SPECIFIC FEATURES OF CENTRAL POINT LOCATION BETWEEN INCISORS IN PEOPLE WITH PHYSIOLOGICAL OCCLUSIONS

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Specific features of human front teeth location have been presented in respective works, which serves as proof to the relevance of this study, both in applied and in clinical aspects [1, 6, 8]. The said parameters are taken into account when modeling teeth for academic purposes, when determining the gnathic and dental types of dental arches, when diagnosing occlusion anomalies, and when designing artificial dental arches in complete removable dentures [2, 3]. Specific features of teeth inclination in people with various types of dental arches have been presented and explained here for clinical use. There has been offered torque estimates corresponding to standard, low and high values [5]. Data on the teeth inclination with regard to the gender dimorphism have been presented as well [10]. In clinical orthodontics, when selecting prescription braces used in arch equipment method, special importance is attached to the teeth inclination in the vestibular-lingual direction, which is called the inclination angle, or the teeth torque [4]. Experts state that the value of the teeth inclination affects the position of the key teeth regarding the major anatomical marks [7, 9, 11, 12]. However, no accurate data on the inter-arch distance is to be found in the respective literature. Yet, this parameter is important when modeling artificial dental arches in people with lengthy dental defects and/or with complete secondary edentulism. All of the above explains not only the relevance of the issue in question, yet may allow solving specific clinical tasks when offering prosthetic treatment to patients, which was the purpose of the present study.

Aim:

to identify the interincisal point deviation from the anterior part of the alveolar arch in people with physiological occlusions.

MATERIALS AND METHODS

A survey was carried out involving 118 people with orthognathic occlusion.

3 groups were identified. Group 1 patients featured teeth retrusion while the torque values ranged among low values. This group included patients with mesognathic microdontic dental system and brachygnatism with normo-and microdontism. Group 2 featured average values for the teeth torque (mesognathism with normodontism, dolichognathism with macrodontism, and brachygnathism with microdontism). Group 3 patients had high torque, which was due to the front teeth protrusive position in people with mesognathism and a macrodontic dental system, as well as in case of dolichognathism with normo- and macrodontism. The types of dental arches were identified following the recommendations obtained from experts. The distance between the central points of the dental and alveolar arch was determined by the cone-beam computed tomography method. The obtained images were used to select the necessary tomogram sections, and then from the alveolar arch point in the medial incisors area, a perpendicular was drawn to the occlusal plane. Software was used to measure the distance from the constructive point to the vestibular edge of the upper jaw medial incisor, which corresponded to the interdental point location, or the dental arch central point. The statistical data was processed subject to generally accepted methods employing personal computer statistical analysis software.

RESULTS AND DISCUSSION

The measurements based on the cone-beam tomograms revealed that Group 1 patients with mesognathism and microdontism had an inter-arch distance between the dental arch interdental point and the alveolar arch central point at 4.0 ± 0.92 mm. The

dental arches were narrow. In case of brachygnathic microdontic dental arches, the distance between the dental arch interdental point and the alveolar arch central point was 3.87 ± 0.92 mm. The transverse parameters of the dental arches had average values. At the same time, in people with brachygnathic types of dental arches with normodontism, the distance between the examined central points of the dental and alveolar arches was 4.11 ± 0.84 mm. The arches were wide. Therefore, regardless of the dental arch width, the distance between the central points of the dental and alveolar arches with retrusive incisors in Group 1 was about 4 mm.

Standard values of the inclination angle (incisors torque) were observed in Group 2 patients with dolichognathic microdental type of dental arches. However, the dental arches were narrow. Nevertheless, the inter-arch distance was 7.0 ± 0.79 mm. The patients of this group with mesognathic normodental type of dental arches had a distance between them at 7.08 ± 0.85 mm, while the dental arches were of medium size. In case of the brachygnathic macrodontic type of dental arches, the distance between the central points of the dental and alveolar arches was 6.97 ± 0.91 mm, yet the dental arches were wide. Therefore, in patients of Group 2, regardless of the dental arches width, the distance between the central points of the dental and alveolar arches at the incisors neutral position was about 7 mm.

Group 3 patients featuring dolichognathic normodontic dental arches were found to have high values of torque. The distance between the arches central points was 8.97 ± 0.83 mm. Patients with dolichognathic macrodontic dental arches had the distance between the arches' central point's equal to 9.11 ± 1.02 mm, while the dental arches were of medium size. In people with mesognathic macrodontic dental arches, the distance between the arches central points was 8.79 ± 0.93 mm, but the dental arches were wide. Given that, regardless of the dental arches width, in patients of Group 3 the distance between the central points of the dental and alveolar arches with protruded position of the incisors was about 9 mm.

CONCLUSION

In view of the above, the shape and size of the dental arches do not have a significant impact on the distance between the central points of the dental arch and the alveolar arch. The inter-arch distance is determined by the teeth inclination in the vestibular-lingual direction. The distance between the central points of the dental and alveolar arches with the retrusive position of the incisors was about 4 mm, with the neutral position of the incisors — 7 mm, and with the incisors protrusion — 9 mm. The results of the study can be employed in orthopedic dentistry for simulating artificial dental arches in people with complete secondary edentulism.

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