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Research Article

COMPARISON OF 'NO TOUCH' EXTUBATION TECHNIQUE WITH STANDARD AWAKE EXTUBATION IN NASAL SURGERY (GENERAL ANETHESIA): A PROSPECTIVE STUDY

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ABSTRACT

This study aimed to assess airway complications associated with the "no touch" extubation technique in patients undergoing nasal surgery. A total of 120 patients were randomly assigned to either standard fully awake extubation (Group I) or absolute "no touch" awake extubation (Group II). Laryngospasms were graded using a four-point scale, and airway events, wound oozing, and sore throats were recorded. Baseline measurements of heart rate (HR), systolic blood pressure (SBP), and diastolic blood pressure (DBP) were taken. Patients undergoing "no touch" extubation did not experience laryngeal spasms or desaturation episodes, while the standard fully awake group had three cases of laryngeal spasm. In the "no touch" group, coughing, excessive secretions, airway obstruction, hoarseness, biting, and non-purposeful limb movements were significantly reduced. During emergence extubation, the "no touch" group showed significantly lower changes in HR, SBP, and DBP compared to the standard fully awake group. Additionally, standard fully awake extubation resulted in significantly more wound oozing. The incidence of post-surgery sore throats did not significantly differ between the two groups. Overall, in nasal and paranasal surgeries, awake "no touch" tracheal extubation appears to be associated with fewer airway-related complications. It may serve as a safe alternative to standard tracheal extubation in airway surgery.

Key words: - Airway complication, Emergence, Extubation, Nasal, Sinus, Surgery, Technique, Tracheal, No Touch.

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INTRODUCTION

Patients can be awake or under deep anesthesia for tracheal extubation. There are pros and cons to each method. [1, 2] Awake extubation is concerned with extubation under light anesthesia while deep extubation is concerned with leaving the patient's airway unprotected. Hypoxemia can be caused by laryngopharyngeal spasms, aspiration, obstructions of the airways, or inadequate ventilation. It is usually possible to correct hypoxemia immediately

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It is possible for postextubation hypoxemia to cause serious complications. [3] Patients who have undergone general anesthesia and are breathing through a tracheal tube (TT). The emergence from general anesthesia can cause hypertension, tachycardia, and agitation, as well as increased intracranial and intraocular pressures, in addition to respiratory events. [4, 5] As a means of preventing such emergence events, deeper planes of anesthesia and local anesthetics have been suggested.[2, 6, 7] The use of opioids can result in the prevention of coughing, agitation, and hemodynamic response prior to emergence, but may also delay emergence. [7] Aspiration during nasal and sinus surgery is a high risk, so most

anesthesiologists prefer awake techniques. Patients who are awake are able to maintain adequate ventilation by returning their laryngeal or pharyngeal reflexes, opening their eyes, grimacing, coughing, and moving their bodies purposefully. [1, 2] If awake extubation is chosen, determining how awake the patient should be is crucial. The standard awake technique relies on the swallowing reflex to determine when tracheal extubation is necessary. It is possible, though, to extubate patients under light anesthesia if swallowing indicates returning laryngeal reflexes [1]. In order to avoid extubation under light anesthesia, a technique called "no touch" extubation has been proposed [8]. As soon as the patient awakens spontaneously and opens his eyes, extubation is performed.

PATIENTS

Following approval from the Ethics Committee and written informed consent, 120 adult patients with ASA physical status I–II, a computer-generated sealed opaque envelope technique was used to randomly assign elective nasal and paranasal sinus surgery patients between 18 and 35.

Criteria for exclusion

A history of asthma, chronic obstructive pulmonary disease, airway reactive diseases, and chronic cough, along with sedatives, anti-tussives, and angiotensin-converting enzyme inhibitors. Two hours before surgery, diazepam 10 mg was administered to all patients. Tracheal intubation was facilitated by propofol 2 to 2.5 mg/kg, fentanyl 2 mg/kg, and cisatracurium 0.15 mg/kg. TT size selection was 7 to 7.5 mm internal diameter in females and 8 to 8.5 mm internal diameter in males, and the cuff was inflated with air, and cuff pressure was monitored and maintained at 20 mbar. Anesthesiologists used oral airways during induction at their discretion. During surgery, all patients were given a nasal spray containing 1:200,000 adrenaline and 1% lidocaine and a moistened gauze throat pack.

Head-up positioning was used and eye lubricant was applied prior to the nasal and sinus surgery in order to ensure optimal conditions for the procedure. In order to maintain anesthesia, a mixture consisting of 50% nitrous oxide and 50% oxygen was used to maintain anesthesia. Fentanyl was administered intravenously as necessary. Lidocaine cannot be inhaled or injected. In addition to BP and HR, electrocardiography, pulse oxygen saturation, bispectral index of electroencephalography, CO2 values, and oxygen saturation were all measured. Infrared analyzers were also used to monitor exhaled anesthetic. A dose of 5-10 mg of labetalol was given intravenously when needed to maintain normocapnia (ETCO2 32-38 mm Hg) intraoperatively.

