Cigna Medical Coverage Policies – Radiology
Neck Imaging Guidelines

Effective February 01, 2024

Instructions for use

The following coverage policy applies to health benefit plans administered by Cigna. Coverage policies are intended to provide guidance in interpreting certain standard Cigna benefit plans and are used by medical directors and other health care professionals in making medical necessity and other coverage determinations. Please note the terms of a customer's particular benefit plan document may differ significantly from the standard benefit plans upon which these coverage policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a coverage policy.

In the event of a conflict, a customer's benefit plan document always supersedes the information in the coverage policy. In the absence of federal or state coverage mandates, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of:

1. The terms of the applicable benefit plan document in effect on the date of service
2. Any applicable laws and regulations
3. Any relevant collateral source materials including coverage policies
4. The specific facts of the particular situation

Coverage policies relate exclusively to the administration of health benefit plans. Coverage policies are not recommendations for treatment and should never be used as treatment guidelines.

This evidence-based medical coverage policy has been developed by eviCore, Inc. Some information in this coverage policy may not apply to all benefit plans administered by Cigna.

These guidelines include procedures eviCore does not review for Cigna. Please refer to the Cigna CPT code list for the current list of high-tech imaging procedures that eviCore reviews for Cigna.

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Abbreviations for Neck Imaging Guidelines

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Abbreviations for Neck Imaging Guidelines	
ALS	amyotrophic lateral sclerosis
CT	computed tomography
ENT	Ear, Nose, Throat
FNA	fine needle aspiration
GERD	gastroesophageal reflux disease
GI	gastrointestinal
HIV	human immunodeficiency virus
MRI	magnetic resonance imaging

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General Guidelines (Neck-1.0)

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- A pertinent clinical evaluation since the onset or change in symptoms including a detailed history, physical examination, appropriate laboratory studies, and basic imaging such as plain radiography or ultrasound should be performed prior to considering advanced imaging (CT, MR, Nuclear Medicine), unless the individual is undergoing guideline-supported scheduled imaging evaluation. A meaningful technological contact (telehealth visit, telephone call, electronic mail or messaging) since the onset or change in symptoms can serve as a pertinent clinical evaluation.
- Advanced imaging of the neck covers the following areas:
  - Skull base (thus, a separate CPT® code for head imaging in order to visualize the skull base is not necessary)
  - Nasopharynx
  - Upper oral cavity to the head of the clavicle
  - Parotid glands and the supraclavicular region
- Ultrasound of neck soft tissues including thyroid, parathyroid, parotid and other salivary glands, lymph nodes, cysts, etc. is coded as CPT® 76536. This can be helpful in more ill-defined masses or fullness and differentiating adenopathy from mass or cyst, to define further advanced imaging.
- CT Neck
  - CT Neck is usually obtained with contrast only (CPT® 70491).
    - With the exception of 4D CT Neck without and with contrast (CPT® 70492) for parathyroid adenoma localization, little significant information is added by performing a CT Neck without and with contrast (CPT® 70492), and there is the risk of added radiation exposure, especially to the thyroid.
    - CT Neck without contrast (CPT® 70490) can be difficult to interpret due to difficulty identifying the blood vessels.
      - Exceptions include:
        - Contrast is generally not required when evaluating known or suspected tracheal anomalies with CT.
        - Additionally, noncontrast CT may be supported for the evaluation of salivary duct stones in the appropriate clinical circumstance where intravenous contrast may obscure high attenuation stones. Dual-phase CT imaging (without and with IV contrast) is not supported in this situation.[4]
    - Contrast enhanced CT is helpful in the assessment of cervical adenopathy and preoperative planning, including in the setting of thyroid carcinomas.
      - Contrast may cause intense and prolonged enhancement of the thyroid gland which interferes with radioactive iodine nuclear medicine studies.
      - Use of IV contrast is an important adjunct, however, because it helps to delineate the anatomic relationship between the primary tumor and

metastatic disease. Iodine is generally cleared within four to eight weeks in most individuals, so concern about iodine burden from IV contrast causing a clinically significant delay in subsequent whole-body scans (WBSs) or radioactive iodine (RAI) treatment after the imaging followed by surgery is generally unfounded. The benefit gained from improved anatomic imaging generally outweighs any potential risk of a several week delay in RAI imaging or therapy. Where there is concern, a urinary iodine to creatinine ratio can be measured.

- MRI Neck
  - MRI Neck is used less frequently than CT Neck.
  - MRI Neck without and with contrast (CPT® 70543) is appropriate if CT suggests the need for further imaging or if ultrasound or CT suggests any of the following:
    - Neurogenic tumor (schwannoma, neurofibroma, glomus tumor, etc.)
    - Vascular malformations
    - Deep neck masses
    - Angiofibromas
    - Cystic neck mass[5]
    - Concern for malignancy (see **Squamous Cell Carcinomas of the Head and Neck (ONC-3)**, **Salivary Gland Cancers (ONC-4)**, or **Thyroid Cancer (ONC-6)** as appropriate)
  - MRI Neck without and with contrast (CPT® 70543) is also directly supported if the head and neck surgeon or neurosurgeon, or the provider in consultation with the head and neck surgeon or neurosurgeon, has reasonable clinical concern:
    - For a skull base or nasopharyngeal neoplasm, or potential perineural invasion/cranial nerve involvement.[2]
    - That extensive dental amalgam may obscure the anatomy on CT in individuals with oral cavity neoplasm.

References (Neck-1)

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Cerebrovascular and Carotid Disease (Neck-2)

Cerebrovascular and Carotid Disease (Neck-2.1)

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- See these related topics in the Head Imaging Guidelines:
  - **General Guidelines – CT and MR Angiography (CTA and MRA) (HD-1.5)**
  - **Aneurysm and AVM (HD-12)**
  - **Stroke/TIA (HD-21.1)**
  - **Cerebral Vasculitis (HD-22.1)**
  - **Dizziness, Vertigo and Syncope (HD-23)**
  - **Hearing Loss and Tinnitus (HD-27)**
  - **Eye Disorders and Visual Loss (HD-32)**
- See **Cerebrovascular and Carotid Disease (PVD-3)** in Peripheral Vascular Disease Imaging Guidelines.
- See **Eagle Syndrome (Neck-10.3)**

Dysphagia and Esophageal Disorders (Neck-3)

Dysphagia and Esophageal Disorders (Neck-3.1)

