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## **ORTHODONTIC PERSPECTIVES ON OROFACIAL MYOFUNCTIONAL THERAPY**

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Like most other specialty areas, orthodontics has a rich professional literature containing disagreement and debate on a number of topics. One area of controversy since the inception of orthodontics in the late 1800s is the relationship between tongue functions and the development of malocclusions.

Many orthodontists continue to believe strongly that tongue functions cause certain types of malocclusions and lead to altered patterns of facial development. Others implicate the tongue as the cause of negative tooth position changes (or "relapse") sometimes seen following the completion of orthodontic treatment. On the other hand, many orthodontists express no concern that tongue functions contribute importantly to the problems seen in their clinical practices.

Orofacial myofunctional therapy is a treatment regimen that developed in response to the expressed concerns of orthodontists. For the most part, orthodontic problems created the need for the specialty area of orofacial myofunctional therapy (Straub, 1951). The cyclic controversy in orthodontics about the role of the tongue in contributing to orthodontic problems reached a peak in the 1970s. Following the adoption of a Position Statement on tongue thrust by the American Speech and Hearing Association, (ASHA), the House of Delegates of the American Association of Orthodontists adopted ASHA's policy statement in 1977.

It is somewhat ironic that orthodontics, which previously encouraged the development of orofacial myofunctional therapy, adopted a position that doubted the efficacy of treatment. Despite the Position Statement, many orthodontists continued to refer patients considered to have myofunctionally related problems. Referrals have continued—where the stability of treatment is questionable with regard to a variety of oral functional or postural variations of concern to the orthodontist.

The purpose of this article is to consider some selected aspects of current orthodontic theory and practice that relate to tongue thrusting and to examine the need for orofacial myofunctional therapy for a myriad of orofacial and pharyngeal variations. An attempt will be made to characterize current thinking and offer recommendations for clinical research in selected areas.

### **A BROADER VIEW OF TONGUE THRUST**

Use of the term "tongue thrust" should probably be prefaced by an adjective. More orthodontists now realize that the observation of a tongue thrust or a tongue thrust swallow pattern represents a single observation of a

behavior in an intertwined environment of anatomical and physiological relationships. That is, a tongue thrust swallow or a lips-apart resting position, for example, may occur for a single reason or combination of reasons. The challenge for the clinician is to identify the various factors that combine to produce the observation identified as a variation.

Tongue thrusting during swallowing may be a necessary adaptation to maintain the size of the airway for successful passage of food to the esophagus. A small oral isthmus due to enlarged faucial tonsils may obligate the tongue to move forward as the bolus of food exits the oral cavity during the process of swallowing. The squirting forward of the tongue during such an adaptation may best be termed an "obligatory tongue thrust swallow," or perhaps an "adaptive tongue thrust swallow." The addition of an adjective in front of tongue thrust identifies the basis for which the observation was made. Until recently, few clinicians strived to describe the etiology and unique properties of each tongue thrust seen.

Some tongue thrusting, during speech or swallowing, is observed in the absence of any morphological delimiting factors. When tongue thrust is present in this manner and shows no effect on the dentition or the resting posture of the tongue, there may be no indications to treat the thrusting. One exception is when treatment for other problems is underway. In such instances, the tongue thrust should also be eliminated. Another exception to this is the presence of a cosmetically unattractive situation resulting in concern to patient or family. In such a case, the term "cosmetic tongue thrust" appropriately describes this situation. Treatment of a cosmetic problem is a worthy goal of therapy but is a concept that has been largely ignored until recently (see the article by Case in this issue). Many cosmetically based problems have been treated in the past, but justified unnecessarily by the nebulous appellation of an "orofacial muscle imbalance," a term to be discussed later in this article.

There are many other adjectives that might appropriately be used to describe the occurrence of a tongue thrust pattern more fully in a given patient. Terms such as "transitional," "retained" (following surgery to clear the airway) or "neurological tongue thrust" may best describe a selected case. Whatever the reason, it is recommended that "tongue thrust" be qualified according to examination findings in areas adjacent to the tongue.

Proffit (1986) points out that "tongue thrust" is something of a misnomer, since it implies that the tongue is thrust forward quite forcefully. In fact, laboratory research by Proffit (1972) using intraoral transducers has revealed that tongue thrusters do not have more tongue force against the teeth than non-thrusters who keep the tongue tip back.

