

## Original Article

# A COMPARISON OF TOPICAL STEROIDS AND ANTIBIOTICS TO IMPROVE DRUG THERAPY FOR RECURRENT SINUSITIS

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## ABSTRACT

**Objective:** *this study is to assess the efficacy of antibiotics against topical steroids in the treatment of recurrent sinusitis, with an emphasis on symptom relief, recurrence rates, and patient satisfaction.*

**Study Design:** *a prospective study.*

**Duration and Place of Study:** *This study was conducting at Department of ENT at Hayatabad Medical Complex between Jan 2020 to Jan 2021.*

**Materials and Methods:** *This study included 175 patients between the ages of 18 and 65 who had recurrent sinusitis. Patients were randomly assigned to two groups: Group A got antibiotics, whereas Group B received topical steroid treatment. Validated rating methods were used to measure symptom intensity, recurrence rates, and patient satisfaction at baseline, 4 weeks, and 12 weeks following therapy beginning. The following information was gathered: medical history, clinical examination, endoscopic results, and radiographic examinations. To compare the results of the two treatment groups, the obtained data were analyzed using relevant statistical techniques such as t-tests and chi-squared tests.*

**Results:** *Of 175 patients, 88 got antibiotics and 87 topical steroids. The average age of antibiotic patients was  $44.2 \pm 8.1$  years, whereas topical steroid patients averaged  $43.9 \pm 7.8$  years. Both groups had identical baseline scores: antibiotics scored  $7.2 \pm 1.5$  and topical steroids scored  $7.4 \pm 1.4$ . Both treatment groups' 12-week patient satisfaction and recurrence rates were examined. 65.9% of antibiotic patients were pleased, 26.1% moderately satisfied, and 7.95% unhappy. In contrast, 85.05% of topical steroids patients were satisfied, 13.8% moderate, and 1.14% poor. These data demonstrate topical steroids may reduce chronic sinusitis patients' symptoms, satisfaction, and recurrence.*

**Conclusion:** *This comparative research shows that topical steroids relieve symptoms quicker and longer, have a reduced recurrence rate, and increase patient satisfaction. These findings suggest that topical steroids may help treat recurrent sinusitis and suggest that further study and clinical recommendations are needed to improve therapy.*

**Keywords:** *recurrent sinusitis, antibiotics, topical steroids, drug therapy, comparative study, symptom improvement, recurrence rates, patient satisfaction.*

## INTRODUCTION

Recurrent sinusitis, a medical disorder characterized by the occurrence of numerous episodes of sinus inflammation and the presence of accompanying symptoms, imposes a significant burden on both pa-

tients and the healthcare system<sup>1</sup>. Frequently, it results in a worse quality of life, frequent consultations with medical professionals, and the administration of many therapeutic interventions to mitigate symptoms and minimize the chances of recurrence. Within the scope of therapeutic methods, antibiotics and topical steroids have traditionally been used as primary interventions<sup>2,3</sup>. The primary objectives of these therapies are to alleviate symptoms, manage inflammation, and deter the occurrence of further episodes. However, the selection between these two therapy alternatives has continued to be a subject of contention, and there is a deficiency of complete comparison investigations that assess their efficacy and patient contentment<sup>4,5,6</sup>. The primary objective of this study is to fill a significant

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knowledge gap in the treatment of recurrent sinusitis. This will be achieved by a comprehensive comparative examination of antibiotics and topical steroids, which are considered as key therapeutic agents. The research includes a sample of 175 patients ranging in age from 18 to 65 years who have had recurring sinusitis. The study investigates the effectiveness of various treatment methods in terms of alleviating symptoms, reducing the chances of recurrence, and measuring patient satisfaction. It is crucial to understand the comparative effectiveness and patient preferences about these therapies in order to optimize therapeutic approaches for recurrent sinusitis and improve patient outcomes.

The justification for doing this study is rooted in the need to provide evidence-based guidance to healthcare professionals and individuals grappling with choices pertaining to the most effective course of therapy for recurrent sinusitis<sup>7</sup>. Given the increasing incidence of this condition and the growing strain on healthcare resources, it is crucial to determine the most efficacious and well-tolerated treatment interventions. The primary objective of this study is to enhance the medical community's comprehension of strategies for enhancing the treatment of recurrent sinusitis. This research effort wants to eventually enhance the safety of patients and minimize the economical consequences associated with this persistent disorder.

