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Developmental anomalies of tongue

A Project Submitted to

The College of Dentistry, University of Baghdad, Department of Oral histology

in Partial Fulfillment for the Bachelor of Dental Surgery

By

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Certification of the Supervisor

I certify that this project entitled **" Developmental anomalies of tongue"** was prepared by the fifth-year student **Duha Hussein Manati** under my supervision at the College of Dentistry/University of Baghdad in partial fulfilment of the graduation requirements for the Bachelor Degree in Dentistry.

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Dedication

Acknowledgment

Confession First, we thank God, Lord of the Worlds, for giving us strength and reconciliation to end this important stage of life. I would like to express my thanks and appreciation to **Prof. Dr. Raghad A. Al-Hashimi**, Dean of the College of Dentistry, University of Baghdad. I would also like to thank **Prof. Dr. Bashar Hamid Abdullah.**

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List of abbreviation

Abbreviation	Phrase
FT	Fissured tongue
LP	Lingua plicata
GT	Geographic tongue
HT	Hairy tongue
MRG	Median rhomboid glossitis
C. albicans	Candida albicans

Introduction

The tongue is a muscular organ of the oral cavity and is an accessory digestive organ in the digestive system. It has many functions of which the most important are mastication, taste, swallowing and speech **(Warford *et al.*, 2015)**. The tongue has a very rich neurovascular supply, and its importance in humans is tightly connected to the digestive system and speech. This becomes even clearer when some of these structures are damaged **(Montagna, 2012)**. The tongue begins development in the 4th week of gestation. It is derived from pharyngeal arches 1-4 (forms the mucosa of the tongue) and the occipital somites (forms the musculature of the tongue) **(Han *et al.*, 2012)**.

The tongue is the most mobile organ of the body and is associated with coordinated activities such as sucking, swallowing, chewing, and speaking, and it contributes to the normal development of the teeth and jaw **(Orsbon, 2018)**.

Developmental anomalies can affect both hard and soft tissues of the oral cavity. Among the hard tissues, the teeth and among the soft tissues, the lip, tongue and the palate are most commonly affected **(Harsha *et al.*, 2017)**.

Developmental anomalies result from disturbances that occur during the human growth and development. These altered structures can be expressed as mild variations to severe malformations **(Ornoy *et al.*,2015)**. The tongue is virtually unique in that it is a deformable structure, with no bones, joints or air filled chambers **(Maureen *et al.*, 2016)**.

Review of Literature

1.1 The tongue

Is a muscular organ with its base attached to the floor of the mouth. It is attached to the inner surface of the mandible near the midline and gains support below from the hyoid bone. It functions in mastication, swallowing and speech and carries out important sensory functions, particularly those of taste **(Orsbon, 2018)**.

1.2 Tongue development

The tongue begins to develop around the 4^{th} week of intrauterine life. The first, second, third, and fourth pharyngeal arches contribute to the development of the various portions of the tongue. The development begins with the growth of a medial swelling from the first pharyngeal arch, known as tuberculum impar **(Nanci, 2018)**.

Gradually, two lateral lingual swellings start to grow in the 5^{th} week from the same arch. As the lateral swellings increase in size, they eventually merge and overlap tuberculum impar. This merging leads to the formation of the anterior two-thirds of the tongue their line of fusion is marked by the median sulcus of tongue. **(Kumar, 2015)**. Meanwhile, from the mesoderm of the second, third, and fourth pharyngeal arches, another median swelling, known as hypobranchial eminence(cupola), begins to develop and form the posterior one third of the tongue. Third median swelling derived from 4^{th} pharyngeal arch forms the epiglottis **(Figure 1.1) (Masthan, 2010; Nanci, 2018)**.

