



Ambulatory Healthcare Pathways for Ear, Nose, and Throat Disorders

HEAD AND NECK SURGERY STUDY OUTLINE

The following is an outline written by Dr. Davidson and used in the Head and Neck Surgery program at the University of California at San Diego and the San Diego VA Healthcare System.

Ear

- A. Auricular Hematoma
 - 1. Treatment: drainage
 - a. Needle aspiration
 - b. Incision with or without drain (rubber band)
 - c. Pressure dressing
 - d. Antibiotics for incision or multiple aspirations
- B. Foreign Body in the External Auditory Canal
 - 1. Treatment: Remove gently. If not easy, perform with microscope under general mask anesthesia.
- C. Otitis Externa
 - 1. Symptoms
 - a. Pain
 - b. Itching
 - c. Decreased hearing
 - 2. Signs
 - a. Auricular pain (elicited by shaking auricle)
 - b. Erythema of external auditory canal
 - c. Edema of external auditory canal
 - d. White keratinous debris in canal
 - 3. Etiology
 - a. Prolonged water exposure
 - b. Q-tip or other foreign body trauma
 - 4. Organisms
 - a. *Pseudomonas aeruginosa* (95-99%)
 - b. Fungal (<5%)
 - 5. Treatment
 - a. Domeboro Otic® (aluminum sulfate and calcium acetate) 30 ml bottle, two drops qid in affected ear or Cortisporin Otic® suspension (polymyxin B-neomycin-

hydrocortisone), 10 ml bottle, two drops qid in affected ear, or aminoglycoside or ophthalmic gtts 10 cc; 2 gtts tid, or quinolone eardrops 10 cc, 2 qts q. day

- b. For pain: aspirin or Tylenol® with codeine or nonsteroidal anti-inflammatory agents and
- c. Local heat application (e.g. heating pad)

D. Surfer's Ear (external auditory canal exostoses)

1. Associated with prolonged cold salt water exposure; seen in surfers and professional divers
2. Symptoms: usually present with otitis externa
3. Signs: generally three exostoses seen in external auditory canal, often white, firm to palpation, adjacent to tympanic membrane
4. Treatment: If occluding more than 50% of canal surgical removal is recommended.

E. Acute Otitis Media

1. Symptoms
 - a. Fever
 - b. Otolgia (pain)
 - c. Decreased hearing
 - d. Pressure in the ear
 - e. Discharge only with perforation
2. Signs
 - a. Red, bulging tympanic membrane
 - b. Conductive hearing loss - diagnose with tuning forks
3. Treatment
 - a. Adults: amoxicillin 250-500 mg p.o. tid x 10 days, add clavulanate prn
 - b. Children 5 years old or under: amoxicillin, or amoxicillin with clavulanic acid 40 mg/kg/day (3 doses daily for 10–14 days)
4. Follow-up appointment in 10-14 days

F. Chronic Otitis Media

1. Symptoms
 - a. Chronic drainage, often foul-smelling
 - b. Decreased hearing
2. Signs (these are all signs of what is often called cholesteatoma)
 - a. Foul-smelling drainage during periods of exacerbation
 - b. Tympanic membrane perforation, often at the margin
 - c. White keratinous debris
3. Treatment
 - a. Quinolone Otic® drops (Floxin Otic® or Cipro H.C.®) 10 cc 2 gtts q. day in affected ear and amoxicillin 250-500 mg 1 p.o. tid for 3 weeks
 - b. Surgery (when not infected): tympanomastoidectomy
4. Complications
 - a. Brain abscess

- b. Meningitis
- c. Lateral sinus (sigmoid sinus) thrombosis
- d. Facial nerve paralysis
- e. Labyrinthitis
- f. Hearing Loss

G. Serous Otitis Media

1. Symptoms

- a. Decreased hearing
- b. Feeling of fullness in ears

2. Signs

- a. Retracted tympanic membrane with no movement or reverse movement on pneumotoscopy
- b. Conductive hearing loss: can be measured with 256 and 512 Hz tuning forks, audiometry, or tympanometry

