THE IMPACT OF FUNCTIONAL ENDOSCOPIC SINUS SURGERY ON SYMPTOMS IN CHRONIC RHINOSINUSITIS

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Abstract: Chronic rhinosinusitis restricts the quality of life of millions of involved patients. The aim of the study was to evaluate how functional endoscopic sinus surgery (FESS) modifies symptom profiles in patients with chronic rhinosinusitis.

Questionnaires were given to eighty patients with chronic rhinosinusitis, who underwent FESS, to assess typically related symptoms preoperatively and postoperatively. Statistical analyses were performed with the Wilcoxon test.

Leading symptoms of chronic rhinosinusitis were nasal obstruction in 93.7% and post nasal discharge in 86.2% of the patients. Furthermore, patients reported anterior nasal discharge in 72.5%, headache in 65% and hyposmia in 62.5% of the patients. One year postoperatively all the symptoms were significantly improved: nasal obstruction in 87%, post nasal discharge in 74.3%, anterior nasal discharge in 70.5%, headache in 59.4% and hyposmia in 58.7% of the patients.

Our results showed that FESS is an adequate and effective method in treatment patients with chronic rhinosinusitis. On the other hand, the questionnaire used in the present study was easy to handle for the patients and allowed successful quantification of sinusitis-related symptoms.

Key words: rhinosinusitis, functional endoscopic sinus surgery, outcome.

Introduction

Rhinosinusitis is a common disorder which affects a significant proportion of the population, with estimates ranging from 7 to 30% (1). The sym-
Symptoms such as nasal obstruction, rhinorrhoea, facial pain, headache, hyposmia, and restriction of patient’s life quality have social and economic sequelae [2]. After failure of conservative therapy, functional endoscopic sinus surgery (FESS) is the preferred and commonly applied treatment of chronic rhinosinusitis in the past years. Although many studies have been written on diagnosis, technique, and results, the evaluation of results has largely relied on subjective assessment [3].

It is of great importance for the ENT surgeons to be able to demonstrate and evaluate the clinical effectiveness of FESS. For that purpose a lot of "outcome measures" are used: Visual Analogue Score (VAS), Sino Nasal outcome Test (SNOT-20), Sino Nasal Assessment Questionnaire (SNAQ-11), Quebec French-Rhinosinusitis Outcome Measure (QF-ROM) and many others developed in different ENT departments [4, 5, 6]. In the 1980s and 1990s, many studies were published on treatment outcome after FESS with varying overall success rates between 73% and 97%. [7] The relationship among FESS, sinusal-related symptoms, and quality of life is not yet well established [8].

The purpose of our study was to demonstrate and evaluate the impact of FESS on chronic rhinosinusitis-related symptoms.

Material and Methods

Eighty patients who were given treatment with FESS for chronic rhinosinusitis in the Department of Otorhinolaryngology, Medical Faculty – Skopje (Skopje, Macedonia), from June 2002 to May 2005, had demonstrated failure of medical therapy for their sinus problems.

All patients were asked to complete questionnaire, developed in our department, preoperatively and at one year postoperatively. This questionnaire was designed to distinguish the degree of sinusal-related symptoms (nasal obstruction, anterior nasal discharge, post nasal discharge, headache, hyposmia) caused by chronic rhinosinusitis. Questionnaire included assessment of complaints in ranking scales from: no complaints [0], mild [1], moderate [2], severe [3], intolerable [4]. Success outcome after FESS was defined as improvement of two or more complaints in at least two ranking steps. The questionnaire used in the study was easily understandable, easy to handle, and patients’ assessments of complaints took less than 5 minutes. The data obtained with this tool were suitable for statistical evaluation, allowing the comparison of preoperative with postoperative outcome.

Preoperative management included thorough rhinological history, nasal endoscopic examination, skin allergy test, rhinomanometric evaluation, and computed tomography (CT) scans of the sinuses (axial and coronal).
FESS was performed in all cases under general anesthesia by one surgeon using the technique essentially as described by Stammberger. The extent of the surgery was determined by the extent of the disease but included uncinectomy, middle meatal antrostomy, anterior ethmoidectomy and perforation of the ground lamella of the middle turbinate with posterior ethmoidectomy, sphenoidectomy and clearance of the frontal recess.

