

## Thyroid

C73.9 Thyroid gland

### SUMMARY OF CHANGES

- Tumor staging (T) has been revised and the categories redefined.
- T4 is now divided into T4a and T4b.
- Nodal staging (N) has been revised.
- All anaplastic carcinomas are considered T4. The T4 category for anaplastic carcinomas is divided into T4a (intrathyroidal anaplastic carcinoma—surgically resectable) and T4b (extrathyroidal anaplastic carcinoma—surgically unresectable).
- For papillary and follicular carcinomas, the stage grouping for patients older than 45 has been revised. Stage III includes tumors with minimal extrathyroid extension. Stage IVA includes tumors of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve. Stage IVB includes tumors that invade prevertebral fascia, carotid artery, or mediastinal vessels. Stage IVC includes advanced tumors with distant metastasis.

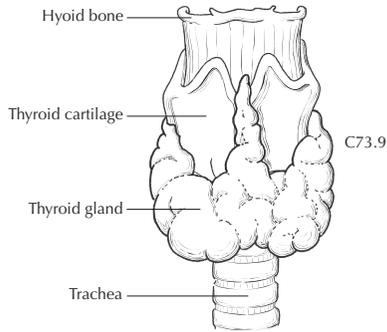
### INTRODUCTION

Although staging for cancers in other head and neck sites is based entirely on the anatomic extent of disease, it is not possible to follow this pattern for the unique group of malignant tumors that arise in the thyroid gland. Both the *histologic diagnosis* and the *age* of the patient are of such importance in the behavior and the prognosis of thyroid cancer that these factors are included in this staging system.

### ANATOMY

**Primary Site.** The thyroid gland ordinarily is composed of a right and a left lobe lying adjacent and lateral to the upper trachea and esophagus. An isthmus connects the two lobes, and in some cases a pyramidal lobe is present extending upward anterior to the thyroid cartilage (Figure 8.1).

**Regional Lymph Nodes.** Regional lymph node spread from thyroid cancer is common but of less prognostic significance in patients with well-differentiated tumors (papillary, follicular) than in medullary cancers. The adverse prognostic influence of lymph node metastasis in patients with differentiated carcinomas is observed only in the older age group. The first echelon of nodal metastasis consists of paralaryngeal, paratracheal, and prelaryngeal (Delphian) nodes adjacent to the thyroid gland in the central compartment of the neck generally described as Level VI. Metastases secondarily involve the mid- and lower jugular,



**FIGURE 8.1.** Thyroid gland.

the supraclavicular, and (much less commonly) the upper deep jugular and spinal accessory lymph nodes. Lymph node metastasis to submandibular and submental lymph nodes is very rare. Upper mediastinal (Level VII) nodal spread occurs frequently both anteriorly and posteriorly. Retropharyngeal nodal metastasis may be seen, usually in the presence of extensive lateral cervical metastasis. Bilateral nodal spread is common. The components of the N category are described as follows: first echelon (central compartment/Level VI) or N1a, and lateral cervical and/or superior mediastinal or N1b. The lymph node metastasis should also be described according to the level of the neck that is involved. Nodal metastases from medullary thyroid cancer carry a much more ominous prognosis, although they follow a similar pattern of spread.

For pN, histologic examination of a selective neck dissection will ordinarily include 6 or more lymph nodes, whereas histologic examination of a radical or a modified radical comprehensive neck dissection will ordinarily include 10 or more lymph nodes. Negative pathologic evaluation of a lesser number of nodes still mandates a pN0 designation.

**Metastatic Sites.** Distant spread occurs by hematogenous routes—for example to lungs and bones—but many other sites may be involved.

