UNIVERSIDADE DE SÃO PAULO
HOSPITAL DE REABILITAÇÃO DE ANOMALIAS CRANIOFACIAIS

CAROLINA MARTINS FROTA

Self-perception of dentofacial esthetics in complete unilateral cleft lip and palate

Autopercepção da estética dentofacial na fissura labiopalatina completa e unilateral

BAURU
2020

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Orientadora: Profa. Dra. Renata Sathler Zanda
Co-orientadora: Profa. Dra. Daniela Gamba Garib Carreira

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Dedico a realização deste sonho ao meu esposo, Kalil, a quem compartilho minha trajetória de vida.

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"Não há barreira, fechadura ou ferrolho que possas impor à liberdade da minha mente."

Virginia Woolf

ABSTRACT

Self-perception of dentofacial esthetics in complete unilateral cleft lip and palate

Objective: The purpose of this study was to evaluate the self-perception of dentofacial esthetics of subjects with complete unilateral cleft lip and palate (UCLP) before and after the orthodontic treatment and analyze the correlation with different variables, such as orthodontic treatment finishing, orthodontic burden of care, socioeconomic status, performed or not orthognathic and rhinoplasty surgeries. **Methods:** Thirty-nine patients with UCLP (20 females, 19 males; mean age=23.3 years, SD=3.8) analyzed their own facial frontal photographs, both in rest and smiling position, taken before (T1) and after comprehensive orthodontic treatment (T2). A visual analogue scale of facial esthetics satisfaction containing scores divided into 3 groups was used: esthetically unpleasant (1 to 3), esthetically acceptable (4 to 6) and esthetically pleasing (7 to 9). Participants also identified their main complaints. Information regarding socioeconomic status, orthodontic treatment burden of care, need of orthognathic surgery and rhinoplasty were obtained in their medical records. Posttreatment dental models were analyzed using OGS index in order to determine the quality of orthodontic finishing. Interphase changes for self-perception score was analyzed using Wilcoxon tests. Correlation between posttreatment self-perception score and other variables were assessed using Spearman test and differences between sexes were analyzed using Mann-Whitney test ($p<0.05$). **Results:** Self-perception improved from esthetically acceptable before treatment to esthetically pleasing after treatment ($p<0.001$). Males had higher grades than females at T2 ($p=0.028$). The facial main complaint was nose asymmetry at T1 (87.18%) and T2 (84.61%). No correlation between the analyzed variables and the score for posttreatment facial self-perception was found. **Conclusion:** The improvement of the dentofacial esthetics self-perception following orthodontic treatment was noticeable. After orthodontic treatment, males presented more satisfaction regarding facial appearance than females. Nose asymmetry was the most frequent complaint before and after treatment.

Keywords: Self-concept. Cleft lip. Orthodontics, corrective. Cleft palate.

RESUMO

Autopercepção da estética dentofacial na fissura labiopalatina completa e unilateral

Objetivo: O objetivo deste estudo foi avaliar a autopercepção da estética dentofacial em indivíduos com fissura labiopalatina completa e unilateral antes e após o tratamento ortodôntico e analisar a correlação com diferentes variáveis, como a qualidade da finalização do tratamento ortodôntico, *burden of care* ortodôntico, condição socioeconômica, realização de cirurgias ortognática e rinoplastia. **Material e métodos:** Trinta e nove pacientes (20 mulheres, 19 homens; idade média = 23.3 anos, DP = 3.8) analisaram suas próprias fotografias frontais faciais, tanto em posição de repouso quanto em sorriso, tiradas antes (T1) e após tratamento ortodôntico (T2). Utilizou-se uma escala visual analógica de satisfação com a estética facial contendo escores divididos em 3 grupos: esteticamente desagradável (1 a 3), esteticamente aceitável (4 a 6) e esteticamente agradável (7 a 9). Os participantes também identificaram suas principais queixas quanto à face. Informações sobre condição socioeconômica, *burden of care* ortodôntico, necessidade de cirurgia ortognática e rinoplastia foram obtidas de seus prontuários. Os modelos dentários pós-tratamento foram analisados usando o índice OGS para determinar a qualidade da finalização ortodôntica. As alterações interfase para o escore de autopercepção foram analisadas usando o teste de Wilcoxon. A correlação entre o escore de autopercepção pós-tratamento e outras variáveis foi avaliada pelo teste de Spearman e as diferenças entre os sexos foram analisadas por meio do teste de Mann-Whitney ($p<0.05$). **Resultados:** A autopercepção melhorou de esteticamente aceitável antes do tratamento para esteticamente agradável após o tratamento ($p<0.001$). Pacientes do sexo masculino tiveram notas mais altas que os do sexo feminino T2 ($p = 0.028$). A queixa principal facial foi a assimetria nasal em T1 (87.18%) e T2 (84.61%). Não foi encontrada correlação entre as variáveis analisadas e o escore para a autopercepção facial pós-tratamento. **Conclusão:** A melhora da autopercepção da estética dentofacial após o tratamento ortodôntico foi considerável. Homens apresentaram mais satisfação em relação à aparência facial do que mulheres e a assimetria nasal causou um elevado número de queixas.

Palavras-chave: Autoimagem. Fenda labial. Ortodontia corretiva. Fissura palatina.

