

Low Parathyroid Hormone Levels (Hypoparathyroidism)

Parathyroid agenesis

- Isolated

- DiGeorge's syndrome

Parathyroid destruction

- Surgical

- Radiation

- Infiltration by metastases or systemic diseases

- Autoimmune

Reduced parathyroid function

- Hypomagnesemia

- Autosomal dominant hypocalcemia

High Parathyroid Hormone Levels (Secondary Hyperparathyroidism)

Vitamin D deficiency or impaired $1,25(\text{OH})_2\text{D}$ production/action

- Nutritional vitamin D deficiency (poor intake or absorption)

- Renal insufficiency with impaired $1,25(\text{OH})_2\text{D}$ production

- Vitamin D resistance, including receptor defects

Parathyroid hormone resistance syndromes

- PTH receptor mutations

- Pseudohypoparathyroidism (G protein mutations)

Drugs

- Calcium chelators

- Inhibitors of bone resorption (bisphosphonates, plicamycin)

- Altered vitamin D metabolism (phenytoin, ketoconazole)

Miscellaneous causes

- Acute pancreatitis

- Acute rhabdomyolysis

- Hungry bone syndrome after parathyroidectomy

- Osteoblastic metastases with marked stimulation of bone formation (prostate cancer)

Abbreviation: PTH, parathyroid hormone.

Vitamin D deficiency, impaired $1,25(\text{OH})_2\text{D}$ production (primarily secondary to renal insufficiency), or vitamin D resistance also cause