

# The Potency of Budesonide Nasal Douching After Endoscopic Sinus Surgery of Polyps in Chronic Allergic Rhinosinusitis in a Tertiary Care Center

Kadiri Sravani<sup>1</sup>, Bhavya Kanakarajula<sup>2</sup>, Gopi Koneti<sup>3</sup>

<sup>1</sup>Department of Otorhinolaryngology, Guntur Medical College and General Hospital, Guntur, Andhra Pradesh, India

<sup>2</sup>Department of Otorhinolaryngology, Santhiram Medical College and General Hospital, Nandyal, Andhra Pradesh, India

<sup>3</sup>Occupational Health Center, Hpclrefinery, Gajuwaka, Vishakapatnam, Andhra Pradesh, india

<sup>1</sup>Corresponding Author: [ksravanimbbs93\[at\]gmail.com](mailto:ksravanimbbs93[at]gmail.com),  
[ksravaninri\[at\]gmail.com](mailto:ksravaninri[at]gmail.com)

**Abstract:** Among the most common causes of chronic respiratory diseases is nasal polyposis. The goal of treating severe allergy rhinosinusitis of polyps is to limit the disease progression as well as the local immune function of the mucous membrane. This is accomplished through the removal of polypoid mucosa from all sinuses via workable functional endoscopic sinus surgery (FESS), followed by steroid suppression of the local immune response. Budesonide nasal douching was recently introduced for the postoperative management of individuals with allergic rhinosinusitis. Many physicians are beginning to accept this procedure's therapeutic effectiveness and safety. The potency of budesonide nose irrigation in postoperative treatment of chronic allergens rhinosinusitis with polyps was investigated. A total of 30 patients with postoperative disease allergic rhinosinusitis of polyps were randomly assigned to one of two groups. According to institute protocol, both groups received regular post - FESS medication. In addition to routine care, one set of patients gained budesonide nasal douching. Endoscopic evaluations were performed on both groups at 1, 2, 6, as well as 2 ½ months following surgery. The change in pre - , as well as the postoperative quality of life, patient complaints, and the requirement for revision surgery, were all evaluated. The Sino - Nasal Actual result Test - 22 (subjective analysis) and endoscopic Lund - Kennedy grading (objective measurement) were used to evaluate the two postoperative groups. The preoperative Sino - Nasal Result Test 22 score was an average of 52.2. It was reduced to an estimated value of 29.4 in patients who followed the standard postoperative protocol and to 15.8 in patients who did not. Budesonide was added to one's douching solutions. The average endoscopy tally for patients who received budesonide was 2.2, especially in comparison to 2.9 for those who didn't acquire budesonide nose douching. Budesonide nasal douching may be a safe and effective tool for managing the local inflammatory reaction in allergic rhinosinusitis. It enhances life quality and has an appropriate response on the nasal mucosa, resulting in less mucosal edema and a decreased risk of polypoidal changes postoperatively.

**Keywords:** Chronic allergic rhino - sinusitis, FESS, polyps, SNOT - 22, Steroid douching

## 1. Introduction

Chronic allergic rhinosinusitis is a chronic inflammatory condition of the nose and sinus mucosa that eventually results in the formation of abnormal masses from the nasal cavity and paranasal sinus mucosa. Nasal obstruction, anosmia or hyposmia, and reduced quality of life are common symptoms.

Controlling the disease process effectively relieves symptoms, improves the quality of life, and reduces disease recurrence. Oral corticosteroids, topical steroid nasal spray, and isotonic saline nasal douching are used to treat the condition. Patients who do not respond to medical treatment are frequently subjected to endoscopic sinus surgery.

Whereas systemic antibiotics seem to be effective in treating CRS exacerbations caused by infection, there is insufficient evidence to support their use in long - term care. Nonetheless, antibiotics are commonly prescribed for CRS, and public polls indicate a considerable degree of overuse, which is linked to the enlargement of serious infections.

Adverse effects and organisms that are resistant [1]. Topical nasal steroid sprays, on the other hand, are both safe and effective.

Although systemic steroid therapy produces better results, it is associated with risks such as elevated blood sugar levels, high blood pressure, peptic ulcers, and other complications. Intranasal steroids, in contrast, hand, act locally and are largely free of these systemic side effects. Intranasal drug therapy has been shown to reduce polyp size and recurrence rate postoperatively.

