

EDITORIAL

Dental malocclusion and its relationship with body posture: a new research challenge in stomatology

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The biomechanical relationship among the head, cervical spine and teeth has generated much scientific debate due to their different implications and interrelations. Of particular interest is the position of the mandible in the sleep state because postural problems have been observed in >90% of cases of subjects with some type of malocclusion, which has led to a growing interest on the subject.

A proper posture is that which is able to both maintain the alignment of the body segments with a minimum expenditure of energy possible and achieve the maximal mechanical efficiency of the central nervous system (CNS). If the posture is not correct, the muscles do not work simultaneously and collaboratively. This will have a negative effect on the skeletal system in the craniofacial morphology and head position. In a dental malocclusion such as a crossbite, functional mandibular asymmetry is detected and controlled according to the models of postural regulation, such that the usual pattern is modified and another is generated configured in the CNS, with muscular compensation at different levels. Initially, the change is functional, but if it is maintained, it may be definitive for later bone development.¹

In the majority of cases, the disadvantages in body posture begin in childhood due to adoption of uncorrected poor postures. This causes problems on the skull face and causes functional, structural, phonetic and esthetic alterations, among others. Also, body posture is very important

during this period because in relation to craniomandibular growth, any postural alteration will compromise the head balance and position of the mandible.

The above determines the changes in the growth and development of the jaw and dental arches and causes malocclusions characterized clinically by distal ratios, mesial ratios, and lateral deviations, which demonstrate the close relationship between body posture and the mandibular-maxillary position of the individual.^{2,3} But why consider this pairing between the body posture and malocclusion as a condition so narrowly related? Fundamentally, it must be taken into consideration that the mandibular postural muscles are part of the muscular chain that allows the individual to remain standing with the head erect. When postural changes occur, the muscular contractions at the level of the stomatognathic system change the position of the mandible because the mandible looks for and adopts new positions in order to function. Therefore, an incorrect posture is considered as an etiologic factor of malocclusions because it modifies instantly the relationship between the jaws.

The spine plays a very important role in body posture. When it is altered, it can be characterized in three ways: a) descending type where the origin may be a problem of dental malocclusion or of temporomandibular joint; b) ascending type where the origin could be related with problems with the lower extremities in the spine or plantar support; and c) mixed type, where the two former participate.

A dental malocclusion may not only be related with the position of the mandible and the skull, but also with the cervical spine, the supra-and infrahyoid structures, the shoulders, and the thoracic and lumbar spine, which function simultaneously as one biochemical unit. These structures also provide orthostatic stability of the skull on the

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Received for publication: 23-9-13

Accepted for publication: 23-9-13

cervical spine which, if compromised, influences on the etiology of craniomandibular dysfunctions and orofacial pain. This is because the spatial placement of the mandible is influenced by anatomic structures associated with dental occlusion. Such is the case of the muscles of mastication which, when altered, could produce dysfunction in the craniomandibular system.⁴

The majority of the studies on body posture in stomatology are oriented towards searching for the relationship between anomalies in the position of the craniocervical tract and the frequency and severity of the malocclusions. In other words, they are principally oriented to the study of different types of regulation of posture in which it is attempted to explain how an asymmetric alteration of body posture is related with dental occlusal modifications. However, Barata-Caballero et al. affirm that some authors question that the body posture be perfect and symmetrical.¹ Even with the absence of pathology, doubt has been raised whether criteria of normality can be established or if the absence of asymmetry is essential for functional efficiency. This agrees with the fact that ~95% of subjects are asymmetric with respect to a perfect pattern of symmetry. For this reason, asymmetry is considered to be something that is normal, always within the limits of statistical normality. However, it is necessary to establish other criteria of postural symmetry without neglecting the criteria of dental occlusion based on the fact that there is no "ideal" dental occlusion and that "functional" dental occlusion meets the assessment and clinical diagnosis expectations, conveniently adopted in accordance with the characteristics of harmony in the dental relationship adopted for each subject. It should be noted that despite the growing interest on the relationship between the craniocervical system and the position at rest of the mandible given its importance in the therapeutic field, at present there is a lack of controlled studies with a solid methodological base. Due to the wide variety of methodology followed in the articles relative to the evaluation of the placement of the head and neck there are repercussions, both on the results obtained as well as on the conclusions derived from them.⁵ This could be one of the reasons why, as pointed out by Hanke et al., certain results extracted from them have opposing conclusions.⁶ One such example is clearly seen in this number of *Boletín Médico del Hospital Infantil de México* where Aguilar-Moreno and Taboada-Aranza car-

ried out a great effort when approaching this topic. Their methodological proposal includes two different units of measurements to evaluate the frequency and severity of the malocclusion in a group of students.⁷ Despite the limitations in the selection of the most adequate index, it leaves aside the group of children who did have some type of malocclusion. For this reason, calculation of the different risks analyzed only describes when the dental occlusion is altered and leaves one mystery to resolve: what would have happened with the statistical analysis and the clinical interpretation of the event if the group of children with normal occlusion would have been included in the statistical processing. Similarly, they did not take advantage of the social space to inquire, in a more detailed manner, the conditions related with the "spinal column and its possible alterations" as defined by the authors. They could have, in a broad manner, made operational the alterations when diagnosing the conditions of scoliosis, kyphosis and kyphoscoliosis. What is relevant in this study is that the results coincide with what is reported by other authors who share and conclude that there are great probabilities for developing some type of malocclusion when body posture is found to be altered. Finally, a clinical-epidemiological profile is being structured, which is providing the basis for treatment of dental malocclusions. The proposal is to use myofunctional orthopedic devices on the prevention and interception of this problem that is manifested in the stomatognathic system, particularly on the related teeth. This will generate a comprehensive impact on the performance of the body and not only in dental occlusion. Also, in relation to the temporomandibular joint where the position of the head on the functions of the mouth and on the posture of the body where the abnormal head position may alter biomechanical skull-neck and skull-mandibular relationships, influencing growth and the body posture of the individual.

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