

# Head and Neck Evaluation

## Chapter 10

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### + Head and Neck Examination Procedures

- Inspect the neck for the following:
  - Symmetry
  - Alignment of trachea
  - Fullness
  - Masses, webbing, and skinfolds
- Palpate the neck, noting the following:
  - Tracheal position
  - Tracheal tug
  - Movement of hyoid bone and cartilages with swallowing
  - Lymph nodes
  - Salivary glands
  - Thyroid gland

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### + The Head and Neck Examination: Inspection

- Head and neck position (tremor, torticollis, hearing or vision loss, symmetry of SCMs and traps, position of trachea, masses)
- Facial features (shape and symmetry)
- Edema, coarsened features, prominent eyes, hirsutism, coloring
- Masses, webbing, skinfolds
- Skin and hair

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### + Head and Face

- Inspection
  - Facial features
  - Facial asymmetry
  - Tics
  - Spasms
  - Head position and shape
  - Skull size and shape
  - Scalp
  - Hair pattern

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### + Trachea palpation

- The trachea should be midline
- Pt should be seated with forward lean
- Place the 5<sup>th</sup> distal phalange in the fossa created by the lateral aspect of the trachea and the medial aspect of the SCM
- The depth should be the same
- Tracheal deviation can occur with chest or neck masses, lung collapse, and pleural effusion

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### + Tracheal tug

- A tracheal tug is a downward displacement of the cricoid cartilage with each ventricular contraction
- Pt is seated with head extended
- Examiner grasps the cricoid cartilage and applies a gentle upward pressure
- A downward tug of the trachea, synchronized with systole, reveals the presence of an aortic arch aneurysm

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## + Campbell's Sign

- Campbell's sign is the downward displacement of the thyroid cartilage during inspiration
- It is not due to an aortic arch aneurysm, but to COPD
- Place the tip of the index finger over the thyroid cartilage and look for downward displacement
- This sign is an accurate indicator of COPD and the degree of displacement correlates well with the severity of compromise of the FEV
- It is due to the strong diaphragmatic contractions of COPD patients

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## + Palpation of Salivary Glands Prefix = sialo\_\_\_\_\_

- The parotid, submaxillary/submandibular, and sublingual glands are palpable
- The parotid glands are located below and anterior to the ear, just anterior to the angle of the mandible
- The submaxillary/submandibular glands are located just medially and anteriorly to the angle of the mandible---easiest to palpate when pt swallows
- The sublingual glands are located in the floor of the mouth, just beneath the tongue

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## + Special Populations: Infants

- Inspection
  - Head circumference
  - Head symmetry of shape
  - Fontanels
  - Scalp scaling or crusting, dilated scalp veins
  - Hair and hairline
  - Caput succedaneum or cephalhematoma
  - Head control, position, movement
  - Facial features
  - Facial symmetry
  - Neck symmetry, size, and shape

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## + Special Populations: Infants

- Palpation
  - Suture lines and fontanels
  - Craniotabes: softening of the outer table of the skull
  - Neck muscle tone and masses
  - Trachea
  - Thyroid goiter
- Transillumination
  - Transilluminate the skull of infants who have suspected intracranial lesions or a rapidly increasing head circumference
  - Performed less often today because of availability of computed tomography (CT) scan

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## + Special Populations: Children

- Percussion of skull with one finger to detect Macewen sign
  - Stronger resonant sound when either hydrocephalus or a brain abscess is present
- Bruits common in children up to 5 years of age or in children with anemia
- Thyroid may or may not be palpable

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## + Special Populations: Pregnant Pts

- Inspect for chloasma/melasma
  - mask of pregnancy
- Palpate for hypertrophy of thyroid
- Auscultate for thyroid bruit

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## + Special Populations: Older Adults

- Facies vary with nutritional status
  - Sunken eyes
  - Eyelids loose and wrinkled
- Evaluate range of motion (ROM) of neck slowly and cautiously
  - Pain or crepitus
  - Jerkiness or limited movement
- Palpate thyroid for nodules or irregularities
  - Thyroid more fibrotic as individual ages
  - Feels more nodular or irregular on palpation

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## + Thyroid Gland Evaluation

- The thyroid gland may not be the most important organ or system in the body, but it is second only to the heart in # of errors in examination technique and lack of confidence among primary care physicians

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## + Thyroid Gland Palpation

