

ORIGINAL ARTICLE

Comparison of Innovative Breathable Nasal Packs with BIPP Gauze Packs in Nasal Septum SurgeryRAANA AMIR AKBAR¹, WAQAS JAVAID², MUHAMMAD NAEEM³, MIRZA MUHAMMAD SARWAR⁴, MARYAM FATIMA⁵, HIRA ANDLEEB⁶^{1,2}Assistant Professor ENT, Sir Ganga Raam Hospital, Fatima Jinnah Medical University, Lahore³Associate Professor ENT, Sir Ganga Raam Hospital, Fatima Jinnah Medical University, Lahore⁴Professor and Head of Department, Sir Ganga Raam Hospital, Fatima Jinnah Medical University, Lahore⁵Medical Officer, Preventive Peads Sir Ganga Raam Hospital, Fatima Jinnah Medical University, Lahore⁶Senior Registrar ENT, Liaquat National Hospital and Medical College, KarachiCorrespondence to Dr. Raana Amir Akbar, Email: dr.raana@yahoo.com, Contact: 03080006838**ABSTRACT****Background:** One of the major consequences of nasal septum surgery is bleeding so bilateral nasal packing is extensively done following nasal surgery to control this postoperative bleeding. This therapeutic blockage of nasal cavity results in discomfort associated with nasal obstruction while pack is in place. Patients also experience varying degrees of discomfort while pack is removed.**Aim:** To compare the outcome of using innovative breathable nasal packs with bismuth iodoform paraffin paste soaked gauze packs.**Setting:** Department of Otorhinolaryngology Unit II Sir Ganga Raam Hospital, Fatima Jinnah Medical University, Lahore.**Duration:** Six months from July 2021 to December 2021.**Study design:** Randomized Controlled Trial**Methods:** A total of 112 patients undergoing intranasal septal surgery, due to deviated nasal septum, under general anaesthesia were randomly allocated into two groups. Group A was consisted of patients who were postoperatively packed bilaterally with innovative breathable nasal packs and group B patients were packed bilaterally with conventional bismuth iodoform paraffin paste soaked gauze packs. All the packs were removed after 24 hours. Visual analogue scale was used to record outcome measures. All the information was recorded on proforma.**Results:** The average age of the patients was 29.60±9.18 years. Mean nasal blockage and sleep disturbance was significantly low in group A than group B [41.79±17.17 vs. 51.07 ± 22.86; p=0.017] and [51.61±14.74 vs. 61.79 ± 24.05; p=0.008].**Conclusion:** Innovative breathable nasal packs are a good option for nasal packing as it causes less discomfort to the patient as compared to conventional nasal packs in terms of nasal blockage and sleep disturbance.**Keywords:** - Nasal septum surgery, Innovative breathable nasal packs, bismuth iodoform paraffin paste soaked gauze packs.**INTRODUCTION**

One of the major consequences of nasal septum surgery is bleeding so bilateral nasal packing is extensively done following nasal surgery to control this postoperative bleeding. This therapeutic blockage of nasal cavity results in discomfort associated with nasal obstruction while pack is in place. Patients also experience varying degrees of discomfort while pack is removed.

First description of nasal packing in the ENT literature was made in 1951. Since then search of an ideal nasal pack is ongoing¹. An ideal nasal pack should control post operative bleeding effectively and should cause minimal discomfort associated with nasal obstruction while it is in place. Packing removal and its associated pain and bleeding should also be within tolerable limits. Traditional nasal packing methods using vaseline or bismuth iodoform paraffin paste (BIPP) soaked ribbon gauze or paraffin mesh may cause nasal obstruction leading to sleep disturbance, headache, breathing through mouth leading to dryness of mouth and difficulty in swallowing.^[2] With these traditional packs, patient is forced to breathe through mouth right from the start of postoperative period. In majority of cases, despite preoperative counseling, it is very difficult to maintain a normal breathing during the immediate postoperative period after bilateral nasal packing. It often results in an unsmooth recovery from general anaesthesia. In light of all these advantages of breathable nasal packs many new packs are designed that provide adequate nasal air way and hence reducing patient's discomfort³.

