

QUICK REFERENCE GUIDE TO

**TNM Staging of Head and
Neck Cancer and Neck Dissection
Classification**

Fourth Edition



AMERICAN ACADEMY OF
OTOLARYNGOLOGY-
HEAD AND NECK SURGERY

F O U N D A T I O N



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Table of Contents

Preface	iv
Acknowledgments	v
I. Introduction	2
A. Upper Aerodigestive Tract Sites	2
Oral Cavity	3
Oropharynx	3
Hypopharynx	4
Larynx.....	4
Nasopharynx	6
Nasal Cavity and Paranasal Sinuses	7
B. Radiation Therapy and Chemotherapy.....	7
II. American Joint Committee on Cancer (AJCC) Tumor Staging by Site	11
A. Oral Cavity.....	11
B. Oropharynx	12
C. Larynx	12
D. Hypopharynx.....	14
E. Nasal Cavity and Paranasal Sinuses.....	15
F. Salivary Glands.....	16
G. Neck Staging under the TNM Staging System for Head and Neck Tumors	17
H. TNM Staging for the Larynx, Oropharynx, Hypopharynx, Oral Cavity, Salivary Glands, and Paranasal Sinuses	18

III. AJCC Tumor Staging—Nasopharynx, Thyroid, and Mucosal Melanoma	19
A. Nasopharynx	19
B. Thyroid.....	20
C. Mucosal Melanoma	23
IV. Definition of Lymph Node Groups	25
A. Levels IA and IB: Submental and Submandibular Groups	25
B. Levels IIA and IIB: Upper Jugular Group	26
C. Level III: Middle Jugular Group.....	26
D. Level IV: Lower Jugular Group	27
E. Levels VA and VB: Posterior Triangle Group.....	28
F. Level VI: Anterior (Central) Compartment Group	28
V. Conceptual Guidelines for Neck Dissection Classification	29
A. Radical Neck Dissection.....	29
B. Modified Radical Neck Dissection	30
C. Selective Neck Dissection	30
D. Extended Radical Neck Dissection.....	34

Preface

Staging is the language essential to the proper and successful management of head and neck cancer patients. It is the core of diagnosis, treatment planning, application of therapeutics from multiple disciplines, recovery, follow-up, and scientific investigation. Staging must be consistent, efficient, accurate, and reproducible. The head and neck cancer caregiver can never be too fluent in this mode of communication, as we educate patients and navigate them toward cure. The simple clarification that Stage IV disease is not synonymous with a “death sentence” has powerful impact for patients and their families. With this imperative, the American Academy of Otolaryngology—Head and Neck Surgery Foundation and the American Head and Neck Society present the fourth edition of *Quick Reference Guide to TNM Staging of Head and Neck Cancer and Neck Dissection Classification*.

Just as our knowledge of and therapeutics for head and neck cancer evolve, so does the language we use in managing the disease. Such terms as “chemoradiation,” “organ preservation,” “HPV positive,” and “de-escalation” are now central to care planning discussions. Likewise, the staging system evolves to incorporate current knowledge and reflect state-of-the-art treatments.

This new edition of *Quick Reference Guide to TNM Staging of Head and Neck Cancer and Neck Dissection Classification* incorporates the changes from the seventh edition of the American Joint Commission on Cancer (AJCC) Cancer Staging Manual, as well as updated discussions of site-specific cancers.

We hope this *Quick Reference Guide* will serve the practitioner and the patient equally well as we ready ourselves for further evolution of head and neck cancer staging and management.

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I. Introduction

The tumor, node, metastasis (TNM) staging system allows clinicians to categorize tumors of the head and neck region in a specific manner to assist with the assessment of disease status, prognosis, and management. All available clinical information may be used in staging: physical exam, radiographic, intraoperative, and pathologic findings. Other than histopathologic analysis, biomarkers and molecular studies are not yet included in the staging of head and neck cancers.

Three categories comprise the system: T—the characteristics of the tumor at the primary site (this may be based on size, location, or both); N—the degree of regional lymph node involvement; and M—the absence or presence of distant metastases. The specific TNM status of each patient is then tabulated to give a numerical status of Stage I, II, III, or IV. Specific subdivisions may exist for each stage and may be denoted with an a, b, or c status. T4a disease indicates *moderately advanced disease* and is specific by subsite, but is still considered resectable. T4b disease is *very advanced disease* with findings—such as carotid artery encasement, prevertebral involvement, and skullbase involvement—that previously determined the disease to be unresectable. In general, early-stage disease is denoted as Stage I or II disease, and advanced-stage disease as Stage III or IV disease. Of importance is that any positive metastatic disease to the neck will classify the disease as advanced, except in select nasopharynx and thyroid cancers. T4a disease is staged as IVa. T4b disease is staged as IVb, and any distant metastasis is staged as IVc.

A. Upper Aerodigestive Tract Sites

The majority of tumors arising in the head and neck (other than nonmelanoma skin cancers) arise from the squamous mucosa that lines the upper aerodigestive tract (UADT) and are predominately squamous cell carcinomas. The UADT begins where the skin meets the mucosa at the nasal vestibule and the vermilion borders of the lips, and continues to the junction of the cricoid cartilage and the cervical trachea and at the level of the cricoid

where the hypopharynx meets the cervical esophagus. The UADT is organized into several major sites that are subdivided to several anatomic subsites. The major sites include (1) the oral cavity, (2) the oropharynx, (3) the hypopharynx, (4) the larynx, (5) the nasopharynx, and (6) the nose and paranasal sinuses.

ORAL CAVITY

The oral cavity is a common site for squamous cell cancers of the UADT, probably because it is the first entry point for many carcinogens. The anterior aspect of the oral cavity is the contact point of the skin, with the vermilion of the lips extending posteriorly to the junction of the hard and soft palates, and with the anterior tonsillar pillars and the circumvallate papillae forming the posterior limits. The major subsites of the oral cavity are the lips, anterior tongue, floor of mouth, buccal mucosa, upper and lower alveolar ridges, hard palate, and retromolar trigone. The trigone consists of the mucosa overlying the anterior aspect of the ascending ramus of the mandible. Tumors of the oral cavity tend to spread regionally to lymph nodes of the submandibular region (Level I) and to the upper and middle jugular chain lymph nodes (Levels II and III).

Because of accessibility and the risk of involvement of bony structures, treatment with primary radiotherapy can lead to radionecrosis of the mandible or maxilla. Moreover, oral cavity squamous cell carcinomas may be less sensitive to chemotherapy and radiation, relative to oropharyngeal or laryngeal cancers. Thus, primary treatment for most tumors is surgical. Advanced-stage disease may receive adjuvant radiation therapy. Positive surgical margins, multiple involved lymph nodes, and/or extracapsular tumor extension call for consideration of postoperative chemoradiotherapy, to improve local disease control.

OROPHARYNX

This region begins where the oral cavity ends at the junction of the hard and soft palates superiorly and the circumvallate papillae inferiorly, and extends from the level of the soft palate superiorly, which separates it from the nasopharynx, and to the level of the hyoid bone inferiorly. The subsites of the oropharynx are the tonsil, base of tongue, soft palate, and pharyngeal walls. Cancers of the oropharynx often metastasize to upper and middle jugular chain lymph nodes (Levels II and III), but can also spread to retropharyngeal

lymph nodes, which distinguishes them from oral cavity tumors and must be considered when treating oropharyngeal cancers.

Tumors in the oropharynx have traditionally been treated with radiotherapy, as a single modality for T1/2 or N0/1 staging. For patients with more advanced disease, T3/4 or N2b/c/3 staging, chemoradiotherapy most often with a concomitant approach has become standard. Cisplatin, administered during weeks 1, 4, and 7, has most often been studied and may be considered a standard.

There has been a near epidemic rise in the incidence of oropharyngeal cancer related to human papillomavirus (HPV) infection. Most often occurring in younger patients lacking the traditional risk factors of significant tobacco and alcohol use, HPV-related tumors demonstrate a significantly higher cure rate. Recent advances in surgical techniques, including transoral laser microsurgery and transoral robotic surgery, have allowed for surgery to be considered as an integral part of combined modality treatment.

HYPOPHARYNX

The hypopharynx has its superior limit at the level of the hyoid bone, where it is contiguous with the oropharynx, and it extends inferiorly to the cricopharyngeus muscle, as it transitions to the cervical esophagus. The major subsites of the hypopharynx are the pyriform sinuses, the postcricoid region, and the pharyngeal wall. Tumors often present here at advanced stages and can be difficult to cure, and because of their location can impact swallowing and speech function adversely. Spread to the upper, middle, and lower jugular lymph nodes (Levels II–IV) and the retropharyngeal nodes is common in these cancers. Two other hallmarks of hypopharyngeal cancers are submucosal spread and skip areas of spread. Surgery had been the mainstay of primary treatment for hypopharyngeal cancers for many years, but increasingly radiotherapy and chemoradiotherapy are used to treat cancers in this location with success.

LARYNX

The larynx is the most complex of the mucosal lined structures of the UADT. The important roles of the larynx in speech, swallowing, and airway protection make the treatment considerations of cancers of this structure varied and controversial. The larynx is bordered by the oropharynx superiorly, the trachea inferiorly, and the hypopharynx laterally and posteriorly. The larynx is

comprised of a cartilaginous framework, and is subdivided vertically by the vocal folds into the supraglottic, glottic, and subglottic subsites. The supraglottic larynx includes the epiglottis, which has both lingual and laryngeal surfaces, the false vocal cords, the arytenoids cartilages, and the aryepiglottic folds. Anterior to the supraglottis is the pre-epiglottic space. This is a complex space with a rich lymphatic network that contributes to the early and bilateral spread of tumors that arise from supraglottic structures to upper, middle, and lower jugular chain lymph nodes (Levels II-IV).

The glottic larynx describes the true vocal folds, where they come together anteriorly at the anterior commissure, as well as where they meet the mobile laryngeal cartilages at the posterior commissure. The glottic larynx extends from the ventricle to 1 centimeter (cm) below the level of the true folds. The vocal folds are lined with stratified squamous epithelium, which contrasts with the pseudostratified, ciliated respiratory mucosa lining the remainder of the larynx. Glottic laryngeal cancers tend to metastasize unilaterally, and regional spread is less common than with supraglottic tumors. Between the thyroid cartilage and the vocal fold lies the paraglottic space, which is continuous with the pre-epiglottic space. This serves as a pathway for submucosal spread of tumors from the glottis to the supraglottis and/or subglottis, or vice versa, which is known as transglottic spread.

