

ORIGINAL STUDY

SNOT-20 and VAS questionnaires in establishing the success of different surgical approaches in chronic rhinosinusitis

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ABSTRACT

BACKGROUND. Chronic rhinosinusitis (CRS) is a common, multifactorial chronic disease, affecting the quality of life of patients and representing an important burden for the society. Most patients with CRS seek medical treatment only when they experience an important impairment of their QoL. So, for the patients, improvement of QoL is a critical indicator of success of surgical treatment.

OBJECTIVE. The aim of the study was to evaluate the impact of chronic rhinosinusitis surgical treatment upon patients' quality of life, measured using quality of life questionnaires.

MATERIAL AND METHODS. The study was performed between October 2009 and October 2011 on 278 consecutive patients with chronic rhinosinusitis, with/without nasal polyps, and operated on, after failure of maximal medical therapy. The patients were divided in two subgroups - the first operated on using conservative endoscopic techniques and the second operated with radical procedures (Caldwell-Luc, Ogston-Luc, etc). Quality of life (QoL) was assessed using two methods: sinonasal outcome test 20 (SNOT-20) questionnaire and visual analogue scale (VAS). The evaluation of the patients was performed preoperatively and, respectively, 3, 6 and 12 months postoperatively.

RESULTS. The results showed an important impairment in terms of QoL of patients before surgery. Preoperatively, patients from radical surgery group showed a higher impairment of QoL than patients treated using endoscopic surgery. One year postoperatively, a significant statistical improvement ($p < 0.05$) in terms of QoL of patients from both subgroups was noted.

CONCLUSION. Both conservative and radical surgical procedures are currently used and designed to improve the health of patients affected by chronic rhinosinusitis. To reflect these improvements, we can use quality of life questionnaires.

KEYWORDS: chronic rhinosinusitis, Quality of Life, SNOT-20, VAS

INTRODUCTION

Chronic rhinosinusitis (CRS) is a chronic condition which lasts 12 weeks or more and is characterized by the presence of two or more symptoms: nasal blockage/obstruction/congestion or anterior/posterior nasal drip, +/- facial pain/pressure, +/- hyposmia/anosmia.

Recent studies pointed that chronic rhinosinusitis (CRS) is one of the most common diseases with a prevalence ranging between 5% to 15% of the urban population in Europe^{1,2} (10.9% according to EPOS2012³), and between 14-16% of population in the US⁴.

The disease requires surgical treatment after medical treatment failure, involving important amount of resources spent in terms of direct and indirect costs. The direct annual costs in US were estimated to be around \$4.3 billion⁵.

Considering that this disease is so widespread, clinical studies focused on patients' quality of life to acknowledge how they perceive improvements before and after surgical treatment. One study showed that CRS has, before surgical treatment, a significantly worse QoL than most other chronic conditions⁶. To measure the QoL, a series of disease-specific instruments have been developed.

Some of these are Rhinosinusitis Disability Index (RSDI), Chronic Sinusitis Survey (CSS), Sino-Nasal Outcome Test (SNOT-20 or SNOT-22), Visual Analogue Scale (VAS) etc. SNOT-20 and VAS are well-known and validated questionnaires to assess the impact of chronic rhinosinusitis on patient's life and also can show how and if surgical treatment improves patients' complaints.

Regarding the surgical treatment, at the end of the XIXth century, radical surgery (open procedures) knew its beginnings as a gold standard surgical procedure (Caldwell-Luc) in the treatment of CRS. The improvements introduced in endoscopic sinus surgery, in the late XXth century, resulted in the reconsideration of the value and usage of external approaches in the treatment of CRS.

The goal of this study was to emphasize how both surgical approaches (external and endoscopic) modify patients' quality of life and, at the same time, to see the success rate of surgical treatment.

