



Thyroid Cancer

The incidence of thyroid cancer has been steadily increasing. Between 1970 and 2000 there was a 2.4-fold increase from 3.6 to 8.7 per 100,000 (Davies et al, JAMA 2006). Although the reason is not clear, it is most likely due to increased diagnostic scrutiny (ultrasound & FNA). This is corroborated by the fact that autopsy studies on people **not** known to have thyroid cancer, have shown the incidence of papillary cancer to be as high as 36% (Harach et al, Cancer 1985). This high incidence of undiagnosed cancer along with the fact that the incidence of follicular, medullary and anaplastic carcinomas have not changed, point to greater clinical acumen and scrutiny as the reason for what may appear as an epidemic. But how do we as physicians deal with this information? One important fact remains. Despite an apparent increased incidence, the mortality rate of thyroid cancer is unchanged.

With this in mind, we are faced with therapeutic dilemmas about how to manage the ever-increasing number of patients presented with malignant thyroid tumors, especially micro-carcinomas, the majority of which have very good long-term prognoses, but some do give rise to metastases and require more aggressive treatment. Unfortunately, we currently do not have reliable means to predict which of these tumors will be harmless and which will become troublesome. Do we treat smaller lesions found on routine testing as less aggressive and not offer surgical excision?

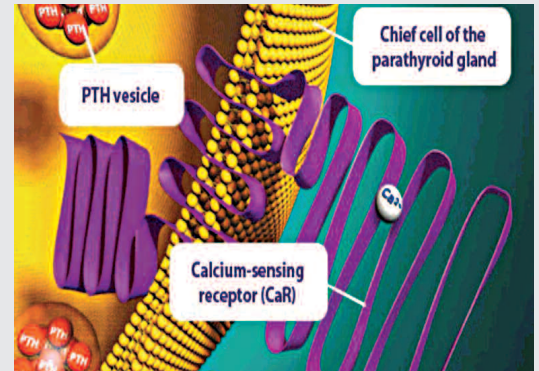
Clearly, at this point, it is impossible to remain passive with a patient faced with a diagnosis of papillary cancer, despite its small size. As such, all patients diagnosed with a cancer are treated with surgery, the extent of which is controversial as well. Due to improved technology and the transition of ultrasound equipment from radiology suites to wide availability in doctors' offices, the incidence is sure to rise even more.

The discovery and development of specific and sensitive markers, especially molecular and genetic, is urgently needed to facilitate the understanding of the basic biology and allow a clinically meaningful risk stratification of each subgroup and variant of papillary thyroid carcinoma. The second major task at hand is to decrease the morbidity of thyroid surgery, not only in terms of risks (which is improved by increased experience and the use of assistive devices such as the EMG nerve monitors) but also by minimizing the actual discomfort of surgery.

Hyperparathyroidism

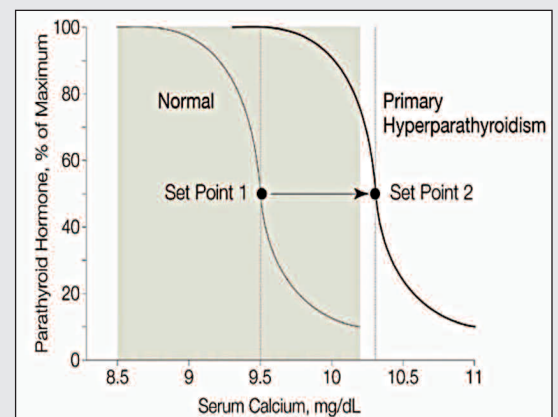
The chief cells of the parathyroid gland are hormone-producing factories that are stimulated by low Ca, and suppressed by high Ca & Vit D.

They are highly sensitive, and control minute-to-minute regulation of the blood Ca level. Primary HPT is a disorder of the



Ca-sensing receptor (CaR), which causes the set point for calcium-induced suppression of PTH to shift leading to inappropriate release of PTH for the level of calcium. Hypercalcemia affects many organ systems. The list of symptoms is exhaustive and includes: *headaches, fatigue, anorexia, nausea, paresthesias, depression, fogginess, forgetfulness, poor sleep, muscular weakness, pain in the extremities, and pain in the abdomen.* A combination of such nonspecific symptoms appears to be the most common presentation of primary HPT. Elevated levels of calcium and PTH_{intact} confirm the diagnosis.

A short list of differentials includes: HPT; hypercalcemia of malignancy-PTHrp; renal failure; bone destruction by a malignancy; Thiazide diuretic;



Granulomatous dz., sarcoidosis; and Familial hypocalciuric hypercalcemia (FHH).

