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Outcome of Endoscopic sinus surgery in patients with polyposis

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A B S T R A C T

Functional endoscopic sinus surgery (FESS) is a minimally invasive technique that is used to management of sinus disease including the excision of nasal polyps. The objective of the present study was to determine efficacy of functional endoscopic sinus surgery (FESS) on clinical signs of patients with nasal polyps. In a before-after study that performed in department of ENT of Tabriz University of Medical Sciences on patients with nasal polyps, efficacy of functional endoscopic sinus surgery (FESS) on clinical signs of patients with nasal polyps evaluated. We enrolled 30 patients suffering with nasal polyps, which failed medical treatment and were proceeding to surgery. Nineteen of patients were male and 11 of them were female. Mean age of patients was 45.96 ± 15.78 year. Intensity of blockage/congestion of nose, sense of smell, postnasal discharge (PND) and facial pain/pressure was "Problem is bad as it can be" in 23(76.6%), 27(90%), 13(43.3%) and 11(36.6%) of patients, respectively. At one month after surgery, Intensity of blockage/congestion of nose, sense of smell, PND and facial pain/pressure was "No Problem" in 30(100%), 23(76.6%), 26(86.6%) and 26(86.6%) of patients, respectively. At six month after surgery, Intensity of blockage/congestion of nose, sense of smell, PND and facial pain/pressure was "No Problem" in 26(86.6%), 21(70%), 22(73.3%) and 28(93.3%) of patients, respectively. Intensity of clinical signs was significantly decreased at one and six month late of surgery. This study demonstrates that long-term results of FESS in patients with nasal polyps are good. Quality of life has improved significantly, especially in nasal symptoms, showing that FESS is a good treatment in patients with nasal polyps.

Introduction

Nasal polyps are benign mucosal lesions that originate from the Mucosa of the nasal cavity or Mucosa of the sinuses around the nasal. Nasal polyps are a common, so up

to 4% of the populations are affected by this disease (1). However, Becker's studies reports its prevalence up to 32% (2). The cause of polyps is unknown, but they are

associated with allergies, asthma and infections of the nose and sinus anatomical variations. Polyps may occur with nasal obstruction, anosmia, rhinorrhea, PND and less common with facial pain and headaches (1). Nasal polyps are associated with significant nasal obstruction, and also they are one of the most common causes of olfactory dysfunction (2-3). Polyps are usually diagnosed with a clinical examination, but the standard gold diagnostic method for nasal polyps is CT scan (1). Since the cause of sinonasal polyps formation is not entirely clear, so the effective long-term treatment remains as a complication. Polyps Treatment is a challenge for ENT specialists.

However, these patients would be treated by a combination of drug therapy and surgery. Surgical treatment would be reserved for patients resistant to drug treatment. With the advent of FESS, resistant cases to drug therapy and extensive tissue destruction with traditional surgical treatments have considerably improved (1). These polyps are listed in relative indication for surgery (4). According to Becker, up to 50% of patients with sinonasal polyps are ultimately require surgical intervention (2). Polyp recurrence is common and even with radical treatment; the disease could recur in 10% of patients. For patients who have polyps, surgery can be considered as the first step in the treatment of chronic process of illness (2). It is important to prevent crusts and adhesions after surgery, nasal cavity should be rinsed regularly with saline. Also, topical nasal steroids are the routine part of care after surgery, to prevent recurrence (1). Polyps in patients without asthma can often be cured by surgery, but in patients with asthma, polyps frequently recur (4). Several studies on the effects of FESS on sinonasal polyps have shown clinical improvement. In patients with sinonasal polyps, sinus surgery

can lead to substantial reduction in polyps with subsequent improvement in nasal obstruction and quality of life (2).

According to studies conducted in other countries, FESS surgery reduces bothersome symptoms in patients with nasal polyps such as nasal obstruction and olfactory dysfunction and postnasal discharge, but it has been less successful in removing facial pain and headache in these patients. In our country, FESS is used to treat a variety of nasal polyps, which are resistant to topical treatment and systemic corticosteroids, but there is no study in patients' complaints about the results.

Whereas this kind of studies has not been carried out in our country so with researching in this field in our own country and the city, we could take FESS advantages and it would have effects on the complaints such as nasal obstruction, impaired sense of smell, postnasal drip, and facial pain and headaches in patients with polyps. The purpose of this study was to determine the effects of FESS on clinical symptoms in patients with nasal polyps.

