Thyroid Cancer Surgical Practice Guidelines

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The Society of Surgical Oncology surgical practice guidelines focus on the signs and symptoms of primary cancer, timely evaluation of the symptomatic patient, appropriate preoperative evaluation for extent of disease, and role of the surgeon in diagnosis and treatment. Separate sections on adjuvant therapy, follow-up programs, or management of recurrent cancer have been intentionally omitted. Where appropriate, perioperative adjuvant combined-modality therapy is discussed under surgical management. Each guideline is presented in minimal outline form as a delineation of therapeutic options.

Since the development of treatment protocols was not the specific aim of the Society, the extensive development cycle necessary to produce evidence-based practice guidelines did not apply. We used the broad clinical experience residing in the membership of the Society, under the direction of Alfred M. Cohen, MD, Chief, Colorectal Service, Memorial Sloan-Kettering Cancer Center, to produce guidelines that were not likely to result in significant controversy. Following each guideline is a brief narrative highlighting and expanding on selected sections of the guideline document, with a few relevant references. The current staging system for the site and approximate 5-year survival data are also included. The Society does not suggest that these guidelines replace good medical judgment. That always comes first. We do believe that the family physician, as well as the health maintenance organization director, will appreciate the provision of these guidelines as a reference for better patient care.

Society of Surgical Oncology Practice Guidelines: Thyroid Cancer

Symptoms and Signs

Early-stage disease
- Asymptomatic
- Mass in the thyroid region
- Presence of enlarged lymph node in the supraclavicular region
- Vague pain or discomfort in the thyroid region

Advanced-stage disease
- Cervical lymphadenopathy
- Large mass in the thyroid region
- Rapidly increasing thyroid nodule
- Change in voice
- Difficulty in breathing
- Difficulty in swallowing

Evaluation of the Symptomatic Patient

Work-up
- Clinical evaluation, physical examination, complete head and neck examination, including
indirect laryngoscopy
- Risk factor analysis
- Fine-needle aspiration (FNA)
- Ancillary diagnostic work-up if necessary
- Thyroid function tests
- Ultrasound, thyroid scan, and CT scan in selected patients

**Appropriate timeliness of surgical referral**

- Initial work-up should include a thorough and detailed clinical examination and evaluation of the physical findings.
- FNA should be considered the first diagnostic test.
- Evaluation of a solitary thyroid nodule

1. If FNA is benign, begin levothyroxine for 3 to 6 months.
   - If lesion regresses or is unchanged, follow clinically.
   - If lesion increases in size, operate.

If FNA shows follicular neoplastic cells, obtain a thyroid scan.

   - If scan reveals a "cold" nodule, operate.
   - If scan reveals a "hot" nodule, observe.

If FNA shows malignant or suspicious cells, operate.

*Preoperative Evaluation for Extent of Disease*

**Physical examination**

**Indirect laryngoscopy**

**Chest x-ray**

**Baseline thyroglobulin for papillary cancer and calcitonin for medullary cancer**

*Role of the Surgeon in Initial Management*

**Evaluation of the symptomatic patient**

- Clinical examination
- Indirect laryngoscopy with fiberoptic laryngoscope if necessary
- FNA of the neck or thyroid mass
- Chest x-ray for evaluation of the airway

**Diagnostic procedures**

- FNA

**Surgical considerations: well-differentiated (papillary and follicular) thyroid cancer**

- Risk group analysis is very helpful.

1. **Age**
2. **Grade**
3. **Extracapsular extent of disease and tumor Size (AGES)**
4. Presence of distant **Metastasis**
5. **Extracapsular spread of disease and tumor Size (AMES)**
Surgical procedures

1. Lobectomy and isthmectomy
2. Subtotal thyroidectomy
3. Near total thyroidectomy
4. Total thyroidectomy
5. Modified neck dissection in selected patients

Surgical considerations: medullary carcinoma of the thyroid

- Total thyroidectomy with appropriate neck dissection should be performed if nodes are clinically palpable.
- Central compartment clearance is extremely important.

Surgical considerations: anaplastic thyroid cancer

- Diagnosis can be made based on clinical suspicion of a rapidly growing mass, age of the patient, unusual symptoms, a rapidly growing mass in the central compartment of the neck and fixed to the surrounding structures, and airway problems.
- FNA will raise suspicion of anaplastic thyroid cancer.
- Confirmation of the diagnosis can be made by either open biopsy or Tru-cut needle biopsy (core biopsy).
- Treatment should consists of the combination of chemotherapy (including doxorubicin) and external radiation therapy.
- The role of surgery is very limited.
- Occasional patients may need a tracheostomy. (Most of these patients will do very poorly.)

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Although thyroid cancer is not of the more common tumors, it accounts for 90% of tumors originating in the endocrine glands. Approximately 16,000 patients with thyroid cancer are seen every year, and 1,200 patients die from this cancer annually.

The most important risk factor for thyroid cancer is a history of radiation to the neck. The most common indications for neck irradiation include acne and other skin conditions and an enlarged tonsil or thymus. The incidence of thyroid cancer is slightly higher in patients with Graves’ disease and thyroiditis.

