

ORIGINAL ARTICLE

The Importance of Chin Position on Perceived Attractiveness in Orthodontic Patient and Lay Person

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ABSTRACT

Objectives: This study was conducted to determine the perceived attractiveness of the face by change in chin position between orthodontic patients and the general public and determine their desire for surgery to correct it.

Study Design: Cross Sectional

Study Setting: Orthodontic OPD,

Period: March 2021- July 2021

Material & Methods: An ideal facial outline was created with a computer software. 150 participants, divided into two groups (pre-treatment orthodontic patients and lay person) were part of the research. Each participant was given a survey and asked to fill it out and rank images on a summative scale

Results: Results showed that the aesthetic judgement of both observer groups was the same for most images; The rating was decided by the amount of shift in the chin position, with the scoring being higher when the chin was more forward than when it was backward.

Keywords: attractiveness, chin position, esthetics, facial profile, orthodontics

INTRODUCTION

We live in a society where physical attractiveness is of overwhelming importance to us. Facial features and body structure are the two key factors that contribute to one's physical appearance. However, the face is the first thing that catches the attention of a friend or a passerby giving it an edge over the body shape. Amongst the many features of the face that make it look attractive, chin plays an equally important role. Chin prominence is closely attached to one's natural beauty and personality. Any individual's chin structure is taken/used to determine his/her personality, where, particularly for men a prominent chin indicates a strong personality and an under-structured/developed chin terms him to be a weak person.^{1,2,3} The acceptable range for chin prominence varies from one society to another. Hence, each society has its own set norms for accepting chin prominence of an individual based on their age, gender, and ethnic background. Due to the pressure from the society, we live in, everyone wants perfectly balanced facial features to look attractive, however, beauty does not have set parameters and therefore there is no perfect size or shape for any facial feature including the chin. For this reason, surgeries are often considered as an option to correct the malformations of the chin or any other facial feature. However, the surgeries are not performed on any and every next individual rather there are certain things taken into consideration before a surgery can be performed. Most importantly, the degree and cause of the deformity needs to be identified.⁴ The deformity could be genetic/hereditary or accidental arising from the surrounding facial tissues, dentoskeletal discrepancy or a mixture of these.⁵ Based on the acceptable chin prominence range by the society and the deviation of the patient's chin structure from it, the decision is taken. At many times and on many occasions, the deformity is not very great, and patient is said to be on the 'border-line' therefore, making the choice of undergoing a surgical procedure subjective.⁵ Having considered all that written above, it needs to be discussed of how the range for chin prominence acceptance is set. Since, the decision to be made is about the people who make up the society, it is these people themselves who set this variability range. This implies that the range is set according to the surveys carried out to obtain the opinions of the orthognathic patients and laymen.

MATERIAL AND METHODS

A facial silhouette was made with Adobe Photoshop. The image was modified to create an 'ideal' facial outline with proportions and

soft tissue measurements^{3,5} based on currently accepted criteria (Fig. 1). The chin position of the profile that had to be modified was adjusted by 2 mm increments from -24mm to +12mm, to represent retrusion and protrusion of the chin (Fig. 2).

150 subjects were part of the study, pre-treatment orthodontic patients and laymen. Selection criteria for the orthodontic patients were patients wanting orthodontic treatment; chief complaint was unsatisfactory facial appearance; no prior orthodontic or adjunctive surgical procedures; no history of facial trauma; and no psychological issues. Selection criteria for the laypeople were: no prior orthodontic or adjunctive surgical procedures; no facial deformities; no history of facial trauma; and non-healthcare workers. Each observer was given a list of questions and asked to complete it.

