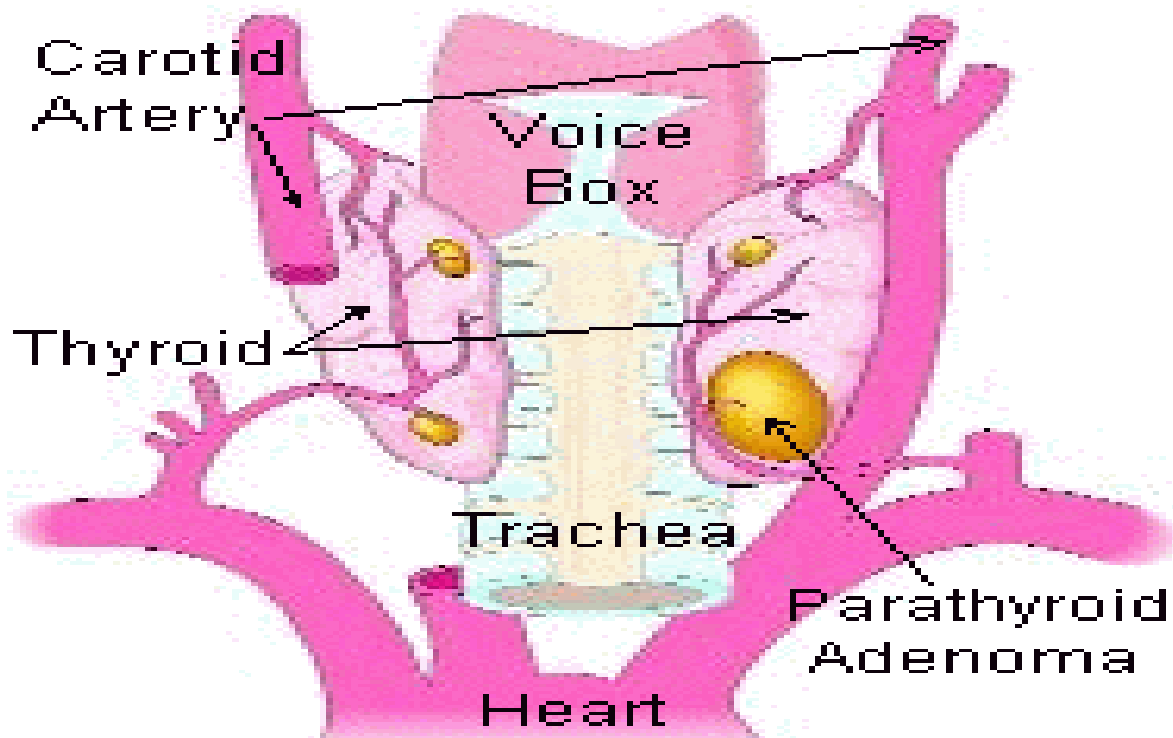


Endocrine system4

Parathyroid glands

The parathyroid glands are small pea-sized glands located in the neck just behind the butterfly-shaped thyroid gland. Most people have four parathyroid glands, with two parathyroid glands lying behind each 'wing' of the thyroid gland.



What do my parathyroid glands do?

The parathyroid glands are important in tightly controlling calcium levels in the bloodstream. Because of this, calcium levels are generally very stable. This is

important to ensure the nervous system and the body's muscles can work properly, and also that bones remain strong.

The main target organs where parathyroid hormone exerts its effects are the bones and the **kidneys**. When calcium levels are low, parathyroid hormone is released by the parathyroid glands into the blood and causes the bones to release calcium and increase levels in the bloodstream. It also causes the **kidneys** to stop calcium being lost in urine as well as stimulating the kidneys to increase **vitamin D metabolism** .

If someone does not take in enough calcium through their diet or does not have enough **vitamin D**, circulating calcium levels fall and the parathyroid glands produce more parathyroid hormone. This brings calcium levels in the bloodstream back up to normal.

Another method that parathyroid hormone uses to increase calcium levels in the bloodstream is activation of vitamin D. This occurs in the **kidney** too; the activated vitamin D then increases calcium.

What could go wrong with my parathyroid glands?

Sometimes the parathyroid glands make too much parathyroid hormone. In this case, patients may develop a blood level of calcium that is too high (hypercalcaemia), which in turn can make them feel generally unwell; however, they may not experience any symptoms. Symptoms may include increased thirst, increased urine production, abdominal pain, constipation, generalised aches and pains, changes in mood. The commonest condition which cause this is called primary hyperparathyroidism. Diagnosis may take some months, as other potential causes of high blood calcium levels need to be excluded. Treatment may include removal of the overactive parathyroid gland or conservative management

(monitoring of symptoms and calcium levels). See the information sheet on primary hyperparathyroidism for further details .

