

PRE-CLINICAL CLERKSHIP, YEAR 1
Physical Examination

Session One B
Nose, Oral Cavity, and Neck Cheryl
A. Walters, M.D.

1. Learning Objectives

To identify the landmarks of the nose and oral cavity and to outline on the neck the cervical vertebrae, anterior midline, anterior and posterior triangles, lymph nodes, thyroid, trachea and suprasternal notch.

To practice the techniques of inspecting the nose.

To practice the techniques of palpating or transilluminating the paranasal sinuses.

To practice the techniques of testing neck range of motion.

To practice the techniques of inspecting and palpating the oral cavity, salivary glands, lymph nodes, thyroid gland, and position of the trachea.

To describe and appreciate the defining features of palpation of lymph nodes and transillumination of the sinuses.

To begin to develop a flow for the head to toe exam.

2. Student Prep

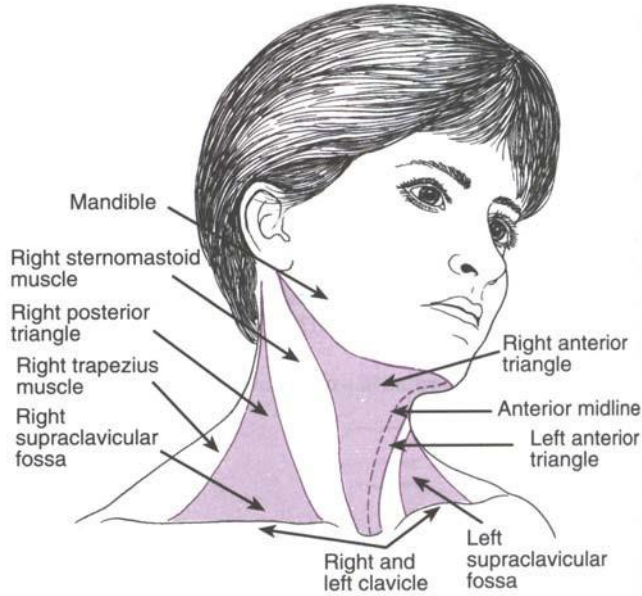
Read pp. 294-295, 310-313 Chapter 11 The Ear and Nose, pp. 321-327, 332-348, Chapter 12 The Oral Cavity and Pharynx, and pp. 193-196, 198-202, Chapter 9 The Head and Neck

View the companion portions of the CD

Practice Exercises: The surface anatomy of the head and neck is complex.

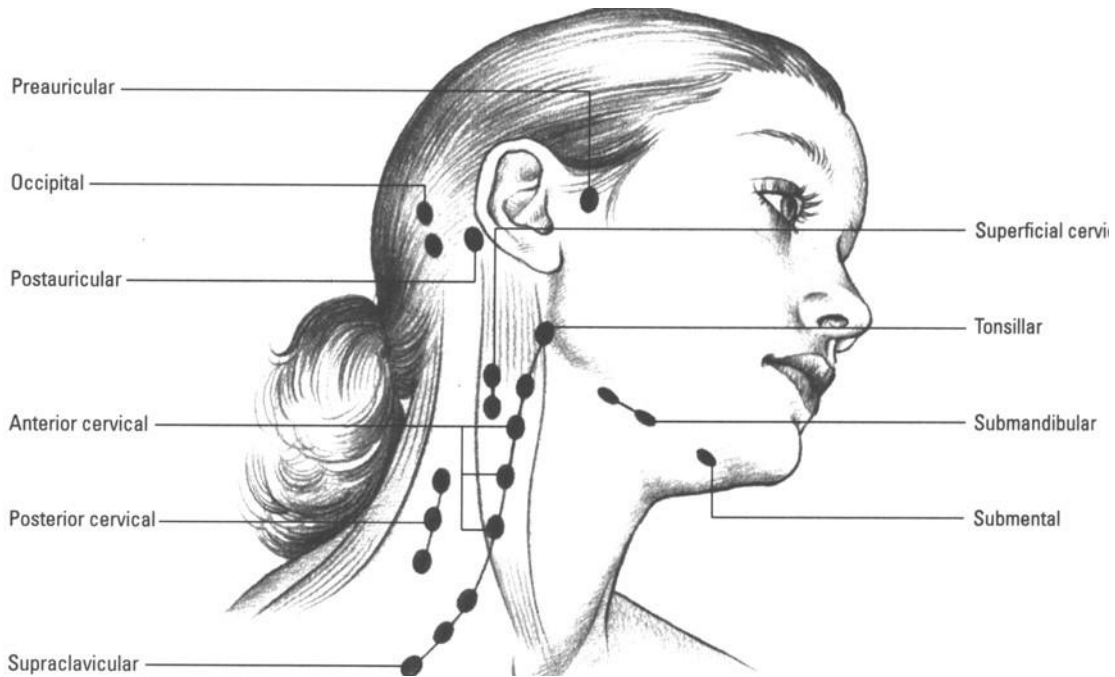
Practice outlining the cervical vertebrae and anterior and posterior triangles of the neck and the associated lymph nodes.

