

Management of Thyroid Cancer



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Autopsies series demonstrate a prevalence of occult thyroid carcinoma ranging from 5-28% suggesting that a large population harbor foci of microscopic carcinoma that are of no clinical significance. There is a female predominance of approximately 3:1 and it is the most common endocrine malignancy. Thyroid cancer can occur at any age although it is most common after age 25 and its virulence increases significantly as a function of age. The majority of patients present with an otherwise asymptomatic thyroid nodule. The prevalence of a thyroid nodule in the general population ranges from 4 - 7% and the vast majority of these nodules are benign. The diagnostic goal is to distinguish benign from malignant thyroid nodules.

Risk factors for thyroid cancer include a history of head or neck radiation, patient's from kindreds of MEN 2A, MEN 2B, familial non-MEN medullary thyroid carcinoma (MTC), and patients with hereditary papillary carcinoma. Routine evaluation includes a detailed head and neck examination including routine laryngoscopy. Almost all patients with thyroid cancer are euthyroid which can be confirmed by demonstrating a normal serum TSH level. Imaging studies including nuclear medicine scans and sonography are not routinely required.

The single most important diagnostic study for evaluation of a thyroid nodule is a fine needle aspiration (FNA). This technique has revolutionized and streamlined the evaluation of patients with thyroid nodules. Interpretation of the FNA specimen must be performed by an experienced cytopathologist. FNA is sensitive for the diagnosis of papillary and medullary carcinomas of the thyroid. However, it is extremely limited in its ability to diagnose follicular lesions of the thyroid because the criteria for malignancy (capsular or vascular invasion)

can generally only be seen on permanent histologic section. FNA can also suggest a primary lymphoma of the thyroid, which can be confirmed utilizing flow cytometric methods.

Patient's who have an established diagnosis of thyroid cancer invariably undergo thyroidectomy. There is ongoing debate about the extent of thyroidectomy. Several classifications have been designed to assist with the management of well-differentiated thyroid carcinoma. These include the AGES, AMES, as well as TNM classifications. In general all of these classifications demonstrate that patients with favorable characteristics enjoy benign post-operative courses no matter what procedure is done, whereas those with unfavorable characteristics have an increased risk of recurrence and death. There are two schools of thought considering the extent of thyroid surgery in well-differentiated carcinoma. One recommends total or near-total thyroidectomy for the majority of patients with well-differentiated thyroid cancer, whereas the other utilizes hemi- thyroidectomy for small cancers with favorable prognostic features. Unfortunately, in the absence of randomized prospective clinical trials this debate will never be resolved and it is extremely unlikely that such a trial will be conducted. If there is clinically apparent lymph node involvement, it is generally recommended to proceed with lymphadenectomy during the initial exploration. However, in the absence of clinical lymph node disease there are no data to support prophylactic lymph node dissection for papillary or follicular carcinoma of the thyroid. The single most important principle in the management of patients with thyroid cancer, however, is that the treatment should not be worse than the disease. Therefore recurrent nerve injury and permanent hypoparathyroidism should be extraordinarily rare when the operations are performed by experienced surgeons.

Patients with follicular neoplasms pose difficult management problems. These lesions are notoriously difficult to diagnosis either on FNA or frozen section. Most surgeons perform a lobectomy and isthmusectomy on the affected side. Intraoperative frozen sections in this setting rarely offer the surgeon useful clinical information. A randomized prospective clinical trial is currently underway to address the utility of frozen sections in this setting. It has already been demonstrated, however, that for the subset of Hürthle cell neoplasms there is a direct

correlation between the size of the tumor and the incidence of carcinoma.

Patients with medullary thyroid carcinoma (MTC) are unusual and present special management issues. These patients may present with MTC as the first manifestation of MEN 2A. In all cases of suspected MTC a urinary screen for catecholamines or their metabolic products should be performed as these patients may harbor an occult pheochromocytoma. The minimal operation for patients with sporadic MTC involves a total thyroidectomy with central nodal clearance. Most advocate, in addition, a modified radical neck micro-dissection on the side of the tumor. Patients who are diagnosed due to family screening programs usually present earlier and have a much more favorable prognosis. It is not uncommon for patients with MTC who presents sporadically to have persistent post-operative hypercalcitonemia. These patients may undergo extensive and aggressive neck operations in the absence of extracervical disease. However it is in the minority of these patients who will ever achieve a normal calcitonin level.

A body of data suggest that favorable results of thyroid surgery are directly related to the experience of the surgeon. All surgeons who perform thyroid procedures must recognize the delicate nature of the surgery and the con-

sequences of permanent hypothyroidism, recurrent laryngeal nerve, and superior laryngeal nerve (external branch) injury.

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