Breathable nasal packs serves the dual purpose of haemostasis and nasal breathing thereby reducing the patient's distress caused by nasal blockage, resulting in smooth recovery from anaesthesia, good sleep, good swallowing and avoiding symptoms that result from mouth breathing such as mouth dryness⁴. In a study by Kim *et al* on the usefulness of nasal

packing with vaseline gauze and airway silicone splint after closed reduction of nasal bone fracture concluded that maintaining nasal respiration reduced the patient's discomfort; in terms of nasal obstruction, dry mouth, sleep disturbance and swallowing difficulty; due to nasal packing. The visual analogue scale (VAS) score of nasal obstruction and sleep disturbance were 44.6±15.1 and 40.8±16.2 respectively, in the experimental group. The VAS score were 79.6±10.7 and 68.9±17.4 respectively, in control group. The experimental group had significantly lower score than the control group². In a study by Leunig *et al* on the use of CMC packing in FESS, showed that the VAS score for sleep disturbance in patients with nasal packing with carboxymethyl cellulose is 22.2±32.4⁵. Sample size calculation was performed with the expectation that that the innovative breathable nasal pack will affect sleep in a similar way as described by Kim *et al* and BIPP soaked gauze pack will affect sleep in a similar way like the packing described by Leunig *et al*. In comparison to the BIPP soaked gauze packing a difference of 5% was taken as clinically significant.

Although commercially prepared ventilating packs are available nowadays but in low resource settings the huge cost and availability are two major practical limitations for their use. Keeping these limitations and the potential complications in view we designed a new intervention aimed at using low cost endotracheal tube (ETT) with a nasal pack to make an innovative nasal pack which maintains the patency of nasal airways resulting in good sleep while in place and is also cost effective. The specific aims of this study are as follows; 1) To determine subjectively whether this method maintains nasal ventilation and 2) Compare patient's disturbance in sleep to BIPP soaked gauze packing. The rationale of this study is that we want to compare the two techniques of nasal packing and to find out which one is better so that we can use it in future in patients of nasal septal surgery. Also we can counsel them on the basis of this study regarding the effect of nasal packing on patient's nasal ventilation and sleep.

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The objective of the study was to compare the outcome of using innovative breathable nasal packs with BIPP soaked gauze packs.

MATERIAL AND METHODS

This study was carried out in the Department of Otorhinolaryngology Unit II Sir Ganga Raam Hospital, Fatima Jinnah Medical University Lahore after getting permission from Hospital Ethical Review Committee. The study duration was from July 2021 to December 2021. Patients were divided in two groups: Group A and Group B with 56 patients in each group. Randomization into two groups was done through block randomization. Group A consisted of patients who were postoperatively packed bilaterally with innovative breathable nasal packs and group B patients were packed bilaterally with conventional BIPP soaked gauze packs. All the packs were removed after 24 hours. Innovative breathable nasal packs were made with a poly-vinyl chloride un-cuffed endotracheal tube of 5 mm internal diameter which was cut to 6.5 cm in length and wrapped with BIPP soaked gauze so as to give a cylindrical nasal pack with a breathing passage inside⁴.

Outcomes were measured in terms of nasal blockage and sleep disturbance after 24 hours of surgery when packs were still in place. Patients were given visual analogue scale (VAS) to record outcomes. VAS is 100 mm long and was given to the patients without numbering. For nasal blockage one end of the scale which was at zero was marked as “no nasal blockage” and other end which was at 100 mm was marked as “very severe nasal blockage”. For sleep disturbance VAS was labeled as “no sleep disturbances” at zero end of the scale, to “very severe sleep disturbance” at the 100 mm end of the scale. The ratings were evaluated to an accuracy of 1 mm by measuring from the end of the scale with a ruler, yielding a value between 0 and 100. All the information was recorded on proforma⁵.

All patients aged 18 to 50 years of either gender who were undergoing intranasal septal surgery, due to deviated nasal septum, under general anesthesia were include. Patients with revision surgery and those with disturbed coagulation profile were excluded from our study.