The subglottic larynx starts 1 cm below the vocal folds and continues to the inferior aspect of the cricoid cartilage. While it is rare for tumors to arise initially in the subglottis, tumors arising in the supraglottic or glottic larynx commonly spread in a "transglottic" fashion to involve the subglottic larynx. Subglottic tumors tend to metastasize to paratracheal (Level VI) as well as middle or lower jugular lymph (Levels III and IV) node groups.

Treatment of laryngeal cancers varies widely from center to center. For early-stage lesions, radiotherapy and transoral endoscopic excision are the most common treatment options. Both yield excellent tumor control, but proponents of each modality often disagree on the functional sequelae of the two types of treatment. However, good long-term functional data are lacking. Treatment of more advanced tumors can be even more controversial, but while total laryngectomy was long held as the gold standard for treating T3 and T4 larynx cancers, chemoradiotherapy has been shown to be quite effective in achieving local regional control, survival, and organ preservation. Concomitant chemoradiotherapy may be most appropriate for T3 and early

T4 primary lesions, while upfront surgery with adjuvant postoperative treatment can have improved disease control for advanced T4 tumors. Treatment of both sides of the neck must be taken into consideration when treating supra- and subglottic tumors, and unilateral neck treatment is considered for patients with advanced glottic tumors.

NASOPHARYNX

The nasopharynx is a cuboidal structure bounded anteriorly by the choanae at the back of the nose, where pseudostratified ciliated columnar cells are found. The roof and posterior walls of the nasopharynx are made up of the sphenoid bone and the upper cervical vertebrae, covered with a stratified squamous epithelial lining. Inferiorly, at the level of the soft palate, the nasopharynx meets the superior oropharynx. The opening of the Eustachian tube is found at the posterior-superior aspect of either lateral nasopharyngeal wall; therefore, impingement of this opening by a nasopharyngeal tumor can lead to Eustachian dysfunction manifested by a middle-ear effusion and hearing loss. Thus, all adult patients with an unexplained unilateral middle-ear effusion, particularly in areas where nasopharyngeal carcinoma is endemic (such as southern China, northern Africa, and Greenland), should have their nasopharynx examined.

The adenoids, consisting of mucosa-covered lymphoid tissue, are found posteriorly and superiorly in the nasopharynx and are more prominent in children than adults. While minor salivary tumors can occur in the nasopharynx, most nasopharyngeal cancers are derived from the mucosal lining and fit into one of the three histologic subtypes described by the World Health Organization (WHO). WHO Type I nasopharyngeal carcinoma (NPC) is keratinizing squamous carcinoma, and WHO Type II is nonkeratinizing squamous cell carcinoma. WHO Type III is an undifferentiated tumor, also known as lymphoepithelioma. The Epstein-Barr virus is thought to play a pathogenic role in the development of Type II and III tumors.

Nasopharyngeal carcinoma may also metastasize to retropharyngeal and parapharyngeal lymph nodes, as well as lymph nodes along the upper, lower, and middle jugular (Levels II-V) chains and the posterior triangle of the neck (Level V). Early-stage NPC is most often treated with radiotherapy alone, and in more advanced cases, such as T3/4 and/or N+ patients, concomitant chemotherapy is being increasingly utilized. Surgery is rarely used in salvage situations at the primary site or neck.

NASAL CAVITY AND PARANASAL SINUSES

The paranasal sinuses consist of the paired maxillary sinuses, the superior frontal sinuses, the bilateral ethmoid system, and the central sphenoids. This region includes the lining of the nasal cavity (medial maxillary walls), as well as the nasal septum. The majority of sinonasal carcinomas arise in the maxillary sinuses and are most commonly squamous cell carcinomas, although adenocarcinomas are described, especially in woodworkers. Because of inherent bone involvement, initial treatment is usually surgical, with consideration for adjuvant radiation therapy based upon stage and pathologic findings. Reconstruction and rehabilitation, especially in cases with orbital involvement, may be prosthetic or tissue based.

Sinonasal carcinomas of the anterior skull base include a variety of pathologies. Standard treatment is multidisciplinary, including craniofacial surgical intervention with adjuvant radiation with or without chemotherapy. Charged-particle radiation, such as proton beam radiation, may be considered in patients with involvement near the anterior skull base and/or orbit. Due to the improved control of the beam's depth of penetration, treatment dose can be optimized, while minimizing collateral damage to adjacent vital structures.

B. Radiation Therapy and Chemotherapy

External beam radiation therapy (RT) alone or in conjunction with chemotherapy has a well-established role in the treatment of head and neck cancer as definitive therapy or as adjuvant to primary surgical treatment. The last two decades have seen tremendous technological developments in targeting and delivery of RT in a complex treatment site, such as the head and neck.

Three-dimensional (3-D) conformal RT marked a significant improvement over the conventional two-dimensional, three-field setup in better delineation of tumor volume and nodal volume. This improvement allows limited dosing to normal tissue, while adequately treating the tumor. However, 3-D conformal planning does not always result in optimal shielding of critical normal tissues (e.g., salivary glands and visual apparatus), due to current beam constraints.

Intensity-modulated radiation therapy (IMRT) allows for better sparing of such critical normal tissues by modulating the radiation beam in multiple small beamlets, while at the same time adequately covering the tumor volume. With the advent of IMRT, it is also very important for the clinician

to be acutely aware of radiologic anatomy (levels of nodal disease, pathways of locoregional spread of tumor, and delineation of postoperative tumor bed), while utilizing computed tomography scan, magnetic resonance imaging, and positron emission tomography scan for treatment planning.

Preoperative clinical and radiologic evaluation of disease is extremely important for postoperative radiotherapy planning, as tissue planes may be obscured after surgery. Such evaluation is also valuable in determining whether ipsilateral or bilateral neck disease needs to be addressed based on tumor location, extent, and size; initial nodal presentation; and likelihood of contralateral nodal involvement. Certain primary tumor sites have a high risk of retropharyngeal nodal involvement (nasopharynx, pyriform sinus, and tongue base), and these nodal groups should be covered in RT target volumes for these tumors. Approximately 20 percent of anterior tongue and floor of mouth cancers may have skip nodal metastasis to the Level IV nodal region, and should be included in RT volumes.

Important considerations in RT planning following surgical resection include a thorough evaluation of the surgical pathology report with respect to resection margins, extension to soft tissue/bone, and perineural or lympho-vascular invasion at the primary site and size; extra-capsular spread (ECS); and number and level of nodal involvement. Postoperative patients with ECS are at high risk for locoregional recurrence. Careful adjuvant treatment planning includes consideration of radiation dose (60–66 gray [Gy]), addition of concurrent chemotherapy (Radiation Therapy Oncology Group [RTOG] 95-01), extension of the RT clinical target volume to include overlying skin, and elective irradiation of contralateral neck nodes. The clinical target volume in radiation therapy of a clinically or pathologically involved neck typically extends up to the skull base to treat the highest neck nodes. In the contralateral elective neck irradiation, the highest-treated nodes are jugulo-digastric nodes.

Adjuvant RT should ideally begin within 4–6 weeks following primary surgical resection and neck dissection, unless postoperative complications significantly delay wound healing. Delaying adjuvant therapy has been shown to significantly decrease locoregional control.

While it has not been shown to have the ability to cure head and neck cancer as a sole treatment modality, chemotherapy has been found to provide patients with significant improvement in disease control; organ preservation;

and a potential decrease in late distant metastatic disease, in certain clinic scenarios. The use of chemotherapy typically is through one of the following approaches: *concomitant adjuvant* (given along with RT in the postoperative setting); *adjuvant* (given alone after the completion of surgery, RT, or both); or *palliative* (given to patients with incurable recurrence or metastatic head and neck cancer to improve survival and/or quality of life).

Concurrent chemotherapy is the most commonly used of the chemotherapeutic options, and is utilized to potentiate the effects of RT in order to achieve improved locoregional control and organ preservation. This treatment strategy has been found to have particular application in treating moderately advanced cancers of the pharynx and larynx (Stage III-IV, excluding T4 laryngeal and hypopharyngeal tumors). In these instances, concomitant chemoradiation has been found to provide improved locoregional control and, in some studies, improved overall survival, all while allowing for larynx preservation in one-half to two-thirds of patients. Platinum-based agents, such as cisplatin and carboplatin, are typically the compounds of choice used in these regimens, given on days 1, 22, and 43 of RT.

Concomitant adjuvant chemoradiation therapy is the use of combined chemotherapy and RT in the postoperative setting. As mentioned above, such adjuvant therapy should be instituted within 6 weeks of the primary surgery. The addition of chemotherapy to postoperative radiation has been shown to yield improved locoregional control and overall survival in patients with evidence of positive margins, multiple positive lymph nodes, and/or the presence of extracapsular spread in cervical lymph nodes. Typical agents used are platinum-based compounds (cisplatin or carboplatin) and 5-fluorouracil. The addition of chemotherapy to adjuvant RT has also been shown to result in increased local toxicity.

Although recurrent and/or metastatic head and neck cancers are generally incurable, palliative chemotherapy has been shown to delay the time until cancer progression and to improve survival modestly. Platinum drugs, 5-fluorouracil, methotrexate, and cetuximab are frequently offered to otherwise healthy patients with incurable head and neck cancers.

In an effort to focus more specifically on head and neck cancers from a molecular level, additional studies are also ongoing to establish the role of different biologic agents in the treatment of this group of tumors. The epidermal growth factor receptor (EGFR) system is currently the most widely

studied area. EGFR overexpression has been shown to be related to more advanced tumor stage and nodal stage, as well as worse prognosis in terms of locoregional control and overall survival. As a result, numerous compounds are under investigation to evaluate their effect on progression of disease. The most widely studied compound in the treatment of head and neck cancer is cetuximab, a monoclonal antibody that inhibits the EGFR. The use of biologic agents in head and neck cancer is an area of many ongoing research efforts.

II. American Joint Committee on Cancer (AJCC) Tumor Staging by Site

A. Oral Cavity

The anterior border is the junction of the skin and vermilion border of the lip. The posterior border is formed by the junction of the hard and soft palates superiorly, the circumvallate papillae inferiorly, and the anterior tonsillar pillars laterally. The various sites within the oral cavity include the lip, gingival, hard palate, buccal mucosa, floor of mouth, anterior two-thirds of tongue, and retromolar trigone.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- Tis Carcinoma *in situ*
- T1 Tumor 2 cm or less in greatest dimension
- T2 Tumor more than 2 cm but not greater than 4 cm in greatest dimension
- T3 Tumor more than 4 cm in greatest dimension
- T4a Moderately advanced local disease*
Tumor invades through cortical bone, inferior alveolar nerve, floor of mouth, or skin of face—that is, chin or nose (oral cavity). Tumor invades adjacent structures (e.g., through cortical bone, into deep [extrinsic] muscle of tongue [genioglossus, hypoglossus, palatoglossus, and styloglossus], maxillary sinus, skin of face)
- T4b Very advanced local disease
Tumor invades masticator space, pterygoid plates, or skull base and/or encases internal carotid artery

*Note: Superficial erosion alone of bone/tooth socket by gingival primary is not sufficient to classify as T4.