Cervical Triangles



The anterior cervical triangle is bounded by the anterior midline, mandible, and sternocleidomastoid muscle. The posterior cervical triangle is bounded by the sternocleidomastoid muscle, clavicle, and trapezius muscle.

Lymph Nodes (preauricular, postauricular, occipital, posterior cervical, submandibular, submental, tonsillar, anterior cervical, superficial cervical, supraclavicular)



3. Clinical Anatomical Landmarks

Nose (nares, nasal mucosa, septum, lateral walls, nasal airway, middle and inferior turbinates, middle meatus)

Maps for palpation or transillumination of paranasal sinuses (frontal, ethmoidal, maxillary)

Oral cavity (lips, labial and buccal mucosa, parotid or Stensen's duct, hard and soft palate, oropharynx, uvula, palatine tonsils, floor of mouth, lingual frenulum, submandibular or Wharton's duct, tongue, circumvallate papillae, gingival or gums, teeth, temporomandibular joint –TMJ, jaw muscles)

Submandibular glands

Parotid glands

Cervical vertebrae

Anterior midline

Anterior cervical triangle (bounded by the anterior midline, mandible, and sternocleidomastoid muscle)

Posterior cervical triangle (bounded by the sternocleidomastoid muscle, clavicle, and trapezius muscle)

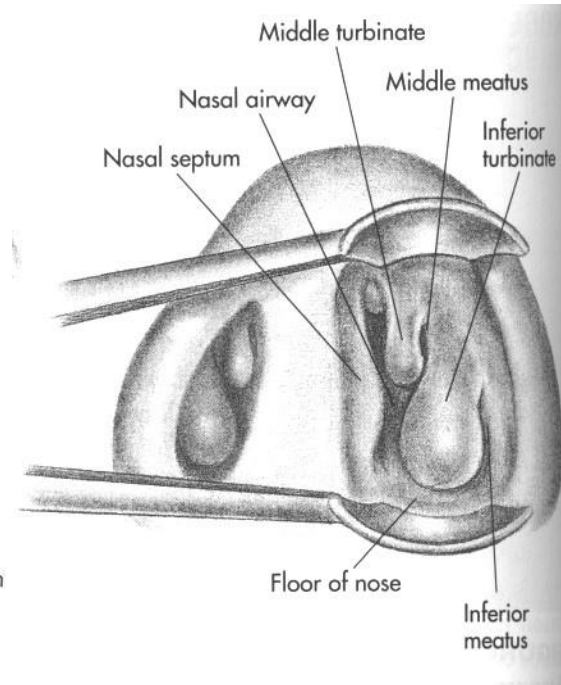
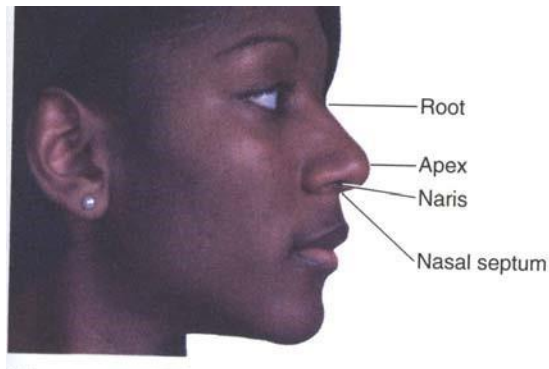
Lymph nodes (preauricular, postauricular, occipital, posterior cervical, submandibular, submental, tonsillar, anterior cervical, superficial cervical, supraclavicular)