The study was conducted after approval by the ethical committee. Written informed consent was obtained from all the patients fulfilling the inclusion criteria. Medical history and physical examination was carried out before the surgery. Septal surgery was done by the same surgeon. All patients were given same antibiotics and analgesics in the postoperative period. All the packs were removed after 24 hours. A surgeon other than the operating surgeon interviewed all the patients with the help of VAS before removing nasal packs.

RESULTS

A total of 112 patients undergoing intranasal septal surgery, due to deviated nasal septum, under general anaesthesia were randomly allocated into two groups. Group A consisted of patients who were postoperatively packed bilaterally with innovative breathable nasal packs and group B patients were packed bilaterally with

conventional BIPP soaked gauze packs. The average age of the patients was 29.60±9.18 years. Mean age in Group A was 27.14 years and for Group B was 32.05 years. There were 92 (82.1%) males and 20(17.9%) females. Comparison of mean nasal blockage and sleeping disturbance VAS score is presented in figure 1 and 2 respectively. Mean nasal blockage was significantly low in group A than group B [41.79±17.17 vs. 51.07±22.86; p=0.017] similarly mean sleeping disturbance was also significantly low in group A than group B [51.61±14.74 vs. 61.79±24.05; p=0.008]. Stratification analysis was performed and found that mean nasal blockage and sleep disturbance VAS score was not significant score between groups form male cases while it was significant in female cases as shown in table 1 and 2 respectively. Stratification of age was also performed and presented in table 3 and 4 respectively.

Comparison of mean nasal blockage vas score between groups (n=112)

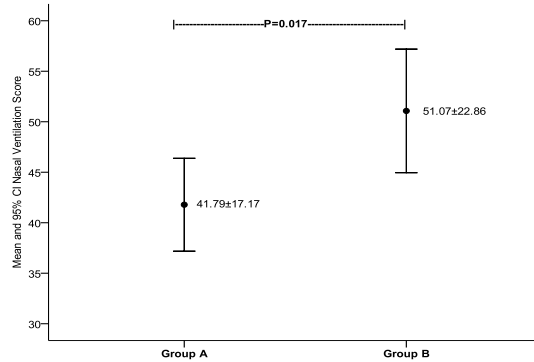


Fig. 2: Comparison of mean sleep disturbance vas score between groups (n=112)

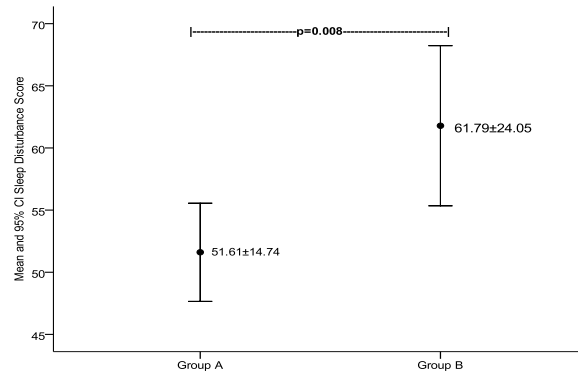


Table 1: Comparison of the outcome between groups for male patients

Outcomes	Group A			Group B			P-Value
	n	Mean	Std. Deviation	n	Mean	Std. Deviation	
Nasal Blockage VAS score	44	45.00	17.58	48	52.08	23.69	0.110
Sleep Disturbance VAS score	44	52.95	13.73	48	57.08	22.40	0.295

Table 2: Comparison of the outcome between groups for female patients

Outcomes	Group A			Group B			P-Value
	n	Mean	Std. Deviation	n	Mean	Std. Deviation	
Nasal Blockage VAS score	12	30	8.52	12	46.67	17.75	0.017
Sleep Disturbance VAS score	8	45	16.90	8	90.00	10.69	0.0005

Table 3: Comparison of the outcome between groups for age ≤ 30 years of patients

Outcomes	Group A			Group B			P-Value
	n	Mean	Std. Deviation	n	Mean	Std. Deviation	
Nasal Blockage VAS score	45	40	17.32	30	55	21.13	0.001
Sleep Disturbance VAS score	45	52.67	16.15	30	58	23.41	0.246