There is no doubt that not all tongue thrusting, during speech or swallowing, demands treatment. Ample evidence exists to show that not all tongue thrusting patients develop dental malalignment (Subtelny, 1965; Proffit, 1972). One of the most persistently controversial areas regarding orofacial myofunctional therapy is the rationale for treatment of tongue thrusting where there are no occlusal problems. Many claim that orofacial myofunctional therapy is truly a preventive service (Snow, 1986). The difficulty here is in identifying those patients who will develop a malocclusion or facial form variation if the tongue thrusting is left unchecked. Currently, no clear criteria are available to separate adequately those patients who may develop a malocclusion from those that will not as a result of tongue thrusting. The challenge to the clinician is to be able to predict which patients truly need treatment according to some strict clinical criteria. Until such criteria are developed, there are no compelling reasons to treat all tongue thrusts just because they are there. A reasonable stance at present is that if speech or resting posture are being treated, an accompanying tongue thrust should also be corrected. This enhances the development of a more harmonious environment for dental eruption.

From a preventive standpoint, the individual who exhibits a tongue thrust pattern and an anterior resting posture of the tongue would be more likely to develop a malocclusion than one who tongue thrusts without a forward tongue posture. Working to reposition the tongue at rest and correct the tongue thrust are worthy goals of treatment for younger patients as a means of encouraging normal dental developmental processes. These concepts are discussed and supported in the article by Pierce in this issue.

The concept of prevention in orofacial myofunctional therapy should come into its own following research that compares tongue thrusters who are separated into groups according to the type of tongue thrust, and whether or not there is an anterior resting posture of the tongue that accompanies the tongue thrust. The addition of a forward resting position of the tongue should create many morphological conditions that can potentially lead to dental occlusal problems. The anatomical, physiological, dental and growth characteristics of such patients need to be catalogued, especially in comparison with similar patients with tongue thrust who do not have a forward resting tongue position. Such a study should represent the definitive longitudinal documentation of tongue thrusting and its interactions with the dentition. Unfortunately, this study has not yet been conducted. The approach used in the research reported by Andrianopoulos and Hanson (1987) is a bold step in this direction.

## **TONGUE PRESSURE AND THE DENTITION**

There have been several theories proposed to explain why teeth and jaws assume the positions they do. Many theories have something to do with the oral form and function interactions. Proffit (1973, 1978, 1986) has reviewed past and current theories and discusses them in a logical and persuasive manner.

The current view in orthodontics is that the resting posture of the tongue has a great deal more to do with the position of the teeth and jaws than the functions of the tongue in swallowing and speaking. This is also the prevailing view in orofacial myofunctional therapy. That does not imply, however, that the thrusting tongue does not play a role in maintaining or encouraging a faulty developing dental eruption pattern that is primarily influenced by the resting tongue.

Resting pressure of the tongue, lips and cheeks exert forces over a relatively long period of time, hours per day. The pressures against the dentition in speaking and swallowing are of short duration and light-to-moderate magnitude (Proffit, 1986). Thus, the most probable relationship of the tongue to a malocclusion such as an anterior open bite is modification of the eruptive schedule of the anterior teeth (Steedle and Proffit, 1985). The presence of a forward tongue between the anterior teeth at rest impedes their normal eruption. At the same time, with the mandible hinged slightly open, the posterior teeth are more free to supraerupt. The result is the development of an anterior open bite in the mixed dentition period, created by a differential eruption sequence of the teeth and caused by a forward resting posture of the tongue (Bateman and Mason, 1984; Proffit, 1986). The added presence of a tongue thrust swallow pattern may enhance the eruption variations, or could serve to maintain the open bite that has occurred. It is well known that a tongue thrust swallow pattern is an expected accompaniment of some open bite conditions (Hanson and Cohen, 1973; Mason and Proffit, 1974). In addition, mastication irregularities may be noted.

