

Introduction to Oral Medicine & Evaluation of Dental Patient

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Oral medicine

A branch of dentistry dealing with diseases of the oral and Para oral structures and the oral management of systemic diseases.

also the diagnosis and management of medical disorders involving the mouth, jaws, and salivary glands.

evaluating, and assessing a patient's oral and overall health status is the process which can be divided into four major overlapping parts:

- 1. Information gathering**
- 2. Establishing a differential and final diagnosis**
- 3. Formulating a plan of action**
- 4. Initiating treatment and follow-up**

INFORMATION GATHERING

An appropriate interpretation of the information collected through a **medical history and patient examination** achieves several important objectives; it affords an opportunity for

1. gathering the information necessary for establishing the diagnosis of the patient's chief complaint (CC)
2. assessing the influence of the patient's systemic health on patient's oral health
3. detecting underlying systemic conditions that the patient may or may not be aware of
4. providing a basis for determining whether dental treatment might affect the systemic health of the patient
5. providing a basis for determining necessary modifications to routine dental care
6. monitoring known medical conditions

Evaluation of the case:

1. Identification: Name, date and time of the visit, date of birth, gender, ethnicity, occupation, contact information of a primary care physician, and referral source.

2. CC: The main reason for the patient seeking care or consultation—recorded in the patient's own words.

3. History of present illness: A chronologic account of events; state of health before the presentation of the present problem; description of the first signs and symptoms and how they may have changed; description of occurrences of amelioration or exacerbation; previous clinicians consulted and prior treatment.

4. Medical history: General health; childhood illnesses; major adult illnesses; immunizations; surgeries (date, reason, and outcome); pregnancies (gravid); births (para); medications (prescribed medications, over the-counter medications, supplements, and home remedies); and allergies.

5. Family history: Blood relatives with illnesses similar to the patient's concern; specific genetic disorders, cardiovascular diseases, diabetes mellitus, different types of cancers.

6. Personal and social history: Birthplace; marital status; children; habits (tobacco use, alcohol use, recreational drug use); sexual history; occupation; religious preferences that may have an impact on types of care.

7. Review of systems (ROS): Identifies symptoms in different body systems

Review of Systems : Is a Systematic Approach to Ascertain Mostly Subjective Symptoms Associated With the Different Body Systems

General: Weight changes, malaise fatigue, night sweats

Head: Headaches, tenderness, sinus problems

Eyes: Changes in vision, photophobia, blurring, diplopia, spots, discharge

Ears: Hearing changes, tinnitus, pain, discharge, vertigo

Nose: Epistaxis, obstructions

Throat: Hoarseness, soreness

Respiratory: Chest pain, wheezing, dyspnea, cough, hemoptysis

Cardiovascular: Chest pain, dyspnea, orthopnea (number of pillows needed to sleep comfortably), edema, claudication

Dermatologic: Rashes, pruritus, lesions, skin cancer (epidermoid carcinoma, melanoma)

Gastrointestinal: Changes in appetite, dysphagia, nausea, vomiting, hematemesis, indigestion, pain, diarrhea, constipation, melena, hematochezia, bloating, hemorrhoids, jaundice

Genitourinary: Changes in urinary frequency or urgency, dysuria, hematuria, nocturia, incontinence, discharge, impotence

Gynecologic: Menstrual changes (frequency, duration, flow, last menstrual period), dysmenorrhea, menopause

Endocrine: Polyuria, polydipsia, polyphagia, temperature intolerance, pigmentations

Musculoskeletal: Muscle and joint pain, deformities, joint swellings, spasms, changes in range of motion

Hematologic: Easy bruising, epistaxis, spontaneous gingival bleeding, increased bleeding after trauma

Lymphatic: Swollen or enlarged lymph nodes

Neuropsychiatric: Syncope, seizures, weakness (unilateral and bilateral), changes in coordination, sensations, memory, mood, or sleep pattern, emotional disturbances, history of psychiatric therapy

The examination procedure in a dental office setting includes :

1. Registration of vital signs (respiratory rate, temperature, pain level, pulse, and blood pressure)
2. Examination of the head, neck, and oral cavity, including salivary glands, temporomandibular joints, and head and neck lymph nodes
3. Examination of cranial nerve function
4. Special examination of other organ systems
5. Requisition of appropriate laboratory studies

ESTABLISHING A DIFFERENTIAL AND FINAL DIAGNOSIS

Before establishing a final diagnosis in the orofacial region,

formulate a differential diagnosis (D.D.) based on the history and physical examination findings.

