

Original Research Article

Patients' and Clinicians' Perception of Facial Esthetic Improvement as Determinant of Successful Orthosurgical Treatment

Fayez Saleh¹

Wisam Wahab Al-Hamadi^{2*}

¹Lebanese University, Lebanon

²Faculty of Dentistry, University of Babylon, Hilla, IRAQ

*E-mail: wisam.alhamadi@gmail.com

Accepted 29 March, 2017

Abstract

The purpose of this study was to compare patients' and clinicians' perception of facial esthetic improvement after orthognathic surgery. 22 adult females who underwent orthosurgical correction of certain dentofacial deformity were randomly selected with an average age of 24 years. Pretreatment and post-treatment set of good quality and standardized colored photographs (7 photographs for each patient) were collected and displayed in separate folders for evaluation. Structured open-ended questions were answered by evaluators and rated their perception on a percentage scale. Linear multiple regression analysis showed significant differences between patients' and clinicians' satisfaction with the orthosurgical outcome. There was a lower correlation between the patients' self-ratings and that of the same patients by the orthodontist and the maxillofacial surgeon. The results indicated that the patients were not significantly impressed despite the esthetic improvement and due to relatively high cost of the orthosurgical procedures. Overall patients' satisfaction rating was significantly lower than orthodontists ($r = -0.07$, $p = 0.77$) and maxillofacial surgeon ($r = 0.07$, $p = 0.76$). On the other hand, both orthodontist and maxillofacial surgeon had moderate significant association ($r = 0.54$, $p = 0.009$). Maxillofacial surgeons rated significantly higher than the orthodontist on the scale and much higher than the patients' ratings.

Key Words: Facial profile perception, Orthognathic surgery, patient satisfaction.

الخلاصة

هدفت هذه الدراسة الى مقارنة المرضى والاطباء من ناحية تصور تحسين الناحية الجمالية للوجه بعد جراحة الفك تقويماً. ٢٢ من النساء البالغات اخترن بصورة عشوائية اللاتي خضعن لجراحة تقويمية وكان متوسط اعمارهم ٢٤ سنة. تم جمع الصور الملونة وذات نوعية جيدة قبل وبعد المعالجة (سبع صور لكل مريض) وعرضها في مجلدات منفصلة للتقييم. وقد اجاب على منظم اسئلة مفتوحة من قبل مقيمين لتقييم تصورهم على شكل نسبة مئوية. التحليل المتعدد الخطي للانحدار أظهر اختلافات كبيرة بين المرضى والاطباء من حيث الرضى بعد الجراحة التقويمية. كان هناك ارتباط اقل بين المرضى والاطباء والتصنيف الذاتي لنفس نوع المرضى من قبل اخصائي تقويم الاسنان وجراحة الوجه والفكين. وأشارت النتائج ان المرضى غير راضيين كثيراً على الرغم من التحسين الجمالي، ونظراً لارتفاع التكلفة نسبياً لاجراءات الجراحة التقويمية وبلغت نسبة رضا المرضى العام اقل بكثير من تقويم الاسنان. ($r = -0.07$, $p = 0.77$) وجراحة الوجه ($r = 0.07$, $p = 0.76$) ومن ناحية اخرى كان لكل من تقويم الاسنان وجراحة الوجه والفكين ارتباط كبير. ($r = 0.54$, $p = 0.009$). بلغت جراحة الوجه والفكين نسبة اعلى معنوياً من تقويم الاسنان واعلى من تصنيفات المرضى.

الكلمات المفتاحية: تصور الوجه الشخصي، جراحة الفك، رضا المريض.

Introduction

Combined orthosurgical treatment of severe dentofacial deformities is becoming a common alternative to camouflage approach where orthodontic tooth movement alone is intended to mask the skeletal mal-relationship. The selection of an appropriate plan of treatment is based not only upon the clinicians' estimation of the final outcome with regard to esthetics, function, and stability but also upon patients' desire, expectations and perception of facial profile. In accordance with this, Bell *et al.* [1] revealed that individuals perceive their own profiles differently than clinicians, and this strongly influences their decision to undergo orthognathic surgery.

