



GHADIALI

General Surgery

P R E S E N T S

Dr. Mufa T. Ghadiali is skilled in all aspects of General Surgery.
His General Surgery Services include:

- General Surgery
- Advanced Laparoscopic Surgery
- Surgical Oncology
- Gastrointestinal Surgery
- Hernia Surgery
- Endoscopy

Hyperparathyroidism

Multimedia Health Education

Disclaimer

This movie is an educational resource only and should not be used to manage your health. All decisions about the management of **Hyperparathyroidism** must be made in conjunction with your Physician or a licensed healthcare provider.

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GHADIALI

MULTIMEDIA HEALTH EDUCATION MANUAL

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INTRODUCTION

Hyperparathyroidism is a medical condition that occurs when the parathyroid glands produce too much parathyroid hormone. Parathyroid hormone helps regulate the body's calcium and phosphorus levels and when an overabundant supply is present, it causes many of the body's functions to be affected.

Hyperparathyroidism is referred to as "primary hyperparathyroidism" when the disorder originates in the parathyroids. It is referred to as "secondary hyperparathyroidism" when a problem elsewhere in the body, such as in kidney failure, causes the parathyroid to be overactive. This module focuses on primary hyperparathyroidism. In order to understand Hyperparathyroidism, it is important to learn about the Parathyroid gland.

Normal Parathyroid Anatomy

What are the parathyroid glands?

The parathyroid glands are four pea-sized glands located on the thyroid gland in the neck. Occasionally, a person is born with one or more of the parathyroid glands embedded in the thyroid, in the thymus, or located elsewhere around this area. In most such cases, however, the glands function normally.

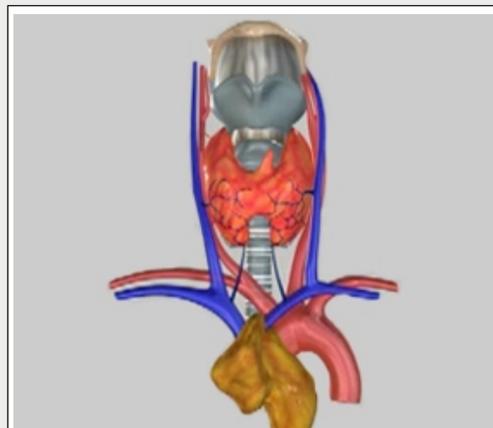
(Refer fig. 1)

- Thyroid
- Parathyroids
- Larynx
- Trachea
- Thymus

Though their names are similar, the thyroid and parathyroid glands are entirely different glands, each producing distinct hormones with specific functions.

The parathyroid glands secrete PTH, a substance that helps maintain the correct balance of calcium and phosphorus in the body. PTH regulates the level of calcium in the blood, release of calcium from bone, absorption of calcium in the intestine, and excretion of calcium in the urine. When the level of calcium in the blood falls too low, the parathyroid glands secrete just enough PTH to restore the blood calcium level.

Calcium is essential for good health. It plays an important role in bone and tooth development and in maintaining bone strength. Calcium is also important in nerve transmission and muscle contraction. Phosphorus is found in all bodily tissues. It is a main part of every cell with many roles. Combined with calcium, phosphorus gives strength and rigidity to your bones and teeth.



(Fig.1)

Unit 2: Overview of Hyperparathyroidism

What is Hyperparathyroidism?

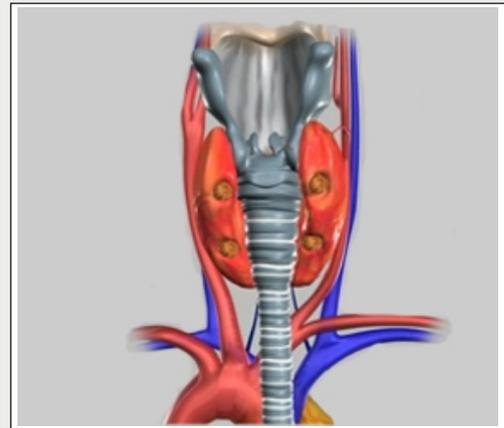
Hyperparathyroidism is a disease of calcium imbalance in the body. It is a medical condition that occurs when one or more of the parathyroid glands form a benign (non-cancerous) tumor that produces too much parathyroid hormone.

The increased amount of parathyroid hormone affects many of the body's functions because the calcium and phosphorus balance is disrupted causing blood calcium to rise. The condition may also be referred to as "overactive parathyroid".

