ORAL AIRWAY DYSFUNCTION AND SLEEP DISORDERS IN CHILDREN

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Sleep is essential for normal growth, development and mood regulation in children and adolescents. The impact of these unresolved sleep issues may present as "sleepy" or "overtired" children in the daycare setting or classroom, which may actually be a manifestation of underlying inattention or hyperactivity.

One major underlying cause for sleep disruption in children and adolescents is sleep-disordered breathing (SDB). The prevalence for frank obstructive sleep apnea (OSA) in children is estimated to be between 1-3 percent of children, with a peak age of 2-5 years. The American Academy of Pediatrics recognizes that OSA is a common condition in childhood and can result in severe complications if left untreated (Marcus et al., 2012). Potential consequences of untreated sleep apnea in children are growth failure; learning, attention and behavioral problems; and cardiovascular complications (Gozal, 1998). The most current research demonstrates that even one apneic event per hour of sleep can result in measurable neurological changes in a child.

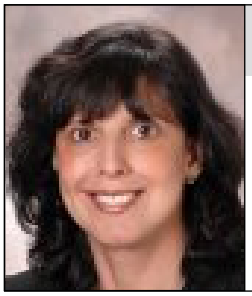
While tonsillectomy and adenoidectomy (T&A) can dramatically improve SDB in most children, and result in improved daytime behavior, it has been shown that SDB can relapse in teenage years (Guilleminault et al., 2013). Other treatment modalities for pediatric SDB, include, but are not limited to, positive airway pressure (PAP) therapy, oral appliance therapy, and other forms of orthodontic devices.

Moreover, a subset of pediatric patients may also have co-morbid craniofacial abnormalities, which puts them at increased risk for failure of the T&A to correct their breathing abnormality. These patients may be predisposed to having orofacial myofunctional disorders, which involve behaviors and patterns created by inappropriate muscle function and incorrect habits, (tongue, lips, jaw and face). During the act of swallowing, and/or during rest posture, an incorrect positioning of the tongue may contribute to improper orofacial development and maintenance of the misalignment of the teeth.

Recent evidence by Guilleminault et al. (2016) has shown that children being evaluated for SDB with short lingual frenula (without adenotonsil enlargement) had a greater degree of oral anatomic abnormalities than children with normal frenula and enlarged adenotonsils. In addition, they found that the majority of children with short frenula had at least one direct family member who also had a short frenulum and SDB. They posit that a short lingual frenulum, when it is left untreated at birth, is associated with the development of SDB later on in life. Therefore, when this anatomical finding is present, a thorough screening for OSA should be considered.

Oral myofunctional therapy (OMT) and proper tongue positioning within the oral cavity has been reported as early as 1918 to improve mandibular growth, nasal breathing, and facial contours. Guimaraes (1999) had proposed OMT as a treatment for SDB since the early 1990s. The exercises consist of isotonic and isometric exercises that target the oral and oropharyngeal structures.

According to a recent task force (Frey et al., 2014), a certified orofacial myologist must be considered a necessary part of a comprehensive SDB screening protocol: for children, to aid proper oropharyngeal development and functional breathing patterns; for adults, to offer support for optimal health as part of a comprehensive treatment approach. A recent literature review conducted by Camacho et al. (2015) demonstrated that OMT reduced AHI by approximately 50 percent in adults and 62 percent in children. This lends support for the role of OMT for the treatment of SDB, and as adjuvant therapy for those patients undergoing ENT procedures, using PAP therapy, or other forms of orthodontic appliances.



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