3. Etiology

- a. Poor eustachian tube function
- b. Allergic upper respiratory tract disease
- c. Bacterial rhinosinusitis
- d. Chronic sinusitis
- e. Residual otitis media
- f. Nasopharyngeal obstruction: adenoids, nasopharyngeal tumor
- g. Cleft palate

4. Treatment

- a. Observe for 2 weeks
- b. If no change, prescribe nasal steroids (age 5 and older) for 4–6 weeks
- c. If no success, add antibiotics (amoxicillin)
- d. If still no success, change to another antibiotics for 2 weeks with or without a short course of systemic steroids
- e. If no success, observe for 2 weeks with no therapy
- f. If no change, myringotomy and insertion of middle ear ventilation tube should be performed by head and neck surgeon

H. Otosclerosis

1. Symptoms

- a. Hearing loss
- b. Tinnitus

2. Signs

- a. Conductive hearing loss with normal otoscopy
- b. Audiogram: conductive hearing loss

3. Treatment: stapedotomy

I. Ménière's Disease

1. Symptoms

- a. Fluctuating hearing loss
 - b. Tinnitus
 - c. Vertigo
 - d. Feeling of fullness in the ear
2. Signs
 - a. Fluctuating hearing loss on audiograms
 - b. Otherwise negative results on vertigo work up
 3. Treatment
 - a. Environmental control
 - b. Stress reduction
 - c. Low salt (Na⁺) diet
 - d. Hydrochlorothiazide 25 mg p.o. bid with KCl 8-10 mEq p.o. qd
 - e. For dizziness diazepam or a phenothiazine
 4. Follow-up care by specialist in head and neck surgery or otology.

J. Presbycusis

1. Symptoms
 - a. Decreased hearing
2. Ringing in ears (tinnitus)
 - a. Signs: sensorineural hearing loss on audiogram
3. Treatment
 - a. Rule out noise-induced hearing loss by history and audiogram
 - b. Hearing aid if recommended by specialist in ear disease

K. Acoustic Neuroma

1. Symptoms
 - a. Hearing loss or
 - b. Vertigo or
 - c. Facial paralysis
2. Signs
 - a. Asymmetric sensorineural hearing loss with poor discrimination
 - b. Abnormal BERA
 - c. Unilateral weakness on electronystagmography
 - d. MRI showing cerebellopontine angle tumor
3. Treatment: Refer to specialist in head and neck surgery

L. Temporomandibular Joint Syndrome (TMJ)

1. Symptoms
 - a. Patient complains of ear pain. Pain is anterior to ear canal; pain involves muscles innervated by C.N. V, particularly the muscles of mastication.
 - b. Clicking in temporomandibular joint
2. Signs
 - a. Pain on finger pressure over joint when opening and closing mouth
 - b. Poor dental occlusion or loose-fitting dentures

- c. Spasm of involved muscles
 - d. Anxious, depressed or hysterical patient often with bruxism and teeth clenching
3. Treatment
- a. Soft diet
 - b. Hot or cold packs
 - c. NSAIDS
 - d. Physical therapy
 - e. Orthotic
 - f. Stress reduction

Otalgia Work-up

Rule out lesions by history and physical examination.

- A. External Auditory Canal
 - 1. Auricular hematoma
 - 2. Foreign body in the ear canal
 - 3. Otitis externa
 - 4. External auditory canal tumor
 - 5. Otitis media—acute or chronic
- B. Temporomandibular Joint
- C. Referred pain from inflammatory or neoplastic lesion in
 - 1. Nasopharynx
 - 2. Tonsil
 - 3. Base of tongue
 - 4. Larynx
 - 5. Pharynx and hypopharynx
- D. Evaluate by examination, endoscopy, cultures, and biopsies

Hearing Loss Differential Diagnosis

- A. External Auditory Canal Obstruction
 - 1. Wax
 - 2. Foreign body
 - 3. Otitis externa
 - 4. Exostoses
 - 5. Tumor
- B. Middle Ear
 - 1. Acute otitis media

2. Chronic otitis media
3. Serous otitis media
4. Tympanic membrane perforation
5. Otosclerosis
6. Ossicular discontinuity
7. Round window rupture (barotrauma)