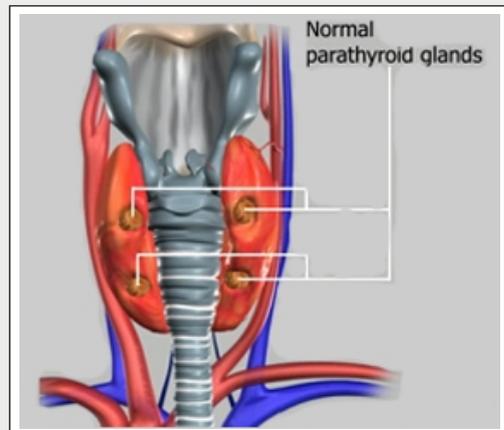
This excess PTH (parathyroid hormone) secretion triggers the release of too much calcium into the bloodstream. The bones may lose calcium, and too much calcium may be absorbed from food. The levels of calcium may increase in the urine, causing kidney Stones.

This condition of excessive calcium in the blood, called hypercalcemia, is what usually signals the doctor that something may be wrong with the parathyroid glands. PTH also lowers blood phosphorus levels by increasing excretion of phosphorus in the urine.

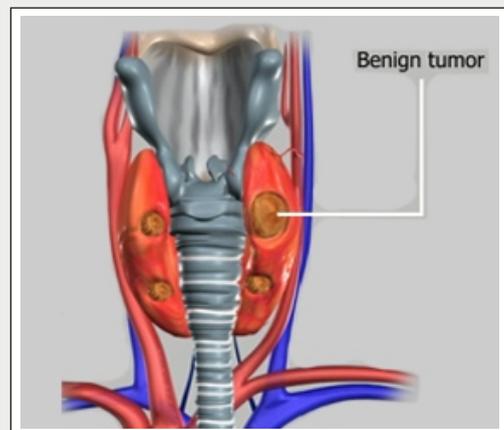
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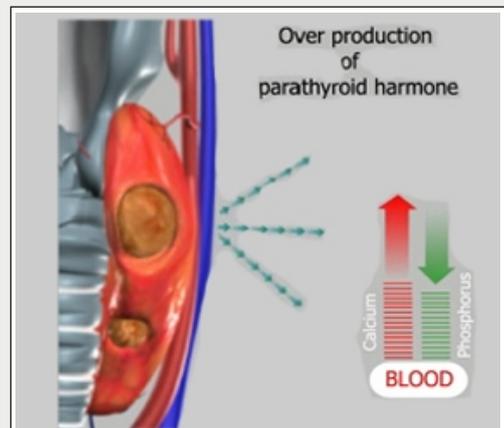
(Fig.2)



(Fig.3)



(Fig.4)



(Fig.5)

Symptoms

What are the symptoms of hyperparathyroidism?

A person with hyperparathyroidism may have severe symptoms, subtle ones, or report no symptoms at all. Increasingly, routine blood tests that screen for a wide range of conditions, including high calcium levels, are alerting doctors to people who have mild forms of the disorder even though they appear symptom-free.

When symptoms do appear, they are often mild and nonspecific, such as a general feeling of weakness and fatigue, depression, or aches and pains. As the disease progresses, a person may experience:

- Loss of appetite.
- Confusion or impaired thinking and memory
- Irritability
- Unable to concentrate
- Loss of interest in daily activities
- Osteoporosis, thinning of the bones, with increased risk of fractures
- Thinning of the hair
- Kidney stones
- High blood pressure

Causes and Risk Factors

Causes and Risk Factors of Hyperparathyroidism

The most common cause of hyperparathyroidism is a benign tumor growth, called a parathyroid adenoma, in one of the glands causing the excretion of too much PTH. In the United States, about 100,000 people develop the disorder each year. Women outnumber men two to one, and risk increases with age. In women 60 years and older, two out of 1,000 will develop hyperparathyroidism each year.

The vast majority of cases occur in people with no family history of the disorder. Only about 5 percent of cases can be linked to an inherited problem:

- Familial multiple endocrine neoplasia type 1 is a rare, inherited syndrome that affects the parathyroids as well as the pancreas and the pituitary gland.
- Another rare genetic disorder, familial hypocalciuric hypercalcemia, is sometimes confused with typical hyperparathyroidism.

Diagnosis

Endocrinologists are doctors who specialize in hormonal problems. Along with surgeons who are experienced in endocrine surgery, endocrinologists are best qualified to treat people with primary hyperparathyroidism.