MATERIAL AND METHODS

We performed a prospective study on 278 consecutive patients with chronic rhinosinusitis that underwent surgical treatment between October 2009 - October 2011. The patients were divided into 2 groups in accordance with the type of surgical treatment. First group of patients underwent radical procedures (Caldwell-Luc, Ogston-Luc, combined radical procedures - endoscopic and external). The patients from the second group underwent conservative endoscopic techniques ranging from minimal invasive sinus techniques

(MIST) to FESS (functional endoscopic sinus surgery) and more extensive techniques (ESS).

The inclusion criteria for the study were:

- Patients with CRS diagnosed according with EPOS 3 criteria that underwent surgical therapy after failure of medical therapy
 - Age between 18-80 years
 - Patients' consent to participate in this study
- In the excluding criteria we included:
- Local or systemic complications of CRS
 - Tumor pathology
 - Depression, diabetes, tuberculosis, cystic fibrosis, primary ciliary dyskinesia
 - ASA triad
 - Pregnancy and lactation
 - Patients' refuse to participate in the study.

Every patient was assessed using QoL questionnaires preoperatively and 3, 6 and 12 months postoperatively. They answered with respect to the different symptoms/health impairments they have experienced in the last 2 weeks. SNOT-20 instrument is composed of 20 questions which cover different domains like physical problems, functional limitations and emotional consequences of disease. Each question has 5 options of answer: 0 to 5 points, depending on how the patient felt the degree of impairment. The total score ranges between 0 and 100 points. A higher score indicates a greater CRS-related health burden. Also, patients had the possibility to indicate the 5 most upsetting symptoms. The success of treatment was determined by calculating the difference between scores before and after surgical treatment.

The Visual Analogue Scale (Figure 1) is composed of 5 questions regarding nasal obstruction, headache, facial pain/pressure, lack of smell, anterior/posterior nasal drip and 1 question about

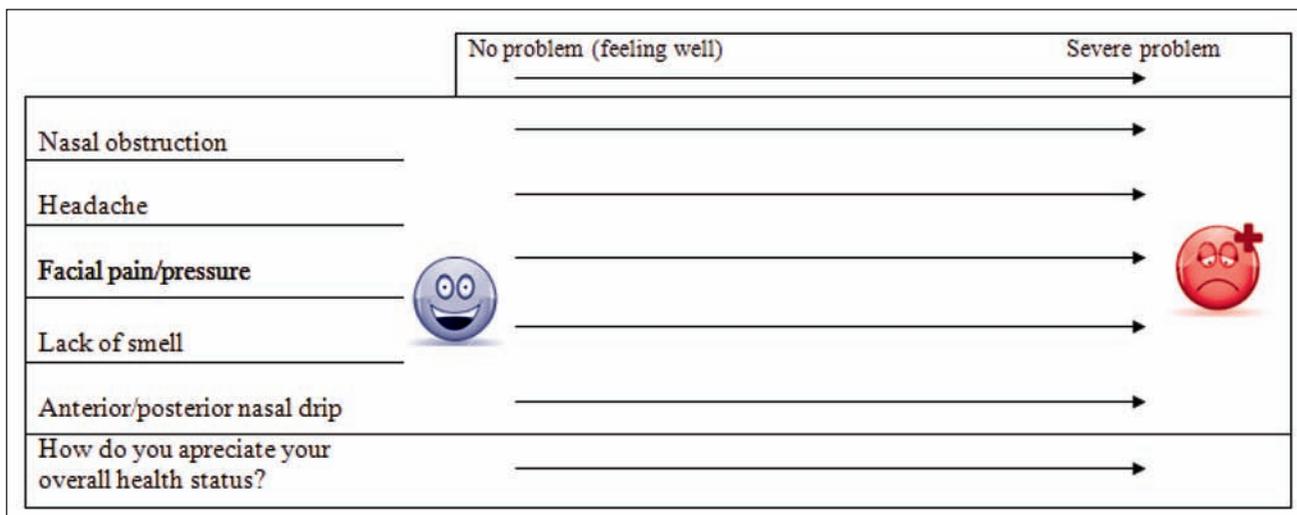


Figure 1 Visual Analogue Scale

overall health status. In this questionnaire, patients should point on a 10 cm line the degree of health burden condition that is affecting him. After that, each answer is quantified by measuring from the start of the line to the pointed answer (1 cm = 1 point as unit of measure). The range per question was 0 to 10 points and 0 to 60 points overall.

