Extraoral and Intraoral Soft Tissue Examination

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Introduction

The extraoral and intraoral soft tissue examination is an essential part of any new patient exam. This examination must be performed thoroughly and systematically to ensure that no parts are missed. With experience, the examination will become second nature and can be done quickly, but at first, it must be broken down into steps. It is important to record if the soft tissue is within normal limits (WNL), or not. If there is an abnormality, further details are noted, such as type of abnormality, size, color, location, surface texture, and consistency. A good knowledge of normal anatomy and common variations of normal is essential to determine if a structure is within normal limits or abnormal. It is also worthwhile to use the correct terms when referring to different regions of the oral soft tissues, to facilitate communication with other dental professionals.

It is important to make the patient feel comfortable during the appointment. Explain the steps that will be followed and the length of the appointment, and answer any questions. Many patients feel some anxiety at dental appointments. They may feel vulnerable, apprehensive about pain, or ashamed at the condition of their teeth. It is important to appear calm, organized, and competent, even if you do not feel this way at first1.

Overview

A complete examination covers the following three areas:

- The General Examination: briefly assesses the patient's general appearance
- The Extraoral Head and neck Soft Tissue examination: focuses on the head and neck.
- The Intraoral soft tissue examination: determines if the soft tissue is within normal limits (WNL)

A. General examination

A thorough examination includes observing the patient's general appearance. The examination starts as soon as the patient enters the dental operatory. The patient's general appearance may give clues to medical conditions. As the patient enters the room, and during history taking, observe the patient's general appearance, symmetry, gait, and mobility. During the history taking, note any facial asymmetries, lesions or scars.

For example, if the patient is in a wheelchair, you will need to find out the reason for this in your medical history. This could affect dental treatment in several ways. If the patient had suffered a stroke, they may need assistance transferring to the dental chair. As well, the medications the patient is taking following a stroke could affect your treatment. Additionally, the patient could have trouble maintaining adequate oral hygiene due to physical limitations. If the patient has decreased mobility of the head and neck, this should be noted, as it may affect the patient's ability to tolerate dental procedures.

The patient's exposed skin should also be examined. Clues to the patient's medical status may be obtained. If petechiae, ecchymosis, or hematoma are seen, then fukrther information should be obtained from the patient about bleeding problems, or medications such as blood thinners. If the patient's skin appears yellowish, more information is needed about possible jaundice or liver problems. Clubbing of the fingers may be a sign of heart or respiratory problems.

B. Extraoral head and neck examination

1. Asymmetries

Asymmetries of the head and neck are assessed by standing directly in front of the patient. This may be difficult to do with the patient sitting in the dental chair, so the patient may have to sit on the side of the chair. Compare one side of the head and neck to the other. Most people are not completely symmetrical, but significant asymmetries should be noted and the cause obtained from the patient if known. Examples of asymmetries are: previous surgeries, nerve paralysis from CVA/stroke, tumours, and infections. Details of the asymmetries should be noted in the chart - such as "3 cm scar in left submandibular area from submandibular gland stone removal 2001".

2. Lymph node examination

The lymph nodes in the head and neck area should be palpated gently to look for tenderness or enlargements. Normal lymph nodes are either not palpable, or you may feel a lymph node that is the size and shape of a small pea or lentil. These are mobile, and non-tender. Abnormal lymph nodes are generally larger, fixed and may be tender.

If an abnormality is noted, the:

- number,
- size,
- consistency,
- tenderness,
- mobility and
- location should be noted in the chart.

Tenderness of the lymph nodes generally indicates inflammation or drainage of infection. Cancer metastasis to a lymph node is often a fixed, non-tender, firm enlargement. Lymphoma is another possible cause of non-tender enlargement of lymph nodes of the neck.

Procedure

To palpate the head and neck lymph nodes, position the dental chair with the patient's head and neck at elbow level, when standing directly behind the patient3. The patient should always be informed of the examination before starting. The neck should be relaxed, with the neck flexed slightly forward1. Patients may automatically tip their chin superiorly, which tenses the neck making it more difficult to examine. If this happens, have the patient bring their chin toward their chest slightly. Palpate the lymph nodes of the head and neck using the pads (or flat) of the fingertips, using an on and off motion, walking your fingers along the area being examined.

The lymph node examination should include:

- preauricular,
- postauricular,
- suboccipital
- submandibular,
- submental,
- cervical and
- supraclavicular lymph nodes4

Alternatives

1. Instead of an “on and off” motion of the fingertips, a constant pressure can be used to examine the lymph nodes.
2. Instead of standing behind the patient, the head and neck lymph nodes can be examined by standing in front of the patient. This method may be used if the examiner can stand directly in front of the patient. This is more difficult if the patient is seated in a dental chair.
3. **TMJ examination**

A limited TMJ examination may be done at the initial dental appointment.