In the 30 minutes before surgery, all patients received 1 g intravenous. Postoperative analgesia with paracetamol and nausea and vomiting prevention with ondansetron 4 mg. With neostigmine 50 g/kg (maximum 5 mg) plus glycopyrrolate 10 g/kg, residual neuromuscular blockade was reversed in both groups. A mixture of sevoflurane and oxygen in air with a 40% concentration were allowed to be inhaled spontaneously without nitrous oxide. A nasal packing was placed over the nose and patients were randomly assigned to one of two extubation groups: In group (I), sevoflurane was discontinued and fresh gas flow was increased. The throat pack is removed, blood and secretions are suctioned, and the patient is turned lateral (for recovery). The patient received 100% oxygen during negative pressure ventilation if spontaneous breathing did not occur. The patient was extubated when he was conscious, breathing spontaneously, had an intact gag reflex, was moving purposefully, and had opened his eyes spontaneously. The throat pack was removed at the end of group II, while the patient was still adequately anesthetized, blood and secretions in the pharynx were carefully suctioned under direct visualization to confirm that secretion clearance had been achieved and to prevent injury, the TT cuff was deflated, and the patient was turned to the lateral position (recovery). Once sevoflurane was discontinued, fresh gas flow was increased, and if spontaneous ventilation did not occur, positive pressure ventilation with 100% oxygen was continued. The same criteria were met for tracheal extubation as in group (I), but stimulation was not allowed until patients spontaneously awoke. Without physically stimulating them, the anesthetist could only give them a verbal command or call their name to wake them up. To reduce tracheal irritation, we avoided all stimuli, including oropharyngeal suctioning, head turning, and the removal of pillows.

Both groups of patients were taken to a postanesthesia care unit (PACU) after extubation with 40% oxygen by mask. Continuous oximetry was provided intraoperatively, during transportation, and after the surgery.

Measurements

In both groups, patients spontaneously opened their eyes after surgery. After surgery, HR, SBP, and DBP were measured. After surgery, measurements were taken 2, 4, 5, 10, 15, 20, 25, and 30 minutes later. There are four levels of coughing severity: zero for no coughing, one for one cough with a SpO2 of 95%, two for multiple coughs with a SpO2 of 95%, three for multiple coughs with a SpO2 of 95%, and four for multiple coughs with a SpO2 of 95% and needing IV treatment. medication.[10] On a scale of 1 to 3, the amount of oozing from the wound was rated based on non-purposeful movement of the limbs. Within 30 minutes of tracheal extubation, airway adjuncts, airway support, and airway events were also reported. Vomiting was reported in the recovery room. In the first 24 hours

following surgery, a hoarse voice and a sore throat appeared as symptoms. The anesthetist recorded all data until transferring the patient to recovery. The recovery room nurse assessed the patients and collected data, while another nurse reported hoarseness and sore throats.

Statistics

For a 50% reduction in coughing to be considered significant, 60 patients in each group need to undergo general anesthesia. The statistical software package was used for the statistical analysis. Student t-tests were used to analyze the parametric data. Mann-Whitney tests were used to analyze nonparametric data. In order to analyze category data, we used the $\chi 2$ test. P values less than 0.05 were considered significant. When appropriate, data are presented as mean + SD, number (n), or percentage (%).

RESULTS

The study protocol included 120 patients between the ages of 18 and 35. Based on gender, age, weight, smoking status, as well as surgery type [Table 1], the groups were comparable (P > 0.05). As far as duration of anesthesia, number of intraoperative fentanyl-treated patients, and total fentanyl dose administered intraoperatively (including induction dose), no significant difference between groups was found; there was no significant difference between groups; sevoflurane concentration at extubation, but time to opening the eyes [Table 2] compared to group II which was significantly more extended (P < 0.06).

Table 3 shows complications related to the airway during extubation. The absolute "no touch" awake group had significantly less coughing, excess secretions, and prolonged breath holding than control subjects. When compared to a "no touch" awake group, a standard awake group coughed grade 2. Those who were extubated using the "no touch" technique did not experience laryngeal spasms. Laryngeal spasms were reported in three cases in the standard fully awake extubation group. We successfully managed two cases grade 1 (stridor upon inspiration) with positive pressure ventilation; however, one case grade 2 (total occlusion of the vocal cords) required intravenous succinylcholine (0.25 mg/kg). Reintubation was not required in any of the cases of laryngeal spasms in the control group. The control group had a higher frequency unsaturation episodes, non-purposeful movements, biting, as well as hoarseness (P 0.05) than the experimental group. The absolute "no touch" group of awake participants had significantly less wound oozing (grade 2 or 3). Accordingly, when compared with the control group, the "no touch" technique group experienced significantly less extubation-induced hemodynamic changes (HR, SBP, and DBP). Two patients from each group vomited within 30 minutes of being extubated. There were no significant differences in postoperative sore throat incidences.

