

# Assessment of patient's benefit from rhinoplasty\*

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## SUMMARY

*It is standard practice for most rhinoplasty surgeons to assess what they perceive to be the cosmetic outcome of their surgery. There have, however, been few attempts to gauge the degree of success of rhinoplasty from the patient's perspective. The aim of this study was to measure the benefit of rhinoplasty in an unselected group of patients who had undergone this procedure under the National Health Service (NHS). Two hundred and twenty-four patients who had undergone rhinoplasty or septorhinoplasty in the Department of Otolaryngology at Glasgow Royal Infirmary from 1990 to 1994 were surveyed by post; two questionnaires were administered. The Glasgow Benefit Inventory has four subscales which assess the patient's perception of the success of surgery, and the influence of surgery on the patients physical health, psychosocial function and social interaction. The Nasal Symptom Questionnaire (Fairley et al., 1993) – previously validated as an outcome measure in the context of FESS – was used to assess nasal symptoms. Multivariate and factor analysis was used to analyse the results. Four factors were extracted from the 103 responses to the Glasgow Benefit Inventory. The major factor of the benefit score was perception of surgical success which explained 50% of the variance. Three other factors (improvements in psychosocial functioning, social interaction and physical health after surgery) accounted for 10%, 5%, and 6% of the variance, respectively. Analysis of the Nasal Symptom Questionnaire yielded one predominant factor which was inversely related to perceived benefit. The outcome of rhinoplasty is influenced by the presence of nasal symptoms. Greater attention to nasal function would increase the benefit of rhinoplasty.*

*Key words: rhinoplasty, patient's benefit*

## INTRODUCTION

The success of rhinoplasty surgery is usually assessed in terms of an improvement in physical appearance as seen in pre- and post-operative photograph comparisons. A functional assessment usually consists of anterior rhinoscopy. Patient's satisfaction is usually judged by a positive response to the surgeon's enquiry. Recently, it has been recognised that psychological factors are important in the patient's perception of success. Objective assessments of surgical outcome are not found to be necessarily predictive of a patient's ultimate satisfaction (Napoleon, 1993). National Health Service (NHS) patients are more likely to be post-traumatic and to be those with greatest psychological problems (Slator, 1993). Success of surgery means different things to surgeon and patient. The psychological effects of surgery can be underestimated or unrecognised by the surgeon (Goin and Rees, 1991).

Greater understanding of these factors may lead to an improvement in the outcome of rhinoplasty. The aim of this study was to measure the benefit of rhinoplasty from the patient's point of views, i.e. in terms of perception of surgical success, of influence of the procedure on psychosocial functioning, social interaction and medical symptoms. The influence of nasal symptomatology on these factors was also evaluated.

## MATERIAL AND METHODS

Patients who had undergone rhinoplasty or septorhinoplasty in the Department of Otolaryngology at Glasgow Royal Infirmary from 1990 to 1994, were surveyed by a postal questionnaire. These were an unselected group of patients, including traumatic and non-traumatic nasal deformities. Two questionnaires were used. The Glasgow Benefit Inventory (GBI) has been

developed in our department to assess the outcome of middle ear surgery. Its four subscales assess the patient's perception of the overall success of surgery, and the influence of surgery on the patient's psychosocial function, social interactions and physical health. It consists of 26 questions, each with five possible responses. The questions are scored on a scale of increasing benefit from 1 to 5. Table 1 shows sample questions from each of the four subscales. All questions refer to the surgery but are not specific to any procedure.

Table 1. Four sample questions from each of the GBI subscales.

surgical success:	Do you feel disappointed or pleased about the operation?
physical health:	As a result of your operation, have you had to take more or less medicine?
psychosocial function:	Since your operation, do you feel you have more or less social support from your friends?
social interactions:	Since your operation, have you found it easier or harder to deal with company?

The Nasal Symptom Questionnaire (NSQ) is constructed by Fairley et al. (1993). This has been validated as a reliable outcome measure in the context of FESS. There are 12 questions. The items are scored "0" to "3" for increasing symptom severity and the patients are required to tick a box of their chosen response. Factor analysis was used to extract the principal components of each of the two questionnaires. Multivariate analysis was used to examine the relationship between the two instruments.

## RESULTS

Of 224 patients contacted, 103 responded, and 76% of these were male, reflecting the traumatic aetiology of nasal deformity in the NHS patient population.

Factor analysis of the GBI extracted four factors, reflecting the four subscales. The largest factor, representing 50% of our patients' scores and reflects their perception of surgical success. The second factor, reflecting 10% of the score, represents an improvement in psychosocial functioning. Factor 3 which accounted for 6% of the score, reflects an improvement in physical health following the surgery. Factor 4 which corresponded to improvement in social interaction accounted for 5% of the GBI responses.

The mean nasal symptom score was 28.8%. The lower the score, the less troublesome the nasal symptoms. Figure 1 shows the frequency distribution of nasal symptom scores. The majority of patients have low scores or few symptoms. Factor analysis of the NSQ yielded one predominant factor, representing 40% of the nasal symptom variance. It loads on three items, those of nasal obstruction, post nasal drip and reduction in the sense of smell.