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- **General considerations**
  - A detailed history of the dysphagia symptoms is important to distinguish neurogenic, pharyngeal and esophageal disorders.
  - Dysphagia (difficulty swallowing) can be the result of a wide range of benign and malignant processes that affects the body's ability to move food or liquid from the mouth to the pharynx and into the esophagus.
  - A short duration (weeks to months) of rapidly progressive esophageal dysphagia with associated weight loss is highly suggestive of esophageal cancer.
  - Advanced imaging for individuals presenting with isolated globus rarely impacts clinical management. In a study of 148 neck CTs and 104 barium esophagrams done for the evaluation of globus sensation, there were no malignancies detected.[20]
- **Gastroesophageal reflux disease (GERD)** [5,14]
  - Non-cardiac chest pain suspected of being GERD should be evaluated first to exclude cardiac and other etiologies. See **Non-Cardiac Chest Pain-Imaging (CH-4.1)** in the Chest Imaging Guidelines and **Indications for EGD (EGD-1)** in the Gastrointestinal Endoscopic Procedure Guidelines.
  - Gastric emptying study (CPT® 78264) for individuals with refractory GERD symptoms, and gastroparesis is being considered.
- **Suspected foreign body impaction and ingested foreign bodies** [1-3]
  - Plain x-rays initial imaging.
  - If imaging is negative, and there is suspicion of a radiolucent foreign body (such as fish or chicken bones, wood, plastic, thin metal objects, aluminum can pop-ups, etc.):[19]
    - CT Neck and/or Chest with or without contrast.
    - 3-D reconstruction (CPT® 76377) can be approved in this setting.
  - The use of oral contrast is discouraged (to avoid the aspiration of contrast material) for acute dysphagia or foreign body impaction, as the contrast may not pass, may be aspirated, and can interfere with subsequent endoscopic intervention.
- **Oropharyngeal dysphagia** [4,10,11]
  - Oropharyngeal dysphagia (difficulty in transferring food from the mouth to the pharynx)
    - Suspected neurologic causes: See appropriate sections in **Head Imaging Guidelines**

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- Initial evaluation is with direct visualization with laryngoscopy and/or upper endoscopy and a swallow study.
  - Video fluoroscopic swallowing study – (Dynamic radiographic evaluation of swallowing during speech pathologist-guided oral intake of various consistencies)
  - Flexible fiberoptic laryngoscopy and/or FEES (Fiberoptic Endoscopic Evaluation of Swallowing). FEES is a dynamic evaluation of swallowing via direct visualization using transnasal laryngoscopy during speech pathologist-guided oral intake of various consistencies.
- CT Neck with contrast (CPT® 70491) is indicated for any documented anatomic abnormalities suggested by direct visualization—ie, on exam with flexible laryngoscopy or rigid video stroboscopy or FEES.
  - Completion of a radiographic swallow study, though potentially helpful, is NOT necessary prior to the requested advanced imaging in such a case.

- **Esophageal dysphagia** [4,6,10,11]
  - Esophageal dysphagia (difficulty in transferring food down the esophagus in the retrosternal region, e.g. food sticking in the neck or chest)
    - Initial evaluation is with barium esophagram or upper gastrointestinal endoscopy
    - Esophageal manometry if indicated, though not required
    - Advanced imaging is supported for the evaluation of structural abnormalities demonstrated on either esophagram or direct visualization (ie, laryngoscopy/upper GI endoscopy), such as external compression, tumor, stricture, diverticulum, etc.
      - Contrasted CT Neck (CPT® 70491), CT Chest (CPT® 71260), **and/or** CT Abdomen (CPT® 74160) depending on the location of the abnormality identified.

- **Suspected perforation, abscess, or fistula**
  - CT Neck, Chest, **and/or** Abdomen, contrast as requested (preferably with contrast- CPT® 70491, CPT® 71260, CPT® 74160), depending on location
- **Hiatal hernia**
  - See **Hiatal Hernia (AB-12.3)** in the Abdomen Imaging Guidelines
- **Globus sensation** [7-9,20]
  - Direct visualization with laryngoscopy and/or upper endoscopy should be performed prior to advanced imaging.
    - Unremarkable laryngoscopy and/or upper endoscopy does not preclude advanced imaging if **red flag** symptoms are also present:
      - weight loss
      - odynophagia/throat pain
      - referred otalgia
      - hoarseness

    - hemoptysis, **AND/OR**
    - other unilateral presentation of concerning symptoms.
  - CT Neck with contrast (CPT® 70491) for ANY of the following:
    - Negative or equivocal findings on laryngoscopy and/or upper endoscopy with any **red flag** present
    - Known history of upper aerodigestive or esophageal malignancy
    - Known history of lymphoma
    - History of previous neck, esophageal, or gastric surgery–see below, and see **Background and Supporting Information** for post-operative oropharyngeal dysphagia associated with Anterior Cervical Spine Surgery (ACSS)
    - Palpable abnormality on physical examination such as neck mass
- **Post-operative dysphagia**
  - Dysphagia following surgery on the oropharynx, soft tissues of the neck, cervical spine, esophagus, or stomach:
    - In the immediate post-operative period the concern is for fluid collections, anastomotic leaks, perforations, and abscess. Prior laryngoscopy/upper endoscopy and barium esophagram are not required initially.
      - CT Neck with contrast (CPT® 70491) **AND/OR** CT Chest with contrast (CPT® 71260)
    - In the delayed post-operative period (ie, > 3 months)[18] the primary modalities for evaluation are history, physical, endoscopy (laryngoscopy or EGD) and/or barium esophagram/videofluoroscopic swallow study (VFSS) to direct any additional advanced imaging. See also **Background and Supporting Information**.
- **Suspected vascular ring** [8,9,12,13,15,16,17] (See **Dysphagia (PEDNECK-5)**)
  - Advanced imaging can be performed if a vascular ring is suspected by, or in consultation with, the treating specialty, i.e., cardiothoracic surgery, cardiology, otolaryngology, and/or pulmonology. More commonly, this congenital pathology would be suspected in a much younger population, however, dysphagia lusoria is a relatively rare condition involving a vascular ring (usually an aberrant right subclavian artery). As children these individuals are asymptomatic but develop worsening dysphagia later in adulthood, presumably secondary to increasing calcification and blood pressure.
    - CTA Chest (CPT® 71275) **OR** MRA Chest (CPT® 71555) are the preferred imaging studies in the evaluation of a suspected vascular ring.
    - CT Chest with contrast (CPT® 71260) **OR** MRI Chest without contrast (CPT® 71550), **OR** MRI Chest without and with contrast (CPT® 71552) can be performed as alternative exams in the evaluation of suspected vascular ring.