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LIST OF ABBREVIATIONS

BCLP	Bilateral cleft lip and palate
CLP	Cleft lip and palate
HRQoL	Health-related quality of life
ICC	Intraclass correlation coefficient
M	Median
NHP	Natural head position
OGS	Objective grading system
OHRQoL	Oral health-related quality of life
Q_1	First quartile
Q_3	Third quartile
SD	Standard deviation
UCLP	Unilateral cleft lip and palate
WHO	World Health Organization

SUMMARY

1 INTRODUCTION

1 INTRODUCTION

According to the World Health Organization (WHO) cleft lip and palate (CLP) are the most prevalent congenital malformations in the world (one Caucasian patient with cleft is born for every 1000 live births).[1] Complete unilateral cleft lip and palate (UCLP) represents about 30% of these[2], being the most frequent type.

The treatment of patients with CLP begins at 3 months of age, when cheiloplasty is performed (surgery that reconstructs and rehabilitates the upper lip). At 12 months of age, palatoplasty is performed, aiming to reconstruct the palate due to the presence of the cleft.[3]

The long-term esthetic and functional result of these surgeries seems to be directly related to the cleft width: the wider, the worse the prognosis because the tissue traction performed is high, which can lead to a greater restriction of growth of the facial middle third.[4] In addition, fibrous scar can compromise the esthetic result of the surgery in relation to the reconstruction of the lip and palate. In some cases, it may be necessary to perform a secondary cheiloplasty and / or palatoplasty[5], usually followed by rhinoplasty.

Since the UCLP involves the alveolar ridge, patients with this condition need orthodontic treatment.[3] The need increases according to the severity of the cleft, where cases that present important growth restriction of the facial middle third can also require orthognathic surgery in adulthood.[6] It is common to observe an ectopic eruption and dental crowding in the upper arch due to the presence of CLP. In addition, dental anomalies such as agenesis and microdontic teeth are common.[7,8]

Because of the complexities related to the occlusion of patients with CLP, the orthodontic treatment becomes long. Alberconi et al.[9] found that the average treatment time in a sample of 100 patients with cleft lip and palate was 140.2 months, with the burden of care being greater according to the severity of the malocclusion. In some cases, the detailed orthodontic finishing becomes challenging, not being possible to reach the 6 keys of the ideal occlusion described by Lawrence Andrews in 1972.[10] As a result, the esthetic outcome can be compromised. It is then questionable if these outcomes would influence the satisfaction with facial self-image.

Self-perception of esthetics refers to the way in which people visualizes and analyzes themselves and can be considered an important aspect in the lives of people aged between 18 and 30 years.[11] In addition, there is a positive correlation between satisfaction with facial appearance and the increase in health-related quality of life (HRQoL).[12] Self-perception can vary according to age, patient needs, socioeconomic condition and according to the esthetic interventions performed.[13-15] Therefore, it varies according to the treatment performed to improve or solve a certain existing condition.

The facial impairment that patients with UCLP present can become significant during growth, and can generate a negative self-perception, since the current society is constantly looking for aesthetic improvement, mainly related to media exposure.[16,17] The balance of facial proportions, in addition to symmetry, can determine the beauty standards of the face in our society.[18] Beauty standards directly influence the patterns of behavior, therefore the self-perception of esthetics is subjective, multifactorial and often inconsistent.[19] The presence of a cleft lip and palate can become an additional concern for patients with UCLP and parents, as the cleft reflects not only as surgical scars, but also interfering in facial growth and, consequently, facial profile.[5]

Facial symmetry may be compromised in patients with UCLP, as the nose and upper lip are altered, interfering in facial harmony.[20] These patients seem to demonstrate a desire to seek perfection in the correction of these failures through plastic surgery, in addition to function rehabiliation.[3]

In cases of severe malocclusion, where orthognathic surgery is required, self-perceptual criticism seems to be directly associated, generating a relevant dissatisfaction with dentofacial esthetics.[21] It is speculated that patients with privileged socioeconomic conditions seem to be more concerned with facial esthetics. In addition, it is also speculated that esthetic requirements affect more women than men with cleft lip and palate.

There are some studies that relate the esthetic self-perception of patients with cleft lip and palate with behavior, with social interaction, correlating with psychosocial function and with the possibility of developing psychological disorders (such as anxiety and attention deficit).[15,22] The World Health Organization (WHO)[23] recommended that studies focusing on the opinion of patients should be performed, also regarding UCLP rehabilitation[1], where the focus of the research should be on results that are important and relevant to these patients.[24]

This is an important WHO strategy for reducing the burden of care in patients with craniofacial anomalies.[1] Chauca[25] stated that the integration of research in the field of orthodontics based on evidence with the appropriate assessment of treatment results considering the point from the patient's point of view should allow progress towards treatment centered on the patient and his perspective.

The results of studies centered on patients, may guide the treatment of cleft lip and palate, giving focus on understanding the needs and requirements and exceeding the expectations of these patients, who need interdisciplinary treatment to be reinserted with dignity in society.

2 OBJECTIVES

2 OBJECTIVES

Overall objective

The aim of this study was to identify the self-perception of dentofacial esthetics of patients with complete and unilateral cleft lip and palate before and after orthodontic treatment.

