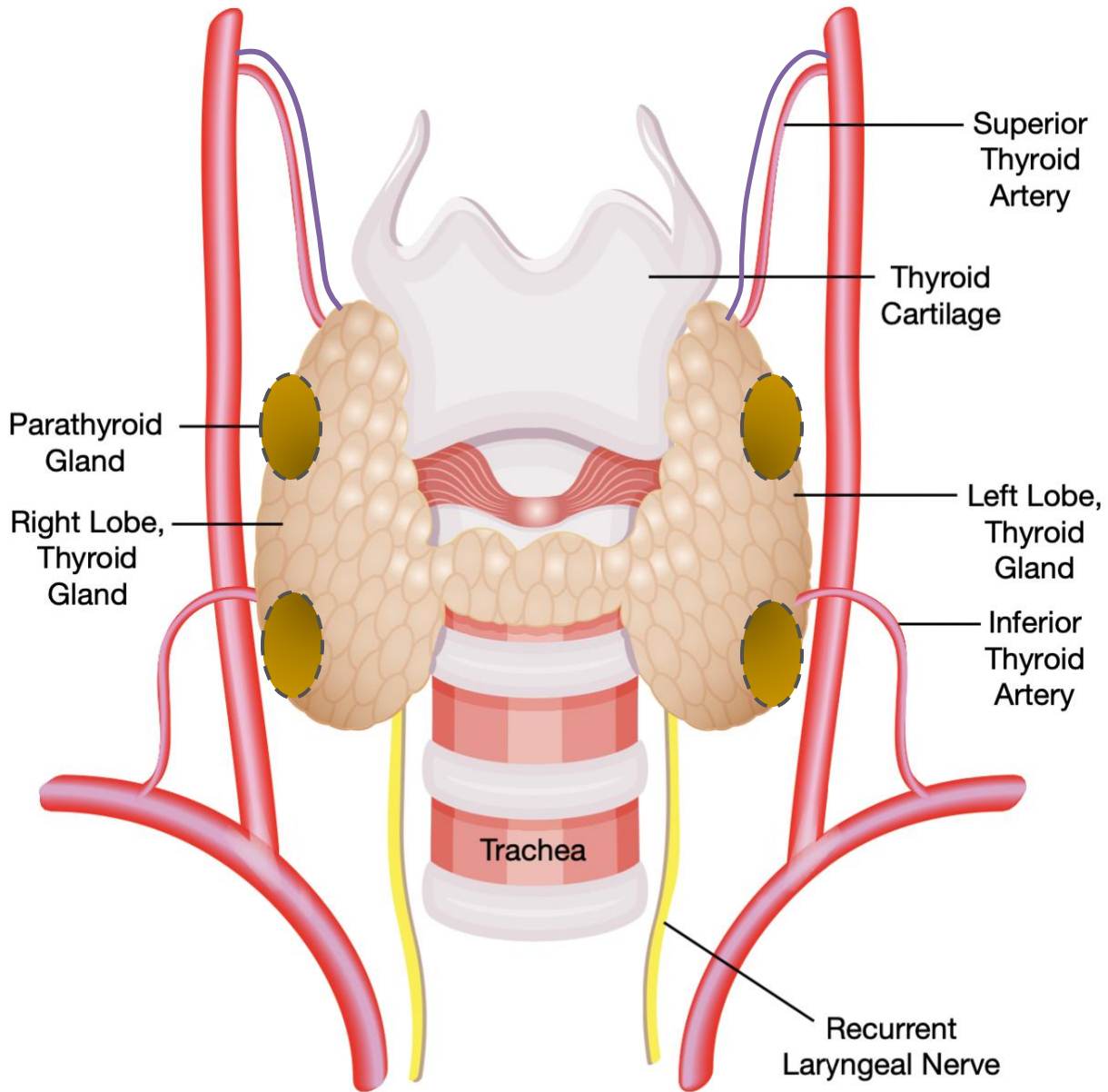


# Parathyroid Surgery for Secondary and Tertiary Renal Hyperparathyroidism



## Thyroid and Parathyroid Glands

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The **parathyroid glands** are located in the neck next to the thyroid gland, though sometimes they can be inside the thyroid gland or in adjacent structures like the thymus or carotid sheath. Usually there are four parathyroid glands, right and left superior parathyroid glands as well as right and left inferior parathyroid glands. Rarely, there are fewer or more than four glands. The parathyroid glands produce **parathyroid hormone (PTH)** and PTH plays an important in regulating the calcium levels in your body.

Normal parathyroid glands regulate **calcium** like a thermostat. Parathyroid glands sense low calcium and produce PTH to increase calcium levels in the blood by acting on the kidneys, bones and intestines (gut) with the help of activated vitamin D. **Abnormal parathyroid function** occurs in patients with chronic kidney disease and in patients with end-stage kidney disease on dialysis. Initially, elevated PTH levels are a normal response to maintain normal calcium and phosphorus levels. Chronic kidney disease reduces the production of activated vitamin D and increases phosphorus levels in the blood, creating a cycle that increases PTH levels and results in enlargement of the parathyroid glands. Medications are used to improve vitamin D, calcium, and phosphorus levels. After patients are on dialysis for a long time, PTH levels may become very high and medication may no longer work to control the calcium and phosphorus levels.

Secondary renal hyperparathyroidism is seen in patients on long-term dialysis and tertiary renal hyperparathyroidism is seen in patients after kidney transplant. **Surgery** to treat secondary and tertiary renal hyperparathyroidism is considered for patients when medication is no longer effective and there is very high calcium, high phosphorus, calcifications under the skin, bone fractures, muscle weakness or bone/joint pains affecting quality of life. Parathyroid surgery may improve cardiovascular health in patients with renal hyperparathyroidism, improve bone density, and protect the transplanted kidney.

Most often, all four parathyroid glands are enlarged and abnormal (**four-gland hyperplasia**). Parathyroid surgery involves removal of three and a half glands (**subtotal parathyroidectomy**) or removal of all four parathyroid and implanting of a portion of a parathyroid gland back into the muscle of your neck or forearm (**total parathyroidectomy with autotransplantation**).

The **recurrent laryngeal nerves** are located behind the thyroid gland and close to the parathyroid glands. The recurrent laryngeal nerves travel to the larynx (voice box) and control the vocal cords and your voice. Stretching or bruising these nerves during surgery can cause hoarseness or voice changes.

After **parathyroid surgery**, you will likely need to **stay in the hospital** for several days after your surgery, and you may require a longer hospital stay to monitor and stabilize your calcium levels. You are at risk for very low calcium from **hungry bone syndrome**, your calcium levels will be checked several times per day, and you will need to take **calcium supplements** and **activated vitamin D** (calcitriol). If you are on dialysis, you will need inpatient dialysis with high calcium baths. Your nephrologist will coordinate your supplements and dialysis after you are discharged from the hospital.

Recovery usually takes 1-2 weeks. Most of the postoperative soreness and discomfort will be relieved with chloraseptic throat lozenges (Cepacol) or spray to numb the throat, acetaminophen (Tylenol) and/or ibuprofen to reduce inflammation, and the use of an ice pack to reduce pain and swelling. Please plan to **purchase these products before your surgery**. You may be offered a short course of narcotic pain medication, though most people do not require pain pills. After surgery you can eat your usual diet. Your incision will be covered with surgical glue and you can shower when you return home. You should not drive for a few days after surgery until your neck soreness has resolved.