Patient reported outcome measures in septorhinoplasty surgery

TC Biggs¹, LR Fraser¹, MJ Ward¹, VS Sunkaraneni², PG Harries¹, RJ Salib¹

¹University Hospital Southampton NHS Foundation Trust, UK

²Royal Surrey County Hospital NHS Foundation Trust, UK

ABSTRACT

INTRODUCTION Surgical procedures incorporating a cosmetic element such as septorhinoplasty and otoplasty are currently under threat in the National Health Service (NHS) as they are deemed to be procedures of 'limited clinical benefit' by many primary care providers. Patient reported outcome measures (PROMs), which assess the quality of care delivered from the patients' perspective, are becoming increasingly important in documenting the effectiveness of such procedures.

METHODS The Rhinoplasty Outcomes Evaluation (ROE) questionnaire, a validated PROM tool, was used to assess patient satisfaction in 141 patients undergoing septorhinoplasty surgery over a 90-month period at the University Hospital Southampton NHS Foundation Trust.

RESULTS Overall, 100 patients with a mean follow-up period of 36 months completed the study. The mean ROE score was 73.3%. In addition, 75% of patients questioned were happy with the final result of their operation and 83% would undergo the procedure again if required. These benefits occurred irrespective of age, sex and primary versus revision surgery, and were maintained for up to 71 months following surgery.

CONCLUSIONS This study has shown that patients are generally satisfied with their functional and cosmetic outcomes following septorhinoplasty surgery. These results help support the case for septorhinoplasty surgery to continue being funded as an NHS procedure.

KEYWORDS

Septorhinoplasty – Patient reported outcome measures

Accepted 29 August 2014

CORRESPONDENCE TO

Timothy Biggs, E: t.biggs@soton.ac.uk

It is becoming increasingly necessary to provide evidence of benefit for a service in the National Health Service (NHS), to ensure its viability and justify continued financial support. Commissioners are demanding this to allow a cost effective assessment of priorities in the NHS. Furthermore, the *Health and Social Care Act 2012* now places patients at the heart of the NHS, with greater emphasis on clinical outcomes as key drivers of future quality assurance. As a result, patient reported outcome measures (PROMs), which assess the quality of care delivered to NHS patients from the patient perspective, are becoming increasingly important in documenting the effectiveness of such procedures, especially those that address issues surrounding quality of life (QoL) as opposed to life and death. Indeed, PROMs are now commonplace in all surgical specialties as a marker of surgical success and potential future funding.

Septorhinoplasty is currently deemed to be a procedure of limited clinical benefit by many primary care providers.¹ At present, funding is limited and can only be justified on a case-by-case basis. It is therefore vital that the value of these procedures can be established, before they are withdrawn from NHS practice altogether. There are only a few

studies specifically examining patient benefit following septorhinoplasty surgery. The majority of UK studies used the Glasgow Benefit Inventory,² with those from outside the UK using the Rhinoplasty Outcomes Evaluation (ROE) questionnaire, originally piloted by Alsarraf in New Orleans.³ To this end, we present the results of the first UK study using the validated ROE questionnaire to examine PROMs following septorhinoplasty surgery. This will provide additional information on the value of this surgery in the UK from the patients' perspective, critical to both clinicians and commissioning groups.

Methods

This study was conducted as an audit of surgical practice, registered with the University Hospital Southampton NHS Foundation Trust (UHS) research and development department. In total, 141 consecutive patients undergoing septorhinoplasty surgery over a 90-month period (June 2005 to December 2012) at UHS were recruited. All operations were performed by one of the two senior authors (PGH and RJS), using similar techniques. The ROE questionnaire

was used to assess satisfaction following surgery, with two additional questions included: 'Knowing the final result of the operation, would you choose to undergo the same procedure again?' and 'Overall, are you satisfied with the results of the operation?'. Patients were contacted initially via a letter survey, followed up with a web-based questionnaire and subsequent telephone contact for all non-respondents. Only patients who could not be contacted were excluded from the analysis.

The ROE questionnaire (Appendix 1 – available online) is a validated six-point questionnaire assessing both functional and cosmetic outcomes. Patients rank individual question responses on a scale of 0 to 4, providing a total score out of 24, which is then converted into a percentage.

Statistical analysis

Data were collated and analysed using Excel® 2009 (Microsoft, Redmond, WA, US) with statistical analysis performed in SPSS® version 20 (IBM, New York, US) using the Mann-Whitney U test. Statistical significance was achieved at a *p*-value of <0.05.

Results

A total of 100 patients (52 male, 48 female) completed the study, providing a response rate of 71%. The age range was 18–67 years (mean age: 36 years). The most common cause for non-response was inability to establish contact owing to a change in address. Primary surgery was conducted in 79 patients with 21 undergoing a revision procedure. The mean duration of follow-up was 36 months (range: 4–71 months).

