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Palpation of the Thyroid Gland

Function:

- Plays an important role in regulating the body's metabolism and calcium balance
- Produces thyroid hormone (TH) which is composed of thyroxin (T4) and triiodothyronine (T3)

 these hormones stimulate every tissue in the body to produce proteins and increase the amount of oxygen used by cells
- Parafollicular cells produce calcitonin this hormone works together with the parathyroid hormone to regulate calcium levels in the body

Structure:

- The thyroid has two lateral lobes that are connected by a median tissue mass called the isthmus
- Internally, the gland is composed of hollow spherical follicles formed by cuboidal/squamous epithelial cells (follicle cells) which produce thyroglobulin

Location:

- Usually located above the suprasternal notch
- The gland, except in the midline, is covered by thin strap-like muscles anchored to the hyoid bone and sternocleidomastoid muscles
- The thyroid isthmus spans the 2nd, 3rd, and 4th tracheal rings just below the cricoid cartilage
- The lateral lobes of the thyroid curve posteriorly around the sides of the trachea/esophagus (each are about 4-5cm in length)

Inspection:

- 1. Inspect the neck for the thyroid gland
 - a. Tip the patient's head back a bit and use a tangential light directed downward from the tip of the patient's chin
 - b. The gland should be located below the cricoid cartilage
- 2. Ask the patient to sip some water then extend the neck and swallow
 - a. Observe for upward movement of the thyroid gland (note contour and symmetry)

Palpation (Posterior approach):

- 1. Have the patient sit in a comfortable position
- 2. Ask the patient to flex the neck slightly forward to relax the sternocleidomastoid muscles (say, "please look at the ceiling")
- 3. Stand behind the patient and place your fingers of both hands on the patient's neck so that your index fingers are just below the cricoid cartilage
- 4. Ask the patient to sip and swallow water. Feel for the thyroid isthmus rising up under your finger pads (often but not always palpable)
 - a. Normal isthmus is a soft consistency and will be missed if you press too hard
- 5. Displace the trachea to the right with the finger of the left hand; with the right-hand fingers, palpate laterally for the right lobe of the thyroid in the space between the displaced trachea and the relaxed sternocleidomastoid muscle. Find the lateral margin
- 6. Repeat step 4 to examine the left lobe
- 7. Note the size, shape, and consistency of the gland and identify any nodules or tenderness a. Each lobe normally weighs between 7 to 10 g (in adults)

Alternate Approach to Palpation:

- 1. Approach the patient from the front
- 2. Feel each lateral lobe in turn by using the fingers of one hand to retract the sternocleidomastoid muscle posteriorly
- 3. Use the fingers of the other hand to feel the underlying thyoid

4. The position of the isthmus can be predicted and palpated during swallowing (once the lateral lobes are located)

Clinical Pearls:

- A retrosternal thyroid gland (below the suprasternal notch) is often not palpable
- The thyroid feels
 - Soft in Graves' disease
 - Firm/rubbery in Hashimoto's and de Quervain thyroiditis
 - Hard in malignancy and Riedel thyroiditis
 - Tender in thyroiditis
- A mass within the thyroid will move with the larynx/thyroid during all 3 phases of swallowing (upward movement, stationary phase, and descent)
- If the thyroid gland is enlarged, listen over the lateral lobes with a stethoscope to detect a bruit (a localized systolic or continuous bruit may be heard in hyperthyroidism)

References:

- 1. Bickley LS et al. Bates' Guide to Physical Examination and History Taking. 11th ed. Philadelphia, PA: Lippincott Williams & Wilkins. 2013;248-53.
- 2. Marieb EN, Hoehn K. Anatomy & Physiology. 3rd ed. San Fransisco, CA: Pearson Benjamin Cummings. 2008;548-52.
- 3. Orient, JM. Sapira's Art and Science of Bedside Diagnosis. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins. 2010;258-61.
- 4. Walker HK et al. Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd ed. Boston, MA: Butterworths. 1990;650-2.