ROLE OF ORTHODONTIC TREATMENT OF PATIENTS TO IMPROVE FACIAL AESTHETICS.

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Abstract. *Facial aesthetics is an important motivating factor for many patients seeking orthodontic treatment. An aesthetically pleasing and balanced face is one of the goals of orthodontic treatment. Understanding the soft tissues and their normal ranges allows us to formulate a treatment plan to normalize an individual's facial features.*

Keywords: *aesthetics, orthodontic treatment, soft tissue profile of the face, treatment planning.*

INTRODUCTION

To date, orthodontics is one of the most rapidly developing sections of dentistry, which is engaged in the study of etiology and pathogenesis of anomalies of the dentoalveolar system, the influence of dentoalveolar anomalies on the development of adjacent organs and the body as a whole, improving methods of diagnosis, the development of methods of prevention and elimination of anomalies of the position of teeth, occlusion disorders, forms of dental arches, normalization of the function of the dentoalveolar system, elimination of aesthetic disorders, as well as controlled growth of the jaws. The study of patients' attitudes toward orthodontic treatment shows that the main motivation for the treatment of dentoalveolar anomalies is the desire to improve their appearance, including facial features, perception by others and themselves, rather than the desire to eliminate morphological abnormalities. In modern society, physical attractiveness is a key component of a positive opinion of oneself, which, in turn, determines the state of mental health. Psychological state and self-esteem of a person are most directly related to external data. The desire for aesthetic correction of anomalies of the

maxillofacial region is often caused by the desire to improve one's social and personal status. Patients' interest in improving their appearance is determined already during the first visit to the doctor. The vast majority of adult patients are motivated by the desire to improve their appearance when they visit an orthodontist.

Purpose: to investigate aspects of using different measurements in quantifying the soft tissue profile of the face and differences in parameters between different gender and ethnic groups.

Methods and Materials. A number of studies on various aspects of facial soft tissue profile parameters in orthodontics were analyzed.

Results and Discussion. The human face is one of the highest manifestations of natural harmony. The complex anatomical relief of the face, if it corresponds to the aesthetic norms accepted in society, is perceived as a single image of beauty and attractiveness. The aesthetic perception of human appearance, in particular the face, has been changing over the centuries in parallel with the development of culture. Under the influence of social ideology, taking into account the standard of living and natural and climatic conditions, each ethnic group develops its own aesthetic views and its own understanding of beauty. It includes the most general features, by which in a particular ethnic group in relation to a particular individual is assessed his/her aesthetic attractiveness. Anomalies of the dentoalveolar system are often accompanied by significant morphological, functional and aesthetic disorders. Significant changes in facial features occur, facial proportions and proportionality of its parts are disturbed, leading to a significant deterioration of facial aesthetics (fig. 1), which negatively affects the patient's psychoemotional state and social status. Violation of anatomo-topographical proportions in sagittal occlusal anomalies is reflected in the shape of the facial profile.

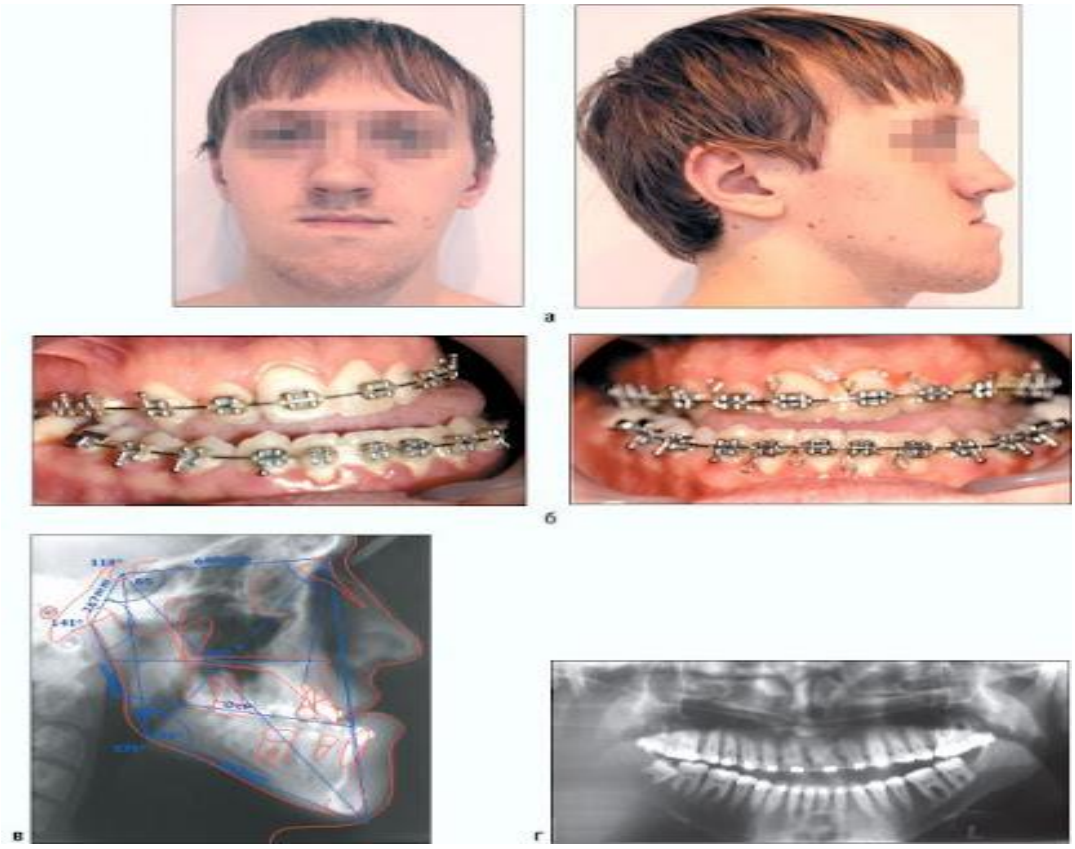

Figure 1. Changes in the appearance of the facial profile depending on the type of occlusal anomaly

