Original Article

Saline Nasal Douching Versus Decongestant Nasal Drops: A Comparative Study of Relative Efficacy in Post-Septal Surgery

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ABSTRACT

Background and Objective: This study aimed to compare the relative efficacy of saline nasal douches versus topical nasal decongestant in post-operative septal surgery and to assess the feasibility and likely utility in post-operative septal surgery.

Material and Methods: The study was a hospital-based prospective double-blind randomized controlled study. Over a period of 18 months, 120 patients following septal surgery were assigned to one of two groups-Group I: Saline nasal douching and Group II: Decongestant nasal drops (xylometazoline 0.1 %). The outcome measures recorded on the 5th and 10th postoperative days are nasal congestion, anosmia, facial pain, itching, crusts, edema, scarring and nasal discharge. On the 14th postoperative day, the patients underwent diagnostic nasal endoscopic examination by the operating surgeon and the findings were recorded on the proforma.

Results: On the 5th postoperative day, group I patients were found to be symptomatically better than group II and this trend continued upto the 10th postoperative day, with group I patients reporting better symptomatic outcomes. Examination of the nasal cavities showed statistically significant differences between the two groups in terms of crusts, edema and scarring.

Conclusion: Saline nasal douching appears to provide better alleviation of post-septal surgery symptoms (anosmia, facial pain and itching) than nasal decongestants as experienced by the patient in terms of VAS scores. There was no difference in alleviating nasal decongestion between the 2 groups.

Keywords:

Saline douching, decongestant drops, post-septal surgery, VAS score

INTRODUCTION

Septal surgery is a relatively common operation performed in otorhinolaryngologic practice and may involve either septoplasty, a more conservative procedure, or submucosal resection. The commonest indication for these procedures is a symptomatic deviated nasal septum, the most common symptom being nasal obstruction. Septal surgery is usually performed after the age of 17 so as not to interfere with the growth of the nasal skeleton. However, if a child has severe septal deviation causing marked nasal obstruction, conservative septal surgery in the form of septoplasty may be performed to provide a good airway.[1]

Patients who undergo these procedures invariably develop mucosal swelling, crusting and nasal discharge in the post-operative period. These problems need to be addressed and corrected early during the post-operative period, so as to avoid the genesis of other post-operative complications which occur as a direct result of these changes. This is done either by using saline nasal douches or topical nasal decongestant drops.[2]

Saline nasal douche is a simple, inexpensive longstanding mode of therapy for sinonasal disease. By its properties of moisturization, humidification and reduction of edema, saline nasal douches have been found to be rather efficacious in the treatment of post-septal surgical problems. Nasal saline douches have been recommended in the immediate post-operative period in post-septal surgery patients to clear clots and crusts. Flushing the nasal cavity

with saline solution promotes mucociliary clearance by moisturizing the nasal cavity and by removing encrusted material. Evidence shows that pulsating saline lavage can remove bacteria also.[3] Treatment guidelines in both the United States and Canada advocate the use of nasal irrigation. Multicenter clinical trials have begun to demonstrate its efficacy for treating several diseases, including rhinosinusitis and allergic rhinitis, and for post-operative care.[4,5]

Decongestant nasal drops such as 0.1 % xylometazoline hydrochloride are potent sympathomimetic drugs which on topical application produce vasoconstriction of mucosal vessels which in turn reduces the edema of the nasal mucosa, an action which is mediated via alpha-1 receptors. The imidazoline compounds (naphazoline, xylometazoline, oxymetazoline) are relatively selective alpha-2 receptor agonists and have been found to have a longer duration of action than other topical agents. These drugs can be habit forming and should be used for short periods as prescribed.[6,7] The present study aimed to compare the relative efficacy of saline nasal douches versus topical nasal decongestant drops in post-operative septal surgery and to assess the feasibility and likely utility in post-operative septal surgery.

