in the vomiting center of the brain. Combination therapy using several antiemetics is advisable for patients who have a high risk for postoperative nausea and vomiting, including young women and nonsmokers who have a history of postoperative nausea and vomiting in the past or car-sickness.

Various drugs can be used to induce general anesthesia. One commonly used induction agent is propofol, a short-acting intravenous drug used in adult and pediatric patients. It may also be utilized during the procedure for the maintenance of anesthesia. Side effects include hypotension and apnea following induction, as well as pain on injection, which can be ameliorated by pretreatment with intravenous lidocaine. Propofol is often used for cosmetic procedures because it is associated with reduced postoperative nausea and vomiting and can even be used as an antiemetic. Thiopental is another induction agent. Thiopental is a barbiturate that affects fine motor skills and is notorious for producing a heavy “hangover” effect and significant postoperative nausea and vomiting. Midazolam and ketamine can also be used for induction, although they are associated with a longer recovery time postoperatively. Ketamine, a phencyclidine derivative, is an anesthetic agent approved for human and veterinary use whose popularity in the outpatient arena has increased over the past several years. Its effects include analgesia and sedation with minimal to no respiratory depression. However, hallucinations, hypertension, increased intracranial pressure, and salivation have limited its appeal. It has been

used successfully with propofol and midazolam for cosmetic procedures, since it may be used without the need for endotracheal intubation, supplemental oxygen, or narcotics. General anesthesia requires control of the patient's airway. Adequate airway control may be achieved either with a traditional endotracheal tube that passes beyond the vocal cords or with a laryngeal mask airway that is inflated above the vocal cords at the laryngeal aperture. As with all cosmetic surgery, the means of securing the airway depends on the procedure being performed. For procedures that do not involve frequent head turning, the laryngeal mask airway provides a safe alternative to the endotracheal tube because it does not risk vocal cord injury and has less of an incidence of postoperative laryngeal irritation and “bucking on the tube.” However, since the laryngeal mask airway does not occlude the trachea, patients at high risk for aspiration should still use a traditional endotracheal tube. For procedures not involving the face, adhesive tape is most often used to secure the tube to the lower jaw. For facial procedures, the tube may be prepped into the field or covered with sterile plastic or stockinet to maintain sterility

After the induction, the anesthesiologist must vigilantly monitor changes in the patient's cardiovascular status, including alterations in oxygen saturation, blood pressure, heart rate and rhythm, respiratory rate, and temperature, while continuously administering anesthetics for the duration of the operation.

A constant stable blood pressure in the low normal range for the duration of the cosmetic procedure is desirable to minimize blood loss and bleeding into the tissues, which contributes to prolonged postoperative ecchymosis and edema. Keeping the blood pressure constant at a level that ensures adequate perfusion cannot be overemphasized. The choice of drugs used to maintain anesthesia is also important to minimize postoperative nausea and vomiting and to allow for a rapid recovery process. Nitrous oxide is commonly used as an inhalational agent to maintain anesthesia. Its use reduces the need for higher concentrations of the volatile inhalational agents for maintenance of anesthesia. It is, however, associated with postoperative nausea and vomiting and should be limited to concentrations under 50%, especially in patients with evident coronary disease. Isoflurane is one of a number of volatile inhalation agents commonly used for maintenance of anesthesia. Desflurane is shorter-acting member of this class of drugs and may be more suitable for cosmetic surgery. Its quick recovery time results from a higher vapor pressure. However, desflurane often causes postoperative respiratory irritation and coughing largely due to its pungent smell. Sevoflurane is better tolerated than desflurane because it lacks a characteristic odour. As a result of the lower solubility of these newer volatile agents, cognitive functions return to baseline more rapidly when compared with inhaled isoflurane. Continuous intravenous anesthetics are commonly employed in cosmetic surgery. Propofol, remifentanyl, dexmetomidine, and ketamine are among the most commonly used. Propofol was discussed earlier as a drug of choice for induction, but it can also be used as a continuous infusion (75 to 150 g/kg per minute) to maintain anesthesia. Last, ketamine, like propofol, can be used for both induction and maintenance, though it is often associated with an increase in blood pressure and salivation, as well as bad hallucinations. Fortunately, it is not associated with postoperative nausea and vomiting.

Emergence should be a well-planned event. The ideal emergence from anesthesia following cosmetic surgery has no increases in blood pressure or heart rate, no “bucking” from irritation of the endotracheal tube, and no respiratory complications. While the concentration of inhalational and intravenous anesthetics are lowered to allow the patient to regain consciousness, additional medications are administered to restore muscle activity and allow the patient to breathe spontaneously to permit extubation. Maneuvers that are particularly stimulating, such as nasogastric decompression or suctioning, are done while the patient is still deeply sedated to prevent hypertension. Gagging at the conclusion of any procedure is undesirable because it raises blood pressure and may trigger subcutaneous bleeding. The prevention of nausea and vomiting is important to minimize fluctuations in blood pressure. Patients should be reminded as they emerge from anesthesia that they may have blurred vision due to the ointment and should be prevented from attempting to rub their eyes.

## POSTOPERATIVE CARE PROTOCOL

Anesthetic care does not end once the endotracheal tube has been removed and the patient is restored to consciousness. Patients must be closely monitored postoperatively for signs and symptoms of hypoxia, hypertension, pain, nausea and vomiting, and even unconsciousness. This is an important part of the continuum of anesthesia care.