For example, in mesial occlusion, the upper lip is recessed in relation to the lower lip, the palpebral fold is deepened, the chin protrudes, and the profile is concave; in distal occlusion, the opposite is true. The influence of orthodontic treatment on the position of the soft tissues of the face is a recognized fact. The shape of the soft tissue profile of the face is influenced by the degree of tooth movement, the position of the temporomandibular joint heads, the pressure of soft tissues on the dental rows, the adaptive capabilities of the ligamentous apparatus of the maxillofacial region and other factors. Orthodontists in the process of treatment face the problem of determining the scope, type, and appropriateness of a particular intervention that entails changes in the patient's appearance. As a result, clinicians often need certain aesthetic guidelines during the diagnostic and treatment planning stages. The identification of optimal proportional relationships characterizing the harmonious structure of the maxillofacial region is noted by a number of authors as one of the most important tasks in orthodontic diagnosis and

treatment planning today. At the same time, a review of the relevant literature shows that the comparison of skeletal, dental and soft tissue parameters in people belonging to different ethnic groups reveals significant differences. Thus, it is natural to state that morpho-anatomical features of the structure of the dento-mandibular-facial system both in the norm and in various anomalies of occlusion, inherent in representatives of different ethnic groups, should also differ significantly. The idea of soft tissue parameters of the face and their fluctuations within the normal range allows to draw up a treatment plan aimed both at correction of dentoalveolar disorders and normalization of facial features of each individual. Despite the large number of studies in this area, covering various facts, today there is no holistic view of its scope, there is no consensus on the relationship between the parameters characterizing the soft tissues of the face, the issue of determining the interdependence between the parameters characterizing the skeletal and soft tissue profiles of the face of patients with various occlusal anomalies is not sufficiently covered. The question of the necessity and acceptability of tooth extraction in the course of treatment has been the subject of heated discussions in orthodontic literature for many years and has not lost its relevance to this day. The decision to perform treatment with or without extraction plays an important role when considering the quality of the results achieved in functional and aesthetic aspects, as well as in the clinical course of the treatment itself. In modern orthodontic literature, the authors dealing with this problem can be divided into two camps. One group of scientists indicates a high degree of correlation between incisor retraction and lip position changes, suggesting that there is a pronounced relationship between soft tissue and underlying bony structures. Another group of scientists argues that marked proportional changes in soft tissues are not necessarily a consequence of changes in the dentition. For example, Garner L.D. in his study determined that retraction of the upper incisors by an average of 4.31 mm and retraction of the lower incisors by an average of 1.38 mm had an effect on the sagittal parameters of the lips in a ratio of 3.6:1 for the upper lip and approximately 1:1 for the lower lip. A study by Basciftci F.A.

indicated that after active treatment of patients with Angle E. Class 1 and 2 anomalies, with and without extraction of individual teeth, the facial profiles of these patients were similar. Hershey J.D. in his study of female profiles also found no significant relationship between hard tissue and soft tissue parameters. The study concluded that lip changes cannot be correctly predicted using the existing norms in the sagittal dimension. Along with this, there are a number of studies that suggest a direct relationship between facial soft tissue changes and orthodontic treatment with tooth extraction. Rains M.D. and Nanda R.examined the records of 34 men for a relationship between upper incisor retraction and profile changes and found a complex interaction between dental parameters, bone and soft tissue parameters of the face. The study supports the view that orthodontic treatment with tooth extraction has a positive result in most cases in patients who have been treated to reduce lip protrusion. On average, patients treated with tooth extraction have 1.8 mm less lip protrusion than those treated without tooth extraction. Thus, in the available literature we have found a sufficiently large number of methods that allow us to evaluate the facial profile and predict it after orthodontic treatment, which indicates the relevance of this issue, but the presence of significant differences in the conclusions made by the authors gives grounds for further detailed study of this issue. The lack of a unified methodology for assessing the parameters of soft tissue aesthetics, differences in the methods of research, age, gender, and ethnoanatomical features of the patients studied, and the impossibility of simultaneously taking into account all the factors influencing the situation complicate the identification of common patterns when planning and predicting changes after treatment completion. Even the results of identical studies in this area often contradict each other, which prevents the creation of a holistic view of the problem. In this regard, it seems appropriate to conduct studies aimed at determining and studying the relationship between hard and soft tissues of the maxillofacial system, taking into account the age of the patient at the time of treatment, the type of anomaly, anatomical features inherent in the structure of the dentoalveolar-facial region of a particular ethnic group, the

method of treatment, the type of appliance used, and a number of other factors. Since the range of professional aesthetic preferences of doctors and the personal opinion of patients themselves often differ from each other, it seems reasonable to study the difference and coincidence of the points of view of orthodontists and non-professionals in preferring the attractiveness of the facial appearance as a whole and its various components.

Conclusions. The above-mentioned studies would allow the creation of methods and algorithms of clinical reasoning aimed at improving the accuracy of predicting changes in the patient's appearance to better guide specialists in determining the desired final goal of treatment and help in choosing the optimal methods to achieve a high final morphofunctional and aesthetic result.

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