

Sino nasal assessment questionnaire, a patient focused, rhinosinusitis specific outcome measure?*

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SUMMARY

It is becoming increasingly important for clinicians to be able to demonstrate the effectiveness of their interventions. We have developed a rhinosinusitis - specific outcome measure (SNAQ-11) that avoids the shortcomings of the existing tools. This paper compares its use with the widely used Sinonasal Outcome Test (SNOT-20). We carried out a prospective study that involved forty patients undergoing endoscopic sinus surgery. Their SNAQ-11 and SNOT-20 scores were compared pre and post operatively. We also recorded individual symptom scores pre and post operatively in order to study the impact of surgery.

The study shows a larger change in the postoperative SNAQ score compared to that in SNOT-20 (21% c.f. 11%). Although the pre and post-op changes in SNOT-20 are significant at the $p=0.005$ level, the changes in the SNAQ-11 are highly significant at the $p=0.0001$ level. Furthermore we have statistically confirmed that the change seen with SNAQ-11 is larger in relation to the variation in change as compared with SNOT-20 (-1.08 c.f. -0.59). Our results show that SNAQ-11 is a valid and highly relevant rhinosinusitis outcome tool. The results also confirm that Endoscopic Sinus Surgery seems especially effective at addressing nasal obstruction, congestion and facial pain/pressure, fair at anterior nasal discharge, sneezing, hyposmia and sleep disturbance and poor for post nasal drip, cough and earache.

Key words: endoscopic sinus surgery, outcome, sinusitis

INTRODUCTION

As the disparity between resources and the cost of various interventions rises "rationing" is likely to become more prevalent. In an effort to demonstrate the clinical effectiveness of their interventions, clinicians are increasingly using "outcome measures" to support their case.

It appears that the Sino Nasal outcome Test "SNOT-20" has become the gold standard outcome measure for sinonasal surgery. It was selected as the outcome tool in the National Comparative Audit of Surgery for rhinosinusitis in the UK 2000/2001. We believe there are some significant shortcomings in the SNOT-20. For example, it contains no reference to nasal obstruction, altered sense of smell or headache. The first two are considered cardinal symptoms in the rhinological history. These inadequacies were highlighted in a departmental audit, which confirmed that patients ranked nasal obstruction, congestion and facial pain most highly and were the commonest presenting symptoms. We therefore developed the Sino Nasal Assessment Questionnaire, an eleven-point assessment, (SNAQ-11) as an outcome tool.

The scoring system for SNAQ-11 was informed by the departmental audit (unpublished data) with weighting of the first three questions (nasal obstruction, congestion and facial pain) to reflect the results.

The scoring therefore ranges from 0 for completely asymptomatic to 80 where all the symptoms are as bad as can be.

The result, we believe is a tool that is more rhinosinusitis focused (Fahmy et al., 2000). Validation of this new tool was carried out in a prospective controlled study and the results were presented in the Fourth European Congress in Otolaryngology "EUROS 2000" in Berlin.

In this new study we compare the SNOT-20 with SNAQ-11 (Sino-Nasal Assessment Questionnaire) as a sinonasal outcome measure.

METHODS

Forty patients who were participating in the Royal College of Surgeons Endoscopic Sinus Surgery National Comparative Audit were asked to complete our questionnaire (SNAQ-11) at the same time as the SNOT-20 preoperatively and at six months

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postoperatively. Patients were sent both questionnaires to complete together with a prepaid, addressed envelope to reply.

We recorded:

- Pre operative CT score using the Lund & Mackay method (Lund & Mackay, 1993).
- Pre and postoperative SNAQ and SNOT-20 score.
- Pre and postoperative SNAQ individual symptom score.

RESULTS

We received twenty-seven replies (67.5%) from fifteen male and twelve female patients With a median age of 44 years (Range 18-68). The mean preoperative CT score was 13.22 (range 0-22).

The mean preoperative SNAQ score (Table 1) was 37.43/80. The mean postoperative score was 21.37/80, a reduction of 21.6%.

The mean preoperative SNOT-20 score was 31.89/100. The mean postoperative score was 20.89/100, a reduction of 11%.

The individual symptom SNAQ scores are illustrated in Table 2.

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. Two general outcome tools that have been used in assessing rhinitis and nasal surgery are the SF36 and the Glasgow benefit inventory (Stewart et al., 1996; Radenne et al., 1999).

In assessing more specific outcomes of Endoscopic Sinus Surgery a number of approaches have been used. In 1994 Lund et al. reported outcome assessments of ESS in 650 patients using a simple questionnaire based on the patients most troublesome symptoms (Lund & Mackay, 1994).

Another nasal symptom questionnaire was developed by Fairley et al. with 12 questions relating almost exclusively to nasal symptoms (Fairley et al., 1993). More recently, Douglas et al. developed a general nasal patient inventory GNPI as a comprehensive, patient derived 45-item questionnaire (Douglas et al., 2001).

Table 2. Individual Symptom Score (n=27).