Background and Supporting Information

- Advanced imaging is generally not indicated for the evaluation of GERD, the diagnosis of which is usually made on the basis of clinical history, in conjunction with endoscopy, pH monitoring, Upper GI Barium Studies, and occasionally manometry.
- Globus sensation is a feeling of a lump or foreign body in the throat. In general, laryngoscopy, endoscopy, and physical examination will rule out malignant causes and advanced imaging is usually not needed for evaluation. It is considered a mild form of dysphagia.
- Postoperative oropharyngeal dysphagia is one of the most common complications following anterior cervical spine surgery (ACSS), and is considered by some to be an inevitable result of this surgery, rather than a surgical complication.[18]
- Severe dysphagia after ACSS should prompt immediate evaluation to exclude any potentially reversible surgical complication such as bone graft dislodgement, hematoma or retropharyngeal abscess.[18]
- In general, history, exam, plain films, laryngoscopy, and videofluoroscopic swallow studies are considered the primary modalities for evaluation. The videofluoroscopic swallow study, in fact, is the gold standard in evaluation, and is very sensitive in patients post-ACSS, and should be considered the initial evaluation in patients who are status post ACSS with globus sensation, or mild dysphagia.[18]

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Neck Mass/Swelling/ Adenopathy (Neck-5)

Neck Mass/Swelling/Adenopathy (Neck-5.1)

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- Cervical lymphadenitis is common and follows most viral or bacterial infections of the ears, nose and throat. Painful acute lymphadenopathy should be treated with a trial of conservative therapy for 2-weeks, including antibiotics if appropriate. If there is improvement with conservative treatment, advanced imaging is not indicated. If the adenopathy persists, it can be imaged as per below**.** [1,2,4]
- Ultrasound (CPT® 76536) can be considered for **ANY** of the following:[1,2,4]
  - Cervical adenopathy/lymphadenitis or an inflammatory, infective, or reactive mass that has failed a 2-week trial of treatment (including antibiotics if appropriate) or observation[1,2]
  - Anterior neck masses[2]
  - Any ill-defined mass, fullness or asymmetry[2]
- CT Neck with contrast (CPT® 70491) can be initially considered if:[2,4]
  - Neck mass with any ONE of the following:
    - Size ≥1.5cm[4]
    - Mass present ≥2 weeks or of uncertain duration[4]
    - Non-tender neck masses[4]
    - Firm texture or fixation of the mass[4]
    - Suspected peritonsillar, retropharyngeal or other cervical space abscess[2]
    - Ulceration of skin overlying the neck mass[4,7]
    - Ear pain ipsilateral to the neck mass[4]
    - Associated onset of hoarseness persistent for greater than 3-weeks[10]
    - Associated onset of throat pain, tonsil asymmetry, oral or oropharyngeal ulceration, weight loss, or hemoptysis[4,7]
    - History of malignancy that would be primary or metastatic to the neck[4]
    - Prior ultrasound results, if performed, are suspicious or indeterminate for malignancy[2]
  - Carcinoma found in a lymph node or other neck mass[2]
  - Suspected or known sarcoidosis[5]
  - Preoperative evaluation of any neck mass[2]
- MRI Orbit/Face/Neck without and with contrast (CPT® 70543) is supported if:[2]
  - CT suggests the need for further imaging[2]
  - Ultrasound or CT suggests neurogenic tumor (schwannoma, neurofibroma, glomus tumor, etc.), vascular malformations, cystic neck mass[7,9], deep neck masses[2], or angiofibroma[2].

- MRI Orbit/Face/Neck without and with contrast (CPT® 70543) is also directly supported without prior CT Neck or ultrasound requirement, if the head and neck specialist, or the provider in consultation with the head and neck specialist, has reasonable clinical concern for:
  - Skull base or nasopharyngeal neoplasm, **OR**
  - Potential perineural invasion/cranial nerve involvement, **AND/OR**
  - Extensive dental amalgam which may obscure the anatomy on CT in individuals with oral cavity neoplasm.

Background and Supporting Information

- Inflammatory neck adenopathy is often associated with upper respiratory infection, pharyngitis, dental infection, HIV and toxoplasmosis. Occasionally it is associated with sarcoidosis and tuberculosis.
- Malignancy is a greater possibility in adults that are heavy drinkers and smokers, but HPV associated disease is on the rise and there can be a high suspicion for malignancy even without these traditional risk factors.
- ENT evaluation can be helpful in determining the need for advanced imaging.
- Although CT and MRI can have characteristic appearances for certain entities, biopsy and histological diagnosis are the only way to obtain a definitive diagnosis. The preferred initial method of biopsy is Ultrasound guided core needle biopsy of the mass.[5,6]
- The most common causes of neoplastic cervical adenopathy are metastasis from head and neck tumors or lymphoma.
- MRI has great specificity for determining the boundaries and prevalence of developmental neck cysts. It may thus be considered optimal to use only MRI, which leads to a correct diagnosis in more than 90% of cases.[9]

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Recurrent Laryngeal Nerve Palsy (Neck-7)

Recurrent Laryngeal Nerve Palsy (Neck-7.1)

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v1.0.2024

- The following are supported with new diagnosis[6] of idiopathic unilateral vocal fold paralysis/immobility or weakness, as identified on videostroboscopy or laryngoscopy by an Otolaryngologist—Head and Neck surgeon, or a clinician in consultation with such a specialist[1,4,8,9]:
  - MRI Brain without and with contrast (CPT® 70553) **OR** MRI Brain without contrast (CPT® 70551) **AND**
  - MRI Orbit/Face/Neck with and without contrast (CPT® 70543) **OR** CT Neck with contrast (CPT® 70491) **AND**
  - CT Chest with contrast (CPT® 71260) (Strongly recommended for left vocal fold paralysis, and may be indicated for right vocal fold paralysis, if requested, see **Background and Supporting Information)**[1,2,3,4,7,8,9,10]

Background and Supporting Information[1-10]

- The right and left recurrent laryngeal nerves supply the motor innervation of the right and left vocal folds/cords, respectively. They are branches off of the Vagus Nerve, CN X. The entire pathway from origin to endpoint of this nerve must be visualized in cases of presumed idiopathic vocal fold paralysis, newly identified by laryngoscopy, to search for a possible cause. From the origin of the vagus at the medulla oblongata to the looping down into the superior mediastinum and back to the neck of its branching nerve (the recurrent laryngeal nerve)—advanced imaging is required to screen for a cause for otherwise idiopathic vocal fold paralysis/paresis. The greater the degree of motion impairment, the more likely it is to find a cause on imaging.
- The superior mediastinum is most noteworthy for containing the take-off point of the three great branches of the aortic arch: the brachiocephalic trunk (also known as the innominate artery), the left common carotid artery, and the left subclavian artery.
- The extent of the CT Neck with contrast, to be inclusive of the entirety of the course of the recurrent laryngeal nerve in question, would have to extend to the "thoracic inlet" portion of the superior mediastinum on the right, and the "aortic triangle" portion of the superior mediastinum on the left.
- Contrasted CT Chest is strongly supported with left vocal cord palsy due to the lower course of the recurrent laryngeal nerve branch on the left side of the body. It curves inferior to the aortic arch and ascends in the groove between the trachea and the esophagus. However, the course of the recurrent laryngeal nerve on the right side may be as low as the level at which the brachiocephalic artery meets the subclavian artery, and this area of the thoracic inlet may or may not be contained within the anatomic extent of a CT neck at all institutions.

