

Preparation of nose for nasal endoscopy: cotton pledget packing versus topical spray. A prospective randomized blinded study

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Abstract During nasal endoscopy it is essential to have proper visualization of structures with minimal discomfort to patient and surgeon. For this it is essential that the nose is well prepared before the procedure. The main objective of the study is to compare and evaluate the efficacy of cotton pledget packing versus topical sprays in preparation of nose for nasal endoscopy. The method includes prospective randomized blinded study on 100 patients. Patients were randomly divided in two groups. In first group the nose was packed with 4% lignocaine with xylometazoline nasal drops and in the other group it was prepared with 10% lignocaine topical spray and xylometazoline nose drops. Following the procedure, patient and the surgeon were asked a pre-formed questionnaire to know their experience during endoscopy. It was observed the packing group required more preparatory time as compared to the spray group. The group which was packed had less discomfort, less pain while endoscopy. The visualization of structures was significantly better in the packed group.

Eight patients in the packed group did have some mucosal bleed during the process of packing which was not seen in the spray group. Both methods of preparation have merits and demerits but in terms of discomfort, pain during procedure and visualization of structure, packing of nasal cavity with 4% lignocaine and xylometazoline drops is better than spraying of nose with 10% lignocaine and xylometazoline drops.

Keywords Diagnostic nasal endoscopy · Nose packing · Nasal Spray · Lignocaine · Xylometazoline

Introduction

Nasal endoscopy has gained wide popularity and is one of the most frequently performed diagnostic procedures in ENT OPD for nasal pathologies [1, 2]. It allows characterization of intranasal anatomy and identification of pathology not otherwise visible by techniques of headlight, speculum and mirror [1, 3]. Diagnosis and treatment of nasal diseases have advanced in the process.

However, it is essential that the endoscopy is performed in a systemic manner so that all the vital areas of the nasal cavity can be well visualized without causing any discomfort to patient [4]. For this purpose, it is pertinent that the nasal mucosa is well anesthetized with a topical anesthetic agent and a topical decongestant. Though this procedure is very common, the exact pre-endoscopy preparation that will provide a good and comfortable field of vision is not standardized.

The process of application of anesthetic agent does bring some discomfort to the patient. Hence, the point of concern is to use a minimal dose of drugs, increase patient's compliance, and reduce the pain during procedure and at

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the same time maintain a good field of vision during endoscopy. The technique of using a cotton pledget soaked in lignocaine and decongestant is quite effective but does cause some discomfort to the patient [5]. On the other hand, the technique of topical spray is also found to be equally effective [6, 7].

However, few data are available on the exact technique for pre-endoscopic preparation of the nose. So a requirement of a comparative study in this regard was sought for. To the best of our knowledge, there is no randomized study comparing the two techniques. The aim is to perform a randomized single blinded study to compare the pre-endoscopic preparation with lignocaine and xylometazoline pledgets to that of lignocaine spray and xylometazoline drops.

Materials and methods

The study was conducted in the ENT department of a tertiary care teaching hospital after acquiring the institutional ethical clearance. It was a prospective, randomized blinded study conducted for a duration of 2 months from June to July 2011. It included 100 patients, presenting in ENT OPD requiring diagnostic nasal endoscopy. Children under the age of 15 years were excluded considering their inability to express the symptoms precisely. Patients already on xylometazoline decongestant nasal drops were also excluded from the study.

Written informed consent was obtained from all the patients included in the study. All patients in ENT OPD requiring diagnostic nasal endoscopy were randomly divided into two groups for the purpose of pre-endoscopic preparation of the nasal cavity.

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. The patients in both the groups were subjected to a waiting period of 5–7 min. After the aforesaid time period, the pack was removed from the nasal cavity in Group A following which the consultant who was blinded about the technique of pre-endoscopic preparation performed the nasal endoscopy.

The following data sheet was prepared based on the patients and consultant's response and observation during endoscopy.

- Q1 Did the process of packing/spray cause you any pain or discomfort?
If yes, grade the severity.
- Q2 Time taken for the pre-endoscopic preparation in both the groups?

- Q3 Any discomfort while waiting for 5 min before endoscopy?
If yes, in what form?

Sore throat/dryness/irritation in the nose/choking sensation/headache/any other

- Q4 Pain during the process of endoscopy?
Yes/no
Severe/moderate/mild/no pain

- Q5 Post-endoscopy discomfort to the patient?
Sore throat/dryness/irritation in the nose/choking sensation/headache/any other

Consultant's response during the process of endoscopy

- Q6 Visualization of structures during endoscopy?
On a scale of 1–10
Excellent (8–10)/good (5–7)/fair (3–4)/poor (<3)

- Q7 Which area was difficult to visualize?

- Q8 Any bleeding or mucosal damage due to pre-endoscopy preparation?
Yes/no

A separate data sheet was prepared for all patients during the period of study. The findings between the two groups were compared by performing the Z test.