## **EQUILIBRIUM THEORY**

For the dentition to be maintained in a stable position, either naturally or following orthodontic treatment, it is reasonable to assume that some sort of equilibrium would be involved to facilitate stability of the dental arch. Historically, most orthodontists have assumed that the factors contributing to an equilibrium were muscular. The focus of interest has been pressures exerted against the teeth in the horizontal dimension. On one side are the muscles of the tongue. On the other, the muscles of facial expression and mastication were presumed to "balance" with the tongue where there is a normal occlusion. In the presence of a tongue thrust or a malocclusion, many clinicians have contended that an "imbalance" of muscles is involved. This is a rather simplistic and incomplete perspective that has yielded fragmentary information (see also the first article by Hanson).

The current view of those factors that may influence an equilibrium on the dentition are discussed and summarized by Proffit (1978, 1986). Table 1 (p. 51) indicates why the current focus of research interest in

developing an equilibrium equation is on the long-acting forces against the dentition. Furthermore, forces applied vertically against the teeth seem to have more influence in contributing to tooth position than horizontal forces. More research is obviously needed to elucidate fully the factors comprising an equilibrium and the scientific contributions of each.

TABLE 1

**Possible Equilibrium Influences:  
Magnitude and Duration of Force Against  
the Teeth During Function\* +**

Possible Equilibrium Influence	Force	
	Magnitude	Duration
Tooth contacts		
Mastication	Very heavy	Very short
Swallowing	Light	Very short
Soft tissue pressure of lip, cheek, and tongue		
Swallowing	Moderate	Short
Speaking	Light	Very short
Resting	Very light	Long
External pressures		
Habits	Moderate	Variable
Orthodontics	Moderate	Variable
Intrinsic pressures		
Periodontal fibers	Light	Long
Gingival fibers	Variable	Long

\* The long acting forces are the current focus of research as being the most important contributors to an equilibrium.

+ Reprinted with permission from Proffit, 1986.

Until the many factors contributing to a dental equilibrium can be properly identified and catalogued, it seems inappropriate to describe clinical variations in the dentition as resulting from an orofacial muscle imbalance. In the search for an equilibrium, no balance of opposing muscles has been clearly documented in normal individuals. Accordingly, it does not seem prudent to generate a therapeutic goal of balancing muscles where no normal "balance" can be demonstrated. How would a clinician prove that muscle balance has been achieved? If the dentition is repositioned into a normal relationship and remains stable, the description of such events should focus on tooth position. Unfortunately, no balance of muscles can be presumed by observing a normal dentition. This should not detract, however, from the desirable clinical goal for the orofacial muscles to function normally with the developing dental arches.

At present, the term "orofacial muscle imbalance" has no place on an orthodontic problem list and should be avoided in clinical use (see also Hanson's first article in this issue). Avoiding the use of misleading terminology

does not imply a change in the clinical activities of the practitioner. In no way is the value of orofacial myofunctional therapy impugned by avoiding descriptive terms that have no measurable value. In fact, treatment objectives should be enhanced by more accurate clinical descriptions.

Although the term "tongue thrust swallow" may be a misnomer to some in the sense of muscular force, it does imply a directional variation of tongue activity in swallowing. As such, it seems descriptive of a behavior without necessarily implying an abnormal event in all who exhibit the behavior.

There are several other terms to describe a tongue thrust swallow that inaccurately imply that an abnormality is present. Terms such as "deviate swallow," "deviant swallow," "perverted swallow" and "infantile swallow" should be avoided due to the inaccurate and faulty implications inherent in their use. As Proffit points out (1986), only brain-damaged children retain a truly infantile swallow in which the posterior part of the tongue has little or no role. If food does not enter the trachea and passes without incident into the esophagus during a swallow, the swallow can be considered normal from a physiological standpoint. There is nothing perverted or deviate about a physiologically normal swallow!

The implication that teeth are pushed out of normal occlusion into a new position of malocclusion by a tongue thrust swallow is an association that need not be made in modern clinical activity. In fact, current data (Proffit, 1986) indicate that a tongue thrust swallow does not push teeth out of alignment. In instances in which the tongue thrust contributes to or maintains a dental eruptive or positional problem, it is currently impossible to demonstrate with instrumentation that the tongue thrust caused the problem.

