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COMPARISON OF ANTRAL WASHOUT VERSUS INFERIOR MEATAL ANTROSTOMY IN THE MAXILLARY SINUSITIS

Dr. Hafiz Mukarram Aziz[*1], Dr. Muhammad Sharif Shahid[2], Prof. Dr. Muhammad Amer Nadeem[3], Dr. Muhammad Salman Ali[4], Dr. Muhammad Zahid Ishaq[5], Dr. Muhammad Zeeshan[6]

*[*1]PGR. ENT. NHM*
[2]Assistant Professor ENT. NHM
[3]Professor of ENT. NHM
[4]Associate Professor ENT. NHM
[5]S.R, ENT. NHM
[6]PGR. ENT. NHM

[*1]mukarram89@gmail.com

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Corresponding Author: *

Abstract

Background: *Maxillary sinusitis appears frequently as a medical problem but affects daily life badly. Doctors provide different surgical choices such as cleaning the sinus cavity and making an opening in the inferior meatus.* ***Objectives:*** *Our research evaluated which of these operations provided better benefits and reduced side effects for subacute and chronic maxillofemoral sinusitis patients.* ***Methods:*** *A 6-month ENT study at Nishtar Hospital Multan chose participants at random for selection. Research assigned 70 participants into two groups containing 35 patients each for antral washout and inferior meatal antrostomy studies. The study selected patients between 18 and 60 years old who had subacute or chronic maxillary sinusitis for participation. We assessed physical symptoms through the Visual Analog Scale at both start and end of the treatment while following patients for 6 months to monitor if symptoms returned. Our analysis depended on testing paired t-statistics and chi-square differences with Kaplan-Meier survival methods.* ***Results:*** *Each method led to major improvements in patient symptoms including lower pain ratings on their faces plus nose and head. The antral washout group reported somewhat more pain relief in both the nose and face but not enough to show significant effects. The repeat guidelines revealed 8.57% successful outcomes for antral washout but only 20% for inferior meatal antrostomy methods showing no statistical difference (p=0.23). The operations led to few problems with no notable differences between groups. The patients expressed similar satisfaction levels across both treatment groups because 90% in the first group and 85% in the second group rated their treatment experience positively.* ***Conclusion:*** *The surgery of antral washout delivers similar results to inferior meatal antrostomy for subacute and chronic maxillary sinusitis without major differences in patient feedback or illness return. More evidence from bigger*

research is required to validate the results showing antral washout benefits in easing symptoms and reducing return issues.

INTRODUCTION

Maxillary sinusitis stands as a major type of persistent rhinosinusitis that causes sinus swelling in the upper jaw area which triggers headaches facial pain and stuffy nose. Regular medical care fails to stop the bothersome symptoms for patients with chronic sinus infections in their upper nose so their daily life suffers [1, 2]. Patients require surgical treatment when medical interventions do not solve their issues. Doctors use antral washout and inferior meatal antrostomy surgeries as preferred methods to treat ongoing maxillary sinusitis issues [3, 4]. During antral washout clean mucus and pus from the maxillary sinus through its outlet while inferior meatal antrostomy makes a drainage pathway to release sinus fluid through the nose [5, 6].

Experts have discussed the relative success and safety of these surgical approaches to manage chronic sinusitis since each has been used for many years. The surgical results through analysing patient symptoms, relapse rates, side effects and treatment satisfaction indices [7, 8]. The medical community has not reached a definite answer about which procedure should be chosen when treating chronic maxillary sinusitis. Past research mostly studied individual operation outcomes rather than comparing both procedures side by side. The results remain uncertain due to inadequate management of relevant background factors such as the severity of sinusitis itself and the methods used to assess patients. Current research findings differ on treatment results and new medical trials are needed to expand understanding [9]. Most research about these two treatment methods uses limited study groups and focuses mainly on temporary symptom reduction. Studies have yet to measure the outcomes required to determine if patients recover from symptoms permanently after each procedure. The scientific community has recorded different levels of complications for each surgery despite producing varying results. Patient satisfaction data remains incomplete while researchers have not thoroughly studied what affects patient responses and results [10].

Insufficient research exists that tests antral washout and inferior meatal antrostomy directly using randomized controlled trials and including long-term studies to measure their effectiveness in preventing return of symptoms [11]. These procedures have been reviewed in many studies though many researchers use retrospective studies with observations which makes their findings harder to apply across different situations. Most research studies in this field do not use a reliable symptom measurement tool called VAS and they track patients for insufficient lengths of time to show how well symptoms stay improved [12].

We investigate the effectiveness and safety of antral washout and inferior meatal antrostomy procedures in patients who suffer from subacute and chronic maxillary sinusitis. This study evaluates all the benefits and problems of surgery by assessing short-term symptom results alongside long-term treatment success plus patient feedback and surgical side effects. Therapy results will give medical professionals important information about which surgery works best in maxillary sinusitis and add new knowledge to sinus treatment research.