Specific objectives

1) To evaluate the influence on different variables in the self-perception of dentofacial esthetics, including socioeconomic status, orthodontic burden of care, orthodontic treatment finishing and performing or not orthognathic and rhinoplasty surgeries;
2) To determine the main complaint related to facial esthetics;
3) To compare the results between sexes.

Hypothesis (H1):

1) There is an improvement of the self-perception of dentofacial esthetics after orthodontic treatment.

3 ARTICLE

3 ARTICLE

The article presented in this Dissertation was written according to the *American Journal of Orthodontics and Dentofacial Orthopedics* guidelines for article submission.

Manuscript title: Self-perception of dentofacial esthetics in complete unilateral cleft lip and palate

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ABSTRACT

Introduction: The aim of this study was to evaluate the self-perception of dentofacial esthetics of subjects with complete unilateral cleft lip and palate (UCLP) before and after the orthodontic treatment. **Methods:** Thirty-nine patients with UCLP (20 females, 19 males; mean age=23.3 years, SD=3.8) were invited to analyze their own facial frontal photographs, both in rest and smiling position, taken pre (T1) and post comprehensive orthodontic treatment (T2). A scale of facial esthetics satisfaction containing scores divided into 3 groups was used: esthetically unpleasant (1 to 3), esthetically acceptable (4 to 6) and esthetically pleasing (7 to 9). Participants also identified their main complaints. Information about socioeconomic status, orthodontic treatment burden of care, need of orthognathic surgery and rhinoplasty were obtained from their medical records. Posttreatment dental models were analyzed using OGS index in order to determine the quality of orthodontic finishing. Interphase changes for self-perception score was analyzed using Wilcoxon tests. Correlation between posttreatment self-perception score and other variables were assessed using Spearman test ($p<0.05$). **Results:** Self-perception improved from esthetically acceptable before treatment to esthetically pleasing after treatment ($p<0.001$). Males had higher grades than females at T2 ($p=0.028$). The facial main complaint was nose asymmetry at T1 (87.18%) and T2 (84.61%). No correlation between the analyzed variables and the score for posttreatment facial self-perception was found. **Conclusions:** Individuals with UCLP showed a considerable improvement in self-perception of dentofacial esthetics after the orthodontic treatment. Nose asymmetry was the most common complaint both before and after treatment.

Keywords: Self-concept. Cleft lip. Orthodontics, corrective. Cleft palate.

INTRODUCTION

Human beings are constantly seeking for esthetic improvement. Balanced facial proportions and symmetry are relevant features in facial beauty standards[1] and the impact of media exposure has an important role on this concern.[2, 3] Self-perception of esthetics refers to the way people visualize and analyze themselves physically and can be considered an important aspect in life, especially between 18 and 30 years of age.[4] The satisfaction with facial appearance can increase the health-related quality of life (HRQoL).[5] Although self-perception of esthetics is subjective, multifactorial and often inconsistent, these beauty standards can directly influence behavioral patterns.[6] The integration between evidence-based research and patient's point of view should allow a treatment focused on achieving their expectations.[7, 8] Hence, the World Health Organization (WHO)[9] recommended patient-centered studies in the field of cleft lip and palate (CLP) rehabilitation.[10]

The presence of complete unilateral cleft lip and palate (UCLP) and the facial alteration related to this condition may become significant throughout the growth process. Orthodontic treatment and a proper functional rehabilitation can become long and the burden of care high due to the severity of malocclusion.[11, 12] Excellent orthodontic finishing can be challenging, compromising the esthetic outcome. In cases where orthognathic surgery is required, self-perceptive criticism seems to be directly associated, causing important dissatisfactions with dentofacial esthetics.[13]

Previous studies have related dentofacial esthetics self-perception of patients with cleft lip and palate with behavior and social life. Also, correlations with psychosocial function and the possibility of developing psychological disorders (such as anxiety and attention deficit) have been evaluated.[14, 15] However, there are no studies in the literature that analyzed the influence of the quality of orthodontic treatment finishing and orthodontic burden of care, only the severity of malocclusion before orthodontic treatment.[16] There is a need to evaluate these features since they are specifically related to the UCLP patients' esthetics, functional rehabilitation and satisfaction with the results. Patients' opinion can become a valuable tool by guiding treatment planning.

The aim of this study was to compare the dentofacial esthetic self-perception of patients with UCLP before and after the orthodontic treatment. Additionally, the influence of sex, socioeconomic status, orthodontic burden of care, orthognathic surgery, rhinoplasty and the level of orthodontic treatment finishing on self-perception was evaluated. The hypothesis was that self-perception improves after the orthodontic treatment.

MATERIAL AND METHODS

The study was approved by the Ethics in Research Committee of the Hospital for Rehabilitation of Craniofacial Anomalies, University of Sao Paulo (HRCA / USP) (process number CAAE: 87080518.9.0000.5441). Considering a level of significance of 5%, a power of 80% and at least 0.5 of correlation between the analyzed variables, a sample size of 29 individuals was required.

The sample consisted of patients with UCLP that finished orthodontic treatment and were interviewed from June 2018 to April 2019. The inclusion criteria were: lip and palate repair performed at the same center; presence of no edentulous space in the anterior region; age varying from 18 to 30 years. The exclusion criteria were: patients with removable prosthesis, associated syndromes and presence of hearing or cognitive impairment.

