Clinical Perspective

The Importance of Respiratory Activity in Myofunctional Therapy

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The Importance of Respiratory Activity in Myofunctional Therapy

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For many years, the speech-language pathologist's work related to the orofacial myology was basically restricted to the swallowing function. Currently, we are becoming more aware that two other functions, respiration and mastication, are extremely important for the growth and development of the Stomatognathic System. In this paper, we will limit ourselves only to breathing, specifically mouth breathing. In our speech-language-hearing clinic, we have been treating a great variety of patients, referred by orthodontists, with a diagnosis of tongue thrust. In general, this condition appears to be highly correlated with mouthbreathing. Actually, most patients present with a combination of respiration (oral and nasal). One question arises, why this enormous amount of oral breathers?

The reasons are many, and some of them are:

- organic problems, like: rhinitis, sinusitis, hypertrophy of pharyngeal or palatine tonsils
- hypotonicity of the mandibular elevator muscles, because of pasty food resulting in open mouth with incorrectly positioned tongue
- no discernible reason for poor posture: the patient (child or adult) simply sits with his mouth open, sometimes even without being aware of it, with no mechanical or functional barriers to nasal respiration.

In general, the mouth breather may present a variety of symptoms, characteristic of the condition known throughout Brazil as Oral Breather Syndrome. These symptoms are:

I. CRANIOFACIAL AND CRANIODENTAL DISORDERS

- predominantly vertical craniofacial growth (Fig 1)
- steep gonial angle-elongation of the face (Fig 1)

- high, narrow palate
- narrower facial dimension
- maxillary hypodevelopment
- narrower or inclined nostrils
- microrrhina with less space in nasal cavity (Fig 2)
- deviation of the nasal Septum
- class II, overjet, crossbite or openbite (Fig 2)
- upper incisal protrusion (Fig 2)

II. DISORDERS OF PHONOARTICULATORY ORGANS

- hypotrophy, hypotonia, and hypofunction of the mandibular muscles (Fig 2,3 and 4)
- tonus changes with hypofunction of lips and cheeks (Fig 2,3 and 4)
- Short or retracted upper lip, and lower lip everted or interposed between teeth
- dry, chapped, or bruised lips with changes in color
- hypertrophy of gums with changes in color and frequent bleeding
- tongue-forward posture or dorsum elevation to regulate air flow (Fig 3)
- oral proprioception fairly altered

III. BODY DISORDERS

- thoracic deformities
- distended or flaccid abdominal muscles (Fig 6 and 7)
- Shadows around the eyes (Fig 7) with ocular hypertelorism or hypotelorism, weary-eyed
- ill-positioned head in relation to the neck causing changes in the spinal column as an attempt to compensate for this ill-positioning (Fig 6,7,8 and 9)
- Shoulders forward compressing the thorax (Fig 6,7,8 and 9)
- alteration of the tympanic membranes, diminished hearing - visible facial asymmetry, mainly in the

buccinator muscle (Fig 7)

- very lean individual, sometimes obese and lacking normal color

IV. DISORDERS OF THE ORAL FUNCTIONS

- ineffective chewing causing digestive problems and choking because of incoordination between breathing and mastication
- tongue thrust with noise, anterior protrusion of tongue, exaggerated orbicularis oris contraction, compensatory head movements, over contraction of the mentalis muscle
- imprecise and inaccurate speech, with excess of saliva, without full resonance because of frequent otitis with high incidence of anterior or lateral lisping
- denasal, nasal or hoarse voice

V. OTHER POSSIBLE DISORDERS

- frequent sinusitis, recurrent otitis - pharyngeal and palatine tonsils growth (adenoids and tonsils) - halitosis and diminished perception of taste and smell
- greater incidence of caries - sleep alterations, snoring, nocturnal drooling, insomnia, vague facial expression
- appetite reduction, gastric alterations, constant thirst, choking, pallor, loss of appetite, loss of weight with less physical development or obesity
- less physical activity, global incoordination with frequent weariness
- agitation, anxiety, impatience, impulsivity, despondency
- difficulty with attention and concentration causing school problems

It is important to point out that all symptoms mentioned above will not necessarily be present at the diagnosis of the oral breather syndrome.

Why is the respiratory matter so important?

Babies do not breathe through the mouth because their oral cavity is small and totally occupied by the tongue. When a baby is suffering from a cold, he becomes very annoyed, for mouth breathing is almost impossible for him. As the babies grow up, they learn that the mouth can be used as a respiratory channel when nasal breathing is impaired.

