

Subjective assessment of facial aesthetics after maxillofacial orthognathic surgery for obstructive sleep apnoea

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Accepted 21 November 2014

Available online 23 December 2014

Abstract

We aimed to evaluate the subjective perception of facial appearance by patients after maxillofacial surgery for obstructive sleep apnoea (OSA), and explored the possible correlation between satisfaction and surgical outcome. A total of 26 patients, 24 men and 2 women (mean (SD) age 45 (7) years), subjectively assessed their facial appearance before and after operation using a visual analogue scale (VAS). To investigate a possible association between postoperative facial appearance and surgical outcome, we analysed postoperative scores for the apnoea/hypopnoea index (AHI) and Epworth sleepiness scale (ESS). Postoperatively, 14 (54%) indicated that their facial appearance had improved, 4 (15%) recorded a neutral score, and 8 (31%) a lower score. The rating of facial appearance did not correlate with changes in the AHI or ESS following surgery. This study supports the view that most patients are satisfied with their appearance after maxillofacial orthognathic surgery for OSA. The subjective perception of facial aesthetics was independent of the surgical outcome.

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Keywords: Facial aesthetics; Subjective; Maxillofacial surgery; Outcomes; Maxillomandibular advancement; Obstructive sleep apnoea

Introduction

Obstructive sleep apnoea (OSA) is a condition of increasing importance because of its neurocognitive and cardiovascular sequelae,^{1–3} and a growing number of studies have highlighted the role of maxillofacial orthognathic surgery in the management of patients who fail to tolerate, or decline treatment with continuous positive airway pressure (CPAP). Although maxillomandibular advancement is reported to be as effective as CPAP,⁴ it is important to consider the prospect of an altered facial profile following surgery. The potential for alteration to the facial profile may dissuade some patients from considering orthognathic surgery as treatment option.

A small number of studies have explored the topic of facial aesthetics in patients treated surgically for OSA.^{5–9} Although some studies have shown high levels of satisfaction with the facial profile and the overall perception of treatment,^{5,6} others

have suggested that patients are not concerned about aesthetics after surgery.⁸ However, the possibility of dissatisfaction with the facial appearance after maxillomandibular advancement for OSA is important from a consent point of view. Several factors might influence subjective ratings of facial aesthetics after surgery, and patients with poor outcomes may rate their appearance more negatively.

The aim of this study was two-fold. First, we wished to evaluate the subjective perception of facial appearance by patients after maxillomandibular advancement for OSA, and secondly, to explore the possible correlation between levels of satisfaction and recognised outcome measures of surgical success. To our knowledge, this potential association has not previously been formally evaluated in published studies.

Method

We retrospectively surveyed the subjective perception of facial appearance by patients who had maxillomandibular advancement for OSA at our institution after they had failed

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to tolerate use of CPAP and other non-invasive treatments. We evaluated their assessments of their facial appearance before, and at least 6 months after operation using a 10 cm horizontal linear visual analogue scale (VAS) (0: very dissatisfied to 10 cm: highly satisfied). We also analysed demographic and clinical characteristics including polysomnographic data to assess whether there was an association between these variables and the subjective perception of facial aesthetics after surgery. In particular, we evaluated scores for the Epworth sleepiness scale (ESS) and apnoea/hypopnoea index (AHI). The ESS is a validated questionnaire that enables patients with OSA to subjectively assess their degree of daytime sleepiness. The AHI is an objective measure of disordered breathing during sleep, and is derived from a sleep study. The number of periodic reductions (hypopnoea) or cessations (apnoea) in breathing secondary to obstruction of the upper airway is used to assess the severity of the condition.

Data were analysed using SPSS Statistics for Windows version 17.0 (SPSS Inc, Chicago). Parametric statistical tests were used, and Pearson’s correlation coefficient was used to assess the association between subjective VAS scores and AHI and ESS scores.

Results

A total of 51 patients had maxillomandibular advancement for OSA at our institution. Preoperative and postoperative VAS scores were available for 26 (24 male and 2 female). Baseline characteristics are shown in Table 1.