- Repeat imaging for a pre-existing diagnosis of idiopathic unilateral vocal cord paralysis may be considered on a case by case basis. Recommendations include possibly repeating advanced imaging as above within 5 years after initial diagnosis and workup, or performing regular (annual) clinical evaluations with imaging reserved for the development of new symptoms or exam findings.[6]

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Thyroid and Parathyroid (Neck-8)

Thyroid Nodule (Neck-8.1)

NK.PT.0008.1.C
v1.0.2024

- Serum thyrotropin (TSH) should be measured in the initial evaluation of thyroid nodule/mass/asymmetry/goiter but is not required for follow-up imaging.[1,3,6,8]
- Nuclear scan (CPT® 78013 or CPT® 78014) is indicated if the serum TSH is subnormal and ANY of the following:
  - Single or multiple thyroid nodules[1,3,6,8]
  - Suspicion of ectopic thyroid tissue[3]
  - Presence of thyroid nodule in the setting of Grave's disease.[3,8]
- Ultrasound (US) Neck (CPT® 76536) is indicated for evaluation of a palpable thyroid nodule/mass/asymmetry/goiter regardless of TSH level:[3,5]
  - Incidentally found on CT, MRI, or PET (focal activity)[2,3,6]
  - Nodules ≤1 cm with very low suspicion US pattern including spongiform pattern (>50% small cystic spaces) and pure cysts do not require repeat US.[6,10]
- ACR Thyroid Imaging, Reporting, and Data System (TI-RADS), consisting of five levels, is utilized for recommendations in determining US follow-up vs FNA of thyroid nodule(s).[10]
  - TI-RADS 1 (Benign) and TI-RADS 2 (Not Suspicious): Follow-up US is not indicated
  - Additional sonograms are indicated for more suspicious thyroid nodules that do not meet size criteria for FNA, such as TI-RADS 3 (Mildly Suspicious), TI-RADS 4 (Moderately Suspicious and TI-RADS 5 (Highly Suspicious) as follows:

ACR TI-RADS Levels for Thyroid Nodule Follow-Up Ultrasound or FNA			
TI-RADS 3 Mildly Suspicious	≥1.5 to 2.4 cm - US at 1, 3, and 5 years ≥2.5 cm - FNA	No further imaging if stable and no increase at 5 years*	TI-Rads level increases but is still below FNA range: Re-image with US in 1 year.
TI-RADS 4 Moderately Suspicious	≥1.0 to 1.4 cm - US at 1, 2, 3, and 5 years ≥1.5 cm - FNA	No further imaging if stable and no increase at 5 years*	TI-Rads level increases but is still below FNA range: Re-image with US in 1 year.
TI-RADS 5 Highly Suspicious	≥0.5 to 0.9 cm – US annually for 5 years ≥1.0 cm - FNA	No further imaging if stable and no increase at 5 years*	

  - *If nodule enlarges on follow-up US but remains below the FNA size threshold for their ACR TI-RADS level at 5 years, additional follow-up US

imaging at the discretion of Thyroid Specialist, Endocrinologist, Neck/Thyroid Surgeon.

- If a TIRADS classification is not stated on a thyroid US report, clinical judgment should be used to determine appropriateness of follow-up imaging interval.
- The American Thyroid Association (ATA) guidelines from 2015 also use imaging characteristics and size for thyroid nodule risk stratification however size cutoffs are slightly more generous when compared to ACR-TIRADs. Sonographic imaging and/or biopsy requests in accordance with ATA criteria are appropriate[3]. See below for ATA's criteria:
  - **FNA requirements based on thyroid ultrasound pattern:**
    - Nodules ≥ 1cm with high or intermediate suspicion pattern
    - Nodules ≥ 1.5 cm with low suspicion pattern
    - Nodules ≥ 2cm with very low suspicion pattern
    - Benign pattern: FNA not required
  - **Nodules with previously benign FNA:**
    - Nodules with high suspicion US pattern: repeat US and US-guided FNA within 12 months.
    - Nodules with low to intermediate suspicion US pattern: repeat US at 12–24 months; if 20% growth or new suspicious features, can repeat FNA or continue to observe with repeat US.
    - Nodules with very low suspicion US pattern (including spongiform nodules):
      - The utility of surveillance US and assessment of nodule growth as an indicator for repeat FNA to detect a missed malignancy is limited. If US is repeated, it should be done at 24 months.
  - **Nodules which do not meet FNA criteria:**
    - Nodules with high suspicion US pattern: repeat US in 6–12 months.
    - Nodules with low to intermediate suspicion US pattern: consider repeat US at 12–24 months.
    - Nodules >1 cm with very low suspicion US pattern (including spongiform nodules) and pure cysts which do not meet FNA criteria: the utility and time interval of surveillance US for risk of malignancy is not known. If US is repeated, it should be at ≥24 months.
    - Nodules ≤1 cm with very low suspicion US pattern (including spongiform nodules) and pure cysts do not require routine sonographic follow-up.
  - See **Background and Supporting Information** section below for links to a diagram of ATA's thyroid nodule risk related to ultrasound appearance and also a link to a diagram of ATA's FNA criteria.
- See **Thyroid Cancer-Surveillance/Follow-up (ONC-6.4)** for thyroid nodules that are biopsy proven thyroid cancer but are being monitored on active surveillance

- CT Neck with contrast (CPT® 70491), or CT Neck without contrast (CPT® 70490), or MRI Orbit/Face/Neck without contrast (CPT® 70540), or MRI Orbit/Face/Neck without and with contrast (CPT® 70543). CT is preferred since there is less motion artifact than with MRI. MRI and CT **are not** indicated for routine thyroid nodule evaluation and should only be considered after US for:[5]
  - Evaluation of extent of known substernal goiter[3,8]
  - Suspected airway compression, ie, subjective sense of dyspnea or choking sensation in the clinical history with known multinodular goiter.[3,8]
  - Presence of pathologic lymph nodes in cervical regions not visualized on ultrasound[3]
  - Clinically suspected advanced thyroid disease, including invasive primary tumor[3,6,8]
  - Any preoperative planning for thyroid disease[3,5,9,10]
- CT Chest without contrast (CPT® 71250) or with contrast (CPT® 71260) is also indicated for:
  - Preoperative planning for individuals with substernal extension of the thyroid, pulmonary symptoms, or abnormalities on recent chest x-ray, and should be ordered by a surgeon or in consultation with a surgeon.[10]
- A thyroid nodule detected for the first time during pregnancy should be managed in the same way as in non-pregnant individuals, except for avoiding the use of radioactive agents for diagnostic and therapeutic purposes.[3]
- Thyroglossal duct cysts (TGDC) are the most common type of congenital neck cyst of the midline neck, and may be first diagnosed in adulthood, though more commonly in early childhood.[8,9]
  - A physical exam feature includes the rise and fall of the midline mass with protrusion and retraction of the tongue, due to its embryonal connection to the foramen cecum.[8,9]
  - There is a small risk (about 1%) of incidental malignant degeneration within the TGDC, particularly within adults, and therefore, it is uniformly managed surgically. The Sistrunk procedure, which involves resection of the TGDC and its complete tract within the surrounding midline tissues—to include the middle third of the hyoid bone, is considered the gold standard in surgical management with a less than 5% risk of recurrence.[8,9]
  - Advanced imaging, per surgeon's request—or a provider in consultation with the head and neck surgeon, to include Neck Ultrasound (CPT® 76536) or CT Neck with contrast (CPT® 70491) or MRI Neck with and without contrast (CPT® 70543), is generally supported pre-operatively, or for the evaluation of a suspected recurrence.[8,9]

