

# Comparison Of Outcome Between Simple Polypectomy Versus Endoscopic Sinus Surgery

Amrat Kumar<sup>1</sup>, Abdul Waheed<sup>2</sup>, Ghulam Shabbir Mahar<sup>3</sup>, Zafar Mahmood<sup>4</sup>,  
Junaid Husaain<sup>5</sup>, Nosheen Wasee<sup>6</sup>, Adnan Anwar<sup>7</sup>

## Abstract

**Objective:** The objective of this study was to compare outcomes of simple intranasal polypectomy versus Endoscopic sinus surgery after removing nasal polyps.

**Methods:** This comparative cross-sectional study was conducted at Department of ENT in Civil Hospital, Hyderabad from April 2020 to June 2020. After ethical approval, 60 adult patients of either gender ranging from 14 to 40 years, with Sinonasal Polyposis were randomly selected. The collected data was analyzed using SPSS version 17.00. Categorical variables like all complications were presented as frequency and percentage.

**Result:** Out of 60 patients, 37(61.6%) were males and 23 (38.4%) were females, with mean age (28.87 ± 7.69 years), the post-operative complications like bleeding was observed in 6.7%, crusting 10%, Synechiae formation 10% of patients after 6 weeks, recurrence in 13.3% after 3 months, while intraorbital complications i.e., orbital swelling in 13.3% patients following simple intranasal polypectomy. In contrast, bleeding 10%, crusting 16.7% with orbital swelling 3.3% was reported up to 2 weeks following surgery. Synechiae formation 16.7% up to 3 months was observed following Endoscopic sinus surgery.

**Conclusion:** Post-operative complications of endoscopic sinus surgery have been quite lesser as compared to simple nasal polypectomy along with low recurrence rate. Fortunately, intra cranial complications were not observed, only intra orbital swelling was seen in both types of surgeries.

**Keywords:** Endoscopic Sinus surgery, Simple Intranasal Polypectomy, Outcomes

**IRB:** Approved by Research Ethics Committee, Liaquat University of Medical and Health Sciences. Ref # LUMHS/REC/-490. Dated: 7th March 2016.

**Citation:** Kumar A, Waheed A, Mahar GS, Mahmood Z, Husaain J, Wasee N, Anwar A. Comparison of Outcome Between Simple Polypectomy Versus Endoscopic Sinus Surgery [Online]. Annals ASH KMDC 2021;26.

(ASH & KMDC 26(4):192;2021)

## Introduction

Nasal polyps are edematous soft tissues which can develop in any area of nasal mucosa and paranasal sinuses. They are described as

smooth, semi-translucent soft tissue, pink or grey and an edematous stroma that covers through metaplasia scale like cell epithelium<sup>1</sup>. Polyp growth is associated with allergy, chronic inflammation, immune dysfunction and genetic tendency. Nasal polyps can block nasal cavity and sinuses and might convert into persistent chronic disorder of rhino sinusitis that can deteriorate the quality of life of an individual<sup>2</sup>. Nasal polyps are mostly occurred in the middle meatus and ethmoid sinuses of the nasal cavity that influence around 1% - 4% of the people. Around 11% of the people of Europe are influenced by chronic rhino sinusitis and is a great burden on the hospitals and the economic system<sup>3</sup>. The prevalence of nasal polyposis is higher in subjects with asthma than in non-asthmatics and 16.5% of asth-

<sup>1</sup>Department of ENT, ISRA University

<sup>2</sup>ENT Consultant, KVSS Hospital

<sup>3</sup>Department of ENT,

Ghulam Muhammad Mahar Medical College

<sup>4</sup>Department of ENT and Head Neck Surgery,

Liaquat College of Medicine and Dentistry

<sup>5</sup>Department of ENT, Pir Abdul Qadir Shah Institute

<sup>6</sup>Department of Physiology,

Karachi Medical and Dental College

<sup>7</sup>Department of Physiology,

Hamdard College of Medicine and Dentistry

**Correspondence:** Dr. Adnana Anwar  
Department of Physiology,  
Hamdard College of Medicine and Dentistry

Email: dradnananwar4@gmail.com

Date of Submission: 16th June 2021

Date of Acceptance: 31st December 2021

matic patients over 40 years of age have been shown to have nasal polyps.

