

Overactive Parathyroid Glands: Hyperparathyroidism

- The **4 parathyroid glands** are located behind, or sometimes inside of, the thyroid gland. **Their job is to maintain calcium levels in the blood at any cost** so your muscles can work and your heart can beat. They “borrow” from the calcium reservoir in your bones to accomplish this.
 - The glands are extremely sensitive to calcium levels and will respond to low calcium very quickly, and “shut off” when calcium is high.
 - We measure parathyroid activity by lab tests for PTH.
- What happens if parathyroids are overactive?
 - When calcium rises significantly patients can feel poorly (sometimes even psychotic): they have abdominal pain, nausea, constipation, and are prone to kidney stones.
 - Because the parathyroids are leaching calcium from the bones, those bones become thinner and prone to fractures, which is called osteopenia or osteoporosis.
- There are 3 types of hyperparathyroidism:
 - **Primary hyperparathyroidism** - excess (or normal) PTH despite a high calcium. This is a situation where the gland fails to “shut off” and most frequently is caused by 1 oversized parathyroid gland, or an adenoma. This is **treated by surgical removal**, unless the patient is not a good candidate.
 - **Secondary hyperparathyroidism** - excess PTH with a low (or normal) calcium. Most commonly this occurs in patients with kidney disease, but it can also be caused by low vitamin D or high phosphorus levels. This is **treated by finding the underlying cause of excess PTH and resolving that**. Otherwise, there is a medication, Cinacalcet, that can “tricks” the body into thinking the calcium is already high, and this will reduce PTH.
 - **Tertiary hyperparathyroidism** - excess PTH (usually very extreme elevations) with a high calcium. This occurs when secondary hyperparathyroidism has progressed beyond medical treatment. Usually all 4 glands are enlarged and functioning independently. This is **treated by surgical removal** of 3 ½ parathyroid glands.
- My calcium is high but my PTH is low, so why is my calcium high?
 - When the PTH becomes low/undetectable in the setting of high calcium, this is a **NORMAL** response. We have to look for other reasons, like cancers or certain vitamin toxicities to explain the high calcium.
- Resources
 - Mayo Clinic <https://www.mayoclinic.org/diseases-conditions/hyperparathyroidism/>
 - National Institute of Health section on Endocrine Diseases and Hyperparathyroidism

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