The participants were randomly selected and included in the sample. Thirty-nine individuals (20 females, 19 males) fulfilled the inclusion criteria. The sample mean age was 23.3 (SD=3.8 years).

The participants were photographed with a Canon T6i camera, 105mm macro lens and ring lite flash in a standardized configuration, at a distance of 1.5 meters from the patient in a room with specific lighting for extraoral professional photography. The patient should be seated, facing the operator, in Natural Head Position (NHP)[17, 18] pupillary line parallel to the ground, looking towards the camera. Each patient was photographed with relaxed lips in maximal intercuspation - habitual occlusion and with a spontaneous smile (showing teeth).

The photos were downloaded to a computer and each patient analyzed their own photos (T2). An adapted visual analogue scale (Figure 1) was provided using the classification method applied by Ferrari Jr et al.[19], and the patients performed a self-assessment. The classification consisted of: esthetically unpleasant (grades 1, 2 or 3), esthetically acceptable (grades 4, 5 or 6), and esthetically pleasing (grades 7, 8 or 9).

The participants selected a score from 1 to 9 according to the classification described above and organized their complaints related to the face. After the analysis of the current photos was finished, the patients analyzed the frontal photos taken before orthodontic treatment and answered the questionnaire of self-perception again (T1). Patients were also asked to identify their main complaints related to their facial esthetics before and after treatment.

The information about the socioeconomic status was obtained by analyzing the medical records. This data was collected previously by using the classification proposed by

Graciano et al.[20] The burden of care considered the total distance traveled to attend all orthodontic appointments, number of orthodontic appliances used, number of orthodontic appointments and total orthodontic treatment time. Need for Le Fort I surgery for maxillary advancement and rhinoplasty were assessed in the records. The quality of orthodontic treatment finishing was assessed from the dental casts and panoramic radiograph performed after orthodontic treatment, using the Objective Grading System (OGS) index[21] by three orthodontists.

Statistical Analysis

The same three examiners reassessed 30% of the dental casts and panoramic radiographs to analyze the method-error related to the OGS index. Intraclass Correlation Coefficient (ICC) was used to analyze the agreement. Wilcoxon test was used to compare T1 and T2 self-perception data whereas Mann-Whitney test was used to investigate sexual differences. A descriptive analysis was used for information regarding the socioeconomic status, the burden of care and to evaluate the main complaints variable. The Spearman correlation test was used to correlate the self-perception with the socioeconomic status, the burden of care after orthodontic treatment, performing orthognathic surgery, orthodontic treatment finishing and rhinoplasty. All tests were performed using the Statistica for Windows program (version 7.0, Copyright StatSoft, Inc, Tulsa, Oklahoma, EUA, 2005). The significance level considered was 5%.

RESULTS

OGS index showed high inter and intra-examiner agreement. The ICC was considered excellent in all comparisons, varying from 0.827 to 0.960 for intra-rater analysis and 0.885 to 0.960 for inter-rater agreement.

Table I shows the descriptive analysis regarding self-perception of dentofacial esthetics at T1 and T2. Most of subjects scored esthetically acceptable before orthodontic treatment and esthetically pleasing after treatment. Table II presents the interphase comparison for self-perception scores. Grades were significantly higher after orthodontic treatment in comparison to pretreatment scores both for males and females.

Table III shows the female and male comparisons. No differences were found for the self-perception when comparing women and men at T1. However, after the orthodontic treatment females self-rated lower scores compared to males.

The main complaints reported by the participants regarding facial esthetics were nose and lip asymmetry, cleft lip scar, smile, facial format and dental midline deviation. Nose asymmetry and smile were the most common complaint before treatment. After the orthodontic treatment, nose and lip asymmetry were the most frequent complaint (Table IV). Ten out of 14 patients (71.4%) that had already performed rhinoplasty surgery still had complaints related to nose asymmetry.

Table V describes the information regarding the sample socioeconomic status, orthodontic burden of care, orthodontic finishing and surgical treatment. The majority of patients were considered to have an Upper Low Class, followed by Lower Middle Class. The mean score for orthodontic treatment finishing (OGS index) was 51.06 (SD=8.09). Most of the sample had undergone orthognathic surgery (58.97%).

No correlation was observed between the self-perception of dentofacial esthetics and the socioeconomic status, orthodontic burden of care, orthodontic treatment finishing, presence of orthognathic surgery or rhinoplasty (Table VI).

DISCUSSION

The opinion of patients and laypeople should be considered the most important measure when evaluating rehabilitation success. Facial attractiveness and self-satisfaction with appearance can interfere directly in social adjustment.[14, 15, 22] Literature was scarce in studies evaluating self-perception of dentofacial esthetics in subjects with cleft lip and palate. After the rehabilitation process, professionals with experience in oral cleft rehabilitation scored better the facial profile esthetics of UCLP[23] and bilateral CLP[19, 24] compared to layperson and health professional not related to oral cleft rehabilitation. Interestingly, these previous studies concentrated facial esthetics assessment on the profile photographs.[19, 23, 24] Most of the studies regarding self-perception in CLP patients used profile facial photographs, scanned 3D images and self-drawings.[25-28] Considering that person identity is constructed mainly based on the facial frontal view, frontal facial photos were used in this study.