The study's mean ROE score was 73.3% (standard deviation: 23) with a range of 16.7–100% and a 95% confidence interval of 68.7–77.8. Table 1 outlines the total ROE score and its correlation with age (<30 vs ≥30 years), sex (male vs female), follow-up duration (<36 vs ≥36 months) and surgery type (primary vs revision). None of these values reached statistical significance (*p*>0.05).

Table 2 outlines the breakdown of ROE scores by individual questions. These scores were also separately compared against the same criteria (age, sex, follow-up duration and type of surgery) as in Table 1. Once again, the differences did not reach statistical significance (*p*>0.05).

Table 1 Breakdown of total scores in various categories. All scores marked out of a maximum of 100

	Mean	SD	95% CI	<i>p</i> -value
Male (<i>n</i> =52)	70.8	24.7	63.9–77.6	>0.05
Female (<i>n</i> =48)	76.0	20.9	70.0–82.1	
Primary surgery (<i>n</i> =79)	72.1	24.0	66.7–77.5	>0.05
Revision surgery (<i>n</i> =21)	77.6	18.4	69.2–86.0	
Age <30 years (<i>n</i> =36)	75.1	23.0	67.3–82.9	>0.05
Age ≥30 years (<i>n</i> =64)	72.2	23.1	66.5–78.0	
Follow-up <36 months (<i>n</i> =47)	68.9	24.7	61.6–76.1	>0.05
Follow-up ≥36 months (<i>n</i> =53)	77.2	20.8	71.4–82.9	

SD = standard deviation; CI = confidence interval

When examining the two questions used in addition to the standard ROE questionnaire, 75% of patients questioned were happy with the end result of the operation and 85% would be happy to undergo the same procedure again based on the final result of the surgery.

Discussion

Outcomes research is a patient centred evaluation process examining views, attitudes and QoL following surgical procedures. It aims to assess the subjective experience and opinion of patients about a given treatment, providing a quantitative assessment of otherwise subjective results. Information gained during this exercise can be used to evaluate surgery from the patients' perspective, thereby helping to assess overall cost effectiveness, in addition to highlighting the advantages of newer techniques compared with older established practices.⁵

In otolaryngology, outcomes research has been used primarily in the assessment of QoL in head and neck cancer and when evaluating specific treatments for disorders such as otitis media, sinusitis and obstructive sleep apnoea.^{4–6}

Table 2 Breakdown of individual question scores for the Rhinoplasty Outcomes Evaluation questionnaire. All scores marked out of a maximum of 4

	Mean	SD	95% CI
1. How well do you like the appearance of your nose?	2.8	1.3	2.6–3.1
2. How well are you able to breathe through your nose?	2.8	1.2	2.6–3.1
3. How much do you feel your friends or loved ones like your nose?	3.0	1.2	2.7–3.2
4. Do you think your current nasal appearance limits your social and/or professional activities?	3.8	0.5	3.7–3.9
5. How confident are you that your nasal appearance is the best that it can be?	2.5	1.4	2.2–2.8
6. Would you like to surgically alter the appearance or function of your nose?	2.6	1.6	2.3–2.9

SD = standard deviation; CI = confidence interval

However, there is far less evidence in the literature regarding outcomes for facial plastic and reconstructive surgery where patient satisfaction is often the primary goal.

In 2009 McKinsey & Company were commissioned by the Department of Health to examine the spending practices of the NHS and advise the UK government on future spending reductions.¹ It was concluded that a number of procedures with 'limited clinical benefit' were being performed in the NHS on a regular basis. Septorhinoplasty, which incorporates a cosmetic element, was one of the procedures on this list and is currently only carried out in the UK on a case-by-case funding basis. PROMs constitute a vital tool in documenting and reinforcing the patient related benefits of such threatened surgical procedures.

The Alsarraf ROE questionnaire was published as a pilot in 2001 when 26 patients undergoing rhinoplasty were examined for functional and cosmetic outcomes prior to and following surgery.^{3,7} The aim was to validate a questionnaire devised to assess patients' views regarding the functional and cosmetic appearance of their nose, for use as a PROM. The test-retest scores revealed that the ROE questionnaire had good consistency and responsiveness to change following surgical intervention, thereby validating the accuracy and value of this questionnaire for septorhinoplasty surgery evaluation.⁵

Our study is the first in the UK to use the ROE questionnaire as well as undertake a subanalysis of ROE scores in relation to follow-up periods, something that is currently lacking in the literature. Using a PROMs-based evaluation tool, this study has revealed overwhelmingly positive patient views on improvements in nasal function and cosmesis following septorhinoplasty surgery, irrespective of the follow-up period. These observations would have been difficult to establish through clinical observation alone.