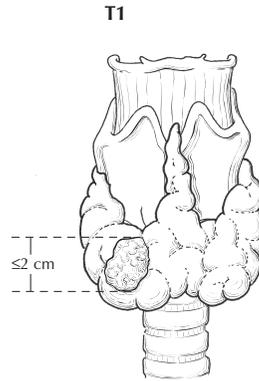
## DEFINITIONS

### *Primary Tumor (T)*

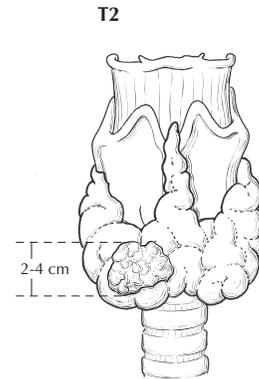
*All categories may be subdivided: (a) solitary tumor, (b) multifocal tumor (the largest determines the classification).*

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- T1 Tumor 2 cm or less in greatest dimension limited to the thyroid (Figure 8.2)
- T2 Tumor more than 2 cm but not more than 4 cm in greatest dimension limited to the thyroid (Figure 8.3)
- T3 Tumor more than 4 cm in greatest dimension limited to the thyroid or any tumor with minimal extrathyroid extension (e.g., extension to sternothyroid muscle or perithyroid soft tissues) (Figure 8.4)

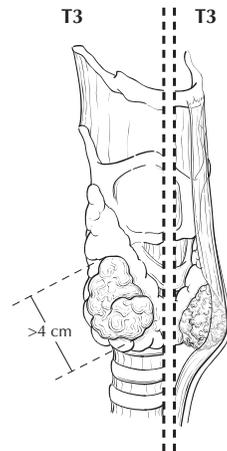
**FIGURE 8.2.** T1 is defined as tumor 2 cm or less in greatest dimension limited to the thyroid.

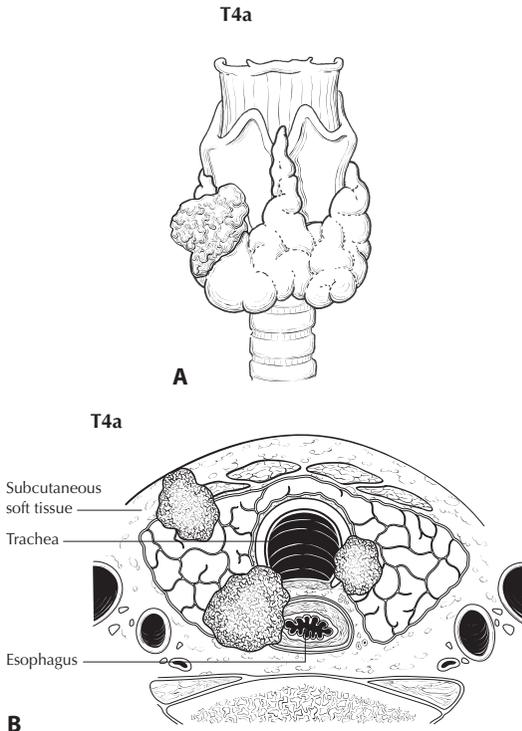


**FIGURE 8.3.** T2 is defined as tumor more than 2 cm but not more than 4 cm in greatest dimension limited to the thyroid.



**FIGURE 8.4.** Two views of T3: on the left, a tumor more than 4 cm in greatest dimension limited to the thyroid; on the right, a tumor with minimal extrathyroid extension (to either sternothyroid muscle or perithyroid soft tissues).





**FIGURE 8.5. A.** T4a is defined as a tumor of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve. **B.** Cross-sectional diagram of three different parameters of T4a: tumor invading subcutaneous soft tissues; tumor invading trachea; tumor invading esophagus.

- T4a Tumor of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve (Figures 8.5A, B)
- T4b Tumor invades prevertebral fascia or encases carotid artery or mediastinal vessels (Figure 8.6)

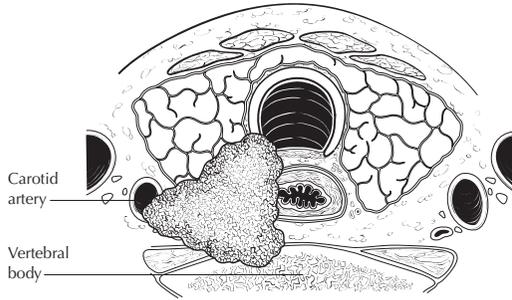
*All anaplastic carcinomas are considered T4 tumors.*