Table 1: Demographic information about patients

	Group (I)	Group (II)
Number	60	60
ASA stratus (I/II)	48/12	50/10
Gender (M/F)	36/24	40/20
Age (years)	25 ± 3.3	24 ± 4.2
Weight (kg)	75 ± 20.2	73 ± 22.8
No. of smokers (%) Type of surgery	16	14
Rhinoplasty (%)	44	42
FEES (%)	16	18

Table 2: Data from intraoperative procedures

	Group (I)	Group (II)
Anesthesia duration (minutes)	141 ± 23.2	139± 27.6
Narcotics used intraoperatively (%)	60	60
(µg/kg)Total intraoperative fentanyl	3.9 ± 0.3	3.8 ± 0.4
Sevoflurane concentration at time of extubation (%)	0.25 ± 0.13	0.22 ± 0.14
Surgery end to eye opening (minutes)	9.3 ± 3.6	15.2 ± 3.4*

Table 3: Complications related to the airway

Coughing	Group (I) (%)	Group (II) (%)
Grade 0	0	4
Grade 1	6	48

Grade 2	44	8
Grade 3	10	0
Grade 4	0	0
Excessive secretions	30	8
Breath holding	28	4
Laryngeal spasm	6	0
All desaturation episodes	10	0
(SpO < 95%)		
Severe desaturation episodes	6	0
episodes (SpO2 < 90%)		
Non-purposeful movement	36	8
Biting	18	6
Hoarseness	10	0
Oozing from the wound		
Grade 2	32	10
Grade 3	16	4

DISCUSSION

Coughing and bucking during awakening from general anesthesia may stimulate the oozing of blood, which may lead to more airway stimulation and thus further coughing and bucking. [1] When TT is present during general anesthesia, coughing is estimated to occur in the range of 38 to 96%. [11, 12] TT-induced coughing and bucking may cause Valsalva maneuvers and breathholding (SpO),[13] leading to high desaturation rates in the awake extubation group. As a result, coughing and bucking can often put patients at risk for bronchospasm if they have hyperreactive airways. [14, 15] Premedication was given to all patients in our study. The doses of fentanyl received by both groups were almost equal. Therefore, we assumed that both groups had similar antitussive effects. Tracheal irritant and stretch receptors are stimulated by the TT. [16] It is believed that these receptors may be involved in the cough reflex. Local anesthetics can inhibit cough reflexes during extubation by blocking these receptors [17, 18]. The “no touch” technique can also be viewed as a way to block these receptors. Early deflation of the endotracheal tube cuff prevented excessive tracheal irritation. Furthermore, any stimulation causing tracheal irritation and awakening was not allowed, including suctioning the oropharynx, turning the head, removing the pillow, and moving the body. This technique reduced emergence-related coughing. While coughing was low in the "no touch" group, sore throats were not significantly reduced. The factors that affect the patient and the type of surgical procedure may contribute to postoperative sore throat, as does anesthesia technique. A sore throat can also result from localized trauma caused by surgical procedures, such as packing of the throat and excessive oral suction, in addition to laryngoscopy and endotracheal intubation. [19, 20]

"No touch" technique group had significantly lower HR, SBP, and DBP changes as compared to the touch group. Following tracheal extubation, the sympathetic adrenal system might be stimulated and catecholamines released. No touch extubation was more effective in controlling HR and BP than standard awake extubation. By avoiding tracheal disturbance, airway-related events were reduced, and emergence was smoother with "no touch" technique, catecholamine release may have been inhibited. A deep extubation may prevent straining and coughing, [1] in contrast to an awake extubation, as well as laryngospasm and oxygen desaturation.[1,2] In spite of this, deep extubation can pose a danger since it prolongs the time between tracheal extubation and protective airway reflexes, especially when performing nasal and paranasal sinus surgery, this is always an important concern following general anesthesia. A total of four patients (two from each group) vomited after being extubated, all awake and able to defend themselves. Extubation should be delayed until the patient is sufficiently awake in order to protect his or her airways from damage. There were no cases of laryngeal spasms or severe desaturations when using strict "non-touch" technique. During trachea extubation with standard awake technique, 3 patients developed laryngeal spasms. A smooth recovery and less airway stimulation can also account for the lower incidence of laryngeal spasms. Less oozing from the wound is another explanation. Blood leaking through postnasal space and bleeding from surgical sites can contaminate the vocal folds, causing laryngeal spasms. (9) Using a nontouch technique for tracheal extubation after tonsillectomy and adenoidectomy in children, a case series study found no incidences of laryngopharyngeal spasm, severe coughing, or desaturation. Previously, [8] the author did not include a control group for extubation, which is a limitation. The study included a control group (standard awake). We successfully demonstrated our primary objective by comparing "no touch" extubation to standard awake extubation.

CONCLUSION

During emergence from general anesthesia, awake "no touch" tracheal extubation results in fewer airway complications than sleep-induced tracheal extubation. There is a possibility that this may be a safer alternative to the tracheal extubation procedure.

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