

# Lec-9- Thyroid Gland

The thyroid gland is a butterfly-shaped organ located in the base of your neck. It releases hormones that control metabolism—the way your body uses energy. The thyroid's hormones regulate vital body functions, including:

- Breathing
- Heart rate
- Central and peripheral nervous systems
- Body weight
- Muscle strength
- Menstrual cycles
- Body temperature
- Cholesterol levels
- Much more!

The thyroid gland is about 2-inches long and lies in front of your throat below the prominence of thyroid cartilage sometimes called the Adam's apple. The thyroid has two sides called lobes that lie on either side of your windpipe, and is usually connected by a strip of thyroid tissue known as an isthmus. Some people do not have an isthmus, and instead have two separate thyroid lobes.

## How the Thyroid Gland Works

The thyroid is part of the endocrine system, which is made up of glands that produce, store, and release hormones into the bloodstream so the hormones can reach the body's cells. The thyroid gland uses iodine from the foods you eat to make two main hormones:

- Triiodothyronine (T3)
- Thyroxine (T4)

It is important that T3 and T4 levels are neither too high nor too low. Two glands in the brain—the hypothalamus and the pituitary communicate to maintain T3 and T4 balance.

The hypothalamus produces TSH Releasing Hormone (TRH) that signals the pituitary to tell the thyroid gland to produce more or less of T3 and T4 by either increasing or decreasing the release of a hormone called thyroid stimulating hormone (TSH).

- When T3 and T4 levels are low in the blood, the pituitary gland releases more TSH to tell the thyroid gland to produce more thyroid hormones.
- If T3 and T4 levels are high, the pituitary gland releases less TSH to the thyroid gland to slow production of these hormones.

## Why You Need a Thyroid Gland

T3 and T4 travel in your bloodstream to reach almost every cell in the body. The hormones regulate the speed with which the cells/metabolism work. For example, T3 and T4 regulate your heart rate and how fast your intestines process food. So if T3 and T4 levels are low, your heart rate may be slower than normal, and you may have constipation/weight gain. If T3 and T4 levels are high, you may have a rapid heart rate and diarrhea/weight loss.

Listed below are other symptoms of *too much* T3 and T4 in your body (**hyperthyroidism**):

- Anxiety
- Irritability or moodiness
- Nervousness, hyperactivity
- Sweating or sensitivity to high temperatures
- Hand trembling (shaking)
- Hair loss
- Missed or light menstrual periods

The following are other symptoms that may indicate *too little* T3 and T4 in your body (**hypothyroidism**):

- Trouble sleeping
- Tiredness and fatigue
- Difficulty concentrating
- Dry skin and hair
- Depression
- Sensitivity to cold temperature
- Frequent, heavy periods
- Joint and muscle pain

