Headmirror's ENT in a Nutshell
Parapharyngeal Space Tumors
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Presentation (0:38)

- Symptoms
  - Asymptomatic
    - Most common presentation, found incidentally on imaging
    - Slow growing and deep
  - Facial prominence laterally
    - Below angle of mandible or anterior to the ear
  - Pharynx prominence medially
    - May note with swallowing

- Physical Exam
  - Visual examination
    - Asymmetry of the parotid region
    - Oropharynx bulge. Pharyngeal constrictor/tonsil displaced medially
  - Palpation
    - Appreciation of fullness and mobility
  - Laryngoscopy
    - Appreciation of size and extent of mass
    - Evaluation of airway
    - Assess for cranial nerve involvement

- Epidemiology
  - Incidence: <0.5% general population
  - Majority benign neoplasms

- Differential Diagnosis: *consider tissue types in the parapharynx*
  - Parotid *(deep lobe)*/Ectopic salivary tissue: primary tumors or metastases
    - Most common parapharyngeal tumors
      - Benign: pleomorphic adenoma, oncocytoma
      - Low grade salivary malignancies: acinic cell carcinoma, mucoepidermoid carcinoma
      - High grade salivary maligancies
  - Fat: lipoma, liposarcoma
  - Lymph Nodes: lymphadenopathy (infectious/inflammatory), primary lymphoma, metastases
  - Carotid artery: paraganglioma
  - Jugular vein
  - Vagus nerve (CN X): schwannoma, neurofibroma

Anatomy (4:57)

- Boundaries

- Described as an inverted pyramid
- Superior: skull base – sphenoid and temporal bone
- Lateral: medial pterygoid muscle, posterior belly of digastric, mandible
- Medial: pharynx (buccopharyngeal fascia, pharyngeal constrictor muscle)
- Inferior (apex): hyoid bone

- Compartments
  - Important for diagnosis and differential
  - Divided by fascia arising from the styloid process connecting to the velopharynx
  - On imaging: anterior/posterior to styloid process
  - Pre-styloid: deep lobe parotid, lymph nodes, fat
    - Vast majority of tumors
  - Post-styloid: carotid artery, jugular vein, vagus nerve, sympathetic trunk

Workup (8:18)

- Imaging
  - CT scan with contrast:
    - Differentiate pre/post-styloid:
      - Relationship and displacement of structures
      - carotid artery: anteromedially
      - jugular vein: anterolaterally
      - vagus nerve: posterior between carotid a./jugular v.
    - Assess size, structure, involvement of surrounding structures
    - Dumbbell tumor signs
      - Deep lobe of parotid sits against stylomandibular ligament
      - An enlarging tumor is impinged by the ligament and mandible creating a dumbbell shape
  - MRI
    - Complementary information
    - Further differentiate interaction with surrounding structures
    - Salt and pepper heterogeneity
      - Neurofibroma tumor
  - Angiography:
    - Post-styloid tumors
    - Determine origin of paraganglioma (embolization site)
    - Lyre sign: carotid paraganglioma
      - Internal and external carotid artery are separated and rounded from each other as the tumor sits in the carotid notch between the structures

- Biopsy
  - Fine needle aspiration
  - Challenging for parapharyngeal tumors as the palpation and ultrasound visualization is impeded by the location and mandible laterally
  - May require CT guided aspiration or transoral aspiration

Treatment (14:35)

- General considerations:
    - Benign salivary gland tumor
        - Surgical resection
    - Lymph node
        - Biopsy determines plan
            - Lymphoma: non-surgical treatment
            - Inflammatory: observation
            - Metastatic disease: multi-modality
    - Carotid body tumors:
        - Consider patient age, morbidity of procedure, site of tumor origin
        - Surgical resection yields low recurrence rate in good surgical candidates
    - Vagal nerve tumors:
        - Observation or radiation therapy: resection of high vagal nerve tumor may cause significant morbidity
- Surgical approaches:
    - Consider origin of tumor
        - Prestyloid
            - Tumors generally quite mobile, less access needed
        - Poststyloid
            - Greater access required with proximal and distal control of great vessels
    - Common approaches
        - Transcervical
            - Incision just below the mandible, similar to neck dissection
        - Cervical-parotid
            - Continuation of neck incision anterior to the tragus
            - Allows access to the facial nerve
        - Trans-oral, potentially robotic
            - Incision made in the superiolateral palate. Dissection through the pharyngeal constrictor exposes the tumor
            - Poor exposure of the carotid artery
            - Patient selection is key for success
                - Pre-styloid tumor, mobile tumor, benign tumor or lymphadenopathy with minimal inflammation
                - Tumors that extend to the skull base or laterally are poor candidates
        - Greater exposure may be needed depending on tumor location, especially if near the skull base. Techniques for increased access:
            - Subluxation of the mandible
            - Divide digastric posteriorly to increase working window
            - Resect mastoid process of temporal bone to gain greater posterior/superior access
            - Splitting the mandible allows for greatest access to the skull base and great vessel, but is the most morbidity
- Surgical Risks:
    - Common
        - Short-lived *trismus* secondary to manipulation of the pterygoids

        - *First bite pain* interruption of the sympathetics at the carotid plexus. Unopposed parasympathetics to the salivary gland cause a strong pain with rush of saliva. More common with transcervical incisions
    - Rare
        - Abscess/infection
        - Fistula, more common if transoral and external incision
        - Injury to surrounding structures: carotid artery (CVA, bleeding), CN X (dysphagia, dysphonia), sympathetic trunk (Horner's syndrome)