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Septorhinoplasty Under Local Anesthesia

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ABSTRACT

Background: Local anesthesia offers the advantages of being less expensive, more efficient and having less anesthetic risk. However, patient comfort must also be considered.

Objective: To define the term local anesthesia, describe the author's specific technique, present pain scores from patients undergoing septorhinoplasty (SRP) under local anesthesia compared with a control group, present a representative case, and review the pertinent literature.

Methods: Retrospective cohort study (Level of Evidence Category 2b).
Over a six month period (July 2013-January 2014), the author performed 200 outpatient, local anesthesia, facial aesthetic surgery cases, 24 of which included SRP. For the SRP group, 12 of 24 patients were surveyed and asked to grade intraoperative and postoperative pain on a 0-10 scale, with 0 being no pain and 10 being the worst pain imaginable. To serve as a control group, 19 randomly selected patients who did not have SRP were also asked to grade intraoperative and postoperative pain. Third party statistical analysis was performed on the results.

Results: The average operative pain score for the SRP group was 2.33 and for the control group 2.26. These values showed no statistically significant difference. The postoperative pain scores for the SRP group was 2.66 and for the control group 3.00. These values showed no statistically significant difference. Ancillary procedures for patients in the study included rhytidectomy, blepharoplasty, facial laser, browlift and autologous fillers. The average number of procedures in the SRP group 2.58 and for the control group 2.79.

Conclusion: For the right patient and with appropriate surgical planning and surgical acumen, SRP under local anesthesia is a viable option.

Disclosure: The author has no conflict of interest.

Keywords: septum, rhinoplasty, local anesthesia

INTRODUCTION

In addition to achieving good surgical results, modern medicine places an emphasis on decreasing morbidity and controlling costs. Given these considerations, outpatient surgery and local anesthesia offer compelling advantages. Many

patients prefer local anesthesia if a comfortable surgical experience, excellent results and less costs can be delivered. SRP surgery is no exception. For the purposes of this paper the term "local anesthesia" includes the use of local anesthetic injection to the operative site, topical anesthetic, and oral medications, but no intravenous access or intravenous medications. Further explanation of this definition for local anesthesia will be presented in the discussion section.

METHODS

Over a six month period (July 2013-January 2014), the author performed 200 outpatient, local anesthesia, facial aesthetic surgery cases, 24 of which included SRP. For the SRP group, 12 of 24 patients were surveyed and asked to grade intraoperative and postoperative pain on a 0-10 scale, with 0 being no pain and 10 being the worst pain imaginable. To serve as a control group, 19 randomly selected patients who did not have SRP were also asked to grade intraoperative and postoperative pain. Third party statistical analysis was performed on the results.

All procedures in both the SRP group and the control group were performed with oral premedication given one hour prior to the procedure. This included an anxiolytic, a narcotic and an antiemetic. Unless otherwise contraindicated this consisted of valium 10 mg, 2 tablets of hydrocodone 10mg/acetaminophen 325 mg, and phenergan 25 mg.

All patients were monitored intraoperatively with pulse oximetry, rhythm strip and blood pressure.

Prior to surgery, SRP patients were treated with atomized intranasal delivery of a combination solution containing equal amounts of oxymetazoline hydrochloride 0.05% and lidocaine hydrochloride 4%. After pharmacologic effect, the nose was lightly packed with cottonoid pledgetts containing the same solution. Local anesthetic consisted of 1% lidocaine with 1 to 100,000 epinephrine buffered in a 10 :1 ratio with 8.4% sodium bicarbonate solution and warmed to body temperature. Injection for SRP was done with 1 cc syringes and either a 27 or 30 gauge needle. Injections to the nasal vestibule were pretreated with anesthetic cream of benzocaine 20%, lidocaine 7% and tetracaine 7%. Cotton tipped

applicator were used to apply the cream to the nasal vestibule. The cream is applied for 20 seconds and allowed to work for 20 minutes. Injections to the external nose were pretreated with an anesthetic cream and the application of a cold compress. Delivery of local anesthetic injection took place from the borders of the nasal area toward the septum.

