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Non-surgical improvement of the upper airway for sleep disordered breathing: 5 year follow up

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In this study, we investigated changes in upper airway volume, to test the hypothesis that the upper airway can be non-surgically remodeled in adult patients with sleep disordered breathing. After obtaining informed consent, we undertook a 3D cone-beam CBCT scans of 56-year-old male patient, who was diagnosed with mild obstructive sleep apnea by a sleep specialist. Volumetric 3D reconstruction of the upper airway on the CBCT scan was undertaken, and the upper airway volume was found to be 4.7cm³ with a minimum cross-sectional area of 73mm². The patient was treated using an FDA approved, biomimetic oral device (DNA appliance®, Vivos BioTechnologies, Inc., USA). The active treatment time was approximately 18 months. The patient was followed for a further 5.5 yrs when a follow up 3D cone-beam CBCT scan was undertaken. The results showed that the upper airway volume increased to 31.8 cm³ and the minimum cross-sectional area had increased to 526 mm² with no device in the patient's mouth when the CBCT scan was taken. We conclude that biomimetic oral appliance therapy may be able to non-surgically remodel the upper airway in adult patients diagnosed with sleep disordered breathing.

Biography

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

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