C. Inner Ear

1. Ménière's disease
2. Presbycusis
3. Noise-induced hearing loss
4. Otosclerosis

D. Central Nervous System

1. Cerebrovascular accident
2. Brain tumor
3. Psychiatric disease

Vertigo Work-up

A. History

1. Vertigo
 - a. Onset
 - b. Intensity
 - c. Duration
 - d. Association with nausea and vomiting
2. Hearing loss
3. Tinnitus
4. Feeling of fullness in ear
5. History of ear pain, infection, surgery, trauma, etc.
6. Recent illness
7. Current medications

B. Examination

1. Hearing (tuning fork)
2. Otoscopic
3. Ophthalmic, to include examination of extraocular movements, nystagmus, and fundi
4. Cranial nerves, with particular attention to nerves 3, 4, 5 (especially corneal), 6, 7, 9, and 10
5. Neck examination to recognize carotid artery disease
6. Blood pressure, to consider hypertension and orthostatic changes
7. Pulse, to diagnose arrhythmia

8. Neurologic, to exclude neurologic disease, especially multiple sclerosis and cerebrovascular accident

C. Laboratory

1. Complete blood count to rule out anemia
2. Electrolyte determinations
3. Calcium determinations to detect hypocalcemia
4. T4 and TSH to detect hypothyroidism
5. VDRL and FTA-ABS to rule out tertiary syphilis
6. Cholesterol and triglyceride levels to detect hyperlipidemia
7. Blood and urine tests for diabetes
8. Electrocardiography with rhythm strip to diagnose cardiac disease
9. Audiogram and tympanogram to evaluate hearing: if a loss exists, to evaluate type of loss
10. Brainstem Evoked Response Audiometry
11. Electronystagmogram (ENG) to test labyrinthine function, gaze nystagmus, response to caloric irrigation; extremely useful to identify labyrinthine disease and also helps localize lesions either in the labyrinth or in the central nervous system.
12. MRI or, if unavailable, CT scan of the internal auditory canal to evaluate cerebellopontine angle tumors, particularly acoustic neuroma
13. Cervical spine series—the cervical spine is closely connected to the labyrinth via a vestibulospinal reflex. Cervical spine disease can cause vertigo and hence must be evaluated.

D. Differential Diagnosis: this is not intended as an exhaustive differential, but rather to give you some insight into the different diseases that can cause vertigo. With persistence a diagnosis can be made in over 90 percent of vertiginous patients.

1. Otologic

- a. Acute otitis media
- b. Serous otitis media
- c. Chronic otitis media
- d. Perilymph fistula
 - i. Traumatic
 - ii. Post-stapedectomy
 - iii. Barotrauma (round window rupture)
- e. Labyrinthitis
 - i. Bacterial
 - ii. Viral
 - iii. Toxic
- f. Ménière's disease
- g. Vestibular neuronitis
- h. Benign positional vertigo
- i. Acoustic neuroma or other cerebellopontine angle tumors

2. Central nervous system
 - a. Stroke
 - b. Transient ischemic attacks
 - c. Multiple sclerosis
 - d. Neurosyphilis
 - e. Meningitis or encephalitis
 - f. Migraine
3. Neck
 - a. Osteoarthritis
 - b. Carotid artery stenosis
 - c. Vertebrobasilar artery insufficiency
 - d. Subclavian steal syndrome
4. Metabolic
 - a. Hyper- or hypoglycemia
 - b. Hyper- or hypothyroidism
 - c. Electrolyte imbalance
 - d. Hypercalcemia
 - e. Anemia
 - f. Polycythemia
 - g. Leukemia
5. Infections
 - a. Influenza
 - b. Herpes zoster
 - c. Measles
 - d. Mumps
 - e. Other viral illness
6. Drugs
 - a. Streptomycin
 - b. Kanamycin
 - c. Gentamicin
 - d. Diazepam
 - e. Sedatives
 - f. Opiates
 - g. Alcohol
7. Cardiac
 - a. Arrhythmia
 - b. Hypertension
 - c. Hypotension
 - d. Poor cardiac output

E. Treatment

1. Mild: promethazine hydrochloride (Phenergan®), 25 mg every 6 hours by mouth as needed, or diazepam (Valium®), 5 mg every 6 hours by mouth as needed
2. Moderate: promethazine hydrochloride intravenously until stable, then promethazine by mouth or by rectal suppository
3. Severe or with dehydration: intravenous fluids and parenteral phenothiazines; occasionally use supplemental diazepam or droperidol