If the high level of parathyroid hormone remains undetected for a long time, it can cause calcium from the bones to be lost into blood and subsequently the urine. This can eventually cause bones to become thin (osteoporosis). Too much calcium in the urine can also cause calcium stones in the kidney.

Occasionally, the parathyroid glands do not produce enough parathyroid hormone leading to low blood calcium levels (hypocalcaemia). This condition is called hypoparathyroidism. This most commonly occurs after neck surgery such as for thyroid disease. Symptoms of low blood calcium include tingling, 'pins and needle' sensations or muscle cramps/spasms. Treatment includes vitamin D or calcium supplementation.

Can you live without a parathyroid gland?

You can easily live with one (or even 1/2) parathyroid gland. Removing all 4 **parathyroid glands** will cause very bad symptoms of too little calcium (hypoparathyroidism). Hypoparathyroidism is the opposite of hyperparathyroidism and it is very rare.

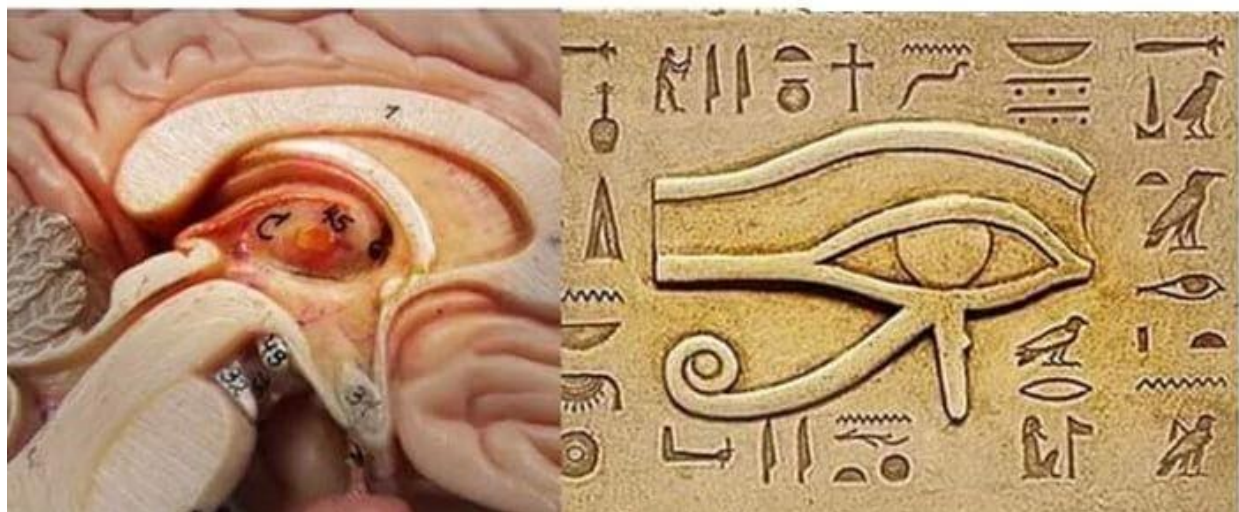
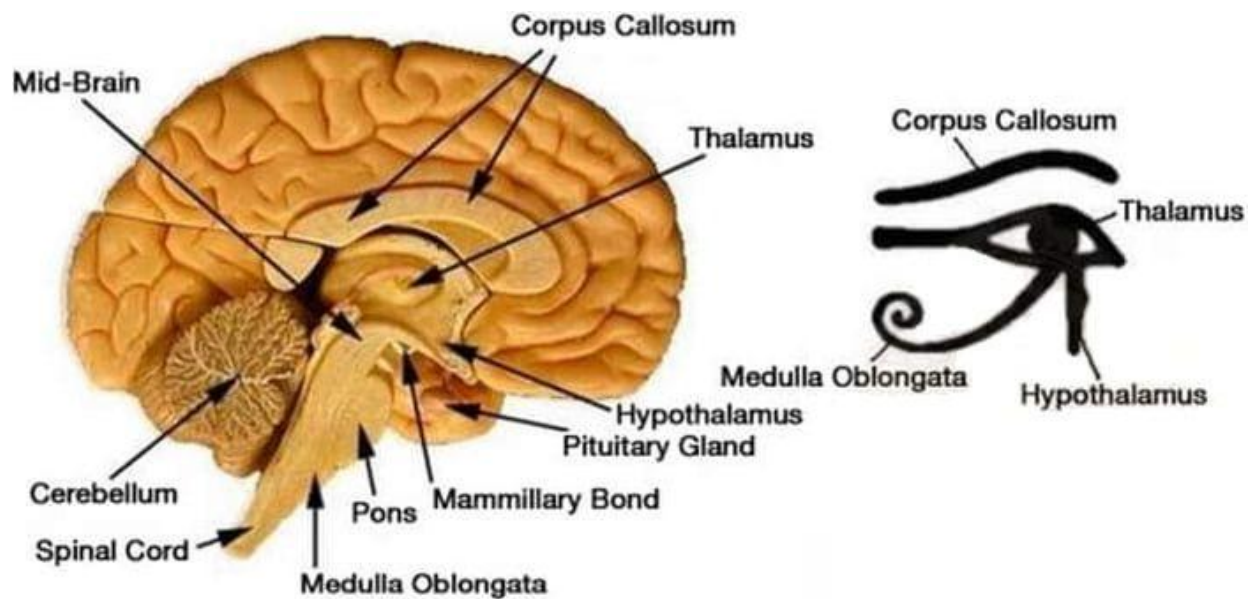
Is parathyroidectomy major surgery?

