



Thyroid and Parathyroid Surgery Details and Risks

Thyroidectomy

All of the thyroid gland is removed during a total thyroidectomy. This is the recommended procedure for patients with known or suspected thyroid cancer. Also patients with bilateral thyroid nodules may benefit from removal of both lobes of the thyroid. Patients who have an increased risk for surgery may also benefit from total thyroidectomy to avoid a surgery in the future if there is concern for cancer. Patients with Grave's disease who chose, or need, a surgical cure require a total thyroidectomy.

Thyroid lobectomy is recommended when there is concern for a nodule in one lobe of the thyroid and a normal opposite lobe. Reasons for lobe removal include large size, a nodule producing too much thyroid hormone, or a needle biopsy that cannot rule out thyroid cancer. The benefit of a partial thyroid removal is avoidance of a permanent low thyroid state requiring lifelong thyroid medication. There is less risk involved in this surgery as the opposite parathyroid glands and vocal cord nerve are not put at risk. If cancer is identified on final pathology, often a completion surgery is recommended.

Nodule removal alone is avoided as the scar tissue that results increases the risk of vocal cord nerve, the recurrent laryngeal nerve, if future surgery is required.

Parathyroidectomy

Parathyroidectomy is the removal of one or more parathyroid glands which are overproducing parathyroid hormone, PTH, resulting in high calcium levels. Dr. Tom Connally uses the focused approach and intraoperative PTH monitoring for all surgeries when indicated. Prior to the surgery imaging is used to identify the gland that is overactive. The excellent imaging available at Norman Regional is very successful in identification. Ultrasound and nuclear medicine imaging are used in most cases. CT scans with computer aided overlay of nuclear medicine scan results are reserved for patients who have had previous parathyroid and thyroid surgery. During the imaging for parathyroid adenomas the radiologist is careful to identify hidden thyroid nodules which may require surgical intervention. If present, a fine-needle aspiration biopsy is performed to direct appropriate management. If a parathyroid adenoma is not

identified preoperatively surgery is still recommended since not all parathyroid adenomas appear on diagnostic imaging tests before surgery.

At Norman Regional the laboratory unit resides in the operating room corridor for intraoperative PTH level monitoring. The amount of surgery time is decreased by nearly 30 minutes with the use of this new technology. Results can be reported in as little as eight minutes by having the levels measured in the operating room as opposed to being taken to a lab to be processed elsewhere in the facility. The use of intraoperative PTH levels allows the screening for patients with the presence of more than one abnormal gland without having to identify all four parathyroid glands. If the PTH level drops 50 percent during surgery as measured prior to surgery and compared to a post adenoma removal level then no further surgery is required to identify the remaining. However, if the level does not drop 50 percent, this suggests that more than one gland is abnormal and further surgical exploration is needed to examine the remaining glands. Surgery for parathyroid disease is routinely performed under local anesthesia and sedation, similar to what is used during a colonoscopy, which minimizes patients' post-operative nausea and vomiting. This can also be used for patients who may be considered too high of risk for general anesthesia.

Re-operative Parathyroid Surgery

Re-operative parathyroid surgery is required for patients who have previously had a thyroid and/or parathyroid surgery. Imaging preoperatively for these patients is important to improve surgical outcomes.

Risk of Thyroid and Parathyroid Surgery

Risks of thyroid and parathyroid surgery are related to a surgeon's experience. Surgeons who perform a high volume of thyroid and parathyroid surgeries, such as Dr. Connally, have fewer complications and better outcomes.

There are risks and benefits associated with any treatment. In general risks of surgery include bleeding, infection, stroke, heart attack, death and blood clots. Complications can also arise related to the patient's other health problems (such as heart disease, respiratory problems like asthma or COPD, etc.). Below are some additional risks specific to thyroid surgery:

Bleeding - Bleeding occurs only in about 1/300 thyroid operations, according to the American Association of Endocrine Surgeons. The amount of bleeding is usually small but because of the location of surgery even small amounts of blood can compress the windpipe and cause difficulty breathing. If that occurs, it may be necessary to perform an urgent operation to drain the blood and relieve the pressure. Blood transfusions after thyroid surgery are very uncommon.

