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The Value of a Multidisciplinary Integrated Approach on Improving the Quality of Care of Patients Affected by Obstructive Sleep Apnea Syndrome

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Obstructive Sleep Apnea Syndrome (OSAS) is a common sleep respiratory disorder, characterized by snoring and partial (hypopnea) or complete (apnea) obstructions of airflow. Oxygen desaturation and sleep fragmentation, caused by the airflow limitations, can lead to an excessive *daytime sleepiness* and an increased risk of cardiovascular, cerebrovascular and metabolic diseases [1-8].

Nowadays, "Dental Sleep Medicine" plays an important role in the treatment of patients affected by OSAS. *Mandibular Advancing* Devices (MADs) represent a conservative, non-invasive and effective alternative for patients presenting a mild or moderate OSAS. Besides, it may give a valid possibility for patients affected by severe OSAS who refused CPAP (Continuous Positive Airway Pressure) and are not good candidates to surgery [9-11]. Furthermore, MADs can be combined to other treatment options, to obtain a better clinical outcome.

Involving a multidisciplinary expertise is essential for a correct *diagnosis* and *treatment plan*, and eventually the treatment management. Due to the high number of signs, symptoms and consequences of the syndrome, to the several etiological factors and the different treatment options, this becomes of paramount importance.

A comprehensive clinical examination should assess: -sleep-oriented present and past medical history;-daytime and nighttime symptoms;-findings of sleep testing; -comorbidities; -anthropometric characteristics; -findings of poliysomnography;-anatomical and functional causes of obstruction; - morphology of skeletal and soft tissues; - oral (dental, periodontal and occlusal) and TMJ status.The objective is to create tailored *treatment plan*, which takes into account guidelines, contra/indications reported in literature, predictability of alternative therapies and preference of patients. This multidisciplinary approach givesthe sleep dentist the following advantages: 1. improvespatient *selection*; 2. reduces failures ratio, by means of *combined treatments*; 3. help to *control* the possible *persistent symptoms*.

Regarding *patients selection*, research on positive and negative predicting factors to MAD therapy is still a challenge because of the heterogeneity of causes, anatomical and functional characteristics and treatment outcomes. In attempt to identify good responders to MAD therapy, several authors emphasised the predictive role of the OSAS severity (good responders present a lower number of obstructive events at baseline polisomnography, when compared to poor responders), of thedependence on supine position (positional OSAS seems to present a better response to oral devices), of the BMI [12] (obesity is a negative predictive factor), of the gender (females normally obtain better results) and of the characteristicsof the obstruction(a larger retrolingual airway caliber, a prevalent retropalatal obstruction and a lateral pattern of collapse seem to be positive predictive factors) [13]. Moreover, the evaluation of anatomical and functional dynamics of airway collapse during DISE (drug induced sleep endoscopy), can give valuable information [14,15].

Regarding *combined treatments*, lifestyle modifications, behavioral and positional therapy can influence MAD outcomes. Recently, Ravesloot et al. [16] have demonstrated the effect of a night positional trainer to control sleep posture. During the 23rd American Academy of Dental Sleep Medicine Annual Meeting, Vanderveken et al. reported that by combining a night positional trainer to a MAD, achieved a significantly lower AHI (Apnea/Hypopnea Index), when compared to baseline or to only-MAD therapy results. However, when different anatomical sites are involved in the genesis of obstructive events, the combination of *MADs with ENT Surgery* can be needed [17]. Nevertheless, the treatment of high nasal resistance can improve MAD tolerability and outcome, by decreasing the tendency to mouth opening during sleep. Mouth opening often leads to an increased collapsibility of the pharynx and enhances the riskto lose the lower splint of the appliance (so the advancement of the mandible), especially when a low retention to teeth is present [18,19]. *Mandibular Advancing* Devices can be also *combined to* CPAP (Continuous Positive Airway Pressure), with the aim of reducing the effective airway pressure and the encumbrance of the interface in patients with poor compliance to CPAP [19].

Finally, the expertise of a neurologist can be essential to control *daytime sleepiness* that persists despite a significant improvement of the AHI, and *sleep quality* and *continuity*, thus improving the tolerance to the oral appliance.

On the other hand, the important role of an expert sleep dentist is: - to *recognize* symptoms of OSAS and to refer the patient to a sleep physician;-to *help in formulating* the complete *diagnosis* and the correct *treatment plan*, by evaluating the craniofacial morphology and the oral status (dental, periodontal and TMJ health); - to evaluate whether or not an oral device can be positioned;-*to carry out* the necessary periodontal, dental and prosthetic pretreatment;- to realize MAD *simulators* for sleep physician (used during polysomnography) and for ENT (used during DISE), for a higher predictability of the mandibular advancement effects [20-25];- to *complete* other treatments outcome, when it is considered insufficient [15]; - to collaborate with sleep physician in the evaluation of treatment outcome, taking into account the tolerance of the patient to mandibular advancement and his characteristics.

In conclusion, only a multidisciplinary approach to treat Obstructive Sleep Apnea Syndrome allows the best clinical outcome. "Coming together is a beginning, staying together is progress and working together is success. *Henry Ford*".

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