- Palpate the thyroid gland for the following:
  - Size
  - Shape
  - Configuration
  - Consistency
  - Tenderness
  - Nodules
    - Do these characteristics seem familiar?
  - If gland is enlarged, auscultate for bruits

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## + Palpate the thyroid

- Sit with a slight extension of the head
- Locate the hyoid bone, just under the mandible
- Immediately inferior to the hyoid bone is the thyroid cartilage
- The thyroid cartilage is the most prominent and easily identified structure in the midline (superior notch)
- Inferior to the thyroid cartilage is the cricoid cartilage (3 cm or two digit span)
- The isthmus of the thyroid gland is immediately below the cricoid cartilage
- You should end up about 2 cm above the clavicles

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## + Thyroid gland

- The inferior margins of the thyroid lobes are located just within the SCM
- The superior margins of the thyroid lobes just touch the prominent thyroid cartilage

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## + Thyroid palpation of a patient

- ▶ You may use either the posterior approach or the anterior approach
- ▶ The posterior approach is more commonly used
- ▶ Pick one approach and stick with it
- ▶ Palpation also should evaluate the texture
- ▶ It normally feels like an almond—mildly ridged

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## + Should the thyroid be palpable?

- Not always. Thyroids of 15 to 20 grams (upper limit of normal) are not always palpable
- Under this are rarely palpable
- The average size is 2 cm wide, 5 cm high, and 2.5 cm thick
- The isthmus is 1.25–2 cm in width and height

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## + Posterior approach

- ▶ Stand behind the patient
- ▶ Place the 2<sup>nd</sup> and 3<sup>rd</sup> digit pads together in the midline, about 2 cm above the clavicles and about .5 cm inside the medial margin of the SCM
- ▶ First try to find the isthmus (below the cricoid cartilage and above the suprasternal notch)
- ▶ Then palpate the lateral lobes
- ▶ To palpate unilaterally, fix the trachea with one hand while palpating with the other

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## + Nodules or asymmetry

- If asymmetry or a nodule is noted, it helps to have the patient flex and rotate the head while you inspect and palpate
- This may make the nodule more obvious
- Finally, ask the patient to swallow repeatedly while you palpate the gland
- Should the gland move with swallowing?

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## + Auscultation of the thyroid

- Auscultate the thyroid in patients with a goiter and those with findings suggestive of hyperthyroidism
- In those patients, a bruit may be heard, indicating increased vascularity
- This is finding is a strong indicator for Grave thyrotoxicosis
- A bruit is rarely found in other thyroid conditions

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## + Thyroid palpation

- The size of the thyroid in a specific population is determined largely by the supply of iodine in the diet
- Larger glands occur in iodine-deficient areas
- Formerly, 35 gm was the upper limit of normal, but with iodine supplementation the upper limit of normal has decreased to 15–25 gm
- Mountainous regions tend to be iodine-deficient; common away from the sea

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## + Differences

- Women have larger and more easily palpable thyroid glands than men
- The right lobe is often larger than the left
- In up to 1%, the entire left lobe can be absent
- A pyramidal lobe may be present in up to 15%, extending as high as the hyoid
- Up to 5% have posterior extracapsular tissue, extending superiorly from the posterior aspect of the tongue (nondescent)
- This is called a lingual thyroid and can extend inferiorly into the mediastinum

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### + False-positive results

- False-positive results caused by:
  - Thin patients have misleading accessibility of the lobes
  - Same for patients with long necklines—these "pseudogoiters" have been termed Modigliani syndrome after the Italian artist's drawings
  - The presence of a fat pad in the anterolateral neck of young women and obese patients—does not rise with deglutition
  - Other anterior neck masses may be mistaken for thyroid masses—unlikely to rise with deglutition

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### + False-negative results

- False-negative results caused by:
  - Inadequate examination skills are the most common reason for false-negative results
  - Short and thick-necked patients, especially the obese or elderly or those with COPD
  - Atypical or ectopic placement of the thyroid—retrosternally, laterally, obscured by the SCMs

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### + So, how do you decrease the errors?

1. Practice!
2. Examine the thyroid through inspection and palpation (cross-lighting)
3. Categorize the thyroid as either normal or goitrous (enlarged)
4. Consider that a small goiter may be an overestimation
5. Evaluate the mass from the profile and note whether it is visible on frontal view with mild extension
6. Make appropriate referral to an endocrinologist

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### + What is the precision and accuracy of physical exam of the thyroid gland?

