



Thyroid Cancer Treatment

Thyroid cancer overview

Thyroid cancer is cancer that starts in the thyroid. The thyroid is a small, butterfly-shaped gland in the front of the neck that wraps around the windpipe. The thyroid gland uses iodine absorbed from food to produce hormones that control how your body uses energy. Thyroid cancer is not common. In 2016, about 64,000 new patients were diagnosed with the disease. However, rates have been on the rise over the last 30 years. Experts believe this increase is mostly due to better detection through the use of ultrasound imaging. Most thyroid cancers can be cured. See the Thyroid Disease page for more information.



There are four types of thyroid cancer:

Papillary thyroid cancer: 70 percent of patients diagnosed with thyroid cancer have papillary thyroid cancer. This cancer originates in the cells where thyroid hormone is stored. It is slow-growing and does not easily spread into nearby tissue.

Follicular thyroid cancer: this type of thyroid cancer also starts in the cells where thyroid hormone is stored. It is more aggressive than papillary cancer and often spreads into the bloodstream, lungs or bones. Most patients are over 40 years of age. A rare type of follicular thyroid cancer is called Hurthle cell cancer. Hurthle cell cancers are more likely to have spread at the time of diagnosis.

Medullary thyroid cancer: This type of cancer is rare. It develops in the cells of the thyroid that make a hormone that helps the body maintain the right level of calcium. It may run in families.

Anaplastic thyroid cancer: This is the rarest form of thyroid cancer. It is aggressive and hard to treat. Most patients with anaplastic thyroid cancer are over the age of 60.

What are my treatment options?

- Treatment options overview
- How can I choose from among the options?
- If I choose surgery, will I need radiation therapy or vice versa?

Treatment options overview

Treatment options for thyroid cancer depend on the type of thyroid cancer, the tumor stage and how far the disease has spread. Your physician may order CT scans, CT/PET scans and a fine needle biopsy to identify the stage of your cancer (called staging).

Most thyroid cancers are treated with surgery to remove the thyroid gland. Radioactive iodine therapy is often used after surgery to destroy any remaining thyroid tissue. To determine your treatment plan, your physician will consider the stage of your cancer and your personal preferences.

Standard options include:

Surgery: The surgical removal of the thyroid is called a thyroidectomy. The surgeon makes an incision at the base of the neck and removes the thyroid gland. If the cancer is limited to one part of the thyroid, the surgeon may remove just that part. This is called a thyroid lobectomy.

Lymph nodes in the neck and other tissue, including four small parathyroid glands, may also be removed.

When the thyroid gland is removed, patients will need to take a daily manmade hormone to replace the hormones no longer produced by the thyroid. If the parathyroid gland is removed, patients will also need to take calcium supplements.

Radioactive iodine: Radioactive iodine (I-131) is an isotope of iodine that emits radiation. Thyroid cells, including most thyroid cancer cells, absorb iodine. When I-131 is swallowed, it enters the bloodstream and is absorbed by the thyroid cells, where it begins destroying them. This is an effective way to target and treat some thyroid cancers. Patients usually receive this treatment after surgery to any destroy remaining thyroid tissue and cancer cells. I-131 is also used to treat patients with recurring thyroid cancer. See the Radioactive Iodine page for more information.

External beam radiation therapy (EBT): EBT uses high-energy x-rays or other forms of radiation to kill cancer cells or keep them from growing. During EBT, a machine called a linear accelerator delivers high-energy x-ray beams to the tumor. The precise beam targets cancer cells while sparing the surrounding normal tissue. EBT is used to treat patients who are unable to have surgery or to be treated with I-131. EBT is delivered for short periods of time, five days a week for four to six weeks. See the External Beam Therapy page for more information.

Chemotherapy: This treatment involves the use of drugs given by vein (intravenously) or by mouth to kill cancer cells or to keep them from multiplying. Chemotherapy may be used with EBT for anaplastic thyroid cancer. Patients usually receive chemotherapy over a set period of time with breaks in between to help ease any side effects.

Targeted Therapy: This is a new option for patients with advanced cancer or cancer that resists treatment. Drugs attack a specific target on the cancer cells, slowing down or even reversing cancer cell growth.