Peterson and Topazian [2] have emphasized the importance of patients' perception in the success of treatment, and considered that an important objective of dentofacial surgery is to have a patient who is happy with the results of treatment. Dissatisfaction may result from failure of communication between the clinicians and the patients; this was confirmed by Scott *et al.* [3].

Howells and Shaw [4] assessed the validity of evaluating facial attractiveness on photographic records by comparing the ratings assigned to photographs to those assigned to live subjects, their findings have shown no significant difference and therefore, the validity of photographs as good representations of clinical reality was established.

Dunlevy *et al.* [5] assessed professional (orthodontists & maxillofacial surgeons) and laypersons judgment of facial esthetic improvement after surgical orthodontics, their sample consisted of the 19 composite photos for female patients. Rating calculations were based on the improvement in the vertical and sagittal dimensions. The mean rankings of the three groups were overall similar, although laypersons consistently scored less than professionals and believed that some patients were even not improved following surgery.

Ronis *et al.* [6] in agreement with Williams *et al.* [7] assumed that a meaningful healthcare service is justified if patients' needs are identified and satisfied. It is therefore desirable that the patients' understanding of the surgical risk, esthetic benefits and cost effectiveness be adequate to make decisions and willingly sign an informed consent.

Several studies have attempted to establish standards of facial harmony and tried to determine which dimensions of the face are related to attractive profile. However, the clinicians, the patients, and the parents have different perceptions of a pleasant face and therefore, the agreement on a specific judgment has not yet been achieved [1, 7].

Michiels and Sather [8] in agreement with previous studies by Martin [9] and Foster [10] concluded that people share a common basis for esthetic judgment of facial photographs.

Cochrane *et al.* [11] recommended using line drawings or silhouettes of facial profiles, others used colored photographs and some others [12] used computer programs to assess the reliability of judgment by different related groups.

Cousley *et al.* [13] pointed out to the importance of assessing the treatment's feasibility and computerized prediction of treatment outcome prior to taking decision and signing the informed consent. The orthodontic and surgical changes must be described accurately to the patients in order to achieve realistic and acceptable objectives.

Narayanan *et al.* [14] in a retrospective study on fifty patients found that the psychological well-being of patients underwent orthognathic surgery is enhanced by preoperative counseling regarding the expected treatment objectives, the operative course, and postoperative sequelae.

Fabré *et al.* [15] compared the perception of maxillofacial surgeons, orthodontists, and laypersons on the aesthetic outcome of three surgical options, mandibular setback, Le Fort I advancement, and bimaxillary surgery

in Class III correction. 18 skeletal Class III Caucasian adult patients (10 males and 8 females) with a mean age of 24.5 years were used. All treatment predictions led to improved scoring of facial aesthetics; however Laypersons tended to give lower improvement scores than professionals.

Felisberti and Musholt [16] in a psychological experimental study raised interesting questions as regards self-face perception and possible prediction of discrepancies between internal representations of one's actual face and one's ideal face. Their results suggested that one's facial attractiveness can be highly influenced by social factors in the sense that features that are generally assumed attractive in others are also desired by us. However, they found a considerable variability among participants in their internal representation of their facial features to an extent some of them underestimated certain attractive facial factors.

In light of the above review, a reliable survey instrument to compare patients' perception and satisfaction of orthognathic surgery with that of orthodontists and maxillofacial surgeons is thus justified.

The purpose of this study was to evaluate the correlation among patients' perceptions of their own profiles and the same perception by orthodontists and maxillofacial surgeons.

Materials and Methods

The records of 22 adult females who underwent orthognathic surgery were randomly selected from the author's private practice in the last 5 years. The average age of the patients was 24 years. Pretreatment and post-treatment set of good quality and standardized colored photographs (7 photographs for each patient) were collected and displayed as shown in (Fig. 1), ready for evaluation (All pictures were taken under patients' agreements).

In this study we used open-ended questions to rate qualitatively the positive and negative outcomes of the orthognathic surgery as suggested by Ajzen and Fishbein [17].

