CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3904397

Available online at: http://www.iajps.com *Research Article*

INFLUENCE OF FUNCTIONAL ENDOSCOPIC SINUSES SURGERY ON SLEEP IN PATIENTS WITH CHRONIC RHINOSINUSITIS

Dr Muhammad Ansab Shah[1], Dr Ayesha Ghafoor[2], Dr Arfah Rauf Khosa[3]

Article Received: April 2020 **Accepted:** May 2020 **Published:** June 2020

Abstract:

Introduction: *Functional Endoscopic Sinus Surgery (FESS); Researchers over the past decades have been using endoscopic sinus surgery widely and regarded as an effective and safe mode of treatment for Para Nasal Sinus (PNS) disorders as well as related problems.* ***Objectives:*** *The main objective of the study is to analyse the influence of functional endoscopic sinuses surgery on sleep in patients with chronic rhinosinusitis.* ***Material and methods:*** *This cross-sectional study was conducted in Health department Punjab during October 2019 to February 2020. The age range of patients was 18 to 60 years. The data was collected through the systematically prepared questionnaire. This survey includes all the questions related to self-administration and knowledge of patients related to diseases. All study subjects had a history of rhinosinusitis for a period greater than 12 weeks, and also displayed endoscopic and radiological evidence of nasal inflammation.* ***Results:*** *There were 200 patients which were selected for this study. From these 200 patients there were 96 female and 104 males. The mean age range was 41.2 ± 12.4years. Table 01 shows the demographic values of all selected patients.* ***Conclusion:*** *It is concluded that sleep quality in CRS patients improved following FESS. CRS patients with obstructive sleep apnea syndrome (OSAS) who had a lower preoperative AHI might concurrently acquire a successful OSAS outcome after FESS.*

Corresponding author:
Dr. Muhammad Ansab Shah,

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Please cite this article in press Muhammad Ansab Shah et al., Influence Of Functional Endoscopic Sinuses Surgery On Sleep In Patients With Chronic Rhinosinusitis, Indo Am. J. P. Sci, 2020; 07(06).

INTRODUCTION:

Functional Endoscopic Sinus Surgery (FESS); Researchers over the past decades have been using endoscopic sinus surgery widely and regarded as an effective and safe mode of treatment for Para Nasal Sinus (PNS) disorders as well as related problems. In order to improve efficiency and safety various endoscopic approaches to benign tumors of the sinuses, nose, anterior cranial and the orbit are well utilized [1].

Sleep impairment is a common symptom in patients with chronic rhinosinusitis (CRS). Alt et al. reported a 75% prevalence of poor sleep quality in 268 CRS patients, as measured by the Pittsburg Sleep Quality Index instrument. The etiology of sleep dysfunction in CRS is multifactorial. Although CRS patients usually experience nasal obstruction, it has been suggested that CRS is associated with the release of proinflammatory cytokines, which may also result in sleep impairment [2].

Nasal surgery, including septomeatoplasty, turbinate surgery, or functional endoscopic sinus surgery (FESS), which aims to reduce upper airway resistance, has been reported to benefit sleep quality. Sukato et al conducted a meta-analysis regarding the effect of FESS on obstructive sleep apnea syndrome (OSAS). They discovered only 7 studies showing that FESS could benefit sleep quality and possibly improve apnea hypopnea index (AHI), although the results displayed high heterogeneity among studies [3]. More research is needed to establish whether or not FESS could improve sleep problems in CRS patients. The aims of this study were to research the influence of FESS on sleep problems in CRS patients and to identify predictive factors of AHI outcomes in CRS patients with OSAS after FESS [4].

Objectives

The main objective of the study is to analyse the influence of functional endoscopic sinuses surgery on sleep in patients with chronic rhinosinusitis.

MATERIAL AND METHODS:

This cross-sectional study was conducted in Health department Punjab during October 2019 to February 2020. The age range of patients was 18 to 60 years. The data was collected through the systematically prepared questionnaire. This survey include all the questions related to self-administration and knowledge of patients related to diseases. All study subjects had a history of rhinosinusitis for a period greater than 12 weeks, and also displayed endoscopic and radiological evidence of nasal inflammation. Patients who were under the age of 20 or had a history of immunodeficiency were excluded. The surgical extension was based upon preoperative computed tomography (CT) and any mucosal inflammatory change which was found during surgery. The primary outcome of this study was the subjective sleep quality. The secondary outcome was the cure rate of OSAS by FESS. Before and 3 months after the FESS procedure, patients were assessed with a Epworth Sleepiness Scale (ESS) questionnaire and underwent a one-night PSG assessment.