However, steroid penetration beyond the nasal passage and into paranasal sinuses is limited, implying that a good delivery method is required to improve intra - nasal congestion corticosteroid deposition [3].

Douching is a new method of delivering topical steroids. Budesonide is one of the medications used for topical instillation. Budesonide has been used in irrigation at regular doses and tends to range from 250 micro gm - 2 milligrams.

### Aim and Objectives

Our goal is to assess the efficacy of adding budesonide to huge quantities, low - pressure saline nasal irrigation as just

Volume 12 Issue 1, January 2023

[www.ijsr.net](http://www.ijsr.net)

Licensed Under Creative Commons Attribution CC BY

a tool for controlling inflammatory reactions in post - FESS patients with allergic rhinosinusitis and polyps.

For the assessment, we use both a subjective outcome measure, the SinoNasal Outcome Test - 22, and an objective outcome measure, the Lund - Kennedy endoscope score. (Table - 1)

## 2. Materials and Methods

### Study Type

This prospective study was conducted at the Dept of Otolaryngology and Head and Neck Surgery at Guntur General Hospital.

### Inclusion Criteria

Patients suffering from allergic rhinosinusitis to nasal polyps, regardless of age or gender.

### Exclusion Criteria

Diabetes, hypertension, a history of pituitary illness, morbid obesity, oral contraceptive device, pregnancy, chronic liver illness, and chronic renal illness were all ruled out.

### Methodology

This study included thirty post - FESS patients with nasal polyposis who were divided into cases and controls. At our hospital, the patient is started on oral methylprednisolone 8 - 16 mg/day for 1 week of surgery, which is then continued until 1 week post - operatively and then progressively tapered. After the nasal pack was removed, patients were given Fluticasone nasal spray & isotonic saline nasal douching. Oral antibiotics are given for a week after surgery.

Budesonide nasal irrigation with isotonic saline was added to the routine of 15 surgical patients. 2 milligrams of budesonide has been blended in 250 mL of normal saline, as well as the solution was utilized for douching in the morning and evening. Budesonide douching was continued for 2 ½ months postoperatively.

The primary outcome was a transition in the Lund - Kennedy endoscopy (LK) score and a start changing in the life quality predicated just on the 22 - item Sino - Nasal Results Test (SNOT - 22). To minimize bias, the scores were measured by a single physician. A preliminary study was conducted before nose irrigation to budesonide, and it was followed up on 1, 2, 6, & 10 weeks post - operatively inside the outpatient department. As a result, both objective and subjective criteria were employed to compare the outcomes of budesonide nasal douching. The statistical analyses were performed using the student's t - test and the Chi - square test, as appropriate.

### Lund - Kennedy Score in endoscopy

An impartial endoscopic evaluation is provided by the Lund - Kennedy endoscopic score. Each of its five parts receives a score between 0 and 2, for a total of 10 points. (Table - 1)

## 3. Results

With a male - to - female ratio of 1: 1.5, the patient's average age was 30.5 years. The pretreatment SNOT - 22 rating was

valued at 52.2 on average. It was decreased to an average of 29.4 in the people/patients who followed the recommended postoperative protocol and to 15.8 in individuals whose douching solutions contained budesonide. It was determined that this difference had a statistical significance p - value of 0.001. (Table 1). Additionally, the endoscopy score increased from 7.4 before irrigation to 2.2 during ten weeks (Table 2). It was determined that this difference had a statistical significance p - value of 0.001.

Our research demonstrated that budesonide nasal irrigation helped reduce the need for repeated postoperative oral steroid administration in individuals who had undergone FESS and had chronic allergic rhinosinusitis with polyps. For the long - term care of recurrent CRS, nasal cleaning with budesonide during the post - sinus surgery phase is crucial to allow the medicine to reach the mucosa.

## 4. Discussion

A strong topical corticosteroid with a 1000 - fold greater topical anti - inflammatory effectiveness than cortisol is budesonide. Budesonide binds to the glucocorticoid receptor and inhibits the production of the Arachidonic Acid metabolites, decreases vascular permeability, prevents the buildup of leukocytes in the affected tissue, blocks neuropeptide - mediated responses, and modifies the production of glycoproteins from the submucosal glands, among other mechanisms.

Our research demonstrates that routine nasal cleaning with budesonide solutions twice daily can avoid disease deterioration, improve life quality and even reduce the need for systemic steroid use. Various doctors have approved of this way of administering topical steroids after studying their efficacy and safety in CRS [4, 5].