- Your doctor will begin by asking you about your symptoms and perform a thorough physical examination.
- A blood test that accurately measures the amount of parathyroid hormone has simplified the diagnosis of hyperparathyroidism in most patients.
- Hyperparathyroidism is diagnosed when tests show that blood levels of calcium and parathyroid hormone are too high. Other diseases can cause high blood calcium levels, but only in hyperparathyroidism is the elevated calcium the result of too much parathyroid hormone.

Once the diagnosis is established, other tests may be ordered to assess for complications relating to the disease. These may include:

Bone Density Test :

Because high PTH levels can cause bones to weaken from calcium loss, a measurement of bone density can help assess bone loss and the risk of fractures.

Ultrasound of the Abdomen :

Abdominal images may reveal the presence of kidney stones.

(Refer fig. 6)

24-Hour Urine :

This urine test may provide information on kidney damage, the risk of stone formation, and the risk of familial hypocalciuric hypercalcemia.

(Refer fig. 7)



(Fig.6)



(Fig.7)

Conservative Treatment

There is no medicine that can be ordered to treat hyperparathyroidism. The only treatment is surgical removal of the benign tumor causing the gland to be overactive. Sometimes physicians may suggest a “wait and see” approach, especially if the patient seems symptom-free with only slight elevation of blood calcium, and whose kidneys and bones appear normal in tests.

However, this approach is becoming outdated as new minimally invasive surgical techniques replace the standard “open” surgery. It is now known that symptoms do not always correlate to blood levels of calcium and even a slight elevation of calcium in the blood can lead to osteoporosis, kidney stones as well as other symptoms. It is important to understand that Hyperparathyroidism will not go away on its own and will get worse over time if left untreated.

The benefits of having Parathyroidectomy surgery include:

- Improved bone health
- Reduced risk of kidney stones
- Improved quality of life

Surgical Overview

Minimally Invasive Radioguided Parathyroidectomy (MIRP) is a newer, less invasive surgery than the standard “open” parathyroidectomy. The “open” technique involves a large neck incision 6-8 inches or longer, general anesthesia, placement of a drain in the incision, and a hospital stay.

MIRP is much less invasive with a one inch incision over the neck, local anesthesia with sedation, and no drain. MIRP also requires less time in the operating room and most patients are discharged within a few hours of the procedure.

The benefits of MIRP surgery over “open” surgery include:

- Higher success rate
- Shorter hospital stay
- Shorter incision
- Less tissue trauma
- Less anesthesia
- Shorter operating time
- Lower complication rate

Unit 3:

Treatment Options

Surgical Treatment

Minimally Invasive Radioguided Parathyroidectomy surgery or MIRP is performed in a hospital with the patient under local anesthesia and IV sedation or light general anesthesia. The surgery is performed by an Otolaryngologist, a head and neck surgeon, or an Endocrine surgeon as an outpatient procedure, enabling the patient to go home the same day.

The patient receives a preoperative dose of sestamibi radioactive marker through IV. The marker will accumulate only in the gland that is producing too much PTH. A Sestamibi scan is then performed to locate the gland with the tumor.

The patient is taken to the OR and positioned on the operating table with pillows under the neck to tilt the head back.

Your surgeon will make a small 1 inch incision in the middle of the neck.

The muscles and connective tissue are divided in order to access the parathyroid glands.

The surgeon then uses a special hand held probe that works similar to a Geiger counter. The probe is used to locate the abnormal gland (tumor) that has absorbed the radioactive marker.

Once located, the blood supply to the area that is to be removed is clamped off.

The abnormal parathyroid gland is then removed. Rarely, more than one gland may be radioactive and also removed.

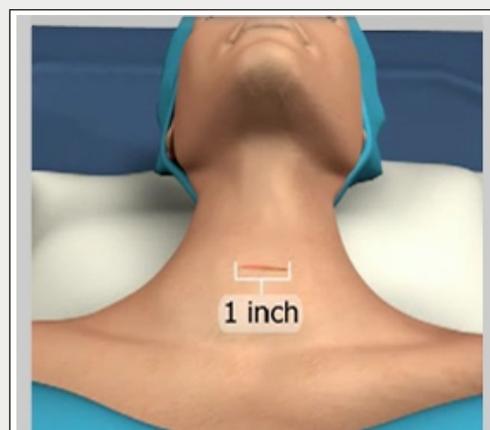
The probe is used to determine that the other parathyroid glands are normal. These glands are left in place.

The muscles and tissues are stitched back together and the incision is closed with dissolvable sutures below the skin and covered with a sterile strips and a bandage.

