



# GHADIALI

## General Surgery

### P R E S E N T S

Dr. Mufa T. Ghadiali is skilled in all aspects of General Surgery.  
His General Surgery Services include:

- General Surgery
- Advanced Laparoscopic Surgery
- Surgical Oncology
- Gastrointestinal Surgery
- Hernia Surgery
- Endoscopy

## Hyperthyroidism

Multimedia Health Education

### ***Disclaimer***

This movie is an educational resource only and should not be used to manage your health. All decisions about the management of Hyperthyroidism must be made in conjunction with your Physician or a licensed healthcare provider.

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GHADIALI

## MULTIMEDIA HEALTH EDUCATION MANUAL

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## INTRODUCTION

**Hyperthyroidism** is a medical condition that occurs when the thyroid gland produces too much thyroid hormone. Thyroid hormones regulate the body's metabolism and when an overabundant supply is present it causes many of the body's functions to speed up. This is referred to as hypermetabolism and causes the body to use abnormal amounts of oxygen and nutrients. In order to understand **Hyperthyroidism**, it is important to learn about the Thyroid gland.

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### Normal Thyroid Anatomy

The thyroid is a 2-inch-long, butterfly-shaped gland weighing less than an ounce. Located in the front of the neck below the larynx, or voice box, it is composed of two lobes, one on each side of the trachea or windpipe. The lobes are joined together by a narrow band of tissue called the isthmus. The thyroid is one of the glands that make up the endocrine system. The endocrine glands produce, store, and release hormones into the bloodstream that travel through the body and direct the activity of the body's cells. Thyroid hormones regulate metabolism—the way the body uses energy—and affect nearly every organ in the body.

(Refer fig.1 to 5)

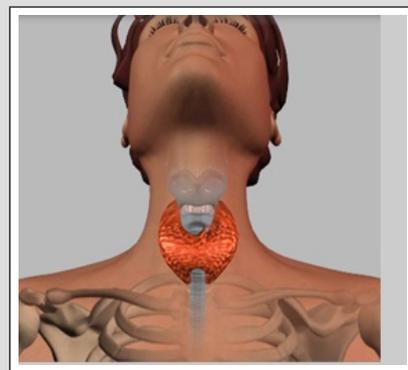
- Thyroid
- Larynx
- Trachea
- Isthmus

The thyroid gland makes two thyroid hormones, triiodothyronine (T3) and thyroxine (T4).

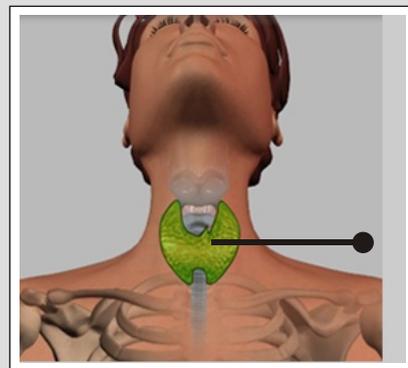
Thyroid hormones affect metabolism, brain development, breathing, heart and nervous system functions, body temperature, muscle strength, skin dryness, menstrual cycles, weight, and cholesterol levels.

A third hormone produced by the thyroid gland, calcitonin, is not considered a thyroid hormone as such, but affects calcium levels in the blood and controls the buildup of calcium in the bones.

Thyroid hormone production is regulated by thyroid-stimulating hormone (TSH), which is made by the pituitary gland. Located in the brain, the pituitary gland is the “master gland” of the endocrine system.