Landmarks along the anterior midline of the neck: hyoid bone, thyroid cartilage (laryngeal prominence and lamina), cricoid cartilage, thyroid (isthmus, left lobe, right lobe), suprasternal notch, trachea

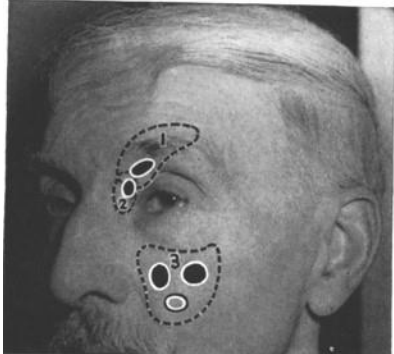
Nose

External Structures

Internal Structures

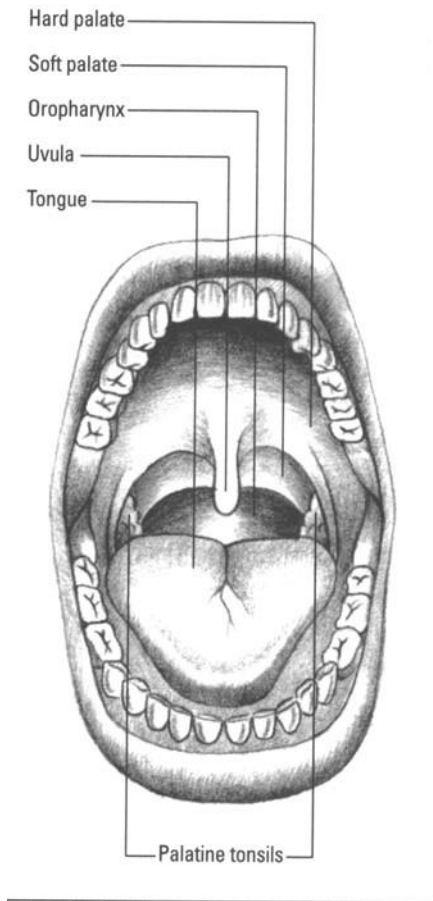


Maps for Palpation or Transillumination of Paranasal Sinuses

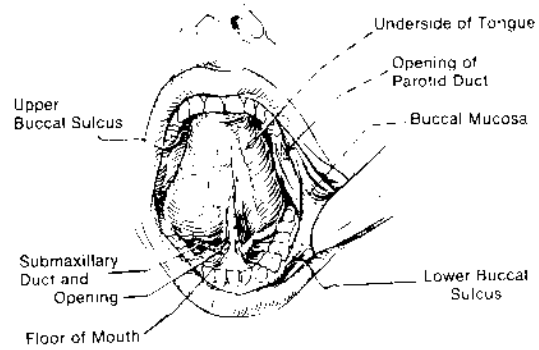


- 1-frontal (just below the superior orbital rim)
- 2-ethmoidal (palpation only)
- 3-maxillary (just below the inferior orbital rim)

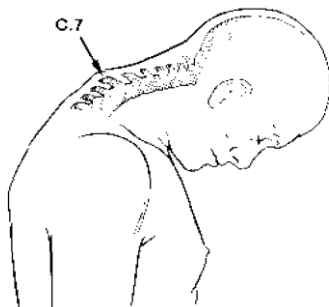
Oral Cavity (lips, tongue, circumvallate papillae, floor of the mouth, lingual frenulum, puncta of Wharton's ducts, buccal mucosa, upper and lower buccal sulci, puncta of Stensen's ducts, gingivae, teeth, hard palate, soft palate, oropharynx, uvula, palatine tonsils)