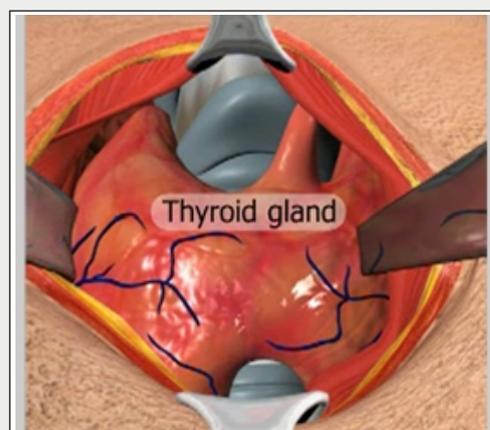
(Refer fig. 8 to 11)



(Fig.8)



(Fig.9)



(Fig.10)



(Fig.11)

Post Operative Precautions

After surgery your surgeon will give you guidelines to follow depending on the type of surgery performed and the surgeon's preference. Common post-operative guidelines following MIRP surgery include:

- You will be taken to the recovery room for monitoring until the anesthesia wears off.
- You will be discharged to home the same day.
- You will be given specific instructions regarding activity. Most patients are able to slowly resume normal activities that day.
- You will be given instructions regarding taking calcium supplements. If you experience tingling around the mouth, face or hands, this is an indication of too little calcium in the blood. This should be reported to your doctor so the amount of calcium can be increased.
- It is normal to have some mild hoarseness or discomfort when swallowing after surgery. This will gradually improve.
- It is important to keep your post operative appointments with your surgeon to ensure a good outcome.
- Call your doctor if you experience temperature above 101.5 degrees, sudden increase in swelling, pain, warmth or redness to the incision area or any other signs of infection.
- Eating a healthy diet and not smoking will promote healing.

Risks and Complications

As with any surgery there are potential risks involved. The decision to proceed with the surgery is made because the advantages of surgery outweigh the potential disadvantages. It is important that you are informed of these risks before the surgery takes place.

Complications can be medical (general) or specific to parathyroid surgery. Medical complications include those of the anesthetic and your general well being. Almost any medical condition can occur so this list is not complete. Complications can include:

- Allergic reactions to medications
- Heart attacks, strokes, kidney failure, pneumonia, bladder infections
- Complications from nerve blocks such as infection or nerve damage
- Serious medical problems can lead to ongoing health concerns, prolonged hospitalization, or rarely death.

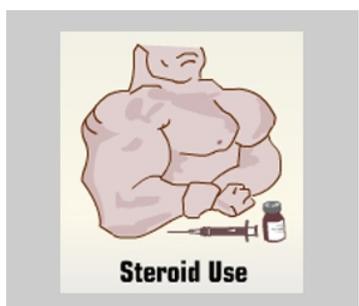
Risks and Complications

Complications are rare after parathyroid surgery, but unexpected events can follow any operation. Your surgeon feels that you should be aware of complications that may take place so that your decision to proceed with this operation is taken with all relevant information available to you.

Specific complications of Minimally Invasive Radioguided Parathyroidectomy surgery are rare but can include:

- Hypoparathyroidism requiring lifelong calcium and Vitamin D supplements.
- Damage to the recurrent laryngeal nerve, also located close to the parathyroid gland, could lead to voice changes (hoarseness or voice loss) or breathing problems.
- Wound Infection can occur and will be treated with antibiotics and drained, if necessary.

Risk factors that can negatively affect adequate healing after surgery include:



A good knowledge of this procedure will make the stress of undertaking the procedure easier for you to bear. The decision to proceed with the procedure is made because the advantages of the procedure outweigh the potential disadvantages. It is important that you are informed of these risks before the procedure.

Although every effort is made to educate you on **Hyperparathyroidism** and take control, there will be specific information that will not be discussed. Talk to your doctor or health care provider about any concerns you have about **Hyperparathyroidism**.

YOUR SURGERY DATE

READ YOUR BOOK AND MATERIAL

VIEW YOUR VIDEO /CD / DVD / WEBSITE

PRE - HABILITATION

ARRANGE FOR BLOOD

MEDICAL CHECK UP

ADVANCE MEDICAL DIRECTIVE

PRE - ADMISSION TESTING

FAMILY SUPPORT REVIEW

Physician's Name : _____

Patient's Name : _____

Physician's Signature: _____

Patient's Signature: _____

Date : _____

Date : _____