NASAL PREPARATION PRIOR TO NASAL ENDOSCOPY: A COMPARISON OF COTTON PLEDGET PACKING VERSUS TOPICAL SPRAY

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ABSTRACT

Nasal endoscopy (NE) is an office procedure done to look at the nasal and sinus passages using an endoscope which could be either rigid or flexible. It allows the clinician to characterize the intranasal anatomy better compared to the conventional techniques of headlight, speculum and mirror thus aiding the diagnosis. Therefore its popularity has increased recently and is one of the most frequently performed diagnostic procedures in Otorhinolaryngology and Head and Neck Surgery OPD. A unanimous consensus has not been reached regarding the best method for preparing the patients for NE. This study compares two methods of nasal preparation; cotton pledget packing and topical spray. A total of 100 patients were randomised into two groups of 50 each (A and B). In Group A, the nasal cavity was packed with a cotton pledget soaked in 4% lignocaine and xylometazoline nasal drops. Whereas in Group B, xylometazoline nasal drops were instilled and nasal cavity was sprayed with 10% lignocaine spray. After performing rigid nasal endoscopy, a proforma based on the patients' and consultant's response was filled. Patients in the cotton pledget group experienced more discomfort during packing ($p=0.04$), during the waiting time ($p=0.001$) and also during the endoscopic procedure. From the clinician's perspective, the duration for the overall endoscopic procedure was significantly less in the spray group ($p<0.001$). Visualisation of structures was comparable in both groups. Less bleeding was experienced in the spray group. We concluded that nasal spray is a better alternative to nasal packing for preparation of nose prior to nasal endoscopy.

KEYWORDS

Nasal endoscopy, nasal packing, nasal spray

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INTRODUCTION

Nasal endoscopy (NE) is an office procedure done to look at the nasal and sinus passages using an endoscope which could be either rigid or flexible. It allows characterization of intranasal anatomy and identification of pathology not otherwise visible by techniques of headlight, speculum and mirror. Therefore its popularity has increased recently and is one of the most frequently performed diagnostic procedures in ENT OPD.[1-3] Rigid rod endoscope was developed by Hopkins and Storz in 1959 and the flexible nasendoscope was pioneered by Sawashima and Hirose later in 1968.[4,5] Both of these instruments have been revolutionary in diagnosing nasal pathologies.

NE is usually accomplished with a rigid endoscope. A flexible endoscope is preferred in patients with severe nasal septal deviation.[6] For the patients, pain and discomfort are the major problems during the procedure.[7] Whereas, for the physicians, the major problems are prolonged procedure duration, limited view of nasal passages due to swollen turbinates and some physiological changes such as acceleration of pulse rate and increase in blood pressure during the procedure.[8] Some placebo-controlled studies recommend no medication before NE.[9-12] Other authors recommend only decongestant or decongestant–local anesthetic combination applications.[13-15] However, a unanimous consensus has not been reached regarding the best method for preparing the patients for NE. This study compares two methods of nasal preparation; cotton pledget packing and topical spray.

MATERIALS AND METHODS

This comparative study was carried out at Nepal Medical College Teaching Hospital (NMCTH), Attarkhel, Kathmandu, Nepal. Prior informed written consent was taken from all the subjects participating in the study. All patients undergoing rigid nasal endoscopy from November 2022 to April 2023, aged between 15 and 70, and willing to participate in the study were included. Patients under the age of 15 years and above the age of 70 years were excluded considering their inability to express the symptoms precisely. Those patients with a significant septal deviation were excluded in order to minimize variability in individual patients. Patients were also excluded if they had asymmetric nasal cavities, pregnancy, heart diseases, uncontrolled hypertension, allergy to lignocaine and/or xylometazoline or if they were already on decongestant nasal drops.

Patients were randomised into two groups A and B on the basis of odd and even dates. This sequence was changed at the mid term of data collection. In Group A, the nasal cavity was packed with a cotton pledget soaked in 4% lignocaine and xylometazoline nasal drops. Whereas, in Group B, xylometazoline nasal drops were instilled and nasal cavity was sprayed with 10% lignocaine spray. A waiting period of 7 minutes was given to both groups. After that, the pack was removed from the nasal cavity in Group A. Rigid nasal endoscopy was then performed by the consultant who was blinded about the technique of nasal preparation. A data sheet was prepared based on the patients and consultant's response and observation during endoscopy. Patient response included questions regarding pain during packing or spraying, time taken while preparing, discomfort while waiting and pain during the procedure. The consultant's response included questions regarding visualisation of structures, areas difficult to visualise, trauma during preparation and discomfort post endoscopy. Responses were recorded mostly as yes/no and if yes, the severity was recorded as well. The results of our study were analyzed on SPSS Software using independent t test.