The considerable improvement of the dentofacial esthetics self-perception observed in this study is related to the patient satisfaction with facial appearance after treatment.

Orthodontic treatment had a positive impact on the rehabilitation of subjects with cleft lip and palate, in agreement to the literature.[29-31] The positive self-assignment was probably explained by several reasons. In the region of maxillary lateral incisor agenesis, canine substitution or fixed prosthetic rehabilitation was accomplished. A previous study showed that patients using removable dentures were less satisfied with facial appearance than patients with orthodontic gap closure, dental bridges or implants.[32] Additionally, orthognathic surgery usually improves midface impairment, which is common in patients with severe maxillary deficiency.[33] However, a study using laypeople's opinion to evaluate social perception found that noncleft patients benefit more of the orthognathic surgery results than cleft patients.[34]

No sexual differences were observed for self-perception of facial esthetics before the orthodontic treatment. These findings are similar to previous studies conducted in both cleft and noncleft individuals.[35, 36] However, after orthodontic treatment females assigned worse scores than males for their own facial esthetics. Previous studies also pointed that females with and without cleft lip and palate presented more dissatisfaction of facial esthetics than males.[37 38] Esthetics standards can be higher for women of occidental societies.[3] Despite the improvement in self-perception scores after treatment, the median scores in females were still less than esthetically pleasing. Our assumption was that regardless sharing the same facial characteristics, female and male patients with UCLP have the same esthetic standards as noncleft individuals.

A considerable part of the sample had complaints about nose asymmetry (almost 85%) and lip asymmetry (35.90%) after the orthodontic treatment. On the other hand, only a few reported dissatisfactions specifically related to their teeth: dental midline, and smile (2.56% and 7.69%, respectively). Laypeople and health professionals also considered the nose as the most compromised facial feature after the complete rehabilitation patients with cleft lip and palate.[24] Surprisingly, only 12.82% of the patients showed dissatisfaction with the presence of a cleft lip scar. These outcomes are distinct from the perception of laypeople and professionals showing dissatisfaction with the presence of the lip scar.[39]

Approximately 71.79% of the participants are distributed in the into the Lower Low and Upper Low classes, showing agreement with this study. Although having high or low grades did not correlate with the socioeconomic status, the lack of individuals in the other categories might justify these findings.

The sample had a relatively high burden of care, especially the data related to the distance traveled and treatment time. These results are in agreement with a previous study showing that the distance traveled was superior to 38.000 km and treatment time was 140.2

months.[11] Moreover, a high orthodontic burden of care tends to occur in cases of severe malocclusion.[11] The absence of correlation between the self-perception and the orthodontic burden of care points that a higher burden of care did not improve the esthetics self-perception. An intercenter study found similar results, reporting a high satisfaction of patients and parents after the rehabilitation of complete unilateral cleft lip and palate.[41] Moreover, no relationship was found between their perceptions with the amount of care after treatment.[40]

After orthodontic treatment, the OGS score was very high (51.06) and can be considered as poor finishing in orthodontic treatment.[21] This index was developed for patients without cleft lip and palate not considering specific features related to orthodontic finishing. OGS was used in this study because there is no scoring system developed specifically for UCLP. Frequently, individuals with cleft lip and palate have lateral incisor agenesis. Canine substitution is the most frequent orthodontic option.[41] In severe cases, some limits on tooth movement can compromise the ideal orthodontic finishing including the lack of bone in the cleft area even after alveolar bone graft.[42] Despite a high OGS index, patients revealed an improvement of their smile self-perception regarding the smile, since 51.28% had complaints before treatment and only 7.69% after treatment. No correlation was found comparing the self-perception of dentofacial esthetics with orthodontic finishing probably because laypersons do not identify fine detailing in tooth positioning and occlusion.[43, 44] Moreover, individuals with CLP usually have complex malocclusions and the improvement in smile after orthodontic treatment is remarkably noticeable.[29]

Noncleft individuals that underwent orthognathic surgery seem to have an improvement in their esthetic self-perception and oral health-related quality of life (OHRQoL).[45, 46] Only 20.51% of the sample had complaints with the facial shape before treatment, improving to 7.69% after treatment. No correlation was found between the self-perception and history of orthognathic surgery. Patients that did not have orthognathic surgery already presented a good facial profile, with mild to absent sagittal maxillary deficiency.

The nose seems to be the greatest challenge in the rehabilitation process. Although rhinoplasty can benefit patients with CLP by correcting nostril asymmetries and alar position, improving nasal tip projection and elongating the collumela,[47, 48] a considerable number of complaints regarding nasal structures was reported in this study after surgery. On the other hand, some studies that reported the opinion of patients, physicians or orthodontists found adequate nose esthetics in UCLP and BCLP after rhinoplasty.[49-51] Despite the fact that most of the sample in this study did not perform rhinoplasty and nose asymmetry was the most

common complaint reported before and after treatment, the post-orthodontic treatment facial esthetics self-perception was not compromised.

The limitation of this study was that facial structures were evaluated simultaneously and our study could not separate the influence the multiple variables interaction. Future studies should perform a multiple linear regression to better understand the role of patients feature on esthetics self-perception.