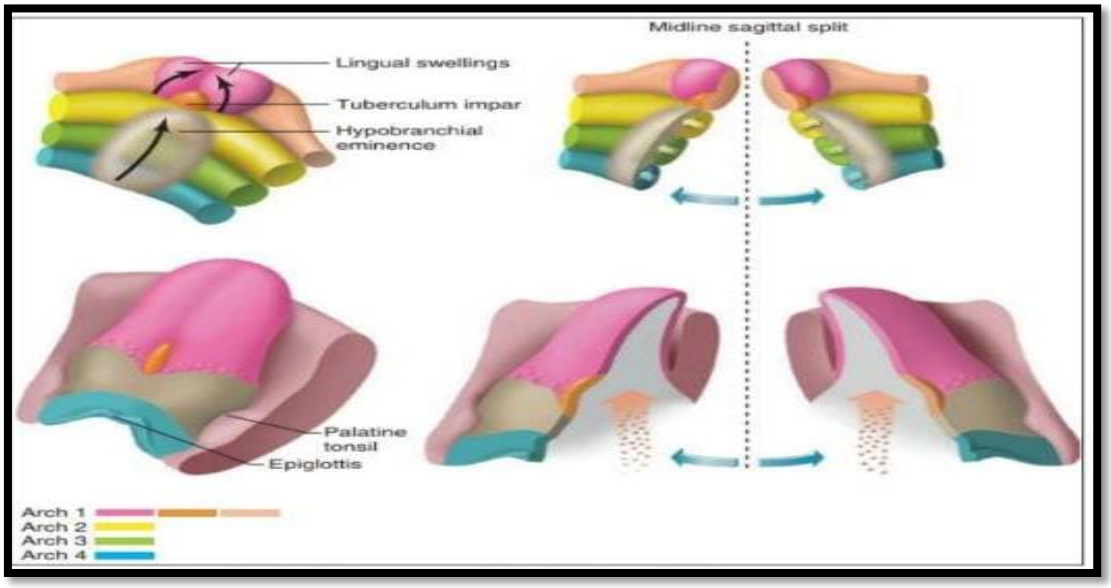


Figure (1.1): Tongue development **(Nanci, 2018)**.

1.3 Tongue structure

1.3.1 Parts of tongue: **(Han *et al*., 2012)**.

1. Oral (anterior 2/3).
2. Pharyngeal (posterior 1/3).
3. Root (base).

1.3.2 Surface of tongue

Dorsal surface

The upper (dorsal) surface of the tongue may be subdivided into an anterior two-thirds (palatal part) and a posterior one-third (pharyngeal part) **(Piagkou *et al*., 2012)**. The junction of the palatal and pharyngeal parts is marked by a shallow V-shaped groove, the sulcus terminalis **(Orsbon, 2018)**. The angle (or V) of the sulcus terminalis is directed posteriorly. In the midline, near the angle, may be seen a small pit called the foramen caecum. This is the primordial site of development of the thyroid gland **(Berkovitz *et al*., 2017)**.

The dorsal surface of tongue covered by specialized mucosa, anterior two third of tongue shows four types of papillae (filliform, fungiform, vallate and folate) while posterior one third show no papillae **(Stavreva, 2020)**.

Ventral surface

The inferior (ventral) surface of the tongue, related to the floor of the mouth, is covered by a thin lining of nonkeratinised mucosa that is tightly bound down to the underlying muscles, In the mindline, extending on to the floor of the mouth, lies the lingual frenum. Lateral to the frenum lie irregular, fringed folds: the fimbriated folds. The deep lingual veins are also visible through the mucosa **(Montagna, 2012)**.

1.3.3 Muscles of tongue

The tongue is composed of two types of muscles:

1-Intrinsic muscles:

Function: Alter the shape of the tongue, consist of longitudinal, transverse and vertical fibers **(Cullins and Connor,2017; Sakamoto, 2017).**

2-Extrinsic muscles

Function: is to connect the tongue to the surrounding structure,the soft palate and the bones(mandible, hyoid bone, styloid process) and help tongue movement, consist of (palatoglossus , genioglossus , hyoglossus , styloglossus)**(Figure 1.2)(Leszek *et al*., 2015; Sakamoto, 2017).**

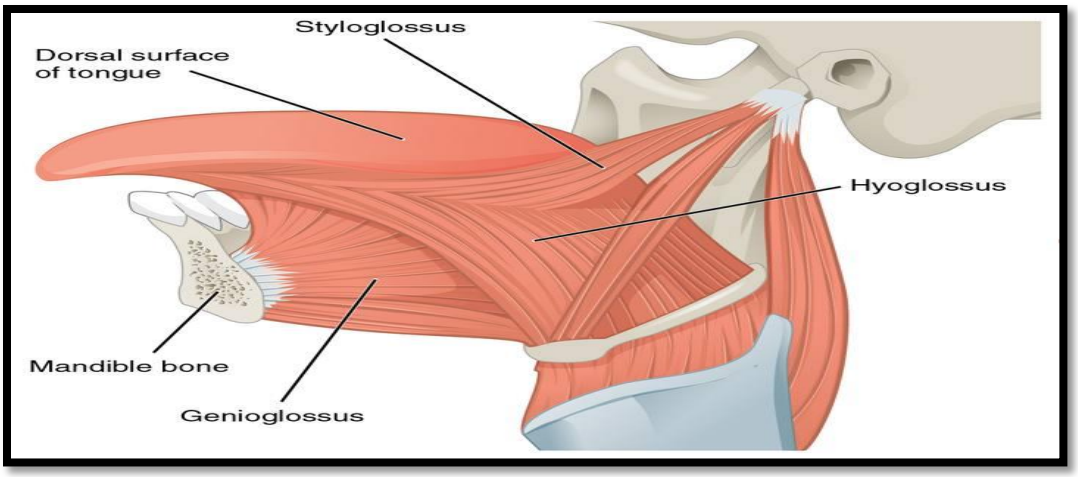


Figure (1.2): Muscles of the tongue **(Sakamoto, 2017)**.