Various writers have utilized budesonide solutions of various strengths to manage chronic rhinosinusitis with improved results. By combining the results of the budesonide in standard/ordinary saline, Seiberling et al. utilized 0.25 mg, Welch et al. used 2 mg, and Bhalla used 1 mg daily for nasal douching [6]. All writers have used topical steroid douching to reduce nasal mucosal irritation to various degrees of success.

Topical steroids are beneficial in treating sino - nasal symptoms in CRS patients and preventing polyp reappearance in CRS patients who have nasal polyps following FESS, according to a recent meta - analysis [7]. After FESS, it is challenging to distribute the medication to the sinus mucosa due to the open target area's size and depth inside the paranasal sinus canal [8]. When compared to low - volume equipment, large - volume, low - pressure nasal douching delivers medications to the sinuses and nasal cavities more effectively [9, 10]. Furthermore, the negative impact of the head or the nasal passage anatomy on the distribution can be mitigated by this large - volume, low - pressure devices.

## 5. Limitations

The study does have certain restrictions. First off, the trial only lasted for 2 ½ months, which may not have been enough time to fully assess the impact of the budesonide medication considering the extended duration of suffering and prolonged type of illness for many individuals. Since we lacked formal compliance assessments, compliance was evaluated by patient self - report. We cannot be certain that individuals received the entire 2 ½ months of treatment, for this reason.

## 6. Conclusion

The utilization of budesonide in huge volumes, low - level - pressure saline nasal lavage for patients with CRS with polyps results in clinically significant benefits among other postoperative treatments, and it is a successful way to enhance the quality of life, prevent the recurrence of the disease, and use oral steroids less frequently. To promote the widespread use of nasal treatment with budesonide, more research is required on the ideal dosage, regularity of irrigation, and length of therapy, as well as an evaluation of the safety of its long - term usage.

## References

- [1] Shapiro DJ, Hicks LA, Pavia AT, Hersh AL (2014) Antibiotic prescribing for adults in ambulatory care in the USA, 2007–09. *J Antimicrob Chemother* 69 (1): 234–240
- [2] Snidvongs K, Pratt E, Chin D, Sacks R, Earls P, Harvey RJ (2012) Corticosteroid [8] nasal irrigations after endoscopic sinus surgery in the management of chronic rhinosinusitis. *Int Forum Allergy Rhinol* 2 (5): 415–421
- [3] Sachanandani NS, Piccirillo JF, Kramper MA, Thawley SE, Vlahiotis A (2009) The effect of [11] nasally administered budesonide respules on adrenal cortex function in patients with chronic rhinosinusitis. *Arch Otolaryngol Head Neck Surg* 135 (3): 303–307
- [4] Welch KC, Thaler ER, Doghramji LL, Palmer JN, Chiu AG (2010) The effects of serum [10] and urinary cortisol levels of topical intranasal irrigations with

- budesonide added to saline in patients with recurrent polyposis after endoscopic sinus surgery. *Am J Rhinol Allergy* 24 (1): 26–28
- [5] Rotenberg BW, Zhang I, Arra I, Payton KB (2011) Postoperative care for Samter's triad patients undergoing endoscopic sinus surgery: a double - blinded, randomized controlled trial. *Laryngoscope* 121 (12): 2702–2705
  - [6] Kalish LH, Arendts G, Sacks R, Craig JC (2009) Topical steroids in chronic rhinosinusitis without polyps: a systematic review and meta - analysis. *Otolaryngol Head Neck Surg* 141 (6): 674–683
  - [7] Seiberling KA, Chang DF, Nyirady J, Park F, Church CA (2013) Effect of intranasal [14] budesonide irrigations on intraocular pressure. *Int Forum Allergy Rhinol* 3 (9): 704–707
  - [8] Harvey RJ, Goddard JC, Wise SK, Schlosser RJ (2008) Effects of endoscopic sinus surgery and delivery device on cadaver sinus irrigation. *Otolaryngol Head Neck Surg* 139 (1): 137–142
  - [9] Thomas WW III, Harvey RJ, Rudmik L, Hwang PH, Schlosser RJ (2013) Distribution of topical agents to the paranasal sinuses: an evidence - based review with recommendations. *Artforum Allergy Rhinol* 3 (9): 691–703
  - [10] Kalish L, Snidvongs K, Sivasubramaniam R, Cope D, Harvey RJ (2012) Topical steroids for nasal polyps. *Cochrane Database Syst Rev* 12: CD006549

