Psychologic implications of orthognathic surgery in patients with skeletal Class II or Class III malocclusion

The psychologic profile of 100 consecutive patients undergoing orthognathic surgery for correction of Class II or Class III malocclusion was monitored in a prospective observational study. Patients and their relatives or friends completed questionnaires about their self-image before surgery, 6 weeks postoperatively, and 6 months postoperatively. Preoperatively, patients with Class III malocclusion felt significantly less attractive (P = .03), had slightly higher attention to physical appearance, and had slightly stronger feelings of insecurity regarding their facial appearance compared with Class II patients. Grading of attractiveness/self-confidence improved significantly in Class III patients at 6 weeks postoperatively (P = .006), while in Class II patients the improvement was less pronounced and only significant at 6 months postoperatively (P = .002). Grading of attractiveness/self-confidence by relatives/friends of patients with Class II and Class III was similar preoperatively, but was significantly higher for Class III patients 6 weeks postoperatively in comparison with Class II patients (P = .048). These data indicate that the psychologic profiles are significantly different between Class II and Class III patients preoperatively and show different dynamics postoperatively. (Int J Adult Orthod Orthognath Surg 2002;17:75–81)

Orthognathic surgery leads to an improvement in both the functional status of the jaws and the facial appearance of the patient. The individual motivation of patients to undergo orthognathic surgery is driven mainly by these 2 aspects. While the improved functional outcome is rather predictable and generally appreciated by patients, the postoperative facial appearance is not always properly anticipated by the patients and therefore not always completely appreciated. Because of the close interdependence of facial appearance with psychologic parameters such as self-esteem and self-confidence, severe psychic distress may result if patients dislike the esthetic outcome of orthognathic surgery.

Several studies have evaluated psychologic parameters in patients undergoing orthognathic surgery with the intention to identify emotional profiles of patients prone to be dissatisfied with their facial appearance after surgery. Such profiles could be delineated by some authors, while others found no clear evidence of an association of such profiles with patient satisfaction after orthognathic surgery. There are many possible reasons for this apparent discrepancy, such as differences in the design of the studies, methods used to establish a profile, and selection of patients. We therefore investigated in a prospective observational study whether there is a difference between the psychologic profiles of patients with skeletal Class II compared with skeletal Class III malocclusions and monitored the postoperative changes in the profile of these patients by...
means of a standardized questionnaire. In addition, we also evaluated the impact of support of the patients by relatives or friends, which is an established predictor of postoperative satisfaction in this type of surgery.11

Patients and methods

Patients

The investigation was a prospective, questionnaire-based observational study. The primary sample consisted of 100 consecutive patients (68 women, 32 men) with skeletal Class II malocclusion (n = 64) or skeletal Class III (n = 36) malocclusion. The mean age at operation was 25 years (range, 14 to 45 years).

Orthodontics and orthognathic surgery

All patients were treated with combined orthodontics and orthognathic surgery. Maxillary surgery alone (Le Fort I osteotomy) was performed in 6 patients, mandibular surgery alone (bilateral sagittal split osteotomy [BSSO]) was done in 51 patients, and a combined procedure was carried out in 43 patients. A genioplasty was performed in a total of 34 patients: in 3 patients together with an isolated Le Fort I osteotomy, in 19 patients together with a BSSO, and in 12 patients together with a combined procedure.

Questionnaire

A structured questionnaire (Fragebogen zur Beurteilung des eigenen Körpers12) was answered by the patient and by a relative or friend nominated by the patient at 3 predefined time points: 2 weeks preoperatively (time point t0), 6 weeks postoperatively (t1), and 6 months postoperatively (t2). The Fragebogen zur Beurteilung des eigenen Körpers (Body Image Assessment Questionnaire) was developed by Strauss and Richter-Appelt.12 It is a multidimensional body/self relationship questionnaire. This self-rating questionnaire consists of 52 dichotomous items comprising 4 scales. Scale 1 (attractiveness/self-confidence, 15 items) contains items about satisfaction and happiness with one’s own body; items that describe feelings of attractiveness and identification with one’s own body are scored positively, and items that describe negative or aggressive reactions to one’s own body are scored negatively. Scale 2 (accentuation of body appearance, 12 items) describes attention to physical appearance and pleasure in the concerns of one’s body. Scale 3 (insecurity/concern, 13 items) focuses on hypochondriacal attention to one’s own body, uncertainty or distrust of physical processes, and feelings of insecurity and lack of physical self-control. Scale 4 (sexual dissatisfaction, 6 items) includes questions concerning sexual dissatisfaction, distrust, and shame. Six items are not assigned to 1 of the 4 scales. For each scale there is a composite sum score. The internal consistency of this questionnaire has been tested and found to be sufficient, with Cronbach alpha between 0.69 and 0.85.13

Statistical procedures

The 2-tailed Student t test was used to compare the means of continuous variables in patients with Class II and Class III malocclusions. The 2-tailed Student t test for paired data was used to compare the means of continuous variables in each group of patients at the 3 predefined time points (t0, t1, and t2).