B. Oropharynx

The oropharynx includes the base of the tongue, the inferior surface of the soft palate and uvula, the anterior and posterior tonsillar pillars, the glossotonsillar sulci, the pharyngeal tonsils, and the lateral and posterior pharyngeal walls.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- Tis Carcinoma *in situ*
- T1 Tumor 2 cm or less in greatest dimension
- T2 Tumor more than 2 cm but not more than 4 cm in greatest dimension
- T3 Tumor more than 4 cm in greatest dimension or extension to lingual surface of epiglottis
- T4a Moderately advanced local disease
Tumor invades the larynx, deep/extrinsic muscle of the tongue, medial pterygoid, hard palate, or mandible*
- T4b Very advanced local disease
Tumor invades the lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base, or encases the carotid artery

**Note: Mucosal extension to lingual surface of epiglottis from primary tumors of the base of the tongue and vallecula does not constitute invasion of larynx.*

C. Larynx

The larynx includes all laryngeal structures from the tip of the epiglottis to the cricoid cartilage inferiorly and is subdivided into three specific sites: supraglottis, glottis, and subglottis.

Sites of the Larynx

Site	Subsite
Supraglottis	Suprahyoid epiglottis
	Infrahyoid epiglottis
	Aryepiglottic folds (laryngeal aspect)
	Arytenoids
	Ventricular bands (false vocal folds)

Glottis	True vocal folds, including anterior and posterior commissures; occupies a horizontal plane 1 cm in thickness, extending inferiorly from the lateral margin of the ventricle
Subglottis	Region extending from the lower boundary of the glottis to the lower margin of the cricoid cartilage

PRIMARY TUMOR (T)

TX Primary tumor cannot be assessed

T0 No evidence of primary tumor

Tis Carcinoma *in situ*

Supraglottis

T1 Tumor limited to one subsite of the supraglottis with normal vocal fold mobility

T2 Tumor invades mucosa of more than one adjacent subsite of the supraglottis or glottis or region outside the supraglottis (e.g., mucosa of base of tongue, vallecula, medial wall of pyriform sinus) without fixation of the larynx

T3 Tumor limited to the larynx with vocal fold fixation and/or invades any of the following: postcricoid area, pre-epiglottic tissues, paraglottic space, and/or inner cortex of thyroid cartilage

T4a Moderately advanced local disease
Tumor invades through the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)

T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

Glottis

T1 Tumor limited to the vocal fold(s) (may involve anterior or posterior commissure) with normal mobility

T1a Tumor limited to one vocal fold

T1b Tumor involves both vocal folds

T2 Tumor extends to the supraglottis and/or subglottis, and/or with impaired vocal fold mobility

T3 Tumor limited to the larynx with vocal fold fixation and/or invasion of paraglottic space, and/or inner cortex of the thyroid cartilage

T4a Moderately advanced local disease
Tumor invades the outer cortex of the thyroid cartilage and/or invades

tissues beyond the larynx (e.g., trachea, soft tissues of the neck, including deep extrinsic muscle of the tongue, strap muscles, thyroid, or esophagus)

- T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

Subglottis

- T1 Tumor limited to the subglottis
- T2 Tumor extends to the vocal cord(s) with normal or impaired mobility.
- T3 Tumor limited to the larynx with vocal fold fixation.
- T4a Moderately advanced local disease
Tumor invades cricoid or thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of the neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus)
- T4b Very advanced local disease
Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

D. Hypopharynx

The hypopharynx includes the pyriform sinuses, the lateral and posterior hypopharyngeal walls, and the postcricoid region.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- Tis Carcinoma *in situ*
- T1 Tumor limited to one subsite of the hypopharynx and is 2 cm or less in greatest dimension
- T2 Tumor invades more than one subsite of the hypopharynx or an adjacent site, or measures more than 2 cm but not more than 4 cm in greatest dimension without fixation of the hemilarynx or extension to the esophagus
- T3 Tumor more than 4 cm in greatest dimension or with fixation of the hemilarynx or extension to the esophagus
- T4a Moderately advanced local disease
Tumor invades thyroid/cricoid cartilage, hyoid bone, thyroid gland, esophagus, or central compartment soft tissue*

- T4b Very advanced local disease
Tumor invades prevertebral fascia, encases carotid artery, or involves mediastinal structures

**Note: Central compartment soft tissue includes prelaryngeal strap muscles and subcutaneous fat.*

E. Nasal Cavity and Paranasal Sinuses

The paranasal sinuses include the ethmoid, maxillary, sphenoid, and frontal sinuses.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
T0 No evidence of primary tumor
Tis Carcinoma *in situ*

Maxillary Sinus

The maxillary sinus is a pyramid-shaped cavity within the maxillary bone. The medial border is the lateral nasal wall. Superiorly, the sinus abuts the orbital floor and contains the infraorbital canal. The posterolateral wall is anterior to the infratemporal fossa and pterygopalatine fossa. The anterior wall is posterior to the facial skin and soft tissue. The floor of the maxillary antrum extends below the nasal cavity floor and is in close proximity to the hard palate and maxillary tooth roots.

- T1 Tumor limited to the maxillary sinus mucosa with no erosion or destruction of bone
- T2 Tumor causing bone erosion or destruction, including extension into the hard palate and/or middle nasal meatus, except extension to the posterior wall of the maxillary sinus and pterygoid plates
- T3 Tumor invades any of the following: bone of the posterior wall of the maxillary sinus, subcutaneous tissues, floor or medial wall of the orbit, pterygoid fossa, or ethmoid sinuses
- T4a Moderately advanced local disease
Tumor invades anterior orbital contents, skin of cheek, pterygoid plates, infratemporal fossa, cribriform plate, sphenoid or frontal sinuses
- T4b Moderately advanced local disease
Tumor invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than maxillary division of trigeminal nerve (V₂), nasopharynx, or clivus

Nasal Cavity and Ethmoid Sinus

The nasal cavity includes the nasal antrum and the olfactory region. The subsites within the nasal cavity include the septum; superior, middle, and inferior turbinates; and olfactory region of the cribriform plate. The ethmoid sinus is made up of several thin-walled air cells. Laterally, the ethmoid sinus is bound by a thin bone called the lamina papyracea, which separates it from the medial orbit. The posterior border of the ethmoid sinus is close to the optic canal. The anterosuperior border or roof of the ethmoid is formed by the fovea ethmoidalis, which separates it from the anterior cranial fossa. The perpendicular plate of the ethmoid bone separates the ethmoid cavity into left and right sides.

- T1 Tumor restricted to any one subsite, with or without bony invasion
- T2 Tumor invades two subsites in a single region or extending to involve an adjacent region within the nasoethmoidal complex, with or without bony invasion
- T3 Tumor extends to invade the medial wall or floor of the orbit, maxillary sinus, palate, or cribriform plate
- T4a Moderately advanced local disease
Tumor invades any of the following: anterior orbital contents, skin of nose or cheek, minimal extension to anterior cranial fossa, pterygoid plates, sphenoid or frontal sinuses
- T4b Very advanced local disease
Tumor invades any of the following: orbital apex, dura, brain, middle cranial fossa, cranial nerves other than V₂, nasopharynx, or clivus

F. Salivary Glands

The salivary glands include the parotid, submandibular, sublingual, and minor salivary glands.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- T1 Tumor 2 cm or less in greatest dimension without extraparenchymal extension
- T2 Tumor greater than 2 cm but not more than 4 cm in greatest dimension without extraparenchymal extension*

- T3 Tumor more than 4 cm and/or tumor having extraparenchymal extension
- [T4a](#) Moderately advanced local disease
Tumor invades the skin, mandible, ear canal, and/or facial nerve
- [T4b](#) Very advanced local disease
Tumor invades the skull base and/or pterygoid plates and/or encases the carotid artery

**Note: Extraparenchymal extension is a clinical macroscopic evidence of invasion of soft tissues. Microscopic evidence alone does not constitute extraparenchymal extension for classification purposes.*

G. Neck Staging under the TNM Staging System for Head and Neck Tumors

This staging system excludes the nasopharynx and thyroid.

REGIONAL LYMPH NODES (N)

- NX Regional lymph nodes cannot be assessed
- N0 No regional nodes metastasis
- N1* Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension
- N2* Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension; or in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension; or in bilateral or contralateral lymph nodes, none greater than 6 cm in greatest dimension
- N2a* Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension
- N2b* Metastasis in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension
- N2c* Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension
- N3* Metastasis in a lymph node more than 6 cm in greatest dimension.

**Note: A designation of "U" or "L" may be used for any N stage to indicate metastasis above the lower border of the cricoid cartilage (U) or below the lower border of the cricoid cartilage (L). Similarly, clinical/radiological ECS should be recorded as E- or E+.*

DISTANT METASTASIS (M)

MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis

H. TNM Staging for the Larynx, Oropharynx, Hypopharynx, Oral Cavity, Salivary Glands, and Paranasal Sinuses

Stage Grouping

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T3	N0	M0
	T1	N1	M0
	T2	N1	M0
	T3	N1	M0
Stage IVA	T4a	N0	M0
	T4a	N1	M0
	T1	N2	M0
	T2	N2	M0
	T3	N2	M0
Stage IVB	T4a	N2	M0
	Any T	N3	M
Stage IVC	T4b	Any N	M0
	Any T	Any N	M1

Clinical Stage Grouping by T and N Status

N	T1	T2	T3	T4a	T4b
N0	I	II	III	IVa	IVb
N1	III	III	III	IVa	IVb
N2	IVa	IVa	IVa	IVa	IVb
N3	IVb	IVb	IVb	IVb	IVb

III. American Joint Committee on Cancer Tumor Staging—Nasopharynx, Thyroid, and Mucosal Melanoma

A. Nasopharynx

The nasopharynx includes the vault, the lateral walls, the posterior walls, and the superior surface of the soft palate.

