Tutorial

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Edward A. Dolan (*Duke University Medical Center*)

Robert M. Mason (*Duke University Medical Center*)

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LESIONS OF THE TONGUE: A Review

Edward A. Dolan, D.D.S.

Assistant Professor, Duke University Medical Center

Robert M. Mason, D.M.D.

Professor and Chief of Orthodontics, Duke University Medical Center

A thorough understanding of the development and growth which involve oral and paraoral structures is necessary for the orofacial myologist. Many of the developmental anomalies are congenital as opposed to being inherited. Tongue abnormalities, whether they be developmental or acquired, are of particular interest to the orofacial myologist. The ability to recognize, evaluate and differentially diagnose these lesions is essential in order that the orofacial myologist treat the patient in a comprehensive manner.

Developmental Anomalies

Microglossia: A congenital anomaly which is manifested by a small or rudimentary tongue. Difficulties in speaking and eating are encountered by these patients and will be obvious to the orofacial myologist. Microglossia is not a common finding, but is of particular interest due to the relationships between tongue and teeth. Where there is a microglossia, the dentition would be expected to have the tendency to tip toward the tongue, as the resting tongue does not provide adequate support laterally for the dentition. Constriction of the upper dental arch, leading to crossbite, may also occur.

Macroglossia: Congenital macroglossia is due to generalized muscular hypertrophy. Secondary macroglossia may occur from neurofibromatosis, hemangioma, lymphangioma, or malignant neoplasms of the tongue.

Acromegaly (due to hyperpituitarism) will also produce an enlarged tongue. Either congenital or secondary macroglossia will produce a malocclusion of the dentition due to the pressure exerted by the strength of the musculature. Scalloping of the lateral borders of the tongue is a common finding in this condition. Treatment focuses on the primary cause or surgical excision in order to reduce tissue bulk.

Most macroglossias are related to space-occupying masses associated with disease of the tongue. It is not common to find an idiopathic macroglossia (i.e., without disease). Accordingly, in the absence of tumor or some other tongue mass, it is easy to make the mistake of assuming that a prominent, forward-positioned tongue constitutes a macroglossia. The clinician should avoid the use of macroglossia as a diagnostic label and should be suspicious of such a diagnosis without confirmatory radiographic studies. If a patient can bite the teeth together without biting the tongue, the condition is probably not a macroglossia. There are many instances in which a normal sized-tongue is positioned forward in a

small oral cavity. This is a "relative macroglossia" rather than a true enlargement of the tongue. The condition of Down Syndrome is an example of a small nasopharynx and retruded maxilla with a normal tongue that rests forward, for many patients with this condition.

Ankyloglossia: Ankyloglossia ("tongue tie") is secondary to a short lingual frenum attached to the tip of the tongue. Due to the restricted tongue movement, patients may exhibit speech difficulties. The majority of cases are treated surgically by a lingual frenectomy. The frenectomy surgery is not a "clipping" procedure, which would further scar and shorten the frenum. Some sort of lengthening procedure is utilized, such as a Z-plasty.

The clinician is cautioned about the need for a lingual frenum operation. In a majority of instances, no surgery is indicated, and the examiner should be aware of the general over-concern about a relatively short frenum. If speech sounds (especially /t/, /d/, /n/, /l/) can be made normally with the tongue tip against the upper alveolar ridge, with the teeth slightly parted this is a sufficient range for the tongue and no surgery is required.

Cleft Tongue: Bifid or cleft tongue may be complete or partial. Partial clefting is more common and results from an incomplete merging of mesenchymal proliferation. Clinically, a cleft tongue does not present difficulties except that irritation may occur secondary to food debris and micro-organisms.

Median Rhomboid Glossitis: Thought to be a congenital abnormality of the tongue which results from the failure of the tuberculum impar to retract before fusion of the lateral halves of the tongue. This produces a structure devoid of papillae in the midline of the tongue. There is a close association between the median rhomboid glossitis and the fungus *Candida Albicans* although no direct etiology has been proven. The lesion is recognized by a diamond or rhomboid patch on the dorsal tongue which lacks filiform papillae. Treatment of the lesion is nonspecific although antifungal agents such as amphotericin and nystatin have caused regression.

Lingual Thyroid Nodule: The lingual thyroid nodule is a condition which is produced by remnants of thyroid tissue which have become detached and left behind during development. It appears as a nodular mass at the base of the tongue usually in the midline, and patients may complain of pain, dysphagia, or a fullness in the throat. Treatment of choice is usually surgical excision, however, the presence of a normal thyroid gland must be determined prior to surgical excision or the patient must be placed on appropriate thyroid hormone therapy.

