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### Keywords

Lingual frenum  
Articulation disorders  
Otolaryngology  
Speech, language and hearing sciences  
Ambulatory surgical procedures

### Descritores

Freio lingual  
Transtornos da articulação  
Otolaringologia  
Fonoaudiologia  
Procedimentos cirúrgicos ambulatoriais

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Received: 6/20/2012

Accepted: 11/20/2012

# Lingual frenulum: changes after frenectomy

## *Frênulo lingual: modificações após frenectomia*

### ABSTRACT

**Purpose:** To describe the changes after frenectomy concerning mobility and functions of the tongue. **Methods:** Participants were 53 subjects who had never undergone speech therapy or lingual frenulum surgery. A specific lingual frenulum protocol with scores was used by speech-language pathologists when there was evidence of frenulum alteration. Ten subjects had abnormal frenulum and were referred to an otolaryngologist for frenectomy. After surgery, the subjects were re-evaluated using the same protocol. Photos and videos were taken for comparison. **Results:** Thirty days after surgery, the subjects had the shape of the tip of the tongue and its movements improved. Lip closure and speech were also improved. **Conclusion:** Frenectomy is efficient to improve tongue posture, tongue mobility, oral functions, and oral communication.

### RESUMO

**Objetivo:** Descrever as mudanças ocorridas após a frenectomia com relação à mobilidade e funções da língua. **Métodos:** Foram avaliados 53 sujeitos, os quais nunca haviam se submetido a fonoterapia ou a cirurgia do frênulo. Um protocolo com escores específicos para avaliação do frênulo lingual foi utilizado para avaliar os sujeitos com evidências de alteração neste aspecto. Foi encontrada alteração em dez sujeitos, que foram encaminhados a um otorrinolaringologista para frenectomia. Após a cirurgia, esses sujeitos foram reavaliados pelo fonoaudiólogo utilizando-se o mesmo protocolo. Fotos e vídeos foram usados para comparação. **Resultados:** Trinta dias após a cirurgia, os sujeitos apresentaram a forma da ponta da língua modificada, assim como os movimentos melhorados. O fechamento labial e a fala também melhoraram. **Conclusão:** A frenectomia é eficiente para melhorar a mobilidade e a postura da língua, assim como suas funções, incluindo a produção da fala.

Study conducted at the Child Care Center, Municipal Department of Health of Brotas – Brotas (SP), Brazil.

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**Conflict of interests:** None

**INTRODUCTION**

The lingual frenulum, a small fold of mucous membrane that connects the middle of the sublingual face of the tongue to the floor of the mouth, interferes in the tongue movements and its functions. Orofacial functions can be altered according to the degree of lingual frenulum alteration<sup>(1-4)</sup>.

Lingual frenulum evaluation is required when tongue movements and orofacial functions, such as chewing, swallowing and speech are altered<sup>(5-8)</sup>. Different health professionals use their knowledge to evaluate lingual frenulum. In general, anatomy and orofacial functions are evaluated. The use of specific protocols is not common. Surgery is indicated when orofacial functions are significantly altered<sup>(9)</sup>. Frenectomy is the usual procedure to release the lingual frenulum<sup>(10)</sup>. This study had the aim to describe the changes in tongue mobility and orofacial functions after frenectomy.

**METHODS**

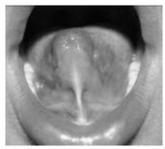
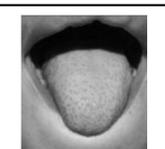
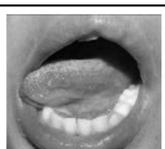
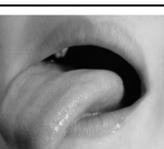
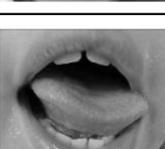
Fifty three subjects who had never undergone speech therapy or lingual frenulum surgery were evaluated by speech-language pathologists (SLPs) in 2010. Paediatricians, dentists and/or schools referred them. From them, 14 (26.4%) were suspected of frenulum alteration. None of these subjects had hearing impairment, mental retardation and/or motor or genetic

syndromes. A specific lingual frenulum protocol with scores was used when there was doubt of frenulum alteration<sup>(6)</sup>. Ten subjects (eight male and two female) with ages from 2 to 33 years had both lingual frenulum and oral functions altered. The SLPs referred all of them to frenectomy, which was performed by an otolaryngologist (ENT). Photos and videos of all procedures were taken before and after surgery. A digital camera Sony® HX1 was used for the recordings. Data were tabulated and analyzed using Excel®. The Ethics Committee of CEFAC Health and Education approved the study (protocol 107/10).

