

Editorial

The role of genetics in dentofacial deformities

Facial harmony is known to directly influence individuals social, professional and personal relationships. Severe dentofacial deformities are skeletal discrepancies associated with malocclusion that may be associated with esthetics and non-functional and non-favorable outcomes as well as altered psychological and social aspects. The reasons why patients seek oral and maxillofacial surgeons to perform orthognathic surgery are different ones, however, the desire to improve facial aesthetics as well as to relief functional problems are the two most common ones. The appropriate skull anatomical development requires coordinated growth of membranous and endochondral bones in order to accommodate the increasing size of facial viscera and brain. The potential involvement of genes and genomics in skull development has lead our group to research in that direction. Genes are basically composed of DNA, the human hereditary material, which information is stored as a code made up of four chemical bases: adenine, guanine, cytosine and thymine. Variations within the DNA sequence occur in population in a stable way, with a frequency of 1% or higher, known as genetic polymorphisms. Polymorphisms in genes related to the skull development could lead to mal-formations or deviations to normal pattern. Different studies highlighted the importance of some specific proteins, codified by genes, in skull development. TGF-Bs have been suggested to have an important role in differentiation of both cranium membranous bones and on its base as an important protein to bone physiology. EGF expression also promotes synthesis of extracellular matrix and mesenchymal cell migration, thereby ensuring the strength of the fused facial bones. Studies with mice have suggested that absence of both TGF-B and EGF leads to different types of craniofacial abnormalities from non-syndromic lips and palate clefts to syndromes with major facial involvement. Our research, until this moment, is mainly focused in this direction. As it was said, craniofacial development requires specific and coordinated growth so understanding those genetic mismatches that lead to abnormal proteins and facial deformities should be a priority before treatment. Oral and maxillofacial surgeons should treat individuals as a whole, and not focusing only in the visible problem.

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