

An atypical Lingual Lesion Resulting from the Unhealthy Habit of Sucking the Lower Lip: Clinical Case Study

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Unhealthy oral habits may be involved in the etiology of a malocclusion, since they may affect development of the orofacial region. There is little information on the habit of sucking the lower lip, to which practitioners attribute less clinical consequences. However, lower lip sucking is a harmful habit which appears frequently in children, especially during situations requiring increased attention and mental concentration. In patients presenting lower lip sucking, strong contractions of the lower lip's orbicular's muscle and the mentalis muscle, associated with hypertonicity of the upper lip caused by sucking, has to be balanced by lingual thrusting during the act of deglutition. A case is presented in which failure to identify the habit of lower lip sucking led to an atypical lesion on the tongue, caused by the tongue's impaction against the orthodontic appliance prescribed to correct a malocclusion. The recognition and elimination of an unhealthy habit is of great importance in diagnosis and the establishment of a treatment plan, so that undesirable complications can be avoided.

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INTRODUCTION

Unhealthy habits related to the mouth are normal behavior that, when repeated excessively or at more vulnerable ages, become harmful. They often involve patterns of muscle contraction and can be a factor in the etiology of a malocclusion because they affect the whole orofacial region. This habit's intrinsic force can contribute to an orofacial muscular imbalance associated with alterations in bone growth, dental malposition and dentofacial deformities.¹⁻³

Unhealthy habits that have received considerable attention in the literature are non-nutritive sucking, finger or thumb sucking and immature deglutition.^{3,5} Less information exists about other habits such as lower lip sucking, to which practitioners attribute less clinical consequences. However, lower lip sucking may manifest itself at any age.^{6,8} Biting, licking or sucking of lips and cheeks is frequently accompanied by chapping, dryness, erosion, irritation of one of both lips and/or vermilion borders.^{2,9}

Another habit has a different clinical diagnosis and potentially more serious consequences. It creates a wrinkled or "golf ball" effect in the area of the symphysis, given that continually raising the lower

lip leads to excessive activity of the chin area muscles, leaving the skin looking puckered.^{9,10} It is usually associated with a labial protrusion of the maxillary incisors, and a lingual displacement of the lower incisors. There may be retraction or dehiscence of the gingival tissue covering the labial portion of the lower incisors.^{2,10}

Evaluating the degree of damage to the teeth and gums caused by an unhealthy habit, one must consider the habit's duration, frequency and intensity.^{11,12} The longevity of the exerted force is the most critical variable, given that the longer the habit lasts, the greater the impact on dentition.⁴

Analysis of neuromuscular function is critical for the diagnosis and treatment of alterations in occlusion. Clinical evaluation must include evaluation of the morphology tongue function, lips and orofacial musculature, whose activity should be integrated and synchronized.^{1,13}

Functional examination of the lips should include observation of the peribuccal muscles and the tongue's position during swallowing and language articulation.^{1,5,13} Alterations in lingual and labial functions (oral dysfunction) are generally described in terms of deviations from the norm. When the peribuccal muscles function harmoniously, they are relaxed and resting during deglutition. However, in patients with the habit of lower lip sucking, the strong contraction of the lower lip orbicularis muscle and the mentalis muscle, associated with hypertonicity in the upper lip due to the sucking action, must be counteracted by tongue thrusts during deglutition.¹³⁻¹⁶

The difference in the diagnoses of various oral dysfunctions facilitates the identification and elimination of possible etiological factors of the malocclusion.^{15,16}

In the following case, the failure to identify the habit of lower lip sucking resulted in an atypical lesion of the tongue, owing to the tongue's impaction against the orthodontic device prescribed for correction of a malocclusion.

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Figure 1: Perioral area chapped and slightly erythematous.

CLINICAL CASE STUDY

A boy, age 7 years and 11 months, was taken to the practitioner's office without reference to any specific pathology. In the medical history, the mother explained that the child was delivered via cesarean section at 38 weeks, following the prenatal diagnosis of an arachnoid cyst in the posterior fossa. He weighed 3.570 kg at birth, was breastfed for the first two months and used a pacifier until he was two and a half years old. The mother did not relate any other significant habits. The boy's neurological evolution was normal, and there was a small increase in the size of the cyst. The medical decision was to observe the cyst's evolution.

Craneofacial exploration revealed a pyknic, brachyfacial biotype with a convex profile. He had a slight facial asymmetry, nasal breathing pattern, atypical deglutition and normotonic musculature, except in the area of the chin, which had characteristics of hypertonicity. The perioral area was desquamated and slightly erythematous (Fig. 1).

