

Surgical Management of Graves' Disease

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.

WHO SHOULD CONSIDER THYROIDECTOMY FOR MANAGEMENT OF GRAVES' DISEASE?

Thyroidectomy should be considered for anyone with *Graves' disease (GD)* and moderate-to-severe eye disease, or smokers with GD due to increased risk of exacerbation of eye disease after radioactive iodine. Women with GD who are pregnant, nursing, or who have young children at home would benefit from a surgical consultation in an effort to avoid radiation exposure to the home. Patients who are found to have an associated *thyroid cancer* or a *nodule* suspicious for thyroid cancer should undergo thyroidectomy as the primary treatment. Anyone with GD who is interested in a rapid resolution of hormone control and hopes to avoid a prolonged transition from *hyperthyroidism* to *hypothyroidism* would benefit from surgical consultation. Any patient with compressive symptoms due to the associated thyroid enlargement from their GD would benefit from surgical consultation. Patients who are having difficulty with hormonal control while on medications, or have experienced a severe side effect from anti-thyroid medications, may be referred for *surgery*.

WHAT ARE THE BENEFITS OF THYROIDECTOMY FOR GRAVES' DISEASE?

Thyroidectomy provides those with GD a rapid cure of hyperthyroidism and a transition from anti-thyroid medications to full thyroid hormone supplementation during the perioperative period (pre-surgery through post-surgery). Patients should continue all their anti-thyroid medications and beta blockers until the day of surgery, at which time patients should discontinue taking. Beta blockers may be continued for a few days after surgery and then may be tapered or stopped. Thyroid hormone supplementation is often started the following day, or a few days later in those patients with poor hormone control during the pre-operative period.

As thyroidectomy removes all or nearly all thyroid tissue from the neck, this will result in a more rapid decrease in antibody production over time, which is beneficial for those with *eye disease*. It also avoids a significant spike in antibody production seen with radioactive iodine ablation that can exacerbate eye disease in some patients (especially smokers). For patients with significant compressive symptoms from their enlarged thyroid (trouble swallowing, choking sensation, shortness of breath, or neck pressure or heaviness), thyroidectomy will remove the enlarged thyroid and should resolve these symptoms.

For patients who wish to avoid radiation exposure to themselves or loved ones, thyroidectomy is a radiation-free alternative for definitive management of their disease.

WHAT ARE THE RISKS OF THYROIDECTOMY FOR GRAVES' DISEASE?

The risks of thyroidectomy in GD include the following:

- Transient injury to the recurrent laryngeal nerve or the external branch of the superior laryngeal nerve resulting in voice hoarseness, loss of voice pitch, range or projection, or trouble swallowing. Risk of permanent injury is very low.
- Transient difficulties with low blood calcium levels (hypocalcemia). This is multifactorial for patients with GD. At the time of surgery, your parathyroid glands, which typically are located in the back part of the thyroid, must be carefully preserved but may require a period of recovery after surgery. During this time they are not able to contribute normally to the maintenance of blood calcium levels. Pre-treatment with calcium, and repletion of vitamin D, if deficient, can minimize these risks. The risk of permanent hypocalcemia due to irreversible damage to the parathyroid glands is exceedingly low in experienced thyroid surgeon's hands.
- The risk of bleeding in the postoperative period at the surgical site is low. However, due to the increased blood flow to the thyroid gland in GD, this risk is higher for GD patients than patients undergoing thyroid surgery for other reasons.
- The risk of infection is exceedingly low.
- Swelling or fluid build-up (seroma) may occur at the surgical site after surgery.

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- Patients will require lifelong thyroid hormone replacement.
- During surgery, the handling of the thyroid gland can cause release of additional thyroid hormone. If you are well controlled prior surgery, your body should be protected from the effects of this extra hormone. However, if your hormones are not under optimal control, this could lead to a dangerous condition of thyroid storm (a form of severe hyperthyroidism).