Facial Paralysis Work-up and Treatment

A. History

1. Gradual vs. sudden onset
2. Family history
3. Pregnancy
4. Head trauma
5. Ear disease
6. Parotid neoplasm

B. Examination must include

1. Otoscopy
2. Hearing test, including tympanometry
3. Eyes: test tearing with Schirmer paper
4. Mouth: Check tongue—chorda tympani is responsible for taste on anterior two thirds of tongue and for submandibular gland salivary stimulation
5. Face: examination for muscle and nerve function; may need to test function electrically
6. Neck: check for parotid tumor
7. Temporal bone tomography to rule out cerebellopontine angle tumor and temporal bone infection or tumor.

C. Treatment of acute paralysis

1. Treat specific cause if known
2. For idiopathic cases
 - a. Prednisone 60 mg p.o. q am for 5-7 days
 - b. Total paralysis with no electrical conduction: otology consultation to consider total facial nerve decompression
3. If the eye does not close or tearing is decreased, or both, treat eye to prevent corneal drying with eye drops during the day and moisture chamber and Lacrilube® at night

D. Facial rehabilitation

1. Facial nerve graft
2. Hypoglossal to facial nerve anastomosis
3. Temporalis muscle sling

Nose

A. Epitaxis

1. Anterior bleeding site: Identify by visual examination
 - a. Hold cocaine-impregnated pledget against bleeding site
 - b. Inject with lidocaine with 1% epinephrine
 - c. Apply commercial Merocel® sponge
 - d. Electrocautery; AgNO₃ (silver nitrate stick) is second choice
 - e. Apply 72-inch Vaseline® gauze anterior nasal pack
2. Posterior bleeding site
 - a. Anterior-posterior balloons
 - b. Use 30 ml Foley balloon or nasal balloon as a posterior pack
 - c. Use 72-inch gauze as an anterior nasal pack
 - d. Admit patient to hospital, apply O₂ mask, give minimal sedation or analgesia
3. If bleeding continues or if it recurs after removing pack at 3 to 4 days, then surgery (internal maxillary artery ligation and ethmoid artery ligation) should be performed

B. Sinusitis

1. Symptoms
 - a. Pain
 - b. Pressure
 - c. Elevated temperature
 - d. Nasal discharge or postnasal drip
2. Signs
 - a. Pain elicited by tapping directly over sinus
 - b. Elevated temperature
 - c. Erythematous oropharynx
3. Acute episodes are often associated with upper respiratory tract infections or episodes
4. Nasal endoscopy: ostiomeatal complex disease
5. If chronic, sinus CT
6. Treatment for acute sinusitis
 - a. Amoxicillin 250-500 mg p.o. tid for 10 to 21 days.
 - b. See algorithm
7. Treatment for chronic sinusitis
 - a. Antibiotics for 3 to 12 weeks
 - b. Nasal evaluation
 - i. endoscopy
 - ii. sinus CT
 - c. Appropriate allergic therapy
 - i. environmental control
 - ii. nasal steroids
 - iii. nasal irrigation
 - iv. immunotherapy

C. Nasal Obstruction

1. Unilateral causes
 - a. Foreign body
 - b. Nasal polyp
 - c. Nasal or nasal pharyngeal tumor
 - d. Septal deviation
2. Bilateral causes
 - a. Nasal polyps
 - b. Septal deviation
 - c. Chronic sinusitis
 - d. Aging
3. Treatment for all conditions mentioned, except allergic rhinitis, surgery may be required; patient should be referred to a head and neck surgeon
4. Allergic rhinitis
 - a. Environmental control
 - b. Nasal saline irrigation
 - c. Intranasal steroids
 - d. If unsuccessful, allergic testing and possible desensitization

D. Olfactory Dysfunction

1. Causes
 - a. Inflammatory rhinitis
 - b. Trauma
 - c. Post viral
 - d. Toxin
 - e. Congenital
 - f. Psychiatric
 - g. Alzheimer's Disease or other dementia
 - h. Aging
2. Evaluation
 - a. Smell test
 - b. Nasal endoscopy
 - c. Sinus CT
3. Treatment
 - a. Specific treatment for specific disease
 - b. Smoke detectors, gas detectors, spoiled food patrol
 - c. Taste rehabilitation

