

Original Paper

Quality of Life in Patients with Chronic Rhinosinusitis with Nasal Polyposis Before and After Functional Endoscopic Sinus Surgery: A Study Based on SINO-NASAL OUTCOME TEST

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ABSTRACT

Background: Chronic rhinosinusitis is one of the most common diseases in the world. The high prevalence and chronicity of disease increasing burden of disease. Burden of this disease, productivity and the quality of life of patients decreased. The aim of this study was to evaluate the effect of endoscopic sinus surgery on the quality of life of patients with chronic rhinosinusitis with nasal polyposis. **Method:** This prospective study was performed on 59 patients suffering chronic rhinosinusitis with nasal polyposis referring to ENT clinic of educational hospital of Tabriz University of medical sciences during 2015 to 2017. These patients underwent Endoscopic Sinus Surgery as treatment. For all patients, SINO-NASAL OUTCOME (TEST) (SNOT-22) was completed before and twelve months after surgery. **Results:** Fifty-nine patients were enrolled in this study. 21 were female (35.6%) and 38 were male (64.40%). The mean age of the studied population was 40.88 ± 16.11 years. The mean score of the preoperative score was 59.38 ± 5.84 and the mean score of the postoperative score was 24.01 ± 10.48 . The results of the statistical analysis showed that endoscopic surgery reduced The SNOT-22 questionnaire score is significant. ($P < 0.000$). The results of the test showed that the increase in preoperative score increases the gain after surgery. (Spearman correlation coefficient: 0.419 and $P: 0.001$) **Conclusion:** Endoscopic sinus surgery seems to improve the symptoms and quality of Life in patients with chronic rhinosinusitis.

INTRODUCTION

Chronic rhinosinusitis (CRS) is one of the most common diseases in world. CRS affects approximately 11 % of UK population(1), and 14% of people in USA (2). CRS is defined as inflammation of the nose and paranasal sinuses, persisting for more than 12 weeks (3). CRS may exist without or with nasal polyps. The most frequent symptom is blockage/congestion; discharge; facial pain/pressure; reduction in smell (3). CRS has been a significant high burden of disease; a recent studies estimated the annual economic burden of CRS to be \$22 billion USD (direct and indirect costs) in the USA (4) furthermore, it has been shown to have a significant impact on quality of life, greater in some respects than other chronic diseases such as angina or COPD (3). Treatment of CRS including medical therapy and surgery. There are several medical therapy including the antibiotics, antihistamines, corticosteroids, decongestant, nasal lavage, immunotherapy (5). Medical therapy is the main form of CRS management, but surgery is a choice, when medical therapy fails or in the presence of actual or impending complications (6). Functional Endoscopic sinus surgery (FESS) is considered as choice treatment for patients who have not

responded to medical therapy (6). In order to assess the success rate of FESS, a variety of variable outcome measures exist. One of the main outcome of intervention, is quality of life. quality of life is an important point in the assessment of the rhinosinusitis severity and best treatment obtaining (7). several instruments have been developed in recent years to assess the quality of life in patients with chronic rhinosinusitis. 22-Item Sinuo-Nasal Outcome (SNOT-22) is a specific questionnaire for assess the quality of life in patient with sinonasal disease (such as CRS, nasal septal deviation, Wegner, Churg Strauss syndrome) (8). According to few number of study in Iran (9-10) to evaluated the effect of FESS on quality of life in patients with rhinosinusitis, this study was performed to assess the quality of life the patients with chronic rhinosinusitis with polyposis before and after FESS by means of the SNOT-22 questionnaire.

MATERIAL AND METHODS

Study Design and Subjects Ascertainment

The study was a cohort study between 2015 and 2017. A total of 59 patients with chronic rhinosinusitis with polyposis

were enrolled by non-probability sampling. Study was done on patients with chronic rhinosinusitis with nasal polyposis that were diagnosed according to the following diagnostic criteria:

Major criteria including stuffy or blocked nose, the post-nasal drip, lack of smell, rhinorrhea, feeling of fullness in the face and *minor criteria* including headache, weakness, toothache, cough, ear pain or a feeling of pressure in the ears. Two major criteria or one Major criteria and two minor criteria were diagnosed as chronic rhinosinusitis. This diagnosis was confirmed by CT scan.