Procedure

Place fingertips over the TMJs with gentle pressure. Note any tenderness, swelling or redness at rest. Ask the patient to open and close slowly several times. Then ask the patient to slowly move the mandible from side to side in an open position. Record any tenderness, pain, clicking, crepitus, deviations, or limited opening.

If any abnormalities are noted, then a detailed TMJ exam including palpation of the muscles of mastication may be indicated. This is beyond the scope of this article.

C. Intraoral soft tissue examination

It is important to record if the soft tissue is within normal limits (WNL), or not.

If there is an abnormality, further details are noted, such as:

- type of abnormality – eg. polyp, macule, ulcer
- size – measure exact size with a perio probe or ruler,
- color,
- location,
- surface texture - eg. smooth, papillary, lobulated
- and consistency eg. soft, firm, fluctuant

A good knowledge of normal anatomy and common variations of normal is essential to determine if a structure is within normal limits or abnormal.

To examine a patient's oral soft tissue, a good light is needed, as well as appropriate instruments. Dental professionals usually use 2 mirrors and an overhead dental light. A periodontal probe is often useful to measure the size of any abnormality. In other settings, such as screening clinics or nursing homes, tongue depressors and a headlamp or flashlight may be used.

Step 1

Lips

Vermillion – look for even coloring, symmetry, and sharp demarcation between the skin and the lip vermillion. Blurring of the edge of the vermillion can be seen in actinic chelitis (sun damage of the lip). Record if there are any abnormalities – such as hyperkeratosis (white patches), ulcers, or pigmentation. Check the corners of the mouth (lip commissures), where redness and small fissures may indicate angular cheilitis.

Labial mucosa – With the mouth ¾ closed, gently grasp the lower lip between the thumb and the first finger of each hand and evert the lip. This can be done to the lower lip and then the upper lip. Record any abnormalities of the labial mucosa, such as polyps, scars, or ulcers.

Scars inside the lower lip are seen frequently as a result of trauma as a child.

Step 2

Buccal mucosa and vestibular mucosa

Use two mirrors to retract the buccal mucosa on one side. Tilt the head so that the light shines directly onto the buccal mucosa. Examine the buccal mucosa and the maxillary and mandibular vestibules. Move slowly from the posterior buccal mucosa to the anterior, and examine the mandibular anterior vestibule, Continue your examination on the opposite buccal mucosa and vestibules, then move to the maxillary anterior vestibule. The mucosa should be smooth, moist and shiny. If the mirror sticks to the mucosa, xerostomia may be present. For any abnormalities, note the type of abnormality, size, color, location, texture, and consistency. If there appears to be a swelling or mass, it is important to palpate the area. Soft swellings are more likely to be infections or cysts, while firm masses could be a tumour.

Step 3

Hard and soft palate

Using direct vision and the dental mirrors, examine the hard and soft palate. Record any abnormalities, or variations of normal. A red velvety appearance of the palatal mucosa beneath a denture may indicate denture stomatitis. A bony swelling in the midline of the hard palate covered with normal mucosa is likely a palatine torus. A soft tissue swelling on one side of the hard palate may be an abscess or tumour. The shape, location, consistency, color and duration will help with the diagnosis.

Step 4

Oropharynx and Fauces

With the patient's tongue in a resting position (not protruding), have the patient open widely, and say "ahhh". In some patients, this will allow visualization of the oropharynx and fauces. If not, place the mirror on the tongue and gently press inferiorly (down) and anteriorly (forward) while having the patient say "ahhh". This depresses the tongue, so that more of the oropharynx, fauces, tonsils, and uvula can be visualized. Occasionally, this will stimulate the gag reflex. If this happens, be sure to look at these areas when the patient gags, so that this step does not have to be repeated. You should look at the two folds of tissue that lie on the sides of the throat. These folds are called the tonsillar pillars or fauces. Between these folds are the palatine tonsils (unless the tonsils have been surgically removed). The posterior pharynx wall and the uvula commonly may have slightly raised pale yellow areas. This is lymphoid tissue.

Step 5

Tongue

Only the anterior 2/3 of the tongue is in the oral cavity (oral tongue). The posterior 1/3 cannot normally be seen on dental examination. Examine the dorsum of the tongue first. Then inform the patient that the sides of the tongue will be examined and this may stretch the tongue slightly. Have the patient protrude their tongue, and grasp the tip of the tongue with 2 X 2 gauze. Gently stretch the tongue to one side and visually examine the lateral border of the tongue. The foliate papillae are multiple small vertical folds in the posterior of the lateral oral tongue. There may be accessory lymphoid tissue in this area that appears slightly yellow in colour. These are called lingual tonsils. If there is any abnormal swelling, or ulceration, then palpate this area. The tissue in this area should be soft. The opposite side of the tongue should be examined in the same way. A mouth mirror may be needed to see the far side of the tongue. Remove the gauze from the tongue, and have the patient lift their tongue, so that the ventral tongue can be seen. Prominent veins are often visible on the ventral tongue. Particular attention should be paid to the lateral borders of the tongue and the floor of mouth, as malignant disease develops in these mucosal sites more frequently than the dorsum of the tongue or the palate. Oral malignancies can have a variety of appearances including ulcers, masses, red areas, white areas or a combination of these.