MATERIAL AND METHODS

The study was a hospital-based prospective randomized controlled study which aimed to compare the relative efficacy of saline nasal douches versus topical nasal decongestant douches in post-operative septal surgery and to assess the feasibility and likely utility in post-operative septal surgery. The Institutional Human Ethics Committee (IHEC) approval was obtained prior to commencing the study. The study population included 120 patients who were posted for septal surgery over a period of 18 months. The patients were informed about the purpose and the procedure of the study and informed consent was obtained for their participation in the study. The patients were assigned to one of two groups by a table of computer generated random numbers: Group I: Saline nasal douching and Group II: Decongestant nasal drops (xylometazoline 0.1 %).

The study was done in patients undergoing elective nasal septal surgery. The exclusion criteria were patients below the age of 18 years, patients with relative contraindications for nasal decongestant drops such as hypertension and patients with general contraindications to surgery or anaesthesia.

Following septal surgery, the patients received either saline nasal douching or decongestant nasal drops douching according to the group to which the patient had been assigned. The outcome measures that were specifically looked for and recorded by the operating surgeon on the 5th and 10th postoperative days were crusts, edema, scarring and nasal discharge. The findings were recorded on a simple questionnaire by the primary investigator. Other study parameters (outcome measures) in terms of the patient's symptoms were specifically recorded on the questionnaire by the primary investigator using the Visual Analog Scale (VAS) scoring system. It included nasal congestion, anosmia, facial pain and itching. On the 14th postoperative day, the patients underwent diagnostic nasal endoscopic examination by the operating surgeon and the findings were recorded on the questionnaire.

The nasal endoscopes used for diagnostic nasal endoscopic examination were 4mm Hopkins rod endoscopes with 0º and 30º angulation. Patients with VAS scores of 3 or less were defined as having mild symptoms. Those with scores of 7 or more were considered to have severe symptoms. Those with scores from 4 – 6 were considered to have moderate symptoms.

Compilation of the data and statistical analysis were done with the help of SPSS software version 20.0. Statistical assessment of distribution of VAS scores and the presence/absence of various post-operative signs have been done by percentage analysis, while the comparison of VAS scores distribution of postoperative signs for saline nasal douching and decongestant nasal drops were done by Chi-square test and $p < 0.05$ was considered significant.

RESULTS

The study population consisted of 36 (60 %) males and 24 (40 %) females in Group I and 26 (43.3 %) males and 34 (56.7 %) females in Group II. In total, the study population consisted of 62 (51.7 %) males and 58 (48.3 %) females.

Most patients were in the 20 – 29 years age group, with 30 (50 %) from Group I and 36 (60 %) from Group II. Twenty six patients in Group I and 18