1.4 Nerve supply of tongue

Sensory nerve supply:

1. Anterior 2/3: innervated by lingual nerve of the trigeminal nerve and chorda tympani of facial nerve.
2. Posterior 1/3: innervated by glossopharyngeal nerve.
3. Base: innervated by internal laryngeal nerve branch of the vagus nerve **(Dotiwala *et al*., 2018).**

Motor nerve supply:

Intrinsic and extrinsic muscle supplied by hypoglossal nerve except the extrinsic muscle (palatoglossus) which innervated by the vagus nerve **(Heiser *et al.*, 2016)**.

1.5 Blood supply of tongue (Goyal *et al*., 2013)

Arteries:

1. Lingual artery branch of the external carotid artery.

2. Tonsillar branch of facial artery.
3. Ascending pharyngeal artery.

Veins: Lingual vein ultimately drains into the internal jugular vein.

1.6 Lymphatic drainage of tongue:

Tip of the tongue drain in the submental nodes bilaterally then to deep cervical lymph node while anterior two third drain to submandibular nodes then deep cervical, posterior third also drain to deep cervical nodes (jugulodigastric mainly) **(Yang *et al*., 2017)**.

1.7 Developmental anomalis of the tongue

Developmental and structural abnormalities of the tongue are common features. The various morphological variations that may occur during the development of tongue are **(Gupta *et al.*, 2015)**:

- Aglossia
- Microglossia
- Macroglossia
- Ankyloglossia
- Cleft tongue
- Fissured tongue
- Geographic tongue
- Hairy tongue
- Median rhomboid glossitis

1.7.1 Aglossia

The term aglossia refers to the congenital absence of the entire tongue which represents an extremely rare condition **(Bommarito *etal*., 2016)**.

Etiology is a rare anomaly where the lateral lingual swellings and the tuberculum impar fail to develop during embryogenesis. Aglossia is rarely isolated and is usually accompanied by other anomalies such as mental retardation, short stature and craniofacial deformities such as micrognathia, cleft palate or lip, facial asymmetry and partial anodontia **(Figure1.3)(McMicken *et al*., 2012; Gupta, 2012)**.

Treatment, The tongue is responsible for speech, swallowing, sucking, taste and jaw development. In its absence, the floor of the mouth has a remarkable ability to hypertrophy and adapt to the functions of the missing organ in swallowing and mastication. The uvula enlarges to close the oropharynx to force the air through the nasal passage for the articulation of the nasal passage. However, a multidisciplinary approach to treatment remains a necessity**(Saitta *et al*., 2015)**.

A glossia sequelae involve several conditions that cannot be treated with a single procedure. To treat the anatomic, functional, psychological, nutritional, and esthetic problems, a multidisciplinary approach with the participation of professionals in the areas of nutrition, psychology, speech and hearing, general dentistry, orthodontics, maxillofacial surgery, and implantology **(Salles *et al*.,2008).**

Figure (1.3): Aglossia **(Gupta, 2012).**

1.7.2 Microglossia

It is term refers to an abnormally underdeveloped tongue. Is an extremely rare developmental condition that might impact the patient's respiratory, feeding and speech functions, in addition to other intraoral structures **(Ishan *et al*., 2020)**.

On physical examination, various oral anomalies may be present in association with microglossia or aglossia. These patients tend to have a narrowing of the face referred by many as "birdlike" along with retrognathia, a high palatal vault, and an excessive overbite **(Figure 1.4)(Voigt *et al*.,2012; Nepram *et al*., 2015).**

Etiology: microglossia may result from fetal cell traumatism in the first few weeks of gestation. Previous study suggested that the tuberculum impar does not make a significant contribution in the formation of the tongue cause microglossia. Frequently, this anomaly presents in association with limb abnormalities and is grouped as a hypoglossia-hypodactylia syndrome **(Sanjib *et al.*, 2015).**

Treatment Ultimately, the presence of microglossia has a detrimental effect on the oral phase of swallowing because the tongue is too small to reach the hard palate and too short and posteriorly displaced to effectively propel a bolus of food, reconstructive efforts should center on enhancing tongue function by improving position, mass, and mobility. This could be done by advancing the tongue's position to within the oral cavity, lengthening the tongue, augmenting the tongue, lowering the hard palate, or any combination of these approaches. Advancing the position of the tongue may be accomplished through bilateral mandibular distraction osteogenesis or glossopexy techniques **(Voigt *et al*.,2012).**

Tongue lengthening could be performed through z-plasty techniques, and augmentation accomplished with the aid of free tissue transfer. A palatal drop prosthesis could be fashioned to fit at an early age to lessen the distance from the tongue to the hard palate. Earlier intervention is technically more complex but may come with the benefit of a better overall functional outcome, given the plasticity of the developing brain and a child's superior ability to adapt to dramatic changes in his or her anatomy **(Wallace *et al*., 2020).**

Figure(1.4)): Microglossa **(Nepram *et al*., 2015)**.