Statistical analysis

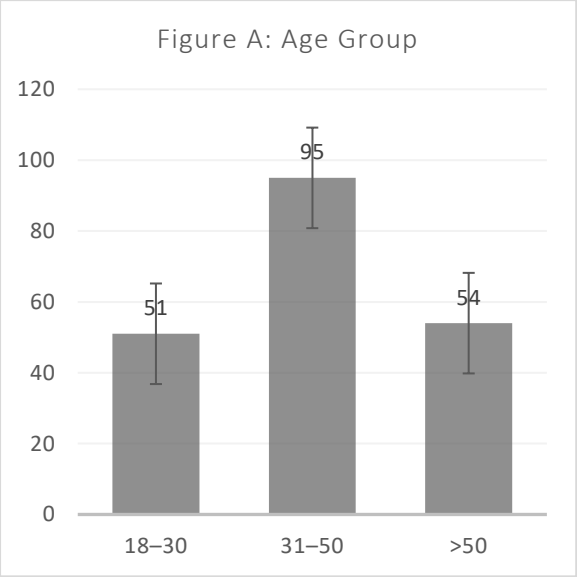
Each experiment was repeated three times and data were displayed as mean±SD and analyzed through SPSS 22.0 (IBM, USA). Student t-test was applied for results in two groups and one-way ANOVA was for results more than two. $P<0.05$ was considered to have significant meaning.

RESULTS: There were 200 patients which were selected for this study. From these 200 patients there were 96 female and 104 males. The mean age range was 41.2 ± 12.4years. Table 01 shows the demographic values of all selected patients.

Table 01: Demographic values of selected patients (n =200)

Demographic values	Frequency	%
Age		
18–30	51	24.5
31–50	95	47.5
>50	54	28
Gender		
Male	104	52
Female	96	48
Complains of patients		
Nasal obstruction	154	77
Facial pain	55	27.5
Facial pressure	93	46.5
Smell loss	39	19.5
Runny nose/discharge	98	49
Post nasal drip	135	67.5
Duration of symptoms		

<3months	40	20
3–6months	28	14
7–12months	27	13.5
1–4years	35	17.5
>5years	70	35.1



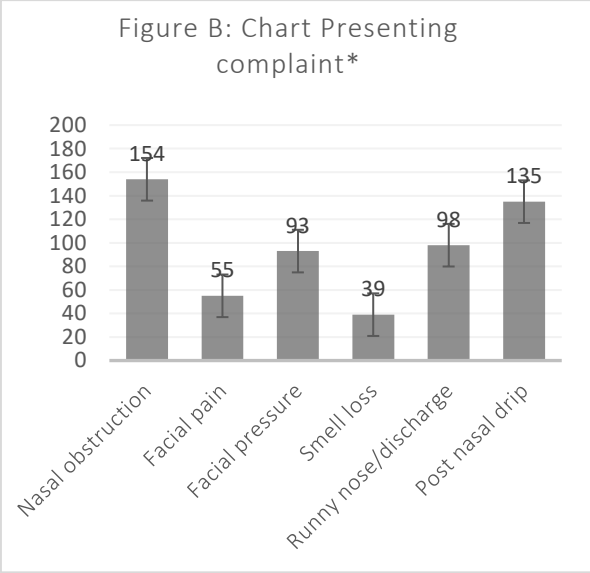


Figure A: Figure A presententing the age group of selected patients. Most of the patients were age range 31-50 years. Figure B: Figure B presents the complaints of the selected patients regarding sleep. Most of the patients compalints about nasal obstruction and post nasal drip. Some of the patients complaines facial pressure and runny nose. But smell loss was the most least symptom among selected patients.