**RESULTS**

Thirty days after surgery, the SLPs re-evaluated all subjects using the same protocol. Changes were observed in the frenulum and in tongue mobility. Protrusion, lateralization, and elevation of the tongue were improved in different degrees. The best results were for tongue protrusion, while the worst were for tongue elevation. Six subjects out of ten had the shape of the tip of the tongue altered; after surgery, all of them had the shape of the tip of the tongue improved. Figure 1 shows changes observed in two patients after surgery.

Six out of eight subjects had mouth opening improved during speech. Difficulties in tongue protrusion and cleaning of oral cavity, as well as drooling and open mouth were solved after surgery. Eight subjects out of ten had speech alteration, and

	Patient A		Patient B	
	Pre-surgery	Post-surgery	Pre-surgery	Post-surgery
Frenulum				
Elevation				
Protrusion				
Lateralization to the right				
Lateralization to the left				

**Figure 1.** Lingual frenulum and tongue movements in two subjects after 30 days

four of them had their speech improved after surgery. Speech became more efficient due to improvement in tongue mobility and wider mouth opening. The subjects reported improvement in their oral communication. Table 1 compares pre and post-surgery evaluation data.

## DISCUSSION

Concerning lingual frenulum alteration, frenectomy and SLPs therapy are controversial subjects<sup>(2-3)</sup>. As the lingual frenulum alteration may range from mild to severe, orofacial functions are not always altered. Frenectomy will be considered important according to the previous knowledge the physician has about the future consequences of lingual frenulum alterations<sup>(1,5,9-10)</sup>.

Some health professionals refer the patients to SLP therapy before surgery. Nevertheless, the therapy results are not always profitable because the lingual frenulum is a mechanical alteration. SLP therapy should be referred when the frenulum alteration is not severe. A proper assessment protocol will help to decide whether frenectomy or SLPs therapy is the adequate choice<sup>(6)</sup>.

Evaluating all subjects before and after frenectomy and SLP

therapy is fundamental for improving the scientific evidences of what is better for the subjects. That would provide more assertive directions in cases of lingual frenulum alterations.

The restriction of tongue movements and functions performed by the tongue, when the lingual frenulum is altered, are widely described in literature<sup>(1-13)</sup>. Although the improvement of the tongue movement immediately after frenectomy is commented in literature<sup>(11)</sup>, the functions performed by the tongue and other alterations found in subjects with frenulum alteration are not commonly described.

This research demonstrates that tongue posture, tongue mobility, orofacial functions, lip posture improved at different degrees after frenectomy, regardless of SLP therapy. These results are strong evidence that frenectomy should be referred in most cases. It is known that lingual frenulum alterations, subjects' age and different surgical procedures influence the results.

## CONCLUSION

At different degrees, frenectomy is efficient to improve tongue posture, tongue mobility, oral functions, lip posture and oral communication.

**Table 1.** Description of the ten subjects

Subjects	Gender	Age	Pre-surgery evaluation	30 days after surgery
1	F	9	Anterior lisp	Reduction of anterior tongue interposition during speech. Improvement in tongue mobility.
2	M	6	Alveolar flap distortion in attack position and in consonantal group.	Improvement in mouth opening during speech. No improvement of altered sounds. Improvement in tongue mobility.
3	M	7	Alveolar flap distortion in attack and coda positions and in clusters.	No improvement in alveolar flap distortion. Improvement in mouth opening during speech. Improvement in tongue mobility.
4	M	6	Alveolar flap omission in attack and coda positions, and in clusters with [r] and [l].	No alveolar flap omission in attack position, and no systematic production of alveolar flap in coda position. Improvement in tongue mobility.
5	M	5	Open lip posture. Diastema between central inferior incisors. Omission of velar plosives [k] and [g]. Simplification of the clusters with alveolar flap. Substitution of the alveolar flap in coda position for semi vowel [y]. Distortion of alveolar flap in attack position.	Closed lip posture. Improvement in mouth opening during speech. Improvement in tongue mobility.
6	M	2	Drooling and open mouth position.	Closed lip posture. Significant decrease in drooling.
7	M	6	[s] and [x] replaced by [f]; [z] and [j] replaced by [v]. Flap alveolar omission in attack and coda position. Simplification of cluster.	Improvement in mouth opening during speech. Same sound substitutions. Improvement in tongue mobility.
8	M	15	Distortion of the alveolar flap in all positions.	Improvement in mouth opening during speech. Improvement in alveolar flap production. Improvement in tongue mobility.
9	M	33	Difficulty in producing the alveolar flap in attack and coda positions and in clusters with [p] and [b].	Improvement in mouth opening during speech. Improvement in alveolar flap production. Improvement in tongue mobility.
10	F	33	Difficulty in sweeping the oral cavity with the tongue during feeding.	Managed to sweep the oral cavity. Improvement in tongue mobility.

**Note:** F = female; M = male

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