Infection – Infection occurs in about 1/2000 thyroid operations, according to the AAES. The routine use of antibiotics to prevent infection is not recommended. If a postoperative infection does develop, opening of the incision and drainage of the infected fluid and/or antibiotics may be necessary.

Change In Voice — Voice change is a known complication after any and all thyroid and parathyroid surgeries. There are two sets of nerves near the thyroid gland that help control the voice. These are the recurrent laryngeal nerve and the external branch of the superior laryngeal nerve. Damage to a recurrent laryngeal nerve can cause hoarseness in the voice. The chance that one of the recurrent laryngeal nerves will be permanently damaged is about 1 percent. A more subtle change in vocal function may be noticeable if you are a professional voice singer or public speaker.

Temporary voice changes are more common in five to 10 percent of patients. Usually the voice usually improves in the first few weeks after surgery although it can last up to six months. This is often a result of nerve irritation from surgical manipulation as the nerve is close to the thyroid and parathyroid glands.

If both recurrent laryngeal nerves are damaged, the vocal cords cannot close and allow air to pass from the mouth and nose into the lungs. In this situation, a tracheostomy tube is required to allow passage of air into the lungs. This is extremely uncommon event. It is important for patients with any previous neck surgery to inform their surgeon what was done to see if evaluation of the vocal cords prior to surgery is indicated.

An injury to the external branch of the superior laryngeal nerve may cause a problem in making high-pitched noises or yelling. These changes are slightly more common, but may often be subtle.

Hypoparathyroidism — With hypoparathyroidism low blood levels of calcium can occur if all the parathyroids are injured or removed. If injured during surgery the gland may need to be "autotransplanted" into a nearby muscle. The parathyroid is transplanted so that the blood supply from the muscle should eventually grow into the parathyroid and allow it to function again. Only one gland is needed to function for the entire body. The symptoms of low blood calcium level include a tingling or "pins and needles" feeling, usually around the mouth and in the fingertips. Severely decreased calcium can cause spasm or "locking up" of the muscles. The chance that all four parathyroid glands would not be able to function permanently is about two to three percent, according to the AAES. These patients will need to take supplemental calcium and prescription Vitamin D for the rest of their life. Temporary low calcium that lasts for the first few weeks after the operation is not uncommon and may take as long as six months to get better. Dr. Connally obtains blood work for all of his patients having total thyroid surgery prior

and after surgery to predict to incidence of who may need to be discharged with prescription Vitamin D and oral calcium supplementation to minimize the risk of symptomatic low calcium state.

Calcium levels should normalize within the first few weeks of operation and calcium supplements will therefore decrease as well. It is important that patients communicate with Dr. Connally or other members of the care team if they are experiencing low calcium. Most often, the symptoms can be managed at home with simple adjustments of calcium supplements. If the symptoms get worse, the patient may need to be seen urgently to supplement calcium levels. After recovery, for woman over the age of 40 years, the patient and their surgeon may choose to lower your calcium supplements down to a smaller dose instead of stopping altogether (to help prevent osteoporosis). Most other patients will likely be weaned completely off of calcium supplements.

Parathyroid surgery risks:

It is rare to have complications parathyroid surgery when the surgery is performed by an experienced surgeon. The chance of being cured and of not having a complication after parathyroid surgery depends on the experience of the surgeon according to the AAES. To be considered an expert, a surgeon should do more than 50 parathyroid operations a year. The risk of complications is higher for patients having re-operative surgery. The most common complications occurring from parathyroid surgery are inability to locate and remove all abnormal parathyroid glands, low calcium blood levels, hoarse voice, and bleeding in the neck.