CONCLUSION

Based on the results found, it can be concluded that:

- Individuals with UCLP improved their self-perception of dentofacial esthetics after orthodontic treatment. Nose asymmetry was the most common complaint before and after treatment.
- Male patients demonstrated more satisfaction with their esthetic facial appearance than females after orthodontic treatment.
- None of the variables studied appears to influence the self-perception of dentofacial esthetics, including the level of orthodontic treatment finishing.

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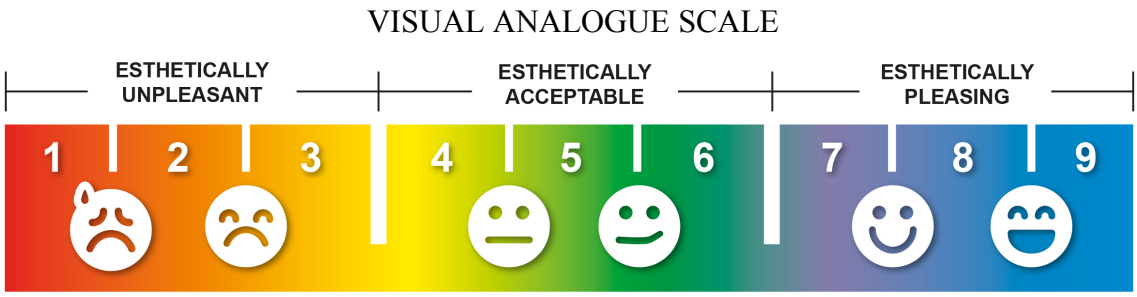
FIGURES

Figure 1: Adapted visual analogue scale to evaluate self-perception of dentofacial esthetics.



TABLES

Table I: Self-perception of dentofacial esthetics scores frequencies before and after orthodontic treatment.

Self-perception	T1 n (%)	T2 n (%)
Esthetically unpleasant	14(35.90)	1(2.56)
Esthetically acceptable	21(53.85)	14(35.90)
Esthetically pleasing	4(10.25)	24(61.54)

Table II. Self-perception of dentofacial esthetics interphase comparisons (Wilcoxon test).

Sample (n)	Grades	T1	T2	p
Male (19)	Q_1	3.0	6.0	<0.001*
	M	4.0	8.0	
	Q_3	6.0	9.0	
Female (20)	Q_1	3.0	6.0	<0.001*
	M	4.0	6.5	
	Q_3	5.0	7.0	
Total (39)	Q_1	3.0	6.0	<0.001*
	M	4.0	7.0	
	Q_3	6.0	8.0	

Significance level: $p<0.05$.

Q1: first quartile; *M*: median; *Q3*: third quartile.

Table III. Female/male comparison of self-perception scores (Mann-Whitney test).

Treatment time	Grades	Female (20)	Male (19)	p
	Q_1	3.0	3.0	
T1	*M*	4.0	4.0	0.456
	Q_3	5.0	6.0	
	Q_1	6.0	6.0	
T2	*M*	6.5	8.0	0.028*
	Q_3	7.0	9.0	

Significance level: $p<0.05$.

Q1: first quartile; *M*: median; *Q3*: third quartile.

Table IV. Distribution of the sample according to the main complaints

Main complaints	T1 n(%)	T2 n(%)
Nose asymmetry	34 (87.18)	33 (84.61)
Lip asymmetry	14 (35.90)	14 (35.90)
Cleft lip scar	6 (15.38)	5 (12.82)
Smile	20 (51.28)	3 (7.69)
Facial shape	8 (20.51)	3 (7.69)
Dental midline deviation	1 (2.56)	1 (2.56)

Table V. Socioeconomic status, orthodontic burden of care, orthodontic finishing and surgical treatment descriptive analysis.

Socioeconomic status	**n(%)**
Lower Low	1(2.56)
Upper Low	27(69.23)
Lower Middle	10(25.64)
Middle	1(2.56)
Upper Middle	0(0)
High	0(0)
Orthodontic burden of care	**Mean(SD)**
Age at the end of treatment (years)	22.25(3.5)
Traveled distance (Km)	54.002(50.189)
Orthodontic appliances (n)	7.2(1.5)
Appointments (n)	54.8(24.07)
Treatment time (months)	138.8(35.55)
Orthodontic finishing	**Mean(SD)**
OGS index	51.06(8.09)
Surgical treatment	**n(%)**
Orthognathic surgery	23(58.97)
Rhinoplasty	14(35.90)

Table VI. Correlation between self-perception and the analyzed variables (Spearman test).

	Self-perception *vs*	**n**	**Correlation coefficient**	**p**
Social information	Socioeconomic status	39	0.246	0.130
Burden of care	Traveled distance	39	-0.247	0.128
	Nº appliances	39	-0.031	0.849
	Nº appointments	39	0.169	0.302
	Treatment time	39	0.161	0.324
Orthodontic finishing	OGS index	39	0.090	0.583
Surgical treatment	Orthognathic surgery	39	0.232	0.155
	Rhinoplasty	39	0.199	0.223

Significance level: $p<0.05$.

4 FINAL CONSIDERATIONS

4 FINAL CONSIDERATIONS

The improvement of the dentofacial esthetics self-perception following orthodontic treatment was noticeable, confirming the hypothesis. Males presented more satisfaction regarding facial appearance than females and nose asymmetry caused a high number of complaints.

