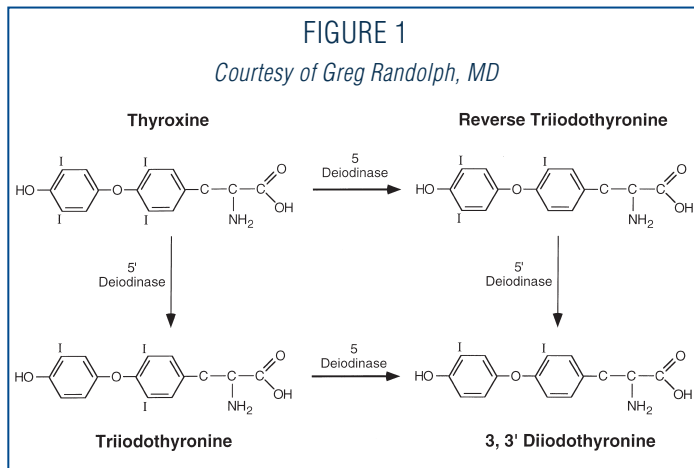


# Thyroid Surgery

## WHAT IS THE THYROID GLAND?

The thyroid gland is a butterfly-shaped endocrine gland that is normally located in the lower front of the neck. The thyroid's job is to make thyroid hormones, which are secreted into the blood and then carried to every tissue in the body. Thyroid hormone helps the body use energy, stay warm and keep the brain, heart, muscles, and other organs working as they should (Figure 1).

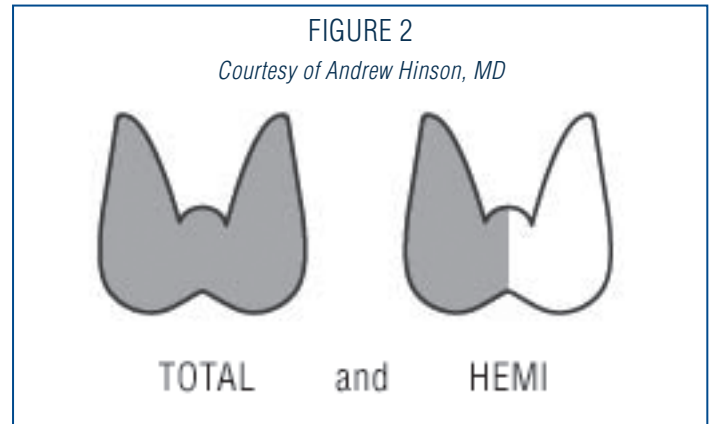


## GENERAL INFORMATION

Thyroid operations are advised for patients who have a variety of thyroid conditions, including both cancerous and benign (non-cancerous) thyroid nodules, large thyroid glands (goiters), and overactive thyroid glands. There are several thyroid operations that a surgeon may perform, including:

1. excisional biopsy – removing a small part of the thyroid gland (rarely in use today);
2. lobectomy – removing half of the thyroid gland (the most frequent way to remove a nodule); (Figure 2)
3. total thyroidectomy, which removes all identifiable thyroid tissue. (Figure 2)

There are specific indications for each of these operations. The main risks of a thyroid operation involve possible damage to important structures near the thyroid, primarily the parathyroid glands (which regulate calcium levels) and the recurrent and external laryngeal nerves (which control the vocal cords).



## QUESTIONS AND CONSIDERATIONS

When thyroid surgery is recommended, patients should ask several questions regarding the surgery including:

1. Why do I need an operation?
2. Are there other means of treatment?
3. How should I be evaluated prior to the operation?
4. How do I select a surgeon?
5. What are the risks of the operation?
6. How much of my thyroid gland needs to be removed?
7. Will I need to take a thyroid pill after my operation?
8. What can I expect once I decide to proceed with surgery?
9. What will be my physical restrictions following surgery?
10. Will I lead a normal life after surgery?

### WHY DO I NEED AN OPERATION?

The most common reason for thyroid surgery is to remove a thyroid nodule, which has been found to be suspicious through a fine needle aspiration biopsy (see *Thyroid Nodule brochure*). Surgery may be recommended for the following biopsy results:

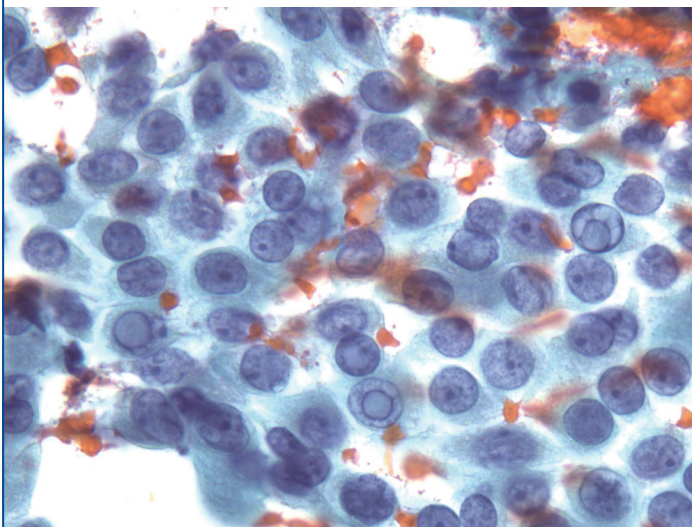
1. cancer (papillary cancer); (Figure 3)
2. possible cancer (follicular neoplasm or atypical findings); or
3. inconclusive biopsy;
4. molecular marker testing of biopsy specimen which indicates a risk for malignancy.

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Surgery may be also recommended for nodules with benign biopsy results if the nodule is large, if it continues to increase in size or if it is causing symptoms (pain, difficulty swallowing, etc.). Surgery is also an option for the treatment of hyperthyroidism (Grave's disease or a "toxic nodule" (see Hyperthyroidism brochure)), for large and multinodular goiters and for any goiter that may be causing symptoms.

**FIGURE 3.**

*Courtesy of Greg Randolph, MD*



## ARE THERE OTHER MEANS OF TREATMENT?

Surgery is definitely indicated to remove nodules suspicious for thyroid cancer. In the absence of a possibility of thyroid cancer, there may be nonsurgical options of therapy depending on the diagnosis. You should discuss other options for therapy with your physician who has expertise in thyroid diseases.

## HOW SHOULD I BE EVALUATED PRIOR TO THE OPERATION?

As for other operations, all patients considering thyroid surgery should be evaluated preoperatively with a thorough and comprehensive medical history and physical exam including cardiopulmonary (heart) evaluation. An electrocardiogram and a chest x-ray prior to surgery are often recommended for patients who are over 45 years of age or who are symptomatic from cardiac disease. Blood tests may be performed to determine if a bleeding disorder is present.

Any patients who have had a change in voice or who have had a previous neck operation (thyroid surgery, parathyroid surgery, spine surgery, carotid artery surgery, etc.) and/or who have suspected invasive

thyroid disease should have their vocal cord function evaluated preoperatively. This is necessary to determine whether the recurrent laryngeal nerve that controls the vocal cord muscles is functioning normally and is becoming a norm of practice. Finally, if medullary thyroid cancer is suspected, patients should be evaluated for coexisting adrenal tumors (pheochromocytomas) and for hypercalcemia and hyperparathyroidism.

## HOW DO I SELECT A SURGEON?

In general, thyroid surgery is best performed by a surgeon who has received special training and who performs thyroid surgery on a regular basis. The complication rate of thyroid operations is lower when the operation is done by a surgeon who does a considerable number of thyroid operations each year. Patients should ask their referring physician where he or she would go to have a thyroid operation or where he or she would send a family member.

## WHAT ARE THE RISKS OF THE OPERATION?

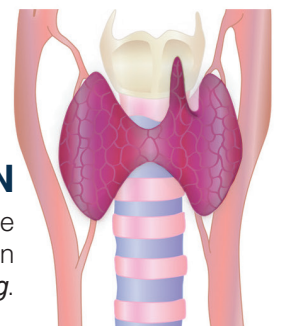
The most serious possible risks of thyroid surgery include:

1. bleeding that can cause acute respiratory distress,
2. injury to the recurrent laryngeal nerve that can cause permanent hoarseness, and breathing problems with possible tracheotomy in rare cases if injury is sustained on both sides and
3. damage to the parathyroid glands that control calcium levels in the body, causing hypoparathyroidism and hypocalcemia.

These complications occur more frequently in patients with invasive tumors or extensive lymph node involvement, in patients requiring a second thyroid surgery, and in patients with large goiters that go below the collarbone. Overall the risk of any serious complication should be less than 2%. However, the risk of complications discussed with the patient should be the particular surgeon's risks rather than that quoted in the literature. Prior to surgery, patients should understand the reasons for the operation, the alternative methods of treatment, and the potential risks and benefits of the operation (informed consent).

## HOW MUCH OF MY THYROID GLAND NEEDS TO BE REMOVED?

Your surgeon should explain the planned thyroid operation, such as lobectomy (hemi) or total thyroidectomy, and the reasons why such a procedure is recommended.



## FURTHER INFORMATION

Further details on this and other thyroid-related topics are available in the patient information section on the American Thyroid Association® website at [www.thyroid.org](http://www.thyroid.org).

