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Postoperative Nasal Airway After Nasal Surgeries: Our Experience

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Abstract

Objective: Several methods have been described in the literature to overcome the issues of nasal airway post routine nasal surgeries due to nasal packing however they are costly. So we've come up with the innovative, effective and very low cost nasal airway device for alleviation of such discomfort in the post op period.

Study design: An observational, hospital based retrospective study

Subjects and methods: This was conducted from June 2021 to February 2025 in the department of Otorhinolaryngology and Head and Neck Surgery (ORL-HNS), Universal College of Medical Sciences-Teaching Hospital (UCMS-TH). 53 files were reviewed from the medical records. In all the cases, newly designed endotracheal tubes (ETT) was applied as nasal airway with bilateral nasal packs after routinely done nasal surgeries. Postoperative observational parameters were evaluated.

Results: There were 33 males and 20 females out of 53 cases. The age range was 8 to 78 years old with maximum number of patients were within the age group of 19-40 years (40; 75.47%), followed by 41-78 years (8; 15.09%) and 8-18 years (5; 9.43%) with the mean age of 33.13 years. None of the patients had throat dryness, had easy suctioning through nasal airways and oxygen supplementation. Concerned Anesthesiologists were satisfied on patients awakening as there was no need to shout telling them to breathe through mouth. Involved surgeons were equally contented. Pain score was 2 in septoplasty cases, 5 in septoplasty with ITR cases, 4 each in SMR and FESS, 5 in FESS with septoplasty cases. Bleeding score was 2 each in all the cases. All the patients were free of nasal obstruction at 3 months follow up which was one of the presenting complaints in all cases. There was significant association between pre and post operative nasal obstruction ($p<0.001$). Data was analyzed with SPSS 20 and the chi-square test was applied.

Conclusion: The technique is pretty simple and very much affordable with amazing results and further like to recommend that such study can be conducted among the surgeons and anesthesiologists as it is easily available and cheap.

Keywords: Nasal airway; Nasal packs; Endotracheal tube

Abbreviations: ORL-HNS: Otorhinolaryngology and Head and Neck Surgery; ETT: Endotracheal Tubes; SMR: Submucosal Resection; FESS: Functional Endoscopic Sinus Surgery; COAD: Chronic Obstructive Airway Diseases; COPD: Chronic Obstructive Pulmonary Diseases; IRC: Institutional Review Committee; ITR: Inferior Turbinate Reduction; OT: Operation Theatre; NRS: Numeric Rating Scale

Introduction

Bilateral nasal packing after nasal surgeries like septoplasty, submucosal resection (SMR), functional endoscopic sinus surgery (FESS) is a routine practice. It provides discomfort like throat dryness, headache, re-nasal packing on bleeding, epiphora, lowers saturation in chronic obstructive airway diseases (COAD), anesthesiologists have hard times on counselling the patient in the immediate postoperative period. Even patients gets agitated and remove the nasal packs unknowingly due to breathing difficulties. Traditionally nasal packs are kept bilaterally in such procedures in order to provide adequate pressure to minimize bleeding and prevention of hematoma formation, stabilize manipulated/repositioned/reconstructed naso-septal element in their original and anatomically correct positions, prevent synechiae formation, act as a substrate for medications (e.g., antibiotics and steroids) , act as a conduit for topical medications after surgery (e.g., nasal decongestant drops to reduce bleeding and/or relieve congestion). Despite the proper preoperative counselling by the anesthesiologists and the surgeons about breathing through mouth after surgery it is extremely difficult to maintain a normal breathing pattern during the immediate postoperative period after bilateral nasal packing due to the nasal packs. It can be even hazardous in patients

with comorbidities like chronic obstructive pulmonary diseases (COPD), obstructive sleep apnea and cardiac diseases [1-5]. So, we are here to share our experience aimed at alleviating the discomforts due to traditional nasal packs after common nasal surgeries in the immediate postoperative period by application of our own designed very lost cost ETT nasal airways.