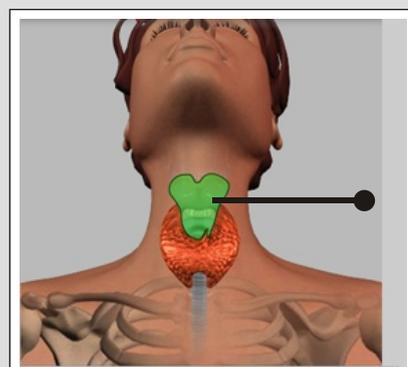


(Fig. 1)



**Thyroid**

(Fig. 2)



**Larynx**

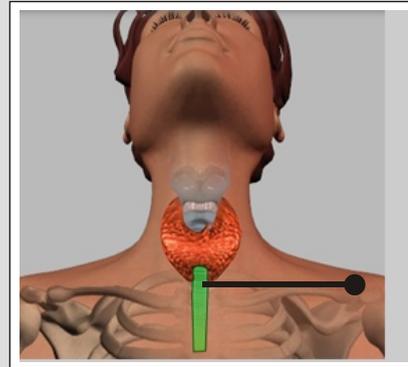
(Fig. 3)

**Unit 1:**

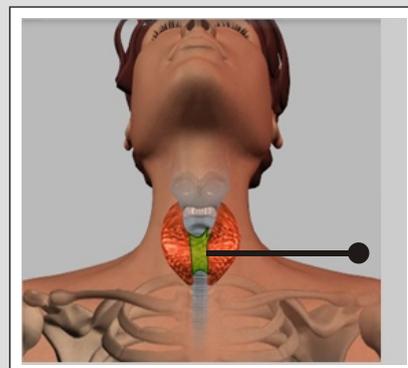
**Normal Thyroid Anatomy**

## Normal Thyroid Anatomy

*(Refer fig.1 to 5)*



**Trachea**  
**(Fig. 4)**



**Isthmus**  
**(Fig. 5)**

### What is Hyperthyroidism?

Hyperthyroidism is a medical condition that occurs when the thyroid gland produces too much thyroid hormone. The condition may also be referred to as “overactive thyroid”. Because the thyroid gland regulates metabolism in the body, the conversion of oxygen and calories to energy, the increased amount of thyroid hormone affects many of the body’s functions.

The thyroid gland functions by absorbing iodine from foods that we eat and converting it into thyroid hormones, T3 and T4. When the thyroid releases its hormones, the bloodstream carries them to the cells in the body where they control metabolism.

The amount of thyroid hormones that are converted and released into the blood stream depends upon a tiny gland in the brain called the pituitary gland. The pituitary gland produces TSH, thyroid stimulating hormone, which, when released into the bloodstream, stimulates the thyroid to produce more hormones.

When the levels of thyroid hormone in the blood increase, the pituitary recognizes this and decreases its release of TSH, thereby decreasing the thyroid’s production of hormones.

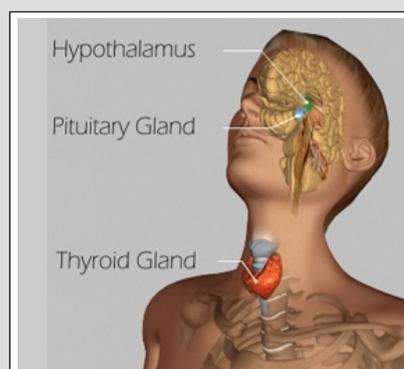
The pituitary is under the control of the hypothalamus, another gland located in the brain. The hypothalamus is responsible for the production and release of TSH releasing hormone or TRH.

TRH is the hormone that communicates with the pituitary gland regarding the production and release of TSH. Hyperthyroidism occurs when there is an overproduction of thyroid hormone.

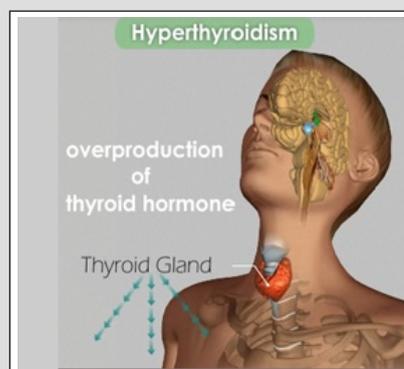
(Refer fig.6 to 8)



(Fig. 6)



(Fig. 7)



(Fig. 8)

