TALKTOOLS THERAPY™

Connections Between Tongue Placement and Dental Alignment

Published in ADVANCE for Speech-Language Pathologists & Audiologists
September 8, 2003 • Vol. 13 • Issue 36 • Page 9

By Robyn Merkel-Piccini, MA, CCC-SLP, and Sara Rosenfeld-Johnson, MS, CCC-SLP

The tongue is by far the strongest and most unique muscle in the human body. It is the only muscle that has one point of insertion, and an end that is left to find intrinsic stability in the open space of the oral cavity. Early in their studies speech-language pathologists learn tongue mobility is essential for articulatory precision. Dentists learn about the impact of the tongue on dental alignment. Why don't these professions learn both of these important facts about the tongue in their educational programs?

The tongue is responsible for refined, dissociated movement necessary to be able to speak and swallow effectively. Its sensory system notes temperature and taste and is an important tool in the mouthing of objects and in sensory integration and exploration. In relation to the hard tissue of the mouth, the rest position of the tongue actually shapes the mouth around it. If the tongue lays low and flat in the mouth secondary to obligatory mouth breathing, which may have a variety of causative factors (low muscle tone, muscle weakness, nasal blockage or enlarged tonsils/adenoids), there will be changes in the structural development of the hard palate and the teeth.

The tongue could be compared to the waves of the ocean wearing on the sand or the impressions made by a tire on a wet dirt road. The marks are clearly visible and easy to match to the culprit. If the tide is high, the sand is wet and there is less room on the beach. Forensic scientists can match tire tracks to the make and model of a car.

Similarly, speech-language pathologists can determine whether or not the tongue has caused impact on the teeth. Look at a child's teeth and observe where the tongue is leaving its marks. Anterior or interdental tongue rest posture and/or tongue thrust results in functional dental malocclusions, including overbite, underbite, open bite, overjet and diastemas. So why is it so hard to establish the need for oral-motor or tongue thrust therapy for a client with dental abnormalities and/or misalignments?

One problem is that some may teach or think dental occlusion is inherited and can only be treated by orthodontic interventions. Speech-language pathologists spend their schooling looking at cause-and-effect relationships and study why a disorder occurs and how to remediate it. Orthodontists primarily are concerned with the alignment of the teeth and what interventions need to occur in order to get a more desirable occlusion.

While it is recognized a tongue thrust will impact the teeth, an unfortunate and mistaken belief is that as the dental arches shift into a more desirable relationship, the tongue positioning will change as well, therefore remediating the tongue thrust at the same time. This is a misconception, as some children have teeth that look beautiful when braces are removed, only to regress to spacing issues and misalignments shortly thereafter. These cases then are referred for speech therapy to remediate the tongue thrust as a secondary procedure when in fact the therapy should have started long before.

The second problem is that orthodontic work is considered to be cosmetic and not functional. Speech-language pathologists look at the teeth as a part of an oral-motor system responsible for speech and swallowing. If dental malocclusion is in evidence, the therapist analyzes the impact this may have on natural jaw resting postures, speech sound production and chewing.

When oral-motor or myofunctional therapy is recommended in light of a dental malocclusion, an underlying assumption is that this is an optional therapy procedure when it actually is the root of the problem itself. Tongue thrust and poor lingual rest posture do not constitute a cosmetic issue but a functional one. Open mouth posture results in poor filtering of air and does not access the nasal turbinates, which filter impurities. Open mouth posture and forward lingual resting postures can lead to dry mouth, dental decay and secondary articulation disorders.

Finally, the most difficult problem is prognosis. Many therapists and orthodontists are not confident tongue thrust therapy will change dental alignment, although it can easily be measured in millimeters using a caliper. This stainless steel ruler allows the therapist to measure oral-facial changes, including spacing between the mandibular and maxillary arches. In addition, progress is measured by skills acquired in speech therapy programs that target lip closure, tongue retraction and jaw stability. These oral-motor skills are all crucial in facilitating a positive relationship between the tongue and teeth.

For example, the Straw Hierarchy from TalkTools™ is designed to facilitate swallowing with appropriate jaw-lip-tongue positioning, thereby eliminating tongue protrusion. This program can be used with clients of all ages and ability levels. Progress is indicated by the mastery of straws on eight sequential levels. The SMILE program, designed for patients with tongue thrust age 7 and older, measures progress by the completion of exercises in 14 sequential lessons. Just as orthodontists measure dental relationships, speech-language pathologists can easily measure tongue thrust success when using an effective program with built-in mastery levels.

In recognition of the impact of the tongue on the teeth, speech-language pathologists and orthodontists can work together in determining the following:

Is the dental malocclusion structural or functional, secondary to abnormal tongue position or function?

Is it appropriate to remediate the oral-motor/myofunctional issues before introduction of orthodontic appliances?

Can the speech-language pathologist work on the myofunctional disorder with an appliance in place?

Once these questions are answered, the speech-language pathologist and orthodontist should consult regularly regarding changes in function and structure.

This professional dialogue will be essential to ensure the client receives the maximum benefit from both the orthodontic and speech therapy treatments.

Sara Rosenfeld-Johnson is the founder of Innovative Therapists International (ITI) and Sara R. Johnson Oral-Motor Speech & Language Associates, specializing in the diagnosis and treatment of oral-motor-based feeding and speech disorders. Both are based in Tucson, AZ. She can be contacted at OromotorSP@aol.com *or online at* www.talktoolstm.com. *Robyn Merkel-Piccini is employed full-time by the Ridgefield Board of Education; has a private practice in Bergen County, NJ, specializing in oral-motor and myofunctional disorders in children; and is a member of the ITI Speakers Bureau. She can be reached at* Robynslp95@aol.com.

ORTHODONTIC REFERRAL

Dear Dr. _____,

I am writing in regard to my client _____ whom I evaluated for oral-motor and speech issues. _____'s evaluation revealed dental concerns, which I would like to bring to your attention.

As you may know, there is a clear relationship between oral resting posture, swallowing patterns and dental relationships. Tongue thrust and inappropriate tongue resting postures result in functional misalignment of the teeth. For example, if the tongue tip rests in between the top and bottom incisors, or pushes forward during swallowing, an openbite may occur.

In this client's Oral-Motor Evaluation, the following dental issues were noted:

	Diastemas/spacing		Crossbite
	Class I malocclusion		Overjet
	Class II malocclusion		Crooked spacing
	Class III malocclusion		Narrow palate
	Openbite		High palate

In addition, there were oral motor issues that could impact on dental alignment:

	Open mouth posture		Drooling
	Thumb sucking		Suckles straws/cups/objects
	Nail biting		Oral-Facial Hypotonia
	Tongue is between teeth at rest		
	Tongue thrusting		

It is my professional opinion that this client has an oral-motor disorder which requires immediate attention. If swallowing and tongue position do not improve, it is likely that orthodontic interventions may not be permanent upon removal of the appliances.

I have recommended the following treatment program for this client:

I look forward to working with you in order to help this client with speech, swallowing and dental health. I have taken the liberty of attaching an article discussing this topic.

_____
Speech Pathologist