Alcohol ablation: This treatment uses ultrasound to guide an injection of alcohol into small thyroid

cancer tumors. It is used to treat thyroid tumors that cannot be removed with surgery and thyroid cancer that returns after being treated.

How can I choose from among the options?

In addition to talking with family and friends, you will need a team of doctors to help advise you. This team may include a surgeon, a radiologist, a radiation oncologist, a medical oncologist and an endocrinologist, a doctor who specializes in diseases of the glands. A radiation oncologist treats cancer with radiation. A medical oncologist treats cancer with drugs. You and your care team will create a treatment plan that works best for your cancer.

If I choose surgery, will I need radiation therapy or vice versa?

Surgery is the primary therapy for thyroid cancer and is often effective. If the tumor is large, has spread to lymph nodes or you are at high risk for the cancer returning after treatment, you will most likely have surgery followed by I-131 treatment. Surgery followed by EBT and chemotherapy or targeted therapy is used for medullary or anaplastic thyroid cancer. For advanced thyroid cancer patients, treatment may consist of all the therapies listed above.

What happens during radiation treatment?

Two types of radiation are used for thyroid cancer patients.

During I-131 treatment: You will swallow a capsule or pill that contains radioactive iodine (I-131). Both healthy and cancerous thyroid cells absorb the I-131, which destroys them. This treatment is usually given in a hospital. You may stay overnight. During the treatment and for a short period after, you will give off radiation. Your doctor will tell you how to protect your family, friends and pets at home. See the Radioactive Iodine Therapy page for more information.

External Beam Therapy (EBT): EBT begins with treatment planning using either x-rays or a computed tomography (CT) scan. These exams help plan the type and direction of radiation beams to treat the cancer. Each treatment will last a few minutes each day, although it may take longer to get you set up. Once the radiation starts, you will hear some electrical noise and see warning lights from the machine. Patients do not feel the radiation during treatment.

What are possible side effects of radiation therapy?

Radioactive iodine (I-131): This treatment is generally well tolerated. Short-term side effects include tenderness and swelling around the thyroid, nausea, swelling of the salivary glands, dry mouth and sometimes changes in how things taste. Some patients find they are unable to make tears, leading to dry eyes and problems with contact lenses. Less frequent side effects include a lower sperm count in men and irregular periods in women. Women are usually advised to avoid becoming pregnant for 6-12 months after treatment. Patients who have had I-131 treatment may have a slightly higher risk of developing leukemia in the future. This is extremely rare.

External beam therapy (EBT): After several EBT sessions, patients may become tired. Getting adequate rest is important. Doctors usually advise patients to try to stay as active as they can. Patients may have skin changes or irritation in the neck area where the radiation has passed through the skin. Other side effects include trouble swallowing, dry mouth and hoarseness. Most of these side effects are easily managed and go away once treatment ends.

What kind of treatment follow-up should I expect?

After your thyroid cancer treatment is complete, you and your treatment team will decide on a follow-up plan. Whole body iodine scans are often used to check these patients each year and monitor them for any signs of cancer. All thyroid cancer patients will require thyroid replacement hormones. Your general physician will regularly monitor your thyroid levels, including a protein called thyroglobulin (Tg). Tg is made by normal thyroid tissue and abnormal thyroid cancer cells. Once the thyroid is destroyed or removed, your Tg level will be low or zero. Rising levels of Tg may mean your cancer has returned. Ultrasound exams may also be performed to ensure no new nodules are forming. Medullary thyroid cancer patients will also have their blood checked for calcium and protein levels. These proteins may be the first sign that medullary thyroid cancer has returned. Anaplastic thyroid cancer patients will need to continue seeing both a medical and a radiation oncologist. These appointments start soon after treatment to address any side effects and determine next steps. Your doctor may order CT or PET scans at these visits. See the PET/CT Scan page for more information.

Are there any new developments in treating my disease?

Clinical Trials

For information and resources about clinical trials and to learn about current clinical trials being conducted, visit:

- RadiologyInfo's Clinical Trials page
- Clinical Trials - from the National Cancer Institute's Web site

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