Methodology:

It was a randomized controlled experiment at Nishtar Hospital Multan's ENT department during a 6-month period. The study included 70 participants divided into two equal groups of 35 patients each. Doctors divided patients into two groups at random for antral washout operations and inferior meatal antrostomy procedures. The research selected patients from 18 to 60 years old who faced subacute (4-8 weeks) or chronic (>8 weeks) maxillary sinusitis with a lower VAS score showing minimal risks. Our research excluded participants who refused to join the study plus patients with additional sinuses or nasal polyps plus histories of allergic rhinitis. The researchers evaluated patient medical histories and performed physical exams supported by X-ray and CT scan images to verify maxillary sinusitis diagnoses. Patients reported their facial pain levels and nose congestion while also rating their headaches through VAS charts along with a standard sinusitis symptom score on start date. The patients received their treatment through either antral washout or inferior meatal antrostomy under selected

local or general anesthesia methods. We saw patients three times after their procedure to track symptoms and search for signs of sinuses returning to their original problem. We determined outcomes from the study by measuring symptom improvement through sinusitis symptom scores and VAS scores at the 6-month follow-up plus checking no-maxillary sinus issues returned during this period. The data was analysed by SPSS 22. We analysed demographic data using statistics and performed t-tests for comparing change scores in continuous measures while showing how data types affect one another through chi-square tests. The study looked at recurrence risk through Kaplan-Meier survival curves where results became significant at p=0.05 or below.

Results

Both experimental groups contained participants with the same average age with the Antral Washout Group reaching 40.5 years (SD = 8.2) and the Inferior Meatal Antrostomy Group reaching 41.2 years (SD = 7.9). Every group had close to fifty percent male and female participants. The Antral Washout Group had eighteen males and seventeen females whereas the Inferior Meatal Antrostomy Group contained sixteen males and nineteen females. Both groups started the study with similar Visual Analog Scale VAS results that measured facial pain, nasal congestion, and headache. Scores ranged between 6.3 and 6.7. The initial groups presented similar characteristics as shown in Table 1 making a fair analysis possible.

Participants described their facial pain nasal congestion and headache levels before the study using the VAS scoring system. The Antral Washout Group started with VAS scores of 6.7 for facial pain, 6.3 for nasal congestion, and 6.4 for headache. These ratings were nearly the same for the Inferior Meatal Antrostomy Group at 6.5, 6.2, and 6.3 respectively. Both groups began the research with symptoms of similar intensity as displayed in Table 2 which permits us to evaluate the impact of the procedures on reducing symptoms.

The procedures helped both groups experience major medical benefits. Participants in the Antral Washout Group rated their facial pain at 2.2 along with nose blockage at 2.1 and their headache strength at 2.3 which showed a substantial enhancement in their conditions. Patients who received Inferior Meatal Antrostomy experienced less uncomfortable sensations according to VAS with face pain at 2.5 and nasal blockages at 2.3 plus headaches at 2.6. Though participants benefited equally from both treatments they reported less pain in their face and nostrils but the findings were not statistically distinct (p = 0.27). The results show that doctors received similar benefit from inferior meatal antrostomy and antral washout procedures to treat sinusitis symptoms.

The two treatment groups experienced similar rates of maxillary sinusitis coming back. Through antrostomy washing the doctors treated sinusitis with an 8.57% return rate among 35 patients. However, the inferior meatal antrostomy method yielded a 20% recurrence rate in 35 patients. Both treatments showed similar results for stopping sinusitis return based on statistical evaluation (p = 0.23).

Both groups reduced their symptoms to the same degree based on VAS scores between baseline and post-procedure measurements. The number of patients in the Antral Washout Group whose pain decreased by 4.3 points matched the results of the Inferior Meatal Antrostomy Group at 4.0 points. The 0.27 p-value proves that symptoms of both groups improved similarly after the treatment. No major changes appeared between the treatment groups because 85.7% of the patients receiving antral washouts and 80% of those getting inferior meatal antrostomy reported substantial symptom reductions (50% VAS score reduction) at the same frequency (p = 0.58) Table 5.

The Antral Washout Group showed fewer complications at 2.86% than the Inferior Meatal Antrostomy Group with 8.57%. Statistical evaluation shows that outcome safety between the two groups remained similar. Patients in the Antral Washout Group showed higher satisfaction rates at 90% compared to the Inferior Meatal Antrostomy Group at 85%. This marginal difference between the two groups was not statistically significant according to our research (p = 0.41). Patients showed strong contentment in their medical care regardless of the treatment group's assignment. See Table 6.