The disorders included in the differential diagnosis will determine which laboratory tests, such as biopsies, blood tests, or imaging studies, are required to reach a final diagnosis.

Extraoral Examination

- 1. Generalized appraisal of the patient**
- 2. Face**
- 3. Submental and submandibular lymph node areas**
- 4. Parotid area including parotid gland and lymph nodes**
- 5. Tempromandibular joint area**
- 6. Ears**
- 7. Neck and cervical lymph nodes including supraclavicular nodes**
- 8. Thyroid gland area**

Intraoral Examination

- 1. Lips and corners of the mouth**
- 2. Mucous membranes of lips, labial and buccal vestibule, gingiva, buccal mucosa, papillae of the parotid ducts**
- 3. Hard palate and palatal gingiva**
- 4. Soft palate**
- 5. Tonsillar areas and posterior pharynx**
- 6. Tongue – dorsum (papillae), ventrum (veins, fimbriated folds), lateral borders (foliate papillae, bilaterally)**
- 7. Floor of the mouth and lingual gingiva**
- 8. Teeth (occlusion, caries, other defects)**

Extraoral Examination

1-a general overall evaluation of the individual. Observe the patient as s/he walks to the dental chair.,

2- a patient with extremely large hands may have the disease acromegaly.

3- Swollen ankles may indicate edema due to a kidney or a heart problem.

4- color of face and sclera, color of lip if there is cyanosis

5- observe whether or not there is basic symmetry. Although most faces have some asymmetry, Examples of asymmetries are: previous surgeries, nerve paralysis from CVA/stroke, tumors, and infections.

an obvious asymmetry may be due to a dental problem, particularly if associated with pain. An abscess of a tooth or the periodontal tissues is a common cause for facial swelling, once trauma is ruled out

Some **asymmetries** may be due to swollen lymph nodes or glands. On doing the facial and head and neck examination, the examiner should palpate all of the areas of known lymph nodes regardless of swellings since a swollen gland may be only palpable and not visible

6- Pigmented lesions such as moles and age spots and ulcers such as with skin cancers are readily observable and should be questioned. A rash on the skin of the face may be due to an allergy which can lead to more knowledge about the history of the patient and about future treatment plans

Lymph node examination

Lymph nodes

are concentrations of lymphatic tissue with T cells, B cells and macrophages which recognize antigens and mount a response. When a lymph node responds, it undergoes a hyperplasia with an increase in the numbers of cells. This causes the gland or tissue to enlarge so that it may become palpable. A major component of the immune surveillance system, **lymphatic tissue responds to inflammation, infections and malignant tumors. Any of these may cause an enlargement.**

lymph nodes are oval or bean-shaped structures found along lymphatic vessels that drain body parts. Normally, they are non-tender, soft and cannot be felt even though they are present. Therefore, one uses the knowledge of anatomical location of the nodes to perform the palpation to find them .

The examiner palpate just beneath the skin with a rotating motion in the areas that nodes would be expected to be found. In most circumstances they will not be felt. however, in young children, with response to so many new antigens, it is easy to palpate nodes in the head and neck .

For inflammation and infection, the nodes may be soft, swollen, tender and movable. After the injury subsides, then, within weeks or months, the node will return to a more normal size. However, sometimes, as when there is scar tissue or calcification in the node, it will not return to normal size and will stay enlarged.

When a tumor grows within a lymph node (lymphatic metastasis), the node will be enlarged, usually, non-tender, and may not be movable, especially if the tumor has invaded to the outside of the node.