According to some study, males are more prone to Nasal Polyposis than females while adults are more affected than children<sup>4</sup>. Patients suffering from nasal polyposis normally appear with the complaints of nasal blockade, hyposmia, congestion, epistaxis, rhinorrhea, snoring, post nasal drip, and headaches. Moreover, patients may present with flange of eye and broad nose, in cases that has existed for a longer period of time. It is also stated in a study that nasal polyps mostly develop bilaterally but its unilateral appearance can also occur. In case of unilateral nasal polyps, it has to be considered and seen pathologies of benign or malignant through nasal endoscopy, biopsy and CT scan, in order to differentiate between unilateral nasal masses and benign or malignant<sup>5</sup>.

For several years, it has been the subject of study to find the etiology of nasal polyps. Even though, the main cause of development of nasal polyps is undefined yet but so far, they are being associated with allergies, asthma, infections and cystic fibrosis and even patients were also found to have aspirin sensitive, in some of the cases<sup>6</sup>.

There have been a lot of incidences of recurrence of nasal polyps postoperatively and to evade it, a rinsing of sinus is applied combined with corticosteroids drugs are used for the ease of breathing<sup>7</sup>. Another study revealed that some patients even after getting the proper treatment, presented with developed nasal polyps, hence, it is necessary to manage them clinically<sup>8</sup>.

Simple intranasal polypectomy is an invasive technique that is applied to remove polyps which is found in the nasal passages and maxillary sinus. This method may possibly be executed without taking prior cross-sectional imaging of the patient<sup>9</sup>. Endoscopic Sinus Surgery (ESS) is a least surgical method for nasal polyposis to improve ventilation and drainage nasal passages. It generally needs computed tomography (CT) scan pre-operatively and short course of systemic combined with treatment of intranasal corticosteroids<sup>10</sup>.

There are some minor and major complications are involved in Simple intranasal polypectomy and ESS. Minor complications may include infection, bleeding, crusting, osteal stenosis, synechiae formation, tooth or lip numbness, or recurrence of infection, whereas its prominent complications are orbital fat and dural exposure, hyposmia/anosmia, impairment of extra-ocular muscles, vascular impairment, cerebrospinal fluid leakage, intracranial wound, blindness, and death<sup>11,12</sup>.

In the international literature, it has showed that the complications for nasal polyp surgery are ranged from 0.3% to 22.4%. The most severe complications are the leakage of cerebrospinal fluid, exposure of dura, peri-orbital or orbital fat exposure, internal carotid artery damage, bleeding needs transfusion, meningitis, and penetration of orbit. Symptomatic improvement is ranged from 78 % to 88% for ESS as compared to 43% to 64% for simple intranasal polypectomy techniques<sup>12,13</sup>.

This study is carried out to assess the outcomes of endoscopic sinus surgery (ESS) versus simple intranasal polypectomy and to compare the complications of both processes. This study would be a step forward in developing a new and beneficial treatment modalities and protocols best suited for our patients.

Due to increasing frequency of patients undergoing sinus surgery being observed and since different varieties of sinus surgery are available but none have been set as a standard technique, therefore it is important to identify a procedure having least side effects and maximal efficacy. As a result, this study was undertaken to compare the outcomes in-between simple polypectomy versus endoscopic sinus surgery. Although literature suggests ESS to be better than simple polypectomy, however the expertise required for ESS remains much higher than a simple polypectomy. This study compared both procedures in terms of their outcomes using skilled and trained surgeons.