The openings, or puncta, of Wharton's ducts from the submandibular gland are seen in the floor of the mouth on either side of the lingual frenulum. The punctum of Stensen's duct from the parotid gland is seen in the buccal mucosa at the level of the second maxillary molar. The giant, or circumvallate, papillae may be seen on the posterior aspect, or base, of the tongue.

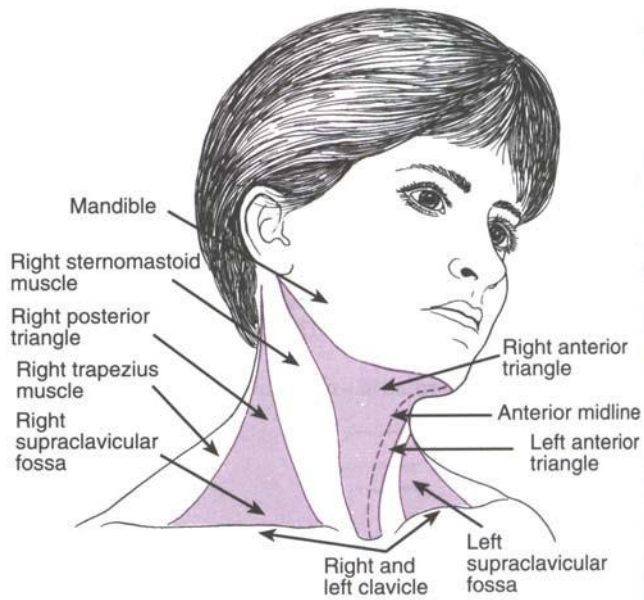


Cervical Vertebrae



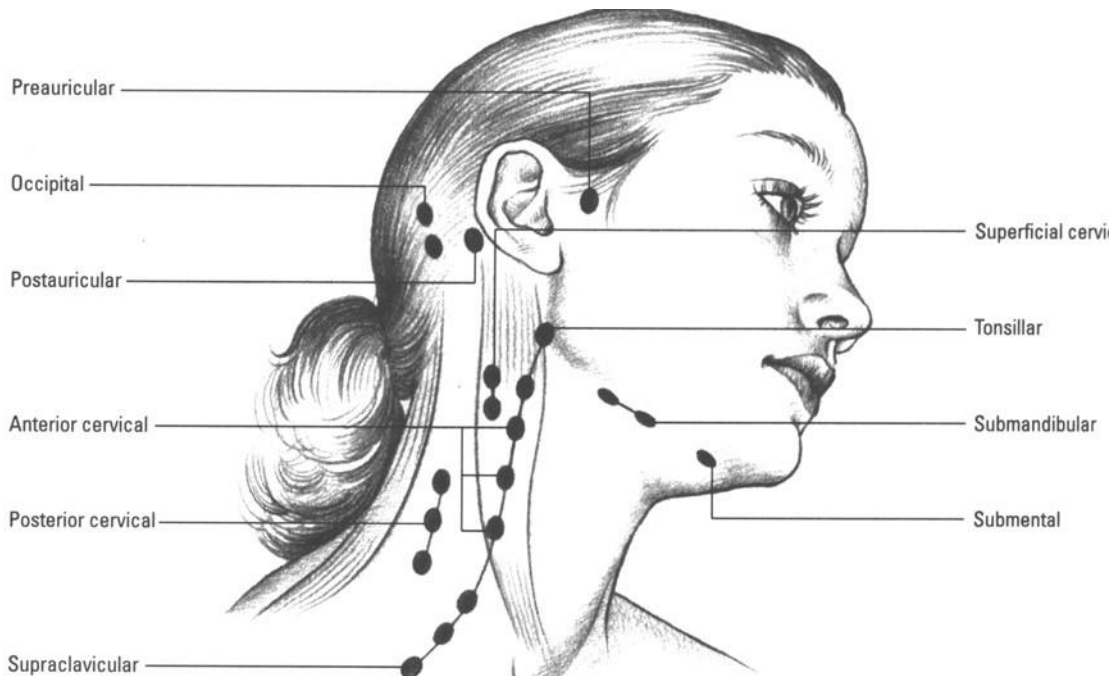
There are seven cervical vertebrae. To eyeball where C7 is, have your partner flex his/her neck. The most prominent vertebral body is C7 (vertebra prominens).