A patient may be discharged once their vital signs are stable, to make sure they are environmentally aware, and to make sure they can walk without falling or becoming excessively dizzy. Patients are also evaluated for pain, nausea and vomiting, and bleeding at the surgical site. Most delays in discharge are due to pain, postoperative nausea and vomiting, hypotension, and dizziness upon ambulating. All patients require analgesia postoperatively and some may require stronger medications than acetaminophen or nonsteroidal anti-inflammatory drugs as part of their postoperative regimen.

### MONITORED ANESTHETIC CARE METHOD

The choice of anesthetic technique for cosmetic surgery varies based on the discretion of the anesthesiologist, the surgeon, and the procedure. Monitored anesthesia care may be offered to patients undergoing compatible procedures. In this technique, a combination of local anesthetic and intravenous analgesic and sedative drugs produces a "minimally depressed level of consciousness. This anesthetic technique is referred to as "conscious sedation," and the patient will be sedated so as to not feel any pain or have any keen sense of environmental awareness. However, unlike in general anesthesia, where unconsciousness is induced and spontaneous respiration is depressed, patients will continue to breathe on their own. Monitored anesthetic care has been shown to be effective and safe in large study populations. Typically, a combination of two or more medication types is used to achieve the desired level of sedation and analgesia. Commonly used agents include rapid-acting opioids, such as fentanyl, and sedatives, such as midazolam and propofol. In certain patients, the administration of enough medication will cause the patient to lose protective airways reflexes and move into a state of general anesthesia. In some instances, this will require securing the airway, while in others it may require decreasing the dose of the anesthetic agents to allow the patient to regain spontaneous respiration. For this reason, monitored anesthesia care has all of the same requirements as general anesthesia. Patients should be screened preoperatively, vigilantly monitored intraoperatively, and meet the same discharge criteria.

### GENERAL ANESTHESIA OVER MONITORED CARE ANESTHESIA

Each of the anesthetic techniques has both advantages and disadvantages, thus the choice of the method depends on the nature of the surgical procedure and the comfort level of the anesthesiologist and surgeon alike. For shorter, less complicated procedures, either method may be used. For difficult and prolonged procedures, general anesthesia is often more appropriate. In the monitored anesthesia care model, the patient drifts in and out of consciousness during the procedure and may become more anxious, irritable, and emotional than patients undergoing general anaesthesia. Postoperative nausea and vomiting, however, may be reduced. It should be noted that the administration of both types of anaesthesia in an ambulatory setting is safe. A recent study reported no significant differences between either form of anaesthetic technique employed as it relates to patient recovery time, sensitivity to pain, and safety.

Patients undergoing cosmetic surgery are generally well informed regarding the nature of the procedure and the reputation of their surgeon, but overlook the importance of the anaesthetic technique needed to effectively perform the procedure. A successful cosmetic procedure involves both a skilled plastic surgeon and a knowledgeable anaesthesiologist.

### REFERENCES

- Zukowski ML, Ash K, Klink B, Reid D, Messa A. Breast reduction under intravenous sedation: A review of 50 cases. *Plast Reconstr Surg.* 1997;99:256–257.
- Practice guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: Application to healthy patients undergoing elective procedures. *Anesthesiology* 1999;90:896–905.
- Rankin MK, Borah G. Anxiety disorders in plastic surgery. *Plast Reconstr Surg.* 2004;113:2199–2201.
- Steele SM, Nielsen KC, Klein SM. Combination antiemetic therapy and the multimodal approach. In *Ambulatory Anesthesia: Perioperative Analgesia*. New York: McGraw Hill; 2005.
- White PF, Freire AR. Ambulatory (outpatient) anesthesia. In: Miller RD, ed. *Miller's Anesthesia*. 6th ed. Philadelphia, Pa.: Elsevier Churchill Livingstone; 2005:2589–2635.
- Orlin SE, Kurata FK, Krupin T, Schneider M, Glendrange RR. Ocular lubricants and corneal injury during anesthesia. *Anesth Analg.* 1989;3:384–357.
- Eisenman A, Cohen B. Music therapy for patients undergoing regional anesthesia. *AORN J.* 1995;62:947–950.
- Augustin P, Hains AA. Effect of music on ambulatory surgery patients' preoperative anxiety. *AORN J.* 1996;63: 750, 753–758.
- Sa'rma'ny J, Ka'lma'n R, Staud D, Salacz G. Role of the music in the operating theatre. *Orv Hetil.* 2006;147:931–936.
- Nique TA. *Ambulatory office general anesthesia*. In: *Anesthesia for Facial Plastic Surgery*. New York: Thieme Medical Publishers; 1993.
- Knill RL, Clement JL. Variable effects of anesthetics on the ventilatory response to hypoxia in man. *Can Anaesth Soc J.* 1982;29:93–99.
- Cork RC, Depa MC, Standen JR. Prospective comparison of use of the laryngeal mask airway an endotracheal tube during ambulatory anesthesia. *Anesth Analg.* 1994;79:719–727.

- Egan TD, Lemmens HJ, Fiset P, et al. The pharmacokinetics of the new short-acting opioid remifentanyl (G197084B) in healthy adult male volunteers. *Anesthesiology* 1993;79:881–892.
- Bitar G, Mullis W, Jacobs W, et al. Safety and efficacy of office based surgery with monitored anesthesia care/sedation in 4778 consecutive plastic surgery procedures. *Plast Reconstr Surg.* 2003;111:150.
- Marcus JR, Tyrone JW, Few JW, Fine NA, Mustoe TA. Optimization of conscious sedation in plastic surgery. *Plast Reconstr Surg.* 1999;104:1338–1345.