Thus, exactly what palpating a lymph node (**positive lymphadenopathy**). Other findings must be used to determine the significance. For example, a patient with an upper respiratory infection, such as a cold, may have several enlarged, tender nodes due to the drainage from the affected tissue sites to the nodes. They will get smaller some time after the infection has passed.

Tumor bearing nodes on the other hand will not regress but will continue to expand. The patient would need a medical workup to find the tumor

- soft (insignificant), rubbery (classically lymphoma), hard (classically malignancy & granulomatous infection).

- **Tender (classically infection) vs. non-tender (classically malignancy)** for example

A logical place to start palpating for nodes is in

1- the **submental nodes**, below and lingual to the chin, against the mylohyoid muscle. This node is significant because it is the one node that is easy to discover the site of drainage. **The lower lip, lower anterior teeth and gingiva, corners of the mouth, and skin and tissue of the chin drain to the submental node.**

Thus, palpating a node there, one should look for a possible lesion in those sites. All of the other lymph nodes do not have as direct a relationship to the area that they may drain as there are interconnections with other nodes and lymphatic vessels .

2- The **submandibular nodes** are bilateral and can be palpated by pressing the tissue below the jaw against the medial side of the mandible or by bimanual palpation with one finger in the mouth and the other externally pushing up .

There are three groups of nodes associated with the submandibular gland. What one is actually palpating is the submandibular gland it self to identify these nodes .

3- a group of nodes associated with the **parotid gland** .It is helpful to have the patient clench the teeth together to make the masseter muscle firm, against which one can palpate for any swellings.

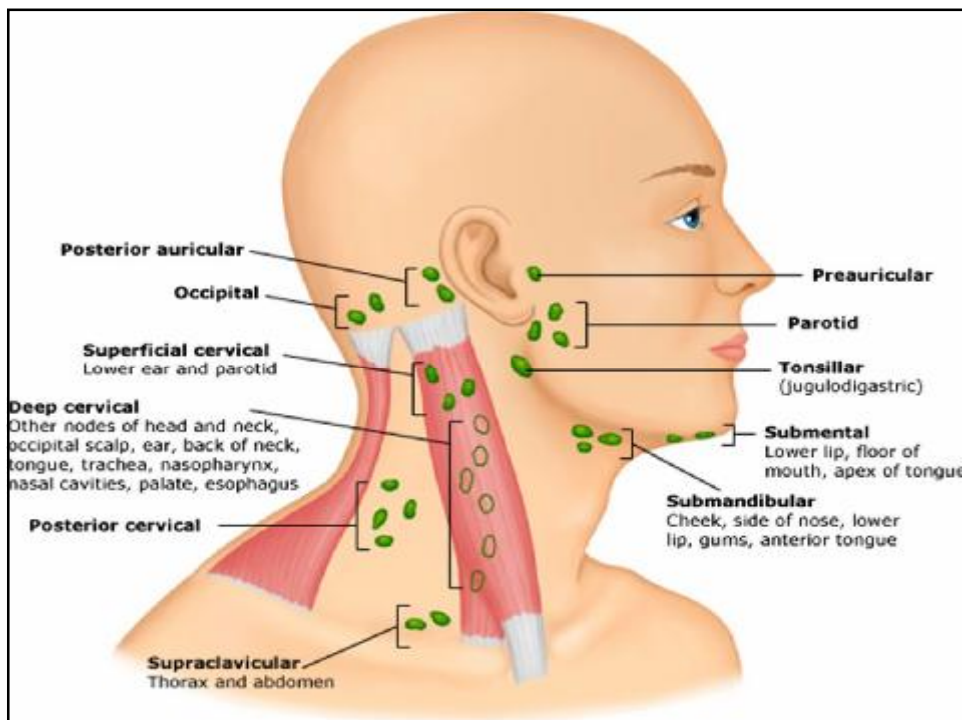
4- **postauricular nodes**

move the ear lobe aside and look and feel behind the ear

5- The cervical chains.