WHAT ARE THE ALTERNATIVES TO THYROIDECTOMY FOR GRAVES' DISEASE?

Patients can continue with long-term management with anti-thyroid medications (Methimazole or PTU), or can undergo *radioactive iodine* ablation with subsequent transition to thyroid hormone replacement as the thyroid gradually stops producing thyroid hormone.

HOW CAN I PREPARE FOR THYROIDECTOMY FOR MY GRAVES' DISEASE?

- The first step is to seek out a high volume thyroid surgeon with experience managing Graves' patients.
- Ensure you are taking your anti-thyroid medications, and any beta blockers as prescribed to provide optimal control of your thyroid hormone levels before surgery.
- Your surgeon may talk to you about starting a calcium supplement leading up to surgery, and a vitamin D supplement if you are deficient.
- You may be prescribed iodine drops for the 10 days preceding surgery. These iodine drops do NOT contain any radiation, but rather may help decrease the blood flow to the thyroid prior surgery.

WHAT WILL SURGERY ENTAIL?

Thyroidectomy will be done under general anesthesia. An incision is made on the front of your neck to get to the thyroid gland. During the operation, the surgeon must carefully control the blood vessels to the thyroid. The surgeon must carefully remove the thyroid while protecting the nerve that controls your vocal cords, and the parathyroid glands. If the parathyroid glands are injured, they may be placed into one of the muscles of the neck for

them to recover. Once the thyroid is removed, the surgeon closes up all the layers, and may or may not leave behind a small drain to remove any fluid that might build up in the space where the thyroid was previously. You will be observed for a period of time after surgery to ensure you are recovering well. In many instances this may involve an overnight stay in the hospital. For some patients who develop issues with low calcium after surgery, a longer hospital stay may be necessary until the calcium levels are stable using only supplements by mouth.

HOW LONG WILL IT TAKE TO RECOVER?

Everyone is different, and recovery times may vary. In general, most people will experience a sore throat for a few days after surgery. You may find a softer diet easier to swallow during this period. For the first week, your energy level will be lower than usual as your body is using your energy to heal. Be prepared to take naps.

WILL I NEED TO TAKE MEDICINE AFTER MY THYROIDECTOMY?

Your surgeon will start you on *thyroid hormone replacement* after surgery. In most instances, you will start it the morning after surgery. If your thyroid hormone levels were poorly controlled prior to surgery, or you experienced an additional hormone release during the operation (you might notice a racing heart rate, high blood pressure, severe hot flashes, or tremor right after surgery), your surgeon may recommend waiting a few days before starting your thyroid hormone.

Based on your calcium and parathyroid hormone levels, you may need to take a calcium supplement and/or vitamin D for a period of time after surgery.

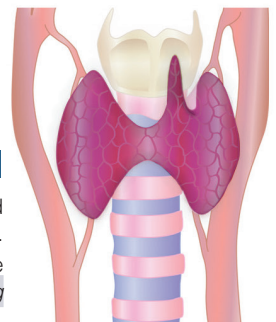
You will be able to stop your methimazole or PTU immediately. You will be able to stop your cholestyramine (if on it) immediately. If you are on a beta blocker for your heart rate (propranolol, atenolol, metoprolol, etc), your doctor may discontinue, decrease the dose, or keep the dose the same with plans to wean the medication in the weeks and months following surgery.

Occasionally, your surgeon and/or endocrinologist may have prescribed you a short course of steroids after surgery.

FURTHER INFORMATION

Further details on this and other thyroid-related topics are available in the patient thyroid information section on the American Thyroid Association® website at www.thyroid.org.

For information on thyroid patient support organizations, please visit the *Patient Support Links* section on the ATA website at www.thyroid.org



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Overview – Surgical Management of Graves' Disease

WHEN IS SURGERY RECOMMENDED FOR GRAVES' DISEASE?