Background and Supporting Information

- TI-RADS levels are determined based on the ultrasound appearance of the nodule. Grading criteria are available at https://www.acr.org/-/media/ACR/Files/RADS/TI-RADS/TI-RADS-chart.pdf?la=en.
- Link to ATA's thyroid nodule risk related to ultrasound appearance:[3]
  - https://www.liebertpub.com/cms/10.1089/thy.2015.0020/asset/images/large/figure2.jpeg
- Link to ATA's FNA criteria:[3]
  - https://www.ncbi.nlm.nih.gov/core/lw/2.0/html/tileshop_pmc/tileshop_pmc_inline.html?title=Click%20on%20image%20to%20zoom&p=PMC3&id=4739132_fig-1.jpg
- Ultrasonography (US) is preferred over CT and MRI[1,2.3.6.8] for thyroid nodule assessment. Thyroid nodule management relies on ultrasound characteristics, TSH level and FNA biopsy, together with clinical findings.
- Fine-Needle Aspiration (FNA) biopsy is indicated for suspicious and/or large thyroid nodules prior to CT or MRI imaging[3]
- A thyroid nodule is distinct either on palpation or radiologically (incidentaloma). Nonpalpable nodules have the same risk of cancer as palpable. Nodules >1 cm are evaluated, while smaller nodules are generally evaluated if there are suspicious sonographic features, co-existing adenopathy or a history of radiation or cancer exists.
- Ultrasound is not used to screen: 1) the general population, 2) individuals with normal thyroid on palpation with a low risk of thyroid cancer, 3) individuals with hyperthyroidism, 4) individuals with hypothyroidism or 5) individuals with thyroiditis. Conversely, US can be considered in individuals who have no symptoms but are high-risk as a result of: history of head and neck irradiation, total body irradiation for bone marrow transplant, exposure to fallout from radiation during childhood or adolescence, as well as family history of thyroid cancer syndromes such as MEN2, medullary or papillary thyroid cancer, Cowden's disease, familial adenomatous polyposis, Carney complex, Werner syndrome/progeria.
- There is insufficient evidence supporting the use of PET to distinguish indeterminate thyroid nodules that are benign from those that are malignant.
- 18FDG-PET imaging is not routinely recommended for the evaluation of thyroid nodules with indeterminate cytology. Routine preoperative 18FDG-PET scanning is not recommended.
- Incidental focal FDG-PET uptake often corresponds to a clinically relevant thyroid nodule and ultrasound is recommended in individuals with a normal life expectancy.[1] Incidentally noted diffuse thyroid FDG-PET uptake most often corresponds to inflammatory uptake, however, ultrasound should be done to ensure that there is no evidence of clinically relevant nodularity.
- Elastography provides information about nodule stiffness that is complementary to gray scale ultrasound findings in nodules with indeterminate cytology or ultrasound findings. It should not be used as a substitute for gray scale ultrasound.

- Use of ultrasound contrast medium is not recommended for the diagnostic evaluation of thyroid nodules and its current use is restricted to definition of size and limits of necrotic zones after minimally invasive nodule ablation techniques.

Parathyroid Imaging (Neck-8.3)

NK.PT.0008.3.C
v1.0.2024

- Classic primary hyperparathyroidism
  - Parathyroid Planar Imaging (CPT® 78070), Parathyroid Planar Imaging with SPECT (CPT® 78071), or Parathyroid Planar Imaging with SPECT/CT (preferred study) (CPT® 78072)[2,3,5] AND/OR Ultrasound (CPT® 76536)[1,2] AND/OR 4D CT Neck without and with contrast (CPT® 70492) are approvable if BOTH of the following conditions are met:[1,2,3]
    - PTH and Calcium levels are elevated (See **Background and Supporting Information**).
    - Intention of the study is preoperative localization
      - All parathyroid nuclear scan codes (CPT® 78070, CPT® 78071, CPT® 78072) include thyroid subtraction when performed and no additional thyroid nuclear scan CPT codes are required unless otherwise indicated in **Thyroid Nodule (Neck-8.1)**.
      - Reporting or billing CPT® 78800 for the purpose of intraoperative parathyroid localization using a gamma probe is not supported if performed along with a parathyroid nuclear scan (CPT® 78070, CPT® 78071, CPT® 78072).
      - Ultrasound (CPT® 76536) can be ordered independently to evaluate the thyroid per criteria in **Thyroid Nodule (Neck-8.1)**
      - 3D Imaging (CPT® 76377) is indicated with a 4D CT Neck
  - MRI Neck without and with contrast (CPT® 70543) for cases of re-operation, difficult localization or ionizing radiation contraindication[1,6] as ordered by an Endocrinologist, Parathyroid surgeon, or Radiologist or any provider in consultation with one of these specialists.
  - CT Chest with contrast (CPT® 71260) in rare circumstances in the evaluation of ectopic mediastinal parathyroid adenomas[14] as ordered by an Endocrinologist, Parathyroid surgeon, or Radiologist or any provider in consultation with one of these specialists.
  - Choline PET/CT (CPT® 78815 or CPT® 78816) is considered experimental and investigational for preoperative localization in cases of primary hyperparathyroidism.[15-17]
  - Repeat imaging is supported both in individuals with prior non-localizing imaging who have not yet undergone parathyroid exploration OR in cases of hyperparathyroidism that recurs or persists after parathyroid surgery if reimaging is being ordered by a surgeon or any provider after consultation with a surgeon with expertise in parathyroidectomy[1].
- Primary hyperparathyroidism variants
  - Primary hyperparathyroidism with non-elevated serum calcium. (Serum Calcium level normal and PTH elevated).

