

Dentofacial Research in Obstructive Sleep Apnea

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Obstructive sleep apnea (OSA) is increasingly being recognized as a serious public health problem and is characterized by snoring, repetitive episodes of complete or partial closure of the oropharyngeal airway during sleep; resulting in nocturnal hypoxemia, frequent arousals leading to cardiac abnormality, excessive daytime sleepiness, endocrinal disturbances etc. Global prevalence varies from 0.3% to 5.1% in general population. Structural/anatomic factors that constrict space for the soft tissues surrounding the pharynx and its lumen are crucial to the development of OSA in many patients. Common sites for obstruction of airway are retropalatal and retroglossal. Bony abnormalities like reduced mandibular body length, inferiorly positioned hyoid bone, retropositioned maxilla can lead to OSA.

Non-obese individuals with severe OSA are mainly affected due to retruded mandible, masticatory and suprahyoid muscle hypotonia which hold mandible during sleep. CBCT (cone beam computed tomography), CT (Computed Tomography), MRI (Magnetic Resonance imaging) and Sleep nasoendoscopy of upper airway showed that nature of collapse of airway is more in transverse than anteroposterior direction with typical retropalatoglossal combination.

Most commonly and effectively used treatment modality for OSA are CPAP (Continuous Positive Airway Pressure), Mandibular Advancement device, Tongue Base Surgeries and Maxillomandibular Advancement. Mandibular advancement devices are the most commonly used oral appliance for the effective management of OSA. Several factors appear to contribute to the effectiveness of oral appliances such as appliance design and titration, the severity of the sleep apnea, the amount of advancement, the vertical opening of the mandible, positional sleep apnea, nature of airway collapse and knowledge and experience of the dental sleep apnea specialist.

In conclusion, management of OSA should be considered in broader perspective in terms of micro molecular changes after any treatment modality. Current research should be directed at changes in oxygen saturation, fibrinogen level, viscosity of blood, EEG (Electro Encephalo Gram) changes with use of Oral Appliances. Combination of oral appliances and CPAP increases patient acceptance and reduce multiple risk factors associated with OSA.

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