The modern view of orofacial myofunctional therapy is that its goal is not to alter tooth position. That tooth changes occur on a routine basis in some practices is a positive event. In no way does it restrict the practice of orofacial myofunctional therapy to de-emphasize the possible causal relationship between a tongue thrust swallow and tooth position. By working on the tongue thrust or rest posture of tongue and lips, the oral environment becomes more normal. It should follow that more normal patterns of dental development and facial form are possible in an environment in which postures and functions are normal. Eliminating a tongue thrust, with concurrent positive changes in the dental development or alignment, need not imply that the tongue caused the problems seen prior to treatment, nor that elimination of the tongue thrust is for purposes of dental change. The orofacial myologist's results in providing a more harmonious or normal oral environment can speak for themselves, without the orofacial myologist being accused of practicing dentistry without a license.

The main point is: There are many reasons to justify orofacial myofunctional therapy besides a presumed deleterious effect of a tongue thrust swallow on the dentition. A focus on the broader concepts of posturing of lips and tongue, or normalizing the swallow pattern for a variety of associated developmental processes of the

dentition (especially vertical eruption sequencing), is a modern view of orofacial myofunctional therapy that should be received with enthusiasm among the orthodontic community. Such a view is compatible with current orthodontic theory about the factors contributing to a dental equilibrium, which can be modified by muscle exercise and repositioning of muscles in repose (see also the first article in this issue by Hanson).

### **LIP AND TONGUE POSTURES**

The modern orofacial myologist realizes that there is a significant difference between tongue function and tongue and lip posturing. In the past, probably too much emphasis was placed on therapy for a tongue thrust swallow, often at the expense of variations in tongue and lip postures. Currently, posturing is a major focus of orofacial myofunctional therapy. This in no way detracts from the value of treatment for a tongue thrust swallow in selected cases.

The posture of the tongue, especially forward resting, has been linked etiologically to the development of an open bite malocclusion in the mixed dentition phase (Proffit, 1986). This event is especially encouraging when the lateral surfaces of the tongue are not resting over the occlusal portions of the lower posterior teeth. The posterior teeth supraerupt as the anterior teeth are impeded in eruption.

Tongue posture can also explain, in part, the development of a Class II malocclusion in some patients. If a forward tongue position is characterized by overlap of the tongue with the occlusal surfaces of all lower teeth, a situation could result in which the upper teeth are more free to erupt, whereas the lower teeth (including the posteriors) are impeded from erupting. Since teeth tend to erupt not only vertically but also in a mesial (forward) direction, the effect of a slight open mouth posture, with tongue forward and lateral margins spread over the posterior lower teeth, is the eventual creation of a Class II malocclusion. This is related to the added, unimpeded stimulation of the upper teeth to supraerupt in a downward and forward direction (Bateman and Mason, 1984). Hence, a variation in resting tongue posture can create dental eruptive changes in the vertical plane of space that results in a disparity of tooth and jaw position in the horizontal plane (Lowe et al, 1985). This has been demonstrated in obstructive sleep apnea patients by Lowe et al (1987). A theoretical explanation of tooth eruption control has been proposed by Steedle and Proffit (1985).

The orofacial myologist deserves a great deal of credit for the increased focus in the past few years on treatment of lip posture variations. Lip incompetence, or the inability of the lips to rest comfortably together without some muscle strain, is a common finding in children and in some adults who have dentofacial problems. In children, lip incompetence is most often related to the fact that the lips have not fully matured in their vertical growth (Vig and Cohen, 1979). Lip growth continues until around age 17 years. As vertical lip growth progresses, the separation between the lips decreases (Vig and Cohen, 1979).

Ingervall and Eliasson (1982) demonstrated in an electro-myographic study of the lips that orofacial myofunctional therapy for lip incompetence has a positive effect on lip morphology. That is, upper and lower lip length are increased and the interlabial gap is reduced. In the control group, who had lip incompetence but received no therapy, the interlabial gap increased over the period of a year. The lip training provided for the experimental group did not affect tooth position over the one-year study period. These data are compatible with a separate study reported in 1975 by Barber and Bonus. Both studies show, using accepted standards of evidence and control groups, that lip seal and lip morphology can be modified by orofacial myofunctional therapy.

There is a vast untapped clinical population that could benefit from therapy to reduce lip incompetence. The surgical population that undergoes maxillary impaction surgery for vertical maxillary excess is an example. Many of these patients had lip incompetence before surgery and retain flaccid, incompetent lips after surgery. Lip exercises were found to be effective in the adaptation process following surgery in a pilot study reported by Grandstaff and Mason (1983). Orofacial myofunctional therapy for increasing the muscle tone of the lips has been demonstrated to result in increases in lip length.

