

Original Research Article

Comparative study on efficacy of SNOT 22 outcome in nasal surgery using teflon splinting for chronic rhinosinusitis

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Received: 21 July 2021

Revised: 03 September 2021

Accepted: 18 September 2021

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ABSTRACT

Background: CRS is defined as inflammation in the nose and paranasal sinus and it is characterized by two or more cardinal symptoms. There is a growing need for a simple, reliable, system-specific standardized outcome measure that can help us explore CRS in a more uniform way and help us to take into account patients' HRQoL. SNOT covers a broad range of health and health-related quality of life problems including physical problems, functional limitations, and emotional consequences.

Methods: we report a case series of 60 patients, divided into 2 groups of 30 each. 1st group underwent FESS+septoturbinoplasty while the 2nd group underwent FESS+septoturbinoplasty with teflon splinting. Patients were asked to score their symptoms on SNOT 22 questionnaire pre-operatively and post-operatively.

Results: Significant changes were noted in nasal related and quality of life domain and less significant changes noted in ear/facial related and psychological domains in group 2.

Conclusions: patient-based outcome measures like SNOT 22, is helpful tool for quantifying changes in symptoms and useful for predicting post-operative improvement. It is both patient and researcher-friendly.

Keywords: SNOT 22, Teflon splint, septoturbinoplasty

INTRODUCTION

Chronic rhinitis and chronic sinusitis are terms that are often used separately. Since consensus was reached as formulated in the 2007 European position paper on rhinosinusitis and nasal polyps (EPOS), the correct term has been chronic rhinosinusitis (CRS).^{1,2} CRS is defined as inflammation in the nose and paranasal sinus and it is characterized by two or more cardinal symptoms like nasal blockage/obstruction/congestion, nasal discharge (anterior/posterior nasal drip), facial pain/pressure, reduction or loss of smell. Either endoscopic signs (polyps, mucopurulent discharge, oedema/mucosal obstruction) or computed tomography (CT) changes like mucosal changes within the osteomeatal complex and or sinus should be present. Disease duration is defined as >12 weeks. If the person was known in advance with a

diagnosis of CRS and had been receiving medical treatment, the diagnosis stated was that which appeared in the person's medical history. CRS is a health problem, the significance of which is believed to be rising both in terms of incidence and prevalence. It is a multifactor disease that affects the patient's quality of life (QoL). In this respect, it is comparable to diabetes and heart disease.^{2,3}

First-line therapy for treatment of CRS is aimed at reducing underlying inflammation and facilitating clearance of the paranasal sinuses. Antibiotics, topical steroids, systemic steroids, and nasal saline irrigation are mainstays of treatment.^{4,5} Also key to medical management is treatment of underlying disease processes, such as environmental allergies.⁶ Unfortunately, many patients are refractory to this treatment and ultimately

require functional endoscopic sinus surgery (FESS) to achieve improved symptom control and quality of life. There is a growing need for a simple, reliable, system-specific standardized outcome measure that can help us explore CRS in a more uniform way and help us to take into account patients' HRQoL.⁷

The sino-nasal outcome test 20 (SNOT-20) and 22 (SNOT-22) are validated patient-reported measures of symptom severity and health-related QoL in sinonasal conditions.^{8,9} SNOT-22 is a modified version of SNOT-20 and the 31 item rhinosinusitis outcome measure (RSOM-31). In SNOT-22, two items have been added to the 20-item version: one item on nasal blockage and one item on sense of taste and smell. SNOT covers a broad range of health and health related QoL problems including physical problems, functional limitations, and emotional consequences, as described by Browne et al.¹⁰ They showed that SNOT covers four different clinical constructs. The SNOT-22 consisted of six domains, i.e., rhinological, sleep, ear/facial, general, physical and psychological domains. These corresponded domains consisted of 6, 4, 3, 5, 1, and 3 questions, and each question was graded using Likert scale from no problem (0) to problem as bad as it can be (5). It is an increasingly popular tool to describe patient burden and clinical effectiveness in sino-nasal disease.^{11,12} The SNOT covers a broad range of health and health-related quality of life problems including "physical problems, functional limitations, and emotional consequences."¹³ Patient-reported outcome measures (PROM) can be used to facilitate the consultation, to identify and prioritize the problems, to define the aims of treatment, and to measure the subsequent response. PROMs also facilitate comparative audit (the comparison of the provision of healthcare by different providers or different methods of treatment), and can thus improve future healthcare provision.¹⁴

Aim and objectives

Aim and objectives of current study was to determine the efficacy of SNOT 22 questionnaire in septoturbino-plasty with and without teflon splinting for chronic rhinosinusitis.

