OMICSGOUP International Conference on <u>C o n f e r e n c e s</u> <u>Accelerating Scientific Discovery</u> Regenerative & Functional Medicine

November 12-14, 2012 Hilton San Antonio Airport, USA

Distraction osteogenesis of the maxillofacial skeleton: Biomechanics and clinical implications

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Distraction osteogeneses (DO), also called callus distraction, callotasis, osteodistraction, and distraction histogenesis is a biological process of regenerating neoformed bone and adjacent soft tissue by gradual and controlled traction of the surgically separated bone segments. Physical and biological parameters affecting the success of DO include the macro and microscopical bone anatomy, the direction and amount of the applied distraction forces, and the regenerative capacity of the tissues involved. Force transduction via adjacent structures (joints, ligaments, muscles, and soft tissue) influences the regeneration of the tissue between the bone fragments by modulating the stress produced within the callus. The clinical applicability of DO is dependent upon device-related and tissue-related factors. Device-related factors affect the mechanical integrity of the distractor and the stability of bone fixation. The number, length, and diameter of fixation pins, the rigidity of the distractor fixation, and the material properties of the device affect the clinical result of the distraction procedure. Additionally, the orientation of the jaws – the occlusal plane and the joint position are important considerations. Tissue-related factors affecting the quality of the generated distraction gap, and the tension of the soft tissue envelope. In the maxillofacial skeleton, DO replacing many of the traditional surgical treatment for Congenital and acquired deformities. The Biomechanics of DO and its Clinical Implications in the maxillofacial skeleton will be discussing.

Biography

Dr. Ayman Hegab has completed his Ph.D. at the age of 32 years from Al-Azhar University and he is a Lecturer of Oral & Maxillofacial Surgery, Faculty of Dental Medicine, Al-Azhar University, and Cairo. Egypt. He is a Member of Egyptian Society of Oral & Maxillofacial Surgeons& a reviewer of Drugs in Dentistry-Evidence Healthcare Canada Journal- Golf Issue. He has published more than 10 papers in reputed journals. He is one of AEEDC Young Researcher Award Participants for 2012. He has three posters presentation and one oral presentation in AEEDC 2012 & Oral Presentation in The 2nd Qatar Dental International Conference and the 8th Gulf Dental Association Conference 2012.

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