60. THE INFLUENCE OF GENETIC FACTORS ON THE DEVELOPMENT OF CLASS III MALOCCLUSION ACCORDING TO ANGLE

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Introduction. The diagnosis of malocclusion is an increasingly common issue in orthodontics, reflecting a growing need for interventions and treatments in this field. Class III malocclusion, of skeletal and non-syndromic nature, represents a particular concern and is largely influenced by genetic factors. Among the most common hereditary factors is autosomal dominant transmission.

Aim of study. This study aims to determine the influence of genetic factors on the development of Class III malocclusion.

Methods and materials. This study investigated 26 scientific articles addressing key terms such as Class III malocclusion, genetics, locus, phenotype, development, and etiology. Research sources included scientific platforms such as Google Academic, PubMed, ScienceDirect, WileyOnlineLibrary, Scirus, and Medline.com.

Results. Investigations into the genetic association of Class III malocclusions have identified specific loci, with the 1p36 locus often correlated with this condition. Genes located in this locus, such as Matrilin, HSPG2, ALPL, and EPB41, play essential roles in cartilage development, craniofacial formation, and cytoskeleton-associated functions. The existence of genes 12q23 and 12q13 has also been described as correlating with bone and cartilage development, highlighting the complexity of molecular pathways influencing mandibular size. Other candidate genes, such as IGF1, HOXC, COL2A1, and DUSP6, have been identified in association not only with mandibular prognathism but also with maxillary deficiency. Additionally, single nucleotide polymorphisms in FGFR2 and COL1A1 present a higher risk for skeletal Class III malocclusion, while the TBX5 gene is associated with a reduced risk for this condition.

Conclusion. Exploring these genetic aspects and the relationship between heredity and Class III malocclusion makes significant contributions to optimizing therapeutic approaches and improving outcomes in orthodontic practice. These factors are key elements in understanding the origin and evolution of Class III malocclusion, providing the foundation for the development of personalized diagnostic and treatment strategies.