PRIMARY TUMOR (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma <i>in situ</i>
T1	Tumor confined to the nasopharynx or tumor extends to the oropharynx and/or nasal cavity without parapharyngeal extension
T2	Tumor with parapharyngeal extension
T3	Tumor involves bony structures of skull base and/or paranasal sinuses
T4	Tumor with intracranial extension and/or involvement of cranial nerves, hypopharynx, orbit, or with extension to the infratemporal fossa/masticator space

REGIONAL LYMPH NODES (N)

This site is different from other head and neck sites.

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Unilateral metastasis in cervical lymph node(s), 6 cm or less in greatest dimension, above the supraclavicular fossa, and/or unilateral or bilateral retropharyngeal lymph nodes, 6 cm or less in greatest dimension*
N2	Bilateral metastasis in cervical lymph node(s), 6 cm or less in greatest dimension, above the supraclavicular fossa*
N3	Metastasis in lymph node)* >6 cm and/or to supraclavicular fossa*
N3a	Greater than 6 cm in dimension
N3b	Extension to the supraclavicular fossa**

*Note: Midline nodes are considered ipsilateral nodes.

****Note:** Supraclavicular zones or fossa is relevant to the staging of nasopharyngeal carcinoma and is the triangular region originally described by Ho. It is defined by three points: (1) the superior margin of the sternal end of the clavicle, (2) the superior margin of the lateral end of the clavicle, (3) the point where the neck meets the shoulder. Note that this would include caudal portions of Levels IV and VB. All cases with lymph nodes (whole or part) in the fossa are considered N3b.

Stage Grouping

This stage grouping is unique to regional lymph nodes.

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N1	M0
	T2	N0	M0
	T2	N1	M0
Stage III	T1	N2	M0
	T2	N2	M0
	T3	N0	M0
	T3	N1	M0
	T3	N2	M0
Stage IVA	T4	N0	M0
	T4	N1	M0
	T4	N2	M0
Stage IVB	Any T	N3	M0
Stage IVC	Any T	Any N	M1

B. Thyroid

The thyroid is composed of right and left lobes, with an isthmus connecting the two lobes.

PRIMARY TUMOR (T)

- 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
- T1a Tumor 1 cm or less, limited to the thyroid
- T1b Tumor more than 1 cm but not more than 2 cm in greatest dimension, limited to the thyroid
- T2 Tumor more than 2 cm but not more than 4 cm in greatest dimension, limited to the thyroid
- 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)
- T4a Moderately advanced local disease
Tumor of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve
- T4b Very advanced local disease
Tumor invades prevertebral fascia or encases the carotid artery or mediastinal vessels
- T4a Intrathyroidal anaplastic* carcinoma
- T4b Extrathyroidal anaplastic* carcinoma with gross extrathyroid extension

**All anaplastic carcinomas are considered T4 tumors.*

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
- N1a Metastasis to Level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes)
- N1b Metastasis to unilateral, bilateral, or contralateral cervical Levels I, II, III, IV, or V) or superior mediastinal lymph nodes (Level VII)

DISTANT METASTASIS (M)

- M0 No distant metastasis
- M1 Distant metastasis

Stage Grouping

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

Papillary or Follicular Carcinoma (differentiated)			
<i>Under 45 years</i>			
Stage I	Any T	Any N	M0
Stage II	Any T	Any N	M1
<i>45 years and older</i>			
Stage I	T1	N0	M0
Stage II	T2	N0	M0
	T3	N0	M0
Stage III	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0
Stage IVA	T4a	N0	M0
	T4a	N1a	M0
	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	N1b	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1
Medullary Carcinoma (all age groups)			
Stage I	T1	N0	M0
Stage II	T2	N0	M0
	T3	N0	M0
Stage III	T1	N1a	M0
	T2	N1a	M0
	T3	N1a	M0

Stage IVA	T4a	N0	M0
	T4a	N1a	M0
	T1	N1b	M0
	T2	N1b	M0
	T3	N1b	M0
	T4a	N1b	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1
Anaplastic Carcinoma*			
Stage IVA	T4a	Any N	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

*All anaplastic carcinomas are considered Stage IV.

C. Mucosal Melanoma*

Malignant melanoma involving a mucosal (noncutaneous) site within the upper aerodigestive tract.

PRIMARY TUMOR (T)

- TX Primary tumor cannot be assessed
- T0 No evidence of primary tumor
- T3 Mucosal disease
- T4a Moderately advanced disease
Tumor involving deep soft tissue, cartilage, bone, or overlying skin
- T4b Very advanced disease
Tumor involving brain, dura, skull base, lower cranial nerves (IX, X, XI, or XII), masticator space, internal or common carotid artery, prevertebral space, or mediastinal structures

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 metastases
- N1 Regional lymph node metastases present

DISTANT METASTASIS (M)

- MX Distant metastasis cannot be assessed
- M0 No distant metastasis
- M1 Distant metastasis

Stage Grouping*

Stage III	T3	N0	M0
Stage IVA	T4a	N0	M0
	T3-T4a	N1	M0
Stage IVB	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

*Note: Mucosal melanoma is an aggressive group of tumors. As a result, T1-T2 and Stage I and II are omitted.

IV. Definition of Lymph Node Groups

The level system for describing the location of lymph nodes in the neck consists of Level I, submental and submandibular group; Level II, upper jugular group; Level III, middle jugular group; Level IV, lower jugular group; Level V, posterior triangle group; and Level VI, anterior compartment (Figure 1).

A. Levels IA and IB: Submental and Submandibular Groups

IA—SUBMENTAL GROUP

Lymph nodes within the triangular boundary of the anterior belly of the digastric muscles and the hyoid bone are at greatest risk for harboring

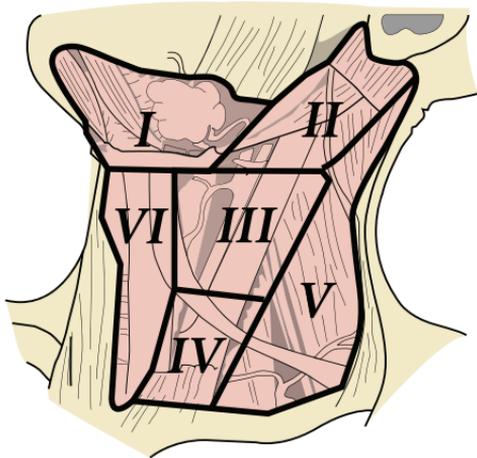


FIGURE 1 The level system for describing the location of lymph nodes in the neck: Level I, submental and submandibular group; Level II, upper jugular group; Level III, middle jugular group; Level IV, lower jugular group; Level V, posterior triangle group; Level VI, anterior compartment.

metastases from cancers arising from the floor of mouth, anterior oral tongue, anterior mandibular alveolar ridge, and lower lip (Figure 2).

IB—SUBMANDIBULAR GROUP

This group consists of lymph nodes within the boundaries of the anterior and posterior bellies of the digastric muscles, the stylohyoid muscle, and the body of the mandible. The group includes the pre- and postglandular nodes, and the pre- and postvascular nodes. The submandibular gland is included in the specimen when the lymph nodes within this triangle are removed. These nodes are at greatest risk for harboring metastases from the cancers arising from the oral cavity, anterior nasal cavity, soft tissue structures of the midface, and submandibular gland (Figure 3).

B. Levels IIA and IIB: Upper Jugular Group

This group is comprised of lymph nodes located around the upper third of the internal jugular vein and adjacent spinal accessory nerve extending from the level of the skull base (above) to the level of the inferior border of the hyoid bone (below). The anterior (medial) boundary is the lateral border of the sternohyoid muscle and the stylohyoid muscle, and the posterior (lateral) boundary is the posterior border of the sternocleidomastoid muscle. Sublevel IIA nodes are located anterior (medial) to the vertical plane defined by the spinal accessory nerve. Sublevel IIB nodes are located posterior (lateral) to the vertical plane defined by the spinal accessory nerve. The upper jugular nodes are at greatest risk for harboring metastases from cancers arising from the oral cavity, nasal cavity, nasopharynx, oropharynx, hypopharynx, larynx, and parotid gland (Figure 3).

C. Level III: Middle Jugular Group

This group consists of lymph nodes located around the middle third of the internal jugular vein extending from the inferior border of the hyoid bone (above) to the inferior border of the cricoid cartilage (below). The anterior (medial) boundary is the lateral border of the sternohyoid muscle, and the posterior (lateral) boundary is the posterior border of the sternocleidomastoid muscle. (Included in this group is the jugulo-omohyoid node, which lies immediately above the superior belly of the omohyoid muscle as it crosses the internal jugular vein.) These nodes are at greatest risk for harboring

FIGURE 2
Dark lines depict the boundaries of the submental (IA) and anterior compartment (VI) lymph nodes.

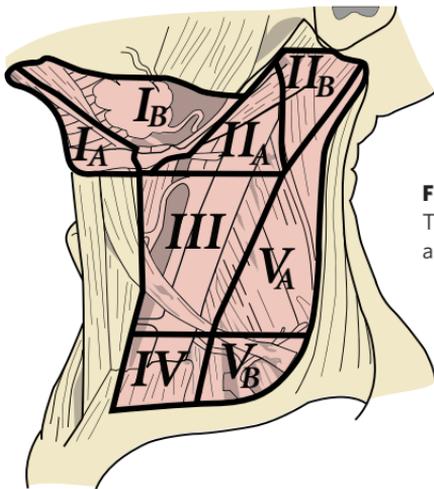
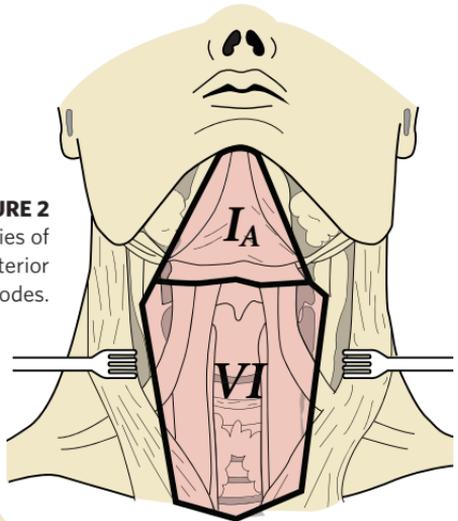


FIGURE 3
The boundaries dividing levels I, II, and V into sublevels A and B.

metastases from cancers arising from the oral cavity, nasopharynx, oropharynx, hypopharynx, and larynx (Figure 3).