The perception of surgical success and physical health factors of the GBI were significantly correlated with the NSQ scores ( $r=-0.45$ ,  $p < 0.001$ ;  $r=-0.38$ ,  $p < 0.001$ , respectively). Figure 2

demonstrates the relationship between the NSQ (Fairley score) and the GBI. The group of patients scoring less than the median score in the NSQ, have higher GBI scores than that group of patients scoring greater than the median. In other words, the presence of nasal symptoms adversely affects the perception of surgical success and physical health following rhinoplasty. The improvements in psychological functioning and social interaction after rhinoplasty were not influenced by the presence of nasal symptoms.

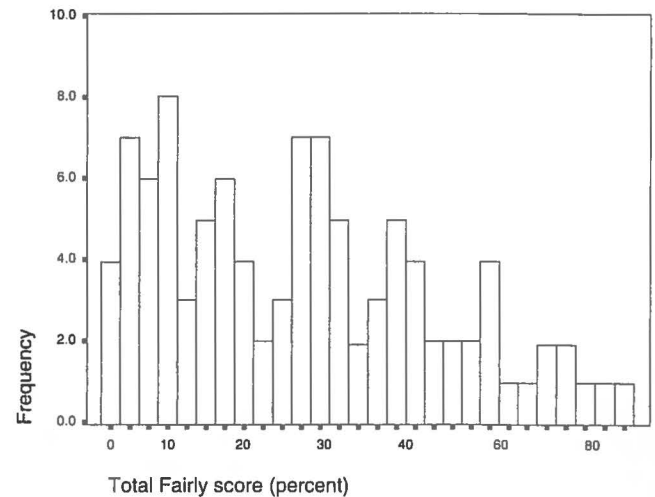


Figure 1. A histogram of the frequency distribution of the NSQ scores (Fairley questionnaire). The mean score was 28.8% and the distribution is skewed to the left.

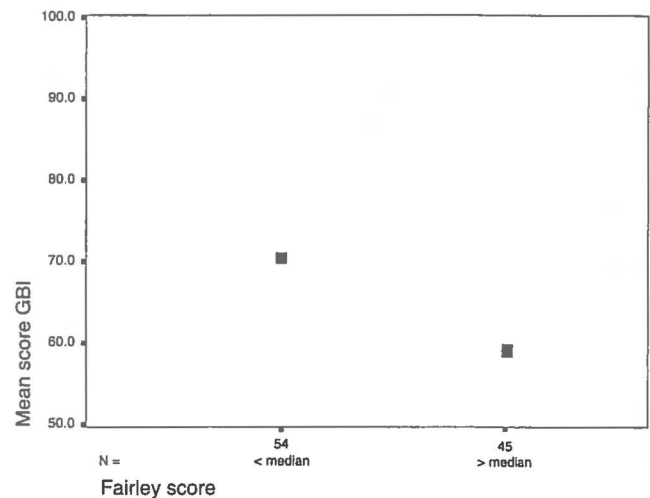


Figure 2. The mean GBI scores in those patients scoring below the median, and those scoring greater than the median NSQ. Those patients with fewer nasal symptoms, i.e. less than the median, scored highly in the GBI, in other words, achieving greater benefit from rhinoplasty.

## DISCUSSION

The results of our survey indicate that patient's benefit from post-traumatic rhinoplasty or septorhinoplasty is closely related to the patient's perception of surgical success, and that psychological factors are less important. This is consistent with the converse findings of Slator (1993) who found that patients with non-traumatic deformities, treated in the NHS were those with the greatest psychological disturbance. The overall benefit

scores are adversely influenced by the presence of nasal symptoms. Those patients with high nasal symptom scores have poorer perception of surgical success and poorer physical health. Psychological improvements were not influenced by nasal symptoms. It seems likely, therefore, that the perceived benefit of rhinoplasty would be increased if greater attention was devoted to the reduction in nasal symptoms, principally the triad of blockage, anosmia and post-nasal drip which emerged as the predominant complaint in our subjects.

The assessment of patient's benefit is, however, complex and we do not propose that either the GBI or Fairley questionnaires is an ideal instrument to use in assessment of benefit from rhinoplasty. Our study suggests that the indication for surgical correction of a nasal deformity must be guided by functional, as well as aesthetic considerations (Nachlas et al., 1990) as the principal determinant of surgical success from the patient's standpoint is the impact of the procedure on nasal symptoms.

#### CONCLUSION

Our results show that overall benefit from rhinoplasty carried out on a largely post-traumatic group of patients is very similar to that of middle ear surgery performed for hearing loss, using a previously validated questionnaire. Also, a reduction in

the NSQ correlates strongly with a beneficial outcome. The perceived benefit of rhinoplasty would be increased if greater attention was directed to functional aspects.

#### REFERENCES

1. Fairley JW, Yardley MPJ, Durham LH, Parker AJ (1993) Reliability and validity of a nasal symptom questionnaire for use as an outcome measure in clinical research and audit of functional endoscopic sinus surgery. *Clin Otolaryngol* 18: 436-437.
2. Goin MK, Rees TD (1991) A prospective study of patients' psychological reactions to rhinoplasty. *Ann Plast Surg* 27: 210-215.
3. Nachlas NE, Paper ID, Steiner A (1990) Functional and cosmetic surgery of nose and ear deformities in children and adolescents. *Md Med J* 39: 655-659.
4. Napoleon A (1993) The presentation of personalities in plastic surgery. *Ann Plast Surg* 31: 193-208.
5. Slator R (1993) Rhinoplasty patients revisited. *Br J Plast Surg* 46: 327-331.

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