Throat

Oral Cavity, Oropharynx, Larynx, Hypopharynx, Esophagus, Trachea

A. Tonsillitis

1. Symptoms

- a. Sore throat: usually severe; occasionally interferes with swallowing, rarely with breathing
- b. Elevated temperature: children, 103-105°F; adults, 101-103°F
- c. Patient feels sick
- d. No runny nose

2. Signs

- a. Reddened tonsils, often with white lymphoid exudates
- b. Pharynx and nose are normal on examination
- c. Cervical lymph nodes often enlarged
- d. Elevated temperature

3. Throat Culture: If positive, will show beta-hemolytic streptococcus, but unfortunately is positive only two thirds of the time; culture is often expensive and for both reasons can be limited to

- a. Patients with known valvular or rheumatic heart disease
- b. Immunosuppressed patients
- c. Patients who insist, or whose parents insist, on having a culture performed

4. Treatment

- a. Adults: amoxicillin 500 mg p.o. tid x 10 days
- b. Children: amoxicillin 40mg/kg/d
- c. Patients allergic to penicillin should be given a macrolide in 2 or 3 doses.

5. Indications for surgery

- a. A single episode requiring hospitalization for dysphagia or dyspnea
- b. More than four episodes per year for at least 2 years, causing patient to miss 10 days of school or work annually
- c. Recurrent tonsillitis causing recurrent otitis media
- d. Halitosis
- e. Sleep disordered breathing

B. Viral pharyngitis

1. Symptoms

- a. Sore throat
- b. Usually followed closely by runny nose

2. Signs

- a. Diffuse pharyngitis including but not confined to tonsils
- b. Clear or purulent rhinitis; usually without significant cervical adenopathy

3. Treatment: This is a viral disease and is not altered by antibiotic therapy. Decongestant or decongestant-antihistamine combination therapy will diminish nasal symptoms. Antibiotics indicated for otitis media, or sinusitis. Tonsillectomy is not indicated.

C. Peritonsillar abscess (PTA)

1. Symptoms: severe sore throat, often unilateral, usually with significant dysphagia, temperature elevation, and malaise
2. Signs: unilateral protuberant tonsil, often with soft palate or uvular edema and occasionally with uvular deviation away from the involved side
3. Diagnosis: confirmed by anesthetizing the superior pole of tonsils and adjacent soft palate and then aspirating or incising
4. Culture and sensitivity tests and Gram stain will often show mixed anaerobic infection
5. Treatment Plan I
 - a. Incision and drainage
 - b. Hospitalization
 - c. Intravenous fluids and I.V. antibiotic
 - d. Antibiotics for 10 days; not necessarily intravenously for all 10 days
 - e. Elective tonsillectomy 6 weeks after recovery
6. Treatment Plan II
 - a. Aspirate pus, confirming diagnosis and obtaining material for culture and sensitivity tests
 - b. Admit patient to hospital and begin intravenous clindamycin therapy
 - c. Immediate tonsillectomy by head and neck surgeon
7. Treatment Plan III
 - a. Needle aspiration up to 3 times
 - b. Oral antibiotics, clindamycin or cephalexin and metronidazole
 - c. Follow-up prn

D. Differential diagnosis for sore throat

1. Beta-hemolytic streptococcal tonsillitis
2. Viral pharyngitis
3. Peritonsillar abscess
4. Mononucleosis: positive mononucleosis spot test
5. Gonococcal pharyngitis: positive sexual history and positive gonococcal culture
6. Atypical infection, such as with Myobacterium, Treponema, or Candida: diagnose by proper culture
7. Recurrent herpes pharyngitis: diagnose by typical history
8. Oropharyngeal neoplasm: biopsy
9. Allergic pharyngitis: often food allergy
10. Smokers' and drinkers' pharyngitis
11. Pharyngitis sicca: a condition seen in mouth breathers, especially in low-humidity conditions, or in elderly patients with atrophic mucosa and poor fluid intake. Also seen in patients after radiation therapy or in patients with Sjögren's syndrome