There are four main types of thyroid cancer: papillary, follicular, medullary, and anaplastic. The differentiated thyroid cancers (papillary and follicular) account for less than 90% of all thyroid malignancies, while medullary and anaplastic represent 5% to 10% and greater than 5% of cases, respectively. Hurthle cell cancers were formerly included in the differentiated group, but the World Health Organization has eliminated Hurthle cell tumor as a separate category and included it as a variant of follicular thyroid cancer.

Papillary cancer is more common in younger individuals (those in the second and third decades of life), while anaplastic thyroid cancer is uniformly seen in the sixth and seventh decades. Follicular cancer is more common in endemic regions, such as Europe. The majority (approximately 80%) of patients with medullary cancer have a sporadic form of the disease, and the remaining 20% have familial disease.

The most common presentation is an asymptomatic mass in the thyroid region. Occasional patients, particularly those 20 to 35 years old or those over age 60, may present with enlarged supraclavicular lymph nodes. Patients with advanced-stage disease may present with massive cervical lymphadenopathy, a large, fixed mass in the thyroid region, or a change in voice. Occasionally, the patient may exhibit difficulty in breathing or swallowing on presentation.

Evaluation

The evaluation of the symptomatic patient with a suspected thyroid malignancy consists of a clinical history, physical examination, and complete head and neck examination, including indirect
laryngoscopy. The ancillary diagnostic work-up includes an ultrasonogram, a CT scan, thyroid function tests, and fine-needle aspiration (FNA). If the FNA report is definitely benign and there is no clinical suspicion of malignancy, the patient may be treated with suppressive therapy and followed for 3 to 6 months. Preoperative evaluation includes physical examination, indirect laryngoscopy, chest x-ray, and thyroid function tests.

**Staging**

The current American Joint Committee on Cancer staging for thyroid cancer is shown in Table 1, along with approximate 5-year survival rates by stage. The staging system for thyroid cancer is quite different from the systems for other tumors in the head and neck. The T1 tumor is described as less than 1 cm in greatest dimension, while the T4 tumor indicates extrathyroidal disease extension. The presence of lymph node metastasis is described as N1 disease; there is no further staging of nodal status. Separate stage groupings are recommended for differentiated, medullary, and undifferentiated thyroid cancers. Age is an important prognostic factor in differentiated thyroid cancer, and this is the only cancer in which age is used in stage grouping. Patients below the age of 45 with differentiated thyroid cancer as considered to have stage I or II disease. Stage III and IV tumors relate to patients above age 45. Lymph node metastasis has very little prognostic bearing, and, in younger individuals, even those with distant metastasis, the survival outcome is quite satisfactory. The anaplastic thyroid cancers are always considered to be stage IV, with an extremely poor prognosis overall. Survival is excellent in patients with papillary cancer, exceeding 95%, and is slightly lower in those with follicular cancer, between 80% and 90%. Five-year survival for patients with medullary cancer is 50%, while average survival for those with anaplastic cancer is less than 1 year.

**Treatment**

The treatment of thyroid cancer consists mainly of surgical resection and the use of radioactive iodine ablation in high-risk patients. The Mayo Clinic, Lahey Clinic, and Memorial Sloan-Kettering Cancer Center data on a large number of patients with well-differentiated thyroid cancer reveal similar prognostic factors. These include age, grade, extracapsular extension of the disease, presence of distant metastasis, and size of the tumor. With this information on prognostic factors, patients can be divided into low- and high-risk groups.

**Papillary and Follicular Cancer** In most low-risk patients with papillary cancer, a limited surgical procedure, including a lobectomy and an isthmectomy, is sufficient if the opposite lobe of the thyroid appears to be clinically normal. In the high-risk patient with a bulky tumor, tumor involving both lobes of the thyroid, or follicular cancer, a total thyroidectomy should be considered. If lymph node metastasis is noted at the time of surgery, a modified neck dissection, with preservation of the sternocleidomastoid muscle, internal jugular vein, and accessory nerve, is performed. Most high-risk patients are treated with adjuvant radioactive iodine ablation.

**Medullary Cancer** Medullary carcinoma of the thyroid is best treated with total thyroidectomy and appropriate neck dissection. Clearance of the central compartment of the neck is extremely important. All patients with medullary thyroid cancer are followed with regular calcitonin assays. Evaluation of family members for the ret proto-oncogene is extremely important to screen for medullary cancer of the thyroid.

**Anaplastic Cancer** Of all the thyroid carcinomas, the anaplastic type has the worst prognosis. The surgeon's primary role in patients with this cancer is making a diagnosis, which can be done either with FNA or Tru-cut biopsy. The best therapy for local control of anaplastic carcinoma of the thyroid is the combination of chemotherapy and radiation. Doxorubicin-based chemotherapy has recently shown promising results. Quality of life is generally excellent in patients with papillary and follicular thyroid cancer. However, the issue of quality of life is of great concern in individuals with anaplastic thyroid cancer, which generally grows in the central compartment, leading to asphyxia and swallowing problems.

**References:**


**Links:**
[1] [http://www.physicianspractice.com/authors/ashok-r-shaha-md-facs](http://www.physicianspractice.com/authors/ashok-r-shaha-md-facs)
[2] [http://www.physicianspractice.com/authors/robert-m-byers-md-facs](http://www.physicianspractice.com/authors/robert-m-byers-md-facs)
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