	Obstruction	Congestion	Facial pain	Anterior Discharge	Postnasal discharge	Sneezing	Cough
Mean Pre op. Score	9.69/15	9.92/15	4.08/10	1.92/5	2.27/5	1.96/5	1.38/5
Mean Post op. Score	3.69/15	4.85/15	2.0/10	1.15/5	1.88/5	0.96/5	0.81/5
Change %	- 40%	- 38%	- 20.8%	- 15.4%	- 7.8%	- 20%	-11.4%
	Hyposmia	Headache	Earache/pressure	Sleep problems			
Mean Pre op. score	2.96/5	1.85/5	1.08/5	2.35/5			
Mean Post op. score	1.58/5	1.0/5	1.0/5	1.31/5			
Change	- 27.6%	- 17%	- 1.6%	- 20.8%			

Table 1. Pre and postoperative SNAQ & SNOT-20 Score (n=27).

Patient No.	Pre op SNAQ /80	Post Op SNAQ /80	Change %	Pre Op SNOT-20 /100	Post Op SNOT-20 /100	Change /100
1	33	19	-17.5	32	33	1
2	56	16	-50	59	18	-41
3	39	20	-23.8	27	12	-15
4	42	6	-42.5	38	8	-30
5	37	16	-26.3	11	8	-3
6	30	5	-31.3	11	6	-5
7	49	62	18.8	37	46	9
8	30	39	11.3	19	24	5
9	44	61	18.8	38	69	31
10	22	28	7.5	18	41	23
11	36	9	-33.8	34	11	-23
12	30	8	-27.5	44	10	-34
13	37	11	-35	22	8	-14
14	32	0	-40	4	2	-2
15	44	44	0	50	49	-1
16	23	10	-16.3	8	15	7
17	12	0	-15	20	0	-20
18	15	8	-8.8	12	9	-3
19	45	38	-8.8	22	22	0
20	49	3	-57.5	46	5	-41
21	68	40	-35	64	41	-23
22	59	29	-37.5	57	39	-18
23	41	7	-42.5	21	7	-14
24	55	39	-17.5	66	48	-16
25	35	8	-33.8	44	7	-37
26	42	27	-18.8	20	19	-1
27	42	24	-21.3	37	7	-30
Mean	37.43	21.37	-21.63	31.89	20.89	-11

The 31-item Rhinosinusitis outcome measure, and its modified and abbreviated sinonasal outcome test (SNOT-20), assess specific nasal symptoms plus a number of other questions relating to general well being (Piccirillo et al., 1998).

Our study results showed a good general correlation between the SNOT-20 and the SNAQ score although there was a relatively larger change in the postoperative SNAQ score com-

SINO-NASAL ASSESSMENT QUESTIONNAIRE (SNAQ)

Below, you will find a list of symptoms and social/emotional consequences often found in rhinosinusitis.

We would like to know more about these problems, and would be grateful if you could answer the following questions as well as you can. There are no 'right' or 'wrong' answers, and only you can give us this information.

Your answers should reflect how you feel on a typical day over the last two weeks.

Score	No Problem	Very Mild Problem	Mild/Moderate Problem	Moderate Problem	Severe Problem it can be	Problem as bad as
	0	1	2	3	4	5
Q1 Blocked Nose	☐	☐	☐	☐	☐	☐
Q2 Nasal Congestion 'Stuffy' nose	☐	☐	☐	☐	☐	☐
Q3 Facial pain/pressure	☐	☐	☐	☐	☐	☐
Q4 Runny nose Anterior nasal discharge	☐	☐	☐	☐	☐	☐
Q5 Phlegm/Catarrh in the back of the Throat (post nasal discharge)	☐	☐	☐	☐	☐	☐
Q6 Sneezing	☐	☐	☐	☐	☐	☐
Q7 Cough	☐	☐	☐	☐	☐	☐
Q8 Reduced/altered smell	☐	☐	☐	☐	☐	☐
Q9 Headache	☐	☐	☐	☐	☐	☐
Q10 Earache/ear fullness	☐	☐	☐	☐	☐	☐
Q11 Lack of good nights sleep/tiredness/fatigue	☐	☐	☐	☐	☐	☐

For Office Use Only:
 N.B. The score for question 1 should be multiplied by 3 (giving a maximum score of 15)
 The score for question 2 should be multiplied by 3 (giving a maximum score of 15)
 The score for question 3 should be multiplied by 2 (giving a maximum score of 10)
 The scores for all other questions remain maximum score 5. Thus SNAQ maximum score = 80

Surrey, 110 Page 1

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pared to that in SNOT-20 (20% Vs 11%). In four cases there were significant improvements in the SNAQ score but no real changes in the SNOT-20 score (Table 1, Patient No.1, 5, 14, 26).

As clinical experience suggests, and our results confirm, Endoscopic Sinus Surgery seems especially effective at addressing nasal obstruction, congestion and facial pain/pressure, fair at anterior nasal discharge, sneezing, hyposmia and sleep disturbance and poor for post nasal drip, cough and earache. These symptoms can clearly be identified in the SNAQ but not so clearly in SNOT-20. And although there is a correla-

tion factor of 0.7925 (at the $p = 0.0001$ level) between SNOT-20 and SNAQ-11 results, the change in SNAQ-11 as compared to variation in change (Standard Deviation) is larger than that of SNOT-20 (-1.08 c.f. -0.59). This would suggest that SNAQ-11 is moderately more reliable.

On the basis of our study we believe that the SNAQ-11 is a valid and clinically relevant tool for assessment of patients with Sino-nasal disease. We feel the specificity and predictive value of SNAQ can play a valuable role in not only in measurement of outcome but also in patient selection for different treatment modalities.

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