Neck/Face Swelling

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No Disclosures

Many thanks:
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• Lindell Gentry, MD

Objectives
At the end of the presentation participants should be able to:
✓ Recognize and categorize causes of neck and face swelling based on anatomic location
✓ Anticipate associated complications of common head and neck infections

Patient Presentation
• Acute swelling in the neck and face is often a result from head and neck infections
• Fever, swelling, erythema, pain localized to a specific region
✓ Immunocompromised patients may not mount same immune response

Why Image?
• How extensive is the swelling?
• What is the source?
• Is there a drainable abscess?
• Are there complications?

Approach to Head & Neck Infections
Recognize Signs of Infections on Imaging
Fat Stranding
Rim Enhancing Collection
Reactive Nodes
Approach to Head & Neck Infections

Recognize Signs of Infection
Localize the Source

Facial Swelling/Pain
Symptoms: Tooth pain; Submand/Parotid swelling, Trismus
Protocol: Maxillofacial CT with contrast
- Consider Neck CT if swelling is diffuse

Anatomic Checklist
- Teeth
- Submandibular Gland
- Parotid Gland
- Temporomandibular Joint
- Overlying Fat Pads
- Sinuses
- Airway
- FOM

Red Flags
- Sublingual Space
- Difficulty breathing

Odontogenic Subperiostial Abscess
- Odontogenic infection is the most common cause of deep space neck infection in adults
- The number of ED visits for dental conditions is on the rise
- Estimated annual cost of $200 million for treatment
- Brush your teeth

Approach to Head & Neck Infections
Recognize Signs of Infection
Localize the Source
Look for Complications
Anticipate Treatment

Right facial swelling with jaw/dental pain and fever

22 yo Severe Progressive Neck Swelling, Jaw Pain and Fever

Odontogenic in the submandibular space
Ludwig’s Angina

- Rapidly progressive cellulitis of sublingual and submandibular space
- Odontogenic source of infection—mandibular tooth
- Level of periapical abscess relative to mylohyoid ridge determines sublingual vs. submandibular

Ludwig’s Angina Progression

Day 1
Day 3
Day 6

Surgical Emergency: Airway Compromise

74 yo facial swelling

Obstructing Wharton’s Duct Stone

- Extensive inflammation, swelling, and hyperenhancement of the submandibular gland
- Marked dilatation of the submandibular duct
- Small ovoid sialolith seen obscuring the distal aspect of Wharton’s duct, at the level of the papilla

56 year old with right facial pain

Stone in Stensen’s Duct

Drains via Stensen’s duct into buccal mucosa at level of 2nd maxillary molar
Parotid Swelling in an adult

- Paramyxovirus ("Mumps") is the most common cause.
- Influenzae, Coxsackie, and Adenovirus are also implicated.
- Seeding from the oral cavity is a common cause, bacterial.
- Need to exclude an obstructing mass.

85 yo F w right facial swelling evaluate for parotitis

Orbital and Sinonasal

Symptoms: Eye swelling, vision loss, diplopia
Protocol: Depends on the history
- Orbital Cellulitis: Sinus/Orbit CT with contrast, consider MRI Orbits and Brain if there is concern for intracranial spread of disease.

\[ \text{Anatomic Checklist} \]
- Globe, ON, Muscles
- Sinuses
- Fat Pads
- Brain

\[ \text{Red Flags} \]
- Proptosis
- CN Palsy
- Visual Changes
- Immunocompromised

3 year old with eye swelling

Subperiosteal Orbital Abscess

Complication of Sinusitis

Due to its thinness, the lamina papyracea is the most common site for breakthrough of sinonasal disease, making the medial orbit the most common location for subperiosteal abscess formation.
Chandler Classification

- Classification of orbital infection based on anatomic site of involvement & development of a defined abscess
- Chandler I - Chandler V.
- The categories are not sequential.

Chandler Classification

I
Preseptal Cellulitis

II
Postseptal Cellulitis

III
Subperiosteal Abscess

IV
Orbital Abscess

V
Cav. Sinus Thrombosis

Orbital Pain and Swelling

Left Orbital Pain and Swelling

17 yo with eye swelling
17 yo with eye swelling

17 yo with eye swelling

17 yo with eye swelling

54 yo with AML s/p BMT with acute onset visual loss, evaluate for stroke

Pre septal Cellulitis, Intraorbital Cellulitis, Subperiostial Abscess and Pachymeningitis

Prior Scan- 2 mo prior

Concern for Invasive Fungal Sinusitis
54 yo with AML s/p BMT with acute onset visual loss, evaluate for stroke

Invasive Fungal Disease

Aspergillus Neutropenic Patients
Mucormycosis Diabetic, Stem Cell TX

Ear Pain/Swelling

Symptoms: Ear pain, mastoid pain, swelling
Protocol: Temporal Bone CT without contrast
• + Contrast if concerned about sinus thrombosis
• Consider MR if concerned about meningitis

Anatomic Checklist
• Temporal Bone
• Overlying Fat Pads
• Venous Sinus
• Brain

Red Flags
✓ Worsening headache
✓ Seizure
✓ Diabetes
✓ Immunocompromised

Otitis Externa with secondary involvement of the parotid gland

• Also called “aggressive” or “malignant” otitis externa
• Typically caused by Pseudomonas infection, usually in immunocompromised, elderly, and/or diabetic patients
• Can erode through underlying mastoid and TMJ
• Inflammatory soft tissue changes and circumferential occlusion of the EAC

Post-auricular pain centered over mastoid process

Acute Otomastoiditis

• Intact bony trabeculae & cortical bone
• The sigmoid plate is intact
• Several air-fluid levels noted
Severe left ear pain and mastoid tenderness

Coalescent Otomastoiditis

- Bone erosion of multiple trabeculae

Otomastoiditis with Intracranial Subperiosteal Abscess

Facial Swelling/Facial Pain
- Odontogenic infection
- Ludwig’s Angina
- Salivary gland infection
- TMJ arthritis

Orbit/Sinonasal Symptoms
- Sinusitis
- Orbital Cellulitis
- Fungal Sinusitis
- Intracranial complications

Ear Pain/Swelling
- Otitis Externa
- Otomastoiditis
- Coalescent Mastoiditis
- Intracranial complications

Summary: Neck/Facial Swelling

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