D. Level IV: Lower Jugular Group

This group consists of lymph nodes located around the lower third of the internal jugular vein extending from the inferior border of the cricoid (above) to the clavicle (below). The anterior (medial) boundary is the lateral border of the sternohyoid muscle, and the posterior (lateral) boundary is the posterior

border of the sternocleidomastoid muscle. These nodes are at greatest risk for harboring metastases from cancers arising from the hypopharynx, cervical esophagus, and larynx (Figure 3).

E. Levels VA and VB: Posterior Triangle Group

This group is comprised predominantly of the lymph nodes located along the lower half of the spinal accessory nerve and the transverse cervical artery, along with the supraclavicular nodes. The superior boundary is the apex formed by a convergence of the sternocleidomastoid and the trapezius muscles, the inferior boundary is the clavicle, the anterior (medial) boundary is the posterior border of the sternocleidomastoid muscle, and the posterior (lateral) boundary is the anterior border of the trapezius muscle. Sublevel VA is separated from Sublevel VB by a horizontal plane marking the inferior border of the arch of the cricoid cartilage. Sublevel VA includes the spinal accessory nodes, and Sublevel VB includes the nodes following the transverse cervical vessels and the supraclavicular nodes. (Virchow's node is located in Level IV.) The posterior triangle nodes are at greatest risk for harboring metastases from cancers arising from the nasopharynx and oropharynx (Sublevel VA), and the thyroid gland (Sublevel VB) (Figure 3).

The surgical landmark that defines the lateral boundary of Levels II, III, and IV and the corresponding medial boundary of the posterior triangle (Level V) is the plane that parallels the sensory branches of the cervical plexus.

F. Level VI: Anterior (Central) Compartment Group

Lymph nodes in this compartment include the pre- and paratracheal nodes, the precricoid (Delphian) node, and the perithyroidal nodes, including the lymph nodes along the recurrent laryngeal nerves. The superior boundary is the hyoid bone, the inferior boundary is the suprasternal notch, and the lateral boundaries are the common carotid arteries. These nodes are at greatest risk for harboring metastases from cancers arising from the thyroid gland, glottic and subglottic larynx, apex of the pyriform sinus, and cervical esophagus (Figure 2).

V. Conceptual Guidelines for Neck Dissection Classification

A. Radical Neck Dissection

Radical neck dissection (Figure 4) is considered to be the standard basic procedure for cervical lymphadenectomy. All other procedures represent one or more alterations of this procedure. Radical neck dissection refers to the removal of all ipsilateral cervical lymph node groups extending from the inferior border of the mandible superiorly to the clavicle inferiorly; from the lateral border of the sternohyoid muscle, hyoid bone, and contralateral anterior belly of the digastric muscle medially; to the anterior border of the trapezius muscle laterally. Included are all lymph nodes from Levels I through V. The spinal accessory nerve, internal jugular vein, and sternocleidomastoid muscle are also removed. Radical neck dissection does not include removal of the suboccipital nodes, periparotid nodes (except infraparotid nodes located

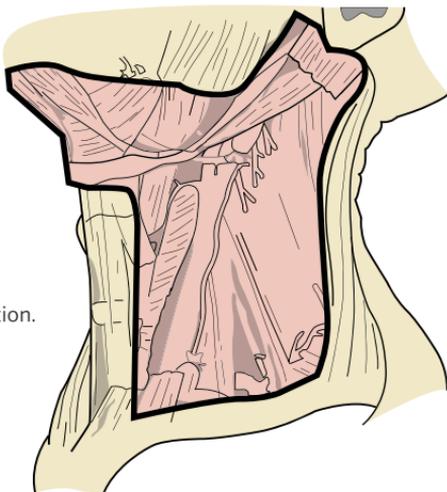


FIGURE 4
Radical neck dissection.

in the posterior aspect of the submandibular triangle), buccinator nodes, retropharyngeal nodes, and midline visceral (central compartment) nodes.

B. Modified Radical Neck Dissection

[Modified radical neck dissection](#) (Figures 5a–c) refers to the excision of all lymph nodes routinely removed by the radical neck dissection, with preservation of one or more nonlymphatic structures: i.e., spinal accessory nerve (SAN), internal jugular vein (IJV), and sternocleidomastoid muscle (SCM). The structure(s) preserved should be specifically named—e.g., “modified radical neck dissection with preservation of the spinal accessory nerve.”

C. Selective Neck Dissection

Selective neck dissection (SND) refers to a cervical lymphadenectomy in which there is preservation of one or more of the lymph node groups that are routinely removed in the radical neck dissection. The lymph nodes groups removed are based on the patterns of metastases that are predictable relative to the primary site of disease. For oral cavity cancers, the lymph nodes at greatest risk are located in Levels I, II, III, and upper IV. The lymph nodes at greatest risk for oropharyngeal, hypopharyngeal, and laryngeal cancers are located in Levels II, III, and IV; for thyroid cancer, they are located in Level VI.

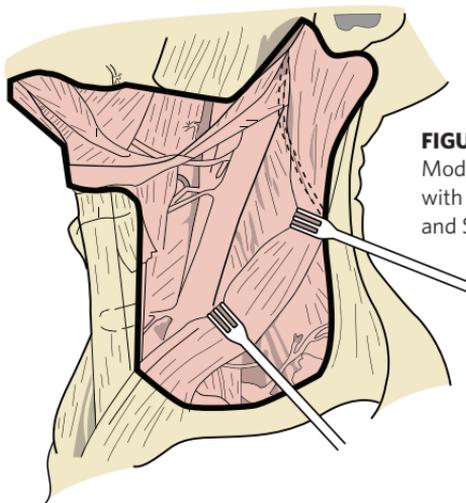


FIGURE 5A
Modified radical neck dissection
with preservation of SCM, IJV,
and SAN.

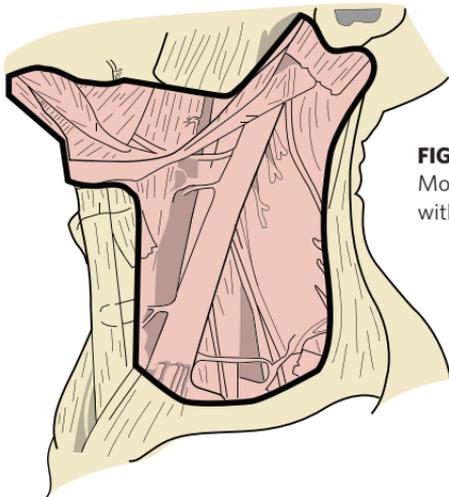


FIGURE 5B

Modified radical neck dissection with preservation of IJV and SAN.

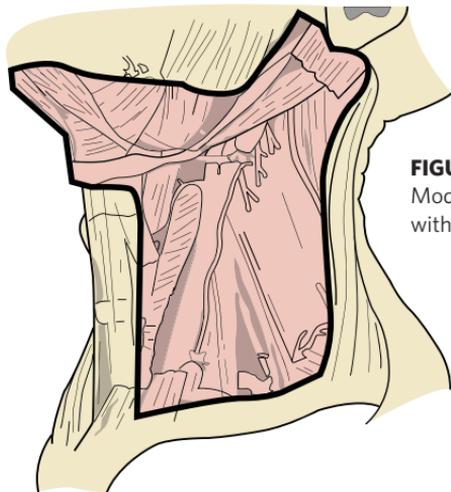


FIGURE 5C

Modified radical neck dissection with preservation of SAN.

Specific variations of the selective neck dissection include:

- [Anterior Neck Dissection](#)—Includes Level VI (Figure 6).
- [Supraomohyoid Neck Dissection](#)—Includes Levels IA & IB, Level IIA or Levels IIA & IIB, and Level III (Figure 7).
- [Lateral Neck Dissection](#)—Includes Level IIA or Levels IIA & IIB, Level III, and Level IV (Figure 8).
- [Posterolateral Neck Dissection](#)—Includes Levels II, III, IV, & V (Figure 9).

Since there is variation of levels and sublevels associated with the names given to the various types of SND, it is recommended to use the term “selective neck dissection” or “SND,” followed by the levels and/or sublevels removed—e.g., SND (IB, IIA, and III).

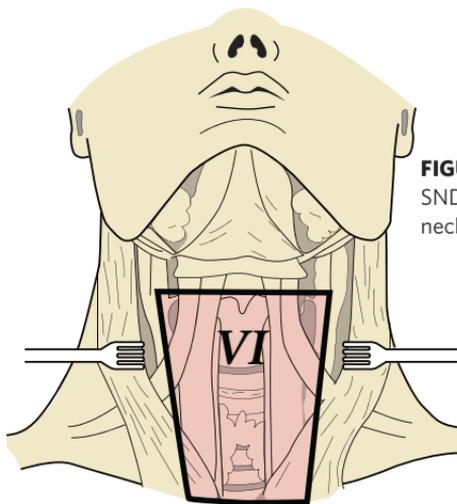


FIGURE 6
SND (Level VI) or anterior neck dissection.

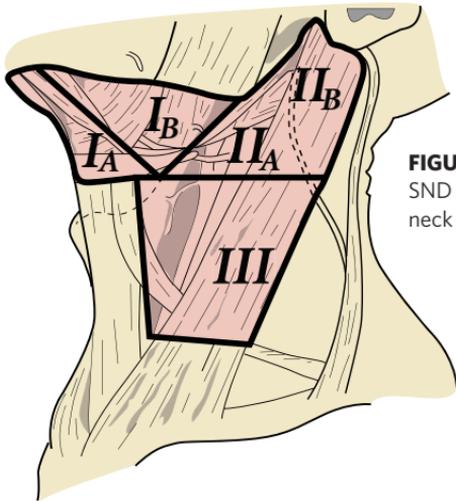


FIGURE 7
SND (Levels I-III) or supraomohyoid neck dissection.

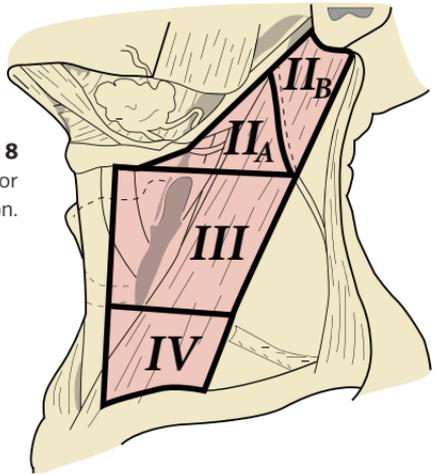


FIGURE 8
SND (Levels II-IV) or lateral neck dissection.