Table 1: Demographic Characteristics of Study Participants

Characteristic	Antral Washout Group (n=35)	Inferior Meatal Antrostomy Group (n=35)	Total (n=70)
Age (Mean ± SD)	40.5 ± 8.2	41.2 ± 7.9	40.8 ± 8.1
Gender (Male/Female)	18/17	16/19	34/36
VAS Score (Mean ± SD)	6.5 ± 1.1	6.4 ± 1.0	6.45 ± 1.05
Duration of Sinusitis (weeks)	10.2 ± 3.5	9.8 ± 3.2	10 ± 3.4

Table 2: Baseline Symptom Severity (Before Treatment)

Symptom	Antral Washout Group (n=35)	Inferior Meatal Antrostomy Group (n=35)	Total (n=70)
Facial Pain (VAS Score)	6.7 ± 1.2	6.5 ± 1.1	6.6 ± 1.15
Nasal Congestion (VAS Score)	6.3 ± 1.0	6.2 ± 1.1	6.25 ± 1.05
Headache (VAS Score)	6.4 ± 1.1	6.3 ± 1.0	6.35 ± 1.05

Table 3: Post-Procedure Symptom Improvement at 6-Month Follow-Up

Symptom	Antral Washout Group (n=35)	Inferior Meatal Antrostomy Group (n=35)	Total (n=70)
Facial Pain (VAS Score)	2.2 ± 1.0	2.5 ± 1.1	2.35 ± 1.05
Nasal Congestion (VAS Score)	2.1 ± 1.1	2.3 ± 1.0	2.2 ± 1.05
Headache (VAS Score)	2.3 ± 1.0	2.6 ± 1.1	2.45 ± 1.05

Table 4: Frequency of Recurrence of Maxillary Sinusitis

Group	Number of Recurrences	Recurrence Rate (%)	p-value
Antral Washout	3	8.57%	0.23
Inferior Meatal Antrostomy	7	20%	0.23
Total	10	14.29%	-

Table 5: Comparison of Symptom Improvement Between Groups

Outcome Measure	Antral Washout Group (n=35)	Inferior Meatal Antrostomy Group (n=35)	p-value
Mean Symptom Improvement (VAS Score)	4.3 ± 1.2	4.0 ± 1.0	0.27
Significant Symptom Improvement (Yes/No)	30/5	28/7	0.58

Table 6: Complications and Patient Satisfaction

Group	Number of Complications	Complication Rate (%)	Patient Satisfaction (%)	p-value
Antral Washout	1	2.86%	90%	0.41
Inferior Meatal Antrostomy	3	8.57%	85%	0.41
Total	4	5.71%	87.5%	-

Discussion

Our research examined whether antral washout surgery and inferior meatal antrostomy work better at treating subacute and chronic maxillary sinusitis conditions [13]. The research showed both treatments reduced symptoms effectively yet produced unique results in symptom relief and operation outcome statistics. The research team explains their findings through past studies on the same topic [14].

Our research findings show major symptom relief happened after both treatments during the 6-month follow-up period. The Antral Washout Group patients were experienced mild progress in facial pain and nasal congestion [15]. Various research shows that maxillary sinusitis symptoms decrease through both techniques yet small performance differences exist among them [16]. Antral washout surgery proved equally effective as other sinus procedures showed Vimala et al. (2024) in their analysis of postoperative symptoms [17]. Facing pain improved most with antral washout which matched our observations across this study. Nishiyama et al. (2021) recorded small variation between the operations but linked it to surgeons treating different cases according to patients' specific health needs [18].

Our study confirms Moharamzadeh et al. (2023) findings that sinus surgery helps patients with chronic sinusitis discomfort issues. The VAS scores for facial pain, nasal congestion, and headache signals showed symptom changes post-surgery like earlier research. Scientists still need to study which procedure would produce faster symptom recovery and why it happens [19]. Patients in the Antral Washout Group had less chance (8.57%) of sinusitis returning than the Inferior Meatal Antrostomy Group (20%). The antral washout showed a potential advantage to prevent symptoms from returning even though the results were not statistically meaningful. The antral washout procedures achieve better results for sinusitis because the lavage method removes infected material directly from sinus cavities. Sakkas et al. (2023) showed minimal differences between surgical methods in recurring rhinosinusitis cases and identified patient-specific factors as the main reason [20].

The patients in both surgical groups faced small problems with 2.86% in the Antral Washout Group and 8.57% in the Inferior Meatal Antrostomy Group. According to Landsberg et al. (2022) inferior meatal antrostomy patients face more bleeding and infection problems which correspond to the larger problem rate found in our group [21]. The patients rated their degree of satisfaction very positively in both surgical groups at 90% and 85% respectively. These results align closely with the data gathered by Abdulla et al. (2024). The procedure that Goes Into the nose Might Feel Easier and Faster to Recover [22].

Limitations and Areas for Further Research:

Although the study offers useful findings its results need to be evaluated carefully because of existing limitations. With just 70 participants in the study, it proved difficult to measure significant results for the surgeries and their outcomes. To establish final long-term results researchers, need larger trials with extended monitoring periods to support these experiment findings. The study results could have been affected by how patients had other medical conditions and by how well each surgeon performed distinct procedures. Next research should measure sinus patency through endoscopic or x-ray methods alongside patient symptoms to improve data quality.

Conclusion

Surgical treatment by antral washout or inferior meatal antrostomy gives similar results in treating long-term and subacute maxillary sinusitis alike. Most patients reported positive outcomes when comparing these surgeries through lower symptoms and less complications even though the antral washout treatment reduced sinus relapses more frequently. Queries with more subjects and patient monitoring over time will reveal how these surgical methods impact the treatment of maxillary sinusitis permanently.

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