1.7.3 Macroglossia

Macroglossia is a generalized term used to describe the tongue that protrudes beyond the teeth during a natural resting posture . Is an uncommon condition that can lead to several alterations like dental-muscle-skeletal deformities, orthodontic treatment instability, masticatory, and breathing and phonation problems, characterized by increased size of the tongue, can be caused by congenital malformations or acquired diseases **(Figure1.5)(Topouzelis *et al*.,2011; Prada *et al*., 2012).**

Clinically showed that the tongue was enlarged in width and length, or in all dimensions. There were also disturbances in phonation, malocclusion, recurrent chest infection, drooling of saliva with angular cheilitis, and sleep apnea **(Sadeghi *et al*., 2019)**.

Etiology of true macroglossia may be due to primary condition of the tongue or a systemic disorder. A wide variety of primary conditions of the tongue can cause tongue enlargement (an increase in the amount of tissue on the tongue) e.g., lingual thyroid, cysts, tumours, haemangioma, myositis, etc. True macroglossia arising from systemic disorders can constitute important diagnostic feature of such disorders (e.g., hypothyroidism, down syndrome, Acromegaly, etc.) may result from neurological impairment of the tongue or a relatively small buccal cavity **(Prada *et al*., 2012)**.

Treatment of macroglossia depends on its etiology and generally includes correcting the systemic disease underlying the increase in lingual mass, surgical treatment, radiotherapy and treatment of orthodontic abnormalities that might have been caused by the condition **(Gardon *et al.*, 2019)**.

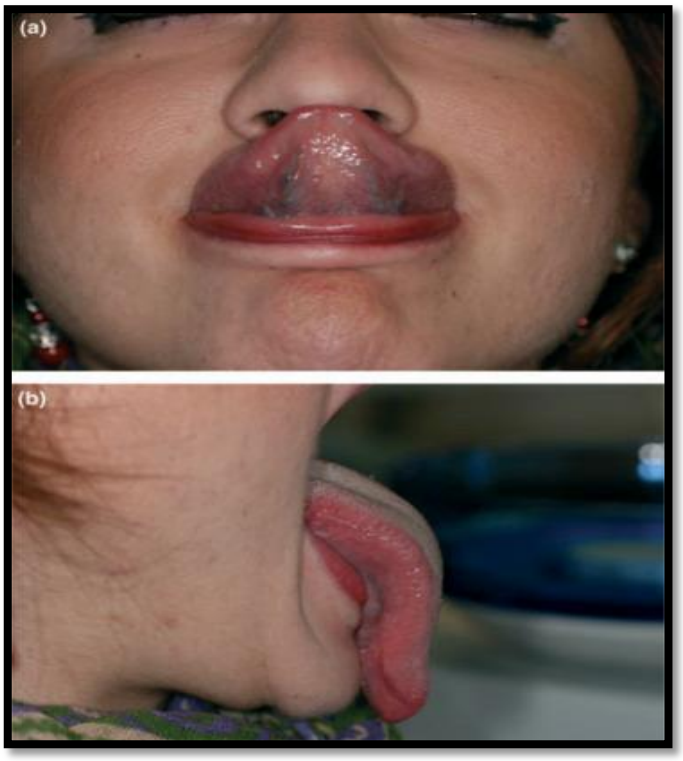


Figure (1.5): Patient with macroglossia who can extend his tongue to his nose tip (a) and chin (b)**(Topouzelis *et al*.,2011).**

1.7.4 Ankyloglossia

Ankyloglossia (tongue-tie) is a congenital abnormality characterized by a short, thick, fibrous lingual frenulum attach the bottom of the tongue's tip to the floor of the mouth, which may restrict tongue mobility and therefore cause difficulties breast-feeding in infants. The tie may be complete or partial. (**Figure1.6)(Sethi *et al*., 2013)**.

This anomaly causes limitations in the movement of the tongue. The tongue cannot be protruded beyond the lower incisor teeth. The prime oral and general concern of this congenital abnormality is speech (articulation of words), swallowing, suckling (leads to breastfeeding problems) and poor oral hygiene. The

child's articulation of sound may lead to embarrassment in social groups **(Jangid *et al.*, 2015)**.