1- Anterior Cervical (both superficial and deep):
Nodes that lie both on top of and beneath the sternocleido mastoid muscles (SCM) on either side of the neck, from the angle of the jaw to the top of the clavicle. The right SCM turns the head to the left and vice versa. Drainage: The internal structures of the throat as well as part of the posterior pharynx, tonsils, and thyroid gland.

- 2- Posterior Cervical: Extend in a line posterior to the SCMs but in front of the trapezius, from the level of the mastoid bone to the clavicle. Drainage: The skin on the back of the head. Also frequently enlarged during upper respiratory infections (e.g. mononucleosis).
- 6- Tonsillar: Located just below the angle of the mandible. Drainage: The tonsillar and posterior pharyngeal regions.
- 7- Supra-clavicular: In the hollow above the clavicle, just lateral to where it joins the sternum. Drainage: Part of the thoracic cavity, abdomen.
 - Left supraclavicular node (Virchow's node) classical sign of abdominal process.
 - Right supraclavicular node classic sign of intrathoracic process.



The **temporomandibular joint** by having the patient open and close while the fingers are in the canal or near the tragus of the ear. Any clicking or deviation should be noted and further questions asked of the patient if this is found .

The **thyroid gland** may be palpated by putting the fingers gently over the area and having the patient swallow, whereby the gland will pass beneath the fingers .

Intraoral Examination

The oral examination can start with the **lips**. observe the vermilion border and the corners of the mouth for any deviation. For instance, patients who have been over exposed to the sunlight frequently have a loss of the vermilion line and whitish lesions and may have a premalignant lesion.

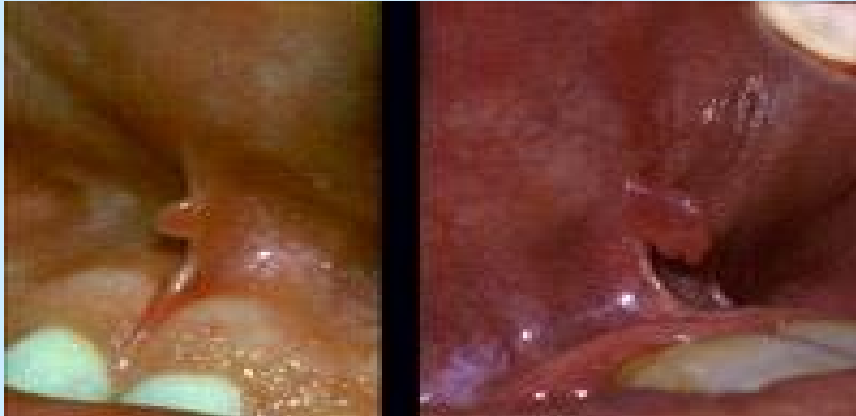
Next, have the patient bring the teeth together to relax the lip muscles. Drape the upper and the lower lips and look at the mucous membrane sides down to the vestibule . On the upper lip, see a maxillary labial frenum as a normal structure. Often, there is a small tab or tag of normal appearing tissue hanging from this frenum . This is a **mucosal tag** and may get irritated if caught between the upper teeth. It is a variation of normal.

Also noted in some patients along the upper lip near the vermillion are clusters of yellow-white submucosal pinhead glands that are called **Fordyce granules** . These are ectopic sebaceous glands that are not associated with any hairs.

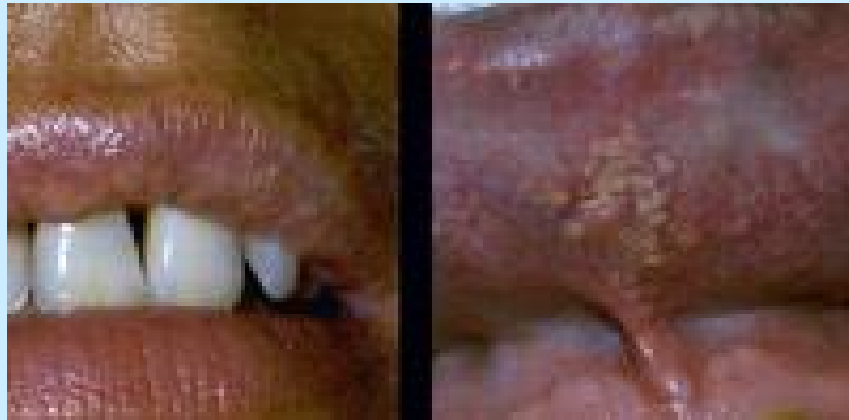
On retracting the lower lip, see fine white, slightly depressed lines, which are scars, usually from falling as a youngster.