## Patients and Methods

This retrospective comparative cross-sectional study was conducted in the Department of ENT in Liaquat University Hospital, Hyderabad with the duration of the study from April 2020 to June 2020 after taking ethical approval from the concerned ethical review board, prior to the data collection. A total of 60 patients of either gender with the age ranging from 14 to 40 years were recruited for the study. The study was performed with well-informed written consent from patients fulfilling the inclusion and exclusion criterion.

As inclusion criteria was, adult patients of both sex with diagnosis of sino-nasal polyposis on clinical examination by at least two ENT clinicians, whereas patients with Immuno-compromised diseases, neoplastic lesions either benign/malignant, or recurrent cases were excluded from the study.

All patients were given medical treatment for two weeks in the form of broad-spectrum antibiotics, anti-histamine and local or systemic corticosteroids. The patients were then subjected to imaging of nose and paranasal sinuses and were prepared for the surgery under general anaesthesia after the baseline investigations like complete blood count, urine DR (Detail report) Hepatitis profile for B and C.

The level of surgery was decided based on the clinical as well as radiological findings. Anterior ethmoidectomy, posterior ethmoidectomy, middle meatalantrostomy and clearance of frontal recess were performed in patients depending on the degree of the disease. At the time of discharge from the hospital, the patients were given and recommended systemic antibiotic for 07 days along with decongestant drops and saline nasal spray. After one and half month's steroid nasal spray was advised. Patients were directed to follow-up after two week, six weeks and three months. Results were evaluated by clinically as well as endoscopically.

After collection of data the analysis was conducted by using statistical package for social sciences (SPSS) software, version 17.0. Numerical

data like age was examined through descriptive statistics by calculating means and standard deviation. Categorical variables like gender and symptoms were presented in the form of percentages and frequencies.

## Results

According to the results of the study, from the total of 60 patients included with overall mean age of  $28.87 \pm 7.69$  years, 37 (62%) were males while 23 (38%) were females. 54 (90%) of patients with nasal polyps experienced nasal obstruction while 46 (77%) suffered from nasal discharge. Hyposmia / Anosmia and headache was reported in 35 (58%) patients each respectively. Facial pain was observed by 06 (10%) of patients (Table 1).

With regards to the outcome of simple intranasal polypectomy at 2 weeks, intra-nasal bleeding was reported in 06 (20%) of patients, crusting in 07 (23.3%) and synechiae formation in 01 (3.33%) patient. Intra-orbital swelling was observed in 04 (13.3%) of patients. At 6 weeks, intranasal bleeding was seen in 02 (6.7%) of patients, crusting in 03 (10%) of patients and synechiae formation was observed in 03 (10%) of patients. Intranasal bleeding at 3 months was noted in 01 (3.3%) patient while synechiae formation and recurrence of polyp was reported in 09 (30%) and 04 (13.3%) of patients respectively (Table 2).

With regards to the outcomes of endoscopic sinus surgery at 2 weeks, intranasal bleeding was reported in 03 (10%) of patients, crusting in 05 (16.7%) of patients while intra-orbital swelling was reported in 01 (3.3%) of patient. At 6 weeks, intranasal bleeding and synechiae formation was seen in 01 (3.3%) patient each while crusting was observed in 02 (6.7%) of patients. At 3 months, intranasal synechiae formation was reported in 05 (16.7%) of patients (Table 3).

**Table 1.** Frequency of demographic distribution and clinical features of the patients

Variable	Mean $\pm$ SD N (%)
Age (Years)	28.87 $\pm$ 7.69
Gender	Male 37 (62.0%) Female 23 (38.0%)
Nasal Polyp	Nasal Obstruction 54 (90.0%) Nasal discharge 46 (77.0%) Hyposmia/Anosmia 35 (58.0%) Headache 35 (58.0%) Facialpain 06 (10.0%)

