

REVIEW ARTICLE

Association of Directors of Anatomic and Surgical Pathology

Recommendations for the reporting of larynx specimens containing laryngeal neoplasms

Received: 18 February 1997 / Accepted: 3 April 1997

Abstract The Association of Directors of Anatomic and Surgical Pathology have developed recommendations for the surgical pathology report for common malignant tumors. The recommendations for carcinoma of the larynx are reported herein.

Key words Squamous cell carcinoma · Laryngectomy · Laryngeal cancer

Introduction

The Association of Directors of Anatomic and Surgical Pathology (ADASP) has named several committees to develop recommendations regarding the content of the surgical pathology report for common malignant tumors. A committee of individuals with special interest and expertise write the recommendations, and they are reviewed and approved by the council of ADASP and subsequently by the entire membership.

The recommendations have been divided into the following four major areas: (1) items that provide an informative gross description; (2) additional diagnostic features that it is recommended are included in every report if possible; (3) optional features that may be included in the final report; and (4) a checklist.

The purpose of these recommendations is to provide an informative report for the clinician. The recommendations are intended as suggestions, and adherence to them is completely voluntary. In special clinical circumstances, the recommendations may not be applicable. The rec-

ommendations are intended as an educational resource rather than a mandate.

Features the Association recommends are included in the final report

Because they are generally accepted as being of prognostic importance, the following are required for therapy or traditionally accepted [1–5].

A. Features contained in a good gross description

1. How the specimen was received – fresh, in formalin, opened by surgeon or pathologist, unopened, etc.
2. How the specimen was identified – labeled (with name, medical record number) and anatomic site designation, e.g., right partial vertical laryngectomy, modified neck dissection.
3. Description of portions of larynx included with specimen, including other structures that may be attached: hyoid bone, adjacent pharynx, thyroid and parathyroid glands and tracheal rings.
4. Overall dimensions of all specimens received.
5. Tumor description:
 - Size (give in three dimensions)
 - Shape (ulcerating, exophytic, polypoid)
 - Color
 - Necrosis
 - Multifocal growth
6. Location of the tumor. Describe all anatomic structures involved, including ventricles, which cords, right and/or left, true and/or false cord (specify clearly). Distance above and/or below false and true cords, respectively.

Involvement of aryepiglottic folds. Does tumor cross midline or extend more than 1 cm from below true vocal cord? If tumor crosses the midline, estimate the percentage of tumor on right and left sides. Is there submucosal spread?

This report was prepared by an ad hoc committee composed of Douglas R. Gnepp (Chair), Leon Barnes, John Crissman, and Richard Zarbo

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Table 1 Laryngeal carcinoma checklist

<p>1. Topography: Larynx _____ Partial larynx _____ Neck dissection _____</p> <p>2. Procedure: Total laryngectomy _____ Partial laryngectomy _____ supraglottic (horizontal) _____ hemilaryngectomy (vertical) _____ Radical neck dissection _____ Partial neck dissection _____</p> <p>3. Exact site of tumor: Supraglottic _____ Glottic _____ Subglottic _____ Transglottic _____</p> <p>4. Histologic type: CIS/severe dysplasia only _____ Squamous cell carcinoma _____ Keratinizing _____ Non-keratinizing _____ Undifferentiated carcinoma _____ Salivary gland carcinoma (specify) _____ Neuroendocrine carcinoma _____ Well Differentiated (Carcinoid) _____ Moderately Differentiated (Atypical carcinoid) _____ Poorly Differentiated (Small cell carcinoma) _____ Papillary (exophytic) squamous cell carcinoma _____ Spindle cell carcinoma _____ Verrucous carcinoma _____ Basaloid squamous carcinoma _____ Adenosquamous carcinoma _____ Adenocarcinoma, non-salivary type _____ Other malignancy (specify) _____</p> <p>5. Histologic grade: Well differentiated _____ Moderately differentiated _____ Poorly differentiated _____ Undifferentiated _____</p> <p>6. Tumor Extent: Commissure Anterior _____ Posterior _____ Ventricle Right _____ Left _____</p>	<p>False cord Right _____ Left _____ True cord Right _____ Left _____ Subglottic region Right _____ Left _____ Aryepiglottic fold Right _____ Left _____ Vallecula _____ Pyrimiform sinus Right _____ Left _____ Epiglottis _____ Right _____ Left _____ Extralaryngeal structures Thyroid _____ Soft tissue _____ Prelaryngeal (Delphian) lymph node _____ Parathyroid glands _____ Tumor invades cartilage Yes _____ No _____ Vascular Invasion Yes _____ No _____ Neural Invasion Yes _____ No _____ Tracheostomy Invasion Yes _____ No _____ Multicentric Tumor Yes _____ No _____ CIS/Dysplasia present Yes _____ No _____ Verrucous Hyperplasia Present Yes _____ No _____</p> <p>7. Status of surgical margins:(specify specimen margins or margins separately submitted) Free of tumor _____ Involved by tumor (specify _____)</p> <p>8. Lymph node metastases: Number of nodes removed-right _____ Number of nodes involved-right _____ Number of nodes removed-left _____ Number of nodes involved-left _____ Extracapsular invasion present _____ Jugular vein invasion present _____ Muscle invasion present _____ Keratin debris present _____</p> <p>9. Pre-operative treatment effects on nodes: Yes _____ No _____</p> <p>10. Special investigations performed: Flow cytometry _____ Electron microscopy _____ Image analysis _____ Molecular diagnostics _____ Gross photograph _____</p>
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7. Depth of invasion, involvement of cartilage (note specific cartilages involved).