The mean VAS score for satisfaction with the facial appearance was 4.1 (range 2–8) before, and 6.5 (range 2–10) after operation. Fourteen patients (54%) gave a higher rating for satisfaction with their facial appearance postoperatively,

Table 1
Baseline characteristics of the study sample. Data are number (%) unless otherwise stated.

Variable	Measurement (n = 26)
Mean (SD) age (years)	45 (7)
Sex	
Male	24 (92)
Female	2 (8)
Mean (SD) body mass index	28 (3)
Smokers	9 (35)
Alcohol	21 (81)
CPAP	
Tried	23 (88)
Not tried*	3 (12)
Skeletal profile	
Class I	21 (81)
Class II	5 (19)
Procedure	
Bimaxillary advancement with genioplasty	24 (92)
Bimaxillary advancement	2 (8)
Mean (SD) maxillary advancement (mm)	8.1 (2)
Mean (SD) mandibular advancement (mm)	8.3 (2)

CPAP: continuous positive airway pressure.
* Declined CPAP or used it for less than 4 weeks.

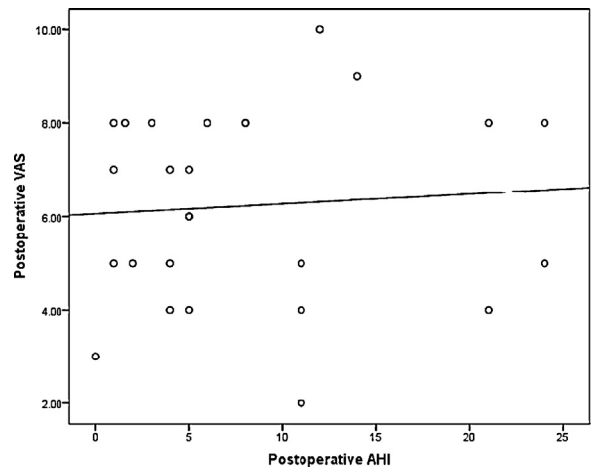


Fig. 1. Scatter plot showing correlation between postoperative apnoea/hypopnoea index (AHI) and subjective facial score on visual analogue scale (VAS).

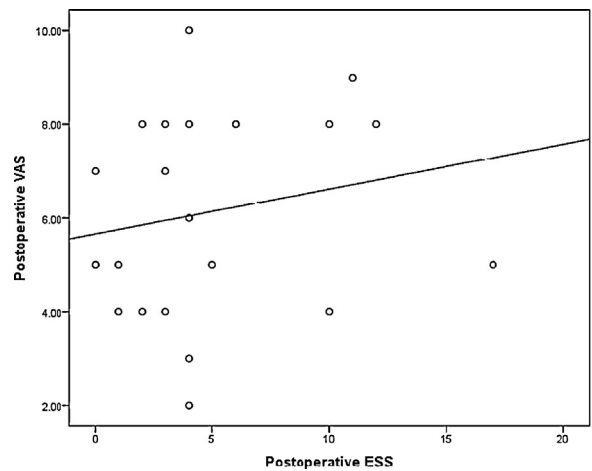


Fig. 2. Scatter plot showing correlation between postoperative Epworth sleepiness scale (ESS) and subjective facial score on visual analogue scale (VAS).

4 (15%) thought there was no change, and 8 (31%) gave a lower rating.

The postoperative ESS score in patients who thought there had been an improvement or no change in their facial appearance was similar to that in those who had rated their aesthetic score as lower (mean (SD) 7 (4) and 7 (3), respectively). Postoperatively, the mean (SD) AHI score in those who thought that their facial appearance had improved or was similar was 8.8 (2); in those less satisfied it was 10.5 (3). The difference was not statistically significant.

Scatter plots showing potential correlation between subjective VAS scores for satisfaction with facial appearance and postoperative AHI and ESS scores are shown in Figs. 1 and 2. Postoperative scores for facial appearance and the ESS ($r=0.22, p>0.05$) did not correlate. Similarly, scores for postoperative facial appearance did not correlate with changes in the AHI ($r=0.08, p>0.05$).

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