Materials and Methods

In a Before - After experimental study, which we conducted on patients with nasal polyps at the department of ENT in Tabriz University of Medical Sciences, the FESS impacts on clinical symptoms in patients with nasal polyps was examined.

Sampling: Consecutive method and recruited from patients referred to ENT Clinic in Imam Reza Hospital of Tabriz.

Due to the turbidity in CT scan, 30 patients with nasal polyps are excluded, reviewed and Scored through their histories, physical examination, endoscopy and CT scan, nasal

obstruction, olfactory dysfunction, PND, facial pain and headache.

One of these symptoms is a nasal polyp criterion. The criteria for rejecting the nasal obstruction are Tumor or just sinusitis. The FESS surgery would be done and assessment and recovery rate were compared with the change of score, at 4 weeks and 6 months after the surgery.

Pre and postoperative evaluations were performed by asking questions and completing the patients' questionnaires, physical examination, endoscopy and CT scan.

Valid SNOT-22 questionnaire, which is internationally available were used to evaluate patients. 5 ENT Physicians validate the translated questionnaires, and then patients were evaluated by SNOT-22 questionnaire.

Studied variables include Age, sex, obstruction / nasal congestion, olfactory dysfunction, posterior nasal discharge, facial pressure / pain. Patient score of CT findings was based on Hadley systems and grading system.

Statistic analysis

Descriptive methods (frequency, percentage, mean \pm SD) were used for statistical analysis and the chi-square test (X^2) and mean difference test were used to compare. All statistical analyzes were performed with SPSS 17 statistical software. The $p < 0.05$ was considered significant in all cases.

Ethical considerations

Written consent for participation in the study was obtained from all patients. Patients' information is completely confidential and their name will not be used anywhere.

Results and Discussion

In this study, 30 patients with nasal polyps were treated by FESS. Clinical symptoms of the patients were studied and evaluated by the SNOT-22 questionnaire before surgery and at the first month and sixth months after the surgery, and the following results were obtained:

19 patients were male and 11 patients were female. The mean age of males and females were respectively 49.52 ± 16.46 and 39.81 ± 13 . There was no significant difference between the average age of males and females cases ($P = 0.106$).

Patients' jobs are shown in Table 1 through genders. 2 patients were single and 28 were married.

The findings of the patients are shown in Tables 2 to 4 through the SNOT-22 questionnaire, before surgery and one month and according to genders at sixth months after surgery.

The findings - based on Hadley scoring system - are shown in Figure 1. There was no significant difference between genders in terms of scoring in Hadley's systems ($P = 0.307$).

The findings were based on the CT findings in Lund-Mackay grading system were shown in Table 6. There was a significant reduction in all symptoms, at the first and sixth months after surgery compared to before operation ($P = 0.001$).

Nasal endoscopy methods have led to significant improvements in the diagnosis, proper treatment and follow-up so resulting reduction in hospitalizing duration and

diagnostic and therapeutic methods costs (5).

The important side effects of endoscopic sinus surgery are to relieve the obstruction and pathology of anterior ethmoid and returning drainage of frontal sinus and maxillary inside noses.

The surgery has a high success rate and negligible side effects, so that the study results indicate that postoperative recovery success rate is about 63-93% of patients (6-8).

Postoperative side effects occur in approximately 1% of patients and commonly include adhesions, maxillary sinus orifice stenosis, CSF leakage, infection, pre and postoperative bleeding (8).

A valid scale is essential for the evaluation of treatment effects. SNOT-22 test was used as an outcome measure in many studies, including in Iran (10-9).

This test is a valid measure for the assessment of rhinosinusitis and nasal polyps, and to evaluate the quality of life and the noses and sinuses healthiness (9 and 11).

In this questionnaire, patients described their health status by referring to their symptoms severity, and also described their quality of life by referring to the importance of specific points such as physical problems, functional limitations and emotional consequences of rhinosinusitis (11).

In this study conducted by Dr. Jalesi and colleagues on the Persian version of the SNOT-22 questionnaire, they stated that the Persian version is a valid and effective questionnaire for the evaluation of patients

after sinus surgery and In this study, Cronbach's alpha calculated for the performance of these questionnaires was 0.898, which indicates the high efficiency and validity of the questionnaire (12).

Also, in this study, we used this questionnaire for evaluating patients with nasal polyps who were treated by FESS.