8. Involvement of extralaryngeal structures: thyroid, soft tissue, prelaryngeal (Delphian) lymph node and parathyroid glands.

9. Description of tracheotomy site if present. Presence or absence of tumor.

10. Lymph node dissection if included [6]:

- Type: extended radical, radical or modified radical or selective
- Inclusion of sternomastoid muscle/submandibular and/or parotid gland/jugular vein
- Palpable mass (solitary, matted)
- Size and location of gross invasion of adjacent soft tissues, muscle and jugular vein.
- Dimensions and description of sternomastoid muscle, major salivary glands, and internal jugular vein.

– Size of lymph nodal masses¹

– Levels or anatomic location of lymph nodes in neck dissection

B. Diagnostic information

1. Topography: type of specimen(s) received (e.g. total or partial larynx, neck contents).

2. Procedure: [e.g. total or partial laryngectomy, e.g. supraglottic (horizontal) or hemilaryngectomy (vertical), radical neck dissection].

¹ It is generally recognized that most masses greater than 3 cm, in diameter are not single lymph nodes but represent confluent nodes or tumor in soft tissues of the neck

3. Exact site of tumor (supraglottic, subglottic, glottic).²
 4. Histologic type (WHO classification recommended)³; comment on no tumor present after therapy).
 5. Histologic grade as appropriate (check grading systems).
 6. Tumor extent – depth of invasion with respect to landmarks. Comment on neural, vascular, cartilage, pre-epiglottic space and extralaryngeal tissue (muscle, soft tissue, cartilage) or tracheostomy involvement as well as multifocal growth [3, 7].
 7. Status of surgical margins.
 8. Lymph node metastases [6]:
 - Size of metastatic node
 - Number of involved nodes
 - Level of node involvement
- Comment whether or not extranodal spread of tumor is found.

² The American Joint Committee on Cancer divides the larynx into the following three regions: supraglottis, glottis, and subglottis. The supraglottis comprises the epiglottis (both its lingual and laryngeal aspects), aryepiglottic folds (laryngeal aspect), arytenoids, and ventricular bands (false cords). The inferior boundary of the supraglottis is a horizontal plane passing through the apex of the ventricle. The glottis comprises the true vocal cords, including the anterior and posterior commissures. The lower boundary is the horizontal plane, 1 cm below the apex of the ventricle. The subglottis is the region extending from the lower boundary of the glottis to the lower margin of the cricoid cartilage

³ Histologic type (World Health Organization Classification, modified): Squamous cell carcinoma, typical, keratinizing or nonkeratinizing, invasive or in situ; spindle cell squamous (sarcomatoid) carcinoma; verrucous carcinoma; basaloid squamous carcinoma; undifferentiated carcinoma (including lymphoepithelioma); salivary gland type tumors (adenoid cystic carcinoma; mucoepidermoid carcinoma; adenosquamous carcinoma; others); neuroendocrine carcinoma [well differentiated (carcinoid tumor); moderately differentiated (atypical carcinoid tumor); poorly differentiated (small cell carcinoma)]; adenocarcinoma, non-salivary-gland type; other malignancies (sarcoma, melanoma, etc.)

Comment on keratin debris as evidence of previous tumor.

9. Pre-operative treatment effects on nodes.

Features optional for the final report

These are optional because they represent specific institutional preferences or are of inconclusive prognostic significance.

- A. Interface with stroma; infiltrating, pushing, superficial or deep invasion.
- B. Extent of and location of any dysplasia (including grade)/CIS.
- C. Results of ancillary investigations (i.e. flow cytometry).
- D. Type or density of inflammatory infiltrate.
- E. Distance from surgical margins.

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