Commentary

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The Pros and Cons of Myofunctional Therapy

"Of Dubious Value"

Mary Ellen Deschenes, R.D.H.

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Tongue thrust therapy has been around for a long time. It has been the subject of heated debate in the dental and speech professions for nearly 30 years. Despite the fact that this treatment remains of dubious value, it has been taught in dental hygiene schools¹² and in continuing education courses. Dental hygienists have also provided this therapy in private dental practices.

Claims that this habit is damaging to the occlusion have not been supported and evidence that tongue thrust therapy is necessary or effective is scant. The actual thrusting of the tongue during swallowing appears not to be a significant factor in dental arch form when compared with tongue and lip resting postures.

The International Association of Orofacial Myology is presently the major champion of the tongue thrust cause. (Tongue thrust is only one entity identified as an oral myofunctional disorder.) Since 1975, when the association began publication of its *Journal of Oral Myology* (now the *Journal of Orofacial Myology*), no well-controlled, scientifically conducted research studies in support of this therapy have been printed. Numerous articles relying on clinical impressions have been printed along with position papers defending the therapy.

Of concern to hygienists is the fact that a great deal of misleading and incomplete information on the subject has been dispensed at *how to* workshops, which are biased in favor of tongue thrust therapy. In addition, of the five articles^{2,19,26,27,34} on tongue thrust printed in the dental hygiene professional journal since 1963, only one²⁷ expressed clearly the need for caution in this yet unproven clinical area.

A new responsibility in the hygienist's office routine was appealing, so the articles had a primarily pro-tongue thrust focus. Consequently, the scope of the tongue thrust controversy has not previously been explored adequately in the dental hygiene literature.

Due to the indications of numerous research studies, the parameters of this theory have become narrower, with many practitioners taking an increasingly conservative approach. Research findings in the last 20 years cover the full range of tongue thrust concerns, from etiology and diagnosis to efficacy of various therapies.

Etiology: There is no commonly identified cause of retained tongue thrust. Ninety-seven percent of infants thrust as a normal swallowing pattern.⁶ Because of facial and dental arch growth, the tongue, which is initially large in proportion to the oral cavity, is accommodated gradually and the incidence of tongue thrust decreases steadily with age.

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By puberty, most children have successfully acquired an adult swallowing pattern. Numerous transitional periods occur, during which a child lapses in and out of tongue thrust swallowing, due to the effects of skeletal growth, eruption of permanent teeth²² and respiratory obstructions.²⁹ The prevalence of tongue thrust after the age of puberty is not known, but estimates vary from 3 percent to 25 percent.²³

This maturation factor creates a significant problem for much of the research conducted in attempts to prove tongue thrust therapy is efficacious. Many studies have used young subjects, who still may have been experiencing considerable facial growth. Any sound study must control for the maturation factor. It is truly unfortunate that studies by Overstake, Goldberger,⁹ Toronto,³⁰ and Rothstein²⁵ did not use maturational control groups, rendering their data spurious and their treatment claims equivocal.

Research findings point to a few probable causes of retained thrust after puberty; primarily, any condition which compromises airway patency and influences the tongue into a low forward posture to allow breathing.²⁹ Such conditions include enlarged tonsils and adenoids and allergies; mouth-breathing may be a concomitant finding. A persistent thumbsucking habit is often accompanied by tongue thrust because it is difficult to swallow properly while fingers are in the mouth.¹⁸

Severe open bite after puberty may be accompanied by tongue thrust as it is in the younger years because the tongue adapts to the oral environment by filling in the available anterior space. In all these cases, the correction of the physiological cause or habit should be of primary concern; some researchers believe that the thrust will spontaneously correct once the dental environment is altered.^{3,27,31}

By itself, tongue thrust is not considered a problem by many authors^{18,33} and it can be present without concomitant speech or malocclusion problems.¹⁸ It often accompanies anterior open bite, but a cause and effect relationship has not been determined.^{8,13}

Lowe¹⁷ notes that there is "no evidence that activity of tongue and lip musculature during swallow, speech or other oral function is related to arch form or final tooth position."¹⁷ Speidel²⁸ believes that tongue thrust, in its present definition, cannot be considered a primary cause of open bite.

It was once popular to explain that tongue thrust caused anterior open bite or overjet by placing as much as five pounds of pressure per swallow on incisors.⁵ Research has demonstrated, however, that these intermittent tongue pressures are relatively light.¹⁸

Lear and Moorrees¹⁶ found that swallowing activities of the tongue, including eating, speaking and saliva swallows, occupies only about 12 percent of the day's oral activity. Resting activity of the tongue, on the other hand, occupies about 88 percent of the day's oral activity.

Proffit et al.,²⁴ and Lowe¹⁷ found that resting posture of the lips and tongue may be strong determinants of dental arch form. This was suggested as early as 1958 by Graber.¹⁰ Resting pressures also seem to constitute a greater source of pressure on teeth because they are sustained.

