



Non-PTH Mediated Hypercalcemia	
Malignancy Associated (usually severe hypercalcemia)	Tumor Produced <u>PTHrP</u> (RCC, SCC, breast cancer) <u>Osteolysis</u> (MM, breast cancer)
Vitamin D Associated	Vitamin D Intoxication (>50k <u>qd</u>) Granulomatous Tissue (fungal infection, tuberculosis, sarcoidosis, lymphoma)
Medication Induced	Calcium Carbonate (esp w/ CKD) Lithium, Thiazides, <u>Vit A Supp</u>
Other Causes	Thyrotoxicosis, Immobilization, adrenal insufficiency, <u>pheochromocytoma</u>

Indications for Surgical Parathyroidectomy

- 1) Serum Calcium >1.0mg/dl above upper limit of normal
- 2) Osteoporosis: T-score <-2.5
- vertebral fracture
- 3) CKD 3 (CrCl <60 ml/min)
- 4) 24-hr Urine Calcium >400mg/day + high stone risk
- Nephrolithiasis
- 5) Age <50

Non-Operative Management

- Physical Activity – resistance exercise
- Avoid thiazides, lithium, hypovolemia
- Moderate calcium intake (1000mg/day)
- Maintain Vitamin D level 20-30ng/ml
- Monitor serum calcium and GFR annually
- Monitor bone density every 2 years