METHODS

A prospective study comprising a total of 60 patients who attended ENT H&N OPD in Saphagiri institute of medical sciences and research centre from October 2019 to march 2021 were considered.

Inclusion criteria

Inclusion criteria for current study were; patients presenting with signs and symptoms of CRS and nasal allergy were considered, age group varied from 15 years to 52 years of age and written consent taken in their own understandable language.

Exclusion criteria

Exclusion criteria for current study were; patients with sinonasal malignancy, patients not giving consent and age <15 years and >53 years.

Diagnosis was confirmed by physical examination, diagnostic nasal endoscopy and radiological investigation. They were divided into 2 groups of 30 each. One group of patients underwent FESS with septoturbino-plasty without teflon splinting, and the other group underwent FESS with septoturbino-plasty with Teflon splinting. Teflon is an inert material used as septal splints with sieves are used in our study as splints. Every patient was pre-operatively seen in OPD where the patient scored their symptoms using SNOT 22 questionnaire chart, 6 weeks post operatively they scored again the symptoms using SNOT 22 questionnaire unaware of their pre-operative SNOT 22 score (Figure 1).

SINO-NASAL OUTCOME TEST (SNOT-22) DATE: _____

Below you will find a list of symptoms and social/emotional consequences of your rhinosinusitis. We would like to know more about these problems and would appreciate your answering the following questions to the best of your ability. There are no right or wrong answers, and only you can provide us with this information. Please rate your problems as they have been over the past two weeks. Thank you for your participation. Do not hesitate to ask for assistance if necessary.

	No problem	Very Mild problem	Mild or slight problem	Moderate problem	Severe problem	Problem as bad as it can be	5 Most Important Items
1. Need to blow nose	0	1	2	3	4	5	<input type="radio"/>
2. Nasal Blockage	0	1	2	3	4	5	<input type="radio"/>
3. Sneezing	0	1	2	3	4	5	<input type="radio"/>
4. Runny nose	0	1	2	3	4	5	<input type="radio"/>
5. Cough	0	1	2	3	4	5	<input type="radio"/>
6. Post-nasal discharge	0	1	2	3	4	5	<input type="radio"/>
7. Thick nasal discharge	0	1	2	3	4	5	<input type="radio"/>
8. Ear fullness	0	1	2	3	4	5	<input type="radio"/>
9. Dizziness	0	1	2	3	4	5	<input type="radio"/>
10. Ear pain	0	1	2	3	4	5	<input type="radio"/>
11. Facial pain/pressure	0	1	2	3	4	5	<input type="radio"/>
12. Decreased Sense of Smell/Taste	0	1	2	3	4	5	<input type="radio"/>
13. Difficulty falling asleep	0	1	2	3	4	5	<input type="radio"/>
14. Wake up at night	0	1	2	3	4	5	<input type="radio"/>
15. Lack of a good night's sleep	0	1	2	3	4	5	<input type="radio"/>
16. Wake up tired	0	1	2	3	4	5	<input type="radio"/>
17. Fatigue	0	1	2	3	4	5	<input type="radio"/>
18. Reduced productivity	0	1	2	3	4	5	<input type="radio"/>
19. Reduced concentration	0	1	2	3	4	5	<input type="radio"/>
20. Frustrated/restless/irritable	0	1	2	3	4	5	<input type="radio"/>
21. Sad	0	1	2	3	4	5	<input type="radio"/>
22. Embarrassed	0	1	2	3	4	5	<input type="radio"/>

2. Please mark the most important items affecting your health (maximum of 5 items) ↑

SNOT-20 Copyright © 1996 by Jay F. Piccirillo, M.D., Washington University School of Medicine, St. Louis, Missouri
SNOT-22 Developed from modification of SNOT-20 by National Comparative Audit of Surgery for Nasal Polyps and Rhinosinusitis
Royal College of Surgeons of England.

Figure 1: Sino nasal outcome test.