RESULTS

A total of 117 patients underwent nasal endoscopy. Of them, 17 required flexible nasal endoscopy because of severe nasal septal deviation and hence were excluded. A total of 100 patients undergoing rigid nasal endoscopy were included in this study of which 47 were males and 53 were females. The ages of patients ranged from 17 to 70 years with mean age of 41.23±14.32 years. Both groups had 50 patients each.

The results obtained from patient's response were as follows:

1. Pain or discomfort during packing/spraying: In Group A, 47 patients had some degree of discomfort while 3 had no discomfort. In Group B, 44 patients had some degree of discomfort while 6 had no discomfort. The mean score was less in Group B in Independent t test and it was statistically significant p=0.04.

2. Pain or discomfort during waiting time: In Group A, 43 patients had some degree of discomfort while 7 had no discomfort. In Group B, 28 patients had some degree of discomfort while 22 had no discomfort. The mean score was less in Group B in

Independent t test and it was statistically significant p=0.001

3. Pain or discomfort during endoscopy: In Group A, 45 patients had some degree of discomfort while 5 had no discomfort. In Group B, 40 patients had some degree of discomfort while 10 had no discomfort. The mean score was less in Group B in Independent t test and it was statistically not significant p=0.09

4. Pain or discomfort post endoscopy: In Group A, 13 patients had some degree of discomfort while 37 had no discomfort. In Group B, 8 patients had some degree of discomfort while 42 had no discomfort. The mean score was slightly less in Group A in Independent t test and it was statistically not significant p=0.22

The results obtained from clinician's response were as follows:

1. Time taken for endoscopy: In Group A, the mean time was 9.70 minutes. In Group B, the mean time was 5.74 minutes. The difference was statistically significant p<0.001.

2. Visualisation of structures: In Group A, visualisation was poor in 2 patients, good in 44 and excellent in 4 patients. In Group B, visualisation was poor in 2 patients, good in 43 and excellent in 5 patients. Mean score was slightly less in Group A but comparable. The difference was not statistically significant p=0.78

3. Areas difficult to visualise: In Group A, it was difficult to visualise superior turbinate and sphenoid sinus in 47 patients. In Group B, it was difficult to visualise superior turbinate and sphenoid sinus in 42 patients. The

Table 1: Patient's response to different methods of pre-endoscopic nasal preparation

Patient's response	Group A (Cotton pledget) n=50	Group B (Lignocaine spray) n=50	P value using independent t test
No of patients who experienced discomfort during packing/spray	47	44	0.04
No of patients who experienced discomfort while waiting	43	28	0.001
No of patients who experienced discomfort during endoscopy	45	40	0.09
No of patients who experienced discomfort post endoscopy	13	8	0.22

Table 2: Clinician's response to different methods of pre-endoscopic nasal preparation

Clinician's response	Group A (Cotton pledget) n=50	Group B (Lignocaine spray) n=50	P value using independent t test
Mean time taken for endoscopy	9.70±3.49 minutes	5.74±2.64 minutes	<0.001
No of patients in whom visualisation of structure was			
a. Poor	2	2	
b. Good	44	43	0.78
c. Excellent	4	5	
No of patients in whom there was difficulty visualising superior turbinate and sphenoid sinus	47	42	0.44
No of patients who experienced bleeding during packing/procedure	2	1	0.56

difference was not statistically significant p=0.44

4. Bleeding during preparation or procedure: In Group A, 2 patients had mild bleeding, one during packing and one during procedure. In Group B, only 1 patient had mild bleeding during procedure. In all cases bleeding was controlled by decongestant drops only. There was no statistical significance p=0.56

DISCUSSION

Nasal endoscopy aims to visualise all the vital areas of the nasal cavity without causing any discomfort to patient.[16] Hence, proper preparation of the nasal cavity is essential to anesthetize and decongest the nasal mucosa before performing the endoscopy. The ideal nasal preparation should be comfortable for the patient, produce adequate anaesthesia and widen nasal patency. As nasal endoscopy by its nature is quite operator dependant, the skill of the surgeon performing the procedure holds major importance.[17] Therefore, training in nasal endoscopy is critical. In our study, all the endoscopic procedures were performed by well experienced consultants thus limiting the possible bias caused by this factor in the results.