Thüer and Ingervall (1986) studied lip strength and resting lip pressures on the teeth in 84 children. Their findings suggest that the pressure from the lips on the teeth is a result of incisor position; that is, lip pressures seem to adapt to facial morphology. There was no correlation found between lip strength and lip pressure. A recent study by Hellsing and L'Estrange (1987) provides new perspectives about lip pressure, head posture and the mode of breathing.

The effects of orofacial myofunctional procedures on lip posture, lip tonicity, the relative amount of eversion of the lips and whatever contributions might exist regarding tooth position remain inadequately explored at present. This is an especially rich area for research in unfolding the natural history of influences on the dentition by muscles at rest and in function.

### **ORTHODONTIC RELAPSE**

The term "relapse" as applied to post-orthodontic active treatment has taken on a very bad name. Much of the fault with the negative connotation associated with "relapse" lies with the orthodontic community, which, until recently, has not demonstrated a good understanding of those factors that lead to relapse. Too often, orthodontists have blamed the tongue when changes in the dentition following orthodontic treatment have occurred that are not understood. The tongue has served as the scapegoat when other plausible reasons for relapse are not recognized.

The possible relationships between orthodontic relapse and the tongue have gotten out of hand. To some orthodontists and orofacial myologists, a word-association test using the stimulus word "relapse" would quickly elicit the response "tongue." Such a restricted view of relapse should be changed. An exception to this restricted view

is a careful and significant study of the relationship between tongue thrust and orthodontic relapse (Andrianopoulos and Hanson, 1987) which is summarized in detail by Hanson in this issue.

The key to understanding the various factors that contribute to orthodontic relapse is appreciation of the concept of *retention*. Retention is a phase of orthodontic treatment that begins when the active orthodontic appliances are removed. As Proffit (1986) points out: "Orthodontic control of tooth position and occlusal relationships must be withdrawn gradually, not abruptly, if excellent long-term results are to be obtained. The type of retention should be included in the original treatment plan" (p. 455). The point is that orthodontists should not consider treatment to be over when the active appliances are removed; retention is a continuation of treatment.

There are three basic reasons why all orthodontic treatment should be followed by some sort of retention: (1) Time is required for reorganization of the gingival and periodontal tissues that were moved during active orthodontic treatment; (2) Additional growth following orthodontics may significantly alter teeth and jaw positions; and (3) The teeth may be relocated by orthodontics in an unstable position so that the soft tissue pressures constantly encourage a relapse tendency (Proffit, 1986).

Most orthodontic patients receive retention for the first two reasons. If late growth occurs, for example, orofacial myofunctional therapy may be doomed to failure as a means of responding to vertical and horizontal changes in the jaws and teeth.

It is unfortunate that too many patients have been referred for orofacial myofunctional therapy because the orthodontist thought reason (3) was involved without recognizing reason (1) and (2). Often, the type of retention (or lack of) has created a problem that the orofacial myologists should not be asked to resolve. Somehow, orofacial myologists need to learn to say "no" for selected patients sent inappropriately for treatment. By the same token, some orthodontists need to learn to identify more accurately the problems associated with orthodontic relapse.

The third reason for relapse, or need for retention merits participation of the orofacial myologist. Therapy directed toward normalizing lip and tongue postures may be a very important part of the retention process for some patients. The alternatives are the acceptance of relapse, or some sort of permanent retention.

The period of retention does, of necessity, differ according to the orthodontic problem and soft tissue situation. An example is the condition of a Class II Division I malocclusion characterized by maxillary dental protrusion. Assuming that teeth were extracted to facilitate retracting the upper anterior teeth, retention of this situation depends in large part on the resting relationship of lips and upper incisors. If the dentition is set up orthodontically so that, at rest, there is lip closure and the lower lip rests against at least 2 mm of the facial surface of the upper incisors, relapse forward of the upper teeth will not occur. This would be expected to be true whether or not that patient had a retained tongue thrust. The resting relationship of lower lip with upper incisors is an

application of growth data presented by Vig and Cohen (1979).

