

# Working together to increase retention through identification and treatment of postural abnormalities

Nicole Cavalea, MS, discusses how strengthening and retraining the muscles and educating patients on breathing techniques can aid in maintaining orthodontists' results

Orthodontists are often the first professionals to identify a patient's abnormal patterning of the mouth and tongue, as these abnormalities interfere with the structural integrity of orthodontic treatment. A visual assessment of the following characteristics can indicate the need to co-treat with an orofacial, myofunctional therapist: forward tongue protrusion during resting, speech, and/or swallow, open-mouth posture, weak lip seal, postural changes to face, open bite, distorted speech, jaw instability, dark eye circles, long face, and a high narrow palate.

## Tongue thrust/atypical swallowing

When an individual presents with a tongue thrust, the patient may rest his/her tongue against the teeth, swallow with the tongue pushing against the teeth, and make sounds (meant for placement on the alveolar palate) with tongue pressure against the teeth. Having a tongue thrust applies pounds of pressure on the anterior teeth daily. This postural and functional imbalance may cause serious dental problems and greatly interfere in the efficiency of orthodontic treatment. If incorrect muscle patterning or swallowing have resulted in a malocclusion, learning proper techniques to correct these imbalances may prevent further damage, as special orthodontic appliances or braces will be needed to reposition dental problems that have already occurred. If atypical swallowing is not corrected early, it can cause alterations in the development of the stomatognathic apparatus. Furthermore, the improper function of the tongue, in conjunction with dental



Figure 1: Treatment before. Here, a tongue thrust is visible by the anterior tongue placement (pushing against teeth)



Figure 2: After 11 weeks of treatment. Noticeable postural changes after 11 weeks of a tongue thrust-treatment protocol

malocclusion, will often lead to jaw instability, thus causing pain and headaches for the patient. For these reasons, myofunctional therapy is a useful adjunct treatment to orthodontics in subjects with myofunctional dysfunction (Saccomanno, et al., 2012).

Two important factors in the correction of tongue-thrust swallowing are 1) growth and

2) orthodontic treatment to place the teeth in their proper positions and thus simplify proper tongue placement. However, growth and orthodontic treatment alone will not correct tongue-thrust swallowing. In correction therapy, the 22 muscles that are used in normal swallowing should be re-educated to eliminate the tongue-thrust swallowing habit in order for the patient to be able to unconsciously swallow in the correct manner (Straub, 1962).

Therapy targeting a tongue thrust is aimed to strengthen, coordinate, and retrain the muscles involved in swallowing, resting posture, and speech. First, an assessment is used to determine the nature of the postural imbalances that are present and how they affect craniofacial development. Next, the



Nicole Cavalea is the founder of Strategies for Success, a speech-language pathology practice and myofunctional therapy clinic. She has worked in the field of communication disorders for 19 years. She received her MS degree in Speech and Language Pathology from San Jose State University. Cavalea has extensive expertise working with children of all ages in the assessment, treatment, and management of speech and language disorders, auditory-processing delays, and myofunctional disorders. After incorporating myofunctional techniques into her practice, she began noticing her clients improving with quicker and more precise results, leading her to further her training in myofunctional disorders and treatment, and attending multiple intensive training courses from the Academy of Orofacial Myofunctional Therapy. Recent studies include an advanced course on breathing re-education, focusing on restoring adequate breathing in sleep apnea patients. Recently, Cavalea has expanded her practice nationwide through telepractice, and values and enjoys collaboration and co-treatment with multi-disciplinary teams across the country.

client is given a set of exercises to activate and strengthen the weakened muscles used incorrectly during swallowing and involved in postural imbalances. Proper placement and precision are taught in regard to the function of swallowing. When swallowing correctly, the client is instructed to voluntarily place the tongue against the roof of the mouth while bringing lips together and creating a suction to swallow. The patient is then taught correct resting posture and speech. Lip exercises to strengthen the lip seal and habituate a closed-mouth posture are elicited. The nature of therapy is to correct habitual use of the tongue, while working on strengthening and patterning of the soft tissue involved. Treatment will last anywhere from 4-6 months, with daily exercises and practice.

## Open-mouth breathing

Along with a tongue thrust, the identification and treatment of an open-mouth breathing posture and weak lip seal is extremely important for your patients. Oral breathing will often be accompanied by: lack of lip seal, postural changes, dark eye circles, and a long face. Diagnosis and treatment for an anterior open bite and a high narrow palate is usually completed with appliances. Oral breathing may be habitual or due to an obstruction. Symptoms of sleep apnea, allergies, and difficulty concentrating may be reported, and further diagnosis will be needed. The goal of the myofunctional therapist is to restore correct nasal breathing in these patients. Achieving proper nasal breathing will result in improving lung volume, increasing nitric oxide through the body, improvement in sleep, and the reduction of allergies and illnesses.

Obstructive sleep apnea (OSA) has become increasingly recognized as a notable health concern in children, given its consequences on behavior, function, and quality of life. Orofacial and pharyngeal muscles are involved in important functions including breathing, with the vital role of maintaining airflow. Any upper airway (UA) obstruction may induce changes in neuromuscular function in order to ensure the passage of air. The most common consequence of UA obstruction is mouth breathing, a functional adaptation that may affect craniofacial growth and development during childhood. Myofunctional treatment is aimed at correcting abnormal breathing patterns and muscular dysfunction that may impair upper airway patency (Felicio, et al., 2016). Adenotonsillectomy and palatal expansion have established their roles in the treatment of OSA after demonstrating considerable improvement related to adenoid or tonsillar hypertrophy, maxillary or mandibular deficiency, and orthodontic or craniofacial abnormalities. However, the implementation of other modalities such as myofacial re-education also plays a crucial role in the optimization of sleep-disordered breathing (Guilleminault, et al., 2013).

To restore efficiency in breathing, first, the myofunctional therapist will educate the client on proper nasal/diaphragmatic breathing. Once coherence is established, the client will learn a series of exercises that focus on the biomechanical and biochemical aspects of breathing. Biochemically, the client is instructed to breathe in a way that creates a desire for air (such as narrow, light breaths). This technique will decrease the clients sensitivity for CO<sub>2</sub>, therefore creating a larger threshold to eliminate sleep

disturbances. Biomechanically, the client is instructed on ways to practice techniques that maximize breathing skills. For example, the client learns deep, slow breathing through the nose, where the air effectively expands the diaphragm.

In conclusion, orthodontic treatment alone, in the presence of bad habits (i.e., oral breathing, atypical swallowing, labial interposition), and dysfunction of the orofacial musculature is not enough to solve the orthodontic issues. Therefore, it is necessary to combine it with myofunctional therapy (Saccomanno, et al., 2012). The goal of the myofunctional therapist in co-treatment is to correct postural imbalances, restore proper alignment, elevation of the tongue and adequate nasal breathing. Furthermore, myofunctional therapy helps in eliminating open-mouth posture and correcting jaw instability. Successful treatment will result in creating an efficient swallow and tongue placement during rest and speech. The effect will have a positive impact on the outcome of orthodontic treatment, providing the opportunity for maximum results. **OP**

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