## METHODOLOGY

The purpose of this study was to assess the effectiveness of antibiotics compared to topical steroids in the treatment of recurrent sinusitis. The research included a sample of 175 patients, who were allocated randomly to one of two experimental groups. Subsequent evaluations were carried out at 4 and 12 weeks after the commencement of therapy. The present study was conducted in the Department of ENT at Hayatabad Medical Complex, spanning from January 2020 to January 2021.

The study design conformed to ethical standards, such as ensuring that informed permission was received from all participants. The research protocol received approval from the Institutional Review Board (IRB). The research comprised patients aged 18 to 65 years who had been diagnosed with recurrent sinusitis based on recognized clinical and radiographic criteria.

Recurrent sinusitis is operationally defined as the occurrence of two or more episodes of sinusitis within a 12-month period. This condition is distinguished by the presence of symptoms including facial discomfort, nasal congestion, purulent nasal discharge, as well as radiographic evidence indicating inflammation of the sinuses. Inclusion in the trial was extended to patients who had a medical background of allergic rhinitis, nasal polyps, or previous sinus surgery. Participants were deemed ineligible for inclusion in the research if they exhibited contraindications to antibiotics or topical steroids, had a medical history of chronic sinusitis lasting longer than 12 weeks, displayed immunodeficiency, had ongoing nasal infections, or had severe comorbidities that could potentially impede the evaluation of treatment outcomes. Furthermore, pregnant or lactating females, persons with a documented hypersensitivity to the medications being studied, and those already undergoing alternative therapies for sinusitis were considered eligible for inclusion in the research.

## Data Collection

All participants had baseline data gathered, which included their medical history, clinical examination results, endoscopic evaluations, and radiographic assessments. Validated grading methods were used to determine the severity of the symptoms. According to their group, patients were randomly allocated to either a conventional course of antibiotics or topical steroids. Follow-up evaluations were performed four and twelve weeks after the start of therapy, and data on symptom improvement, recurrence, and patient satisfaction were collected.

## Statistical Analysis

To compare the results of the antibiotic and topical steroid groups, statistical analysis was done using acceptable methodologies. Continuous data were reported as means with standard deviations and analysed using t-tests, whilst categorical variables were presented as percentages and analysed with chi-squared tests. Symptom improvement, recurrence rates, and patient satisfaction were the major goals. A p-value of 0.05 or less was judged statistically significant. The study's findings were analyzed and evaluated in order to reach significant conclusions on the relative efficacy of antibiotics vs topical steroids in the treatment of recurrent sinusitis.

## RESULTS

A total of 175 patients were separated into two groups, with 88 receiving antibiotics and 87 receiving topical steroids. Patients in the antibiotics group were  $44.2 \pm 8.1$  years old on average, whereas those in the topical steroids group were  $43.9 \pm 7.8$  years old. Both groups had somewhat more men than females. The majority of patients (81.8% in the antibiotics group and 82.8% in the topical steroids group) were nonsmokers. Comorbidities such as allergic rhinitis, nasal polyps, and prior sinus surgery were present in a modest proportion of both groups of individuals. At 4 weeks, the baseline score in both groups was comparable, with a mean score of  $7.2 \pm 1.5$  in the antibiotics group and  $7.4 \pm 1.4$  in the topical steroids group. Overall, the baseline demographics and clinical features of the two therapy groups were well balanced (Table 1).

The improvement in symptom severity levels in both groups was measured after 4 weeks. In the antibiotics group, 15.9% of patients improved by less than 25%, whereas 42.0% improved by 25-50%. In contrast, only 6.9% of patients in the topical steroids group improved by less than 25%, while 17.2% improved by 25-50%. A larger proportion of patients in the topical steroids group (41.4%) improved by 50-75%, compared to 32.9% in the antibiotics group. The topical steroids group showed the most improvement, with 34.5% of patients seeing more than 75% relief in symptoms, compared to just 9.1% in the antibiotics group. These findings show that topical steroids may be more helpful in reducing symptom intensity in chronic sinusitis patients (Table 2).

Patient satisfaction and recurrence rates in both therapy groups were assessed after 12 weeks. In the antibiotics group, 65.9% of patients were satisfied with their therapy, 26.1% were slightly satisfied, and 7.95% were dissatisfied. In contrast, a larger majority of patients (85.05%) indicated high satisfaction, with just 13.8% expressing moderate pleasure and 1.14% reporting poor satisfaction in the topical steroids group. The topical steroids group also had reduced recurrence rates, with 8.04% of patients having recurrence after 12 weeks, compared to 18.18% in the antibiotics group. These data imply that topical steroids may be more successful not only in reducing symptoms, but also in increasing patient satisfaction and lowering recurrence rates in patients with chronic sinusitis (Table-3).

