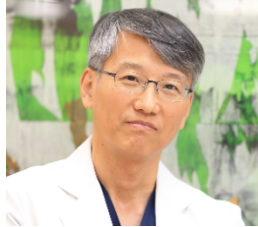


Musculo-skeletal coordination in craniofacial growth and development

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The bone-muscle relationship may be viewed in terms of structure and function, as documented in craniofacial growth as well as in functional treatment proposed by Professor Jean Delaire. The masticatory muscles power the orofacial system, their structures being closely related to the functions of the teeth, jaw, and joints. The functional healing and remodeling of the fractured mandibular condyle, based on the protocol of Professor Jean Delaire, clearly evidenced the potential of functional treatment applied in craniofacial region.

The masticatory muscles also guide the growth of craniofacial system along with various environmental and genetic factors. Previous studies reported aberrant craniofacial growths after experimental muscular force changes, possibly influenced by the scar tissues. We avoided this issue by the introduction of botulinum toxin (BTX), which blocks the nerve endings of the muscles without scarring. We evaluated the effect of masticatory muscular inactivity of primate and mammalian model on mandibular growth, while considering simultaneous inhibition of the major masticatory closing muscles and possible compensatory reaction of the biological system. Our results clearly showed that BTX-induced hypofunction of masticatory muscles produced a decrease in the size of the mandibles as well as a change in its form, particularly on the vertical dimension and in the posterior-lateral angulation of the ramus. It also accompanied compensatory growth of the non-BTX side ramus which might accentuate the asymmetrical growth of the hypofunctional mandible. They all proved the effect of masticatory muscular activity on skeletal and dentoalveolar growth and structure.