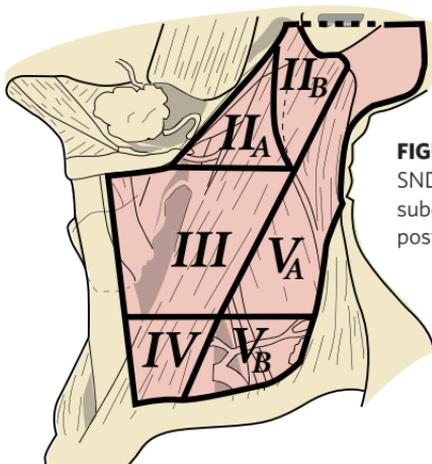


FIGURE 9
SND (Levels II-V), postauricular, suboccipital, external jugular, or posterolateral neck dissection.

D. Extended Radical Neck Dissection

[Extended radical neck dissection](#) (ERND) refers to the removal of one or more additional lymph node groups or nonlymphatic structures, or both, not encompassed by the radical neck dissection (Figure 10). Examples of such lymph node groups include the parapharyngeal (retropharyngeal), superior mediastinal, perifacial (buccinator), and paratracheal lymph nodes. Examples of the nonlymphatic structures include the carotid artery, overlying skin, hypoglossal nerve, vagus nerve, and paraspinal muscles. The additional lymphatic or nonlymphatic structure(s), or both, should be identified.

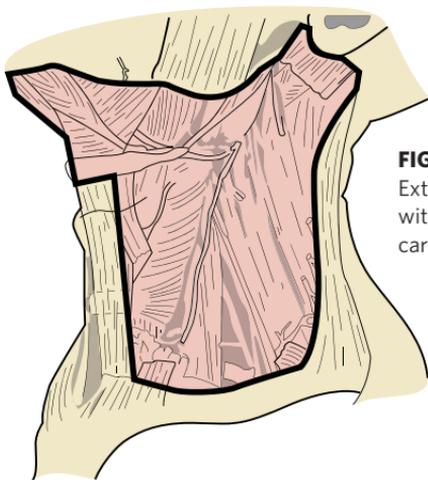


FIGURE 10

Extended radical neck dissection with removal of the common carotid artery or ERND.

VI. Reference Photos

The following photos are linked to the highlighted text of this reference guide. To return to the page where a particular type of carcinoma is mentioned, click on the caption beneath the photo.

Oral Cavity—Stage 0



Right tongue carcinoma *in situ*

Oral Cavity—Stage 1



T1 tongue carcinoma



T1 tongue carcinoma



T1 floor of mouth carcinoma

Oral Cavity—Stage 2



T2 right buccal carcinoma



T2 tongue carcinoma

Oral Cavity—Stage 3



T3 tongue carcinoma

Oral Cavity—Stage 4a



T4a buccal carcinoma

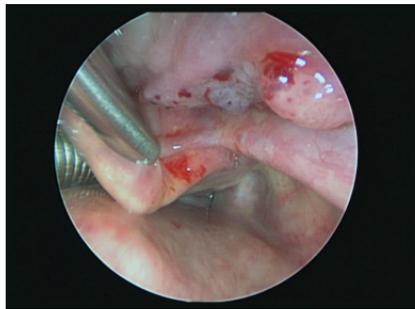
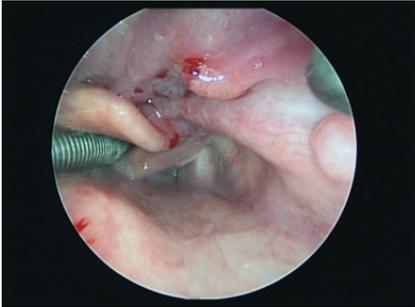


T4a alveolar ridge carcinoma

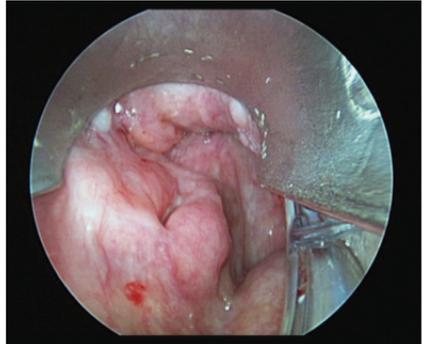


T4a floor of mouth carcinoma

Oropharynx—Stage 1



T1 base of tongue carcinoma



T1 tonsillar carcinoma

Oropharynx—Stage 2



T2 base of tongue carcinoma

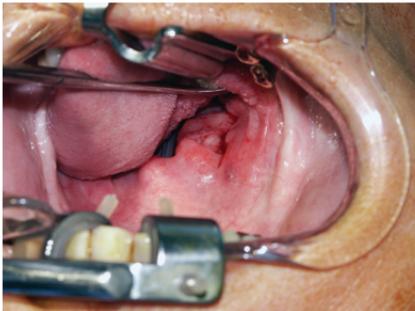
Oropharynx—Stage 3



T3 soft palate carcinoma

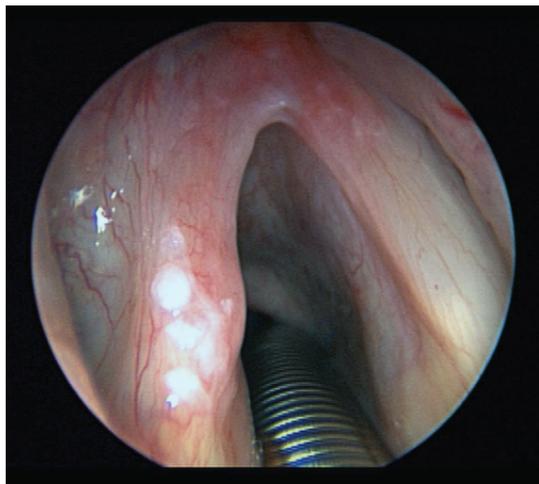


T2 retromolar trigone carcinoma



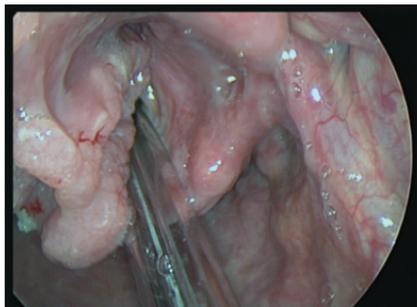
T2 right tonsillar carcinoma

Larynx—Stage 0



Glottic carcinoma *in situ*

Larynx/Supraglottis—Stage 2



T2 supraglottic carcinoma

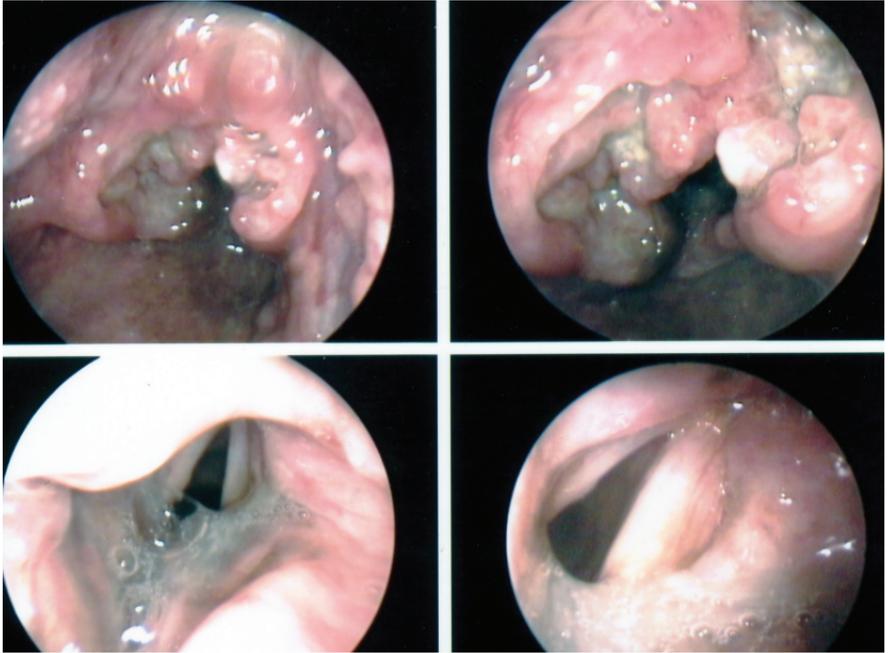


T2 supraglottic carcinoma



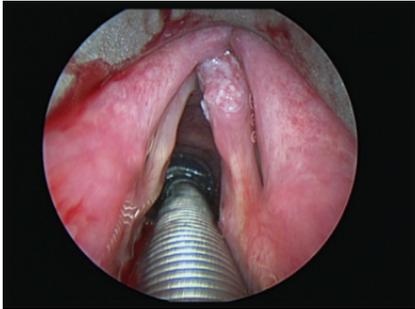
T2 supraglottic carcinoma with medial pyriform extension

Larynx/Supraglottis—Stage 3



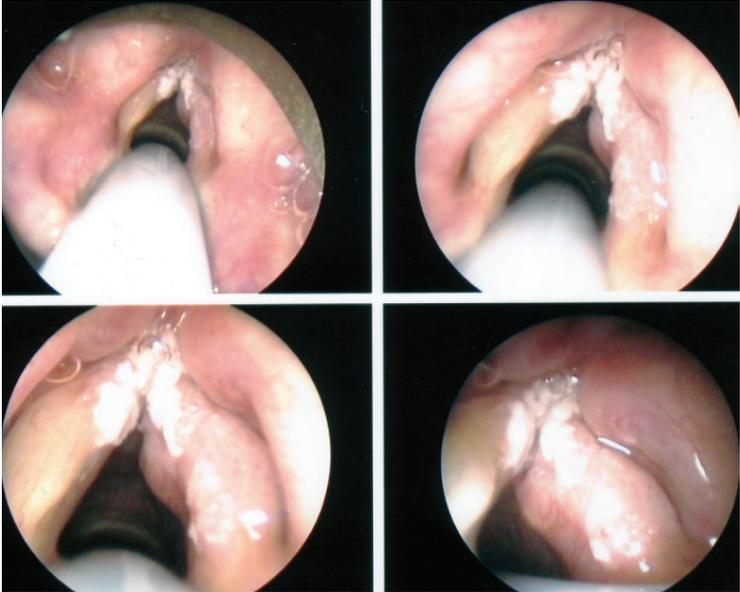
T3 supraglottic carcinoma with preepiglottic invasion