Cervical Triangles

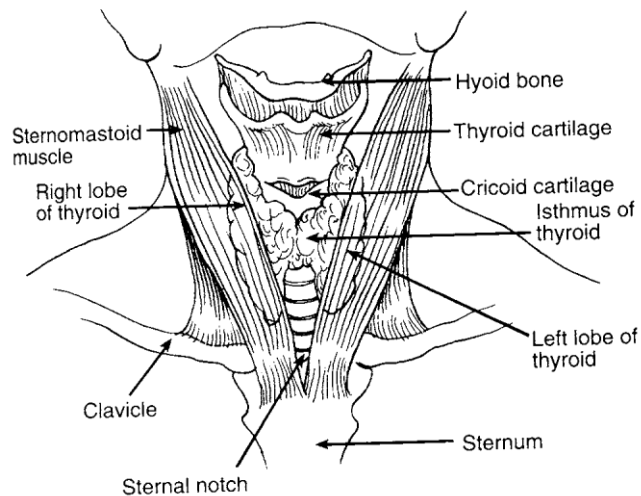
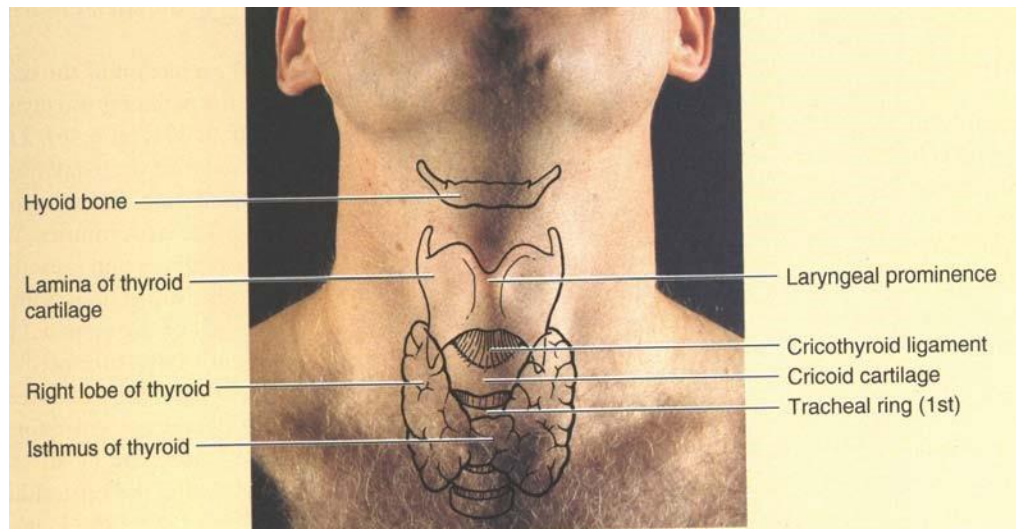


The anterior cervical triangle is bounded by the anterior midline, mandible, and sternocleidomastoid muscle. The posterior cervical triangle is bounded by the sternocleidomastoid muscle, clavicle, and trapezius muscle.