Etiology: Typically, the lingual frenulum separates before birth, allowing the tongue free range of motion. With tongue-tie, the lingual frenulum remains attached to the bottom of the tongue. Why this happens is largely unknown, although some cases of tongue-tie have been associated with certain genetic factors. Ankyloglossia usually occurs without other congenital anomalies. Rarely, orofacial clefts (i.e., cleft lip, cleft palate) and other craniofacial syndromes have been reported with ankyloglossia such as pierre robin syndrom **(Paul, 2013)**.

According to **(Elvira *et al.*, 2015)** , five degree were defined for tongue tie:

Degree 1: The tongue have totally free movement; the tongue tip can reach its highest point.

Degree 2: A mild hypertrophy, although the tongue almost has full mobility. It observed when the mouth opened at maximum; there is a slight impediment in tongue elevation.

Degree 3: Moderate hypertrophy recorded with a moderate lingual mobility impairment.

Degree 4: It is a frenulum with a rather reduced level of lingual mobility; the tongue is low but the base of the tongue and frenulum can still be observe. The degree is severe and consequently requires surgery.

Degree 5: Lingual mobility is very restricted. It is what is termed serious.

Treatment include surgical removal of the lingual frenum (Frenectomy or Frenotomy) followed by tongue training exercise and speech therapy to restore the

function of the tongue. If this anomaly that cause no problem therefore no need for treatment **(Walsh *et al*., 2017)**.

Figure(1.6): Ankyloglossia **(Sethi *et al.*, 2013)**.

1.7.5 Cleft tongue

A bifid or cleft tongue (glossoschissis) is a tongue with a groove or split running lengthwise along the tip of the tongue (**Figure1.7)(Patil *et al.*, 2021)**.

Etiology: It is the result of disturbances in the formation of anterior 2/3 of the tongue which arise from fusion of two lateral swelling with tuberculum impar. A bifid tongue may be an isolated deformity and has also been reported to be associated with maternal diabetes. Two infants with a bifid tongue born to diabetic mothers were reported. Also may associated with cleft palate. Combined deformities of the palate and tongue are suspected to be manifestations of various types of the heterogeneous group of oral-facial digital syndromes **(Zhou *et al*., 2021)**.

Treatment: is surgical repair under anesthesia were resulted in a favorable outcome which the devitalized edges freshened, The tongue "halves" were orientated and single layer of buried absorbable sutures followed by a second layer of running absorbable sutures and take concern the midline location protected the neurovascular supply **(Lee *et al.*, 2019)**.

Figure (1.7): Cleft tongue **(Patil *et al.*, 2021)**.

1.7.6 Fissured tongue (FT)

Fissured tongue, also known as lingua Plicata (LP), scrotal tongue and grooved tongue, is a condition frequently seen in the general population. FT is believed to be a congenital anomaly (**Figure1.8) (Järvinen *et al.*, 2014)**. Clinically, it is characterized by grooves that vary in depth and are noted along the dorsal and/or dorsolateral aspects of the tongue. Furthermore, FT presents many enlarged, smooth papillae, which are filiform papillae **(Feil and Filippi, 2016)**.

The clinical diagnosis of FT is based on deep grooves or fissures on the dorsal and lateral surfaces of the tongue up to 6mm. At present, there is no consensus regarding the establishment of more universal criteria for the diagnosis of FT **(Hamissi *et al.*, 2015)**.

Figure (1.8): Fissured tongue **(Järvinen *et al.*, 2014)**.

Etiology of LP not completely known yet. A polygenic or autosomal dominant hereditary component presumed, because LP clusters in families with other affected individuals. However, the difference in prevalence observed in various age groups suggests that LP primarily is not of genetic origin **(Patil *et al.*, 2013)**. The best-known cause of LP is age. An additional factor influencing the development of LP is hyposalivation, which in turn is also associated with age. In addition, LP particularly often occurs in individuals wearing a removable denture **(Göniil *et al.*, 2011)** as well as in cases of psoriasis or oncologic therapy. Sometimes lingua plicata occurs in combination with a geographic tongue **(Nisa and Giger, 2012)**. Fissured tongue was found to be associated with certain syndromes like Down's syndrome, Oral-Facial-Digital Syndrome Type I, Pierre Robin Syndrome and even Sjogren syndrome **(Sharma *et al.*, 2013).**

Two main types of FT have been found clinically: fissures cover the whole surface of the dorsal tongue or they localized on the dorsolateral part of the tongue **(Hamissi *et al.*, 2015)**.

Classification system for fissure tongue (Sudarshan *et al.*, 2015)

They classified fissure tongue as follow:

l. Based on pattern of tongue fissures

a. Central longitudinal pattern (**Figure1.9A)**.