E. Oral cavity venereal disease

1. Gonorrhea: usually pharyngitis, diagnosed by positive sexual history and culture
2. Syphilis: primary chancre, positive sexual history and culture, positive VDRL test

3. Papilloma: venereal warts, usually multiple; positive sexual history. Treat with cryotherapy, diathermy, or surgical excision. Papillomas are also found without sexual history
4. Recurrent Herpes Pharyngitis: Usually found in patients with venereal herpes; tends to recur during periods of stress. Physical findings show a few clear, fluid-filled vesicles in oropharynx

F. Globus hystericus

1. Symptoms: A feeling of fullness in throat, a lump in throat associated with swallowing, or tightness in throat
2. Signs: normal findings on head and neck examination
3. Diagnosis 1. This is most commonly caused by Gastroesophageal Reflux (GERD)
4. Diagnosis 2. This is a psychologic response to stress (see algorithm), almost always revealed by taking a careful history. Refer the patient for appropriate psychologic or psychiatric counseling. Barium swallow rarely indicated.

G. Foreign bodies in the airway

1. Occurs most commonly in the very young, usually 8 months to 3 or 4 years
2. Symptoms
 - a. Aphonia and acute respiratory obstruction when there is total airway
 - b. obstruction
 - c. Coughing with inspiratory or expiratory stridor breathing when there is partial obstruction
3. Treatment
 - a. Total obstruction: use the Heimlich maneuver for young and old alike. If unsuccessful, emergency cricothyroidotomy is required
 - b. Partial obstruction: keep the patient quiet and transport to operating room for removal of the foreign body under anesthesia. Obtain cervical or chest x-rays, or both, to localize the foreign body

H. Foreign bodies in the esophagus

1. Symptoms: choking while eating often on a fish or chicken bone. Frequently hurts at first and then the pain subsides. If foreign body remains, signs of infection will begin to develop approximately 3 days after ingestion
2. Evaluation: includes careful history and soft tissue x-rays; if these are not diagnostic, perform a barium swallow with cotton pledget soaked in barium
3. Treatment: if history or x-rays give even a slight suspicion of a foreign body, rigid endoscopy under general anesthesia is required

I. Hoarseness: voice changes resulting in breathy, rough, or coarse sound. Common causes include:

1. Acute viral laryngitis: often associated with upper respiratory infection; this is self-limiting and will disappear in 7 to 10 days, but patient should use voice sparingly
2. Vocal cord nodules: these are caused by voice abuse (usually screaming and yelling excessively), smoking, GERD and endotracheal intubation. Diagnosis is made by

laryngoscopy; treat patient by ordering voice rest, speech therapy and sometimes microlaryngoscopy with vocal cord stripping

3. Vocal cord paralysis: this is caused by trauma, laryngeal cancers, and occasionally superior mediastinal diseases or cardiac dilation affecting the left recurrent laryngeal nerve. Diagnosis is by mirror laryngoscopy and then by complete work-up to determine its pathogenesis. Treatment depends on the cause
4. Laryngeal cancer: this is usually found in middle-aged or older smokers. Diagnosis is by mirror laryngoscopy followed by direct laryngoscopy with biopsies. These tumors are treated primarily by head and neck surgeons

J. Acute epiglottitis (supraglottitis)

1. Symptoms: acute respiratory distress, primarily inspiratory. Patient is toxic, prefers sitting up, and as symptoms progress develops increasing air hunger and inspiratory stridor
2. Signs: Toxic, febrile child. epiglottis swollen and red. Blood cultures reveal *Hemophilus influenza*
3. Treatment: intravenous dexamethasone and ampicillin, humidified air, oxygen, and racemic epinephrine by mask. Patients with mild cases can be observed in intensive care; if they begin to improve, they will recover rapidly. Patients with severe cases are brought directly to the operating room with a head and neck surgeon and an anesthesiologist in attendance. If under anesthesia the patient can be intubated, that is sufficient. If not, emergency tracheotomy will be necessary. A 7- to 10-day course of ampicillin is necessary. Patient can be extubated after 48 to 72 hours or the tracheotomy tube can be removed after 3 to 4 days