        - Confirmatory study is elevated ionized calcium, elevated albumin corrected calcium or elevated historic calcium levels.[1,4]
    - Hypercalcemia with inappropriately non-suppressed PTH (Calcium level elevated and PTH normal).
        - PTH level ≥25 pg/mL is consistent with primary hyperparathyroidism.
        - See **Background and Supporting Information** for more information.
    - Intention of parathyroid imaging should be for pre-operative localization.
    - Use the same guidance on imaging modalities as described in "classic" primary hyperparathyroidism.

      Primary Hyperparathyroidism variants:

	Calcium	PTH	Confirms/strongly suggests primary hyperparathyroidism
Classic primary hyperparathyroidism	High	High	Yes
Primary hyperparathyroidism with non-elevated serum calcium	Normal	High	Elevated ionized albumin corrected or historic calcium levels*
Hypercalcemia with inappropriately non-suppressed PTH	High	Normal	PTH ≥25 pg/ml

- Normocalcemic hyperparathyroidism
    - Serum calcium levels (including ionized calcium levels) are always normal and PTH levels are elevated.
    - Secondary causes of PTH elevation are excluded. See **Background and Supporting Information** for differential diagnosis of secondary hyperparathyroidism.
    - Calcium, PTH and clinical status should be monitored annually.
        - In the event of laboratory progression to hypercalcemia, refer to "classic" primary hyperparathyroidism for imaging guidance.
        - In the event of clinical progression (decline in bone mineral density or new fracture/renal stone/nephrocalcinosis), imaging for the intent of preoperative localization is as requested by or after consultation with a specialist or any provider in consultation with a specialist[18].
- Secondary renal hyperparathyroidism
    - Serum calcium levels are low or normal (but may also be elevated in more advanced disease) and PTH levels are very elevated.
    - Imaging for the intent of preoperative localization as requested by or after consultation with a specialist if all of the following are met:

  - Individuals has stage 3a-stage 5 chronic kidney disease (GFR<60).
  - PTH level is >9x upper limit of normal reference range for the lab testing facility (~585 pg/mL) despite standard medical or pharmacologic therapy (calcimimetics, calcitriol and/or vitamin D analogs).[19]
- Tertiary hyperparathyroidism
  - Serum calcium and PTH levels are elevated as a result of long standing secondary hyperparathyroidism in individuals on renal replacement therapy or after renal transplant.
  - Imaging for the intent of preoperative localization as requested by or in consultation with a specialist.

Hyperparathyroidism subtypes:

	Calcium	PTH	Clinical Hallmarks
Normocalcemic Hyperparathyroidism	Normal	High	Calcium never elevated
Secondary renal Hyperparathyroidism	Low/Normal/High	Very High	Stage 3a-5 CKD, PTH >9x ULN
Tertiary Hyperparathyroidism	High	High	ESRD/renal transplant

Background and Supporting Information

- Hypercalcemia in individuals with primary hyperparathyroidism may be determined by elevated serum calcium, elevated serum ionized calcium, elevated serum calcium level corrected for albumin, or historic calcium elevation. A comparison of serial measurements of calcium is helpful in determining the presence of true hypercalcemia as calcium levels may be variable over time.
- Parathyroidectomy candidacy should be determined by the provider, however national guidelines recognize the following criteria for surgery[1,4]
  - All individuals <50 years of age, regardless of whether objective features are present or absent.
  - All symptomatic individuals, including those with kidney stones, hypercalcemic crises, pathologic fractures or other associated symptoms.
  - Individuals with findings concerning for parathyroid cancer (very high calcium >13).
  - All asymptomatic individuals with the following:
    - Serum calcium >1.0 mg/dl (0.25 mmol/l) above the normal range
    - BMD by DEXA: T-score ≤2.5 at the lumbar spine, total hip femoral neck or distal 1/3 radius. (The forearm i.e. distal 1/3 radius is preferentially impacted by primary hyperparathyroidism as this area is rich in cortical bone.)
    - Vertebral fracture by x-ray, CT, MRI and vertebral fracture assessment

        - Estimated glomerular filtration rate of less than 60 ml/min
        - Urinary calcium excretion >400 mg in 24 hours
        - Nephrolithiasis or nephrocalcinosis by x-ray, ultrasound or CT
    - Asymptomatic individuals who cannot participate in appropriate medical surveillance
    - Asymptomatic individuals desiring definitive surgical management
- For cases of “normocalcemic hyperparathyroidism” in which primary hyperparathyroidism is not confirmed, additional investigation for secondary/tertiary causes of hyperparathyroidism (renal insufficiency, hypercalciuria as a primary renal abnormality, vitamin D deficiency and gastrointestinal malabsorption problems such as short gut syndrome, celiac disease, Crohn's disease or a prior Roux-en-Y bypass surgery) is indicated[1,18].
- For cases of hypercalcemia in which primary hyperparathyroidism is not confirmed, additional consideration for other causes of hypercalcemia (malignancy including PTH-RP mediated and myeloma, granulomatous disease, FHH, medications including thiazide diuretics, excessive calcium/vitamin D supplementation and the history of or present lithium use) is indicated[1].

Parathyroid Incidentaloma (Neck-8.4)

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- A mass incidentally found on neck imaging that may represent an enlarged parathyroid gland, should prompt laboratory testing including calcium and PTH levels.[1,2,3,4,5]
  - If laboratory abnormalities suggest hyperparathyroidism, i.e. "functioning parathyroid incidentaloma," see **Hyperparathyroidism (NECK- 8.3)** for imaging recommendations.
  - If there are no laboratory abnormalities and diagnoses other than parathyroid incidentaloma are suspected, see **Neck Mass/Swelling/Adenopathy (NECK-5.1)** for imaging recommendations.
  - Parathyroid nuclear scans are commonly requested for an evaluation of a PTI however the sensitivity of these scans are low in individuals with normal calcium/PTH and no clinical symptoms of primary hyperparathyroidism.[5,6] Reliance on either a positive scan or negative scan to decide if surgery is indicated is not supported by current literature.
- If a parathyroid incidentaloma is suspected on imaging prior to planned thyroid surgery or other head/neck surgery[4], the following studies are indicated if ordered by the surgical team or any provider in consultation with the surgical team:
  - Parathyroid Planar Imaging (CPT® 78070), Parathyroid Planar Imaging with SPECT (CPT® 78071), or Parathyroid Planar Imaging with SPECT/CT (CPT® 78072) AND/OR Ultrasound (CPT® 76536) AND/OR 4D CT Neck without and with contrast (CPT® 70492)
- Ultrasound (US) Neck (CPT® 76536) annually if the mass was not removed surgically.[3]

