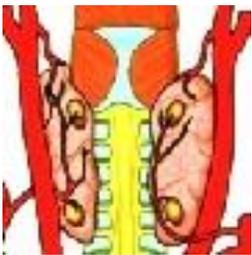


PARATHYROIDECTOMY Frequently Asked Questions (FAQ) Minimally Invasive Radioguided Parathyroidectomy (MIRP) Endoscopic Video-Assisted Minimal Parathyroidectomy (MIVAP)

What are the parathyroid glands?

Normally, humans have [four parathyroid glands](#) , two upper and two lower. They are located near or attached to the posterior surface of the thyroid gland. Each gland is no larger than a grain of rice. They secrete **parathyroid hormone (PTH)** which controls the **calcium** level in the body. Normal anatomical variations may occur, where an individual has only one or two or three glands. Sometimes, a parathyroid gland may be found in the mediastinum, several inches below the neck.



Posterior surface of the thyroid gland and pharynx, showing the 4 parathyroid glands.

What is parathyroidectomy and what are the indications for parathyroid surgery?

Parathyroidectomy is an operation in which one or more parathyroid glands are removed. This operation is performed to control [hyperparathyroidism](#) (overactivity of the parathyroid glands) which is either caused by a benign tumour of one or more of the glands ([parathyroid adenoma](#)), or generalized growth and overactivity of all of the glands ([parathyroid hyperplasia](#)). In rare instances, surgery is performed on the parathyroid glands in order to remove a **parathyroid cancer**.

What are the symptoms of hyperparathyroidism?

Hyperparathyroidism (overactivity of the parathyroid glands) may be associated with **osteoporosis** (loss of calcium from the bones), **generalized fatigue and lethargy, kidney stones, stomach ulcers, joint aches and pains and constipation**. A blood test would show elevation of the serum calcium and PTH.

What happens before surgery?

We will schedule a pre-operative visit during which the doctor will fill-out hospital forms, go over your medical history, current medications, allergies etc. and perform a complete physical examination. You will also be given the opportunity to ask questions about the procedure, hospitalization, complications, etc. You will sign the pre-operative surgical consent form and receive your post-operative instructions, and prescriptions for antibiotics, pain killers and other medications you may need after surgery.

What is pre-operative assessment?

After you finish with the doctor, you will then go to the hospital for pre-operative registration and assessment. This is where pre-operative blood tests, EKG, chest x-rays, etc. are carried out. You will also have the opportunity to talk to the anesthesiologist and ask questions or express concerns about anesthesia. Here also, you will be informed of the time of the operation and given instructions about when to take your medications

and what to wear. You may also be asked to sign consent forms for surgery and anesthesia. Sometimes, this assessment may not be necessary and may be carried out on the telephone.

What time do I show up on the day of surgery?

The assessment nurse will tell you the exact time of your operation and when to come to the hospital. In general, you are expected to be in the hospital, about two hours prior to your scheduled procedure.

What happens on the day of surgery?

You will be directed to the pre-operative holding area in Day Surgery. Your family may remain with you or wait in the Surgery waiting area. It would be helpful if family members or friends notify the nurses' desk or the waiting room receptionist of their whereabouts, so that we can find them to let them know that your surgery is over.

In pre-op holding, the nurses will start an IV line and review your history and medications. They will ask you questions to make sure you understand what is going to be done and that you have consented. They may make you sign the consent forms if you have not signed them during assessment. They will also mark the operative site with ink and if applicable, write on your neck LEFT or RIGHT so that there will be no confusion as to which side is being operated on. You may request a sedative if you are very anxious.

Do I have to go for another parathyroid scan?

About two hours before the scheduled surgery, you **may** have to go to Nuclear Medicine to receive a dose of Technetium 99m Sestamibi. This radioactive isotope initially goes to the thyroid gland. But, two hours later, it washes off from the thyroid gland and concentrates in the parathyroids. This allows us to see it on a scan in which the overactive parathyroid or the parathyroid adenoma would light up. This radioactivity is also picked up by the Neoprobe and allows us to determine the exact location of the parathyroid adenoma and mark the site of the surgical incision. **It is not uncommon to skip the injection of technetium and take you directly to the operating room.**

What are the complications of parathyroidectomy?