Table 4: Comparison of the outcome between groups for age >30 years of patients

Outcomes	Group A			Group B			P-Value
	n	Mean	Std. Deviation	n	Mean	Std. Deviation	
Nasal Blockage VAS score	11	49.09	15.13	26	46.54	24.32	0.75
Sleep Disturbance VAS score	11	47.27	4.67	26	66.15	24.51	0.017

DISCUSSION

Surgery for correcting nasal septum deviations are routinely done in otorhinolaryngology practice. To fulfill its function properly nasal mucosa is richly supplied with blood vessels both from internal and external carotid system, so after nasal septum surgery mucosa has propensity to bleed. In order to control this post-operative bleeding nasal packing is mostly done⁶. If bleeding is mild it can still result in formation of septal hematoma because of the potential space created between surgical flaps and septal cartilage where blood can collect. If the bleeding is severe, it may result in inhalation as well as swallowing of blood causing aspiration and nausea and vomiting respectively immediately when patient is extubated or in the post operative period⁷. Nevertheless septoplasty can be done without the need of post-operative nasal packing in carefully selected cases where we can use quilting technique, suturing or fibrin glue to attain haemostasis. But in most of the cases nasal packing is required and most of the patients complain that discomfort of packing and pain associated with its removal is far greater than that of surgery itself^{6,8}. Although there is no such thing as ideal nasal pack but efforts are being made to develop a nasal pack that is able to stop bleeding effectively and that also provide passage for nasal breathing which in turn can lead to fewer disturbances during sleep and during swallowing⁷.

Nasal packing is routinely carried out primarily to control post-operative bleeding, although some surgeons do not believe in this concept. Nasal packing currently being used consist of either Vaseline gauze packs, finger glove stalls, ribbon gauze packing or hydroxylated polyvinyl acetate packing. These packs though effective in stopping post-operative bleeding but are extremely uncomfortable due to the fact that the patient is unable to breathe through the nose. Furthermore these packs cause headache, throat dryness and local discomfort⁹.

In this study the average age of the patients was 29.60 ± 9.18 years. There were 82.1% male and 17.9% female. Mean age of presentation was 34 years and majority of the patients were in the age range of 16 to 45 years. The male to female ratio was about 2:1. In present study mean nasal blockage was significantly low in group A than group B [$p=0.017$] similarly mean sleep disturbance was also significantly low in group A than group B [$p=0.008$]. In our study we found that our innovative breathable nasal packs were superior to conventional BIPP soaked gauze packs in terms of patient comfort as they reduced patient's inconvenience caused by nasal blockage. Similar results were shown by Kim et al².

In Kim et al study the visual analogue scale (VAS) score of nasal obstruction and sleep disturbance were 44.6 ± 15.1 and 40.8 ± 16.2 respectively, in the experimental group. The VAS score were 79.6 ± 10.7 and 68.9 ± 17.4 respectively, in control group. The experimental group had significantly lower score than the control group². In a study by Leuniget al on the use of CMC packing in FESS, showed that the VAS score for sleep disturbance in patients with nasal packing with carboxymethyl cellulose is 22.2 ± 32.4 ⁵.

But in other studies ventilating nasal packs are not found superior in maintaining eustachian tube function¹⁰. The ability to have a patent airway after nasal surgery is of the utmost importance as it provides a natural way of breathing, where as a blocked nose as in conventional nasal packs causes throat dryness and headache. Some packing materials like merocel packs cause much pain and bleeding when removed¹¹. Regarding materials to be used for nasal packing, biodegradable synthetic polyurethane foam has also found to be much superior as it causes less pain and bleeding¹².

CONCLUSION

Breathable nasal packs provide a better alternative to conventional nasal packs in terms of patient's comfort after septoplasty as it served all functions of packing and prevented most of its complications, particularly related to nasal obstruction. It is particularly useful for patients having cardio-pulmonary disease who need nasal packing for septoplasty or epistaxis.

Conflict of interest: Nil

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