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Long-term follow up of non-surgical upper airway remodeling for adult obstructive sleep apnea**G Dave Singh and Felix Liao**

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We investigated changes in upper airway morphology to test the hypothesis that the upper airway can be non-surgically remodeled in adult patients with Obstructive Sleep Apnea (OSA). After obtaining informed consent, we undertook a 3D cone-beam (CBCT) scan of a 56-year-old male patient, who was diagnosed with mild OSA by a sleep specialist prior to treatment. The patient was treated using a biomimetic oral device (DNA appliance®). The active treatment time was 18 months approx. Volumetric 3D reconstruction of the upper airway from the CBCT scan was undertaken prior to treatment and the patient was monitored with a follow up CBCT scan 5.5 years. later. All measurements were taken with no device in the patient's mouth during wakefulness. The results showed that the upper airway volume increased from 13.9 cm³ to 29.2 cm³. The minimal antero-posterior retropalatal distance increased from 1.5 mm to 11 mm in the mid-sagittal plane; the minimum medio-lateral retropalatal width increased from 4.5 mm to 29 mm in the coronal plane; the minimum retropalatal area in the axial plane at the same level as above increased from 67 mm² to 477.5 mm². In addition, the minimum antero-posterior retroglossal distance increased from 6 mm to 17 mm in the mid-sagittal plane; the minimum medio-lateral retroglossal width increased from 14.5 mm to 26.5 mm in the coronal plane and the minimum retroglossal area in the axial plane at the same level as above increased from 83.5 mm² to 423.5 mm². We conclude that biomimetic oral appliance therapy may be able to non-surgically remodel the upper airway in adult patients diagnosed with mild OSA. This biomimetic protocol requires further investigation to elucidate the novel mechanism of pneumopedics or physiologic upper airway remodeling.

Biography

G Dave Singh holds three Doctorate degrees: Doctor of Dental Medicine, PhD in Craniofacial Development and DDS in Orthodontics. He led a NIH-funded program of craniofacial research at the Center for Craniofacial Disorders, USA. He is a Member of the World Sleep Society; the American Sleep and Breathing Academy; Fellow of the World Federation of Orthodontists and the International Association for Orthodontics. He has published about 200 articles in the medical, dental and orthodontic literature and has lectured in North America, Asia, Europe, Africa and Australia.

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