Ancillary procedures were always completed prior to the SRP portion of surgical case. The author does not typically utilize any postoperative nasal packing, just a gauze drip pad for the first 24 hours after SRP. A standard skin adhesive, steri strip and plastic external nasal splint is used for all SRP cases. Patients are instructed to use a decongesting spray twice a day for 3 days after SRP as well as saline spray four times a day for a week after SRP. Patients are instructed to keep their head elevated as much as possible for the first 3 days after surgery and avoid any strenuous activity until being evaluated at the one week postoperative appointment. Patients are also instructed to use cold compresses on the nasal area for the first 24 hours after surgery. Unless otherwise contraindicated, postoperatively, patients were prescribed hydrocodone 10mg/acetaminophen 325 mg, 1-2 tabs by mouth every 4 hours as needed for pain. Patients were highly encouraged to use the pain medication for the first 24 hours.

RESULTS

The average operative pain score for the SRP group was 2.33 and for the control group 2.26. These values were not parametric and therefore the Wilcoxon-Mann-Whitney test was performed. No statistically significant difference in the values for the two groups was calculated (p=0.675). The postoperative pain scores for the SRP group was 2.66 and for the control group 3.00. These values were parametric and therefore the t test was performed. No statistically significant difference in the values for the two groups was calculated (p=0.66). For a list of specific procedures performed in the SRP and control group see Tables 1 and 2. All patients in the SRP group underwent an endonasal approach for the nasal surgery. The average number of procedures in the SRP group was 2.58 and for the control group 2.79. The average age of the SRP group was 72 and for the control group 73. The age range for the

SRP group was 45-84, for the control group 50-71. There were 2 males in the SRP group and 1 male in the control group. All other patients were female.

A representative case for the SRP group is depicted in Figures 1-9.

DISCUSSION AND REVIEW OF LITERATURE

Interestingly, the term "local anesthesia" can mean different things to different medical personnel. The author's definition of "local anesthesia" is adapted from the Virginia Board of Medicine, the state in which the author practices. [1] The author's definition of local anesthesia includes the use of injectible anesthetic agent, along with minimal sedation / anxiolysis, which can be achieved with oral agents (i.e. oral pain medication, oral anxiolytics and oral antiemetics). No intravenous medications can be used. Local anesthesia with minimal sedation / anxiolysis, can result in impairment in cognitive function and coordination, however, the patient must not have any impairment in their airway, ventilation, or cardiovascular function. Impairment in airway, ventilation or cardiovascular function occurs with deeper levels of anesthesia such as moderate sedation, deep sedation or general anesthesia. These deeper forms of anesthesia are only appropriate in a hospital or certified ambulatory center setting. In fact, many surgical societies (including The American Academy of Facial Plastic and Reconstructive Surgery) require its members to pledge not to use any anesthesia deeper than local anesthesia with minimal sedation/anxiolysis in an office setting. [2]

Technique regarding the contents, preparation and delivery of the local anesthetic agent can have a significant effect on the patient's perceived discomfort. Smaller needle size has been shown to be better tolerated.[3-4] Preinjection site cooling[5] as well as application of anesthetic cream have both been shown to decrease patient discomfort.[6] As mentioned previously, the author uses a benzocaine, lidocaine, tetracaine mixture as the anesthetic cream. This cream must be massage into an area for 20 seconds and allowed to work for 20 minutes in order to be effective. Numerous studies have shown that buffering local anesthetic solution decreases the discomfort of injection.[7-10] In addition, buffering has been shown to result in

a faster onset of action without affecting hemostasis, or duration of action.[11] It has been shown that the proper volume ratio of 8.4% sodium bicarbonate to 1% lidocaine with 1 to 100,000 solution to achieve body pH is approximately 1 ml:10 ml.[12] Warming the injection solution to body temperature has been shown, independently, to decrease the pain of injection, without affecting duration of action.[13-14] A slow injection rate of local anesthetic has been shown to result in less pain.[15] This slow injection technique should be combined with keeping a volume of injectate in front of an advancing needle.[16] This advancing volume technique is routinely used during tumescent injections. When septorhinoplasty is to be performed after rhytidectomy, the dilute solution for the facelift is used to sneak up on the perinasal area in preparation prior to more formal nasal anesthesia. The author injects local anesthetic to the lateral cutaneous portions of the nose and advances toward the septum as he believes this is better tolerated. Smaller syringes like a 1cc are used for SRP injection as they allow greater sensitivity and control. As calculated using Bernoulli's principle (pressure=force/area), a 1cc syringe is 9 times more sensitive than a 10 cc syringe to force generating pressure. More sensitivity gives greater control.