Background and Supporting Information

- "Parathyroid incidentalomas" include parathyroid adenomas found unexpectedly at the time of surgery or seen on ultrasound.[1,2,3,4,5,6]
- Normal sized parathyroid glands (~6mm) are not usually identified by most imaging modalities, so enlargement warrants laboratory evaluation to rule out pathologic causes such as primary hyperparathyroidism or rarely parathyroid carcinoma.[1,2,3,4]
- Sonographic imaging features of a parathyroid incidentaloma (ovoid, hypoechoic, well circumscribed and adjacent to but separate from the thyroid either posteriorly or inferiorly) may have overlap with perithyroidal lymph nodes and exophytic thyroid nodules in a multinodular goiter.[1,2,3,4]
- The literature does report cases of pathologically confirmed parathyroid adenomas/ hyperplasia in individuals with normal serum calcium and PTH levels, so these enlarged parathyroid glands, may represent an early stage of hyperparathyroidism. It is unclear what percentage of non-functioning PTIs become hyper-secreting over time, but many of these masses are surgically managed.[2,3,4,6]

- Normally sized and normally functioning parathyroid glands do not take up sestamibi or tetrofosmin.[7] The likelihood of a positive parathyroid nuclear scan is low in the setting of normal calcium and PTH levels.[5,6]
- Parathyroid fine needle aspiration biopsy has been used historically however its diagnostic use is limited, due to the potential for hemorrhage and fibrosis which make eventual surgical dissection and pathologic interpretation more difficult.[1,4]

References (Neck-8)

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Thyroid

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Parathyroid

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Trachea and Bronchus (Neck-9)

Trachea and Bronchus – Imaging (Neck-9.1)

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- Initial evaluation for suspected laryngotracheal pathology:
  - Direct visualization of the upper airway (via laryngoscopy, with or without bronchoscopy), and can also include
  - Plain x-rays of the neck with or without chest x-ray
- To further evaluate definite abnormalities found on either of the above, including laryngotracheal, tracheal, or bronchial anomalies, foreign bodies or persistent segmental or lobar lung collapse:
  - CT Neck with contrast (CPT® 70491) **OR** CT Neck without contrast (CPT® 70490) **AND/OR**
  - CT Chest with contrast (CPT® 71260) **OR** CT Chest without contrast (CPT® 71250), depending on the anatomic level of the lesion
    - See **Squamous Cell Carcinomas of the Head and Neck—Suspected/Diagnosis (ONC-3.1)** for suspected laryngotracheal tumor
- For suspected subglottic stenosis (SGS) after evaluation by a specialist or in consultation with a specialist who has directly visualized the upper airway:
  - CT Neck with contrast (CPT® 70491) **OR** CT Neck without contrast (CPT® 70490) is supported
- For obstructive physiology in the setting of tracheomalacia:
  - Expiratory HRCT (CPT® 71250) is supported[1]

Background and Supporting Information

- Bronchoscopy can further evaluate the distal endobronchial tree.
- Suspected laryngotracheal disease can be identified by inspiratory or biphasic stridor and a characteristic flow-volume loop of PFTs.[1]
- The visualization of tracheal or bronchial "inspissation" or thickening of secretions without an abnormality, is not a risk for malignancy.[3]
- CT with multiplanar reformatting has proven comparable to rigid bronchoscopy with a 100% sensitivity and specificity of detecting SGS and for measuring length and grade of stenosis.[5]

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Neck Pain (Neck-10)

Neck Pain (Cervical) (Neck-10.1)

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- Neck pain is usually related to a specific process including pharyngitis, radiculopathy, adenopathy, mass, carotid dissection and torticollis, and therefore found elsewhere in these guidelines.[1]
- For the evaluation of neck pain or other symptoms which may involve the cervical spine, including myelopathy and cervical radiculopathy[1], see **Spine Imaging Guidelines**.

Torticollis and Dystonia (Neck-10.2)

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Older Child (beyond infancy) or Adult [1]

- To identify fracture or malalignment in cases of trauma:
  - Initial evaluation with recent trauma (without a high-risk mechanism of injury– see **SP-3.2 Neck (Cervical Spine) Trauma)** is by plain radiographs of the cervical spine.[10,11,12] If inconclusive:
    - CT Neck with contrast (CPT® 70491) **AND/OR**
    - CT Cervical Spine without contrast (CPT® 72125)
- In the clinical setting of cervical spine trauma with an associated neurologic deficit:
  - MRI Cervical Spine without contrast (CPT® 72141) is supported
- To evaluate for soft tissue or neurological cause in cases with no trauma history:
  - CT Neck with contrast (CPT® 70491), **AND/OR**
  - MRI Cervical Spine without contrast (CPT® 72141), **OR**
  - CT Cervical Spine without contrast (CPT® 72125)
    - Positive→ Further advanced imaging is not required if CT Neck or CT/MRI Cervical Spine has identified local cause.
    - Negative→ MRI Brain without and with contrast (CPT® 70553) to exclude CNS cause.

Eagle's Syndrome (Neck-10.3)

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Also known as "Calcified stylohyoid ligament," "elongation of styloid process," or "stylocarotid artery syndrome."

- **"Classic Eagle Syndrome"**
  - Typically seen in individuals after pharyngeal trauma or tonsillectomy[4,5]
  - Characterized by ipsilateral dull, persistent pharyngeal pain, centered in the ipsilateral tonsillar fossa, that can be referred to the ear, and exacerbated by rotation of the head
  - Other symptoms may include dysphagia, sensation of foreign body in the throat, tinnitus, or cervicofacial pain
  - If Eagle Syndrome is suspected on exam and/or lateral neck x-ray:[4,5]
    - CT Maxillofacial with contrast (CPT® 70487) **OR** CT Maxillofacial without contrast (CPT® 70486) **AND/OR**
    - CT Neck with contrast (CPT® 70491) **OR** CT Neck without contrast (CPT® 70490)
- **"Stylocarotid Artery Syndrome"** (ie, the anterior circulation equivalent of "bow hunter syndrome"—rotational vertebral artery occlusion syndrome, see also **General Guidelines - CT and MR Angiography (CTA and MRA) (HD-1.5)**[9])
  - Characterized by the compression of the internal or external carotid artery (with their peri-vascular sympathetic fibers) by a laterally or medially deviated styloid process
  - It is related to a pain along the distribution of the artery, which is provoked and exacerbated by rotation and compression of the neck
  - Not correlated with tonsillectomy
  - In cases of impingement of the internal carotid artery, there may be referred supraorbital pain and parietal headache. In cases of external carotid artery irritation, the pain radiates to the infraorbital region.
    - Dynamic/Positional CTA (CPT® 70498) is supported to assess for vascular compression (see also **General Guidelines - CT and MR Angiography (CTA and MRA) (HD-1.5)**[9] and **General Guidelines - Other Imaging Situations (HD-1.7)**[6]
- CT scanning (and in particular, 3-D CT scanning) represents an extremely valuable imaging tool in patients with Eagle syndrome. 3-D rendering (CPT® 76376 or CPT® 76377) is supported as an add on to CT Neck (CPT® 70491 **or** CPT® 70490), if requested, for accurate evaluation of the styloid process in relation to its anatomic relationship with the other head and neck structures, in surgical planning.[7] See **3D Rendering (Preface-4.1)**.