Larynx/Glottis—Stage 1



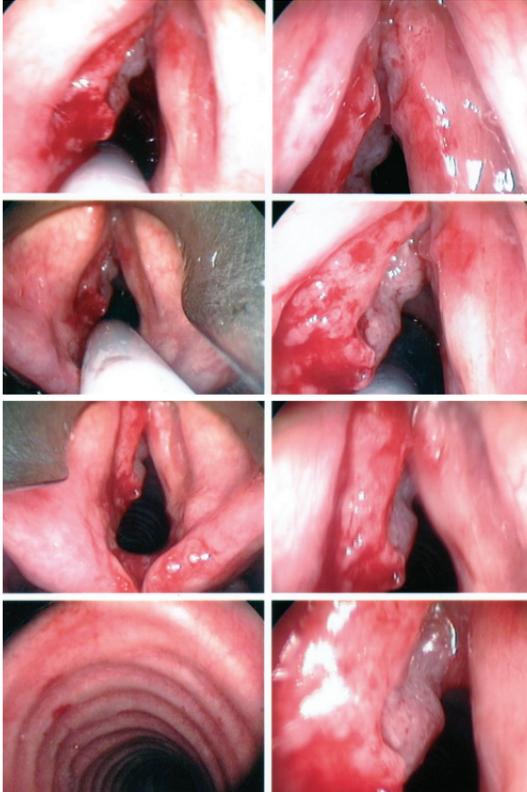
T1 glottic carcinoma

Larynx/Glottis—Stage 1b

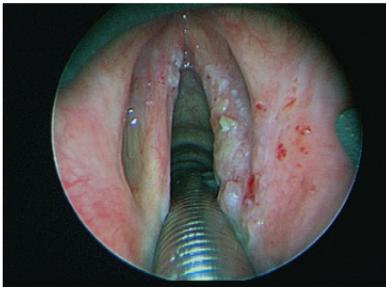


T1b glottic carcinoma

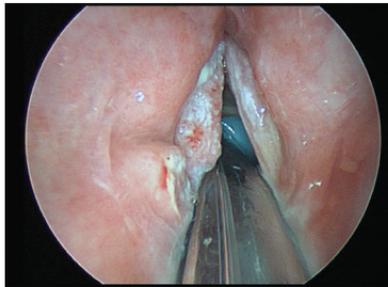
Larynx/Glottis—Stage 2



T2 glottic carcinoma

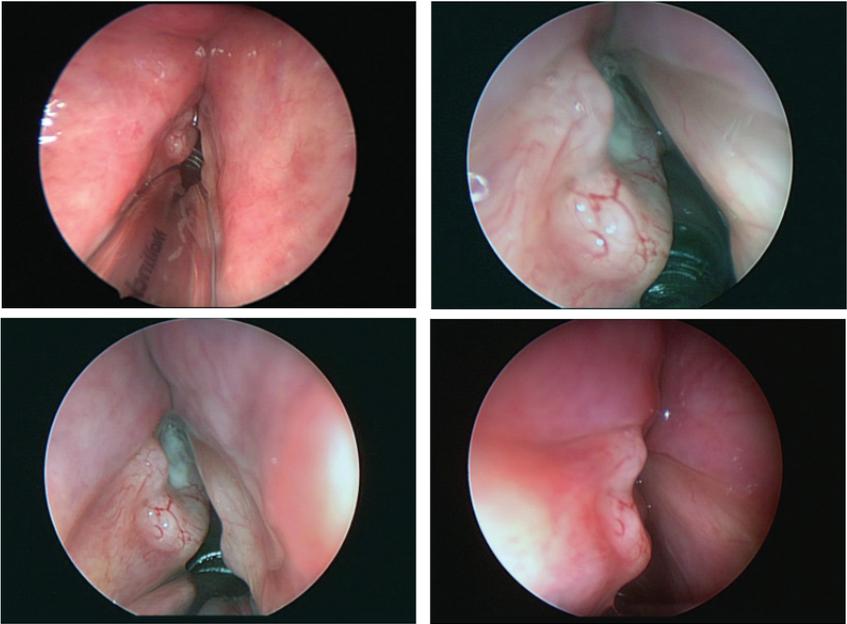


T2 glottic carcinoma



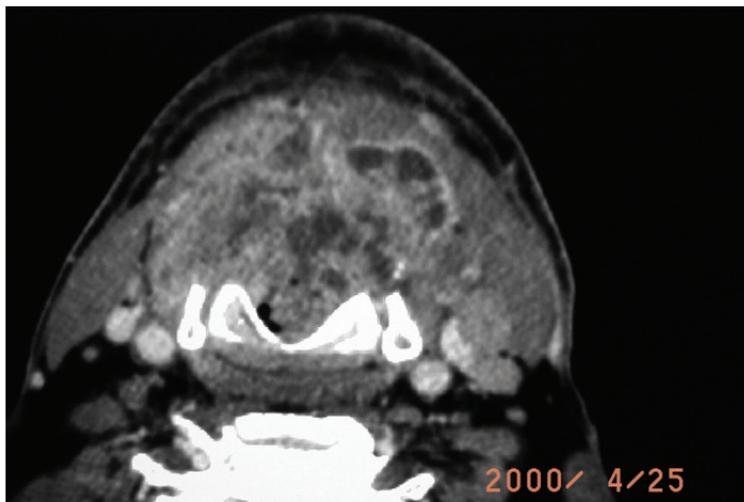
T2 glottic carcinoma with supraglottic extension

Larynx/Glottis—Stage 3



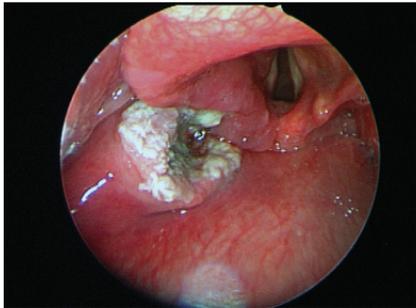
T3 glottic carcinoma

Larynx/Glottis—Stage 4a



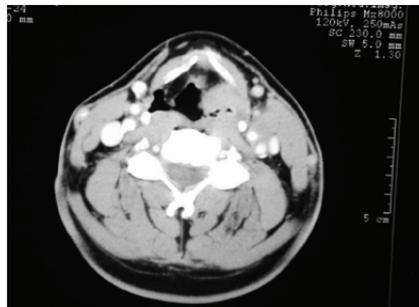
T4a glottic carcinoma

Hypopharynx—Stage 2



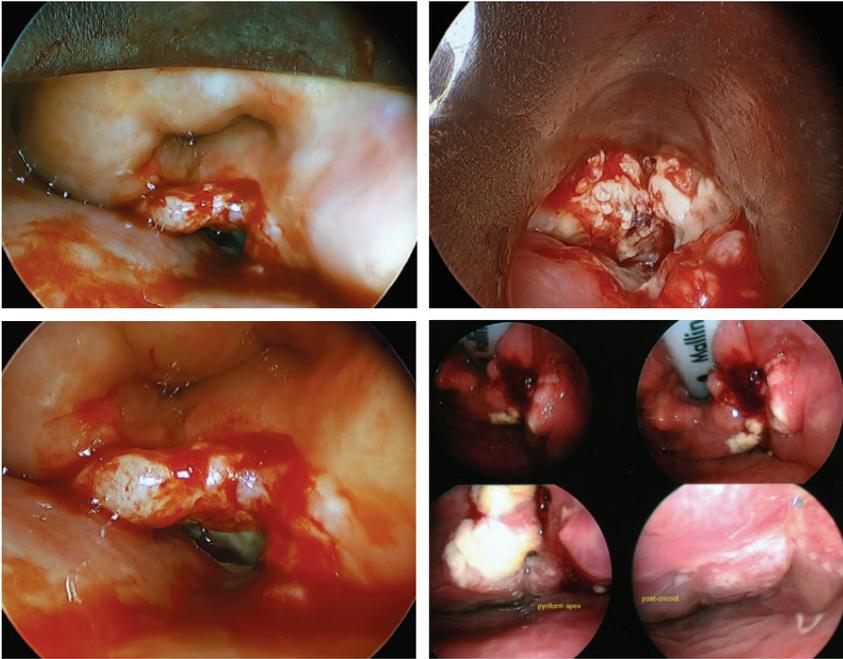
T2 lateral wall pyriform sinus carcinoma

Hypopharynx—Stage 3



T3 pyriform sinus carcinoma

Hypopharynx—Stage 4a



T4a hypopharyngeal carcinoma

Maxillary Sinus—Stage 3



T3 maxillary sinus carcinoma

Salivary Glands—Stage 1



T1 minor salivary mucoepidermoid carcinoma

Salivary Glands—Stage 4a

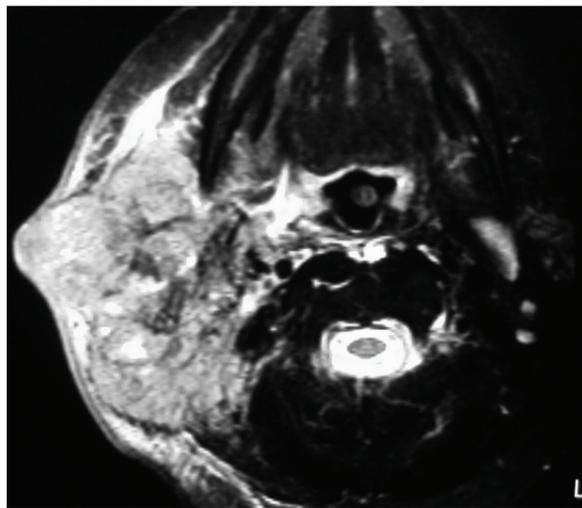
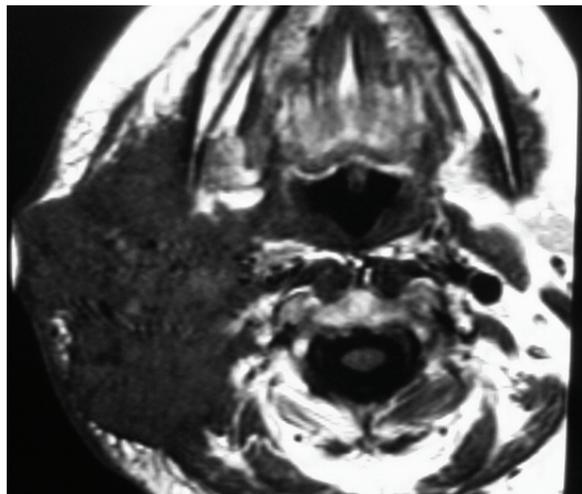