The exclusion criteria were:

- 1) Specific conditions such as other problems in the ears and throats that have similar symptoms with chronic polyposis and rhinosinusitis and affect the outcome.
- 2) Previous Sinus Surgery.
- 3) Secondary causes for chronic rhinosinusitis such as fungal infections, vasculitis and mucocell.
- 4) Anatomical disorders of the maxillofacial area.
- 5) Diseases such as depression that affects the outcome after a patient's surgery.
- 6) The patient's unwillingness to participate in the project.

The researchers were committed to the ethical guidelines of the Declaration of Helsinki (11). Ethical approval for the study was obtained from the Institutional Review Board at Tabriz university of Medical Science. Signed consent forms were also obtained from all participants.

SNOT-22 questionnaires were filled out by patients after education about this instrument. All patients filled out the questionnaire before FESS and 12 months after it. The researcher used the Persian version of SNOT-22 that valid and reliable (12). SPSS Software version 22.0 was used for statistical analysis (IBM, Chicago, IL, USA). Relative frequency percentages were reported to demonstrate the nominal variables. The characteristics of study were compared by the Wilcoxon test, Spearman correlation coefficient and Mann-Whitney u test.

RESULT

59 patients enrolled in the study. All subjects were followed up for 12 months after FESS and no sample loss was observed. The subjects were 21 females (35.6%) and 38 males (64.40%). The male to female ratio was 1.80:1. The mean age of the studied population was 40.88 ± 16.1 years (82-16). FESS significantly reduced the mean score of all items in the SNOT-22 questionnaire. In other words, it improves the symptoms mentioned in each item. The mean score of the preoperative score was 59.38 ± 5.84 (70-37) and the mean score of the postoperative score was 24.01 ± 10.41 (51.7). The results of statistical analysis showed that endoscopic surgery significantly reduced SNOT-22 questionnaire score ($P < 0.000$). Figure 1 shows these changes.

Correlation test was used to examine the relationship between the total score before and after the FESS. The results of the test showed that there was a significant correlation between the total score before and after the FESS, in which the increase in pre-surgical score increases the gain after surgery. (Spearman correlation coefficient: 0.419 and $P = 0.001$) Figure 2 shows these changes.