Material and Methods

This hospital based retrospective study was carried out in the department of ENT-HNS, UCMS-TH by reviewing the charts of 53 cases from the medical records from June 2021 to February 2025. Nasal surgeries like septoplasty, SMR, FESS, inferior turbinate reduction were included regardless of age and gender. Septal abscess, septal hematoma, closed reduction of nasal bone fractures, nasal malignancy, juvenile nasopharyngeal angiofibroma cases, invasive fungal polyposis were excluded. Institutional Review Committee (UCMS/IRC/059/25) approval was obtained. Post operative (immediate - 48 hours) observational parameters were filled up in the proforma regarding the age, sex, dryness of throat, easy suctioning through nasal airway/oxygenation, anesthesiologist satisfaction during postoperative period, pain/bleeding during removal of nasal airway and surgeons satisfaction during postoperative period and the type of surgery (Septoplasty / Submucosal resection (SMR) with or without inferior turbinate reduction (ITR) / functional endoscopic sinus surgery (FESS) with or without septoplasty. All the parameters were noted in the patients file since the application of newly designed airway along with the nasal packs was a new trial in order to see the differences.

Surgical Procedure

Preoperatively all the patients were thoroughly explained about the type of surgery and the planned nasal airway intervention to prevent any possible postoperative airway obstruction and its consequences. A written consent was obtained. The same idea was shared with the anesthesia team so they didn't have to counsel about the mouth breathing after the surgery. All the cases were done in general anesthesia. At the end of surgery and before nasal packing, a 6mm or 4mm ID (internal diameter) ETT (endotracheal tube) was chosen in adults and pediatric cases. The length of the floor of the nasal cavity was in approximation with the full length of the nasal packing forceps and a cm was added to it for the ETT length. Two separate tubes were prepared of equal length and lubricated with ciprofloxacin eye ointment on its external surface for each cavity. It roughly equaled to four and half fingers breadth of the senior operating surgeon in all the adult cases.

At first a Killian's nasal speculum with the long blade lubricated with the ciprofloxacin eye ointment was inserted followed by suctioning and the introduction of the freshly prepared ETT in septoplasty and SMR cases followed by nasal packs. However, in FESS nasal packs were kept first from frontal, ethmoids, sphenoid and maxillary followed by ETT and the residual packs. The distal end was kept at the posterior aspect of choana and proximal to the posterior pharyngeal wall and approximately one cm of the tube was kept outside. The nasal tubes were inserted under the headlight/ endoscopic guidance bilaterally. ETT was held in place by suturing the outer aspect of the tubes with Merslik 1.0 cutting suture. Then, ribbon gauze pack impregnated with ciprofloxacin ointment was kept bilaterally. A bolster was kept as shown in the picture.

Patients were assessed immediately after extubation in the OT (operation theatre) and in the postoperative ward in terms of nasal airflow keeping mouth closed and the vital parameters. Anesthesiologist team were asked about the new experience at the same time as they have a hard time on counselling the patients regarding mouth breathing post extubation. Nasal airway tubes and the packs were removed after 48 hours and discharged on next day. During rounds, they were asked about any breathing discomfort or difficulty with the nasal airway in situ or foreign body sensation in the throat. Patients were asked about the pain post tube and pack removal as using numeric rating scale (NRS):0, none; 1-3, mild; 4-6, moderate; and 7-10, severe. Similarly, Bleeding during pack removal was graded as follows: 0, no bleeding; 1, mild bleeding (controlled spontaneously without any intervention); 2, moderate bleeding (controlled by the insertion of oxymetazoline 0.1%-soaked cottonoids); and 3, severe bleeding (controlled by repacking or re-intervention) (Figure 1 & 2).

Figure 1: Newly designed ETT airway.

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Figure 2: Bilateral nasal airway ETT with nasal packs with bolster.

Results

There were 33 males and 20 females out of 53 cases. The age range was 8 to 78 years old with maximum number of patients were within the age group of 19-40 years (40; 75.47%), followed by 41-78 years (8; 15.09%) and 8-18 years (5; 9.43%) with the mean age of 33.13 years (Table 1). None of the patients had throat dryness, had easy suctioning through nasal airways and oxygen supplementation. Concerned Anesthesiologists were satisfied on patients awakening as there was no need to shout telling them to breathe through mouth. Involved surgeons were equally contented. Pain score was 2 in septoplasty cases, 5 in septoplasty with ITR cases, 4 each in SMR and FESS, 5 in FESS with septoplasty cases. Bleeding score was 2 each in all the cases (Table 2). All the patients were free of nasal obstruction at 3 months follow up which was one of the presenting complaints in all cases (Table 3).

Table 1: Frequency distribution of Socio-Demographic Variables.

