

Blepharoplasty and Otoplasty: Comparative Sedation with Remifentanil, Propofol, and Midazolam

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Abstract. Three different methods of sedation or sedoanalgesia using remifentanil, Propofol, or midazolam to increase intra- and postoperative comfort and to reduce neuroendocrine stress in patients who had undergone typical ambulatory cosmetic surgery under local anesthesia were studied. A sample of 90 patients who underwent upper and lower eyelid blepharoplasty to correct baggy eyelids or otoplasty to correct protruding ears was selected according to standard criteria for the study. Remifentanil provided the best tolerability profile and the most effective perioperative pain control among the substances studied, demonstrating it to be a valid drug for modern sedoanalgesia aimed at increasing the well-being of patients undergoing ambulatory cosmetic surgery.

Key words: Blepharoplasty—Otoplasty—Sedonalgesia—Local anesthesia—Cosmetic surgery

Currently, the search for pharmacologic agents that improve comfort for patients undergoing ambulatory cosmetic surgery is increasingly important. Certainly, the objective for these drugs is to increase the safety and effectiveness of the anesthesia procedure contemporaneously, allowing efficient postoperative analgesia and rapid recovery of the patient, thus reducing hospitalization. Three different methods of sedation or sedoanalgesia using remifentanil, propofol, or midazolam to reduce intra- and postoperative pain and neuroendocrine stress in patients who had undergone typical ambulatory cosmetic surgery under local anaesthesia were studied.

Midazolam is a hydrosoluble benzodiazepine, the first produced for anaesthetic purposes [13]. Propofol is an endovenous anesthetic that belongs to the alkyl phenols (oils at room temperature and therefore insoluble in water, but highly liposoluble) [3]. Remifentanil is an opioid with rapid onset, metabolized by nonspecific, nonsaturated hematic and tissue esterases [1].

Blepharoplasty and otoplasty, the two types of cosmetic surgery most frequently performed in outpatient settings, were chosen for this study. Both have similar operating times, sedation intensity, and postoperative analgesia duration.

Materials and Methods

With written consent, 90 patients (64 females and 26 males) ages 18 to 67 years (average, 46 ± 8 years) were studied. These patients had an American Society of Anesthesiology (ASA) classification of I or II, and a body weight of 52 to 88 kg (average 67 ± 9 kg). They had undergone cosmetic blepharoplasty surgery for upper and lower eyelid bags or otoplasty for protruding ears. The average operating time was 68 ± 11 minutes and for blepharoplasty 56 ± 8 minutes for otoplasty.

The patients were divided into three homogeneous groups according to their age, weight, ASA class, and type of surgery. The propofol group is denominated as GP, the remifentanil group as GR, and the Midazolam group as GM.

The infusion regimen, aiming to obtain, a sedative level equivalent to grades II and III on the Ramsey Scale (Table 1), was initiated before the anesthetic block was performed. Local anaesthesia was achieved by infiltration of mepivacain hydrochloride with 2%

Table 1. (Ramsay Scale)^a

Grade	Description
I	Patient anxious, alert and/or restless
II	Patient collaborative, oriented, calm
III	Patient sleepy but responds when called
IV	Patient sleepy with lively response to luminous stimulus, to the glabellar reflex, or to a low auditory stimulus
V	Patient sleepy with slow response to luminous stimulus, to the glabellar reflex or to a low auditory stimulus
VI	Patient sleepy but cannot be aroused

^aReference 9**Table 2.** Intraoperative infusion regimen^a

Sedative	Dosage n (range)
Propofol (GP)	1.2 mg/kg/h (1.0–1.5 mg/kg/h)
Midazolam (GM)	0.18 mg/kg/h (0.1–0.2 mg/kg/h)
Remifentanyl (GR)	0.08 mg/kg/min (0.05–0.12 mg/kg/min)

^aReference 4, 6, and 11 GP, protocol group; GM, midazolam group; GR, remifentanyl group

adrenalin in prepackaged form (maximum, 35 ml perpatient). Intraoperative monitoring was performed using SBP (systemic blood pressure), DBP (diastolic blood pressure), MBP (mean blood pressure), electrocardiogram (II der.), HR (heart rate), arterial oxyhemoglobin saturation (SpO₂) frequency of respiration, and an visual analog scale intraoperative (VAS). Eventual adverse side effects were reported (e.g., nausea vomiting). The Students *t* test was used for statistical analysis of the result. Values of *p* < 0.05 were considered significant.

Results

The medium infusion regimen for the sedation level mentioned earlier (Ramasay Scale grades II and III) is shown in Table 2. The proposed level of sedation was achieved for all the patients. Better hemodynamic stability was achieved for the GR and GM patients than for the GP patients [1,6]. Bradycardia (45 bpm) was recorded for 20% of the GP group as compared with 10% of the GM group and 6.6% of the GR group. However in the latter group, the heart rate never fell below 50 bpm. Hypertension also was recorded in more GP patients (n = 3) than GM (n = 2) and GR (n = 0) patients.

In 16.6% of the GM and in 20% of the GP patients, the respiratory rate fell to fewer than 10 breaths per minute. Consequently, it was necessary to assist ventilation by mask for six GP and five GM patients in spontaneous respiration because of desaturation (SpO₂, 94%), whereas this maneuver was not necessary for GR patients.

Table 3. Study result

Parameter	GM	GR	GP
Bradycardia (n)	3	2	6 ^a
Hypotension (n)	2	—	3
FR < 10 breaths/min (n)	5 ^a	—	6 ^a
SpO ₂ ≤ 94% (n)	5 ^a	—	6 ^a
Nausea (n)	3	5	3
Vomit (n)	3	2	—
VAS mm (range)	22(19–26) ^a	9(7–25)	24(21–29) ^a

^a*p* < 0.05 GM, midazolam group; GR, remifentanyl group; GP, propofol group; FR, frequency of respiration; SpO₂, arterial oxyhemoglobin saturation

The results of the study are shown in Table 3. Statistically significant differences were observed in a composition (*p* < 0.05) of the GM and GP groups with the group GR in terms of all the effects studied, except for nausea and vomiting. Furthermost should be noted that superior intraoperative pain control was demonstrated in the GR patients [7,8].

Conclusions

Most opioids reduce sympathetic and increase parasympathetic and vagal tones. However, these effects appear only when they are administered in boluses and in high doses. Remifentanyl does not exhibit these effects because of its pharmacokinetic properties [10]. In this study, remifentanyl provided an overall better tolerability profile than the other substances [2,5,12]. It also offered the best control of intraoperative pain, proving to be safe and valid for use in analgesedation. It surely improved the comfort and well-being of patients undergoing cosmetic surgery because of its more effective and lasting control of perioperative pain.

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