Clinical Perspective

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Clinical Exchange

Lingual Frenums and Frenectomies

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Clinical experience has taught the orofacial myologist that **sometimes** exercises can stretch restrictive lingual frenums; **sometimes** surgical intervention is necessary. The authors present two case studies to illustrate the different scenarios.

Criteria

When examining the lingual frenum, criteria that must be assessed are as follows:

1. The location of the mandibular insertion and the ventral insertion;
2. Mobility and motor function of the tongue;
3. Ability to gather food particles from the occlusal surfaces and vestibular areas;
4. Ability to form a correct linguopalatal seal; and
5. Length of the frenum.*

* A measurement of the patient's maximum opening (interincisal distance) is performed using a boley gauge or simple millimeter ruler. A second measurement is taken of the maximum interincisal distance **while the tongue is in or approximating a correct linguopalatal seal**. The 2nd measurement (lingual frenum length) should be approximately 1/2 the maximum opening (1st measurement). Example: If the maximum interincisal opening is 48mm, the desired frenum length is 24mm or greater.

CASE STUDY 1

MYOFUNCTIONAL THERAPY TO STRETCH LINGUAL FRENUM

A 10 year-old female, referred by her orthodontist, visited an orofacial myology office for an initial evaluation. Among the clinical findings was a short and restrictive lingual frenum — a situation referred to by the professionals as "borderline ankyloglossia".

History

Complaints of significant seasonal (fall/winter) upper airway congestion with increased nasal drainage were

reported as well as chronic mouth breathing since infancy. A history of frequent otitis media continued to the present. The patient had received speech therapy in Kindergarten and 1st grade for misarticulation of /s/. A prone sleep posture was used 90% of the time.

Examination

The inferior nasal turbinates were enlarged bilaterally, decreasing airway space to 1mm (L) and 2-3mm (R). Tonsils were inflamed and size 2+ bilaterally. Habitual mouth breathing patterns were present with a 6mm interlabial gap and low anterior resting posture of the tongue. Maximum resistive lip strength was poor. Extreme hyperactivity of the mentalis and facial grimace were evident as well as asymmetry of the face in which the right masseter was more prominent. Mastication was most often performed only on the right.

The maxillary labial frenum showed evidence of previous injury. The mandibular labial frenum was inserted at the mucogingival junction. Insertions of the lingual frenum were within normal, however the length measured 13mm. The patient's maximum opening was 40mm. Lingual protrusion was limited. The patient was able to point the tongue but was unable to achieve tip elevation toward the nose.

Examination of the occlusion revealed a bilateral flush terminal plane and Class II tendency with a 6mm overjet. The palate was high, vaulted and narrow.

Clinical Diagnosis

After careful examination of the patient's myofunctional status, it was evident that the patient displayed: 1) a "complete" or "full" lingual thrust pattern during deglutition with total lack of molar or TMJ stabilization, 2) a "borderline ankyloglossia" with 13mm lingual frenum length, 3) chronic oral respiratory pattern secondary to intermittent airway compromise with associated open-lip, low-tongue rest posture, and 4) unilateral pattern of mastication.

Discussion

Whether the shortened lingual frenum was a result of the lack of stretching which normally occurs during myofunctionally correct growth and development **OR** whether the short frenum played a causative role in the development of incorrect lingual function is a debate equivalent to the "the chicken vs. the egg." Regardless of the form or function etiology question, clearly, the first two

priorities in this patient's myofunctional therapy program were to stretch the lingual frenum and to establish consistent nasal breathing.

Treatment

One week following the oral myofunctional evaluation, a myofunctional therapy program was initiated. Exercises to facilitate stretching of the lingual frenum such as hold and pulls, point/press, and tongue pops were emphasized. Three weeks after initiating therapy, the lingual frenum length measured 26mm. After three months of therapy, the length measured 27mm and the habituation phase of therapy began. Other benefits of therapy documented were: increased lip strength and competency, relaxed mentalis, consistent nasal breathing and 90% correct deglutition and resting patterns.

Eighteen months after beginning myofunctional therapy, the patient experienced increased airway problems. A referral for airway evaluation, diagnosis, and treatment was made to the patient's pediatrician who prescribed an oral allergy medication and corticosteroid nasal spray. Occlusal overjet at the time was 5mm.

Three years and two months after beginning myofunctional therapy, active orthodontic treatment began with full upper and lower brackets and wires. Frenum length was 25mm. Interlabial gap with fixed appliances was 2mm. Myofunctional status appeared stable. Two years later, the braces were removed and a night positioner was prescribed for retention.