Figure (1.9A): Central longitudinal and coated tongue **(Sudarshan *et al*., 2015)**.

b. Central transverse pattern: horizontal fissure/fissures crossing the midline.

(**Figure1.9B)**.

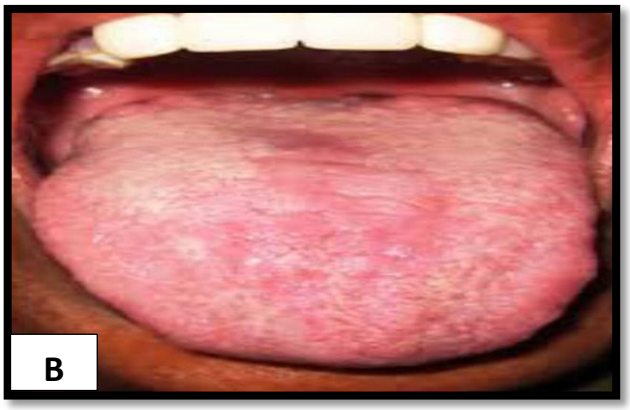


Figure (1.9B): Transverse central type **(Sudarshan *et al*., 2015)**.

c. Lateral longitudinal pattern: vertical fissure/fissures running laterally to the midline **(Figure1.9C).**

Figure (1.9C): Lateral longitudinal type **(Sudarshan *et al*., 2015)**.

d. Branching pattern: transverse fissures extending from the central longitudinal fissure (branching tree appearance) (**Figure1.9D)**.

Figure (1.9D): Branching type **(Sudarshan *et al*., 2015)**.

e. Diffuse pattern: fissures diffusely distributed across the dorsal surface of the tongue (**Figure1.9E)**.

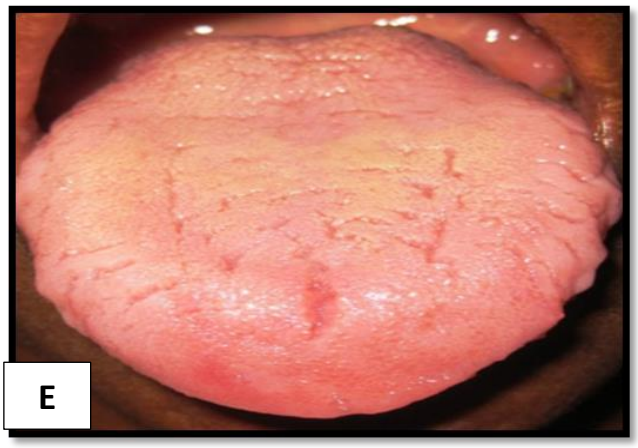


Figure (1.9E): Diffuse type **(Sudarshan *et al*., 2015)**.

2. Based on number of tongue fissures: (Sudarshan *et al*., 2015).

a. Mild: tongue fissures ranging from 1 to 3 in number.
b. Moderate: tongue with more than 3 fissures.
c. Severe: tongue with more than 10 fissures.

3. Based on associated symptoms such as burning sensation and feeling of food lodgement: (Sudarshan *et al*., 2015)

a. Without burning sensation.
b. With burning sensation.

Treatment usually no treatment is required. If fissures are deep enough that food residues entrapped in them and persist, an inflammation can ensue. In this case, the patient should be inform about the harmlessness of the condition and instructed about correct tongue cleansing **(Nadine *et al.*, 2016)**. Other general measures include avoiding tobacco, alcohol and foods that irritate the mucosa of the tongue **(Hamissi *et al*., 2015)**.

1.7.7 Geographic tongue (GT)

Geographic tongue, also known as benign migratory glossitis, is a benign chronic inflammatory condition of the tongue **Figure(1.10)(Ogueta *et al*., 2019)**. It is characterized by erythematous lesions with filiform papillae atrophy, surrounded by white limited areas in the dorsal and lateral aspects of the tongue, producing a map-like aspect. This lesions change in size and shape with time, and are characterized by periods of exacerbation and remission without scaring **(Dafar *et al*., 2016)**.

Clinically, GT is characterized by an erythematous, atrophic area circumscribed by a yellowish-white line. The lesions often change their location and shape over a span of a few minutes and primarily affect the dorsum of the tongue **(Dios *et al*., 2016)**.

Diagnosis is based on the history and clinical examination, consistent with chronic, migratory, macroscopic lesions on the tongue epithelium that change in size, color, and position. Routine laboratory tests, including complete blood count, sedimentation rate, and levels of C-reactive protein and glucose, are usually normal **(Goswami *et al*., 2012)**.

