Most thyroid problems, such as hypothyroidism, Hashimoto’s thyroiditis, Grave’s Disease and others are most commonly not treated surgically. Typically an endocrinologist, or a physician who treats endocrine (glandular) disorders medically, manages the majority of thyroid problems via medical intervention.

The most common reason that I see a patient for a surgical consultation regarding the thyroid gland is for a thyroid nodule. It is very common after middle age, especially in women, to have nodularity of the thyroid gland seen on ultrasound. So having small nodules within the thyroid depending on gender and age is not considered abnormal or that unusual. It is when a nodule, or mass, reaches a certain size (typically 1 cm or approximately ½ inch) that we as endocrinologists or endocrine surgeons typically investigate their clinical significance further. Not uncommonly I see patients who have thyroid masses seen coincidentally when a radiographic study such as a CT scan, ordered to investigate some other condition identifies a thyroid nodule/mass. Other tests that have coincidentally discovered thyroid masses include the conventional chest x-ray, MRI, carotid ultrasounds and cardiac nuclear medicine stress tests. Why physical examination is the key to detecting a thyroid mass, sometimes even the most obvious of thyroid masses are missed by the most skilled of hands during a doctor’s visit. The cervical neck is capable of hiding very large masses that one would think should be rather easy to identify on a routine neck examination.

**Work-up for Most Thyroid Masses**

In most cases blood work is rarely helpful to evaluate the common thyroid nodule. Commonly in cases of both benign and cancerous thyroid nodules, my patients will ask me “Why didn’t my blood work show that anything was wrong with my thyroid?” In both cases, it is more predictable than not that thyroid blood tests for most thyroid masses will be within normal ranges (with the exception of the hyperfunctioning thyroid nodule).
I still see that veteran practitioners order thyroid nuclear scans to evaluate the “functionality” of a thyroid mass (looking for the “cold” or nonfunctioning nodule). I rarely find routine thyroid scans useful in evaluating a thyroid mass. I find the 3 most important diagnostic tools to assess a thyroid nodule to be:

1. Physical Examination
2. Thyroid Ultrasound
3. Fine Needle Aspiration Biopsy

Fine needle aspiration (FNA) biopsy has essentially replaced older and less conventional thyroid nuclear scans. In the right hands, FNA carries a 97-98% diagnostic accuracy rate and is quickly performed (typically by cytopathologists, endocrinologist and some endocrine surgeons).

A left thyroid lobe enlargement pre-operatively

Types of thyroid nodules / masses that require resection:

1. Symptomatic Hashimoto’s Thyroiditis – refractory to medical management (symptoms of pain, discomfort, swallowing difficulties, hoarseness of voice, etc)
2. A previously benign thyroid mass (via FNA) that has enlarged over time, changed in character on ultrasound or that has started to confer symptoms (discomfort, swallowing problems, airway obstruction, etc.)
3. A unilateral (one-sided) or diffuse multinodular goiter now refractory to medical management.
4. The follicular neoplasm
5. Hurthle Cell neoplasm
6. Thyroid cancer

Most thyroid surgery is for benign thyroid conditions including:

1. Solitary thyroid masses that have grown, cause compressive symptoms or have a non diagnostic FNA
2. A unilateral (one-sided) or bilateral (both lobes) nodular goiter
3. Hashimoto’s thyroiditis (an autoimmune disease seen primarily in women)
4. Grave’s disease – a hyperfunctioning thyroid condition, usually treatable without surgery in most cases.
5. Thyroid masses that may be small, but have an equivocal or non-diagnostic FNA (as in the case of the follicular neoplasm)
6. In some cases, a past history of radiation exposure can increase the possibility that a thyroid mass is neoplastic / cancerous.

The Follicular Neoplasm

The follicular neoplasm is a type of nodule diagnosed via FNA. It is often misidentified by many physicians to their patients as “thyroid cancer” which it usually is not. Via FNA the pathologist identifies certain cell types that can be associated with a form of thyroid cancer (known as the follicular variant of papillary thyroid cancer – more on thyroid cancer below). In most cases the follicular neoplasm is benign (85-88% of the time) but the only way to tell is to resect the thyroid lobe containing the mass and therefore be able to examine how those cells encroach (or not) on the thyroid capsule (the membrane encircling the thyroid tissue of the lobe) and to better examine the cellular characteristics of the mass itself. In many cases my patients come to my office thinking they have thyroid cancer based on the pathology report following the FNA (which they usually do not). However, a follicular neoplasm is a type of thyroid mass that usually requires resection in order to establish the diagnosis in most cases. When we find a follicular neoplasm to be cancerous on final pathologic exam, the patient often has to return to the operating room for a second surgery, usually performed shortly after the initial surgery, in order to remove the remaining thyroid (typically the opposite side).

The Hurthle Cell Neoplasm

The Hurthle cell neoplasm is another type of thyroid mass that often requires resection in order to differentiate the benign form (a Hurthle cell adenoma) versus cancer (a Hurthle cell adenocarcinoma). In this instance, there is more of a correlation with carcinoma based on the size. In my experience however, a Hurthle cell cancer is rare even when large.