Results and observation

In toto 100, subjects were included in the study out of which there were 62 males and 38 females. Both the groups had 50 subjects each. The age group of the patients varied from 18 to 73 years with an average age of 33 years.

The results were evaluated based on the response given by the patient and the consultant who performed the nasal endoscopy. The response to each question was tabulated in the data sheet and thus evaluated.

The data for each question was analyzed and the following result was drawn.

- Pain during the pre-endoscopy preparation
 - Group A: 38 patients did not have any pain or discomfort during the process of packing the nasal cavity while. 12 patients did complain of pain and discomfort (Fig. 1).
 - Group B: 46/50 (92%) patients had discomfort immediately after spraying the nasal cavity. In a patient who was asthmatic, the spray also led to dyspnea which was relieved with asthalin puff. 4/50 (8%) patients did not have any discomfort with spray.
- Time taken for pre-endoscopy preparation

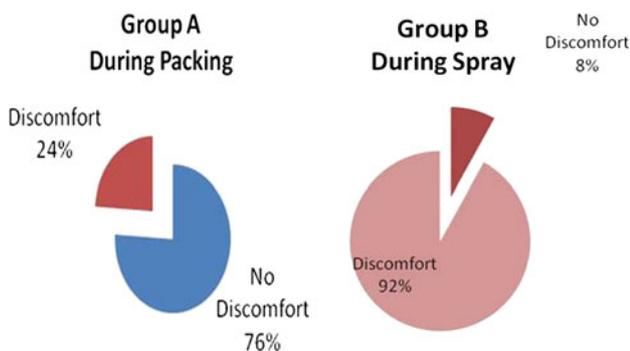


Fig. 1 Discomfort with packing and spray

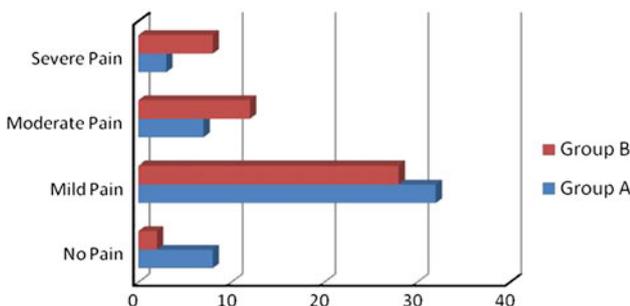


Fig. 2 Pain to patient while performing nasal endoscopy

- (a) Group A: The process of preparing the pack and packing both the nasal cavity with three cotton patty varied from 3 to 6 min.
 - (b) Group B: The process of spray and instilling drops ranged from 30 s to 1 min
3. Discomfort while waiting for 5 min
- (a) Group A: 36/50 (72%) patients did not have any discomfort while the waiting period. 14/50 (28%) patients had a sore throat and heaviness due to the trickling of solution in the throat
 - (b) Group B: 22/50 (44%) patients did not have any discomfort during the waiting period. 28/50 (56%) had discomfort in some form due to spray.

The difference in discomfort between the two groups was assessed by the Z test which was found to be highly significant ($P = 0.0015$). Thus, the group where the nasal cavity was packed had significantly less discomfort during the waiting period as compared to the one where nasal cavity was sprayed.

4. Pain during the procedure of endoscopy based on visual analogue scale (Fig. 2).
 0 = no pain, 1–3 = mild pain, 4–7 = moderate pain, 8–10 = severe pain
- (a) Group A: no pain: 8/50, mild pain: 32/50, moderate pain: 7/50, severe pain: 3/50.
 - (b) Group B: no pain: 2/50, mild pain: 28/50, moderate pain: 12/50, severe pain: 8/50

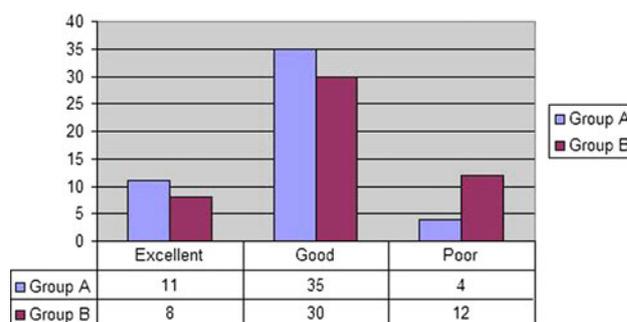


Fig. 3 Visualization of structures (response of the specialist)

The difference in pain between the two groups was assessed by the Z test considering the criteria of pain and no pain. The difference was found to be significant ($P = 0.026$). Thus, the group in which the nasal cavity was packed has less pain as compared to the one where the spray was used.