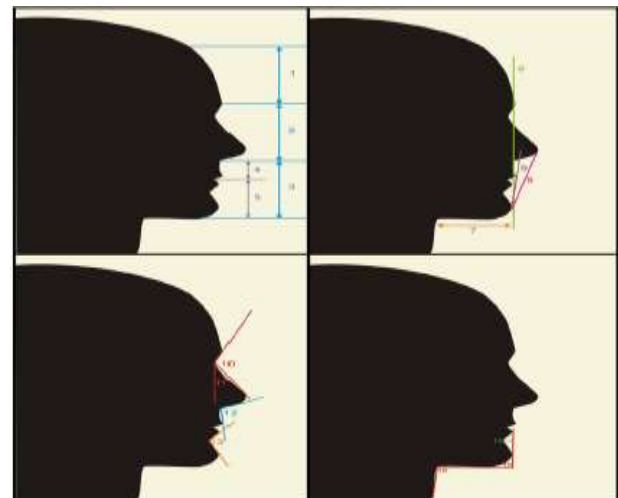


Fig. 1: Ideal facial profile image with facial parameters based on currently accepted criteria: facial trisection (facial thirds equal: 1, trichion to glabella; 2, glabella to subnasale; 3, subnasale to menton); lower facial third: 4, upper lip height – subnasale to stomion (1/3); 5, lower lip and chin height – stomion to menton (2/3); 6, sagittal position of glabella, subnasale and pogonion to zero-degree meridian line; 7, submental length; 8, lips to E-line; 9, lips to S-line. Ideal values for: 10, nasofrontal angle; 11, nasofacial angle; 12, nasolabial angle; 13, mentolabial angle; 14, mentolabial depth; 15, lip-chin-throat angle; 16, throat-neck angle.

An instruction sheet supplemented the questionnaire, asking the observers to rate each image in terms of facial attractiveness using the following rating scale: 1, extremely unappealing; 2, very unappealing; 3, slightly unappealing; 4, neither unappealing nor appealing; 5, slightly appealing; 6, very appealing; 7, extremely appealing. Observers were also asked whether they would consider surgery to correct their profile if this was their face (yes or no). Photos were randomly uploaded to the Microsoft PowerPoint software application.

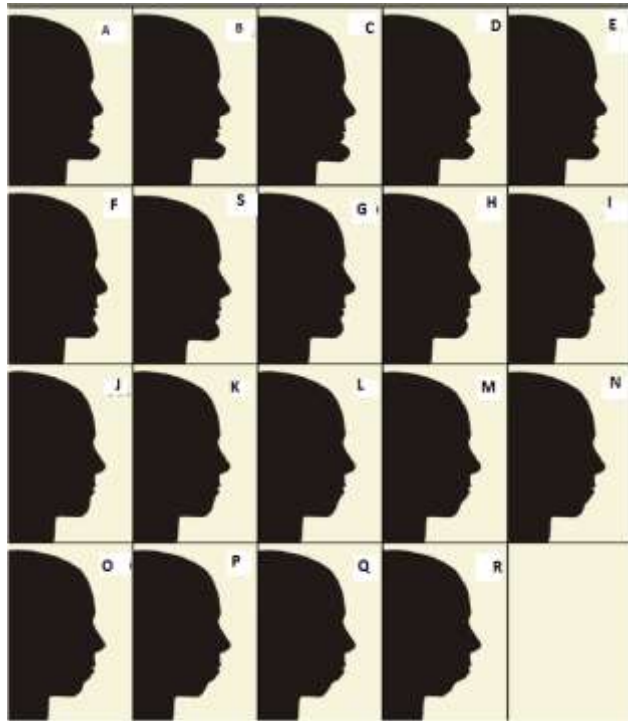


Fig. 2: Sagittal chin prominence altered in 2 mm increments, from +12 to -24 mm.

RESULTS

Table 1: Mean observer ratings and confidence intervals, (positive values represent chin protrusion and negative values represent chin retrusion).