**Table 2.** Outcomes in simple intranasal polypectomy (n=30)

Variable	N (%)
2 weeks Intranasal complications	Bleeding 06 (20.0%) Crusting 07 (23.3%) Synechiae Formation 01 (3.33%) Recurrence 0 (0.0%)
Intraorbital Complications	Orbital swelling 04 (13.3%)
6 weeks Intranasal complications	Bleeding 02 (6.7%) Crusting 03 (10.0%) Synechiae Formation 03 (10.0%) Recurrence 0 (0.0%)
3 months Intranasal complications	Bleeding 01 (3.3%) Crusting 0 (0.0%) Synechiae Formation 09 (30.0%) Recurrence 04 (13.3%)

**Table 3.** Outcomes in endoscopic sinus surgery (n=30)

Variable	N (%)
2 weeks Intranasal complications	Bleeding 03 (10.0%) Crusting 05 (16.7%) Synechiae Formation 0 (0.0%) Recurrence 0 (0.0%)
Intra-orbital Complications	orbital swelling 01 (3.3%)
6 weeks Intranasal complications	Bleeding 01 (3.3%) Crusting 02 (6.7%) Synechiae Formation 01 (3.3%) Recurrence 0 (0.0%)
3 months Intranasal complications	Synechiae Formation 05 (16.7%)

## Discussion

The present study was aimed to compare the outcomes of surgical intervention in nasal polypsis. In this study, patients who underwent polypectomy were observed to have a mean age of 28.87  $\pm$  7.69 years, that was not in accordance with the study conducted in France wherein the mean age of patients was 49.4  $\pm$  17.6<sup>14</sup>. Thus, our patients were younger than the above cited study. Hashemian and colleagues reported that in a study of nasal polyposis in Iran the occurrence of polypsis in a total 192 patients with chronic rhinosinusitis was 40%, however, as far as the distribution of gender with polyposis is concerned 60% were males and 40% were females in which 43% patients possessed a history of allergy<sup>15</sup>. In comparison with our present study, prevalence of nasal polyposis was predominant in males 37 (62%) as compared to females 23 (38%).

Another cross-sectional study analyzed 50 chronic rhinosinusitis cases for the period of six months. In this study, there were two groups and each group containing 25 cases i.e., endonasal endoscopic sinus surgery (EESS) group and conventional surgery group. Patients were assessed clinically, endoscopically and through imaging for both the periods of pre- and post-operative. The frequencies for follow-ups were based on 1st, 2nd, 3rd week, 1st month, 3rd months, and 6th months. Most of the cases were males in the age between 21 to 40 years, in both the groups, and mostly presented with headache (80) %, nasal discharge (70%), nasal obstruction (62%). The complications in both the groups that were most common were cheek swelling 10 (40%) in conventional group, while crusting 12 (84%) in EESS group. Sufficient recovery in EESS group was 21 (84%) and in conventional surgery group were 16 (64%) cases. EESS has given safe and effective technique for managing different sino nasal illnesses<sup>16</sup>.

As far as present study is concerned, 60 patients were selected who under went either EESS or simple intranasal polypectomy followed-up till 3 months subsequent to surgery where in 37 (62%)

males were predominant than females 23 (38%) with their mean age  $28.87 \pm 7.69$  years. Majority of patients present with headache 58%, nasal discharge 77%, nasal obstruction 90% and Hyposmia/Anosmia 58%. Commonest intranasal complications were bleeding 20% and crusting 23.3% in simple intranasal polypectomy while orbital swelling 13.3% were observed till 2 weeks in intra orbital complication in simple intranasal polypectomy. On the other hand, 16.7% cases were observed for Synechia formation till 3 months in EESS group.

In another analysis reported that post-operative meningitis after surgery is occasional, however, in paranasal sinus surgery, it shows the most common intracranial complication. It migrates by dural abrasions, perivascular or vascular paths or even through perineural spaces of the olfactory fibers<sup>17</sup>. This study was inconsistent with our present findings as there were no cases of meningitis observed in both type of surgeries.