Postoperative management continued with systemic antibiotics for five days (Amoxicillin or Clindamycin) and intranasal steroid therapy for at least three months after surgery. All patients were reviewed regularly following surgery to perform endoscopic cleaning of crusts and mucus. After discharge from hospital, ambulatory visits were performed until postoperative wound healing was completed.

Exclusion criteria consisted of patients with other disease that may influence the sinusitis-related symptoms and quality of life such as allergic rhinosinusitis, cystic fibrosis, tumors in sinonasal region and previous sinus surgery.

Statistical analyses were performed with the Wilcoxon test, allowing the comparison of preoperative with postoperative outcome. A P value less than 0.05 was regarded as statistically significant.

Results

Of the patients who completed the follow-up, 46 patients were female and 34 were male patients. The mean age was 46.3 years, ranging from 18 to 61 years.

Thirty six procedures were performed for nasal polyposis (45%), and 44 for rhinosinusitis (55%). Overall, 17 patients had unilateral sinus surgery (21.25%), and 63 had bilateral procedures performed (78.25%).

Uncinectomy with middle meatal antrostomy was performed in 72 patients (90%), anterior ethmoidectomy in 51 patients (63.7%), total ethmoidectomy in 43 (53.7%), sphenoidectomy in 18 (22.5%), frontal sinus surgery in 21 (26.2%). Partial resection of the middle turbinate (concha bullosa) was carried out in 18 patients (22.5%), while septoplasty was necessary in 11 patients (13.7%). The total number of surgical procedures is higher than the number of patients due to multiple procedures performed in one patient (Figure 1, 2).

Intra-operative complications include severe epistaxis from the sphenopalatine artery occurred in three patients (3.7%). Cerebrospinal fluid leakage and orbital injury did not happen.

Leading symptoms of chronic rhinosinusitis were nasal obstruction in 75 patients (93.7%) (mean rank score – 2.9 ± 1.1), and post nasal discharge in
69 patient (86.2%) (mean rank score – 2.5 ± 1.7). Furthermore, there was anterior nasal discharge in 72.5% (2.3 ± 2.1), headache in 65% (1.7 ± 1.5) and hyposmia in 62.5% (1.4 ± 1.3) of the patients.

Nasal obstruction was postoperatively improved in 87% (0.61 ± 1.2), post nasal discharge in 74.3% (0.89 ± 0.95), anterior nasal discharge in 70.5% (1.1 ± 1.3), headache in 59.4% (0.72 ± 1.1) and hyposmia in 58.7% (0.51 ± 0.91) of the patients.
All preoperative versus postoperative sinusitis-related symptoms were significantly improved i.e. reached statistical significance following surgery (p < 0.05) (Table 1).

**Table 1 – Таблица 1**

*Pre-operative and post-operative questionnaire mean symptom scores*  
*Средни вредности на симптомите пред и след оперативна интервенция*

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Pre-operative scores</th>
<th>Post-operative scores</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal obstruction</td>
<td>2.9 ± 1.1</td>
<td>0.61 ± 1.2</td>
<td>2.29*</td>
</tr>
<tr>
<td>Postnasal discharge</td>
<td>2.5 ± 1.7</td>
<td>0.89 ± 0.95</td>
<td>1.61*</td>
</tr>
<tr>
<td>Ant. nasal discharge</td>
<td>2.3 ± 2.1</td>
<td>1.1 ± 1.3</td>
<td>1.2*</td>
</tr>
<tr>
<td>Headache</td>
<td>1.7 ± 1.5</td>
<td>0.72 ± 1.1</td>
<td>0.98*</td>
</tr>
<tr>
<td>Hyposmia</td>
<td>1.4 ± 1.3</td>
<td>0.51 ± 0.91</td>
<td>0.89*</td>
</tr>
</tbody>
</table>

* = p < 0.05

**Discussion**

Only valid and relevant outcome measures can produce a meaningful estimate of intervention results. This allows accurate measurement of clinical effectiveness of specific procedures and also the opportunity to audit surgeon’s individual performance. Many outcome measures have been used to assess results of sinonasal surgery, some are general quality of life measures and some are rhinosinusitis specific [8, 9].