Table 02: Liner regression analyses for association of changes in sleep outcomes, BMI, and rhinological parameters

Adjusted R square	9.9%	-2.4%	-0.9%	1.3%
F	4.35	0.27	0.72	1.39
P value	0.007*	0.844	0.540	0.251

DISCUSSION:

After FESS, both subjective and objective parameters of rhinosinusitis severity improved in most patients, with the exception of CRS patients with severe OSAS. The scores of ESS and sleep domain of the SNOT-20 also significantly decreased, except in CRS patients with severe OSAS. We also found that the change of ESS significantly correlated with that of SNOT-22. It seemed that the sleep quality of CRS patients was improved following FESS because of decreased rhinosinusitis severity, unless they had severe OSAS [5]. In a study by Rotenberg and Pan on patients without polyps, and in a study by Varendh et al. on patients with polyps, sleep quality also improved after FESS [6]. A recent systematic review reported that FESS has demonstrated encouraging results in improving sleep function in OSAS patients. The authors reported cumulative data analyses from 7 studies where FESS demonstrated a moderate to large good effect in subjective sleep quality and small improvement in objective AHI [7]. Our results are consistent with the aforementioned systemic review. The pathophysiology of OSAS is complex and includes anatomical, neuromuscular, and pulmonary factors, along with aging [8]. The mechanisms by which FESS benefits OSAS include the reduction of upper airway resistance and the avoidance of breathing through the mouth. Mouth breathing usually aggravates sleep related breathing disorders. Ayuse et al. reported that mouth breathing increased upper airway collapsibility during midazolam sedation. A study which enrolled 138 OSAS patients proved that mouth breathing resulted in reduction of oropharyngeal lumen by computed tomography scans [9]. It had been reported that oral patches for prevention open mouth breathing are useful to treat mild OSAS [10].

CONCLUSION:

It is concluded that sleep quality in CRS patients improved following FESS. CRS patients with obstructive sleep apnea syndrome (OSAS) who had a lower preoperative AHI might concurrently acquire a successful OSAS outcome after FESS.

REFERENCES:

1. Värendh M., Johannisson A., Hrubos-Strøm H., Andersson M. Sleep quality improves with endoscopic sinus surgery in patients with chronic rhinosinusitis and nasal polyposis. *Rhinology*. 2017;55(1):45–52.
2. Sukato D. C., Abramowitz J. M., Boruk M., Goldstein N. A., Rosenfeld R. M. Endoscopic sinus surgery improves sleep quality in chronic rhinosinusitis: a systematic review and meta-analysis. *Otolaryngology - Head and Neck Surgery (United States)* 2018;158(2):249–256.]
3. Alt J. A., Ramakrishnan V. R., Platt M. P., et al. Sleep quality outcomes after medical and surgical management of chronic rhinosinusitis. *International Forum of Allergy & Rhinology*. 2017;7(2):113–118.
4. Thomas M., Yawn B., Price D., Lund V., Mullol J., Fokkens W. EPOS primary care guidelines: european position paper on the primary care diagnosis and management of rhinosinusitis and nasal polyps 2007 - a summary. *Primary Care Respiratory Journal*. 2008;17(2):79–89.
5. Elshaug A. G., Moss J. R., Southcott A. M., Hiller J. E. Redefining success in airway surgery for obstructive sleep apnea: a meta analysis and synthesis of the evidence. *SLEEP*. 2007;30(4):461–467.
6. Liang K. L., Twu C. W., Shiao J. Y. Validation of the taiwanese version of the 20-item sino-nasal outcome test. *Journal of Taiwan Otolaryngology-- Head and Neck Surgery*. 2011;46(1):6–13.
7. Lund V. J., Kennedy D. W. Staging for rhinosinusitis. *Otolaryngology—Head and Neck Surgery*. 1997;117(3, part 2):S35–S40.
8. Chen N., Johns M. W., Li H., et al. Validation of a chinese version of the epworth sleepiness scale. *Quality of Life Research*. 2002;11(8):817–821.
9. Liu Y. F., Hu J., Streelman M., Guthrie O. W. The epworth sleepiness scale in the assessment of sleep disturbance in veterans with tinnitus. *International Journal of Otolaryngology*. 2015;2015:9.
10. Kapur V. K., Auckley D. H., Chowdhuri S., et al. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: An American academy of sleep medicine clinical practice guideline. *Journal of Clinical Sleep Medicine*. 2017;13(3):479–504.]