

Steroid Nasal Douching Versus Alkaline Nasal Douching And Topical Steroid Nasal Spray : A Comparative Study Of Relative Efficacy In Post-Functional Endoscopic Sinus Surgery In Patients Of Chronic Rhinosinuitis.

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Abstract:

Background: Chronic rhinosinuitis is a common disease characterised by the inflammation of the nasal cavity and paranasal sinuses, with or without nasal polyps. Even after undergoing FESS inflammatory processes continue to play a significant role in chronic rhinosinuitis patients and hence the use of topical medical therapy plays a very important role.

Materials and Methods: 60 Post-FESS patients who were operated for (CRS) were included in this study and were divided into 2 equal groups of 30. Patients in Group A were started on alkaline nasal douching after nasal pack removal. IN Group B, we added budesonide to isotonic saline nasal irrigation to the regimen of patients that were operated. 2 respules of budesonide was mixed in 1000 ml normal saline and the solution was used for douching—in the morning and the evening. Budesonide douching continued for 6 weeks postoperatively. The outcome measure was a change in the Lund–Kennedy endoscopy (LK) score at the end of 2 weeks, 4 weeks and 6 weeks. A single physician measured the scores to minimize bias.

Results

The Lund Kennedy Endoscopy score improved significantly post operatively, preoperatively being an average of 6.7 and post operatively being an average of 1.3 in Group B and 2.1 in Group A at the end of 6 weeks post operatively.

The endoscopy score improved significantly in Group B as compared to Group A (1.3 in Group B as compared to 2.1 in Group A). Our study showed that budesonide nasal irrigation in post FESS patients yielded better results as compared to alkaline nasal douching as budesonide nasal douching led to lesser mucosal edema, scarring, postoperative secretions and crusting as indicated by lower value of Lund Kennedy Endoscopy score and DNE findings at 2 weeks, 4 weeks and 6 weeks respectively. Nasal irrigation with budesonide during post-sinus surgery period is essential, especially for long-term treatment of recurrent CRS, to permit exposure of the drug to the mucosa. Out of 60 patients operated, 54 regularly reported for follow up DNE and only their results were taken into consideration.

Key Word: Chronic rhinosinuitis; budesonide; FESS; nasal douching.

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I. Introduction

Chronic rhino sinusitis (CRS) is a common disease characterized by the inflammation of the nasal cavity and paranasal sinuses, with or without nasal polyps [1]. It represents a chronic inflammatory condition of the mucosa of the nose and sinuses that ultimately lead to the outgrowth of abnormal masses from the mucosa of the nasal cavity and paranasal sinuses. The characteristic features include nasal obstruction, anosmia or hyposmia and impaired quality of life. Many times it does not respond to medical therapies causing significant morbidity impacting the quality of life [2]. Functional endoscopic sinus surgery (FESS) is indicated for the treatment of chronic rhinosinuitis that is resistant to medical treatment [1,3,4]. Even after undergoing FESS inflammatory processes play a significant role in chronic rhinosinuitis patients and hence the use of topical medical therapy plays a very important role [5]. Nasal irrigation is a powerful and significant method for the management of chronic rhinosinuitis after FESS [6]. Patients who have had such operations invariably will develop mucosal swelling and crusting in the postoperative period. These symptoms can last from few days to several weeks following the

operation. To counter these problems patients are advised various forms of treatments. These could be in the form of nasal alkaline douches, steroid nasal douching or both. Nasal alkaline douches have been a longstanding treatment for sin nasal disease. It has been practiced in India for centuries. Nasal irrigation with saline seems to reduce nasal and rhino sinusal dryness, facilitating the clearing of thick mucus and crusts in patient’s affected by rhino sinusitis. In addition to these properties, because of their effects of moisturization, humidification and reduction of swelling, they have been tried after surgery for rhino sinusitis. Nasal douches have been recommended in the immediate postoperative period to clear the blood clots and crusts.

	0	1	2
Polyp	Absent	Within Middle Meatus	Extending into the nasal cavity
Mucosal Edema	Absent	Mild/Moderate	Polypoid degeneration
Secretions	Absent	Hyaline	Thick/mucopurulent
Scarring	Absent	Mild	Severe
Crusting	Absent	Mild	Severe

II. Material And Methods

Our aim is evaluating the effectiveness of the addition of budesonide to saline nasal irrigation as a tool for controlling local inflammation in post-FESS patients of chronic rhinosinusitis as compared to alkaline nasal irrigation and topical steroid nasal spray. We use the objective outcome measure, i.e. Lund–Kennedy Endoscope score for the assessment.

Study Type

This study carried out at the Department of Otolaryngology and head and neck surgery, Maharaja Agrasen Medical College, Agroha and it was a prospective comparative study. The study was conducted from November 2022 to April 2023.

Inclusion Criteria

Patients with chronic rhino sinusitis undergoing FESS.

Exclusion Criteria

Patients with co-morbid conditions like diabetes, hypertension, history of pituitary disease, morbidly obese, on oral contraception, pregnancy, chronic liver disease and chronic renal disease were excluded.