When we breathe through the nose, with proper functioning of chewing, swallowing, and resting postures of the tongue and lips, the muscle actions stimulate the bones correctly for optimal facial growth and development.

If mouth breathing is present, that stimulation may occur improperly, resulting in a disharmonious growth and development.

Genetic conditions must be considered. If the individual has a tendency toward a class III malocclusion,

mouth breathing, a low tongue resting position, and an open mouth resting posture will certainly aggravate the class III malocclusion. Orthodontics and oral myofunctional therapy, can redirect growth and minimize the possibility of prognathism, by correcting the breathing patterns and the oral muscle functions and postures.

Orofacial myofunctional therapy with young children (4 to 5 years of age), who are mouth breathers without unfavorable genetic heritage and without organic problems impairing nasal breathing, is highly successful because once good lip and tongue posture, have been established and habituated, a more harmonious growth is facilitated.

With allergic patients, the oral myofunctional therapy goal is to give the patient better nasal breathing conditions outside crisis. If the individual can be trained to use nose breathing whenever possible, episodes of allergy crises are diminished, since the air flowing through the nose is submitted to cleansing, heating and humidifying processes.

However, we must emphasize to the family that this therapy will not cure the allergy; it will only improve breathing conditions of the patient outside crisis.

Therapy with the oral breather is not limited to the oral myofunctional therapy. On the contrary, usually the therapist works together with an otorhinolaryngologist and an orthodontist in a team approach.

It will always be necessary to ask for an otorhinolaryngologic evaluation to determine whether or not the mouth breathing is caused by organic disorders. If the disorder is organic, it will frequently be best to delay treatment. It might be necessary to proceed at first with medical or surgical treatments, before myofunctional therapy is began, in order to install or reinstall nasal breathing.

With regard to the orthodontist, as mentioned above, mouth breathing can cause alterations in occlusion and/or facial growth.

We must not forget that there are also adult mouth breathers. These are two types:

1. those who became mouth breathers as adults;
2. those who were mouth-breathers since childhood but only sought treatment as adults.

The first type present muscle but not bone disorders, since the facial growth was already completed when they became oral breathers. 90% of the face grows until the age of 13/14 years and the remaining 10% until the age of 20 years. In these cases, because of muscle alterations only, the changes are swifter and the therapeutic success is higher. As for the second type, attention must be directed to the choice of appliances and also the lack of a 100% success in treatment, since the craniofacial growth ended and the muscles will have accommodated over the bones.

Before beginning the myofunctional therapy, the

patient must be aware that the therapy itself will be limited to muscle functions and will not be able to change occlusion and bony structures.

In relation to mouth breathers' characteristics, some associated problems can develop, such as:

- articulatory imprecision: because of tongue hypotonis, sometimes in correct articulation of phonemes is present in spontaneous speech, despite the patient being able to articulate each phoneme individually
- anterior lisp: because of tongue hypotonia associated with anterior open bite, common in mouth breathers
- lateral lisp: because of tongue hypotonia, the tongue occupies the oral cavity, interposing itself in the posterior part of the dental arches
- tongue thrust: because of poor resting posture of the tongue or as a compensation for anterior open bite or other malocclusion.
- atypical mastication: because of hypotonia of mandibular elevator muscles and poor coordination of respiration with mastication/deglutition.

In summary, we would like to alert professionals who are working with the Oral-Motor-Sensory System that "tongue thrust" swallowing may not be the "key point" but may actually result from ill functioning of breathing and even chewing.

Working accordingly with respiration as well as with chewing, swallowing can adapt by itself without the training of "tongue on papilla". Also, it is important to note that simultaneous therapy with tongue, lip, and cheek tonicity, and mandibular elevator muscles must be carried out if necessary.

In London in 1870, George Catlin wrote a book

entitled "Shut Your Mouth and Save Your Life." Today we can plagiarize him and write: "Without a shut mouth there is no nasal breathing, and without nasal breathing, because of all the alterations it causes, there is no good quality of life."

Editor's Note: The authors of this article confirm a widely-held belief in the United States regarding the origins of "tongue thrust", as depicted in this diagram from SWALLOW RIGHT by Roberta B. Pierce.

Reprinted with permission. Pierce, Roberta B., *SWALLOW RIGHT: An Exercise Program to Correct Swallowing Patterns*. (1993). Tucson, Communication Skill Builders. page 5.

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Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9