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ANNEXES

ANNEXES

Annex 1: Table of method-error evaluation: intra- and inter-examiners.

	Examiner	Dahlberg's formula	Paired t test: t value / p value	ICC:
Intra-examiner	1	1.53	1.732 / 0.111	0.960
	2	3.49	1.696 / 0.118	0.827
	3	2.90	1.114 / 0.279	0.861
Inter-examiner	1 and 3	1.63	1.632 / 0.111	0.960
	1 and 2	2.35	0.961 / 0.342	0.915
	2 and 3	2.84	0.118 / 0.907	0.885

Significance level: $p<0.05$.

Annex 2. Questionnaire regarding the self-perception of dentofacial esthetics

1. Seguindo como referência a escala visual analógica fornecida, qual nota você daria para a sua aparência facial? Marque uma opção abaixo:

(1) (2) (3) – Esteticamente desagradável

(4) (5) (6) – Esteticamente aceitável

(7) (8) (9) – Esteticamente agradável

2. Caso haja, cite abaixo suas principais queixas (o que mais incomoda) com relação à sua aparência facial, em ordem decrescente (do que mais incomoda ao que menos incomoda):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Annex 3: Approval from the Ethics in Research Committee of the Hospital for Rehabilitation of Craniofacial Anomalies, University of Sao Paulo (HRCA / USP)

USP - HOSPITAL DE REABILITAÇÃO DE ANOMALIAS CRANIOFACIAIS DA UNIVERSIDADE DE SÃO PAULO -HRAC/USP

PARECER CONSUBSTANCIADO DO CEP

DADOS DA EMENDA

Título da Pesquisa: Percepção de indivíduos com fissura labiopalatina pós-tratamento ortodôntico.
Pesquisador: CAROLINA MARTINS FROTA
Área Temática:
Versão: 4
CAAE: 87080518.9.0000.5441
Instituição Proponente: Hospital de Reabilitação de Anomalias Craniofaciais da USP
Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 3.556.994

Apresentação do Projeto:
O projeto de Dissertação, de autoria de CAROLINA MARTINS FROTA sob orientação de Renata Sathler Zanda e co-orientação de DANIELA GAMBA GARIB CARREIRA retorna ao CEP para avaliação das seguintes solicitações de emendas:
Remoção do grupo 2 (pacientes sem fissura labiopalatina), com consequente alteração do título ("Autopercepção da estética dentofacial de indivíduos com e sem fissura labiopalatina após o tratamento ortodôntico") e dos objetivos que avaliavam este grupo, além da remoção do TCLE correspondente a este grupo;
2. Adição da análise das fotografias pré-tratamento ortodôntico pelos próprios pacientes, juntamente com a análise das fotografias pós-tratamento que já serão feitas nesta pesquisa;
3. Adição do desenvolvimento de um índice de análise da finalização ortodôntica, utilizando os mesmos modelos que já serão utilizados nesta pesquisa; 4. Adição de uma nova variável nos objetivos a ser avaliada (burden of care) a partir da análise dos prontuários que já serão avaliados nesta pesquisa.

Objetivo da Pesquisa:
O objetivo primário consiste em identificar a autopercepção da estética dentofacial de pacientes com fissura labiopalatina completa e unilateral após o tratamento ortodôntico e quais as principais queixas relacionadas à face (incluindo o sorriso). Com esses dados, delinear o perfil de aceitação

Endereço: Rua Silvio Marchione, 3-20
Bairro: Vila Nova Cidade Universitária **CEP:** 17.012-900
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estética destes pacientes, comparando com os resultados da autopercepção dentofacial pré e pós-tratamento ortodôntico.

Objetivo Secundário:

1) Conhecer as diferenças da autopercepção dos pacientes com fissura labiopalatina antes e após o tratamento ortodôntico;

2) Determinar qual a principal queixa facial relacionada à estética em pacientes com fissura labiopalatina;

3) Comparar os resultados entre o sexo, qualidade da finalização ortodôntica e condição socioeconômica.

4) Desenvolver, validar e avaliar a reprodutibilidade do índice simplificado de avaliação da qualidade da finalização ortodôntica em pacientes com fissura labiopalatina, comparando-o ao índice OGS (CASKO et al., 1998).

5) Avaliar o burden of care do tratamento ortodôntico.

Avaliação dos Riscos e Benefícios:

Os riscos relacionadas à este estudo são baixos. A atenção a todos os princípios de biossegurança, bem como a utilização dos equipamentos de proteção individual (EPI) durante as tomadas fotográficas e a proteção à confidencialidade dos participantes minimiza o risco associado à pesquisa.

Os questionários serão aplicados em um local reservado para reduzir o risco de constrangimento, porém isto não elimina completamente a possibilidade de o paciente apresentar um certo desconforto no momento da análise de suas próprias fotografias.

Benefícios:Os benefícios relacionados à esta pesquisa são: contribuir para o conhecimento da autopercepção da estética dentofacial em pacientes com fissura e sem fissura, buscando entender o impacto do tratamento ortodôntico nesta autopercepção. Além disso, definir o perfil de aceitação estética desses pacientes é muito importante pois a partir dos resultados poderemos buscar um tratamento reabilitador dos pacientes com fissura mais objetivo e direcionado, buscando entender as principais queixas, com maior enfoque em suprir as carências, procurar cumprir as exigências e superar as expectativas destes pacientes, que tanto precisam do tratamento para serem reinseridos de maneira digna na sociedade.