To date, eight comparable studies outside the UK have been published examining patient satisfaction following rhinoplasty using the ROE questionnaire.⁷⁻¹⁴ Our mean study score of 73.3% is well within the mean range of post-operative scores of 69.75–85.4% from these other studies, particularly when considering that 21% of our patients had revision surgery, which is generally associated with much lower satisfaction rates. This is highlighted well in the study by Hellings *et al*, who examined ROE scores in revision rhinoplasty: an overall postoperative mean score of 58.8% was obtained,¹⁰ significantly lower than those examining purely primary surgery.⁷⁻⁹

Only one other study, that by Hellings *et al*,¹⁰ used the two additional questions also included in this study: 'Knowing the final result of the operation, would you choose to undergo the same procedure again?' and 'Overall, are you satisfied with the results of the operation?'. The answer to the first question scored 83% and 79% in our study and that by Hellings *et al* respectively while the second scored 75% and 88% respectively. Overall, patients appeared to be satisfied with the procedure they underwent.

Study limitations

The main limitations of this study relate to the use of a questionnaire and the lack of preoperative scores due its

retrospective nature, thereby limiting our ability to quantify the precise extent of change in outcomes following the surgical procedure. Nevertheless, a response rate of over 70% was achieved, which is fairly respectable, and despite these limitations, the study data reveal that patients are generally happy with their nasal appearance and function following septorhinoplasty surgery. These results are particularly relevant in the current climate where surgical procedures incorporating a cosmetic element are under real threat and could be further at risk if patient related benefit cannot be demonstrated. Indeed, with the introduction of clinical commissioning groups, implementation of revalidation and the publication of surgeon-level outcomes data, this type of PROM data will undoubtedly assume even more relevance in the future.

Conclusions

PROMs are useful tools in assessing the benefit of surgery from the patients' perspective. These types of assessment will undoubtedly become more commonplace and assume more importance in the NHS, particularly during these times of austerity and limited resources. This study has shown that septorhinoplasty patients appear to be generally satisfied with the appearance and function of their nose following surgery. These results help support the case for septorhinoplasty surgery to continue being funded as an NHS procedure.

Acknowledgements

The authors would like to thank all the patients who participated in this study.

References

1. Department of Health. *Achieving World Class Productivity in the NHS 2009/10 – 2013/14: Detailing the Size of the Opportunity*. London: DH; 2009.
2. Kosowski TR, McCarthy C, Reavey PL *et al*. A systematic review of patient-reported outcome measures after facial cosmetic surgery and/or nonsurgical facial rejuvenation. *Plast Reconstr Surg* 2009; **123**: 1,819–1,827.
3. Alsarraf R. Outcomes research in facial plastic surgery: a review and new directions. *Aesthetic Plast Surg* 2000; **24**: 192–197.
4. Hassan SJ, Weymuller EA. Assessment of quality of life in head and neck cancer patients. *Head Neck* 1993; **15**: 485–496.
5. Deleyannis FW, Weymuller EA, Coltrera MD, Futran N. Quality of life after laryngectomy: are functional disabilities important? *Head Neck* 1999; **21**: 319–324.
6. Rosenfeld RM. Pilot study of outcomes in pediatric rhinosinusitis. *Arch Otolaryngol Head Neck Surg* 1995; **121**: 729–736.
7. Alsarraf R, Larrabee WF, Anderson S *et al*. Measuring cosmetic facial plastic surgery outcomes. *Arch Facial Plast Surg* 2001; **3**: 198–201.
8. Cingi C, Songu M, Bal C. Outcomes research in rhinoplasty: body image and quality of life. *Am J Rhinol Allergy* 2011; **25**: 263–267.
9. Arima LM, Velasco LC, Tiago RS. Influence of age on rhinoplasty outcomes evaluation: a preliminary study. *Aesthetic Plast Surg* 2012; **36**: 248–253.
10. Hellings PW, Nolst Trenité GJ. Long-term patient satisfaction after revision rhinoplasty. *Laryngoscope* 2007; **117**: 985–989.
11. Baykal B, Erdim I, Kayhan FT, Oghan F. Comparative analysis of nasal deformities according to patient satisfaction. *J Oral Maxillofac Surg* 2014; **72**: 603.e1–603.e7.
12. Saleh AM, Younes A, Friedman O. Cosmetics and function: quality-of-life changes after rhinoplasty surgery. *Laryngoscope* 2012; **122**: 254–259.
13. Arima LM, Velasco LC, Tiago RS. Crooked nose: outcome evaluations in rhinoplasty. *Braz J Otorhinolaryngol* 2011; **77**: 510–515.
14. Meningaud JP, Lantieri L, Bertrand JC. Rhinoplasty: an outcome research. *Plast Reconstr Surg* 2008; **121**: 251–257.