All the data from this study were introduced in Microsoft Excel and a statistical analysis was performed using XLSTAT software, which integrates with Microsoft Excel.

RESULTS

In this study were included 278 consecutive patients, with the sex ratio men/women of 1.15/1 (149 men and 129 women), the mean age being of 43,12 years (ages ranging between 18 to 77 years old).

The first subgroup of patients (treated using radical surgery) counted 17 patients (4.32%) (Figure 2). Caldwell-Luc procedures were applied on 12 patients; Ogston-Luc – 1 patient; combined techniques (Caldwell-Luc and radical endoscopic sinus surgery) – 4 patients. Average of admission days in hospital was 6.5 days.

The preoperative mean score in radical surgery approach group of SNOT-20 was 3.39; standard deviation was 1.5. At 6 months, the score was decreasing to 0.92, with a slight increase at 12 months (0.95) (Figure 3a). P-value was 0.027 (<0.05), showing statistical relevance of radical procedures in term of improving QoL of the patients with CRS (Table 1). In this group, we observed that the most important symptoms that impair QoL were the need to blow the nose (15

patients), post-nasal discharge (14 patients) and runny nose (12 patients).

For VAS, the mean preoperative score was 7.8 (Figure 3b). Postoperatively, the scores were decreasing at 3.15 points at 3 months, 2.73 points at 6 months and 2.96 points at one year (Table 1). P-value was 0.011 (<0.05) showing statistical relevance of radical procedures in term of improving QoL of the patients with CRS. The most disturbing symptoms were anterior/posterior nasal drip (15 patients, 88.23%), nasal obstruction (13 patients, 76.47%) and facial pain/pressure (8 patients, 47.05%).

Endoscopic sinus surgery was performed in 261 patients, using various techniques in accordance with the localization and the extent of the disease (antroscopy, ethmoidectomy, sfenoidotomy, frontal drainage). Average of admission days in hospital was 4 day +/- 1.91.

The findings in QoL were: at baseline, for SNOT-20 the score was 2.02 +/- 0.9. An increase in QoL was observed 3 months (1.1 point) and 6 months (0.92) postoperatively, with similar results at 12 months (0.95 points) (Figure 3a). P-value = 0.038 (<0.05). The 5 most disturbing symptoms were thick nasal discharge (207 patients), the need to blow the nose (197 patients), post-nasal discharge (187 patients), runny nose (171 patients) and fatigue (141 patients).

Mean preoperative VAS score was at baseline 5.15 points and decreased 3 months later at 2.36 points, respectively 2.3 points at 6 months follow-up and 2.56 at 1 year after endoscopic sinus surgery (Table 2, Figure 3b). P-value for VAS was 0.011 (<0.05), showing statistical relevance of endoscopic procedures in term of improving QoL of the patients with CRS. The most disturbing symptoms were anterior/posterior nasal drip (224 patients, 85.82%), nasal