Neck Masses Differential Diagnosis and Evaluation

A. Congenital neck masses: occur predominantly between birth and 30 years of age

1. Branchial cleft cyst: occurs often as an infected cyst; appears in the high lateral neck along the jugular vein
2. Thyroglossal duct cyst: appears in the midline between the hyoid bone and sternal notch; often appears as an infected cyst
3. Hemangioma and lymphangioma: these can appear anywhere in the head and neck and can be localized or extensive

B. Traumatic neck masses

1. Arteriovenous fistula secondary to penetrating trauma; diagnose by history and bruit
2. Laryngocele: usually found on left side in patients playing a musical instrument such as bugle or trumpet; diagnosis is by history, physical examination, and laryngoscopy or CT scan

C. Inflammatory neck masses

1. Viral lymphadenitis: common in children with viral upper respiratory tract infection; lymph nodes are multiple, soft, mobile and rarely larger than 2 cm across
2. Bacterial abscess: may be secondary to direct penetrating injury, abscessed viral lymph node, or a primary infective process in the head and neck, such as a dental abscess. Patient is usually sick, often toxic. Mass can be firm if under pressure or fluctuant. Aspiration of pus is diagnostic. Organisms are often anaerobic. Treat is surgical drainage
3. Other common infectious causes
 - a. Tuberculosis
 - b. Coccidiomycosis
 - c. Mycobacterium
 - d. Syphilis
 - e. Cat-scratch fever
4. Ludwig's angina: this is an abscess/phlegmon under the floor of the mouth that presents under the chin. The lesion is of particular concern because it may push the tongue posteriorly, thereby causing respiratory obstruction.
5. AIDS: various HIV related illnesses can present as a cervical mass; biopsy is often required

D. Neoplastic neck masses

1. Lymphoma: masses are often multiple and can be unilateral or bilateral; they can be large (up to 10 cm) or small, and are usually soft and mobile
2. Epidermoid carcinoma: this is a tumor found in the fourth decade of life and later. It results from effects of tobacco use that are enhanced by alcohol intake. The cervical disease is metastatic from a primary lesion somewhere in the mucosa of the upper-aerodigestive tract. The neck mass can be large. It is usually hard and may be fixed. Diagnosis is by discovery and biopsy of the primary lesion
3. Metastatic cancers from the chest and abdomen: spread is usually via the lymphatics and the mass is in the supraclavicular fossa. Full work-up and then biopsy are indicated
4. Thyroid cancer: The thyroid mass or cervical metastases may be the initial presenting feature. Careful examination should reveal the thyroid primary tumor. Diagnosis is by fine needle aspiration (FNA); ultrasound, thyroid scan, or open biopsy
5. Other tumors: A variety of other tumors, such as melanoma, sarcoma, plasmacytoma, and adenocarcinoma may present in the neck. If one of these is suspected, diagnosis is made by a full evaluation and finally a biopsy

E. Metabolic neck masses

1. Graves' disease
2. Goiter
3. Parathyroid tumors
4. All of these should be obvious. The Graves' tumor and parathyroid tumors should have endocrine manifestations. A full evaluation is indicated.

Head and Neck Cancer

A. Salivary gland cancer

1. Constitutes about 3 percent of head and neck tumors; 80 percent involve the parotid gland. Of parotid tumors, 80 percent are benign (60 percent are pleomorphic adenomas), where as 50 percent of submandibular and sublingual tumors are malignant and 80% of minor salivary gland tumors are malignant.
2. Benign tumors include pleomorphic adenoma, papillary cystadenoma lymphomatosum
3. (Warthin's tumor), and oncocytoma. Malignant tumors include mucoepidermoid carcinoma, adenoid cystic carcinoma, adenocarcinoma, epidermoid carcinoma and undifferentiated carcinoma