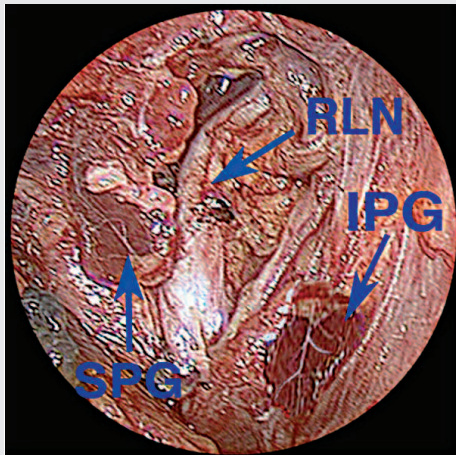
Accurate diagnosis remains challenging in symptomatic patients with borderline laboratory values, especially in view of such non-specific symptoms. 20% of patients with HPT have PTH in upper normal range. It is very important to exclude other causes.



MINIMALLY INVASIVE THYROID & PARATHYROID SURGERY

Minimally Invasive Thyroidectomy (MIT)

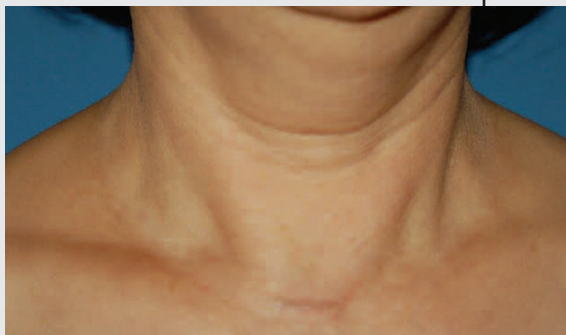
Although the focus of the **endoscopic thyroidectomy** appears to be just minimizing scars, **more importantly the extent of dissection of the tissue planes is much less, leading to less tissue trauma, less pain, less blood loss, and a much faster recovery.** Endoscopic magnification of the field of view allows better identification of structures such as Recurrent Laryngeal Nerve (RLN), Superior and Inferior Parathyroid Glands (SPG & IPG), as well as small blood vessels. The central *compartment lymph nodes* can also be removed via the same incision. Complication rates are exactly the same as traditional surgery in expert hands. Most patients are discharged on post-operative day one; calcium supplementation and Rocalcitol is given to those that have a low post-operative PTH (Drawn 6 hours post-op). Outpatient total thyroidectomy is also a possibility for selected patients.



The role of **central node dissection** remains somewhat vague, as there appears to be no survival advantage ultimately, but rather a decreased recurrence rate.

Pre-operative ultrasound evaluation of the lateral nodal compartment is a sound way to assess the extent of lateral nodal disease, which will direct the decision to perform a modified neck dissection.

Can we do better?
We certainly will improve and ultimately treat only patients with aggressive tumors, not indolent ones.

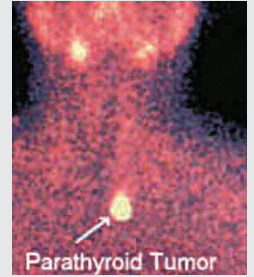


2 Weeks Post-op

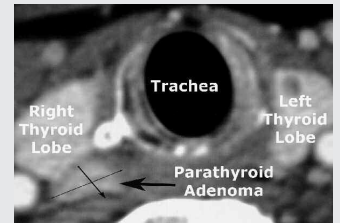
Parathyroid

Testing should include:

- Serum Ca & PTH_{intact}
- Cr & estimated GFR
- 24 hour urine Ca
- 25-hydroxyvitamin D
- DEXA Scan for selected patients



Treatment of parathyroid disease in most cases is surgical. A great majority of cases are caused by a single parathyroid adenoma.



Improved pre-operative localization studies have revolutionized our approach to this disease.

Research shows that combining pre-operative sestamibi scans with a neck CT scan or Ultrasound improves accuracy to 95%. In the past, surgical treatment involved bilateral neck exploration and sampling of all glands. This approach is no longer valid for every patient.

Three factors make parathyroid surgery more successful and very simple:

- **Pre-operative Localization**
- **Surgical Experience**
- **Intra-operative Rapid PTH Testing**

Finding the parathyroid pre-operatively requires extensive experience. The surgeon's experience in deciding who will benefit by surgery along with surgical skill is of utmost importance. Intra-operative PTH testing is what allows us to safely operate on one gland and be assured that the other glands are not culpable; inversely, it also tells us if more than one gland is problematic, i.e. double adenoma or hyperplasia (both of which may not be apparent on pre-operative testing). Radio-guidance intra-operatively is used in rare anatomically challenging cases.

In experienced hands the actual surgical time in patients with an adenoma is less than 20 minutes. This is an outpatient procedure, and patients are placed on calcium supplementation for several weeks, if not longer, based on pre-operative calcium profile.

Studies show 95% of patients have symptomatic improvement, which can occur as early as 72 hours after surgery.