In the center of the meatus, Synechia formation is the commonest complication regarding functional endoscopic sinus surgery (FESS). A retrospective study was carried out on patients with chronic rhino sinusitis (CRS) and 200 cases of bilateral FESS were restudied and found that 38 (19.0%, 95% CI 13.6-24.4%) patients had exposed with Synechia. Patients that were getting FESS and nasal septal reconstruction (NSR) primarily, were intensely related to the progression of Synechia<sup>18</sup>. In the present study, Synechia formation was developed in 16.7% in Endoscopic sinus surgery and 30% in simple intranasal polypectomy till 3 months.

In a study of Kim Dalziel et al. an organized analysis of ESS for nasal polyps was done and witnessed symptomatic development and changes in 78 % to 88% with the median recurrence rate of 20%. The results of the said study certify and endorse the efficacy of ESS<sup>19</sup>. In present study, recurrence rate 13.3% was found only in simple intranasal polypectomy.

Sinusitis complications contain abrasions that influence the soft tissues, orbit, surrounding bones, and the intracranial region. One more retrospective investigation reported 35 (19.8%) complications with orbit<sup>20</sup>. As far as our study is concerned, intra-orbital swelling was observed only in 13.3% cases in simple intranasal polypectomy and 3.3% in Endoscopic sinus surgery proved that there were fewer orbital complications that were associated with Endoscopic sinus surgery.

The treatment of nasal polyps involves first line medical therapy but surgery has always been a best treatment technique if medically treated illnesses fail. Amongst invasive methods of simple polypectomy and ESS, literature shows that ESS is more operative and effective owing to improved and better results with less complications, however, it depends upon resources and presence of proficient and skillful clinicians<sup>21</sup>.

The qualitative approach of the study has assured that we have sampled extensive range of patients with nasal polyps. However, the study might not be immune for practice and observer bias.

Cross sectional and retrospective designs and small sample size were the limitations of study. It is recommended that awareness programs should be initiated in order to create awareness among people for endoscopic surgery along with more training of ENT surgeons to gain expertise in the field.

## Conclusion

The present study concludes that post-operative complications of endoscopic sinus surgery were less as compared to the simple nasal polypectomy along with lower recurrence rate. Fortunately, intracranial complications were not observed in both types of surgeries. Both the procedures excise the nasal polyps but the endoscopic sinus surgery have superior to simple nasal polypectomy with regards to postoperative complications and recurrence rate.

## Conflict of Interest

Authors have no conflict of interest and no grant/funding from any organization.

