

# ABSTRACTS & REVIEWS

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## JAW FUNCTIONAL ORTHOPEDICS: VISTAS IN NEURO-OCCLUSAL REHABILITATION

Wilma A. Simões (ed). São Paulo, Brazil: Artes Médicas. 3rd edition, 2003 (Portuguese), 1,028 pages; 4th edition, 2004 (Spanish), in press (Italian), 1,032 pages. (Spanish edition reviewed.)

The 2-volume third edition of this book, last published in 1989, has been significantly revised. A number of chapters have been added and/or expanded and new collaborators included. Dr Wilma Simões has indicated that a continuation of these 2 volumes will follow soon in the format of a cephalometric book.

In the introduction, Dr Simões describes the origins of the tremendous anatomical variation on the dentition and masticatory apparatus. She explains that the dentition is a dynamic entity and, therefore, it changes over time as a result of growth, environmental disturbances, dental restorations, oral pathologies, and aging.

Evidence is presented to support the hypothesis that the evolutionary process has reduced tooth and musculature size, as well as affected the anatomy and function of the temporomandibular joints. Dentoalveolar prognathism has also been diminished, and the morphology of the dental arches and teeth are not the same as they were hundreds of thousands of years ago, largely due to a gradual transition of the human lifestyle. The dentition inherits phenotypic characteristics in variable degrees because of the interactions among several genes and their environments, ie, polygenic inheritance, which is far from being completely understood. A detailed description of the Australian aboriginal dentition follows, as well as a listing of possible causes for the morphologic changes in aborigine teeth and dental arches that resulted in new patterns of protrusive mandibular movements, dental occlusion, dental dimensions, and surface wear. Aboriginal children do not usually have crowded dentitions, perhaps because of a strong component on the protrusive movements that generates bimaxillary dentoalveolar protrusion, in addition to the well-known bone resorption in the inner surface of the mandibular ramus. (Contribution by Dr T. Brown.)

Dr Simões then explains the fundamental principles of "maxillary functional orthopedics" (MFO) and the specific characteristics that disassociate it from orthodontics. She believes that MFO is an extensive field and should be considered a specialty of dentistry, not a subspecialty of orthodontics, as it is now classified in Brazil. She summarizes: "MFO is a specialty that diagnoses, prevents, controls, and treats the abnormalities of growth and development of the dental arches and dentoalveolar bases." In reality, Simões explains, MFO should be considered a field of dentistry with the aim of removing unwanted interferences during the growth and development (during both the ontogenetic and the post-ontogenetic periods) of the stom-

atognathic system to achieve ideal occlusion, esthetics, and function. This is common to both specialties; however, MFO emphasizes specific diagnosis, anchorage parameters, clinical examination methods, and other completely different technical requirements based on key neurophysiological determinants. The harmonious relationship among all the components of the stomatognathic system contributes to the creation of an efficient masticatory and digestive apparatus and, therefore, overall well-being.

MFO utilizes 4 natural forces: (1) growth and development; (2) tooth eruption; (3) lingual posture and movements; and (4) mandibular posture and movements. The devices prescribed in MFO impact the neuromuscular system surrounding the dentition, inducing the modeling and correcting the malocclusion when possible. This book contains information on and describes the approach of the authors to issues such as functional appliances that enhance mandibular growth, lateral pterygoid muscles that also regulate mandibular growth, and occlusal interferences that may cause temporomandibular disorders.

Neuro-occlusal rehabilitation, which aims to prevent and treat deleterious occlusal interferences, is described. A well-performed neuro-occlusal rehabilitation will balance the physiologic forces of general growth and development of the craniofacial complex, eruption forces of the dentition, head posture, tongue position, and mandibular movements.

MFO has 3 fundamental principles: (1) neural stimuli (acting on the muscular tonicity and bone remodeling); (2) postural change (ideal muscular balance necessary to achieve isometric contraction of all muscular fibers opposing the moment); and (3) ideal incisal relationship (interincisal angle, overjet, and overbite within the norms) for therapeutic change of tongue posture and to achieve ideal outcomes within the shortest period of time possible.

Chapters that follow explain the physiology of mastication; growth and development of the craniofacial complex, as well as the general body; key factors for a correct diagnosis; techniques for the Planas symptomatic diagnosis; a few laboratory techniques; treatment-plan-ning methods; examples of treated cases; and 2 final chapters on halitosis and orofacial pain. It is interesting to learn the phylogenetic and ontogenetic aspects of mastication. The Planas laws are described in detail, including the embryologic basis for their existence, in a chapter by Dr F. Macedo. Treatment of growth abnormalities is also illustrated by contributor A. Teran, with case presentations of patients with hemifacial microsomia and cleft lip and palate treated with MFO.

Bimler cephalometric analysis is explained by A.R. Almeida in a clear manner, and color-coded measurements further facilitate understanding. Articular compass cephalometric analysis is described as a valid way to quantify mandibular proportions and diagnose a tendency to skeletal open bites. Articular compass cephalometric analysis is extremely important prior to the fabrication of appliances that change mandibular posture. The Simões symmetric panoramic analysis is a method by which to obtain linear and angular measurements in the lower third of the face to assess symmetry.

The chapter on appliance fabrication not only describes appliances in detail, but also their biomechanics. This is not just a technical chapter to teach how wires should be bent and how the acrylic should be added. It is, in fact, a chapter for the clinician and lab technician, who need to know and understand every component of the appliance and its function. Finally, 50 cases before and after treatment exclusively with MFO are reported. The records are complete and of great quality. It is an excellent way to conclude the introduction of MFO as a new field in dentistry.—Naci De Felippe

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