**Table 1: Baseline Demographics and Clinical Characteristics**

Characteristic	Antibiotics Group(n=88)	Topical Steroids Group (n=87)
Age (years), mean $\pm$ SD	44.2 $\pm$ 8.1	43.9 $\pm$ 7.8
Gender		
Male	45	46
Female	43	41
Smokers (%)	16(18.2%)	15(17.2%)
Non-Smokers (%)	72(81.8%)	72(82.8%)
Comorbidities		
Allergic Rhinitis	21(23.9%)	20(22.9%)
Nasal Polyps	12(13.6%)	13(14.9%)
Previous Sinus Surgery	8(9.1%)	9(10.3%)
Baseline Score (4 weeks)	7.2 $\pm$ 1.5	7.4 $\pm$ 1.4

**Table 2: Improvement in Symptom Severity Scores at 4 Weeks**

Symptom Improvement (4 Weeks)	Antibiotics Group(n=88)	Topical Steroids Group(n=87)
< 25% improvement	14(15.9%)	6(6.9%)
25-50% improvement	37(42.0%)	15(17.2%)
50-75% improvement	29(32.9%)	36(41.4%)
> 75% improvement	8(9.1%)	30(34.5%)

**Table 3: Recurrence Rates at 12 Weeks**

Variables	Antibiotics Group(n=88)	Topical Steroids Group(n=88)
Patient Satisfaction (12 Weeks)		
High Satisfaction	58(65.90%)	74(85.05%)
Moderate Satisfaction	23(26.1%)	12(13.8%)
Low Satisfaction	7(7.95%)	1(1.14%)
Recurrence at 12 Weeks		
Recurrence	16(18.18%)	7(8.04%)
No Recurrence	71(81.81%)	80(91.95%)

## DISCUSSION

The findings of this study provide insights into the relative efficacy of antibiotics and topical steroids in the treatment of recurrent sinusitis. Recurrent sinusitis is a medical problem that has a significant impact on both the well-being of people and the financial resources of healthcare systems<sup>8,9</sup>. The results of our study provide significant contributions to the understanding of treatment alternatives and patient contentment, therefore assisting healthcare professionals in enhancing pharmacotherapy for this recurrent condition<sup>10</sup>. One of the principal discoveries of our

investigation is the significant improvement of symptoms found in both cohorts undergoing therapy. Both antibiotics and topical steroids demonstrated efficacy in lowering the intensity of symptoms, as shown by the initial symptom ratings and subsequent improvement<sup>11</sup>. However, the group treated with topical steroids had a faster and more significant decrease in symptoms after four weeks. This finding implies that the use of topical steroids may provide expedited alleviation to those experiencing the pain often associated with recurrent sinusitis<sup>12</sup>. The most notable outcome seen was the disparity in recurrence rates throughout the 12-week follow-up period. The group treated with antibiotics had a rather high incidence of recurrence, amounting to 18.18%. In contrast, the group treated with topical steroids revealed a much lower rate of recurrence, measuring 8.04%<sup>13</sup>. The previous findings suggest that the use of topical steroids may provide more favorable long-term results, hence decreasing the probability of recurrence of sinusitis. Patient satisfaction is a significant indicator of therapy efficiency, and the findings of this research indicate that a much greater proportion of patients in the topical steroids cohort expressed elevated levels of satisfaction (85.05%) in comparison to those in the antibiotics cohort (65.90%). This finding indicates that patients may have a preference for topical steroids because of their higher efficacy and most likely reduced rates of recurrence<sup>14</sup>. The research findings have significant clinical consequences. This statement underscores the need of promptly addressing and proactively preventing recurrent sinusitis in its treatment. It is important for clinicians to carefully evaluate the prospective advantages of using topical steroids, not alone for the purpose of alleviating symptoms, but also for diminishing the chance of recurrence and increasing patient satisfaction. The results of this study have the potential to bring about a change in clinical practice, with a preference for the use of topical steroids as a therapy approach that is more efficacious for recurrent sinusitis.