Results

Among the 100 consecutive patients in the study, there were more women (n = 68) than men (n = 32) and fewer patients with Class III malocclusion (n = 36) than with Class II malocclusion (n = 64). The mean age at operation was 25.0 years, with a range from 14 to 45 years. Patients with Class III malocclusion (mean age 23 ± 6 years) were significantly younger (P = .008) at the time of surgery compared with the Class II patients (mean age 27 ± 7 years).

All patients had an uncomplicated surgical procedure. A dental Class I occlusion was present in all patients at both postoperative exams (t1 and t2).

The return rates of completed body-image questionnaires were 91% for patients and 84% for relatives/friends.
Questionnaire answered by patients

Absolute grading: Class II versus Class III. Scale 1 (attractiveness/self-confidence) (Fig 1). Preoperative (t0) grading on scale 1 was significantly higher in Class II patients (51.0 ± 9.8) compared with Class III patients (46.1 ± 11.1) (P = .03). A difference was still present but not significant at 6 weeks (t1) (51.4 ± 10.3 versus 50.8 ± 8.7, respectively; P = .77) and 6 months (t2) (52.6 ± 9.13 versus 54.1 ± 8.3, respectively; P = .46).

Scale 2 (accentuation of body appearance) (Fig 2). Preoperative (t0) grading on scale 2 was similar in Class II patients (49.7 ± 9.3) and Class III patients (51.1 ± 7.9). A significant difference was present at 6 weeks (t1) (51.1 ± 8.7 versus 54.5 ± 7.0, respectively; P = .04). The difference was similar at 6 months (t2) (49.6 ± 10.4 versus 53.1 ± 8.1, respectively; P = .88).

Scale 3 (insecurity/concern) (Fig 3). Preoperative (t0) grading on scale 3 was slightly but not significantly higher in Class III subjects (47.8 ± 7.8) compared to Class II subjects (45.9 ± 8.8). The grading was almost identical at 6 weeks but was reversed at 6 months (Class III versus Class II: 45.3 ± 5.5 versus 46.4 ± 9.3).

Scale 4 (sexual dissatisfaction). No significant difference in the grading on scale 4 was observed between Class II and Class III patients.
Changes in grading: Class II versus Class III.

Scale 1 (attractiveness/self-confidence) (Fig 1). Grading on scale 1 in the Class III patients showed a significant increase from preoperative to 6 weeks postoperative (46.2 ± 11.2 to 50.1 ± 8.6; \(P = .006\)) and a further significant increase by 6 months postoperative (50.1 ± 8.6 to 54.1 ± 9.2; \(P = .04\)). A similar increase was also observed in the Class II patients, which was significant at 6 months (50.5 ± 10.1 at t0 to 53.2 ± 9.2 at t2; \(P = .002\)).

Scale 2 (accentuation of body appearance) (Fig 2). No significant differences were seen from preoperative grading on scale 2 to follow-up grading of Class II and Class III patients.

Scale 3 (insecurity/concern) (Fig 3). Grading on scale 3 in Class III patients showed a constant decrease, which was significant from preoperative to 6 weeks and 6 months postoperative (47.9 ± 4.1 at t0 versus 47.1 ± 5.9 at t1 versus 45.4 ± 4.2 at t2; t0 versus t2 \(P = .008\)). No such dynamics were observed in patients with Class II. Their grading on scale 3 remained relatively unchanged throughout the observation period (45.9 versus 46.8 versus 45.4).

Scale 4 (sexual dissatisfaction). No significant differences on scale 4 were observed from the preoperative grading through the follow-up period of Class II and Class III patients.

Questionnaire answered by relatives/friends

Absolute grading: Class II versus Class III.

Scale 1 (attractiveness/self-confidence) (Fig 4). Grading on scale 1 was similar in relatives/friends of patients with Class II and Class III preoperatively (t0), but was significantly higher in Class III patients 6 weeks postoperatively when compared with Class II patients (53.5 ± 7.4 versus 51.3 ± 10.3; \(P = .048\)). This difference remained fairly stable at 6 months (t2) (53.4 ± 7.4 versus 52.4 ± 9.5) but lost significance.

There were no statistically significant differences in scale 2, 3, or 4 in the grading of relatives/friends of Class II compared with Class III patients.

Changes in grading: Class II versus Class III.

Scale 2 (accentuation of body appearance) (Fig 5). The grading on scale 2 increased slightly in relatives/friends of Class II and Class III patients during the postoperative period.

Scale 3 (insecurity/concern) (Fig 6). Postoperative grading on scale 3 increased significantly in relatives/friends of patients with Class II, which resulted, at 6 months
postoperatively (t2), in a significantly elevated grading (44.5 ± 6.7 versus 46.8 ± 9.3; P = .034). In contrast, relatives/friends of patients with Class III had a decrease in grading from preoperative to 6 months postoperatively (t1) and 6 months postoperatively (t2). This resulted in a borderline-significant lower grading of Class III patients compared with Class II patients 6 months postoperatively (t2) (44.1 ± 6.5 versus 46.8 ± 9.3; P = .08).