If orthodontic work has been completed in a Class II Division 1 patient and there is lip incompetence, it follows logically that some sort of orthodontic retention would be required until such time that lip competence can be produced, either with growth or through orofacial myofunctional treatment.

The typical completed orthodontic patient is about 13 years of age. Vig and Cohen's (1979) data on lip growth show that lip separation is still evident in many children at this stage of development. Some separation, or lip incompetence, may continue until age 17 years or so. It follows from this that the completed orthodontic case that does not demonstrate a lips-together resting posture and who had some orthodontic retraction of anterior teeth is at risk for relapse by forward movement of the upper incisors unless a long period of retention is involved. The only reasonable alternative to extended retainer wear on a full-time basis is orofacial myofunctional therapy to produce lip competence. The studies by Ingervall and Eliasson (1982) and Barber and Bonus (1975) should encourage the use of orofacial myofunctional therapy for such patients.

Generally, most orthodontists need to be challenged to recognize potential sources of relapse and build in adjustments for possible relapse into their treatment plans. Overcorrection of tooth position in selected cases is a time-honored method of anticipating and dealing with relapse. Recognition of the relapse tendency with rotated teeth corrected without sulcus slice (supracrestal circumferential incision of gingival tissues around the tooth); expansion of canines during treatment; or unfavorable growth are but a few examples of typical causes of relapse (see chapters 17 and 18 in Proffit, 1986).

The nontdentist orofacial myologist should not be responsible for determining the causes of relapse. In fact, orofacial myologists should resist the temptation to assume why relapse is occurring. Without adequate radiographic records, dental casts and knowledge of biomechanics and the step-by-step treatment history of the case, the orofacial myologist is in no position to conclude "I told you so" when relapse occurs without orofacial myofunctional intervention.

Few orthodontists would appreciate having a nontdentist conclude that a patient relapsed because of unrecognized tongue problems. Even though this may be the true cause of orthodontic relapse in many cases, there are more relapse patients incorrectly linked by orthodontists and orofacial myologists to tongue thrust. The main point is that the reasons for relapse are many, and the identification of factors that can produce relapse begins in the initial treatment planning process and involves evaluation of patient and records along the way.

### **ASPIRATIONS FOR THE FUTURE**

There is a great need in orthodontics and orofacial myofunctional therapy to depolarize thinking in a number of areas. More frequent and meaningful communications and interactions are indicated between orthodontists and orofacial myologists. Many basic questions need to be

resolved regarding muscle pressures at rest and during function and the stability of tooth position.

Orthodontic training programs could be the focus of significant research into myofunctionally related problems and questions. A rich supply of graduate thesis materials in orthodontics is available for mutual collaboration and clinical research. To date, most university training programs in orthodontics have minimal experience with orofacial myofunctional problems and information. It is from such environments that the skeptics of orofacial myofunctional therapy are largely derived. This situation does not lead to a full understanding of the value or limitations of orofacial myofunctional treatments nor the indications to treat or not treat.

Orthodontic training programs compile excellent records on each patient. For those patients who exhibit a dental relapse tendency that is thought to be associated with soft tissue problems, why not turn the patient over to a certified orofacial myologist for six months? Why not have an orofacial myologist on staff on a part-time basis to conduct clinical research? The careful selection of qualified and IAOM certified individuals would be key to the success of such endeavors (Barrett, 1986). Graduate student participation in the resolution of relapse using other than fixed or removable retainers should be encouraged.

What about the orthognathic surgery patient who had lip incompetence before surgery and retains lip incompetence after maxillary impaction or some other surgical procedure? What contraindications are there for orofacial myofunctional therapy to develop increased lip tonicity and lip competence? If the patient is desirous of achieving lip competency as a motivation for agreeing to have orthognathic surgery, and lip competence is not produced by surgery and does not occur spontaneously after scar release about six months postoperatively, it would seem incumbent on the clinician to try any reasonable way to achieve the desired therapeutic result.

Another area where communication between orthodontists and orofacial myologists can be improved is the careful consideration of terminology used to describe clinical observations. It seems obvious that many orthodontists have been unimpressed by orofacial myology because of what is said, in the absence of actually observing what can be accomplished clinically. Both groups should share a responsibility in this regard, since many of the catchwords that are falling into disuse and carry emotional connotations were originally coined by orthodontists. Clarification of vocabulary and thoroughness of examination reporting should help alleviate some of the polarization that has occurred between some orthodontists and orofacial myologists. Hanson's comments and suggestions in the first article in this issue are especially relevant to this situation.