Intra oral examination showed a mixed dentition phase, class III canine relationship, end on molar relationship on the right and a mesial step on the left. He had interproximal caries in molars 64, 65 and 85. A right lateral crossbite was observed from the cuspid to the primary molar. Arch width was diminished.

The craneofacial structures were measured using the McNamara analysis (lateral) and the Ricketts analysis (frontal). The treatment plan included the establishment of preventive measures and oral hygiene, filling the caries lesions and orthopedic maxillary arch



Figure 3: Redness and sores on the lip borders.



Figure 2: Extensive laceration at the back of the tongue.

expansion. For this purpose, the utilization of a quad-helix was proposed.

Likewise, prominent redness and ulcers were observed along the edges of the lips and these were more accentuated on the lower lip, leading the practitioner to suspect the presence of lower lip sucking (Fig. 3). This suspicion was confirmed during rigorous questioning of the patient; until then, the habit's relevance had not been sufficiently recognized. Thorough questioning of the mother revealed previous redness of the lower lip and ulcerous lesions at age 3 or 4, coinciding with the patient's school enrollment.

The device was removed and the practitioner prescribed the utilization of bioadhesive chlorhexidine gel, three times a day for two weeks. At the end of this period, the lesion had subsided.

Given the habit's persistence, which was confirmed during subsequent checkups (Fig. 4), the practitioner decided to end the interceptive treatment completely, indicating the need for corrective therapy once the habit had been broken.

DISCUSSION

During deglutition, a balance exists between the activation of the phasic tongue musculature and mastication, along with deactivation of the tonic facial muscles, which remain virtually stationary.^{1, 10, 14, 15}

In adult and mature deglutition, the tip of the tongue rests on the palate, at the level of the incisive papilla. There is no tongue thrusting; instead, the tongue rests progressively along the palate, moving the mass of food toward the fauces. The teeth are momentarily in con-



Figure 4: a) Lower lip sucking.



Figure 4: b) Redness in the perioral area, the result of sucking the lower lip.

tact during deglutition and the mandible is stabilized by the contraction of the elevator muscles; the facial and peribuccal muscles, which are the most active muscles in infant deglutition, are deactivated. The change to adult deglutition takes place gradually, during what has been called the transition period.^{5, 10, 11, 16}

Thus, a physiological wave of positive pressure is established during deglutition. The muscle contraction and relaxation increases the pressure that begins in the anterior portion of the tongue's dorsal surface and then flows toward the pharyngoesophageal sphincter.¹⁷ Pressure changes detected in the buccal cavity indicate the existence of negative pressures like those observed when the mouth is at rest.¹⁸ Deglutition exerts a specific force within the oral cavity and on the orofacial complex; this occurs approximately 2,000 times a day.⁵ It has been observed that children swallow 800-1200 times a day¹⁶ and that the frequency of deglutition may reach levels of 2.400 per day.^{19, 22} Swallowing saliva, consciously or unconsciously, is much more frequent than swallowing during eating.²⁰ Diverse authors report that the pressure exerted by the tongue during deglutition varies from 40 to 700 g/cm² (0.40-7.00 N/cm²).^{16, 19} Therefore it can be stated that in the act of deglutition, forces are applied that, potentially, have orthodontic action and exert a profound remodeling effect on the orofacial structures.^{11, 19}

When a child presents pathological sucking of the lower lip, this infers that the lips muscular alterations will be compensated by the projection of the tongue against the palate during the act of deglutition, due to the imbalance of intrabuccal (lingual) and extrabuccal forces.^{19, 20, 21} Thus the strong contraction of the lower lip's orbicularis muscle and the mentalis muscle, associated with hypertonicity of the upper lip due to the act of sucking, must be counteracted by increased lingual pressures.^{20, 22}

In this case, placement of a quad-helix to correct a malocclusion revealed the patient's habit of sucking his lower lip, evidenced by the tongue lesion caused by the constant and pathological impaction of the tongue against the appliance. Lower lip sucking is an unhealthy habit to which practitioners give little attention. Nonetheless, it appears frequently in children, especially in situations that require greater attention and mental concentration. In this case, the habit appears to have started at age 3, at the time the boy first went to pre-school and the mother later noted that the placement of the orthodontic device had coincided with problems at school.

It is important to conclude that, in order to establish a treatment plan, the practitioner must take into account all the data gathered

through the clinical and functional exploration of all the buccal and peribuccal structures, given that results depend on their proper evaluation and synchronization.

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