Scale 4 (sexual dissatisfaction). The grading on scale 4 remained unchanged postoperatively for relatives/friends of Class II and Class III patients.

Questionnaire completed by relatives/friends versus questionnaire completed by patients

In Class III patients, preoperative grading on scale 1 (attractiveness/self-confidence) was significantly lower by patients compared with the grading by their relatives/friends (46.1 ± 11.4 versus 50.4 ± 9.1; P = .0026) (Fig 7). This difference was still present at 6 weeks postoperatively (t1) but disappeared at 6 months postoperatively (t2) (54.1 ± 8.3 versus 53.5 ± 7.4). Grading was similar between Class II patients and their relatives/friends at all time points. There were no significant differences between patients and relatives in grading on scales 2, 3, and 4.

Discussion

Several significant findings emerge from our prospective study on the psychologic profiles of patients undergoing orthognathic surgery for correction of Class II or Class III malocclusion. There was a clear over-representation of females in our sample (68/100) of consecutive patients, which is in line with findings in earlier studies.9,14–16 The reason for this unequal distribution of gender is not entirely clear but could be due to a greater appreciation in women for their facial appearance.14 The distribution of the types of malformation was also unequal: Patients with Class II were clearly over-represented (64/100) of consecutive patients, which is in line with findings in earlier studies.9,14–16 The reason for this unequal distribution of gender is not entirely clear but could be due to a greater appreciation in women for their facial appearance.14 The distribution of the types of malformation was also unequal: Patients with Class II were clearly over-represented (64/100). This is in line with studies of patients from central Europe17 and either reflects the incidence of these malformations in the general population or differing readiness of Class II and Class III patients to undergo surgical treatment.

It was surprising to see that patients with Class III malocclusions underwent surgery significantly earlier in their life (approximately 4 years) than patients with Class II malocclusions. Although many reasons may influence the decision to undergo early correction in Class III patients, there are some well-defined psychologic reasons that emerge from our study. Patients with Class III malocclusion felt significantly less
attractive (scale 1), paid more attention to their physical appearance (scale 2), and had stronger feelings of insecurity regarding their facial appearance (scale 3) compared to patients with Class II malocclusion. It is therefore feasible that Class III patients felt a greater drive toward correction of their appearance and therefore sought help and surgical correction of their malocclusion earlier than Class II patients. An additional psychosocial pressure for Class III patients does not exist according to our data: Class II and Class III patients had a similar grading of attractiveness when judged by their relatives/friends.

The postoperative course in all patients was characterized by a steady increase in attractiveness (scale 1) as judged by the patients and by their relatives/friends. The increase was much more pronounced in Class III patients. This change was statistically significant in these patients immediately after surgery (at the 6-week check-up) and showed a further significant increase at 6 months. In contrast, Class II patients reached a significantly improved self-grading of attractiveness only at the 6-month check-up. At that time their grading of attractiveness was slightly inferior than that of Class III patients, although it had been slightly superior preoperatively. These data show that patients with a Class II malocclusion need special attention: They need to be informed that they will experience an improvement in their attractiveness rather late in the postoperative course and that this improvement will be significant but still relatively small. In contrast, Class III patients, although preoperatively they are more affected by their malocclusion than Class II patients—as is evident from a more pronounced accentuation of body appearance (scale 2) and insecurity and concern (scale 3)—their attractiveness will increase (scale 1) and they will lose their accentuation of body appearance (scale 2) and become more secure (scale 3) following surgery. Both latter parameters remain unchanged in Class II patients.

A somewhat different picture emerged when relatives or friends were asked to answer the questionnaires. Preoperative grading concerning attractiveness was similar in friends/relatives of Class II and Class III patients. However, a significant difference regarding attractiveness appeared postoperatively: Class III patients were judged significantly more attractive than Class II patients by their respective relatives/friends, although an increase in attractiveness was scored for both classes. At the same time, insecurity and concern (scale 3) decreased according to relatives/friends of Class III patients but showed a significant increase in Class II patients. This means that relatives/friends of patients undergoing orthognathic surgery regarded both types of malformation as equally attractive, but judged the postoperative results as much more attractive in Class III patients, with the consequence of an obviously improved self-esteem (reduction in insecurity/concern) in these patients.

Our data show that the preoperative psychologic profile and the postoperative changes in that profile are markedly different between Class II and Class III patients. The data suggest that orthognathic surgery has an overall beneficial effect on Class III patients. It increases attractiveness and at the same time reduces feelings of insecurity and concern with the appearance. These feelings are also evident for relatives and friends of the patients. Class II patients, in contrast, may gain attractiveness but remain unchanged with regard to their body image; they are still concerned and insecure and still suffer from accentuated body appearance, which is evident to their friends/relatives. These 2 different psychologic profiles of Class II and Class III patients should guide the overall care for these patients.

References