Your physician may recommend a surgical consultation for your *Graves' Disease* in the following instances:

- Currently pregnant or nursing, or with young children in the home
- Severe eye disease from your Graves' Disease
- Simultaneous presence of thyroid cancer or nodule suspicious for thyroid cancer
- Side effects from Methimazole or PTU, preventing their usage
- Significant enlargement of your thyroid causing trouble swallowing or breathing, or disfigurement of your neck
- Difficult to control hyperthyroidism
- Desire for rapid control and resolution of your hyperthyroidism

HOW DO I SELECT A SURGEON?

- Your Endocrinologist or treating physician may work regularly with a high volume thyroid surgeon in your area and refer you to him/her.
- When you consult with the surgeon, be sure to inquire as to how often they perform thyroid surgery, and if they routinely care for patients with Graves' Disease. A high volume surgeon is someone who performs over 30 thyroidectomies a year.

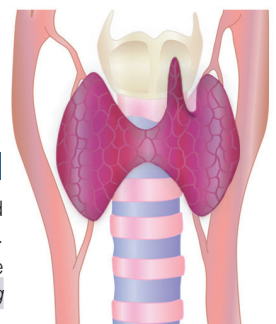
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- Transient difficulties with low blood calcium levels (hypocalcemia). The risk of permanent hypocalcemia due to irreparable damage to the parathyroid glands is exceedingly low in experienced thyroid surgeon's hands.
- The risk of bleeding in the postoperative period at the surgical site is low. However due to the increased blood flow to the thyroid gland in GD, this risk is higher for Graves' patients than patients undergoing thyroid surgery for other reasons.
- The risk of infection is exceedingly low.
- Swelling or fluid build-up (called seroma) may occur at the surgical site after surgery.
- Patients will require lifelong thyroid hormone replacement.
- During surgery, the handling of the thyroid gland can cause release of additional thyroid hormone. If you are well controlled prior surgery, your body should be protected from the effects of this extra hormone; however, if your hormones are not well controlled, this could lead to a dangerous condition of thyroid storm.

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Overview – Surgical Management of Graves' Disease

DO I NEED TO TAKE ANY MEDICATION IN PREPARATION FOR SURGERY?

- Your surgeon may prescribe iodine drops (SSKI, or Lugol's solution) for the 7 to 10 days prior to surgery.
- Calcium supplementation with Vitamin D if levels are low.
- Adequate hormone control via antithyroid medications, beta blockers, steroids or cholestyramine. The better controlled your thyroid hormones, the safer surgery will be.

SHOULD MY SURGEON BE CHECKING FOR ANY ADDITIONAL MEDICAL PROBLEMS?

- Cardiac arrhythmias are common with poorly controlled hyperthyroidism.
- Vitamin D deficiency – common in the general population and can make issues with low calcium after surgery more difficult. Pre-treatment is beneficial.

HOW MUCH OF MY THYROID WILL BE REMOVED?

- Your surgeon will be removing all or almost all of your thyroid.

WILL I STILL HAVE TO TAKE MEDICINE AFTER SURGERY?

- You will be able to stop your anti-thyroid medications.
- If on a beta blocker, your surgeon and endocrinologist will work to wean the dose as needed.
- You will start taking thyroid hormone replacement soon after surgery.
- You may need to stay on calcium and/or vitamin D supplementation for a short period of time (a few weeks) after surgery.

WHAT SHOULD I EXPECT DURING MY RECOVERY?

- Many people experience a sore throat in the first few days after surgery. You can modify your diet to whatever is easiest to swallow.
- The muscles in the back of your neck may be stiff and/or sore. Use of a mild prescription muscle relaxer and non-steroidal anti-inflammatories (Ibuprofen, Naproxen) can be helpful to combat this problem.
- Your energy level may be lower than normal. Your body is focusing your energy on healing first and foremost. Be prepared to take naps.
- The first few days after surgery you may feel a little hyperthyroid if some excess hormone was released during surgery. This will pass as your body uses up the extra hormone.



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