Socio-Demographic Variables	Category	Frequency (n)	Percentage (%)
Gender	Male	33	62.26
	Female	20	37.74
Age group	18-Aug	5	9.43
	19-40	40	75.47
	41-78	8	15.09

Mean ± sd = 33.13 ± 12.38 years.

Table 2: Frequency distribution of Clinical Parameters.

Clinical variables	Category	Frequency (n)	Percentage (%)
Types of surgery	Septoplasty	15	28.3
	Septoplasty with ITR	6	11.32
	SMR	7	13.21
	FESS	10	18.87
	FESS with septoplasty	15	28.3
Pain score	2	15	28.3
	4	17	32.08
	5	21	39.62
Bleeding score	2	53	100
Other postoperative observational parameters	Throat dryness	0	0
	Easy suctioning and oxygenation via nasal airway	53	100
	Anesthesiologist satisfaction	53	100
	Surgeon satisfaction	53	100

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Table 3: Association between Pre-operative and post-operative nasal obstruction.

	Nasal Obstruction (n=53)	No Nasal Obstruction (n=53)	P value
Pre-operative	53(100)	0 (0)	<0.001
Post-operative	0 (0)	53(100	

*chi-square test was applied

There was significant association between pre and post operative nasal obstruction (p<0.001).

Discussion

There's no consensus on choice of nasal packing post sinonasal surgeries. Even some surgeons don't prefer nasal packs. Several studies have shown airway obstruction and breathing discomfort with the use of nasal packs or without packs post surgeries. So, several techniques and maneuvers have been implicated with varying level of success [1-2]. There are various types of nasal airway like Doyle septal splint, Venti Pak, Double barrel nasal trumpet etc., available in the global market but they are expensive [2]. So, we've come up with our own designed, effective and very low cost nasal airway device for alleviation of such discomfort in the post op period. In Bajwa SJS et al. study [1] there were 90 patients and divided into 3 groups who underwent FESS under GA. Each group consisted of 30 patients and each received nasal packs, unilateral nasal airway and bilateral nasal airway. There were 53 (55.3%) male, 37(41%) female, age ranged between 16-58 and majority being 23-32 years old.

There's a slight difference regarding the total patients, gender involved, age range and the majority of patients involved to our study, however, both studies have used the same material for nasal airway i.e., endotracheal tube (ETT). They've used 5mm ID ETT in all the cases, however, 4 and 6 mm ID were used in pediatric and adult cases in our study. The pain was minimal and dry postoperative period was found in their study and it was highly significant (p = <0.0001) which was similar to our study. Overall satisfaction rate among the anesthesiologists and operating surgeons was also significantly similar to our study. They had ooze of bleed on pack removal which stopped spontaneously in 16.6% patients, however, bleeding score was 2 in every patient on pack removal and it stopped with application of oxymetazoline 0.1% soaked cottonoids in our study. They've also consented with the ease of suctioning and oxygenation with the nasal airway in situ along with the packs similar to our study.

Conclusion

Based on the observations, the technique is pretty simple and very much affordable with amazing results and further like to recommend that such study can be conducted among the surgeons and anesthesiologists as it is easily available and cheap in routine sinonasal surgeries as it is able to alleviate the discomfort due to traditional nasal packs.

References

1. Bajwa SJS (2013) Postoperative airway management after nasal endoscopic sinus surgery: A comparison of traditional nasal packing with nasal airway. Anesth Essays Res 7(1): 116-122.
2. Kotler R, Wahl K, Lee KJ (2020) Solving the problem of post-operative airway obstruction in Nasal/Sinus Surgery. Arch Otolaryngol Rhinol 6(3): 091-097.
3. Bingöl F, Budak A, Şimşek E, Kılıç K, Özel Bingöl B (2017) Comparison of Early-period Results of Nasal Splint and Merocel Nasal Packs in Septoplasty. Turk Arch Otorhinolaryngol 55: 136-139.
4. Becker GD, Ransom E, Guy C, Bloom J (2010) Surgical Treatment of Nasal Obstruction in Rhinoplasty. Aesthetic Surgery Journal 30(3): 347-378.
5. Masroor R, Aleem A, Siddiqui R, Naeem M (2016) Comparison of post-operative recovery with or without pre-extubation throat wash in patients undergoing intranasal surgery under general anesthesia. Egyptian Journal of Anesthesia 32: 7-11

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