## Author Name and Affiliation (In sequence)

**Dr. Kadiri Sravani**, Department of Otorhinolaryngology, Guntur Medical College and General Hospital, Guntur, Andhra Pradesh, India. Ph. no – 8179178930. Address - d. no - 14 - 36 - 2/1, KL raonagar, opp. Sai Baba Temple, BC road, gajuwaka, Visakhapatnam – 530026. **Corresponding Author:** Ksravanimbbs93[at]gmail.com, ksravaniniri[at]gmail.com

**Bhavyakanakarajula**, Department of Otorhinolaryngology, Santhiram Medical College and General Hospital, Nandyal, Andhra Pradesh, India

**Gopi Koneti**, Occupational Health Center, Hpcl refinery, Gajuwaka, Vishakhapatnam, Andhra Pradesh, india

**Table 1**

	0	1	2
Polyp	Absent	Within middle meatus	Extending into the nasal cavity
Mucosal edema	Absent	Mild/moderate	Polypoid degeneration
Secretion	Absent	Hyaline	Thick/mucopurulent
Scarring	Absent	Mild	Severe
Crusting	Absent	Mild	Severe

I.D.: \_\_\_\_\_

**SINO-NASAL OUTCOME TEST (SNOT-22)**

DATE: \_\_\_\_\_

Below you will find a list of symptoms and social/emotional consequences of your rhinosinusitis. We would like to know more about these problems and would appreciate your answering the following questions to the best of your ability. There are no right or wrong answers, and only you can provide us with this information. Please rate your problems as they have been over the past **two weeks**. Thank you for your participation. Do not hesitate to ask for assistance if necessary.

1. Considering how severe the problem is when you experience it and how often it happens, please rate each item below on how "bad" it is by circling the number that corresponds with how you feel using this scale: →	No Problem	Very Mild Problem	Mild or slight Problem	Moderate Problem	Severe Problem	Problem as bad as it can be	5 Most Important Items
1. Need to blow nose	0	1	2	3	4	5	<input type="radio"/>
2. Nasal Blockage	0	1	2	3	4	5	<input type="radio"/>
3. Sneezing	0	1	2	3	4	5	<input type="radio"/>
4. Runny nose	0	1	2	3	4	5	<input type="radio"/>
5. Cough	0	1	2	3	4	5	<input type="radio"/>
6. Post-nasal discharge	0	1	2	3	4	5	<input type="radio"/>
7. Thick nasal discharge	0	1	2	3	4	5	<input type="radio"/>
8. Ear fullness	0	1	2	3	4	5	<input type="radio"/>
9. Dizziness	0	1	2	3	4	5	<input type="radio"/>
10. Ear pain	0	1	2	3	4	5	<input type="radio"/>
11. Facial pain/pressure	0	1	2	3	4	5	<input type="radio"/>
12. Decreased Sense of Smell/Taste	0	1	2	3	4	5	<input type="radio"/>
13. Difficulty falling asleep	0	1	2	3	4	5	<input type="radio"/>
14. Wake up at night	0	1	2	3	4	5	<input type="radio"/>
15. Lack of a good night's sleep	0	1	2	3	4	5	<input type="radio"/>
16. Wake up tired	0	1	2	3	4	5	<input type="radio"/>
17. Fatigue	0	1	2	3	4	5	<input type="radio"/>
18. Reduced productivity	0	1	2	3	4	5	<input type="radio"/>
19. Reduced concentration	0	1	2	3	4	5	<input type="radio"/>
20. Frustrated/restless/irritable	0	1	2	3	4	5	<input type="radio"/>
21. Sad	0	1	2	3	4	5	<input type="radio"/>
22. Embarrassed	0	1	2	3	4	5	<input type="radio"/>

2. Please mark the most important items affecting your health (maximum of 5 items) \_\_\_\_\_ ↑

SNOT-20 Copyright © 1996 by Jay F. Piccirillo, M.D., Washington University School of Medicine, St. Louis, Missouri  
 SNOT-22 Developed from modification of SNOT-20 by National Comparative Audit of Surgery for Nasal Polyposis and Rhinosinusitis  
 Royal College of Surgeons of England.