- T4a Intrathyroidal anaplastic carcinoma—surgically resectable
- T4b Extrathyroidal anaplastic carcinoma—surgically unresectable

#### **Regional Lymph Nodes (N)**

*Regional lymph nodes are the central compartment, lateral cervical, and upper mediastinal lymph nodes.*

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Regional lymph node metastasis

**T4b**

**FIGURE 8.6.** T4b is defined as tumor invading prevertebral fascia or encasing carotid artery or mediastinal vessels. Cross-sectional diagram of two different parameters of T4b: tumor encases carotid artery; tumor invades vertebral body.

N1a Metastasis to Level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes) (Figure 8.7)

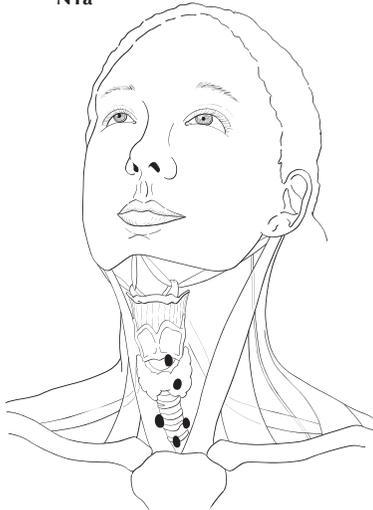
N1b Metastasis to unilateral, bilateral, or contralateral cervical or superior mediastinal lymph nodes (Figure 8.8)

***Distant Metastasis (M)***

MX Distant metastasis cannot be assessed

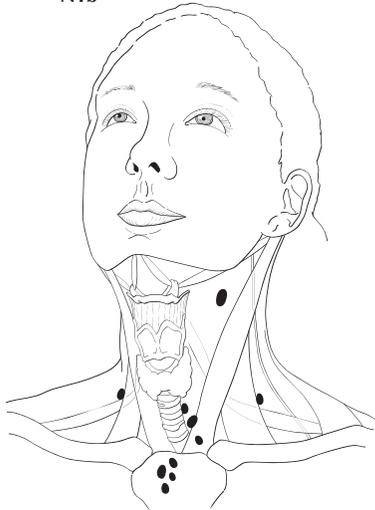
M0 No distant metastasis

M1 Distant metastasis

**N1a**

**FIGURE 8.7.** N1a is defined as metastasis to Level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes).

## N1b



**FIGURE 8.8.** N1b is defined as metastasis to unilateral, bilateral, or contralateral cervical or superior mediastinal lymph nodes.

### STAGE GROUPING

**Separate stage groupings are recommended for papillary or follicular, medullary, and anaplastic (undifferentiated) carcinoma.**

#### Papillary or Follicular

##### Under 45 years

I	Any T	Any N	M0
II	Any T	Any N	M1

#### Papillary or Follicular

##### 45 years and older

I	T1	N0	M0
II	T2	N0	M0
III	T3	N0	M0
	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0
IVA	T4a	N0	M0
	T4a	N1a	M0
	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	N1b	M0

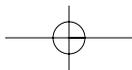
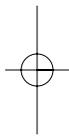
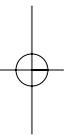
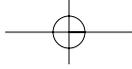
IVB	T4b	Any N	M0
IVC	Any T	Any N	M1

### Medullary Carcinoma

I	T1	N0	M0
II	T2	N0	M0
III	T3	N0	M0
	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0
IVA	T4a	N0	M0
	T4a	N1a	M0
	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	N1b	M0
IVB	T4b	Any N	M0
IVC	Any T	Any N	M1

### Anaplastic Carcinoma

IVA	T4a	Any N	M0
IVB	T4b	Any N	M0
IVC	Any T	Any N	M1





<http://www.springer.com/978-0-387-29014-0>

AJCC Cancer Staging Atlas

(Eds.)F.L. Greene; C.C. Compton; A.G. Fritz; J. Shah; D.P.  
Winchester

2006, IX, 352 p., 343 illus., Softcover

ISBN: 978-0-387-29014-0