## References

1. Dadgarnia M, Rahmani A, Baradaranfar M, Atighechi S, Zand V, Meybodan M, et al. The relationship between endoscopic and radiologic findings and olfactory status of patients with chronic rhinosinusitis with nasal polyps before and after the endoscopic sinus surgery. *Eur Arch Otorhinolaryngol.* 2019;276:397-400. [DOI: 10.1007/s00405-018-5221-z].
2. Stevens WW, Schleimer RP, Kern RC. Chronic Rhinosinusitis with Nasal Polyps. *J Allergy Clin Immunol Pract.* 2016;4:565-72. [DOI: 10.1016/j.jaip.2016.04.012].
3. Hastan D, Fokkens WJ, Bachert C, Newson RB, Bislimovska J, Bockelbrink A, et al. Chronic rhinosinusitis in Europe--an underestimated disease. A GA<sup>2</sup>LEN study. *Allergy.* 2011;66:1216-23. [DOI: 10.1111/j.1398-9995.2011.02646.x].
4. Hopkins C, Philpott C, Crowe S, Regan S, Degun A, Papachristou I, et al. Identifying the most important outcomes for systematic reviews of interventions for rhinosinusitis in adults: working with Patients, Public and Practitioners. *Rhinology.* 2016;54:20-6. [DOI: 10.4193/Rhin15.199].
5. Gelardi M, Iannuzzi L, Tafuri S, Passalacqua G, Quaranta N. Allergic and non-allergic rhinitis: relationship with nasal polyposis, asthma and family history. *Acta Otorhinolaryngol Ital.* 2014;34:36-41.
6. DeConde AS, Suh JD, Mace JC, Alt JA, Smith TL. Outcomes of complete vs targeted approach to endoscopic sinus surgery. *Int Forum Allergy Rhinol.* 2015;5:691-700.
7. Erskine SE, Verkerk MM, Notley C, Williamson IG, Philpott CM. Chronic rhinosinusitis: patient experiences of primary and secondary care - a qualitative study. *Clin Otolaryngol.* 2016;41:8-14. [DOI: 10.1111/coa.12462].
8. Ta NH. "Will we ever cure nasal polyps?" *Annals of the Royal College of Surgeons of England.* 2019;101:35-39.
9. Calus L, Van Bruaene N, Bosteels C, Dejonckheere S, Van Zele T, Holtappels G, et al. Twelve-year follow-up study after endoscopic sinus surgery in patients with chronic rhinosinusitis with nasal polyposis. *Clin Transl Allergy.* 2019;14:9-30. [DOI: 10.1186/s13601-019-0269-4].
10. Weber RK, Hosemann W. Comprehensive review on endonasal endoscopic sinus surgery. *GMS Curr Top Otorhinolaryngol Head Neck Surg.* 2015 Dec 22;14:08. [DOI: 10.3205/cto000123].
11. Shaikh AA, Rafique M, Farrukh MS. An experience of steroid in recurrent ethmoidal nasal polyps at tertiary care hospital. *J Liaquat Uni Med Health Sci.* 2014;13: 09-12
12. Krings JG, Kallogjeri D, Wineland A, Nepple KG, Piccirillo JF, Getz AE. Complications of primary and revision functional endoscopic sinus surgery for chronic rhinosinusitis. *Laryngoscope.* 2014;124:838-45. [DOI: 10.1002/lary.24401].
13. Mohammed AAM. Antrochoanal Polyp: Endoscopic Polypectomy Versus Simple Intranasal Avulsion. 2013;33: 107-111.
14. Klossek JM, Neukirch F, Pribil C, Jankowski R, Serrano E, Chanal A, et al. Prevalence of nasal polyposis in France: A cross sectional, case-control study. *Allergy* 2005;60: 233-7.
15. Hashemian F, Farahani F. [Frequency of nasal polyposis in chronic rhinosinusitis and role of endoscopic examination in correct diagnosis]. *Scientific journal of Hamadan University of Medical Sciences.* 2005;12: 20-3.
16. Ahmed S, Humayun MP, Karim MA, Bhattacharjee U, Sattar MA, Alam MM, et al. Complications of endonasal endoscopic sinus surgery for management of nasal polyp and chronic sinusitis. *Mymensingh Med J.* 2014;23:229-34.
17. Schnipper D, Spiegel JH. Management of intracranial complications of sinus surgery. *Otolaryngol Clin North Am.* 2004; 37:453-72.
18. Manji, J., Habib, AR.R., Amanian, A.A. et al. Potential risk factors associated with the development of synechiae following functional endoscopic sinus surgery. *Eur Arch Otorhinolaryngol* 2018;275:1175-1181. [DOI.org/10.1007/s00405-018-].
19. Dalziel K, Stein K, Round A, Garside R, Royle P. Endoscopic sinus surgery for the excision of nasal polyps: a systematic review of safety and effectiveness. *Am J Rhinol.* 2006;20:506-519. [DOI: 10.2500/ajr.2006.20.2923].
20. Radovani P, Vasili D, Xhelili M, Dervishi J. Orbital complications of sinusitis. *Balkan Med J.* 2013;30:151-4. [DOI: 10.5152/balkanmedj.2013.8005].
21. Southwood JE, Loehrl TA, Poetker DM. Advances in Surgery: Extended Procedures for Sinonasal Polyp Disease. *Adv Otorhino laryngol.* 2016;79:148-57. [DOI: 10.1159/000445153].