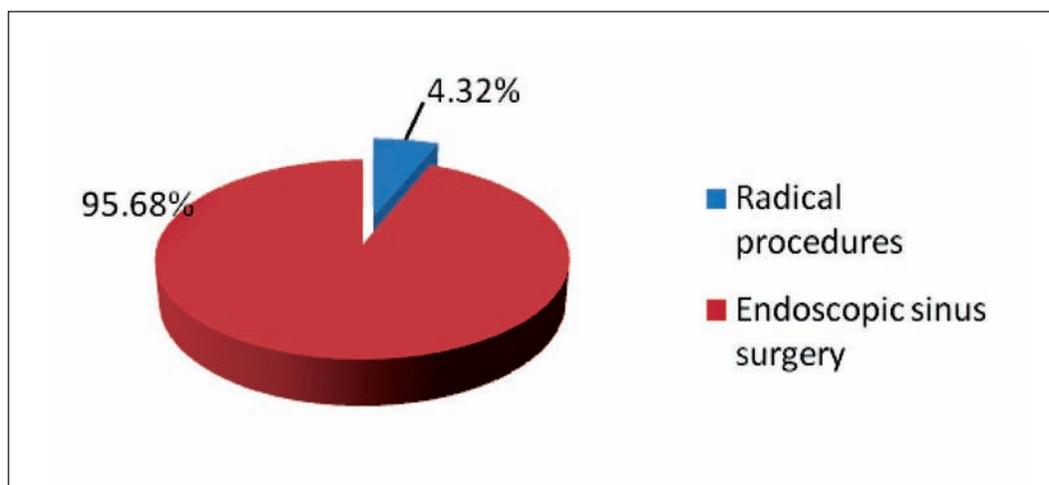


Figure 2 Type of surgical approach

Table 1
Analysis of SNOT-20 and VAS scores in the group of radical surgery

Radical surgery			
SNOT-20		VAS	
Preoperatively	3.39	Preoperatively	7.8
Postoperatively 3 M	1.38	Postoperatively 3 M	3.15
Postoperatively 6 M	1.05	Postoperatively 6 M	2.73
Postoperatively 12 M	1.12	Postoperatively 12 M	2.96

Table 2
Analysis of SNOT-20 and VAS scores in the group of endoscopic surgery

Endoscopic sinus surgery			
SNOT-20		VAS	
Preoperatively	2.02	Preoperatively	5.15
Postoperatively 3 M	1.1	Postoperatively 3 M	2.36
Postoperatively 6 M	0.92	Postoperatively 6 M	2.3
Postoperatively 12 M	0.95	Postoperatively 12 M	2.56

obstruction (198 patients, 73.56%) and facial pain/pressure (156 patients, 59.77%).

DISCUSSIONS

Chronic rhinosinusitis (CRS) is a common multifactorial chronic disease, affecting the quality of life of patients and representing an important burden for the society. Studies showed that CT scan or endoscopic evaluation of the extension of disease does not correlate with the extent of symptoms experienced by individuals⁷. As a general rule, most patients with chronic rhinosinusitis seek medical treatment only when they experience an important impairment of their QoL. Therefore, for the patients, improvement in QoL is a critical indicator of success of the surgical treatment.

SNOT-20 questionnaire was introduced by Piccirillo⁸ as an alternative for RSOM-31 questionnaire. After analyzing the RSOM-31 questions, he decided to renounce at 11 questions which did not contribute significantly to the instrument. So he obtained a

small, still disease-specific questionnaire, easy to fill by patients. SNOT-20 became one of the widely used instruments for measuring the QoL.

In our study, we showed that surgical treatment can improve patients' QoL, that is in accordance with the medical literature. In this regard, one study made by Kountakis⁹ on 158 patients who underwent ESS showed an improvement at 12 months by 77% in QoL. In his study on 120 patients, Kennedy reported a marked improvement in symptoms on 85% patients after ESS, with a mean follow-up of 18 months¹⁰. In our study, we show that both surgical procedures bring improvements in QoL between baseline and 1 year postoperatively ($p < 0.05$). Values in the external surgery lot were a little bit higher than in the ESS group, so Lot 1 experienced a greater impairment of QoL. One of the reasons that contribute to this lower QoL can be that the admission time in hospital was higher for those in Lot 1 (a mean of 6.5 days versus 4 days). The QoL varies from one patient to another and this can partly be explained by demographic factors, medical comorbidities and histologic inflammatory phenotypes¹¹.