Patients were asked to review the signed consent form, reread the presurgical instructions and information, and the discussions with the healthcare team members before answering the questions and rating the outcome Table-1.

Table 1: Questions recommended to review the signed consent form

What are the advantages that you received from the orthosurgical treatment?
What are the positive side effects of the treatment?
What are the possible negative side effects of treatment?
How you evaluate the cost effectiveness of the orthosurgical treatment?

Considering the above factors and looking into the photographs, patients were asked to rate their satisfaction with the improvement in esthetics and function according to the following scale and recorded on Table (2).

Scale of percentage rating:

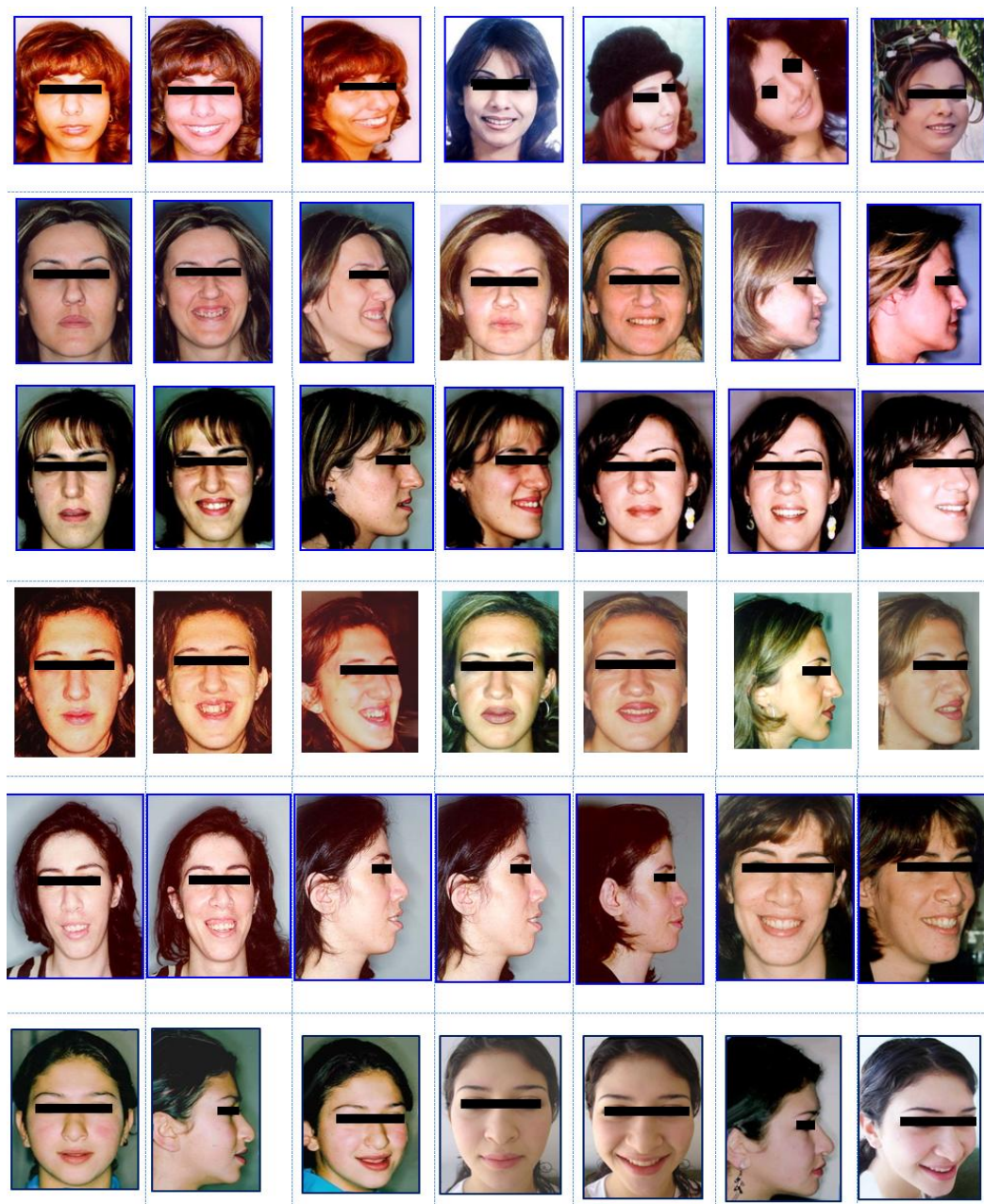
0 ----49% not satisfied

50---74% fairly (Moderately) satisfied

75--100% highly satisfied

Table 2: Three items Patients' self-rating scale of esthetic improvement after orthognathic surgery