if the lower lip is held for a while and dried, one can test the minor salivary glands of the lip by noting whether or not mucus is expressed from the many glands of the lower lip.

also note the vestibule area, the gingiva and the anterior teeth .



Mucosal tags or tabs projecting from the maxillary labial frenum. Also, note the stippled gingivae and mucogingival line on the left



Fordyce glands on inner aspect of upper lip. Ectopic sebaceous glands appear as submucosal yellowish, pin-head sized papular lesions, often gathered together in clusters as seen here in two patient

When retract the corners of the mouth to reveal the **buccal mucosa**. Here, there are two normal landmarks.

One is the **papilla and opening of the parotid duct (Stensen duct)** , can test the saliva existing from the duct by massaging on the side of the face where the parotid gland is located and observing the flow from the duct. It should be clear or watery since the parotid is mostly serous.

A lack of flow or sluggish flow may indicate a dry mouth (xerostomia). Causes may be medication induced or radiation therapy, amongst others. A yellowish salivary flow usually indicates a bacterial infection in the parotid gland, requiring treatment .



Buccal mucosa with a prominent papilla of Stensen duct with an expression of clear, watery saliva from the parotid gland. Also, note the large cluster of ectopic sebaceous glands, a common location

The other landmark on the buccal mucosa is a white line known as the **occlusal or bite line**, a horizontal line running from the corner of the mouth posteriorly, where the teeth meet the mucosa. It can be very exaggerated in some patients and mimic disease.



Retraction of the cheek to view the buccal mucosa which includes the papilla of Stensen duct opposite the maxillary second molar and the occlusal or bite line opposite where the teeth occlude



Buccal mucosa with a prominent, white occlusal line and a prominent papilla of Stensen duct. The patient has a habit of sucking in the buccal mucosa and pressing the tongue against the teeth, producing the white lines

The **hard palate** can be viewed next either directly or using a dental mirror . The anterior portion has prominent, firm folds called **rugae** that can be large in some patients.

Posteriorly, the hard palate is whitish due to the keratinized surface. Laterally, where there are numerous minor salivary glands and blood vessels, there is a bluish hue.

There are pin-sized, pink, ductal openings from minor glands. In smokers, they may be reddened and prominent against a whiter than normal background. There is also a **linea alba** or white line seen in the midline running antero posteriorly. At the posterior segment, in the midline, may be small depressions called **fovea palatini** ,just anterior to the vibrating line of the palate .

In the midline of the hard palate extra bone may be found . Called **a torus** ,it may be minimal or very enlarged. It will feel bony hard and will appear opaque on a radiograph confirming that it is composed of extra, but normal bone .

Moving posteriorly with the examination, one envisions the soft palate which ends at a pendulous structure, the **uvula**.

ask the patient to say "ah" or "eh" and see that the soft palate vibrates, also confirming the intactness of cranial nerve VIII .



Edentulous hard palate and soft palate showing a bony outgrowth in the midline that is called a maxillary torus. Note the difference in color between the soft and the hard palate, the soft palate being more pink due to lack of keratin

In this posterior aspect of the soft palate is a circle of lymphoid tissue **Waldeyer ring**, including the tongue. The major tonsillar tissues are readily identifiable.

1-The **palatine tonsils** are located on each side situated between the palatoglossal and the palatopharyngeal folds. They may be very large in children, appearing to close off the airway, but in adults they are usually receded between the folds. If only one palatine tonsil is enlarged and pushed toward the midline, then one should consider tumor, lateral pharyngeal abscess or other conditions



Enlarged palatine tonsils with some crypts .showing at the surface

Tonsillar crypts are indentations that can become filled with bacteria. A large accumulation of bacteria in a crypt is a **bacterial plug** . It can cause a tickle in the throat and malodor.