Etiology: is a chronic, inflammatory condition that affects 4.8% of the world's population. Some investigators have classified it as congenital anomaly or as hereditary disorder, while others believe that this lesion has a multifactorial etiology including psychological factors, allergic conditions, psoriasis, and nutritional deficiencies **(Nandini *et al*., 2016; Picciani *et al*., 2017)**. Some bacterial and fungal infections related to geographic tongue due to the nature of the inflamatory lesions. However, no particular microorganism consistently found in association with the disease **(Bruno *et al*., 2016)**.

Figure (1.10): Geographic tongue **(Ogueta *et al*., 2019)**.

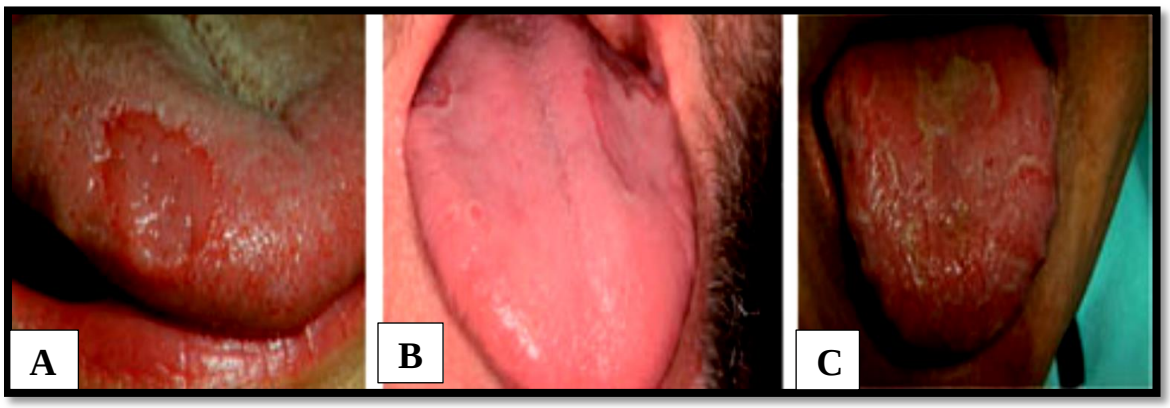
Classification of geographic tongue **(Dafar *et al*., 2016)**.

1. Classification of geographic tongue according to the number of observed lesions (Figure 1.11 A, B, C).

(A) Mild (single lesion)

(B) Moderate (2–5 lesions)

(C) Severe (6 lesions or more).

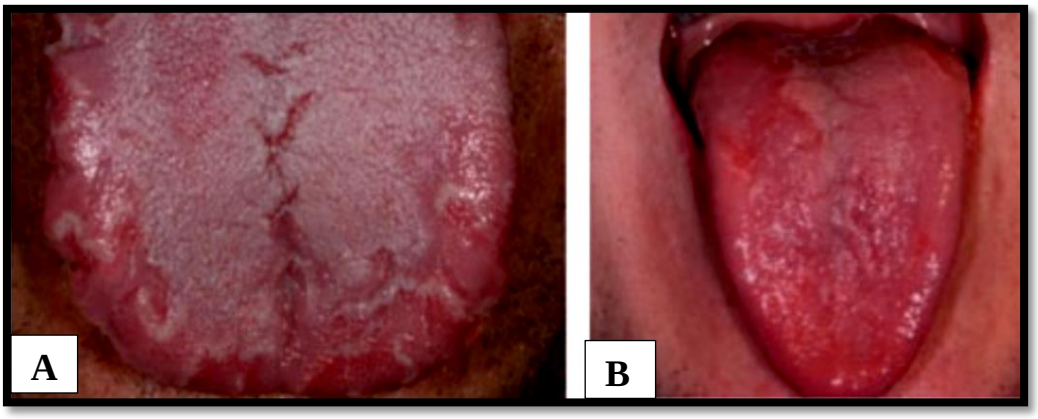


Figure(1.11): Geographic tongue **(A)** Mild **(B)** Moderate **(C)** Severe**(Dafar *et al*., 2016)**.

2. Classification of geographic tongue according to the activity of the lesions. (Figure 1.12 A, B)

(A) Active lesions have well-demarcated white or red borders.

(B) Passive lesions lack distinct whitish borders, but still have depapillated areas.



Figure(1.12): Geographic tongue **(A)** Active lesions **(B)** Passive lesions **(Dafar *et al*., 2016).**

Treatment, Because it is a benign and generally asymptomatic lesion, geographic tongue patient does not receive treatment **(Goswami *et al*., 2012)**.

Symptomatic treatment based on the use of oral rinses containing anesthetics, topical corticosteroids, vitamin A, antihistamines and zinc supplements. It recommended also to avoid contact with irritants and infectious factors, such as dentures and braces, which may exacerbate the situation. The patient should be instructed in relation to diet, avoiding acidic and spicy foods. In addition, patients should be instructed to always maintain good oral hygiene **(González-Álvarez *et al*., 2018)**.