The average pain scores in this study for both the SRP group and the control group overall were fairly low on a 0 to 10 scale, i.e. 2.33 and 2.26 respectively. This gives support for the proposition that SRP can be performed comfortably in a local anesthesia setting. To the author's knowledge, the medical literature contains no studies looking at pain scores in elective rhinoplasty with local anesthesia, however, two studies have shown no statistically significant difference in pain scores when nasal fractures are reduced under local anesthesia versus general anesthesia.[17-18] In both of these studies a 0 to 10 pain scale was used. Also in both of these studies, the method of the local anesthesia is described as injecting lidocaine with epinephrine. Concentrations for the solutions consisted of 2% lidocaine with 1 to 80,000 epinephrine in one study and 2% lidocaine with 1 to 100,000 in the other. No specifics regarding solution buffering, preinjection numbing/cooling, injection technique,

or premedication are given. The cohort groups were of substantial size ranging from 65 to 74 patients. The average pain scores for the procedures under local anesthesia in the two studies were 2.47 and 3.0. These values are close to the SRP pain score in this report, i.e. 2.33.

In a perfect world, all pain scores would be 0, however, this author does consider a procedure pain score of 3 or less acceptable. In the two cited studies, only reduction of nasal fracture was performed. No other procedures were done in addition to the nasal fracture reduction.

All but one of the 12 patients in the SRP local anesthesia cohort had additional procedures performed (see Table 1). In 10 of the 12 patients, the additional procedure(s) included rhytidectomy. As noted previously, the average number of procedures in the SRP group was 2.58 and for the control group 2.79. So the SRP group had more procedures performed on average, but did not have significantly more pain. All procedures were completed in less than 4 hours. Efficiency is always the goal in surgery and is especially important when performing multiple procedures in one setting under local anesthesia.

Although all of the SRP procedures in this study were performed with an endonasal approach, the author does use the external approach when needed. The author feels comfortable performing most nasal surgery maneuvers in the local anesthesia setting, including all types of grafts and osteotomies. Deep septal work, however, is deferred for a deeper anesthesia setting. It is more difficult to anesthetize the patient for deep septal work and there is a greater chance of bleeding, which is better handled with the patient under deeper anesthesia. No patients in the SRP group required septal splints or nasal packing. In general, the author only uses septal splints or nasal packing when deep or major septal work is performed.

CONCLUSION

Low intraoperative and postoperative pain scores in this report supports using local anesthesia for SRP. Future investigations could compare pain scores for SRP performed under various levels of anesthesia: local, moderate sedation, deep sedation and general anesthesia, as well as a cost analysis and report of associated complications. However, for the right patient and with

appropriate surgical planning and surgical acumen, SRP under local anesthesia is a viable option.

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Table 1 SRP Group

AGE	SEX	RHINOPLASTY MANUEVERS	OTHER PROCEDURES
51	F	ACG, DG, CG	none
57	F	HRX, SG	Rhytidectomy, full face laser, lower lid blepharoplasty
52	F	CS, TG, ABR	Rhytidectomy
63	M	CS, TG	Rhytidectomy, upper lid blepharoplasty
50	F	HRX, CS, SG	Rhytidectomy, upper lid blepharoplasty
59	F	CS, TG	Rhytidectomy, full face laser
45	F	CS, TG, ABR, OS	Autologous fat transfer

50	F	CS, TG	Rhytidectomy
57	F	ACG, DG, TG, ABR	Rhytidectomy, upper lid blepharoplasty
84	F	ACG, CS, DG, TG, ABR	Rhytidectomy, autologous fascial transfer
67	F	ACG, HRX, SG	Rhytidectomy, full face laser
60	F	HRX, CS, SG	Rhytidectomy