Image	Chin prominence(mm)	Mean	SE
A	+2	3.83	0.08
B	+4	2.90	0.09
C	+6	2.60	0.09
D	+8	2.23	0.08
E	+10	2.23	0.08
F	+12	1.96	0.05
G	-2	5.56	0.09
H	-4	5.13	0.09
I	-6	5.00	0.08
J	-8	3.63	0.09
K	-10	3.21	0.07
L	-12	2.77	0.07
M	-14	2.63	0.08
N	-16	2.53	0.08
O	-18	2.14	0.08
P	-20	2.02	0.07
Q	-22	1.67	0.06
R	-24	1.54	0.05
S	0	5.33	0.08

Table 2: Multivariate mixed logistic regression for desire for surgery.

	Chin retrusion(-ve)			Chin protrusion(+ve)		
	OR	95% C.I.		OR	95% C.I.	
Lay people vs patients	2.16	1.00	4.54	1.03	0.67	2.71

Most alluring and least alluring images: The most observed and highest alluring image perceived was G which represented chin position which was 2 mm behind the idealized profile. On the other hand, the three lowest ranked profiles were Q, R and F. Chin retrusion was generally favored over chin protrusion. Amongst the other higher rated images were H and I.

Desire for surgery: The central factor that determined whether surgery should be performed or not was retrusion of chin position. For each mm drop in chin position, the likelihood of seeking surgery increased by 21.6%

DISCUSSION

Facial aesthetics is an essential element of diagnosis and treatment planning for orthodontic procedures. Therefore, many studies have been carried out to evaluate if there are disparities in the opinion of facial attractiveness amongst laymen and orthodontic patients. To meet the social norm of having the 'perfect facial features' more and more people have started to opt for surgical enhancements. Chin is the keystone structure of the face. Fittingly, the evaluation of the chin position to determine this ideal facial profile is an important factor which pushes a person towards surgery. Chin augmentation surgeries have seen an upward trend. According to 2011 statistics from the American Society of Plastic Surgeons, the number of chin augmentation surgeries performed in the United States increased 71 percent from 2010 to 2011, making chin augmentation the fastest growing plastic surgery trend.⁶ Asians have started to seek more non-surgical esthetic procedures at younger ages in the recent times. These procedures are not based on western preferences but their own desires to correct short comings that they consider will help improve their overall facial esthetic.⁷

Commonly, the most acceptable facial profile is one in which Pogonion is at the tangent drawn from glabella to the menton^{2,3} If not, we consider chin rejuvenation surgery. It is obvious for an observant orthodontist or physician to identify any alteration in chin position with requires surgeries. Most patients, however, are unaware of the fact that their soft tissue profile is not ideal because of the relative differences in the chin position. This research was conducted to evaluate the difference in opinion of patients and the lay public.

Previous researches have observed that there are substantial differences between the opinion of orthodontists' consultants and oral maxillofacial surgeons compared with general public. when it comes to sagittal chin position.^{8,9,10} In a cross sectional study the it was seen that lay person rated images with chin position higher as compared to clinicians.¹¹ It was also seen that there was no significant effect between the groups for desire for surgery which is in agreement with our study and the deciding factor for determining whether surgery should be performed or not was retrusion of chin position which is 21.6% for each mm drop in chin position. The odds of desire for surgery increased by 21.6% for each mm decrease in chin position. Sukhia et al compared the mean scores for desire of orthodontic treatment based on chin position between orthodontic patient, their parents, and orthodontists. The study found that orthodontist was more critical of chin position and desire for surgery as compared to the patients and their parents.¹² In another study the influence of chin prominence on the perception of profile attractiveness between male and female by orthodontists, oral and maxillofacial surgeons (OMF), plastic surgeons, orthognathic patients and laypersons was assessed. The survey showed that in females a more convex profile while in males a more concave profile was preferred. Surgery was considered for for 50.9% of retrusive profiles and 57.3% of protrusive profiles and females wanted surgery more as compared to the male counterparts.¹³

CONCLUSION

It was observed that the extent of change in the chin position determined the rating with the scoring being higher when the chin

was protrusive than when it was retrusive. Surgery is recommended for protrusions and retrusions that are more than 8 mm.

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