Figure 1 : Comparison of mean VAS scores for anosmia

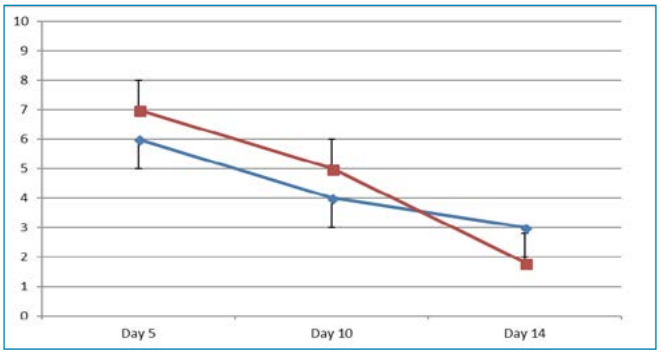

Figure 2 : Comparison of mean VAS scores for facial pain

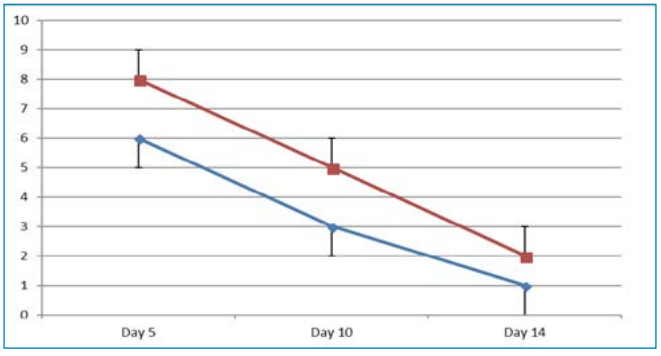

Figure 3 : Comparison of mean VAS scores for itching

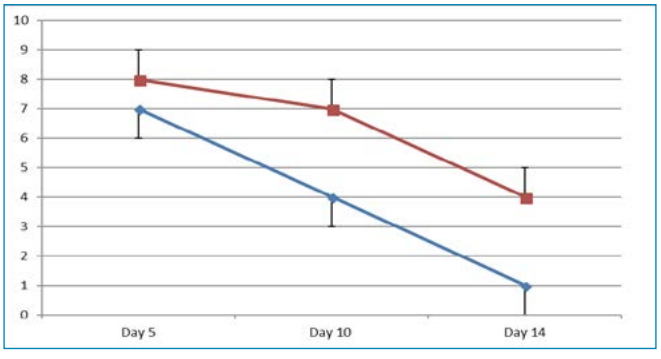

Figure 4 : Comparison of mean VAS scores for nasal congestion

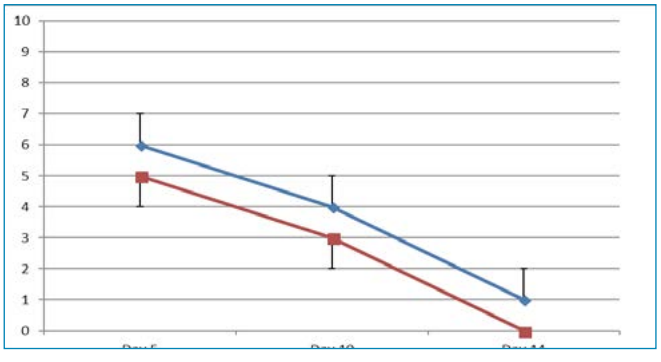

Table 1: Comparison of endoscopic findings between the two groups (mean± SD)

Findings	Number of patients		p value
	Group I	Group II	
Crusts	30±10	48±3.056	<0.001
Edema	46±2.31	40±15.53	0.004
Scarring	36±11.02	50±3.056	<0.001
Nasal discharge	42±14.19	42±12.17	>0.99

patients in Group II were included in the 30 – 39 years age group. Four patients in Group I and 6 patients in Group II were included in the 40 – 49 years age group.

Postoperatively, all patients were evaluated by the primary surgeon on Day 5. Group I patients consistently showed lower VAS scores in terms of symptoms of anosmia (Figure 1), facial pain (Figure 2), and itching (Figure 3) as compared to Group II patients, except for nasal congestion (Figure 4), which was found to have better alleviation in Group II. Symptom VAS scores for Group I patients were generally in the moderate intensity range, while scores were generally in the severe intensity range for Group II patients, except for nasal congestion.

Symptom VAS scores for both groups on Day 10 showed a generalized decrease in scores indicating alleviation of symptoms, though it may be noted that the scores were in the mild to moderate intensity range for the saline douching group by Day 10, whereas, the scores for the decongestant group were concentrated in the moderate intensity of symptoms range, except for nasal congestion.

Table 1 shows the distribution of examination findings post-operatively as described by the surgeon. There was significant difference between the two groups in term of crusts, edema, and scarring (p<0.001). But no significant difference was found for nasal discharge between the two groups.

DISCUSSION

The major finding of our study was that saline nasal douching appears to provide better alleviation of post-septal surgery symptoms, except nasal congestion, as compared to nasal decongestants. Our findings are different from an earlier pilot study which concluded that both nasal saline douching and decongestant nasal drops improved nasal symptoms and that both were well tolerated and complied by patients in the postoperative period. A previous study reported that nasal decongestant drops relieved nasal congestion quicker and better when compared to the saline douche but we found them to be comparable.[1]

A prospective study by Grobler et al assessed the pre- and postoperative sinus penetration by nasal irrigation, with the aim to determine a critical ostial size at which douching solution reliably enters the sinus cavities. The study determined that postoperative sinuses have greater penetration of irrigant secondary to surgical ostial enlargement whereas obstructed sinuses have less chance of successful irrigant penetration. The study concluded that intranasal irrigation is effective at penetrating non-obstructed sinuses with a minimal ostial dimension of 3.95 mm.[8] Another study compared the buffered and non-buffered nasal saline irrigations for the treatment of allergic rhinitis. It was reported that the differences in pH of isotonic saline irrigations affect the relief of some nasal symptoms but do not affect the mucociliary function or nasal patency. Buffered isotonic saline with mild alkalinity (pH 7.2 – 7.4) was the most preferred.[9] The findings of our study appear to concur with these results in terms of outcomes and the effectiveness of isotonic saline nasal douching.