In Vigand and Housman study which was concluded on 220 patients, the overall success rate of FESS in recovery trend was 70 – 93%. In the study, Rayan and Colleagues studied on the FESS results of 120 patients and stated that the recovery trend in the 18-month follow-up was 78%(7).

Swife expressed that the results of FESS were extremely well and the overall success rate in this study was 90-80% and the postoperative complication such as bleeding was appeared in just 0.59% of the patients(8). In Tan's review nasal obstruction plays a more prominent role in the symptomatology CRC, accompanied by polyps. Compared with the conservative pharmacological treatment of nasal polyps, FESS showed a significant impact on improving the nasal obstruction(13).

Other study, with 5 years follow-up after surgery, reported the improvement of the functional side effects such as nasal obstruction, rhinorrhea, facial pain and anosmia in the patients undergoing FESS surgery(2). In a study, the olfactory test results after FESS indicated the olfactory improvement in 74% of patients after 1 year post-operative follow-up. In this study, 76.66% of the patients suffered from olfactory problems. In 10% of patients, olfactory dysfunction was moderate and it was severe in 13.33% of them so our results were similar to above information.

Table.I Patients' jobs through genders

| | Sex | | Total |
|---------------|------|--------|-------|
| | Male | Female | |
| Housekeeper | 0 | 9 | 9 |
| Self-employed | 9 | 0 | 9 |
| Retired | 3 | 0 | 3 |
| Farmer | 3 | 0 | 3 |
| Employee | 3 | 1 | 4 |
| Student | 1 | 1 | 2 |

Table.II Clinical finding of patients with the SNOT-22 questionnaire according to genders at before surgery

| | | Sex | | P |
|------------------------|---------------------|------|--------|-------|
| | | Male | Female | |
| Nasal obstruction | Moderate Problem | 1 | 0 | 0.832 |
| | Severe Problem | 3 | 3 | |
| | Very Severe Problem | 15 | 8 | |
| Loss of smell or taste | Moderate Problem | 2 | 0 | 0.933 |
| | Severe Problem | 0 | 1 | |
| | Very Severe Problem | 17 | 10 | |
| Post-nasal discharge | NO Problem | 4 | 1 | 0.800 |
| | Very Mild Problem | 0 | 1 | |
| | Mild Problem | 2 | 1 | |
| | Moderate Problem | 4 | 1 | |
| | Severe Problem | 1 | 3 | |
| Facial pain/pressure | Very Severe Problem | 8 | 4 | 0.077 |
| | No Problem | 9 | 1 | |
| | Moderate Problem | 2 | 3 | |
| | Severe Problem | 3 | 1 | |
| | Very Severe Problem | 5 | 6 | |

Table III: Clinical finding of patients with the SNOT-22 questionnaire according to genders at one month after surgery

| | | Sex | | P |
|------------------------|---------------------|------|--------|-------|
| | | Male | Female | |
| Nasal obstruction | No Problem | 19 | 11 | - |
| Loss of smell or taste | No Problem | 12 | 11 | 0.103 |
| | Moderate Problem | 3 | 0 | |
| | Very Severe Problem | 4 | 0 | |
| Post-nasal discharge | No Problem | 18 | 8 | 0.328 |
| | Very Mild Problem | 1 | 2 | |
| | Moderate Problem | 0 | 1 | |
| Facial pain/pressure | No Problem | 17 | 9 | 0.735 |
| | Very Mild Problem | 1 | 1 | |
| | Mild Problem | 1 | 1 | |

Figure.I Hadley score of patients in two Sex

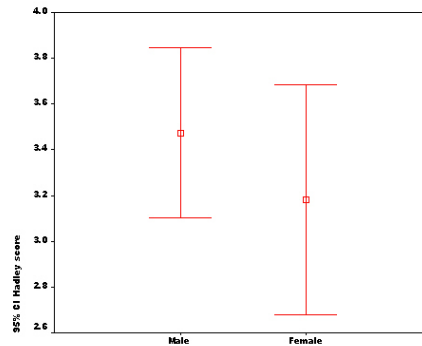


Table.IV Clinical finding of patients with the SNOT-22 questionnaire according to genders at Six month after surgery