### Limitations

Several limitations should be considered in this investigation. First, the 12-week trial may not reflect treatment's long-term effects. Recurrence rates may be better understood with longer follow-ups. The research also excluded physicians' alternative treatment methods and combinations, focusing only on antibiotics and topical steroids. The research also did not examine

treatment side effects or tolerance. The outcomes may also depend on the patient group and may not apply to all recurrent sinusitis situations.

### CONCLUSION

While both antibiotics and topical steroids give symptom relief, topical steroids produce quicker and more persistent reduction in symptoms, a lower recurrence rate, and greater patient satisfaction. These findings highlight the potential benefits of topical steroids in the treatment of recurrent sinusitis and highlight the need for more research and clinical recommendations to optimize the therapeutic strategy for this difficult disease.

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### REFERENCES

1. Singh H, Bhatt A, Kumar M, Deshmukh P. Tonsillitis and Sinusitis: A Narrative Review of Pathogenesis, Diagnosis, and Management. *Cureus*. 2023 Oct 17;15(10).
2. Williamson IG, Rumsby K, Bengt S, Moore M, Smith PW, Cross M, Little P. Antibiotics and topical nasal steroid for treatment of acute maxillary sinusitis: a randomized controlled trial. *Jama*. 2007 Dec 5;298(21):2487-96.
3. Rudmik L, Hoy M, Schlosser RJ, Harvey RJ, Welch KC, Lund V, Smith TL. Topical therapies in the management of chronic rhinosinusitis: an evidence-based review with recommendations. *International forum of allergy & rhinology* 2013 Apr (Vol. 3, No. 4, pp. 281-298).
4. Zabolotnyi DI, Kneis KC, Richardson A, Rettenberger R, Heger M, Kaszkin-Bettag M, Heger PW. Efficacy of a complex homeopathic medication (Sinfrontal) in patients with acute maxillary sinusitis: a prospective, randomized, double-blind, placebo-controlled, multicenter clinical trial. *Explore*. 2007 Mar 1;3(2):98-109.
5. Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, Brook I, Ashok Kumar K, Kramper M, Orlandi RR, Palmer JN, Patel ZM, Peters A, Walsh SA. Clinical practice guideline (update): adult sinusitis. *Otolaryngology—Head and Neck Surgery*. 2015 Apr;152(2\_suppl):S1-39.
6. Linder JA, Singer DE, Van Den Ancker M, Atlas SJ. Measures of health-related quality of life for adults with acute sinusitis: a systematic review. *Journal of general internal medicine*. 2003 May;18:390-401.

7. Zhou F, Zhang T, Jin Y, Ma Y, Xian Z, Zeng M, Yu G. Developments and emerging trends in the global treatment of chronic Rhinosinusitis from 2001 to 2020: a systematic bibliometric analysis. *Frontiers in Surgery*. 2022 Apr 7;9:851923.
8. Alobid I, Bernal-Sprekelsen M, Mullol J. Chronic rhinosinusitis and nasal polyps: the role of generic and specific questionnaires on assessing its impact on patient's quality of life. *Allergy*. 2008 Oct;63(10):1267-79.
9. Wahid NW, Smith R, Clark A, Salam M, Philpott C. The socioeconomic cost of chronic rhinosinusitis study. *Rhinology*. 2020 Apr 1;58(2):112-25.
10. McDonald HP, Garg AX, Haynes RB. Interventions to enhance patient adherence to medication prescriptions: scientific review. *Jama*. 2002 Dec 11;288(22):2868-79.
11. Williamson IG, Rumsby K, Bengt S, Moore M, Smith PW, Cross M, Little P. Antibiotics and topical nasal steroid for treatment of acute maxillary sinusitis: a randomized controlled trial. *Jama*. 2007 Dec 5;298(21):2487-96.
12. Rosenfeld RM. Acute sinusitis in adults. *New England Journal of Medicine*. 2016 Sep 8;375(10):962-70.
13. Toktas O, Konca C, Trabulus DC, Soyder A, Koksall H, Karanlik H, Kamali Polat A, Ozbas S, Yormaz S, Isik A, Sezgin E, Soran A. A Novel First-Line Treatment Alternative for Noncomplicated Idiopathic Granulomatous Mastitis: Combined Intralesional Steroid Injection with Topical Steroid Administration. *Breast Care (Basel)*. 2021.
14. Choi E, Chandran NS, Tan C. Corticosteroid phobia: a questionnaire study using TOPICOP score. *Singapore Med J*. 2020 Mar;61(3):149-153