5. Visualization of structures: the response was taken from specialist who performed the endoscopy (Fig. 3). (It was a general remark about the visualization of structures along with decongestion and patient’s cooperation)

- (a) Group A: 11 excellent, 35 good, 4 poor
- (b) Group B: 8 excellent, 30 good, 12 poor (The main reason given by the specialist for inadequate visualization was lack of proper decongestion)

Statistical test (Z test) was done and the difference was found to be significant ($P = 0.0126$). Thus, in Group A where the nasal cavity was packed was significantly better visualized as compared to Group B where the spray was used.

6. Areas difficult to visualize
- (a) Group A: middle meatus: 4/50, posterior choana/nasopharynx: 6/50, superior turbinate: 42/50, sphenoid sinus opening: 38/50
 - (b) Group B: middle meatus: 4/50, posterior choana/nasopharynx: 8/50, superior turbinate: 48/50, sphenoid sinus: 46/50
7. Bleeding/mucosal trauma during preparation
- (a) Group A: eight patients had some mucosal trauma while packing
 - (b) Group B: none of the patients had any mucosal trauma
8. Discomfort post-endoscopy
- (a) Group A: four patients were anxious due to mild bleeding. 12 patients had heaviness and bitter taste in the throat.
 - (b) Group B: eight patients had discomfort in the nose and throat.

Discussion

Nasal endoscopy has gained wide popularity due to its potential to diagnose various nasal and sinus pathologies. Due to the availability of the nasal endoscopy, diagnosis and treatment of nasal diseases has advanced. It allows characterization of intranasal anatomy and identification of pathology not otherwise visible by the usual techniques of headlight speculum and mirror [C]. However, training in nasal endoscopy is critical. Hence, proper preparation of the nasal cavity is essential to anesthetize and decongest the nasal mucosa before performing the endoscopy. Here, we compare two methods of pre-endoscopic preparation of the nasal cavity so as to visualize all the vital areas as well as cause minimal discomfort to the patient.

In our study, including 50 patients in each group, it was found that the majority of the patients had severe discomfort during the process of spraying 10% lignocaine which was much less in the group where the nasal cavity was packed. This may be attributed to the fact that 10% lignocaine produces strong irritation of the mucosa. The group in whom the nasal cavity was packed, the concentration of lignocaine used was 4%. Hence, limited irritation was noticed. One of the patients developed an attack of asthma due to spray.

The other point of concern is that the time taken for pre-endoscopic preparation was considerably more in the group in whom the nasal cavity was packed as compared to the other group since packing itself is time consuming and the solutions for packing need to be prepared.

As far as visualization of structures during a nasal endoscopy is concerned there was a significant difference in both the groups. The visualization was significantly better in the group where packing was done. The probable reason being better de-congested. This is attributed to the fact that the topical effect of xylometazoline would be better when the nose is packed as packing induces some amount of pressure and the effect is more site specific. While during the process of instilling drops some amount of it may trickle down the throat and reduce the topical effect.

Group A in whom the nose was packed had eight cases of mucosal trauma leading to mild bleeding which was a cause of worry to the patient in the post-endoscopy period. This bleeding was 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 had significantly more discomfort during the waiting period.

Thus, there was a significant difference in visualization of the structures between the two techniques. The surgeons comfort was also more when the nasal cavity was packed. Besides that, the patient's tolerability to packing was more

than that of spray. However, preparation of the nose with a spray is rapid without much compromise to the visibility of structures.

It can be concluded that both the methods have their merits and demerits in certain terms but visibility of structures by the surgeon and patient's tolerability was better when the nose is packed with 4% lignocaine and xylometazoline drops.

The merits of our study are that it is a prospective randomized blinded study which provides a level I evidence on the clinically apt subject. The demerit of this study is the difference in the concentration of lignocaine used in both the groups. The reason for this was to make the results practically applicable, as lignocaine spray is generally available in 10 and 15%. Moreover, in most of institutes the concentration of spray used is of 10% and 4% is used for packing. So the most commonly used concentration of lignocaine was used in the study.

Summary

The study was conducted to compare the two techniques of pre-endoscopic preparation of the nasal cavity. Diagnostic nasal endoscopy is a very common procedure in ENT OPD and both the techniques are extensively used. However, there is hardly any study in the literature comparing the two methods.

The result has established that both the methods have their merits and demerits though in terms of diagnosing and visualization of structures the technique of packing with 4% lignocaine and xylometazoline is superior to the use of 10% spray with xylometazoline drops.

Conclusion

Based on the results obtained in this study it is concluded that in terms of visualization of structures during nasal endoscopy both preparatory techniques are effective. Nasal packing with cotton pledget and decongestant, though time consuming, is less irritant to patient and has better decongestion. Nasal spray with 10% lignocaine and decongestant drops is a fast method but the spray does cause discomfort to the patients. However, a longer duration of study with larger sample size and inter institutional data would provide a more clear insight on this subject.

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