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NASAL TOILETING AFTER ENDOSCOPIC SINUS SURGERY- A PROSPECTIVE RANDOMIZED STUDY

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ABSTRACT

Background: The present study is designed to compare the efficacy of normal saline nasal drop with a combination of normal saline spray and saline irrigation in the postoperative period of endoscopic sinus surgery.

MATERIALS & METHODS: Sixty patients undergoing endoscopic sinus surgery were studied prospectively for a period of one year. Out of the 60 patients, 30 were placed in Group A, while in the rest 30 in Group B.

RESULTS: There was statistically significant improvement of symptoms as well as improved postoperative healing of the operated sinus cavity in Group B ($p<0.001$) than Group A.

CONCLUSION: Normal saline spray with nasal douching gives a better post operative result in endoscopic sinus surgery compared to normal saline nasal drop.

KEYWORDS : Nasal spray, nasal douching, endoscopic sinus surgery.

INTRODUCTION

The efficacy of atomizer spray in post endoscopic sinus surgery patients; results were comparable with vertex to floor position of nasal drops [1]. The bioavailability in terms of area under the time concentration curve was higher when intranasal spray was used as compared to nasal drops [2]. The bioavailability from nasal drops was eight times lower than nasal spray [3]. The positive pressure or negative pressure nasal saline irrigation has better distribution in the nasal sinuses than using normal saline nebulizer [4].

Our study was designed to compare the efficacy of normal saline drops with a combination of normal saline spray and normal saline douching in enhancing faster healing of operated endoscopic sinus surgery cavity.

Materials and Methods:

The study was undertaken in the department of E.N.T and Head-Neck Surgery Calcutta National Medical College of a tertiary care hospital in Kolkata, over a period of one year (October 2014 to September 2015).The study design was a prospective randomized one.

(i)Inclusion Criteria:

Adult patients, underwent endoscopic sinus surgery for various types of sinonasal pathologies, were included in the study.

(ii)Exclusion Criteria:

Patients below 18 years of age, suspected malignancy and revision cases were excluded from the study.

The study was included 60 patients. Informed, written consents were obtained from all individual participants included in the study. All patients underwent endoscopic sinus surgery. On the day of discharge, they were instructed to pick up a pre-sealed envelope, which would either have Group A or Group B written inside. Patients were randomized into two groups. In **Group A,** patients were advised to do their post-operative nasal toileting with normal saline nasal drops only while in **Group B**, toileting was done with normal saline nasal spray (Solspre nasal spray, Solvay Pharma) followed by normal saline nasal douching. Normal saline nose drop was used in head down position in the dosage of 4 drops into each nostril three times daily. Solspre was administered in sitting position as follows: – two sprays were pumped in each nostril three times daily, one spray was directed upwards and the other towards lateral wall so that it can reach the middle meatus. The patients breathe gently after spraying and do not sniff. Normal saline nasal douching was done each time after spraying with the help of Higginson's syringe.

Outcome Measures:

The recovery of all the patients was assessed both subjectively and objectively in the post-operative period. Four symptoms were taken into account in assessing outcome measures subjectively: nasal obstruction, nasal discharge, hyposmia and headache, as they appear after removal of nasal pack following surgery. The severity of these symptoms were rated by the patient on a Visual Analogue Scale (VAS) of 0 (best possible condition) to 5 (worst possible condition). Symptom scores were recorded in the 2nd and 4th week after surgery in both the groups.

Objective improvements were evaluated by performing nasal endoscopic examination with 4mm 30º rigid nasoendoscope in the same sitting. Two parameters were used for this purpose: crusting (0 – absent, 1 – mild degree, 2 – severe degree) and discharge (0 – absent, 1 – clear thin discharge, 2 – thick mucopurulent discharge). Thus endoscopic scores were recorded in both the groups.

The findings obtained in the study were tabulated and statistically analyzed by using Mann-Whitney U test since the data did not follow normal distribution. An alpha level of 5% was taken, i.e, any p value less than 0.05 was considered as significant. The statistical software SPSS version 20 was used for the analysis.

Results:

The total number of patients included in this study was 60. There were 36 (60%) females and 24 (40%) males with a male: female ratio of 2:3. The mean age of the patients was 37.17 years, ranging from 19 to 62 years.