Lymph Nodes (preauricular, postauricular, occipital, posterior cervical, submandibular, submental, tonsillar, anterior cervical, superficial cervical, supraclavicular)



Landmarks along the Anterior Midline of the Neck



The hyoid bone may be palpated in the anterior midline between the mandible and thyroid cartilage at the level of C3. The laryngeal prominence of the thyroid cartilage may be observed on inspection as the Adam's apple. The cricoid cartilage, the junction of the larynx and trachea, may be palpated inferior to the laryngeal prominence at the level of C6. The isthmus of the thyroid is about 3 cm inferiorly and overlying the 2nd through 4th tracheal rings. It extends about 1.25 cm on either side of the anterior midline. The right and left lobes of the thyroid may be palpated laterally. The apices are at the middle of the laminae of the thyroid cartilage. The inferior rings of the trachea are palpable in the midline at the suprasternal notch.

4. List of Maneuvers to be Demo/Practiced

Inspection and palpation with patient sitting:

Identify the following landmarks on your partner:

Nose (nares, nasal mucosa, septum, lateral walls, nasal airway, middle and inferior turbinates, middle meatus)

Maps for palpation or transillumination of paranasal sinuses (frontal, ethmoidal, maxillary)

Oral cavity (lips, labial and buccal mucosa, puncta of parotid or Stensen's duct, hard and soft palate, oropharynx, uvula, palatine tonsils, floor of mouth, lingual frenulum, puncta of submandibular or Wharton's duct, tongue, circumvallate papillae, gingiva or gums, teeth, temporomandibular joint –TMJ, jaw muscles)

Submandibular gland

Parotid glands

Cervical vertebrae

Anterior midline

Anterior cervical triangle (bounded by the anterior midline, mandible, and sternocleidomastoid muscle)

Posterior cervical triangle (bounded by the sternocleidomastoid muscle, clavicle, and trapezius muscle)

Lymph nodes (preauricular, postauricular, occipital, posterior cervical, submandibular, submental, tonsillar, anterior cervical, superficial cervical, supraclavicular)

Landmarks along the anterior midline of the neck: hyoid bone, thyroid cartilage (laryngeal prominence and lamina), cricoid cartilage, thyroid (isthmus, left lobe, right lobe), suprasternal notch, trachea

Inspect nose (for view of internal structures use otoscope with large largest comfortable speculum)

Palpate or transilluminate paranasal sinuses

Inspect oral cavity (lips, labial and buccal mucosa, puncta of Stensen's duct, hard and soft palate, oropharynx, uvula, tonsils, floor of mouth, puncta of Wharton's duct, tongue, gingiva, teeth, temporomandibular joint –TMJ, jaw muscles)

Palpate tongue, teeth, TMJ, jaw muscles

Neck range of motion

Inspect and palpate the salivary glands (parotid and submandibular) and neck nodes

Inspect and palpate thyroid

Inspect and palpate the position of the trachea in the suprasternal notch

5. Procedural Tips

Approach to inspection of the oral cavity: 1. Inspect the oral cavity with a disposable tongue blade and penlight. 2-3. The tongue blade may be used to gently retract the lip or cheek. Pay particular attention to the lateral borders of the tongue. 4. To inspect the oropharynx, hold the tongue blade in the corner of the mouth, place the tip of the tongue depressor at about the level of the circumvallate papillae, and gently depress the anterior part of the tongue downward and forward. This is more easily accomplished if the patient does not stick out his/her tongue.



1.



2. View of the lower labial mucosa.
at the level of the second maxillary molar.



3. View of the left buccal mucosa and
the punctum of the parotid or Stensen's duct



4.

Testing neck range of motion: There are seven cervical vertebrae. To test flexion and extension, stand to the side of the patient. Note that these movements occur primarily in the lower cervical vertebrae (C7 is vertebra prominens). To test lateral flexion and rotation, stand behind the patient. Lateral flexion tests the function of the mid-cervical vertebrae. Rotation tests the function of the atlanto-axial (C1-C2) articulation.