The bacterial plug is best diagnosed by expressing the yellow mass from the tonsil.

Another lesion that may be noted in tonsillar tissue is the **pseudocyst of the tonsil** , also known as an oral lymphoepithelial cyst. It is formed by the closing over of the opening of the tonsillar crypt which then allows desquamating epithelial cells to accumulate, causing a raised, yellow lesion.

- Diagnosis is usually made by trying to express the yellow. In **pseudocysts**, there is a covering and the yellow cannot be readily expressed as in the **bacterial plug**. Eventually, the contents spontaneously are expressed. The lesion is one that need not be removed although they can be confused with a fatty tumor (lipoma). The pseudocyst can occur in any of the major and minor tonsillar tissues.



Bacterial plug filling a tonsillar crypt. It is a yellow plug composed primarily of bacteria with a few desquamated epithelial cells .

2- Accessory tonsils may be noted at the posterior part of the soft palate, often near the base of the uvula . They may resemble a small tumor. However, they do get bigger or smaller after reacting to a stimulus and this gives a clue to their tonsillar origin .

If the palatine tonsils have been removed, two findings may be present. One is a band of white that represents scar tissue. The other is a mass of tonsillar tissue called **residual tonsil** .These fleshy masses may become reactive remain enlarged. They represent foci that were not totally removed at the tonsillectomy .



Accessory tonsil at the base of the uvula. It is pink,, and may react and become bigger and smaller. It has a smooth surface in contrast to a papilloma which has a pebbly surface and can appear in this location

More tonsillar tissue can be noted by depressing the tongue down and having the patient say "ah".

In the posterior pharyngeal wall are tissues that are tonsillar and can become reactive and then noted as bright pink, fleshy masses (reactive pharyngeal tonsils)

Sometimes pseudocysts are noted in them. Also noted in some patients in this area as a yellow, white, sticky mucus plug Known as (postnasal drip)



Posterior pharyngeal wall in a patient who had a tonsillectomy. Note the raised reddish masses that are reactive pharyngeal tonsils

Tonsillar tissue is prominent at the very base of the tongue but is usually hard to visualize (**lingual tonsil**) .

Other tonsillar tissue in the tongue is noted on the lateral surfaces, most posteriorly, in the **foliate papillae** bilaterally . These are small reddened areas with small bumps and indentations. They may be very enlarged in smokers and do undergo reactive hyperplasia that may mimic a tumor . One should follow a reactive foliate papilla to see that it regresses. Bacterial plugs and pseudocysts may occur here also.

The tongue can be viewed next, by holding it with a gauze and gently moving it, or by having the patient move it from side to side, while holding the buccal mucosa to the side, and forward while opening wide.

papillae of the tongue are:

1- The **filiform papillae** are the most numerous ones. Having a keratinizing surface, they appear white

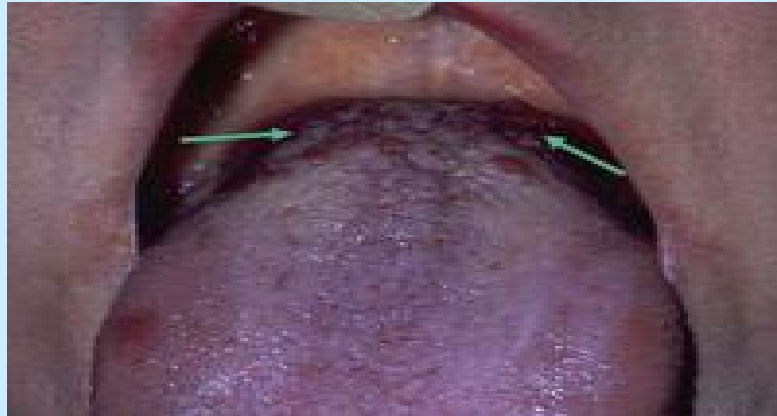
. Sometimes the surface builds up yielding a coated or hairy tongue. Depending on circumstances, this coating can become colored, such as brown in heavy smokers or tea drinkers.