1.7.8 Hairy tongue (HT)

Is a benign medical condition characterized by elongated filiform lingual papillae with typical carpet-like appearance of the dorsum of the tongue **(Schlager**

***et al.*, 2017)**. Hairy tongue may also appear brown, yellow, green, blue, or even unpigmented. It is typically causes aesthetic concerns and halitosis to the patient and leads to frequent physician visits (**Figure1.13)(Handler *et al.*, 2017).**

The diagnosis of HT primarily relies on a visual intraoral examination. HT shows a predilection for the dorsal tongue, anterior to the circumvallate papillae and sulcus terminalis **(Gurvits and Tan, 2014)**. Microscopic examination may be used as an adjunct to diagnosis; demonstrating elongated filiform papillae on the dorsal tongue more than 3 mm in length. Cultures may be considered to rule out superimposed bacterial or fungal infections associated with HT **(Del Barrio-Díaz *et al.*, 2017)**. Tongue biopsy is supportive but not usually required if the lesion appears characteristic for HT and responds to mechanical debridement. Careful review of known precipitating factors and recent medication changes is also fundamental in the diagnosis of HT **(Del Barrio-Díaz *et al.*, 2017)**.

Etiology has not been fully elucidated and are likely multifactorial. Male sex, older age, smoking, alcohol use, xerostomia, poor oral hygiene, trigeminal neuralgia and certain medications such as antidepressant and bismuth salicylate place patients at higher risk for developing black hairy tongue. Black hairy tongue also shows clear gender and age predilection **(Grigority and Amy, 2014)**.

Figure (1.13): Hairy tongue **(Handler *et al.*, 2017).**

Treatment: The goal of therapy is the discontinuation of potential offending agents (including dietary or medicinal causes) and modifying predisposing factors (smoking, black tea consumption, neurological conditions, general debilitation), followed by maintaining good oral hygiene and gentle debridement with a soft toothbrush or tongue scraper to promote desquamation of the hyperkeratotic papillae **(Gurvits and Tan, 2014)**. Rinsing with diluted hydrogen peroxide solution may help improve desquamation of the keratinized filiform papillae and bleach the color. Lifestyle modifications, including aggressive oral hydration are important and increased dietary consumption of raw fruits and vegetables may help improve this condition by facilitating the roughage on the tongue **(Schlager *et al.*, 2017)**.

1.7.9 Median rhomboid glossitis (MRG)

Median rhomboid glossitis is defined as the central papillary atrophy of the tongue and it affects 0.01%–1.0% of the population. MRG is typically located

around the midline of the dorsum of the tongue **(Figure 1.14)(Goregen *et al*., 2011).**

Figure (1.14): Median rhomboid glossitis **(Goregen *et al*., 2011)**.

It occurs as a well-demarcated, symmetric, depapillated area arising anterior to the circumvallate papillae. However, it sometimes appears in the paramedial location. The surface of the lesion can be smooth or lobulated. While most of the cases are asymptomatic, some patients complain of persistent pain, irritation, or pruritus **(Panta and Erugula, 2015).**

Additionally, it is not unusual in median rhomboid glossitis to have a "kissing lesion," or area of roughness, most commonly in the area of the hard and soft palate where the tongue generally rests against the palate **(Figure1.15)(Bihari *et al*., 2014; Nath and Rath, 2018)**.

Figure (1.15): The concomitant lesion of MRG, which called kissing lesion **(Bihari *et al*., 2014)**.

Etiology: Despite the relative frequency of MRG, little is known about its etiology, It has been described as a congenital abnormality of tongue due to failure of tuberculum impar to retract before fusion of lateral halves of tongue. There are several predisposing factors associated with MRG such as smoking, denture wearing, diabetes mellitus, as well as candidal infections. Previous study suggests that infection with C. albicans may be the causative factor **(Bihari *et al*., 2014)**.

The treatment for median rhomboid glossitis is essentially the same as the treatment for oral candidiasis. The numerous antifungal agents that have been developed have a variety of side effects. Potential adverse reactions and drug interactions should be discussed with the patient's primary care physician before any particular agent is prescribed **(Pili *et al.*, 2014)**.

Conclusion

The tongue is an important organ that occupies a large area in the oral cavity covering the floor of the mouth. It is below the palate, and is surrounded by teeth on either side. Together with the palate, it performs the function of swallowing.

A host of things can go wrong with the formation of the tongue, since it develops from multiple sources, rather than a single progenitor process. Most of the developmental disturbances of the tongue are related to its size and shape, though structural defects also exist. Some developmental disturbances may be asymptomatic that required no treatment while other disturbances may affect on function therefore required intervention and treatment.

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