Conclusion

Six years post-myofunctional therapy, the patient was reevaluated. Frenum length measured 25mm. Maximum interincisal distance measured 45mm. All myofunctional patterns appear correct and stable. The patient, now age 16, continues to monitor her airway and use allergy prescriptions PRN.

When lingual frenum insertions and tongue mobility are within normal ranges, "borderline" lingual frenula can often be stretched sufficiently to attain and habituate correct myofunctional patterns. The ability of the orofacial myologist to accurately diagnose the lingual frenum is of utmost importance. Not all lingual frenula can be adequately stretched to achieve desired results. When a true anatomically ankylosed condition exists, surgical intervention is indicated.

CASE STUDY 2

REFERRAL FOR LINGUAL FRENECTOMY

A 42 year old female visited an orofacial myology office for an initial evaluation. Clinical evaluation revealed a previously undetected restrictive lingual frenum.

History

The patient was complaining of pain, persistent in the TMJ areas bilaterally. This had become more bothersome in the last month because she was no longer taking 1000/mg of Naprosyn daily, as she had been for the last three and one-half years, due to chronic back pain. The patient had been diagnosed with mild polio at age five. She was in an automobile accident at age 12. She had a history of "neck aches" and no previous orthodontic treatment. She routinely visited her general dentistry office for prophylaxis. Periodontal health was good. At that time, she was working in sales and using the phone frequently.

Examination

Habitual mouthbreathing patterns were present, with an interlabial gap of 6-7mm. The maxillary lip was incompetent, and the mandibular lip was everted. Hyperactivity of the mentalis was present, along with poor maximum resistive lip strength. The patient constantly "splinted" her tongue between her teeth. Masseter tonicity was weak, and the stability very poor. Genioglossus activity was poor and flaccid. She had a bilateral posterior open crossbite with 5mm overjet occlusion. The midline deviated 1.5mm. Maxillary rugae were very prominent, and the hard palate was vaulted and narrow. The uvula was inflamed. Mandibular deviation to the right was noted upon opening, mastication, and speech production.

The maxillary and mandibular labial frenula were normal; however, the lingual frenum was restrictive. The mandibular insertion was "webbed" in appearance along the lingual attached gingiva and ventral insertion was into the tongue tip. The patient could not perform a linguopalatal seal. She could not reach the occlusal surfaces of her bicuspid or molar teeth with her tongue tip. No "pointed" shape to the tip of the tongue could be achieved.

Clinical Diagnosis

After careful evaluation of the patient's myofunctional status, a true case of ankyloglossia was diagnosed. The patient's mandibular shifting during function severely impacted the functional status of her TMJ. The "splinting" of the tongue during rest posture positioned the start of her swallow pattern interdentally, resulting in a mandibular tongue thrust pattern with total absence of molar stabilization.

Discussion

The lingual pressures exerted during swallowing displaced the mandible forward and to the right, causing displacement of the condyle and subsequently the disc. During rest posture, the mandible was also displaced. The weakness of the masseter muscles further indicated poor and incorrect chewing patterns. The orofacial myologist referred the patient to an oral surgeon for diagnosis and treatment of the restrictive lingual frenum.

Treatment

Six weeks after the initial orofacial myology evaluation, the patient underwent surgical lingual frenectomy with modified Z-Plasty closure and excision of hyperplastic redundant webbed tissue posterior to teeth #25 and #26 (mandibular central incisors). Ten days post-op, an individualized myofunctional therapy program was initiated. The patient was in therapy for six months, at which time a 33mm interincisal distance was measured while the tongue maintained a strong linguopalatal seal. Masseter tonicity and stability were normal. Mastication and deglutition patterns were normal. Proper rest postures were reported by the patient; however, occasional periods of "stiffness" continued to interfere with consistent nasal breathing. Best of all, TMJ dysfunctional patterns were significantly corrected, and pain was decreased, and manageable.

Conclusion

Five and one-half years post-therapy, the patient was re-evaluated. She reported NO TMJ problems or pain. The posterior crossbites remain; however, the bite is closing. The overjet remains the same. The interincisal distance with the tongue in a linguopalatal seal is 30mm. The maximum opening is 40mm. The mandibular shifting to the right is significantly reduced. The rest posture of the tongue, lips, and teeth is noted as normal and correct. The mastication and deglutition patterns appear normal and correct.