Factors to be evaluated	% rating of self-satisfaction	Collective %
1. Esthetic improvement (Facial profile)	%	
2. Occlusion: Straight teeth	%	
Functional improvement, chewing& mastication	%	
3. Cost-effectiveness satisfaction	%	
Overall self-rating of improvement and Satisfaction		%

Figure 1: Sample of the pre & post treatment facial photographs for esthetic judgment by the 3 groups of assessors

I, the undersigned herewith allow Prof. F. Saleh to publish pre-post photos outside Lebanon without mentioning the name.

أنا الموقع أدناه أسمح للبروفيسور فايز صالح أن ينشر الصور المرفقة خارج لبنان دون ذكر الاسم
I have their signature on their contract admission. April 4, 2017

Prof. F. Saleh

Two groups of evaluators (the Orthodontist and the maxillofacial surgeon) were also asked to separately and independently rate their satisfaction with the treatment outcome for every case (facial attractiveness) from the set of colored photographs and from the post treatment follow up observation on the actual face in a real-life setting.

Statistical Methods:

Repeated measures ANOVA were used to assess how the three groups rated their satisfaction on a percentage scale. Correlation analysis investigated the degree of agreement or disagreement between the three groups in terms of the designed predictors.

Results

Mean overall percentage ratings by orthodontist, oral surgeon, and treated patients were displayed in (Table 3).

Linear multiple regression analysis showed significant differences between patients and clinicians' satisfaction with the orthosurgical outcome. Predictors included

reviewing presurgical information by patients and clinicians and assessing postsurgical photographs in addition to follow-up record of esthetic and functional improvement.

The results indicated that the patients were not significantly satisfied with the esthetic improvement and the relatively high cost of the orthosurgical procedures. Overall patients' satisfaction rating was significantly lower than orthodontist ($r = -0.07$, $p = 0.77$ and maxillofacial surgeon ($r = 0.07$, $p = 0.76$). On the other hand, both orthodontist and maxillofacial surgeon had moderate significant association ($r = 0.54$, $p = 0.009$).

There was a lower correlation between the patients' self-ratings and that of the same patients by the orthodontist and the surgeon.

The qualitative data however, reported positive outcome on the straightening of teeth and the oral function. Maxillofacial surgeons rated significantly higher than the orthodontist on the scale and much higher than the patients' ratings.

Table 3: Descriptive statistics reported positive outcome qualitative data

Descriptive statistic	Overall rating % of Patients' Satisfaction	Orthodontist's Overall rating%	Maxillofacial surgeon's Overall rating%
N	22	22	22
Mean	70.91	85.45	89.55
Std. Deviation	5.03	4.86	4.61
Minimum	65	75	80
Maximum	85	95	95
p value < 0.001	C	B	A

Discussion

Female subjects were only included in this study because prior studies showed a difference in profile preferences for men and women; girls are more likely to undergo treatment for internal psychological reasons to improve their appearance and self-esteem [7, 8, 16].

The use of open-ended questions increased the validity of the scale by including relevant treatment outcomes and other psychological patients' concerns. However, this study still has certain limitations including the small sample size and sex, the heterogeneous malocclusion types, and the different surgical procedures.

The results of this study strongly support what Bell *et al.* [1] once believed that patients perceive their own profile differently than orthodontists or oral maxillofacial surgeons. The moderate positive correlation seen between the ratings made by the clinicians (orthodontist and maxillofacial surgeon) indicates that a fairly consensus of the esthetic values exist between them. On the other hand, the weak correlation between patients and clinicians confirms the necessity of setting a practice to train patients to become familiar with the nature of the task and material to be rated [4].

