Pneumopedics: Non-surgical upper airway remodeling for pediatric obstructive sleep apnea

Currently, the management of pediatric obstructive sleep apnea (OSA) remains undecided. Often, the tonsils and adenoids are surgically removed but this intervention does not always produce the desired outcome, and alternatives must be sought. On the other hand, continuous positive airway pressure (CPAP) is often contra-indicated in pediatric OSA, unlike adult OSA. However, mandibular advancement devices (MADs) are often used as alternatives to CPAP in adult OSA. Therefore, alternative solutions to pediatric OSA are also required. Biomimetics is a science that studies natural models and uses these designs and processes to solve human health issues. For example, in modern humans (Homo sapiens sapiens), the natural design includes 32 teeth, which are symmetrically-arranged within the human craniofacial architecture. This structural pattern is achieved through developmental processes (e.g. temporo-spatial patterning) that are encoded within the human genome, including growth and development of the mandible and eruption of the teeth. Studies have shown that the growth and development of the mandible can be modified in 2D and 3D studies. In fact, monozygotic twins respond to removable appliances that reposition the mandible during growth favorably. However, not all pediatric devices are effective in mandibular repositioning during growth, and careful selection is mandatory. In responsive cases, however, both pre-formed and customized devices are cost effective. In fact, significant changes in upper airway morphology have been induced in children using these techniques. It is concluded that this pneumopedic approach may be considered for non-surgical upper airway remodeling in pediatric cases of obstructive sleep apnea.

Recent Publications

JOINT EVENT

7th World Congress on Addictive Disorders & Addiction Therapy & 29th International Conference on Sleep Disorders and Psychiatry

July 16-18, 2018  London, UK

Biography

G D Singh holds three doctorates, including Doctor of Dental Medicine; a PhD in Craniofacial Development, and a DDSc in Orthodontics. He was invited to relocate to the Center for Craniofacial Disorders, USA where he led a NIH-funded program of craniofacial/cleft lip and palate research. Currently, he is a Board Member of the American Sleep and Breathing Association, a member of the World Sleep Federation, an Academic Fellow of the World Federation of Orthodontists, and Fellow of the International Association for Orthodontics, where he was awarded prizes in 2005, 2013 and 2014. He has published over 200 articles and books in the peer-reviewed medical, dental and orthodontic literature, and has lectured in Australia, Asia, Europe, Africa and North America. Currently, he is President of Vivos BioTechnologies, Inc.

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