- Despite the concern for mistakes, interobserver variability for estimating the presence or absence of a goiter and in estimating the size is  $k = .77$
- Intraobserver variability for inspection is  $k = .73$  and  $k = .65$  for palpation
- The sensitivity of detecting a goiter with physical exam is 70% and the specificity is 82%

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Abnormalities

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### + Flags in the HPI

- Thyroid problem
  - Changed temperature preference
  - Swelling of neck
  - Change in texture of hair, skin, or nails
  - Change in emotional stability
  - Increased prominence of eyes (exophthalmos)
  - Tachycardia, palpitations
  - Change in menstrual flow
  - Change in bowel habits
  - Medications: thyroid preparations

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## + Thyroid disorders

- A goiter (Latin *gutter* = throat) is a chronic enlargement of the thyroid
- A goiter is not a neoplastic or inflammatory process—it is the result of hypertrophy or degeneration of the gland
- Functionally, the goiter could be euthyroid or dysthyroid (hyper or hypo)
- Thus, the presence of a goiter does not necessarily reflect the functional status

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## + Interesting...

- Normal size depends on the region—mountainous regions are endemic
- Large thyroid goiters were so common among mountaineers of Switzerland and northern Italy that they became part of the local folklore
- For example, among the masks of Italian Commedia dell' Arte was a mountaineer named Gioppino
- The word *cretin* (endemic or congenital hypothyroidism) is also related to the goiters of mountaineers
- A group of Christians was allowed to settle in the French Pyrenees to escape religious persecution
- They all developed hypothyroidism and the mental defects associated with the condition
- When traveling to different villages, they were easily recognizable and immediately referred to as *cretins* (Chretien = French for Christian)

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## + Goiters and pregnancy

- A true goiter is uncommon, but mild hypertrophy during pregnancy is not uncommon as a result of the changed hormonal environment
- It is so common, that the fathers of ancient Rome used to observe and measure the necks of their young daughters to gauge their "purity"

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## + Pregnant Women

- Changes in thyroid gland and hormones
  - Fetal thyroid glands becomes functional in the second trimester
  - Before this, mother is source of thyroid hormone
  - Pregnant women require increased iodine intake
  - As long as adequate iodine intake is maintained, the size of the thyroid will not change by physical examination
    - Slight enlargement may be detectable by ultrasound

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## + Thyroid

- Hypothyroidism
  - Underactive thyroid
- Hyperthyroidism
  - Overactive thyroid
- Myxedema
  - Skin and tissue disorder usually due to severe prolonged hypothyroidism
- Graves disease
  - Autoimmune antibodies to thyroid-stimulating hormone receptor, leading to overactive thyroid
- Hashimoto disease
  - Autoimmune antibodies against thyroid gland, often causing hypothyroidism

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## + Older Adults

- The rate of  $T_4$  production and degradation gradually decreases with aging
- Thyroid gland becomes more fibrotic

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## + Salivary gland swelling

- Unilateral swelling:
  - Ductal calculus due to infection (Staph or Strep)
  - Rarely: painless unilateral swelling = tumor
- Bilateral swelling:
  - Malnutrition (kwashiorkor, anorexia, bulimics)
  - Sjogren's syndrome (RA + dry eyes & mouth)
  - Alcoholism
  - Diabetes mellitus
  - HIV
  - Thyrotoxicosis
  - Leukemia and lymphoma
  - Drugs—sulfonamides, lead, mercury, iodine
  - Acute parotitis (mumps)---contrast with cervical adenitis
    - Mumps obscures the angle of the mandible during palpation

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## + Neck

- Thyroglossal duct cyst
  - Palpable cystic mass in the neck
- Branchial cleft cyst
  - Congenital lesion formed by incomplete involution of branchial cleft
- Torticollis (wry neck)
  - Birth trauma, tumors, trauma, cranial nerve palsy, muscle spasms, infection, drug ingestion

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## + Infants

- Encephalocele
  - Neural tube defect with protrusions of brain and membranes that cover it through openings in the skull
- Hydrocephalus
  - A problem in the formation, flow, or absorption of cerebrospinal fluid (CSF) that leads to an increase in volume of the CSF

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## + Infants

- Microcephaly
  - Circumference of head is smaller than normal because brain has not developed properly or has stopped growing
- Craniosynostosis
  - Premature closure of one or more cranial sutures before brain growth is complete
  - Leads to misshapen skull

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