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Background and Supporting Information

- Torticollis or cervical dystonia is an abnormal twisting of the neck resulting in head rotation. Its causes are many and may be congenital or acquired and caused by trauma, infection/inflammation, neoplasm and/or idiopathic. It occurs more frequently in children and on the right side (75%).
- Eagle syndrome is characterized by recurrent pain in the oropharynx and face due to an elongated styloid process or calcified stylohyoid ligament. The styloid process is a slender outgrowth at the base of the temporal bone, immediately posterior to the mastoid apex.[4,8]

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Salivary Gland Disorders (Neck-11)

Salivary Gland Disorders (Neck-11.1)

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- **Salivary Gland Stones, Sialadenitis or Stenosis:** [1]
  - Sialography (contrast dye injection) under fluoroscopy, can be performed to rule out a salivary duct stone or stricture, using
    - Post-sialography CT (CT Maxillofacial without contrast [CPT® 70486] for Stensen's duct of the parotid gland, which would be most common; **or** CT Neck without contrast [CPT® 70490] for the level of the Wharton's Duct); **or** post-sialography MRI (MRI Orbit/Face/Neck without contrast [CPT® 70540])

    OR
  - CT Maxillofacial area with contrast (CPT® 70487) **OR**
  - CT Neck with contrast (CPT® 70491)
    - CT performed only without IV contrast (CPT® 70490) may be helpful in a small minority of cases, such as cases of follow-up for known salivary stones, or for post-sialography imaging, as described above **OR**
  - MRI Orbit/Face/Neck without and with contrast (CPT® 70543)
- **Parotid or Other Salivary Gland Mass**
  - The following are appropriate:[2]
    - Ultrasound (CPT® 76536) is supported as initial or additional imaging and does not need to be completed prior to the performance of advanced imaging.
    - MRI Orbit/Face/Neck without and with contrast preferred (CPT® 70543), **or** MRI Orbit/Face/Neck without contrast (CPT® 70540) **OR**
    - CT Neck with contrast (CPT® 70491) preferred **or** CT Maxillofacial area with contrast (CPT® 70487)
- **Repeat Imaging (CT or MRI, as above)** [4]
  - There is currently no standard timeframe for repeat advanced imaging to follow known benign pathology of the salivary gland that has been resected—partially or completely, or only observed. This holds true even if the salivary lesion has the potential for recurrence or malignant transformation (i.e., pleomorphic adenoma).
  - Repeat advanced imaging, as requested by the surgeon or those in consultation with the surgical team, is indicated if recent history and exam demonstrate signs:
    - Concerning for complications of surgery, or
    - Recurrence or progression of neoplasm/lesion

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Background and Supporting Information

- CT Neck
  - CT should be performed with IV contrast to distinguish vessels from lymph nodes and to confirm if a mass is hypervascular. *Dual-phase CT imaging (without and with IV contrast) is not supported*. CT performed only without IV contrast may be helpful in a small minority of cases including cases of follow-up for known salivary stones or post-sialography studies.
    - A recent study in the American Journal of Neuroradiology comparing contrast enhanced and non-contrast enhanced CT in the evaluation of sialolithiasis demonstrated excellent sensitivity and specificity with no false-positive results using contrast-enhanced CT alone (without the addition of non-contrasted images for comparison). Benefits of initial only contrast-enhanced CT include better evaluation of the ductal system, improved soft tissue contrast in assessing salivary masses and decreased radiation dose (compared to dual phase CT imaging (without and with IV contrast)).[3]

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Sore Throat, Odynophagia, and Hoarseness (Neck-12)

Definitions (Neck-12.0)

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- Hoarseness – Altered voice quality reported by the individual
- Dysphagia – Disordered or impaired swallowing ie. food impactions, globus sensation, choking/aspiration, regurgitation (See **Dysphagia and Esophageal Disorders (Neck-3.1)**)
- Odynophagia – Painful swallowing

Sore Throat/Throat Pain/Odynophagia (Neck-12.1)

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- See **Dysphagia and Esophageal Disorders (Neck-3.1)** for dysphagia as the primary symptom.
- Sore Throat/Throat Pain/Odynophagia
  - Uncomplicated viral or streptococcal pharyngitis with sore throat[3]
    - Imaging studies are not indicated. See **Neck Mass/Swelling/Adenopathy (Neck-5.1)** for suspected complications of pharyngitis/tonsillitis, such as a cervical space abscess.
  - Postoperative throat pain or odynophagia after head and neck procedure with suspected complication of procedure.[4]
    - CT Neck with contrast (CPT® 70491)
  - Sore throat/throat pain/odynophagia that is persistent or progressive for two or more weeks, in spite of any treatment measures or observation:
    - Initial evaluation is laryngoscopy
      - If the initial laryngoscopy is abnormal, or if it is negative, and if there is a continued suspicion of submucosal lesion of the pharynx[2,4] due to any red flag symptoms (weight loss, referred otalgia, hoarseness, hemoptysis, and/or unilateral presentation of symptoms):
        - CT Neck with contrast (CPT® 70491) **OR**
        - MRI Orbit/Face/Neck without and with contrast (CPT® 70543)
      - Alarm symptoms of persistent unilateral throat pain or odynophagia with ipsilateral referred otalgia is especially suspicious for a submucosal tumor of the head and neck (versus more distal esophageal pathology).[5]
      - If subjective dysphagia AND odynophagia are both present and the initial laryngoscopy and neck exam are normal (i.e. no cervical space abscess or post-surgical complication is suspected), and no red flag symptoms are present, then barium esophagram (or GI upper endoscopy) is indicated prior to the advanced imaging studies of the neck listed above.[5,6]

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Hoarseness (Neck-12.2)

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- Laryngoscopy is the primary diagnostic modality for evaluating individuals with hoarseness. Imaging studies, including CT and MRI, are unnecessary in most individuals with hoarseness because most hoarseness is self-limited or caused by pathology that can be identified by laryngoscopy alone.
- The need for advanced imaging is based upon abnormal findings upon laryngoscopy,[1] such as:
  - Immobile or partially mobile vocal cord [See **Recurrent Laryngeal Nerve Palsy (NECK-7.1)**]
  - Any growth, asymmetry, ulceration, or other suspected neoplasm of the glottis or supraglottis [See **Neck Mass/Swelling/Adenopathy (Neck 5.1)**. See also **ONC-3.0-3.4**].

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