If the resting position of the tongue is forward and low, this sustained pressure may be applied to anterior teeth; this is likened to the action of orthodontic bands in the ability to move teeth, while the brief, intermittent pressures of tongue thrust swallowing appear to be of little consequence in tooth movement.²⁴

This low forward tongue posture is frequently seen in the cases of enlarged tonsils and adenoids and allergies mentioned earlier.²⁹ It appears that the idea of tongue thrust has diverted attention from more significant matters in determination of dental arch form.

Diagnosis: An extremely conservative view of diagnostic criteria is indicated by the research. Subtelny³¹ observed a wide range of characteristics in normal swallows, including lack of molar occlusion during swallow, facial grimace and mentalis contraction, all of which were once considered pathognomic of tongue thrust. A study by Hanson et al.¹¹ of school children demonstrated that a high narrow palatal vault, prominent palatal rugae, and perioral muscle contraction are not reliable indicators of tongue thrust swallow.

Lip incompetency, which is often used as another diagnostic indicator, appears to be normal for children.³² Vig and Cohen³² found marked changes in lip competence during ages nine to 13 and spontaneous lip closure and improved lip seal occurring in the absence of therapy, due to maturation. Prescribing myofunctional lip exercises to reduce this incompetency would be of questionable value until at least puberty.

Predictive criteria to determine likelihood of tongue thrust retention have not been identified. This raises questions about the wisdom of preventive therapy for younger children.

A further complication in diagnosis is the need to determine diagnostic differentiation between a dental open bite and a skeletal open bite. Dental open bites can close spontaneously, whereas skeletal open bites imply the existence of an unfavorable growth pattern.

The use of exercises or appliances to correct skeletal open bite will fail to produce changes in the occlusion⁶ and orthodontics is often indicated. It is important, therefore, that any therapy be related to careful orthodontic diagnosis.

Treatment modalities and efficacy: Exercise therapy and appliance therapy are the major methods of treating tongue thrust. The procedures for both types of therapy have been well described in the literature.^{1,6,33}

Some researchers doubt the value of tongue retraining through exercises because tongue activity is essentially reflexive,¹⁴ even after voluntary initiation. Opponents of appliance therapy claim the appliances are painful and once the spur is removed, the tongue will revert to its old habits.¹

There is a surprising lack of good research available on the efficacy of treatment or the success of one technique over another.

A number of studies conducted to show short-term swallow correction and long-term retention have been invalidated, mainly by small samples,⁹ lack of control groups,^{20,25,30} and improper design of the studies.

Cooper⁴ has found effective short-term correction of tongue thrust for both appliance and exercise therapy. All experimental subjects could demonstrate a proper *on command* swallow, regardless of therapy mode, while no one in the maturational control group could. Number of subjects and ages were not included.

The study was not designed to test for length of retention. It is apparently possible for patients to perform correct swallows for the therapist,¹ while swallowing with tongue thrust the rest of the time; long-term retention of *corrected* swallows and related dental benefits must still be determined.

Additional problems arise in providing exercise therapy because of the delicate therapist-patient interaction needed. Problems therapists encounter include patients' lack of motivation, boredom, busy lifestyles and forgetfulness.^{1,35}

Extremely significant to the argument against the necessity for corrective treatment is the fact that research supports the theory that tongue function follows form. When orthodontic procedures alter the oral environment, quite often the tongue will adapt to these changes.^{3,24,31} The tongue and oral muscles have a remarkable ability to adapt to the local environment, as demonstrated by patients who have had surgical jaw repositioning.¹⁸

Tongue thrust has also been implicated as a factor in relapse following orthodontic treatment by opponents of therapy. The actual causes of relapse have yet to be determined.

Several authors writing on orthodontic relapse cite other possible causes including constant changes in the dentition throughout life, improper orthodontic treatment methods, insufficient retention period, unfavorable growth changes and inherent morphogenetic patterns which limit the extent of dental movement possible.²¹ The research previously cited indicates that resting lip and tongue postures may be influential to some degree in orthodontic relapse.

Summary: A review of available research on the value of tongue thrust therapy yielded the following salient points:

- There is no evidence to demonstrate that tongue thrust influences dental arch form or contributes to orthodontic relapse.
- Although there is some evidence to demonstrate that therapy may induce short term changes in swallowing patterns, there is no evidence that these changes have any beneficial effect on occlusal relationships.
- A body of evidence is developing which indicates that resting lip and tongue postures may be extremely important factors in determining dental arch form and influencing orthodontic relapse.
- Therefore, the attention presently being focused on therapy is almost certainly unwarranted.

It is instructive to note that the American Speech and Hearing Association, The American Association of Dental Schools, and the American Association of Orthodontists continue to endorse an earlier statement that the clinical usefulness of tongue thrust therapy is not proven.¹⁵

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