RESULTS

The data collected was entered in MS Excel sheet and analysis was done by using SPSS version 20. Result is expressed in the form of descriptive and inferential statistics. There were 17 males and 13 females in group I and 12 males and 18 females in group II. Most of the patients were from the area of 25 km in and around the medical college. In our present study, significant improvement was noted for symptoms as shown in (Table 1).

Table 1: Significant improvement of the symptoms.

Symptoms	Group I (%)	Group II (%)
Need to blow nose	53.33	70
Nasal blockage	40	83.33
sneezing	56.66	80
Runny nose	63.33	76.66
Post nasal discharge	96.66	96.66
Lack of good night's sleep	63.33	100
Difficulty falling asleep	80	100
Wake up at night	66.66	100
Lack of good night's sleep	63.33	100

Hence, better results were shown in group II for domains related to nasal symptoms and quality of life. In our study, patient on pre-op did not complain of symptoms like cough, ear fullness, dizziness, facial pain/pressure, reduced productivity, reduced concentration, fatigue, frustrated, sad and embarrassed and hence not significant in both study groups (Figure 2). Certain symptoms like wake up tired, thick nasal discharge, ear pain had complete improvement of symptoms post-surgery in both the study groups. Symptom of loss of smell/taste showed no improvement pre and post operatively in both the groups suggesting probable irreversible damage.

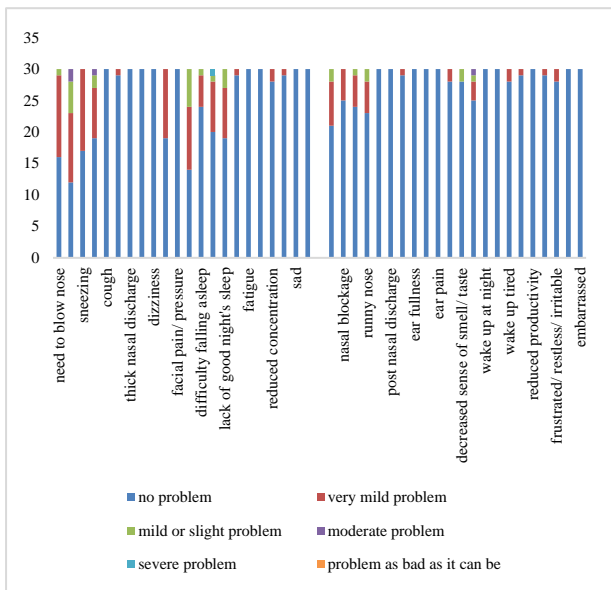


Figure 2: FESS with septoturbinoplasty without teflon splint vs. FESS with septoturbinoplasty with teflon splint.

DISCUSSION

The SNOT-22 questionnaire showed better internal consistency and responsiveness than other questionnaires, and the SNOT-22 is already validated in the Brazilian (Portuguese), English, Swedish, Chinese, Czech, and

Danish languages. The SNOT-22 is a modified version of the SNOT-20 and the 31-item rhinosinusitis outcome measure (RSOM-31). In the SNOT-22, two items have been added to the 20-item version: one item on nasal blockage, and one item on the sense of taste and smell. The SNOT covers a broad range of health and HRQoL problems including physical problems, functional limitations, and emotional consequences, as described by Browne et al and Kennedy et al who grouped the SNOT-22 questions into 4 main categories: nasal related (need to blow nose, sneezing, runny nose, nasal obstruction, loss of smell/taste and post nasal drip); ear/facial related (ear fullness, dizziness, ear pain, facial pain and pressure); quality of life related (difficult falling asleep, wake up at night, wake up tired, and fatigue, reduced productivity, reduced concentration); psychologically related (frustrated/restless, sad, embarrassed), Kennedy et al concluded that SNOT-22 is helpful tool for quantifying changes in symptoms and can be used to predict extent of post-operative improvement. While all of the components of the SNOT-22 significantly improved after surgery, only runny nose, as well as cough was independent predictors of post-surgical SNOT-22 improvement.¹⁵