Interpersed among the filiform papillae are small, pink, dome-shaped 2- **fungiform papillae**, which may or may not have taste buds.

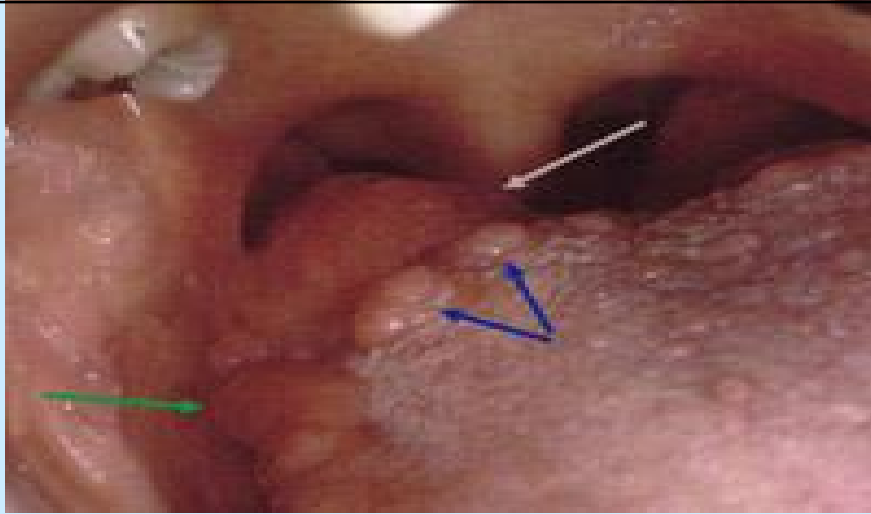
3- The circumvallate papillae, the largest of the papillae, are present in the most posterior part of the tongue as two rows of structures forming an upside down "V", with pointing toward the throat. Some times they extend beyond the surface and can mimic small tumors.

The true lingual tonsils are beyond the circumvallate papillae and usually are seen only with a mirror reflecting light on them.

4- The foliate papillae are bumps or grooves of tonsillar tissue (lymphoid) on the lateral borders of the tongue at its most posterior segment where the tongue meets the floor of the mouth. It is important to visualize these because anterior to them is a site that can give rise to squamous cell cancer of the tongue. The base of the tongue is bluish because it is richly vascular.



Vascular tonsillar tissue at the base of the tongue. Some circumvallate papillae are anterior to the tonsillar tissue



An enlarged lingual tonsil, Grey arrow. Also, a prominent foliate papilla (tonsillar tissue) at the posterior lateral surface of tongue, green arrow, and some circumvallate papillae, blue arrows



Two different patients with enlarged, reactive foliate papillae



Dorsal surface of the tongue showing the white filiform papillae and the red fungiform papillae



Dorsal surface of tongue showing a double row of circumvallate papillae running posteriorly to form a "V" shape. These are raised above the surface and mimic small "tumors."

Next, have the patient open the mouth and try to touch the hard palate with the tongue. Some patients cannot perform this maneuver and it indicates a short lingual frenum in a condition called **ankyloglossia or tongue-tie**.

In addition to noting the lingual frenum in the midline of the ventral surface of the tongue,

visualize the large blue **veins** running lateral to it on each side. These can become prominent and in older patients there can be other, deeply blue veins that are prominent (varicose veins) .

Varicosities, dilated tortuous veins, are common and can mimic a vascular lesion such as a hemangioma, a benign tumor composed of blood vessels or a vascular malformation.



Ventral surface of the tongue and the floor of the mouth in a patient with ankyloglossia or "tongue-tie." The lingual frenum is attached too far forward toward the tip of the tongue and the patient cannot touch the hard palate with the mouth open.



Normal ventral surface of the tongue showing the midline lingual frenum, and the two prominent lingual veins running on each side. Also, note the fimbriated folds or lines running parallel to the veins.