1. Flexion

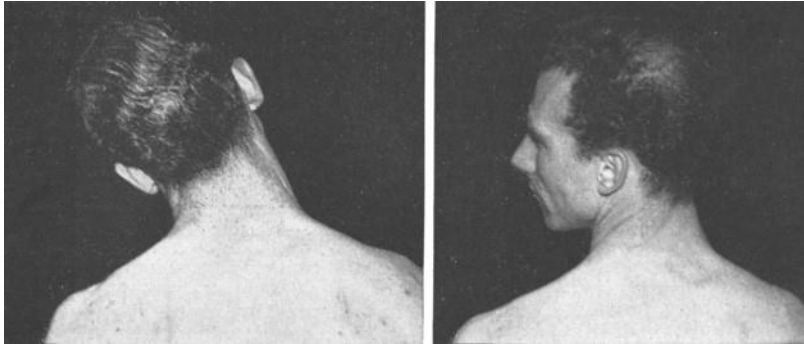


2. Extension

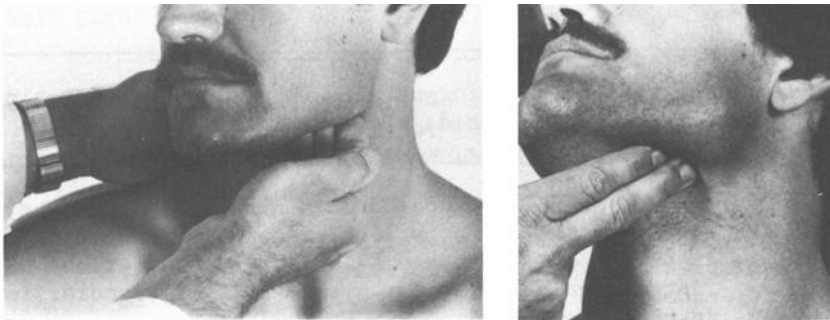


3. Lateral flexion

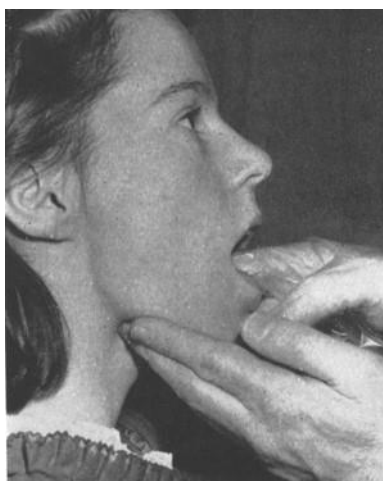
4. Rotation



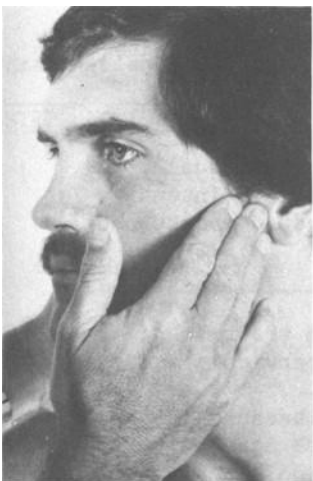
Systematic approach to palpation of lymph nodes: 1. Palpate the submental and submandibular nodes. These nodes are felt most readily by placing the thumb along the lateral surface of the mandible and curling the fingers under the lower edge of the mandible. Use the fingertips to roll the nodes against the inner surface of the body of the mandible. 2. Since the submandibular nodes are associated with the capsule of the submandibular salivary gland, bimanual palpation of the gland will help to differentiate gland from node enlargement. Cervical swelling alone suggests adenopathy, whereas cervical and buccal swelling suggests salivary gland enlargement. 3. Palpate the preauricular nodes by pressing the fingertips over the parotid gland and moving them to and fro. Use the fingertips to roll the nodes against the firm underlying tissue. 4. Palpate the postauricular and posterior triangle nodes in a similar manner. 5. Palpate the anterior triangle nodes. These nodes may be more difficult to feel because of overlying sternocleidomastoid muscle and absence of firm underlying tissue against which to palpate. To relax the sternocleidomastoid muscle on the side being examined, instruct the patient to turn the chin slightly to the opposite side and tilt the head such that the ear on the side to be examined lies closer to the shoulder. Gently palpate with the fingertips deep to the muscle.