## Symptoms of Hyperthyroidism

Hyperthyroidism has many symptoms that can vary from person to person. Some common symptoms of hyperthyroidism are:

- nervousness or irritability
- fatigue or muscle weakness
- trouble sleeping
- heat intolerance
- hand tremors
- rapid and irregular heartbeat
- frequent bowel movements or diarrhea
- weight loss
- mood swings
- goiter, which is an enlarged thyroid that may cause your neck to look swollen

## Causes of Hyperthyroidism

Hyperthyroidism has several causes, including:

**Graves' Disease:** In Graves' disease, the immune system makes an antibody called thyroid stimulating immunoglobulin (TSI), which mimics TSH and causes the thyroid to make too much thyroid hormone.

**Thyroid Nodules:** Thyroid nodules, also called adenomas, are lumps in the thyroid. Thyroid nodules are common and usually noncancerous but can become overactive and produce too much hormone.

**Iodine Ingestion:** The thyroid gland uses iodine to make thyroid hormone, so the amount of iodine you consume influences the amount of thyroid hormone your thyroid makes. In some people, consuming large amounts of iodine may cause the thyroid to make excess thyroid hormone.

**Overmedicating with Thyroid Hormone:** Some people who take thyroid hormone for hypothyroidism may take too much. Some medications may also interact with your synthetic thyroid hormone to raise levels in your blood.

**Pituitary Adenoma** Rarely, hyperthyroidism is caused by a pituitary adenoma, which is a noncancerous tumor of the pituitary gland. In this case, hyperthyroidism is due to too much TSH.

**Silent thyroiditis:** This type of thyroiditis is called “silent” because it is painless, as is postpartum thyroiditis, even though the thyroid may be enlarged. Like postpartum thyroiditis, silent thyroiditis is probably an autoimmune condition and sometimes develops into permanent hypothyroidism.

## Risk Factors for Hyperthyroidism

Women are five to 10 times more likely than men to develop hyperthyroidism. The American Thyroid Association recommends that adults, particularly women, have a blood test to detect thyroid problems every 5 years starting at age 35. Certain factors can increase your chances of developing thyroid disorders. You may need more frequent testing if you:

- have had a thyroid problem before, such as goiter or thyroid surgery
- have pernicious anemia; type 1 diabetes; or primary adrenal insufficiency, a hormonal disorder
- have a family history of thyroid disease
- eat large amounts of food containing iodine, such as kelp, or use iodine-containing medications such as amiodarone, a heart medication
- are older than 60 years
- have been pregnant or delivered a baby within the past 6 months

## Diagnosis

Your doctor will begin by asking you about your symptoms and performing a thorough physical examination. Your doctor may then use several tests to confirm a diagnosis of hyperthyroidism and to find its cause.

### Thyroid-Stimulating Hormone (TSH) Test:

This test can detect even tiny amounts of TSH in the blood and is the most accurate measure of thyroid activity available. Generally, a TSH reading below normal indicates hyperthyroidism and a reading above normal means a person has hypothyroidism.

### Other Tests:

If your doctor confirms you have hyperthyroidism, additional tests may be needed to find the cause and determine the best treatment.

### T3 and T4 test:

This test will show the levels of T3 and T4 in your blood. If you have hyperthyroidism, the levels of one or both of these hormones in your blood will be higher than Normal.

### Thyroid-stimulating immunoglobulin (TSI) test:

This test, also called a thyroid-stimulating antibody test, measures the level of TSI in your blood. Most people with Graves' disease have this antibody, but people whose hyperthyroidism is caused by something else do not.

### Radioactive iodine uptake test:

This test measures the amount of iodine your thyroid collects from the bloodstream and can help your doctor know what is causing your hyperthyroidism.

### Thyroid scan:

A thyroid scan shows how and where iodine is distributed in your thyroid as well as showing images of nodules and other possible thyroid irregularities.