Another prospective randomized study assessing the efficacy of different medications (0.5% ephedrine hydrochloride nasal drops and pseudoephedrine tablets) for relief of postoperative nasal obstruction concluded that combination therapy was more effective than either agent when given alone, especially in terms of postoperative sensation of nasal patency. Oral or topical therapies given singly, were equally effective and were better at relieving obstruction for the patient than no treatment.[2] But, it must also be borne in mind that nasal decongestants can be habit forming and must be used only as prescribed, or may lead to long-term complications such as rhinitis medicamentosa.

A study by Wei et al found that once-daily intranasal irrigation for 6 weeks is safe and equally effective in the treatment of pediatric chronic rhinosinusitis using saline or saline plus gentamicin, and quality of life was significantly improved after 3 weeks of irrigation in both groups. They suggested that the high tolerance, compliance and effectiveness of irrigation supported its use as a first-line treatment for pediatric chronic rhinosinusitis before considering surgical intervention.[10] Hence, saline nasal douching appears to be an appropriate and efficacious treatment modality in pediatric patients also. Saline nasal douching is an easy inexpensive form of maintaining nasal hygiene with almost no associated complications and may help to prevent formation of synechiae.

An interesting study compared intranasal hypertonic Dead Sea saline spray and intranasal aqueous triamcinolone spray in seasonal allergic rhinitis based on a 7 day regimen. Although the study showed that triamcinolone spray was the more effective of the two treatments, the authors also suggested that intranasal hypertonic Dead Sea saline solution is superior to plain saline solution in the treatment of seasonal allergic rhinitis, possibly due to the hypertonicity of the Dead Sea solution which may have a positive effect on the physiology of the nasal mucosa by improving the mucociliary clearance.[11] This is certainly an fascinating concept which needs further larger trials to establish the effectiveness of hypertonic saline.

The efficacy of mechanical nasal lavages with pressurized sea water versus nasal irrigations with antiseptic/mucolytic saline for the management of post-ethmoidectomy crust formation was investigated in another study. Nasal lavages with saline were found to be very useful in post-ethmoidectomy care and the results of the study suggested that added antiseptics and/or mucolytics could improve their efficacy.[12] This needs to be studied more extensively in multi-center randomized controlled trials to truly understand the benefit of adding these drugs to saline irrigation.

CONCLUSION

Saline nasal douching appears to provide better alleviation of post-septal surgery symptoms as experienced by the patient in terms of VAS scores. Nasal decongestants have better post-operative results in terms of nasal congestion. Saline nasal douching has better results in terms of prevention of significant

crust formation, edema and scarring. Hence, this study shows that saline nasal douching is a better alternative to decongestant nasal drops in alleviating many of the symptoms of post-septal surgery patients. However we suggest that judicious use of nasal decongestant drops along with saline nasal douching will definitely give optimal results.

CONFLICTS OF INTEREST

None.

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Blood Tests Developed That Identify Women at Risk of Preterm Birth

Noninvasive blood tests that provide information about fetal development and gestational age could potentially improve prenatal care. Ultrasound, the current gold standard, is not always affordable in low-resource settings and does not predict spontaneous preterm birth, a leading cause of infant death. In a pilot study of 31 healthy pregnant women, we found that measurement of nine cell-free RNA (cfRNA) transcripts in maternal blood predicted gestational age with comparable accuracy to ultrasound but at substantially lower cost. In a related study of 38 women (25 full-term and 13 preterm deliveries), all at elevated risk of delivering preterm, we identified seven cfRNA transcripts that accurately classified women who delivered preterm up to 2 months in advance of labor. These tests hold promise for prenatal care in both the developed and developing worlds, although they require validation in larger, blinded clinical trials.

Source: *Ngo TTM et al . Science 2018: 360; 1133-1136*