Comentários e Considerações sobre a Pesquisa:

Pesquisa bem delineada com mérito científico e metodologia adequada a proposta do estudo.

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Considerações sobre os Termos de apresentação obrigatória:

Os seguintes termos foram apresentados:

Carta de encaminhamento;

Formulário HRAC;

Folha de Rosto da Plataforma Brasil;

Termo de Consentimento Livre e Esclarecido;

Termo de Compromisso, Confidencialidade e Autorização de Utilização de Dados em Projetos de Pesquisa;

Termo de Permissão para uso de Registros para Fins Científicos;

Termo de Compromisso de Tornar Públicos os Resultados da Pesquisa e Destinação de Materiais ou Dados Coletados;

Termo de Compromisso do Pesquisador Responsável.

Conclusões ou Pendências e Lista de Inadequações:

A emenda estava sob pendência para efetuar as seguintes alterações:

Solicitamos aos autores compatibilizar as informações quanto ao "n" informado no resumo do projeto na PB (42) e no projeto detalhado (50). PENDÊNCIA ATENDIDA

Corrigir o item 1 dos objetivos secundários.

PENDÊNCIA NÃO ATENDIDA (está faltando a palavra FISSURA)

Apesar de não terem atendido uma das pendências entendemos que isso não constitui infração ética, portanto sugiro sua aprovação.

Considerações Finais a critério do CEP:

Projeto Aprovado Ad Referendum que será referendado na Reunião de 24/09/2019.

O pesquisador deve atentar que o projeto de pesquisa aprovado por este CEP refere-se ao protocolo submetido para avaliação. Portanto, conforme a Resolução CNS 466/12, o pesquisador é responsável por "desenvolver o projeto conforme delineado", se caso houver alterações nesse projeto, este CEP deverá ser comunicado em emenda via Plataforma Brasil, para nova avaliação.

Cabe ao pesquisador notificar via Plataforma Brasil o relatório final para avaliação. Os Termos de Consentimento Livre e Esclarecidos e/ou outros Termos obrigatórios assinados pelos participantes da pesquisa deverão ser entregues ao CEP. Os relatórios semestrais devem ser notificados quando

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solicitados no parecer.

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_1381034_E1.pdf	21/08/2019 10:38:25		Aceito
Outros	Of_Pendencia.pdf	21/08/2019 10:35:46	CAROLINA MARTINS FROTA	Aceito
Projeto Detalhado / Brochura Investigador	Projeto_de_Pesquisa.pdf	21/08/2019 10:34:51	CAROLINA MARTINS FROTA	Aceito
Projeto Detalhado / Brochura Investigador	Projeto_Pesquisa.pdf	09/07/2019 16:59:03	CAROLINA MARTINS FROTA	Aceito
Outros	oficio_emenda_projeto.pdf	09/07/2019 16:16:40	CAROLINA MARTINS FROTA	Aceito
Outros	oficio_pendencia.pdf	27/04/2018 14:56:42	CAROLINA MARTINS FROTA	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE_GRUPO_UM.docx	27/04/2018 12:52:20	CAROLINA MARTINS FROTA	Aceito
Outros	Checklist_Prot_Pesq_25_2018.pdf	06/04/2018 17:37:26	Rafael Mattos de Deus	Aceito
Outros	Term_Perm_Uso_Registro.docx	05/04/2018 18:02:54	CAROLINA MARTINS FROTA	Aceito
Outros	Term_Comp_Tornar_Publico_Dest_Mat.pdf	05/04/2018 17:59:46	CAROLINA MARTINS FROTA	Aceito
Outros	Term_Comp_Pesq_Resp.pdf	05/04/2018 17:58:22	CAROLINA MARTINS FROTA	Aceito
Outros	Term_Comp_Conf_Aut_Dados.pdf	05/04/2018 17:57:34	CAROLINA MARTINS FROTA	Aceito
Outros	Carta_Encaminham.pdf	05/04/2018 17:47:12	CAROLINA MARTINS FROTA	Aceito
Declaração de Instituição e Infraestrutura	Form_Cadastro_HRAC.pdf	05/04/2018 17:44:06	CAROLINA MARTINS FROTA	Aceito
Folha de Rosto	Folha_Rosto.pdf	05/04/2018 17:37:19	CAROLINA MARTINS FROTA	Aceito

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Continuação do Parecer: 3.556.994

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

BAURU, 05 de Setembro de 2019

Assinado por:
Renata Paciello Yamashita
(Coordenador(a))

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Annex 4: Declaration of exclusive use of the article in dissertation

DECLARATION OF EXCLUSIVE USE OF THE ARTICLE IN DISSERTATION/THESIS

We hereby declare that we are aware of the article *Self-perception of dentofacial esthetics in complete unilateral cleft lip and palate* included in the Dissertation of the student Carolina Martins Frota was not used and may not be used in other works of Graduate Programs at the Bauru School of Dentistry, University of São Paulo.

Bauru, 27 de fevereiro 2020.

Carolina Martins Frota _____
Author Signature

Renata Sathler Zanda _____
Author Signature

Daniela Gamba Garib Carreira _____
Author Signature