## Conservative Treatment

Treatment depends on the cause of hyperthyroidism and how severe it is. The goal of treatment is to bring thyroid hormone levels to a normal state, thus preventing long-term complications, and to relieve uncomfortable symptoms. No single treatment works for everyone. The three treatment options are medications, radioiodine therapy, and surgery.

## Medications

### Beta Blockers:

Your doctor may prescribe a drug called a beta blocker to reduce your symptoms until other treatments take effect. Beta blockers act quickly to relieve many of the symptoms of hyperthyroidism, such as tremors, rapid heartbeat, and nervousness. Beta blockers act by blocking the effects of thyroid hormone on your body, but they do not stop thyroid hormone production.

### Antithyroid Drugs:

Antithyroid drugs interfere with thyroid hormone production by blocking the way the thyroid gland uses iodine to make thyroid hormone. Your thyroid hormone levels may not move into the normal range for several weeks or months. The average treatment time is about 1 to 2 years, but treatment can continue for many years. Antithyroid therapy is the easiest way to treat hyperthyroidism but often does not produce permanent results.

**Radioiodine Therapy:** Radioactive iodine-131 is a common and effective treatment for hyperthyroidism. It is administered by mouth as a liquid or capsule form. Because your thyroid gland collects iodine to make thyroid hormone, it will collect the radioactive iodine in the same way. The radioactive iodine will gradually destroy the cells that make up the thyroid gland but will not affect other tissues in the body.

## Surgical Overview

Endoscopic Thyroidectomy is a newer, less invasive surgery than the standard "open" Thyroidectomy. The "open" technique involves a large neck incision 6-8 inches or longer, placement of a drain in the incision, and usually a 3-4 day hospital stay.

With the minimally invasive endoscopic approach, the surgery is performed through a smaller incision and most patients are able to go home the same day of surgery. Benefits of Minimally invasive surgery versus Traditional (Open) Surgery:

- Smaller incision
- Minimal soft tissue
- Less pain
- Faster healing time
- Lower infection rate
- Less scarring
- Less blood loss
- Earlier mobilization
- Usually performed as outpatient day surgery

### Surgical Treatment

Endoscopic Thyroidectomy surgery is performed under sterile conditions in a hospital operating room with the patient under general anesthesia. The surgery may be performed by an Otolaryngologist, a head and neck surgeon, or an Endocrine surgeon.

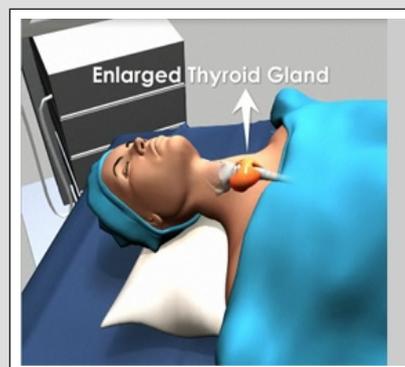
You will be placed on your back with your neck hyperextended. Your surgeon makes a small incision at the front of the neck. The muscles and connective tissue are divided in order to access the thyroid gland and retractors are placed to maintain the operative space. Your surgeon inserts the tiny endoscope through the incision.

Next, the blood supply to the area that is to be removed is clamped off or a special Harmonic scalpel is used which cauterizes as it cuts.

Both lobes of the Thyroid gland are then removed if a complete Thyroidectomy is being performed. If a partial Thyroidectomy is being performed, then only one lobe of the gland is removed.

Your surgeon may place a drain to allow fluids to flow out of the area before closing the incision. The muscles and tissues are stitched back together and the incision is closed with sutures and covered with a sterile bandage.