Varicose veins, ventral surface of the tongue in an older patient. These are dilated veins due to loss of elasticity and do not reflect any systemic condition.

The floor of the mouth is examined next. In the anterior portion on each side are the **sublingual plicae or carunculae**, slightly raised, cylindrical structures running from the midline to each side and housing openings of the sublingual glands.

At the most anterior portion of each is a more raised nodule with an opening to the submandibular gland (Wharton duct).

The **submandibular gland** can be milked to see a less clear but not milky solution expressed from the duct.

A stone in the duct can prevent the saliva from exiting. If the patient is edentulous and the mandible is greatly resorbed, then the floor of the mouth can appear dome-shaped as a tumor-like mass rising above the mandible and mimicking disease.

Sometimes, hyperplastic, **reactive oral tonsillar tissue** may be noted in the floor of the mouth. These may be associated with **pseudocysts/oral lymphoepithelial cysts**.



Normal floor of the mouth showing bilateral sublingual plicae or carunculae. At the medial aspect of each is the opening of Wharton duct, green arrow.

On the anterior gingiva, usually of the mandible, a similar condition may be found at the mucogingival line. Called **gingival fibrous nodules or gingival nodules**, they are small, pink, nodules with a sessile base composed of normal collagen. They may be single or multiple and, if removed, may recur. But they are normal structures that can mimic disease.

Gingival fibrous nodules at the mucogingival junction on the attached gingiva in two separate patients. Considered normal structures, they are composed of dense collagen like a fibroma. The larger lesion at the top recurred after removal.



Gingival fibrous nodules at the mucogingival junction on the attached gingiva in two separate patients. They can be multiple as in the bottom picture.



12 Cranial Nerve

Cranial Nerve	Assessment
I olfactory	Smell
II optic	Vision
III oculomotor	Eye movements, PERRLA, eyelids
IV trochlear	
V trigeminal	Facial sensations, corneal reflex
VI abducens	Assessed with III and VI
VII facial	Taste, smile, frown, close eyes tightly
VIII acoustic	hearing
IX glossopharyngeal	Gag reflex, swallowing, taste;
X vagus	
XI spinal accessory	Shrug shoulders, turn head against resistance
XII hypoglossal	Stick out tongue, move tongue side to side

Table 24.1 Cranial Nerves

NAME	NUMBER	FUNCTION	ACTIVITY
Olfactory	I	Sensory	Sense of smell.
Optic	II	Sensory	Vision.
Oculomotor	III	Motor	Pupillary reflex, extrinsic muscle movement of eye.
Trochlear	IV	Motor	Eye-muscle movement.
Trigeminal	V	Mixed	<i>Ophthalmic branch:</i> Sensory impulses from scalp, upper eyelid, nose, cornea, and lacrimal gland. <i>Maxillary branch:</i> Sensory impulses from lower eyelid, nasal cavity, upper teeth, upper lip, palate. <i>Mandibular branch:</i> Sensory impulses from tongue, lower teeth, skin of chin, and lower lip. Motor action includes teeth clenching, movement of mandible.
Abducens	VI	Mixed	Extrinsic muscle movement of eye.
Facial	VII	Mixed	Taste (anterior two thirds of tongue). Facial movements such as smiling, closing of eyes, frowning, Production of tears and salivary stimulation.
Vestibulocochlear	VIII	Sensory	<i>Vestibular branch:</i> Sense of balance or equilibrium. <i>Cochlear branch:</i> Sense of hearing.
Glossopharyngeal	IX	Mixed	Produces the gag and swallowing reflexes. Taste (posterior third of the tongue).
Vagus	X	Mixed	Innervates muscles of throat and mouth for swallowing and talking. Other branches responsible for pressoreceptors and chemoreceptor activity.
Accessory	XI	Motor	Movement of the trapezius and sternocleidomastoid muscles. Some movement of larynx, pharynx, and soft palate.
Hypoglossal	XII	Motor	Movement of tongue for swallowing, movement of food during chewing, and speech.