Most surgery nowadays is safe, however, any operation has general risks including reactions to the anesthetic, chest infections, blood clots, heart and circulation problems, and wound infection. In addition there are specific risks associated with parathyroid surgery as follows:

- Post-operative **bleeding** may cause swelling in the throat and difficulty breathing due to pressure on the windpipe. It is usually fixed by a further operation to remove the blood clot
- Injury to the laryngeal nerves may cause **hoarseness of the voice**. This is usually temporary, but may be permanent in up to 1 to 2% of cases. It may improve with speech therapy or further surgery to the vocal cords. If you are a singer or public speaker, any surgery to the thyroid may cause subtle long-term changes to your performing voice.
- Interference with the other parathyroid glands may cause the calcium level in the blood to drop (**hypocalcemia**). It is treated with calcium and vitamin D tablets and usually improves in a few weeks.
- A **keloid**, or **overgrowth of scar tissue**, may form in any surgical scar. It will result in a tender, pink raised scar but may be treated with silicone gel tapes or steroid injections.
- Even in the most expert hands, up to 5% of parathyroid tumors cannot be found at operation and the blood calcium will remain elevated (**persistent hyperparathyroidism**). Sometimes after successful surgery, one of the other parathyroid glands may also then become overactive and cause the blood calcium level to rise again (**recurrent hyperparathyroidism**).
- For a couple of days after surgery, patients who have received **methylene blue** to localize the parathyroids, will continue to notice a bluish green discoloration of the urine. Although methylene blue has been successfully used for more than 30 years in parathyroid surgery, there are some extremely rare side effects

that could happen from the administration of this dye. These include confusion, hallucinations and abnormal limb movements that may last a few days before slowly subsiding.

What happens during surgery?

During surgery, you may receive an intravenous infusion of a blue dye called **methylene blue**. This dye concentrates in the parathyroid adenomas and stains them blue, thus making it easier to localize them. Remember that this dye will cause your urine to turn greenish blue for several days. When the parathyroid is removed, it is sent for **frozen section**. This means that they freeze a piece of the gland, slice it very thin and color it for the pathologist to examine it under the microscope. The pathologist would confirm that the tissue removed is indeed a parathyroid tissue. A blood sample is drawn (usually from the foot) and sent to the laboratory for parathyroid hormone (PTH) and calcium assay. The calcium and PTH levels drop after the removal of the parathyroid adenoma. In general, we have to wait for the result of this test before waking the patient from anesthesia.

What happens after surgery?

When you wake up from surgery, you will be transported to the **recovery room (PACU)**, where you would spend about 30 minutes to an hour, until you are fully awake and stable for transportation to Day Surgery, where you would spend another hour or two prior to your discharge. Please bring with you some sleepware in case you are too sleepy to go home, in which case, we would admit you overnight.

You will be asked to **speak to find out if your voice is hoarse**. Many patients, especially smokers, have a raspy or hoarse voice when they wake up from anesthesia.

In general, the wound is sealed with a thin clear **acrylic layer (Dermabond)** and the **sutures are buried** under the skin. There is no need to apply antibiotic ointment on the wound. **You are allowed to take a shower without covering the wound**. This acrylic film will peel off in a couple of weeks. When you go home, please keep the wound exposed and do not hide it with a dressing or scarf. Do not apply any antibiotic cream or any other ointments.

For 2 – 3 days after surgery, it is not unusual to have **pain or difficulty on swallowing**.

You may have to take calcium tablets for a couple of weeks after surgery, if your calcium is too low.

When do I go home?

In general, most patients are discharged 2 - 3 hours after the operation. By then, they should be able to eat, walk and go to the bathroom. Occasionally, however, some patients may feel too groggy to stand or too sleepy. In that case, they would be admitted to the hospital overnight. Sometimes, we admit patients overnight to control excessive nausea or vomiting. Finally, it is not uncommon for older men, especially those with large prostates, to develop urinary retention after general anesthesia. In all these instances, discharge is delayed until the problem is resolved.