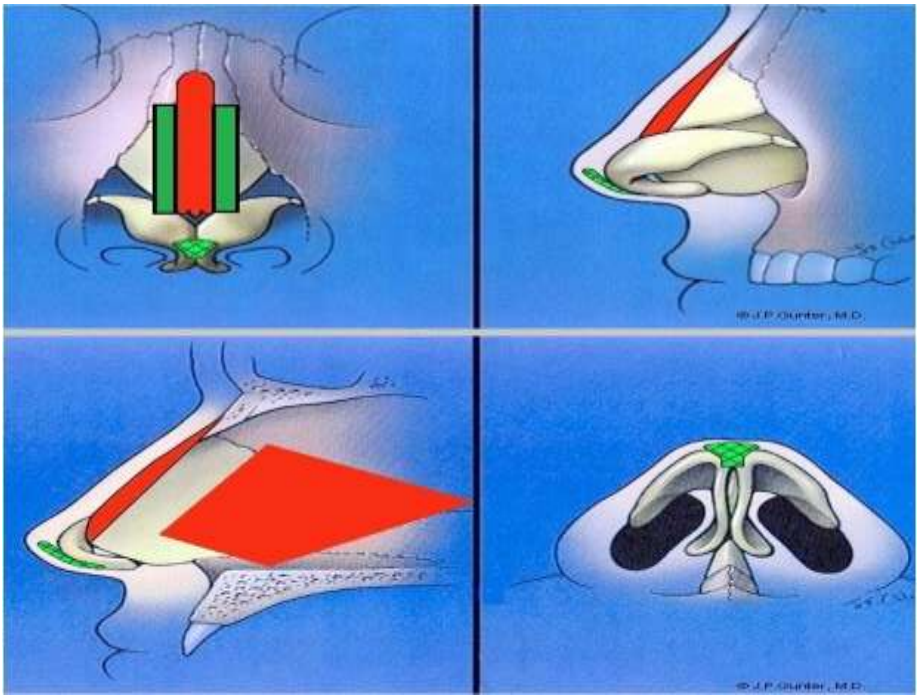
Key to abbreviations: ACG-auricular cartilage graft, HRX-hump resection, CS-cephalic strip resection, DG-dorsal graft, CG-columellar graft, TG- tip graft, ABR-alar base reduction, OS- osteotomy

Table 2 Control Group

AGE	SEX	PROCEDURES
71	F	Rhytidectomy, autologous fascial transfer
69	F	Rhytidectomy, lower lid blepharoplasty
62	F	Upper lid blepharoplasty, autologous fat transfer, full face laser, brow lift
69	F	Rhytidectomy, full face laser
62	F	Upper lid blepharoplasty, lower lid blepharoplasty, autologous fat transfer,full face laser
62	F	Rhytidectomy, lower lid blepharoplasty, full face laser
57	F	Rhytidectomy, upper lid blepharoplasty, full face laser
50	F	Rhytidectomy, upper lid blepharoplasty, lower lid blepharoplasty, full face laser
59	F	Rhytidectomy, autologous fat transfer, perioral laser
66	F	Rhytidectomy, upper lid blepharoplasty, full face laser
71	M	Rhytidectomy, upper lid blepharoplasty, autologous fascial transfer
61	F	Rhytidectomy, perioral laser, upper lid blepharoplasty

Figure Legends:

Figure 1: Representative case is of a 72 year old female who underwent, septorhinoplasty, rhytidectomy and full face laser. Graphic diagram of the rhinoplasty maneuvers performed including: septoplasty, hump reduction, spreader grafts and crushed cartilage tip graft.



Figures 2-3: Frontal view pre and 12 months postop. The spreader grafts are supporting the middle vault after hump reduction.

Figures 4-5: Oblique view pre and 12 months postop.

Figures 6-7: Lateral view pre and 12 months postop. The dorsal line and tip projection are improved.

Figures 8-9: Submental view pre and 12 months postop.