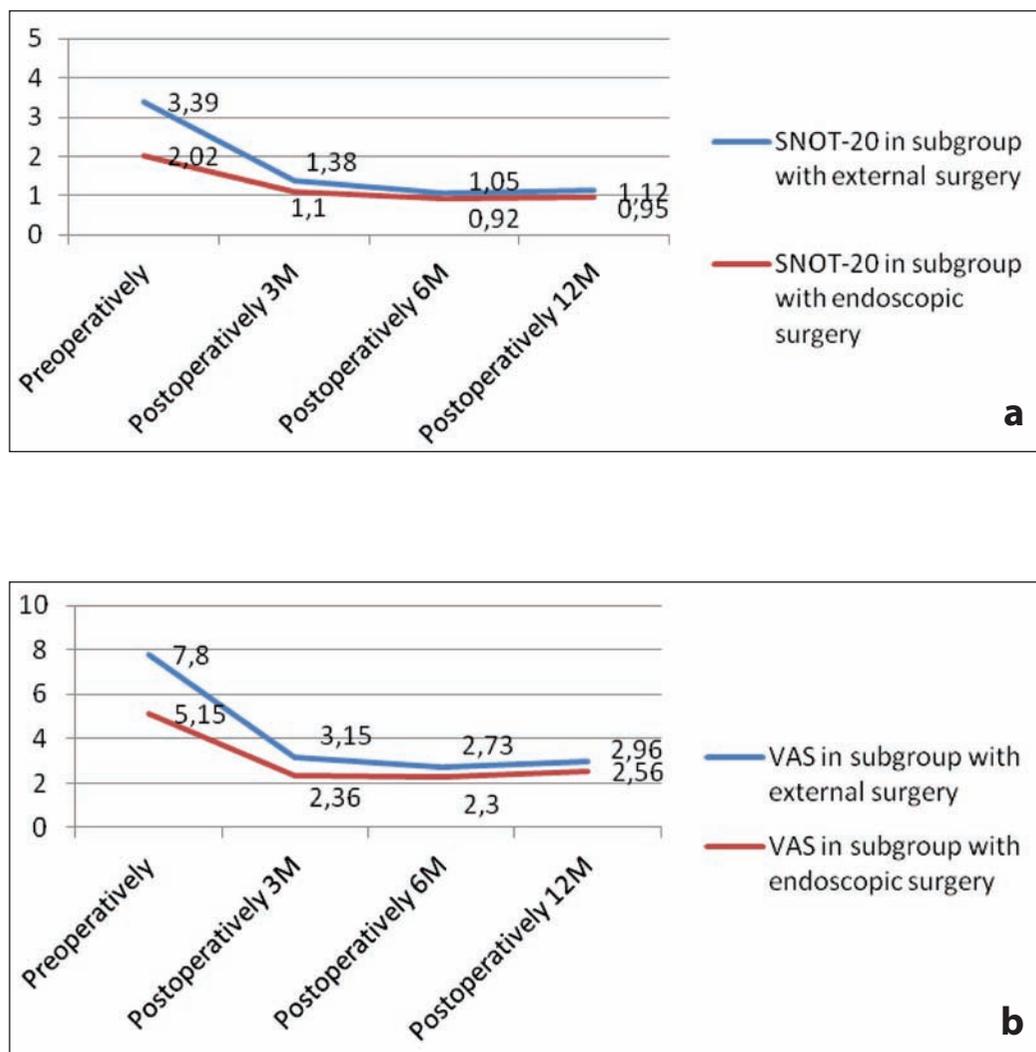


Figure 3 a, b Evolution in time of SNOT-20 and VAS mean scores

A potential weakness of this study is that of choosing the right parameters that allowed us to include a patient in the group of radical or endoscopic surgery. It is known that radical surgery is a more invasive procedure, which requires more days of medical care and involves a slower recovery than endoscopic approaches. We used the newly introduced histopathologic score of Sarafoleanu et al.¹² as predictive score for the type of surgery that was used for every patient.

CONCLUSIONS

Both conservative endoscopic or radical surgical procedures are still in use and are able to improve the health of patients affected by chronic rhinosinusitis. To reflect these improvements, we can use quality of life questionnaires that are disease-specific validated instruments. Each method

improves the QoL at a satisfactory level. QoL questionnaires can be used to assess the success rate of the surgical treatment.

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