Conclusions

The key to successful orthosurgical treatment is to increase the concordance between patients and clinicians in terms of benefits of treatment, surgical risk and cost-effectiveness. Using standardized colored photographs and small groups of judges provide valid and reliable ratings of facial attractiveness. This simple and economic technique has proven to be suitable for epidemiologic studies of facial profile changes. Patients' perception of beautiful face and their expectations must be respected and harmonized with the health care providers. Patients should be informed about the biologic limitations and sensitivity of vital oral-nasal spaces to volumetric modifications.

References

- [1] Bell R, Kiyak HA, Joondeph DR, McNeil RW, Wallen TR. Perception of facial profile and their influence on the decision to undergo orthognathic surgery. *Am J Orthod.* 1985; 88: 323-332.
- [2] Peterson LJ and Topazian RG. The preoperative interview and psychological evaluation of the orthognathic surgery patient. *J Oral Surg* 1974; 32: 583-588.
- [3] Scott AA, Hatch JP, Rugh JD, Hoffman TJ, Rivera SM, Dolce C, Bays RA. Psychosocial predictors of satisfaction among orthognathic surgery patients. *Int J Adult Orthod Orthognath Surg* 2000; 15: 7-15.
- [4] Howells DJ, Shaw WC. The validity and reliability of ratings of dental and facial attractiveness for epidemiologic use. *Am J Orthod.* 1985; 88:402-408.
- [5] Dunlevy HA, White RP, Proffit WR, Turvey TA. Professional and lay judgment of facial esthetic changes following orthognathic surgery, *Int J Adult Orthod Orthognath Surg* 1987; 2(3): 151-158.
- [6] Ronis DL, Callan MA, Vig KWL, Vig PS, McNamara JA. Developing measures of patients' perceptions of orthognathic surgery. *Int J Adult Orthod Orthognath Surg* 1994; 9: 87-94.
- [7] Williams AC, Shah H, Sandy JR, Travess HC. Patients' motivations for treatment and their experiences of orthodontic preparation for orthognathic surgery. *J Orthod* 2005; 32:191-202.
- [8] Michiels G, Sather AH. Validity and reliability of facial profile evaluation in vertical and horizontal dimensions from lateral cephalograms and lateral photographs. *Int J Adult Orthod Orthognath Surg* 1994; 9: 43-54.
- [9] Martin JG. Racial ethnocentrism and judgment of beauty. *J Soc Psychol* 1964; 63: 59-63.
- [10] Foster EJ. Profile preferences among diversified groups. *Angle Orthod.* 1973; 43: 34-40
- [11] Cochrane SM, Cunningham SJ, and Hunt NP. a comparison of the perception of facial profile by the public and 3 groups of clinicians. *Int J Adult Orthod Orthognath Surg* 1999; 14: 291-295.
- [12] Csaszar GR, Bruker-Csaszar B, Niederdellmann H. Prediction of soft tissue profiles in orthodontic surgery with the Dentofacial Planner. *Int J Adult Orthod Orthognath Surg* 1999; 14: 285-290.
- [13] Cousley RRJ, Grant E, Kindelan JD. The validity of computerized orthognathic predictions. *J Orthod.* 2003; 30: 149-154.
- [14] Narayanan V, Guhan S, Sreekumar K, Ramadorai A. Self-assessment of facial form oral function and psychological function before and after orthognathic surgery: A retrospective study. *Ind J Dent Res* 2008; 19(1): 12-16.

- [15] Fabré M, Mossaz P, Christou S, and Kiliaridis S. Professionals' and laypersons' appreciation of various options for Class III surgical correction. *Eur J Orthod* 2010; 32 (4): 395-402.
- [16] Felisberti F, Musholt K. Self-face perception: Individual differences and discrepancies associated with mental self-face representation, attractiveness, and self-esteem. *Psychol & Neurosci*. 2014; 7(2): 65-72.
- [17] Ajzen I, Fishbein M. Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall, 1980.