Symptom scores: using the visual analogue scale, 26 out of the 30 (86.66%) patients in group B reported improvement in their symptoms. Overall analysis of all the 60 patients showed a statistically significant ($p<0.001$) reduction in the VAS scores recorded by patients in group B than in group A at the end of 2nd and 4th week post-operatively (Table I).

Table I: The VAS scores of both groups.

Symptoms (VAS)	Week	GroupA n= 30 (mean±sd)	GroupB n = 30 (mean±sd)	*P* value
Nasal obstruction	2nd Week	4.47 ± 0.68	0.8 ± 0.71	<0.001
	4th Week	4.57 ± 0.5	0.4 ± 0.56	<0.001
Nasal discharge	2nd Week	4.43 ± 0.63	0.93 ± 0.74	<0.001
	4th Week	4.43 ± 0.57	1.07 ± 1.36	<0.001
Headache	2nd Week	4.33 ± 0.66	1.2 ± 0.81	<0.001
	4th Week	4.5 ± 0.57	1 ± 1.17	<0.001
Hyposmia	2nd Week	3.97 ± 0.67	0.97 ± 0.67	<0.001
	4th Week	4.03 ± 0.72	0.33 ± 0.48	<0.001

Nasal endoscopic scores : Of the 30 patients in Group B , 28 (93.33%) demonstrated great improvement in their sinuses with minimum crusting and discharge as well as good healing of the sinus cavities whereas other 2 patients demonstrated visibly worse sinus mucosal inflammation on endoscopy. On the other hand, we found extensive crusting and discharge in the sinuses of all the patients in group A. Overall statistical analysis showed a statistically significant (p<0.001) improvement in the endoscopy scores in Group B than Group A (Table II).

Table II: Nasal endoscopic scores of both groups

Endoscopic findings	Week	Group A n=30 (mean±sd)	Group B n=30 (mean±sd)	*P* Value (< 0.05)
Crusting	2nd Week	1.87 ± 0.35	0.2 ± 0.41	<0.001
	4th Week	1.93 ± 0.25	0.33 ± 0.61	<0.001
Discharge	2nd Week	1.9 ± 0.31	0.43 ± 0.5	<0.001
	4th Week	1.83 ± 0.38	0.4 ± 0.67	<0.001

Table III summarizes the overall mean score of each variable in both group A and B.

Variable	Week	Group A (mean±sd)	Group B (mean±sd)	*P* value
VAS	2nd Week	17.2 ± 1.42	3.9 ± 1.27	<0.001
	4th Week	17.53 ± 0.94	2.8 ± 1.79	<0.001
Endoscopy score	2nd Week	3.77 ± 0.63	0.63 ± 0.72	<0.001
	4th Week	3.77 ± 0.5	0.73 ± 0.94	<0.001

Discussion :

Daley[4] in 2001 measured and compared the systemic bioavailability of fluticasone propionate aqueous nasal spray and a new nasal drop formulation. The bioavailability from nasal spray was found to be 8 times higher than from the nasal drops. Our study corroborates with these studies as far as nasal spray is concerned. In 2013, Lam et al [8] did a human cadaveric study where he compared the distribution of nasal irrigation to spray within the nasal cavity. He concluded that irrigations provide a more effective method of delivering topical agents to the posterior and superior aspects of the nasal cavity than spray. This study partly corroborates with our findings. We have demonstrated that nasal irrigation yields statistically significant improvement both subjectively and objectively when combindly used with nasal spray. Nasal cavity quickly becomes encrusted following surgery. Periodic cleaning and regular nasal irrigation are required for 4 to 8 weeks until lining of nose and the sinuses has regenerated, both anatomically and physiologically. Various studies have found that nasal irrigation promote improvement of nasal symptoms via 1) improving mucociliary function[5], 2) decreasing mucosal oedema,3)decreasing inflammatory mediators[6] and 4)mechanically clearing inspissated mucus[7]

Conclusion :

We conclude that normal saline nasal spray along with nasal douching gives a better post operative outcome and early healing of sinus cavities after endoscopic sinus surgery in comparison to normal saline nasal drop only. Hence we recommend that the initial use of saline spray (Solspre) followed by douching helps in moistening the crusts first resulting in the thorough cleaning of the nasal cavity by douching.

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