# Thyroid Surgery

For patients with papillary or follicular thyroid cancer many, but not all, surgeons recommend total or near-total thyroidectomy when they believe that subsequent treatment with radioactive iodine might be beneficial. For patients with large (>1.5 cm) or more aggressive cancers and for patients with medullary thyroid cancer, more extensive lymph node dissection is necessary to remove possibly involved lymph node metastases.

Thyroid lobectomy may be recommended for overactive one-sided nodules or for benign one-sided nodules that are causing symptoms such as compression, hoarseness, shortness of breath or difficulty swallowing. A total or near-total thyroidectomy may be recommended for patients with Graves' Disease (see *Hyperthyroidism brochure*) or for patients with enlarged multinodular goiters

## WILL I NEED TO TAKE A THYROID PILL AFTER MY OPERATION?

The answer to this depends on how much of the thyroid gland is removed. If half (hemi) thyroidectomy is performed, there is an 80% chance you will not require a thyroid pill UNLESS you are already on thyroid medication for low thyroid (Hashimoto's thyroiditis). If you have your entire (total) or remaining (completion) thyroidectomy, then you have no internal source of thyroid hormone remaining and you will need lifelong thyroid hormone replacement.

## WHAT CAN I EXPECT ONCE I DECIDE TO PROCEED WITH SURGERY?

Once you have met with the surgeon and decided to proceed with surgery, you will be scheduled for your pre-op evaluation (see *above*) and will meet with the anesthesiologist (the person who will put you to sleep during the surgery). You should have nothing to eat or drink after midnight on the day before surgery and should leave valuables and jewelry at home. The surgery usually takes 2-2½ hours, after which time you will slowly wake up in the recovery room. Surgery may be performed through a standard incision in the neck or may be done through a smaller incision with the aid of a video camera (Minimally invasive video assisted thyroidectomy). Under special circumstances, thyroid surgery can be performed with the assistance of a robot through a distant incision in either the axilla or the back of the neck. There may be a surgical drain in the incision in your neck (which will be removed after the surgery) and your throat may be sore because of the breathing tube placed during the operation. Once you are fully awake, you will be moved to a bed in a hospital room where you will be able to eat and drink as you wish. Many patients having thyroid operations are hospitalized

for about 24 hours and can be discharged on the morning following the operation.

## WHAT WILL BE MY PHYSICAL RESTRICTIONS FOLLOWING SURGERY?

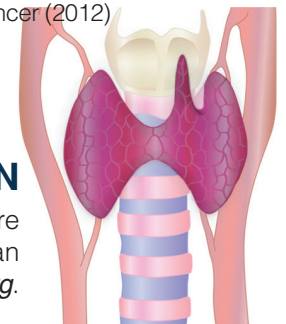
Most surgeons prefer a brief limitation is extreme physical activities following surgery. This is primarily to reduce the risk of a post operative neck hematoma (blood clot) and breaking of stitches in the wound closure. These limitations are brief, usually followed by a quick transition back to unrestricted activity. Normal activity can begin on the first postoperative day. Vigorous sports, such as swimming, and activities that include heavy lifting should be delayed for at least ten days to 2 weeks.

## WILL I BE ABLE TO LEAD A NORMAL LIFE AFTER SURGERY?

Yes. Once you have recovered from the effects of thyroid surgery, you will usually be able to do anything that you could do prior to surgery. Some patients become hypothyroid following thyroid surgery, requiring treatment with thyroid hormone (see *Hypothyroidism brochure*). This is especially true if you had your whole thyroid gland removed. Thyroid hormone replacement therapy might be delayed for several weeks if you are to receive radioactive iodine (RAI) therapy unless there is a plan for you to receive TSH injection prior to RAI.

## REFERENCES

- Revised American Thyroid Association Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer (2009)
- Revised American Thyroid Association Guidelines for the Management of Medullary Thyroid Carcinoma The American Thyroid Association Guidelines Task Force on Medullary Thyroid Carcinoma (2015)
- Radiation Safety in the Treatment of Patients with Thyroid Diseases by Radioiodine 131I: Practice Recommendations of the American Thyroid Association (2011)
- American Thyroid Association Statement on Surgical Application of Molecular Profiling for Thyroid Nodules: Current Impact on Perioperative Decision Making (2015)
- American Thyroid Association Statement on Optimal Surgical Management of Goiter (2014)
- American Thyroid Association Statement on Outpatient Thyroidectomy (2013)
- American Thyroid Association Consensus Review and Statement Regarding the Anatomy, Terminology, and Rationale for Lateral Neck Dissection in Differentiated Thyroid Cancer (2012)



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