Although topical anesthetic causes unpleasant taste during endoscopy, use of a topical anesthetic seems to be considerably efficacious in reducing discomfort during transnasal endoscopy.[18] Xylometazoline is recommended for nasendoscopy as it is effective and is significantly cheaper than the other preparations.[19] Therefore, we chose to use lignocaine and xylometazoline in our study.

Regarding the mode of application, both cotton pledget packing and spraying techniques have been commonly used for preparation of nose prior to nasal endoscopy. We randomised patients into two groups A and B. In Group A, the nasal cavity was packed with a cotton pledget soaked in 4% lignocaine and xylometazoline nasal drops. Whereas in Group B, xylometazoline nasal drops were instilled and nasal cavity was sprayed with 10% lignocaine spray. Application of cotton pledgets, though slightly irritating for patients, has been found to be more effective by some authors.[20-22] On the other hand, the technique of topical spray is also found to be equally effective by others.[23-25]

In our study, during the process of packing and spraying, patients in both groups experienced some degree of discomfort in our study. Although the cotton pledget had only 4% lignocaine compared to 10% in the spray, discomfort caused by cotton pledget packing was significantly more than that by spray. During the waiting time also, significantly more patients in the cotton pledget group experienced some degree of discomfort. This could be attributed to the apprehension caused by the need for an instrument to actually place a cotton pledget in the nasal cavity, the physical pressure applied by the cotton pledget on the nasal mucosa, the irritant effect of lignocaine and trickling of solution into the oropharynx causing sore throat and heaviness. Literature revealed some studies with similar findings while others with opposite.[21, 22, 25]

During the process of nasal endoscopy, patients in the cotton pledget group still felt more discomfort compared to the spray group. However, the result was not statistically significant. Post endoscopy also, more patients in packing group had at least some degree of discomfort compared to spray group. However, the mean score was less in the packing group. This difference was not statistically significant. This hints that once the pledget is removed, the discomfort level of patient begins to decrease rapidly but does not go away completely in the packing group compared to nasal spray.

In Group A, the mean time taken for the endoscopic procedure was 9.70 minutes. In Group B, the mean time was 5.74 minutes. The difference was statistically significant p<0.001. Similar results have been published in previous literature.[21,25] This could be a reflection of more discomfort felt by the patients in the packing group compared to spray group during the process of nasal endoscopy.

In both groups visualisation of structures was good in majority of patients. Mean score was slightly less in Group A but comparable. The difference was not statistically significant p=0.78. Our study suggests that both methods are equally effective for visualisation of structures. However, literature reveal studies favouring cotton pledget.[21,22] In both groups, superior turbinate and sphenoid sinus were the most difficult areas to visualise in majority of patients. The difference was not statistically significant p=0.44. This once again echoes the fact that cotton pledget packing is not superior to spray in terms of visualisation.

In Group A, 2 patients had mild bleeding, one during packing and one during procedure. In Group B, only 1 patient had mild bleeding during procedure. In all cases bleeding was controlled by decongestant drops only. There was no statistical significance p=0.56. This bleeding in group A could be attributed to the

fact that the mucosa was already congested in these patients and the process of packing led to minimal trauma. Whereas the group which was sprayed (Group B) had more effective and uniform vasoconstriction leading to less bleeding. Similar results were found in other studies with more bleeding in the packing group.[21,25]

Our study clearly showed that from the patient's perspective spraying was much more comfortable than nasal packing. Patients in the cotton pledget group experienced more discomfort during packing, during the waiting time and also during the endoscopic procedure. From the clinician's perspective, the duration for the overall endoscopic procedure was significantly less in the spray group. Visualisation of structures was comparable in both groups. Less bleeding was experienced in the spray group.

The major strength of our study is its comparative randomized design which provides a high level evidence. The major limitation of this study is the difference in the concentration of lignocaine used in the two groups. The most commonly used concentration of lignocaine used as spray is 10% and used for packing is 4%. Therefore, we chose these concentrations to make the results practically applicable.

In conclusion, nasal packing with cotton pledget and decongestant not only causes more discomfort and irritation to the patients but is also more time consuming. Nasal spray with 10% lignocaine and decongestant drops is a faster method and is more comfortable for the patients. In terms of visualization of structures during nasal endoscopy both preparatory techniques are effective and comparable. We recommend nasal spray as a better alternative to nasal packing for preparation of nose prior to nasal endoscopy. However, a longer duration of study with larger sample size and multi institutional data would provide a more clear insight on this subject.

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