Methodology

60 Post-FESS patients who were operated for (CRS) were included in this study and were divided into 2 equal groups of 30 .Patients in Group A were started on alkaline nasal douching after nasal pack removal. IN Group B, we added budesonide to isotonic saline nasal irrigation to the regimen of patients that were operated. 2 respules of budesonide was mixed in 1000 ml normal saline and the solution was used for douching—in the morning and the evening. Budesonide douching continued for 6 weeks postoperatively. The outcome measure was a change in the Lund–Kennedy endoscopy (LK) score at the end of 2 weeks, 4 weeks and 6 weeks. A single physician measured the scores to minimize bias.

Endoscopic Lund–Kennedy Score

The Lund–Kennedy endoscopic score is an objective endoscopic assessment. It has five components, each with a score of 0–2 and the total score is 10. The scoring was done preoperatively and post operatively with budesonide nasal douching and with alkaline nasal douching without budesonide.

Table 1: Lund–Kennedy score pre operatively and post operatively at the end of 2 weeks, 4 weeks and 6 weeks (Average score was taken into consideration)

LUND-KENNEDY SCORE		2 weeks	4 weeks	6 weeks
Pre operatively	6.7			
Post operatively with budesonide nasal douching and steroid nasal spray(Group B)		3.1	2.6	1.3
Post operatively with alkaline nasal douching and steroid nasal spray (Group A)		4.2	3.5	2.1

III. Result

The Lund Kennedy Endoscopy score improved significantly post operatively, preoperatively being an average of 6.7 and post operatively being an average of 1.3 in Group B and 2.1 in Group A at the end of 6 weeks post operatively.

The endoscopy score improved significantly in Group B as compared to Group A(1.3 in Group B as compared to 2.1 in Group A).

Our study showed that budesonide nasal irrigation in post FESS patients yielded better results as compared to alkaline nasal douching as budesonide nasal douching led to lesser mucosal edema, scarring, postoperative secretions and crusting as indicated by lower value of Lund Kennedy Endoscopy score and DNE findings at 2 weeks, 4 weeks and 6 weeks respectively. Nasal irrigation with budesonide during post-sinus surgery period is essential, especially for long-term treatment of recurrent CRS, to permit exposure of the drug to the mucosa. Out of 60 patients operated, 54 regularly reported for follow up DNE and only their results were taken into consideration.

IV. Discussion

Budesonide is a potent topical corticosteroid with an approximately 1000-fold higher topical anti-inflammatory potency than cortisol. Budesonide binds the glucocorticoid receptor and exerts an anti-inflammatory effect through several mechanisms including altering the release of arachidonic acid metabolites, decreasing the vascular permeability, inhibiting the accumulation of leukocytes in the affected tissue, inhibiting neuropeptide mediated responses, and altering the secretion of glycoproteins from sub-mucosal glands.

Our study shows that constant nasal irrigation with budesonide solution thrice a day as compared to alkaline nasal douching can prevent worsening of the disease and so improve quality of life, and even minimize systemic steroid usage. The safety and usefulness of this method of delivering topical steroids have been studied in CRS and been accepted by many physicians [7, 8]. Various authors have used budesonide solutions of different strengths for better results in managing chronic rhinosinusitis. Seiberling et al. used 0.25 mg budesonide per day, Welch et al., used 2 mg/day while Bhalla used 1 mg/day for nasal douching by mixing respules of budesonide in normal saline [9]. All authors have achieved varying degrees of success using topical steroid douching in controlling nasal mucosal inflammation. A recent meta-analysis showed that topical steroid is effective against sino-nasal symptoms in patients with CRS and prevents polyp recurrence in CRS with nasal polyps after FESS [10]. After FESS, delivery of the drug to sinus mucosa is difficult because the open target area is both large and deeper in the paranasal sinus cavity. A reduction in the post-operative Endoscopic Lund Kennedy Score in Group B as compared to Group A validated our point that Budesonide Nasal douching provides better and earlier relief from nasal crusting, edema as compared to plain alkaline nasal douching.

LIMITATIONS

There are some limitations to this study. First, the duration of the study was only 6 weeks and, given the long period of symptoms and chronic nature of the disease for many participants, this may have been an insufficient time to compare the full effect of nasal douching in post operative patients. Compliance was assessed by patient self-report, as we did not have formal compliance assessments. Thus, we cannot be sure that participants completed the full 6 weeks of nasal douching post operatively. Further, few patients did not report for assessment of direct nasal endoscopy after 2, 4 and 6 weeks respectively post the beginning of nasal douching and hence their findings were excluded during analysis of results.

V. Conclusion

In conclusion, this study shows that the use of budesonide in large-volume, low-pressure saline nasal douching results in clinically meaningful benefits postoperative patients of CRS and it is an effective method for improving quality of life, preventing recurrence of the disease and reducing the use of the oral steroid. Further study on the appropriate dose, frequency of irrigation, and duration of treatment are needed, along with an assessment of the safety of its long-term use, to encourage extensive use of nasal irrigation with budesonide.

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