T4a minor salivary gland adenoid cystic carcinoma



T4a parotid carcinoma

Salivary Glands—Stage 4b



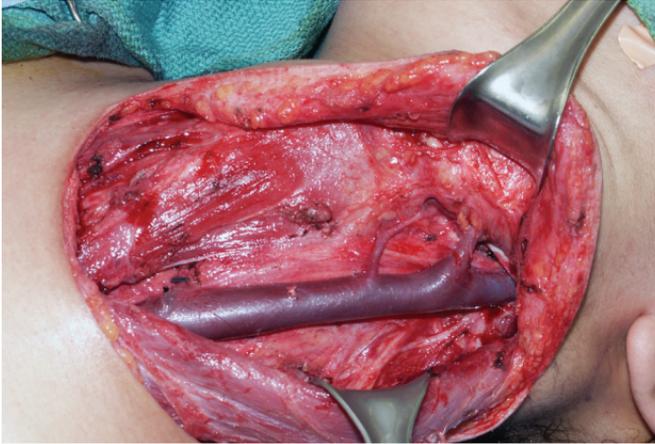
T4b parotid squamous cell carcinoma axial MRI

Radical Neck Dissection



Right radical neck dissection

Modified Radical Neck Dissection (first two of four photos)



Left modified radical neck dissection, sparing sternocleidomastoid muscle, internal jugular vein, and cranial nerve XI

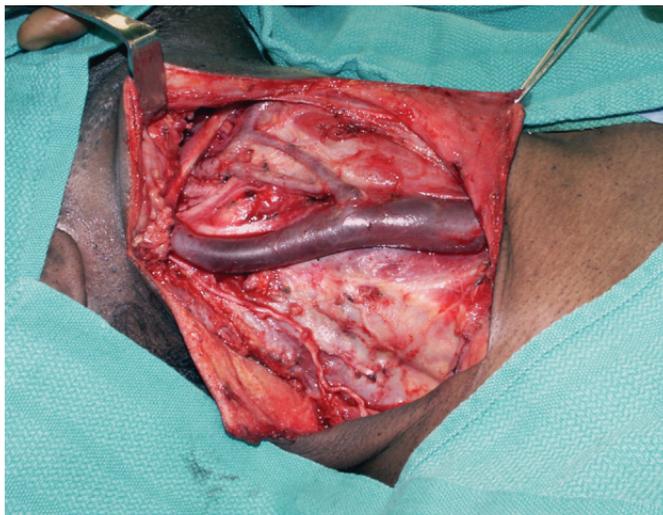


Posterior view of left modified radical neck dissection sparing sternocleidomastoid muscle, sparing internal jugular vein, and cranial XI

Modified Radical Neck Dissection

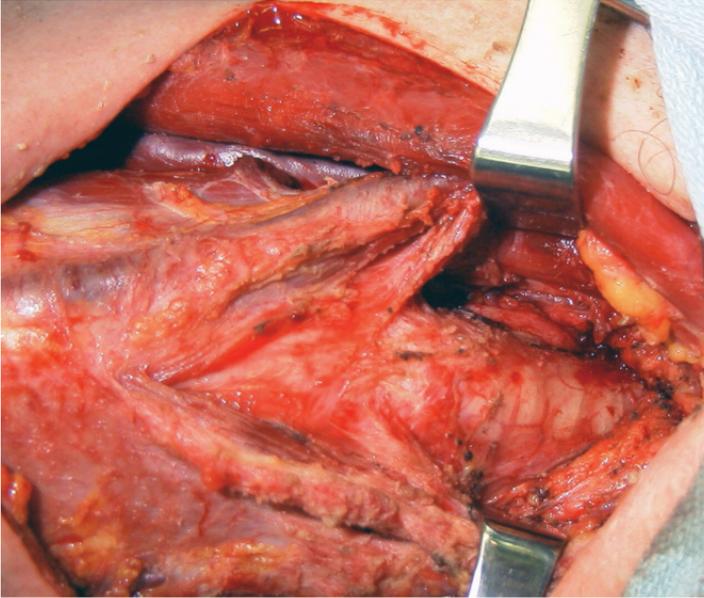


Right modified radical neck dissection, sparing cranial nerve XI



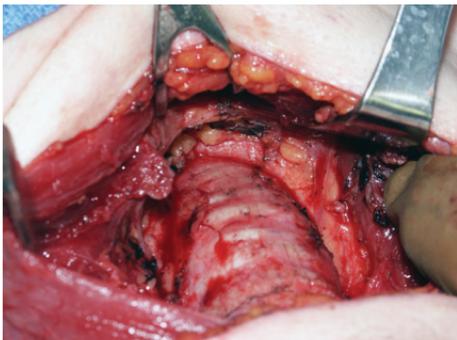
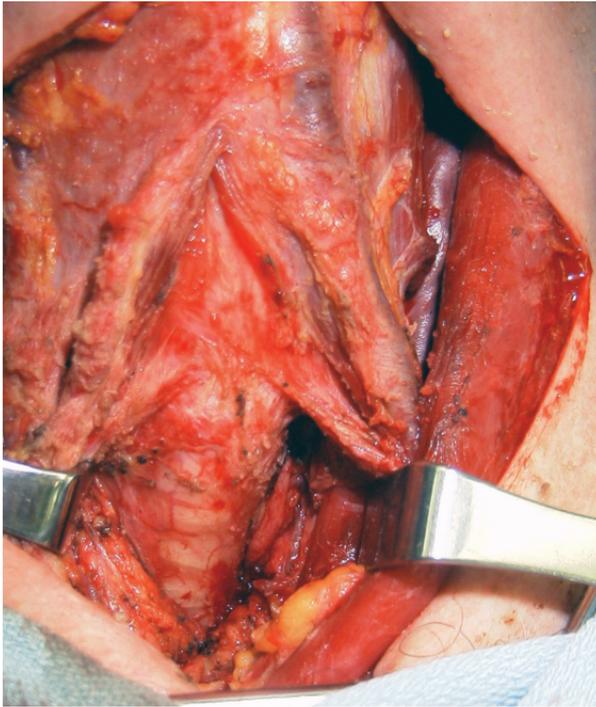
Right modified radical neck dissection, sparing internal jugular vein and cranial nerve XI

Anterior Neck Dissection (first of three photos)



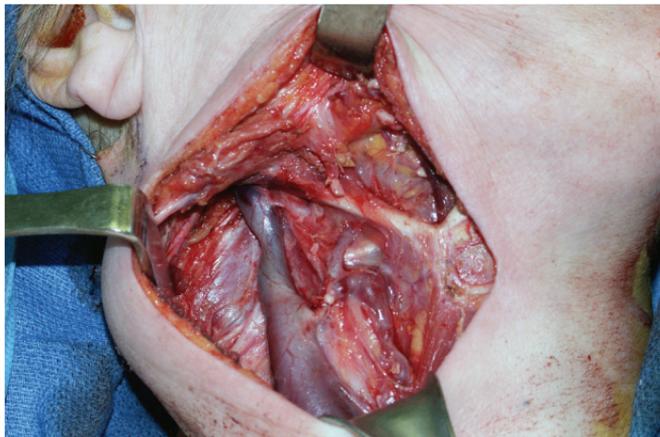
Central compartment carcinoma level VI and left level II, III, IV dissection

Anterior Neck Dissection



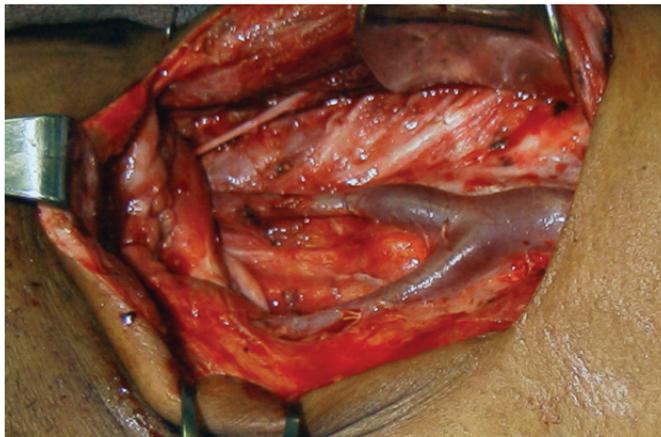
Superior mediastinal extension of central neck dissection

Supraomohyoid Neck Dissection



Right supraomohyoid neck dissection of levels I, II, III

Lateral Neck Dissection



Left lateral neck dissection levels II, III, IV

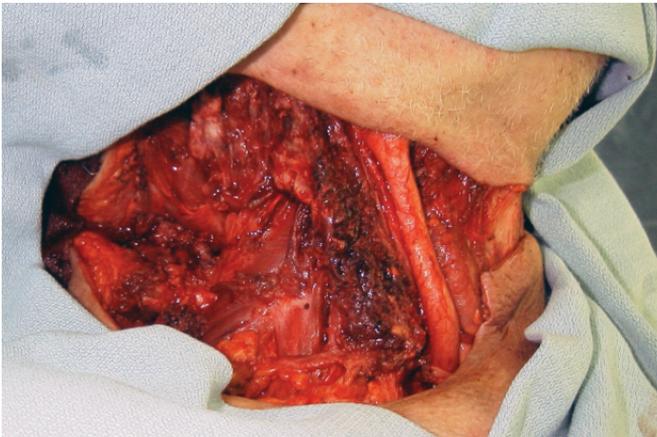


Right lateral neck dissection levels II, III, IV

Extended Radical Neck Dissection



Preop right extended radical neck dissection



Resected right extended radical neck dissection deep muscles and skin

The American Academy of Otolaryngology—Head and Neck Surgery Foundation’s education initiatives are aimed at increasing the quality of patient outcomes through knowledgeable, competent, and professional physicians. The goals of education are to provide activities and services for practicing otolaryngologists, physicians-in-training, and nonotolaryngologist health professionals.

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AHNS MISSION

On May 13, 1998, The American Head and Neck Society (AHNS) became the single largest organization in North America for the advancement of research and education in head and neck oncology. The merger of two societies, the American Society for Head and Neck Surgery and the Society of Head and Neck Surgeons, formed the American Head and Neck Society. The American Head and Neck Society remains dedicated to the common goals of its parental organizations:

- To promote and advance the knowledge of prevention, diagnosis, treatment, and rehabilitation of neoplasms and other diseases of the head and neck,
- To promote and advance research in diseases of the head and neck, and
- To promote and advance the highest professional and ethical standards.

For more information about the AHNS, visit www.ahns.info.



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