Orthodontic training programs should also be challenged and encouraged to direct research attention to studying the morphology of patients with recognized tongue and lip functional and postural variations, and the degree to which therapeutic intervention with muscle and postural retraining can contribute to stability of the oral-facial-pharyngeal areas.

The orofacial myologist needs to keep excellent records and strive to select patients and treatment modes on an individual basis. Improved communication with orthodontic referral sources and increased knowledge of the details of treatment and the overall orthodontic plan should enhance treatment progress. It is also imperative that the orofacial myologist participate in continuing education, as encouraged in the articles by Hanson and Zimmerman. Learning to say "no" to inappropriate patient referrals can follow from broadened clinical perspectives achieved in continuing education. On the other hand, occasional "experts" are produced after taking one or two short courses in orofacial myology. Orthodontists need to determine the qualifications, experience level and certification status of potential referral sources (Barrett, 1986).

Orofacial myofunctional therapy should not be advocated out of fear that something terrible is going to happen if no treatment is rendered. The cycle of reinforcement for this impression that all tongue thrusting needs to be treated comes, perhaps, from the observation of relapse in some patients. As already mentioned, the nonorthodontist should resist the temptation to get caught up in this cycle of thinking. A positive step away from the assumption that preventive treatment is always worthwhile would be clinical research that clearly identifies those patients at risk and in definite need of treatment. At present, diagnostic criteria for therapy selection are, at best, sketchy. In the meantime, the indications for treatment of the younger child, as presented by Pierce in this issue, are recommended as logical and persuasive.

The heightened recent interest by orthodontists about airway interference problems should motivate increased inter-disciplinary cooperation in diagnosis and treatment planning (Berkinshaw et al, 1987). Dr. Riski's emphasis on documenting the breathing capabilities of suspected airway interference patients was well stated in this issue. There is certainly a place for the orofacial myologists on the team of individuals evaluating and treating patients with airway interference characteristics. Teaching the patient to manage nasal hygiene more effectively, treating the lip and tongue posture variations in the so-called "mouth breather" and attempting a variety of nonsurgical modifications of breathing patterning is an appropriate area for the orofacial myologist.

Orthodontists, orofacial myologists and speech pathologists share a common interest in cosmesis that has not been exploited extensively in the mutual treatment of patients. Many patients seek care for a variety of problems with their teeth, jaws or speech out of a cosmetically related concern. Both Case and Zimmerman provide information and supporting data for a variety of these considerations in this journal.

Although it is natural for dental examiners to focus on the functional relationships of teeth and jaws, the cosmetic component looms very important to many patients and should be addressed. Correction of the distracting lips, or achieving lip competence, a more posterior resting tongue posture or a more alert or pleasing appearance are goals that any clinician would welcome for

their patients. The adaptation of patient to morphology is a process that involves coordination of specialties, depending on expertise. Orofacial myofunctional and speech treatments for such problems are appropriate inclusions in an overall treatment plan for an orthodontic patient.

One of the special skills that an effective orofacial myologist must have is the ability to motivate patients. Motivation is a necessary inclusion in orofacial myofunctional therapies, since many exercises are repetitive and are practiced in the home. The materials in the article by Zimmerman should expand the horizons of the orthodontist to the motivational principles and procedures some orofacial myologists and speech pathologists employ with mutual patients. Some of the "compliance" problems in orthodontics, which basically represent patient motivation problems, can be solved effectively if a

team approach is utilized. A willingness to combine appropriate speech and orofacial myofunctional and orthodontic treatments and to communicate about mutual motivational problems with such patients is needed.

## SUMMARY

The challenges presented in this article, for the orthodontist who has largely ignored orofacial myofunctional therapy and for the orofacial myologist who may have been more enthusiastic about claims than evidence deserves, are intended to encourage understanding and improve communication between professionals. Efforts to consider orofacial myofunctional variations in a broader perspective should result in added recognition of orofacial myofunctional therapy, while also improving patient care.

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