ACQUIRED ANOMALIES

Geographic Tongue (Benign migratory glossitis):

Benign migratory glossitis is a clinical condition which presents as areas of multiple desquamation of the filiform papillae. The etiology is unknown, however, it may be secondary to emotional stress. The desquamated areas move to different locations which persist for weeks or months then regress spontaneously. Treatment of the lesion is empirical and since the condition is benign there should be no reason for concern other than to reassure the patient.

Fissured Tongue (Scrotal tongue): The fissured tongue is characterized by several small furrows or grooves radiating from a central groove along the midline of the tongue. The condition develops simultaneously or as a sequelae of geographic tongue although this is not common. It is not a developmental condition, increases with age, and is often associated with extrinsic factors such as trauma or a vitamin deficiency. Scrotal tongue is a nonpainful condition, however, food debris can collect in the grooves and cause irritation. Brushing of the tongue with a soft toothbrush may alleviate the condition.

Hairy Tongue: This condition is characterized by a hypertrophy of the filiform papillae thereby producing a thick matted layer on the dorsal surface. The color will vary depending on extrinsic staining factors such as tobacco, medicines or various organisms. The etiology is unknown; however, micro-organisms (in particular fungi) have been implicated as the possible cause. Systemic diseases and oral drug use may aggravate this condition. Patients who have undergone radiation therapy for treatment of a tumor may have this condition secondary to decreased salivary flow.

Hemangioma: Hemangiomas are vascular tumors of the tongue and appear as red or bluish swellings which blanch on pressure, as opposed to the colorless lymphangiomas. The hemangioma due to its extensiveness and bluish color is difficult to confuse with other lesions. Treatment is surgical excision if the lesion is small, however, if the lesion is large and asymptomatic it is not treated. A hemangioma would be expected to produce a true macroglossia, and speech and dental variations may develop from a significant enlargement of the tongue.

Neural Tumors: Neural tumors are benign neoplasms which surround various nerves from different types of neural tissue. These lesions may arise anywhere in the oral cavity, however, the tongue is the most frequent site, and they appear as smooth firm nodular lesions. Multiple oral neurofibromas, coupled with similar skin lesions and cafe au lait pigmentations, signal a diagnosis of von Recklinghausen's neurofibromatosis. Differential diagnosis from other mesenchymal neoplasms and cysts should be made, and the treatment is surgical

excision. The macroglossia involved would be expected to produce speech variations, a forward resting tongue posture, and dental changes over time.

Granular Cell Myoblastoma: Granular cell tumors are composed of cells which have an intensely granular cytoplasm. The lesions appear as raised nodules on the dorsum of the tongue, are painless and soft to palpation. These lesions must be differentiated from median rhomboid glossitis, and are treated by simple excision.

Leiomyoma: Leiomyomas are firm painless encapsulated lesions frequently found in the tongue. It is usually indistinguishable from other lesions, and is treated by surgical excision.

Amyloid Nodules: The tongue is the most common location for amyloid nodules. The nodules are of normal color, painless and nonulcerated. Differential diagnosis must include inflammatory hyperplasia or mesenchymal neoplasm if solitary, and multiple neurofibromatous if multinodular. Amyloidosis represents a metabolic disorder, may be primary or secondary, and must be controlled by managing the disease process.

Granulomas: Granulomas are nodular swellings with rolled margins and a central ulcerated area. These lesions represent an underlying disease such as tuberculosis, histoplasmosis and cryptococcosis. Granulomatous lesions must be differentiated from the clinically similar lesions of carcinoma or sarcoma, or a primary syphilitic chancre. A biopsy is required to establish a definitive diagnosis. After a diagnosis of granulomatous disease is made, treatment should be aimed at managing the underlying disease process.

Squamous Cell Carcinoma: Carcinoma can occur in any location. The tongue is no exception. Any lesions with focal ulceration and indurated margins should be considered cancerous until proven otherwise. Patients often have a history of smoking or heavy drinking. The lateral border of the tongue is the usual location and the lesion is often painless. Definitive diagnosis is made by biopsy, and the patient should be referred to an oncologist for treatment.

CONCLUSIONS

A variety of both developmental and acquired tongue lesions have been reviewed. Familiarization with these specific lesions is recommended as well as an overall general knowledge of oral pathology (see References). Caution is urged in the use of the descriptive terms *macroglossia* and *short frenum* in terms of the need for surgery.

The informed orofacial myologist may observe variations of the tongue and oral cavity and make appropriate referrals to medical and dental specialists for definitive evaluation and diagnosis.

Send All Correspondence to:

Edward A. Dolan, D.D.S.
Assistant Professor
Division of Oral & Maxillofacial Surgery
P.O. Box 2955
Duke University Medical Center
Durham, North Carolina 27710

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