The questionnaire is quick and easy for patient to understand and complete. For the researcher, it is rational and easily applicable scoring system. It includes a range of items that are important to the patient with CRS and allows patient to indicate the ones important to them. Hence this may be used both to measure health status and QoL. In a study conducted by Sudhir et al a comparative case series study was done in 214 cases of septoplasties. 116 postoperative cases were packed with framycetin packs only and the other 98 cases by framycetin packs and teflon septal splints. The groups were compared for postoperative nasal adhesions, residual deviation, pain, septal perforations and subjective patient satisfaction. Results showed that the rates of adhesion and pain on VAS scale showed no significant difference in the splinted and non-splinted group. Pain was more with the splints even after pack removal. Residual deviation was reduced with these teflon nasal septal splints. They concluded that nasal septal splint does not significantly reduce the adhesions after septoplasty but are effective in reducing the residual deviations. The pain and discomfort are more with the splints. Post-operative adhesions are better reduced by nasal irrigation and manual cleaning of the cavities by antibiotic ointments.¹⁶ In a study conducted by Yong et al 40 subjects who had undergone septoplasty only without sinus surgery or turbinoplasty, a silastic septal splint was inserted in one side of the nasal cavity at the end of each septoplasty, with the other side serving as a control. The splint side and control side were randomly selected. Nasal discomfort score (10-point scale) and mucosal status (grades 1-4) were surveyed in a blinded setting on postoperative days 7 and 14. Forty of 83 subjects fulfilled the enrolment criteria. On the 7th postoperative day there was no significant difference in nasal discomfort between the splint and control sides (6.2±1.28 and 5.7±1.27, respectively; p=0.116), but the

mucosal status was better on the splint side than on the control side (1.5 ± 0.51 and 2.5 ± 0.85 ; $p<0.001$). At 14 days postoperatively, the symptom score (2.7 ± 1.06 versus 3.8 ± 1.25 ; $p<0.001$) and mucosal status (1.5 ± 0.55 versus 1.9 ± 0.68 ; $p=0.013$) were significantly better on the splint side compared with the control side. They concluded that Insertion of a silastic septal splint after septal surgery should be accepted as a routine procedure.¹⁷ In a study conducted by Ardehali et al, study was a prospective, randomized clinical trial where, 114 patients underwent septoplasty for septal deviation and ensuing nasal obstruction. These patients were divided into two groups: packing (using intranasal septal splints and antibiotic meshes at the end of the operation) and non-packing (using four separate trans-septum through and through horizontal mattress sutures without any mesh or intranasal splint insertion). The authors found no significant statistical differences between the two groups in the parameters studied, but significantly higher pain levels were noted in the patients in the packing group. The final results confirmed that patients who underwent septoplasty, intranasal packing and septal splint insertion did not benefit more than those who had trans-septum through and through suturing.¹⁸ In our present study, it was found effective that use of Teflon splint for FESS with septoturboplasty showed improvement of scores in SNOT 22 system. As per previously available literature, most of the authors did not have a proper measuring scale for symptoms related to CRS and allergy, SNOT 22 provides not only the patient, but a reliable indicator for the researcher as well. Hence, this is one the most reliable PROM for nasal surgeries. Drastic improvement was noted in nasal related domain like need to blow nose, sneezing, runny nose, nasal obstruction, loss of smell/taste and post nasal drip and quality of life domain like difficult falling asleep, wake up at night and wake up tired. Our patients did not have pre-operative complaints in ear/ facial and psychological domains. Hence, the questioning method and further research is required in these domains.

Limitations

Major limitations faced in current study were; though a reliable PROM, it is subjective scoring system. Hence chances of bias may be high and there is no specific criteria defined or mentioned in literature to categorize patients who need to undergo septoturboplasty into splint and nonsplint groups.

CONCLUSION

FESS with Septoturboplasty is an effective surgical intervention for patients with allergy and CRS. In our study patients showed better improvement following FESS with septoturboplasty and teflon splinting than the control group who underwent FESS with septoplasty, in all the domains of SNOT 22 system. Significant changes were noted in nasal related and quality of life domain and less significant changes noted in ear/facial

related and psychological domains. Decreased sense of smell and taste was independent predictor of post-surgical SNOT 22 improvement. Hence, patient-based outcome measures like SNOT 22, is helpful tool for quantifying changes in symptoms and useful for predicting post-operative improvement. This scoring system aids to important questions that must be addressed before surgical intervention. Thus, use of silastic splints should be made conventional in nasal surgeries.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sajitha KB, Vibha B, Thomas N. Comparative study on efficacy of SNOT 22 outcome in nasal surgery using teflon splinting for chronic rhinosinusitis. *Int J Otorhinolaryngol Head Neck Surg* 2021;7:1599-603.