Ultrasound Interpretation of Non-Thyroid Neck Pathology

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86th Annual Meeting of the American Thyroid Association, September 21, 2016, Denver, Colorado
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I have nothing to disclose
Head and Neck Ultrasound

- Although utilized extensively to evaluate for thyroid and parathyroid pathology, ultrasound is useful for evaluating all masses within the head and neck, especially lymph nodes
- Coincidental secondary pathology may be encountered
- Clinician performed ultrasound gives real-time information to the examiner, allowing for immediate assessment and possible intervention
- Useful for initial assessment of any neck mass as well as for surveillance
- Can differentiate between benign and malignant pathology
Head and Neck Ultrasound
Superficial masses

• Sebaceous cyst and epidermal inclusion cyst
  – Typically tethered to overlying skin
  – Course debris
  – Posterior enhancement
Superficial masses

- Lipoma
  - Superficial or deep
  - Ovoid, hypoechoic mass
  - Horizontal striations
  - Physical exam + ultrasound diagnostic
  - FNA unnecessary
Salivary Glands

- **Ranula**
  - Results from an obstructed duct, often a sublingual gland
  - Presents as an anterior/lateral sublingual cystic swelling in the floor of the mouth
  - Becomes a plunging ranula when it extends inferiorly and posteriorly around the mylohyoid into the submandibular triangle
Salivary Glands

- Plunging ranula
  - Extends into submandibular triangle
  - Cystic dilation adjacent to SMG
Plunging Ranula
Salivary Glands

- Sialolithiasis
  - Can see hyperechoic stone in duct; posterior shadow
  - Ductal dilation proximal to calculus
Sialolithiasis
Salivary Glands

• Sjogren’s Syndrome
  – Autoimmune disorder causing parotitis as a result of lymphocytic infiltration of the parotid glands (lacrimal glands as well)
  – Causes xerostomia and keratoconjunctivitis sicca
  – Female predominance, often associated with rheumatoid arthritis
Salivary Glands

- Sjogren’s
  - Xerostomia, parotid swelling
  - Honeycombed appearance of gland (note similar appearance to Hashimoto’s thyroiditis)
Salivary Glands

- **Parotitis**
  - Often bacterial
  - Swollen, inflamed, painful gland
  - Purulence from Stensen’s duct
Salivary Glands

- Parotid cysts
  - Seen in HIV
  - Filled with proteinaceous debris
Parotid cysts
Salivary Tumors

- Pleomorphic adenoma
  - Hypoechoic, discrete but irregular capsule, areas of cystic degeneration, posterior enhancement
  - Avascular stroma/lack of internal vascularity
Pleomorphic Adenoma
Mucoepidermoid Carcinoma

Note irregular borders
Central Neck

- Thyroglossal Duct Cyst
  - Thyroid descends at 5 weeks gestation from foramen cecum at tongue base and completes its final journey at 7 weeks
  - Initially epithelial lined tube persists and then obliterates. When this does not occur, risk of bacterial contamination and infection
  - Treatment requires removal of central hyoid to prevent recurrence
  - WDTC rare but occurs
Central Neck

- **Thyroglossal Duct Cyst**
  - Midline cystic mass often superior and anterior to hyoid bone; occasionally displaced laterally
  - Filled with debris, even colloid demonstrating comet-tail artifact
Thyroglossal Duct Cyst
Thyroglossal Duct Cyst
Zenker’s Diverticulum

- A pseudodiverticulum representing a herniation through a weak area between the inferior constrictor muscle and the cricopharyngeus muscle
- Symptoms include dysphagia, regurgitation of undigested food, possible aspiration
Zenker’s Diverticulum

- Outpouching behind thyroid lobe with expanded esophageal pattern
- Food debris, usually sonorefractive, can be identified and clears with sequential swallows
Zenker’s Diverticulum

[Images of ultrasound scans]

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Zenker’s Diverticulum
Thymus

• Less echogenic than normal thyroid
• Echogenic lines representing connective tissue septa (“speckled” pattern)
• Hassall’s corpuscles of thymus appear similar to microcalcifications of PTC
Larynx

- Hyoid ★
- Thyrohyoid membrane ★
- Thyroid notch (laryngeal prominence) ★
- Thyroid cartilage ★
- Cricothyroid ligament ★
- Cricoid cartilage ★
- Trachea ★
Surface Anatomy

Anterior view
Epiglottis
Hyoid bone
Thyrohyoid membrane
Superior horn of thyroid cartilage
Corniculate cartilage
Arytenoid cartilage
Superior thyroid notch
Thyroid cartilage lamina
Vocal ligament
Cricothyroid ligament
Inferior horn of thyroid cartilage
Cricoid cartilage
Trachea

Posterior view
Corniculate cartilage
Muscular process of arytenoid cartilage
Vocal process
Cricoid cartilage

Anterosuperior view
Surface Anatomy

Epiglottis
Hyoepiglottic ligament
Hyoid bone
Thyrohyoid membrane
Thyroid cartilage lamina
Oblique line
Laryngeal prominence
Corniculate cartilage
Arytenoid cartilage
Muscular process
Vocal process
Vocal ligament
Thyroepiglottic ligament
Cricothyroid ligament
Cricoid cartilage
Trachea
Surface Anatomy
Surface Anatomy

Placement of the ultrasound transducer transversely over the thyroid cartilage just inferior to the notch will allow for visualization of the vocal cords.
Surface Anatomy
Vocal Cord Function
Internal Anatomy

- Anterior Commissure
- False Cords
- True Vocal Cords
- Trachea
- Arytenoids
Internal Anatomy

- True cords (TC)
- False cords (FC)
- Arytenoids (AR)
Ultrasound Anatomy

- **True cords**
  - hypoechoic muscle
  - hyperechoic free edge
- **False cords**
  - hyperechoic
- **Arytenoids**
  - hyperechoic
Normal Endoscopic Exam

Courtesy of Dr. Phil Weissbrod
Normal TLUS
Endoscopic Exam With Paralyzed Cord

Left TC paralysis

Courtesy of Dr. Phil Weissbrod
TLUS With Left TC Paralysis
Lateral Neck

- Carotid body tumor
  - Paraganglioma at carotid bifurcation
  - Mass splays internal and external carotid arteries
  - Highly vascular
Carotid Body Tumor
Lateral Neck

- Schwannoma/neural tumors
  - Vagus, sympathetic chain, cervical plexus
  - Associated signs/symptoms
  - Adjacent to great vessels, usually displacing carotid anteriorly
  - Tapering at end of lesion where nerve of origin noted
Schwannoma
Lateral Neck

- **Traumatic neuroma**
  - Prior surgery
  - Hypo-isoechoic mass
  - Nerve enters mass
  - Digital pressure producing pain a supportive maneuver in addition to ultrasound
  - Avoid FNA
Lateral Neck

- **Branchial cleft cyst**
  - One of the most challenging, metastatic cervical LAD often misdiagnosed as a branchial cleft cyst
  - Usually a solitary cystic structure with imperceptible cyst wall
  - Variable internal echogenicity
  - Posterior enhancement common
Head and Neck Ultrasound

• Point of care clinician-performed ultrasound allows for comprehensive exam of the entire neck (importance of examining the neck when assessing a thyroid lesion and examining the thyroid gland when assessing a neck mass)
• Utilize ultrasound to confirm previous imaging studies and clarify/expand upon findings
• Immediate U/S guided FNA as indicated
• Surgical planning
• Surveillance