B. Epidermoid carcinoma of the mucosal surfaces of the upper aerodigestive tract

1. Includes tumors of the nasal cavity and paranasal sinuses, oral cavity, oropharynx, nasopharynx, hypopharynx, larynx, and cervical esophagus
2. These tumors are induced by tobacco; the tobacco effect is enhanced by alcohol intake
3. Symptoms
 - a. Pain
 - b. Hoarseness
 - c. Obstruction to respiration or swallowing
 - d. Weight loss
 - e. Malaise or neck masses
4. Evaluation: includes a complete history and physical examination, biopsy of the primary site, complete blood count, urinalysis, determinations of creatinine, blood urea nitrogen, serum glutamic pyruvic transaminase, alkaline phosphatase, and bilirubin (total and direct) levels and chest x-ray
5. Direct laryngoscopy and esophagoscopy should be performed to evaluate the extent of the cancer fully, to rule out second primary lesions and to discover the primary lesion in patients presenting with neck masses
6. Treatment: includes surgery and radiation therapy, often in combination; chemotherapy is only adjunctive or palliative

C. Thyroid cancer

1. Includes papillary carcinoma, follicular carcinoma, mixed papillary and follicular carcinoma, Hürthle cell carcinoma, medullary carcinoma, and anaplastic carcinoma
2. Patient usually presents with an asymptomatic thyroid or cervical mass
3. History may include previous radiation to neck
4. Evaluation includes T4, T3, TSH, and thyroid scan, ultrasound and/or FNA (fine needle aspiration)
5. Diagnosis is by observation to see if the mass is enlarging, fine needle aspiration, and finally lobectomy
6. Treatment: total thyroidectomy and excision of all cervical metastases; patient should be maintained on thyroid hormone after surgery

D. Skin cancer

1. Basal cell tumors
 - a. Diagnosis is by inspection and punch biopsy
 - b. Treatment: includes curettage and desiccation for superficial lesions and surgery for large and deeper lesions
 - c. Recurrent basal cell tumors and sclerosing basal cell tumors should be treated with microscopically controlled excision called MOHS
2. Epidermoid cancer
 - a. Diagnosis is by inspection and punch biopsy
 - b. Treatment: surgical excision
 - c. Recurrent, large or invasive epidermoid cancers should be removed with microscopically controlled excision called MOHS
3. Melanoma
 - a. Diagnosis is by inspection and excisional biopsy
 - b. Staging by depth of invasion is important
 - c. Treatment: wide surgical excision with neck dissection only if metastasis exists
 - d. Postoperative radiation therapy is indicated for advanced lesions
 - e. Immunologic and chemotherapy consultations should always be requested

Maxillofacial Trauma

A. Evaluation

1. For soft tissue trauma, evaluate
 - a. Skin
 - b. Muscle
 - c. Nerves
 - d. Major vessels
 - e. Mucosa
2. For trauma to facial bones, evaluate by observations, palpation, and x- rays
3. Eyes: check vision and extraocular eye movements
4. Ears: test hearing and look for hemotympanum
5. Nose: look for bleeding and cerebrospinal fluid leak
6. Mouth: examine teeth and occlusion

B. X-rays if bony trauma is suspected

1. Mandibular series
 - a. Posteroanterior
 - b. Right and left oblique
 - c. Transorbital view of condyle and/or
 - d. Panorex
2. Maxillofacial CT scan
3. Nose: nasal x-rays are not indicated

C. Treatment

1. Soft tissue
 - a. Clean
 - b. Debride dead tissues
 - c. Stop bleeding
 - d. Repair nerves
 - e. Repair muscles
 - f. Close subcutaneous tissue and skin
2. Bone: bony fractures are repaired if functional or cosmetic defects exist; common fractures include
 - a. Trimalar (zygoma, malar, or both) fracture
 - i. Elevate zygomatic arch
 - ii. Reduce fracture to restore normal facial contour
 - b. Orbital floor fracture
 - i. Observe for enophthalmos
 - ii. Observe for diplopia with muscular entrapment
 - iii. Explore and repair only when diplopia with entrapment or enophthalmos is present
 - c. Nasal fracture
 - i. Reduce for cosmetic reasons
 - ii. Look for and treat septal hematoma
 - d. Maxillary fractures: all fractures (often called LeFort) must be repaired to restore normal dental occlusion. All patients receive arch bars with interdental fixation
 - e. Mandibular fracture: reduce fracture and place arch bars for interdental fixation

D. Larynx

1. All laryngeal fractures require indirect or direct laryngoscopy by head and neck surgeons.
2. Fractures are opened and reduced. The larynx or trachea is then stented.