Thyroid Cancer

There are four types of thyroid cancer, ranked in order of frequency:

1. Papillary Thyroid Carcinoma
   a. The Follicular Variant of Thyroid Carcinoma
2. Follicular Adenocarcinoma
3. Medullary Thyroid Carcinoma
4. Anaplastic Thyroid Carcinoma

Papillary thyroid cancer is by far the most common variety of thyroid cancer and also one of the most “benign” behaving forms of all cancers. In most cases, with thyroidectomy and post-operative radioactive iodine ablation following surgery (RAI), patients with papillary thyroid cancer have an excellent opportunity for cure and typically do very well. In more advanced cases, papillary thyroid cancer can spread to regional lymph nodes in proximity to the thyroid, but rarely will it travel beyond the confines of the cervical neck. The older surgical treatment modalities of radical lymph node resections concurrent with thyroidectomy for the most part, are no longer advocated. In cases where lymph nodes are involved, those lymph node regions are removed surgical or a single identified node is simply removed (or cherry-picked as the textbooks describe).
Post operatively, once the neck has recovered from the expected swelling that occurs following surgery, there may exist thyroid tissue within the neck that surgery is unable to be removed surgically and that is usually not visible to my eye intraoperatively. As thyroid tissue is the only tissue in the body that requires iodine to function (there are 4 iodine molecules attached to a circulating thyroid hormone molecule), the patient is usually given a dose of radioactive iodine in an oral form no sooner than 4-6 weeks post-operatively. This radioactive iodine (RAI) is taken up solely by thyroid tissue within the thyroid bed, is concentrated within those cells which are then “killed” or ablated by the radioactive iodine. The treatment is painless, although some patients report feeling fatigued from the effects of hypothyroidism that occur prior to the onset of treatment.

Thyroid cancer is unique from other forms of human cancers in that the treatment usually consists of surgery and sometimes RAI. There is no chemotherapy given, nor is there any external beam radiation recommended (except in the rare instance of an advanced form of thyroid cancer which is refractory to conventional management).

**Follicular thyroid carcinoma**, is the second most common, but also rarer form of thyroid cancer. The difference in most cases of a follicular adenoma (benign) and follicular carcinoma is how the tumor (tumors can be benign or cancerous) encroaches on the thyroid capsule on a microscopic level. This type of thyroid cancer has been known to spread hematogenously (via the bloodstream) to other areas in advanced cases.

**Medullary thyroid cancer** is a very rare form of thyroid cancer and often has a genetic predisposition. It is most commonly seen in a form of Multiple Endocrine Neoplasia or MEN II syndrome. This form of thyroid cancer can often be present at a very early age and there usually is a family history that dates back generations. To date I have seen about 5 cases (out of about 1500 cases) of medullary thyroid cancer. The treatment in this case is purely surgical. A serum calcitonin level is what we use to monitor the effectiveness of treatment.

**Anaplastic thyroid cancer** is a rare and an extremely aggressive from of any type of cancer. Resection may offer palliation but unfortunately patients with anaplastic thyroid cancer are rarely if ever cured. The disease usually progresses quite rapidly and death usually occurs within months of the diagnosis.

**Thyroid Surgery**

Most of my thyroid surgeries, regardless of age, are performed as an outpatient procedure. With minimally invasive surgery, I would estimate that 80-90% of my patients rarely fill the prescription for medicine that I provide. Because the incision is typically very small, recovery is usually very quick. Although I ask that most of my patients reserve 5-7 days to dedicate for their recovery, I would estimate that 80-90% of patients who have thyroid surgery are driving and performing most of their normal activities of daily life in a 1-2 days.

For patients having complete thyroidectomy, I make two requests. First, I ask those patients to purchase an over the counter calcium / vitamin D supplement (to prevent the sometimes seen post-operative drop in serum calcium) and secondly, to make a follow-up appointment with their endocrinologist for about 4-5 weeks post-
operatively (in cases of thyroid cancer surgery, in order to begin preparation for RAI).

Complications with thyroid surgery in my experience are rare. The most notable complication would be trauma to the recurrent laryngeal nerve (RLN) (figure 1.)

Often the RLN is intimately involved with the posterior aspect of the thyroid lobe and it requires a good understanding of the anatomy in order to identify it. Trauma to this very small nerve can sometimes cause temporary or rarely, permanent changes in speech. This incidence of RLN injury even with forms of cancer in my experience with thyroid surgery is less than ½ of a percent. In most cases, there is no surgical bleeding whatsoever with thyroid surgery.

When you undergo a complete thyroidectomy, you will be required to take a synthetic form of thyroid hormone daily for the rest of your life. For most, thyroid hormone is an easy medication to dose. Having thyroid surgery and then having the requirement to take thyroid hormone daily will not make you gain weight, lose your hair, etc.; provided you take it consistently and properly.

Once again, the majority of thyroid conditions we experience are treated medically and not via surgery. The endocrinologists in the Tucson area are very good about selecting and referring patients who meet the indications for surgery. An appointment to see me regarding a thyroid problem does not mean you will leave the office scheduled for surgery. I do think it is VERY important to have a surgeon experienced with all forms of thyroid problems conduct the procedure, as it is a very delicate and technically demanding procedure.

If am selected as your thyroid surgeon, I promise to take excellent care of you, answer all of your questions and make sure that throughout the course of having your surgery, that you never feel lost or unsure as to what, or what not, to do. I personally call my patients at home post-operatively and then call you again with your final surgical pathology report. I also make sure to communicate with your doctors regarding your surgery, all of your reports and once you are released from my care.