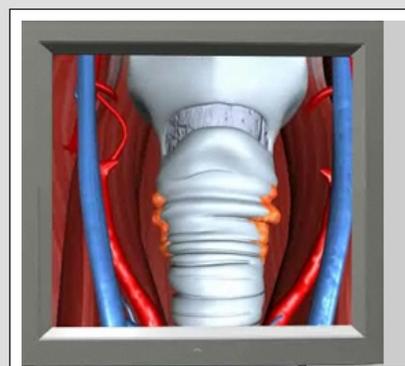
*(Refer fig.9 to 13)*



(Fig. 9)



(Fig. 10)



(Fig. 11)



(Fig. 12)

## Surgical Treatment

(Refer fig.9 to 13)



(Fig. 13)

## Post Operative Precautions

After surgery your surgeon will give you guidelines to follow depending on the type of surgery performed and the surgeon's preference. Common Post-operative guidelines following Endoscopic Thyroidectomy surgery include:

- You will be taken to the recovery room for monitoring.
- You may be discharged the same day or stay in the hospital overnight for monitoring.
- You will be given pain medication to keep you comfortable.
- If a drain was placed, it will probably be removed 1-2 days after surgery.
- You will be given wound care instructions upon discharge. You may shower once the dressings are removed unless otherwise directed by your surgeon.
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- Take all medications as prescribed by your doctor.
- It is normal to have some mild hoarseness or discomfort when swallowing after surgery.
- It is important to keep all your post operative appointments with your surgeon to ensure a good outcome.
- Call you doctor if you experience temperature above 101.5 degrees, sudden increase in swelling, pain, warmth or redness to the incision area or any other signs of infection.
- Eating a healthy diet and not smoking will promote healing.

## Risks and Complications

As with any major surgery there are potential risks involved. The decision to proceed with the surgery is made because the advantages of surgery outweigh the potential disadvantages. It is important that you are informed of these risks before the surgery takes place.

Complications can be medical (general) or specific to thyroid surgery. Medical complications include those of the anesthetic and your general well being. Almost any medical condition can occur so this list is not complete.

Complications include:

- Allergic reactions to medications
- Blood loss requiring transfusion with its low risk of disease transmission
- Heart attacks, strokes, kidney failure, pneumonia, bladder infections
- Complications from nerve blocks such as infection or nerve damage
- Serious medical problems can lead to ongoing health concerns, prolonged hospitalization, or rarely death.

Complications are rare after thyroid surgery, but unexpected events can follow any operation. Your surgeon feels that you should be aware of complications that may take place so that your decision to proceed with this operation is taken with all relevant information available to you.

Specific complications of Endoscopic Thyroidectomy surgery can include:

Damage to parathyroid glands due to their close proximity to the thyroid. These glands help control calcium levels in your body and if injured can cause hypoparathyroidism.

Damage to the recurrent laryngeal nerve, also located close to the thyroid gland, could lead to voice changes (hoarseness or voice loss) or breathing problems.

Hematoma, a collection of blood, can occur after surgery and can be life threatening due to the location near the patient's airway. Another surgical procedure to drain the hematoma may be necessary should it occur.

Wound Infection can occur and will be treated with antibiotics and drained, if necessary.

Conversion to "open" technique: Rarely, your surgeon may have to convert to a larger incision due to bleeding or enlarged gland.

Risk factors that can negatively affect adequate healing after surgery include:



## Disclaimer

Although every effort is made to educate you on Hyperthyroidism and take control, there will be specific information that will not be discussed. Talk to your doctor or health care provider about any concerns you have about Hyperthyroidism.

**YOUR SURGERY DATE**

**READ YOUR BOOK AND MATERIAL**

**VIEW YOUR VIDEO /CD / DVD / WEBSITE**

**PRE - HABILITATION**

**ARRANGE FOR BLOOD**

**MEDICAL CHECK UP**

**ADVANCE MEDICAL DIRECTIVE**

**PRE - ADMISSION TESTING**

**FAMILY SUPPORT REVIEW**

**Physician's Name :** \_\_\_\_\_

**Patient's Name :** \_\_\_\_\_

**Physician's Signature:** \_\_\_\_\_

**Patient's Signature:** \_\_\_\_\_

**Date :** \_\_\_\_\_

**Date :** \_\_\_\_\_