The questionnaire symptom score offers a reproducible quantifiable evaluation of patients symptoms which may give more subtle information than simply asking if the patient is better, the same or worse and confirms overall clinical improvement for all clinical symptoms considered.

Since chronic rhinosinusitis is a disease with rising prevalence that cost society a lot of money and affects a significant portion of the population, the outcome evaluation and verification of therapy effectiveness are essential [10]. According to our study, nasal obstruction, post nasal discharge and anterior nasal discharge were the leading symptoms observed in the chronic rhinosinusitis population. These symptoms were identified to be mainly responsible for reduced quality of life. After FESS, a significant improvement of all symptoms and quality of life was achieved in our patients. However, health or quality of life
is not easy to measure. According to the World Health Organization, health is a multidimensional concept that encompasses physical, social, and mental states of being [11].

A large number of studies with variable follow-up have focused on the patients’ subjective appraisal of results, and have consistently shown a clinical improvement estimated at between 80%–98%, but objective tests have not been performed [12, 13, 14, 15, 16]. Besides "subjective" measurements, the discussion of the best, most meaningful tools for treatment outcome control also includes "objective" methods. Among other authors Kennedy et al. [17] and Lund et al. [18] have favoured these objective measurements. Kennedy examined 120 patients by both endoscopic examination and questionnaires over a period of 18 months. Subjective results showed "marked improvement" in 85%, "mild improvement" in 12.5%, and "no improvement" complaints in 2.5%. Despite this excellent subjective improvement, many of the patients had residual evidence of sinus disease (44.9% of all patients) on endoscopic examination. Lund et al. performed preoperative and postoperative rhinomanometry and olfactometry. Although they demonstrated a significant improvement in all symptoms examined, quantitative olfaction and anterior rhinomanometry were not improved, despite diminished symptoms. Undoubtedly, these objective findings reveal important information regarding the process of the mucosal disease, but they are not correlated or are insufficiently correlated with patients’ complaints.

As clinical experience suggests, and our results confirm, endoscopic sinus surgery seems especially effective at addressing nasal obstruction, anterior nasal discharge and post nasal discharge and fair at headache and hyposmia.

On the basis of our study we believe that questionnaire, developed at our department is a valid and clinically relevant tool for assessment of patients with sino-nasal disease especially with chronic rhinosinusitis. We feel the specificity and predictive value of the questionnaire can play a valuable role in not only in measurement of outcome but also in patient selection for different treatment modalities.

REFERENCES


Резиме

ВЛИЈАНИЕТО НА ФУНКЦИОНАЛНАТА ЕНДОСКОПСКА СИНУСНА ХИРУРГИЈА НА СИМПТОМТЕ КАЈ ХРОНИЧНИОТ РИНОСИНУЗИТИС

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Хроничниот риносинузитис го ограничува квалитетот на живеење кај милиони пациенти. Целта на судијата беше да се евалуира на кој начин функционалната ендоскопска синусна хирургија (FESS) влијае на симптомите кај пациентите со хроничен риносинузитис.

Осуднест пациенти со хроничен риносинузитис кои беа подложен на FESS, пополнено пражалници за тежината на нивните симптоми пред и една година по оперативната интервенција. Во статистичката анализа на добиените податоци беше користен Вилоксонов тест.

Водечки симптоми кај хроничниот риносинузитис беа: назална опструкција кај 93,7% и пост назална секреција кај 86,2% од пациентите. Предна назална секреција беше присутна кај 72,5%, главоболка кај 65% и хипосмија кај 62,5% од пациентите. Една година по оперативната интервенција постоеше статистички значајни подобрување на сите симптоми: назална опструкција кај 87%, пост назална секреција кај 74,3%, предна назална секреција кај 70,5%, главоболка кај 59,4% и хипосмија кај 58,7% од пациентите.

Резултатите од нашата студија покажаа дека FESS претставува адекватен и ефикасен метод за хируршко лекување на пациенти со хроничен риносинузитис. Од друга страна, пражалникот употребен во студијата беше едноставен за пополнување од страна на пациентите и истиот овозможи успешно квантификување на симптомите.

Ключни зборови: риносинузитис, функционална ендоскопска синусна хирургија, резултати.

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