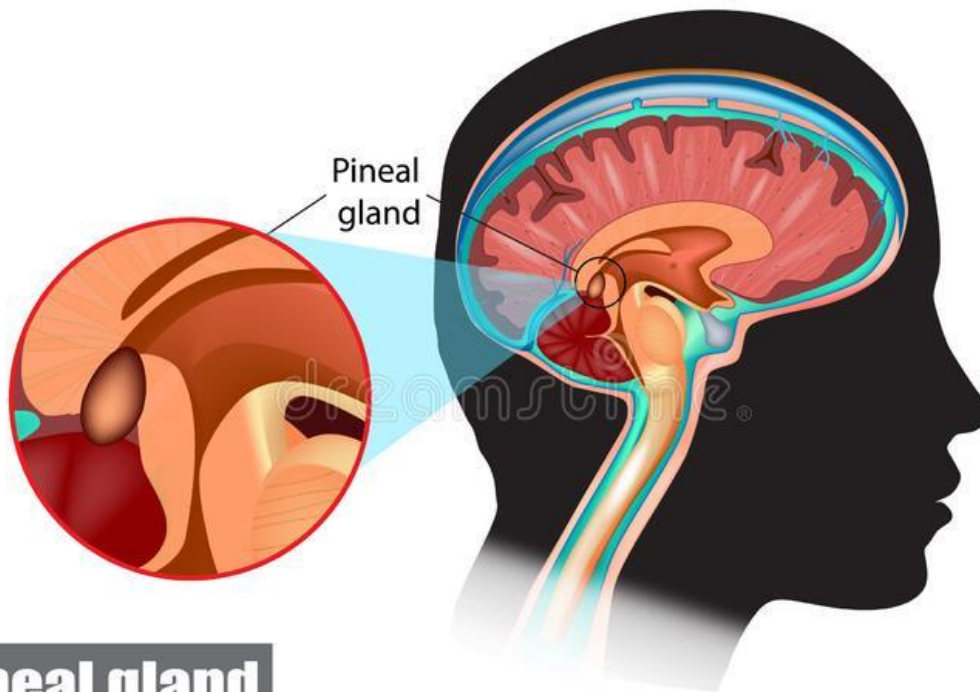
Parathyroidectomy is a minimally invasive **surgery** to remove the **parathyroid** glands or one or more **parathyroid** tumors from your neck. All patients have minimally invasive **parathyroid surgery** (ie, a very small incision) to remove the abnormal **parathyroid** glands. It is as a same day, outpatient **procedure** .

pineal gland or (pineal body)

Where is pineal body located?

The **pineal gland** is located deep in the brain in an area called the epithalamus, where the two halves of the brain join. In humans, this is **situated** in the middle of the brain; it sits in a groove just above the thalamus, which is an area that coordinates a variety of functions related to our senses.





Pineal gland

What body system is the pineal in?

Of the endocrine organs, the function of the pineal gland was the last discovered. Located deep in the center of the brain, the pineal gland was once known as the “third eye.” The pineal gland produces melatonin, which helps maintain circadian rhythm and regulate reproductive hormones.

Why pineal gland is known as Third Eye?

The **pineal gland** was commonly dubbed the “**third eye**” for many reasons, including its location deep in the center of the brain and its connection to light. Mystic and esoteric spiritual traditions suggest it serves as a metaphysical connection between the physical and spiritual worlds.

What is pineal gland responsible for?

The pineal gland's function in the body is not clearly understood yet. However, it is known to play a role in regulating female reproduction and sexual maturation. It also has a part in controlling circadian rhythms, the body's internal clock that affects such actions as when we wake and sleep. The pinealocytes create and secrete melatonin, a hormone that helps maintain the body's internal clock. Humans generally have higher levels of melatonin in childhood, which progressively decrease with age. Unusually high melatonin levels have been linked to a delay in sexual maturation. Melatonin also helps regulate female reproductive hormones, including when women menstruate.