Step 6

Floor of mouth

Examine the floor of mouth using direct vision and mouth mirrors. The tongue may have to be retracted with one mirror while examining the posterior floor of mouth with the other mirror. The openings of the right and left submandibular ducts (Wharton's ducts) are found on either side of the snsertio of the lingual frenum into the anterior floor of mouth. Bimanual palpation is used to feel the soft tissue structures in the floor of the mouth. Place one index finger of one hand in the floor of the mouth lingual to the molars, and place the index finger of your other hand on the skin medial to the patient's mandible, inferior to your intraoral index finger. Using a gentle up and down motion, palpate the submandibular gland and move your fingers forward to palpate the sublingual gland and floor of mouth. The sublingual gland usually feels ropey or lobulated. A salivary stone in this area would feel hard. A salivary gland tumour would usually feel like a firm oval or round mass. This examination should not be painful, but it is a slightly odd feeling, so the patient should always be informed before starting this examination.

Step 7

Gingiva and alveolar mucosa

The gingiva would be examined briefly at this time, if a full periodontal examination is not going to be done. Healthy gingiva is pink, and stippled. The overall appearance of the gingivae should be noted to be within normal limits (WNL) or abnormalities noted such as

generalized or localized swelling, erythema, ulceration or bleeding. A gingival graft typically appears as a pale, demarcated area of the attached gingiva. The gingiva is firmly attached to the alveolar bone and is continuous with the movable alveolar mucosa at the mucogingival junction.

The maxilla and mandible should be palpated to check for enlargements such as exostoses or tori. This examination may also reveal tenderness that could be the result of infection or inflammation.

It is important to record the findings of the extraoral and intraoral examination. This is normally done during the examination process. There are many different methods of recording results, including checklists and free text.

Normal structures that may be mistaken for lesions

- Stensen's duct is the duct of the parotid gland. It opens into the mouth on the posterior buccal mucosa opposite the maxillary molars. The duct opening may be flat or slightly raised.
- The circumvallate papillae form a V-shaped row of rounded papillae at the junction of the anterior 2/3s and the posterior 1/3 of the tongue.
- The lingual tonsils are found on the posterior-lateral aspect of the oral tongue. They may become enlarged with viral infections.
- Plica fimbriata are folds of mucosa on the ventral surface of the tongue on either side of the lingual frenum5. The folds may looked fringed due to mucosal tags.

Variations of Normal

1. Fissured tongue is a common condition. Multiple grooves are seen on the dorsum or occasionally the lateral tongue. This is reported in 2% to 5% of the population6.
2. Fordyce granules are ectopic sebaceous glands that occur on the oral mucosa. They are commonly seen on the buccal mucosa or the lateral vermillion of the upper lip. They appear as groups of yellowish-beige slightly raised areas (papules) measuring 1 to 3 mm diameter.
3. Varicosities are enlarged veins, commonly seen on the ventral tongue. These are usually seen in older patients. Varicosities blanch on pressure. A glass slide or glass test tube can be used to press on the varicosity. The pressure causes collapse of the vein with disappearance of the purple color. On releasing the pressure, the blood flows back into the vein, and the purple color returns.

Common oral pathology

1. Geographic tongue a common benign condition seen in 1% to 3% of the population6. The eitiology is unknown. The classic features are multiple pink or red circular or semicircular well-demarcated areas on the dorsum or lateral aspect of the tongue. The erythema is partially surrounded by a slightly raised yellowish-white rim or border. It may be seen in association with fissured tongue.
2. Linea Alba (white line) appears as a white (hyperkeratotic) horizontal line along the buccal mucosa at the level of the occlusal plane. This is a common condition and is often bilateral. It is due to frictional irritation or sucking trauma6.
3. Benign vascular lesions appear as red or purple areas on the oral mucosa. These are usually seen in older patients. They blanch on pressure. A glass slide or glass test tube can be used to press on the varicosity. The pressure causes collapse of the blood vessels with disappearance of the purple color. On releasing the pressure, the blood flows back into the blood vessels, and the purple color returns.
4. Morsicatio buccarum or cheek biting appears as a ragged slightly translucent area on the buccal mucosa. Most patients, when asked, will admit that they bite their cheek repeatedly.

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