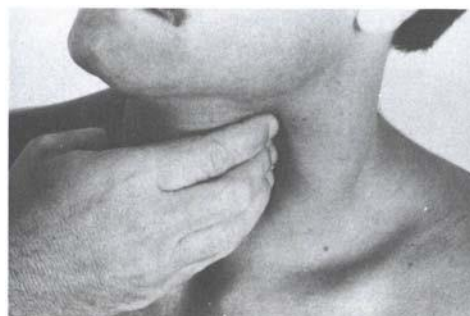
1. Palpate the submental and submandibular nodes.



2. Wear a disposable glove to perform buccal palpation in the bimanual exam of the submandibular salivary gland.



3. Palpate the preauricular nodes.



4. Palpate the postauricular and

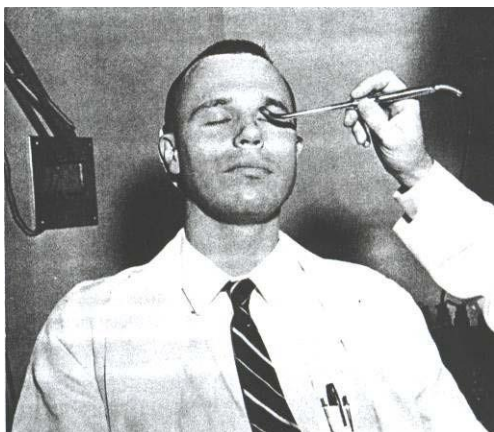
5. Palpate the anterior triangle nodes.

posterior triangle nodes.

6. Perceptual Tips

Transillumination of the paranasal sinuses: In a darkened room, use a strong light source (penlight, otoscope or a sinus transilluminator) to transilluminate the sinuses.

1. To evaluate the frontal sinuses, place the light source under each of the superior orbital rims. 2. To evaluate the maxillary sinuses, place the light source just under each of the inferior orbital rims. 3. As shown, the normal transillumination of the maxillary sinus is appreciated by observing light shining through the antrum into the open mouth on that side. Normal transillumination of the frontal sinus is appreciated as light glowing from the light source through the sinus superiorly.



1.



2.



3.

Transillumination of the left maxillary sinus using a penlight placed just below the left inferior orbital rim.

Palpation of lymph nodes: Using the fingertips, palpate the lymph nodes in the neck systematically as described above. Note the defining features of size, consistency, mobility, and tenderness. Compare nodes from side to side. Normal nodes are less than 1 centimeter in diameter, rubbery, mobile, and nontender.

7. Description of Key Features

Nose: Appearance of nares, appearance of mucosa, presence or absence of discharge, septal position and integrity, appearance of lateral walls, appearance of nasal airways (symmetry, patency, lesions or masses) appearance of middle and inferior turbinates (with or without congestion), patency of middle meatus

Sinuses: Palpation for tenderness or transillumination for patency of paranasal sinuses (frontal, ethmoidal, maxillary)

Oral cavity: appearance of lips, labial and buccal mucosa, puncta of parotid or Stensen's ducts, hard and soft palate, oropharynx, (and movement of) uvula, tonsils (size, crypts), floor of mouth, lingual frenulum, puncta of submandibular or Wharton's ducts, tongue (surface, mobility, papillae), circumvallate papillae, gingiva or gums, teeth, temporomandibular joint (TMJ), and jaw muscles; palpation of teeth, TMJ joint (crepitus or clicking on opening and closing), and jaw muscles

Salivary glands: Appearance and palpation (parotid and submandibular)

Neck: Range of motion (ROM) in six directions

Neck Nodes: Palpation of anterior and posterior triangles of neck (size, consistency, tenderness, location)

Thyroid: Appearance and palpation for size, symmetry of lobes, nodules, tenderness, and movement with swallowing

Trachea: Position in the suprasternal notch