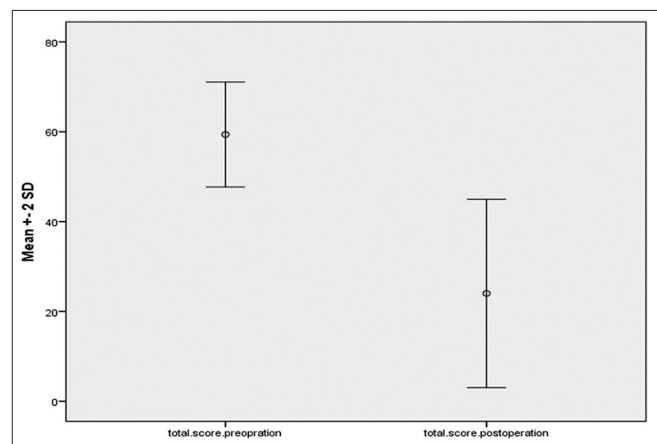


Figure 1. Comparison of total score of SNOT-22 before and after FESS

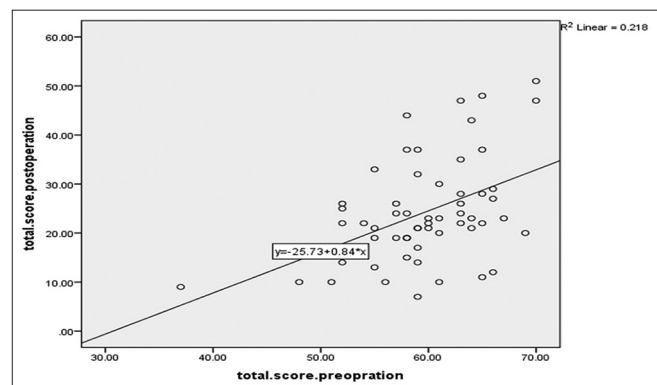


Figure 2. Relationship between the total score of SNOT-22 before and after FESS

Variable entitled “The improvement percentage of the questionnaire score”, which results in subtracting the pre-surgical score from the post-surgical score divided by the pre-surgical score multiplied by 100%” was defined. The mean of this variables was $60.00 \pm 15.73\%$ (24.14- 88.14%). According to the Mann-Whitney test, there was no significant correlation between this variable and the gender of the patient ($P = 0.447$). correlation test results also showed that there was no significant statistical relationship between this variable and the patients' age ($P = 0.228$).

DISCUSSION

Our findings demonstrated that FESS reduced the SNOT-22 questionnaire score significantly ($P < 0.000$). The results of analysis showed that the increase in preoperative score increases the preoperative one. (Spearman correlation coefficient: 0.419 and $P = 0.001$). According to analysis, there was no significant correlation between the improvement percentage of the questionnaire score and gender of the patient. Correlation test results also showed that there was no significant statistical relationship between this variable and the patients' age. Chronic rhinosinusitis is a common disease that estimated affect 20 million patient in USA per year (13). The results of a cohort study showed that each person spent about \$ 1,000 per year for treatment, and about \$ 1,500 for

economic cost annually (14). so cost-effective treatments are needed. Various variables are examined for comparing and examining different types of treatments, some studies examine the complications of treatment, and some compare the results of imaging. Since the diagnosis of rhinosinusitis is based on clinical criteria, using a questionnaire to examine the severity and quality of the symptoms of the patient is helpful. In the present study, we evaluated the effect of endoscopic sinus surgery on the quality of life of chronic rhinosinusitis patients with nasal polyposis.

In this study, 64.40% were male. The male to female ratio is 1.80:1. Which is in line with other previous studies (15-16, 9). The mean age of the study population was 40.88 ± 16.1 years (16-82). In the NIKAKHLAGH et al. study, the mean age of the population was 39.25 (22.66) (9) and in the study of Akarçay et al., The mean age of the study population was 36 (17). In the study of Satish et al., The mean age of the study population was 36 (16). furthermore, some study demonstrated the mean age of study population was 42 that similar to our study (18-20). The duration of patients follow up was different. In the present study, this period was twelve months. NIKAKHLAGH et al (9) followed up patients for six months. In other studies, patients were followed by three months (15-17). According to chronicity of disease, it seems that more duration time for follow up is needed in next studies. In the present study, there was no significant difference between gender and improvement in the questionnaire score, which was similar to that of Bezerra (21) and NIKAKHLAGH (9). In the study of Macdonald et al., Improving the quality of life after FESS was significantly higher in men, and in addition, this improvement was higher in the age group less than 50 years old (22). Generally, CRS with polyposis affected both sex but it seems that more study needed to determine that treatment of CRS depended on sex or not. In the present study, all items of the questionnaire were significantly improved. In the study of Bunzen et al., This improvement of quality of life score was associated with nasal congestion, halitosis, headache, and lack of smell (23). In Ling et al., This improvement was observed in PND, nasal obstruction and nasal congestion. (24) The NIKAKHLAGH study showed the highest improvement in symptoms of nasal congestion and nasal congestion. (9)

CONCLUSION

Functional endoscopic sinus surgery (FESS) has been significantly associated with improvement in quality of life in patients with chronic rhinosinusitis with polyposis, according to SNOT-22 after 12 months.

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