| | | Sex | | P |
|------------------------|---------------------|------|--------|-------|
| | | Male | Female | |
| Nasal obstruction | NO Problem | 17 | 9 | 0.735 |
| | Very Mild Problem | 0 | 1 | |
| | Mild Problem | 2 | 0 | |
| | Moderate Problem | 0 | 1 | |
| Loss of smell or taste | NO Problem | 11 | 10 | 0.134 |
| | Very Mild Problem | 1 | 0 | |
| | Mild Problem | 1 | 0 | |
| | Moderate Problem | 2 | 1 | |
| | Very Severe Problem | 4 | 0 | |
| Post-nasal discharge | NO Problem | 16 | 6 | 0.145 |
| | Very Mild Problem | 2 | 2 | |
| | Mild Problem | 1 | 1 | |
| | Moderate Problem | 0 | 2 | |
| Facial pain/pressure | NO Problem | 18 | 19 | 0.866 |
| | Very Mild Problem | 1 | 1 | |

Although the patients suffered from sinusitis and anosmia were satisfied for surgery but often do not show a favorable response to surgery(3). In a study conducted by Tan, the FESS effects on the patients with and without polyps were evaluated and he demonstrated that nasal obstruction in the

patients with Polyps improved but the rate of headache and facial pain recovery did not differ.

After FESS, nasal airflow and nasal cavity in the patients with polyps increases. The role of surgery in the treatment of headaches

and facial pain remains controversial (14). In our study the blockage / nasal congestion was severe and very severe in 29 patients and this problem was fixed during the first month after surgery. In the next 6 months, the blockage / nasal congestion was mild and just in one case, it was moderate.

In a study by Mascarenhas et al on patients with chronic sinusitis and nasal polyps, the results of endoscopic sinus surgery in patients with and without nasal polyps were studied and they expressed that in patients with chronic sinusitis, the FESS surgery leads to improve the SNOT-22 score in all cases and there was no significant difference between FESS results in patients with and without polyps(15).

Same as above, in our study, there was a significant reduction in all symptoms during one month and six months after surgery compared to preoperative condition(P=0.001). In a study by Tang and colleagues conducted on patients with nasal polyps, they stated that FESS improves clinical symptoms of patients (16). In a meta-analysis conducted by Dalziel and colleagues in 2006, they analyzed the results of different studies about the effects of FESS Up to 2005 and stated that this method is safe and effective for treatment of the patients with chronic sinusitis and nasal polyps(17).

In 2003, Dalziel and colleagues studied on the FESS results of the patient with nasal polyps and indicated that the symptoms recovery rate was in the range of 78-88% and the symptoms recurrence was 8% in different studies and the side effects just appeared in 1.8% of the cases(18).

In a study conducted by Dalziel et al on FESS results of the patients with nasal polyps in 2003, they found that SNOT-22 could be beneficial for analyzing the FESS

results which help us to evaluate and study about the therapeutic response range in patients after FESS surgery. However there was a poor correlation between CT findings and symptoms these patients.

In a study, Dilidaer et al studied on the results of treatment in patients with nasal polyps, they stated that the failure rate of FESS treatment was 5% in cases.

In our study, 4 patients were too dissatisfied with their olfactory ability but no cases suffered from the severe problems such as obstruction / congestion, nasal posterior discharge and facial pain/ pressure. They were mild and moderate if they had been. Khalil et al expressed that FESS is a safe and useful method for treatment of the patients with nasal polyps(21). In a study conducted by Corent and colleagues on long-term results of FESS in the treatment of chronic sinusitis associated with nasal polyps in children, it was found that the results were too perfect(22).

In Siedek and colleagues' study, on patients suffered from polyps and chronic sinusitis, in addition analyzing the results of treatment by FESS surgery, it was found that in 76% of cases, evaluation of patients after FESS, indicating improvement in the main symptoms (23).

Conclusion

In this study, for evaluating the patients with nasal polyps -those who were treated with FESS – a SNOT-22 questionnaire was used. At 6 months after surgery, 76.66% of patients did not complain of olfactory disorders, it was moderate in 10% of cases and severe in 13.33% of them. The preoperative nasal obstruction / congestion in 29 patients was severe and very severe. One month after surgery, all patients had no difficulty and at 6 months after surgery the

blockage / nasal congestion in 2 patients were mild and moderate in one. In this study there was a significant reduction in all symptoms of patients at one month and six months after surgery compared to before operation. In this study, 4 patients were too dissatisfied with their olfactory ability but no cases suffered from the severe problems such as obstruction / congestion, nasal posterior discharge, and facial pain/pressure. None of the patients suffered from a severe and if there were problems, in most cases they were mild or moderate.

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