

Laryngeal Tumours

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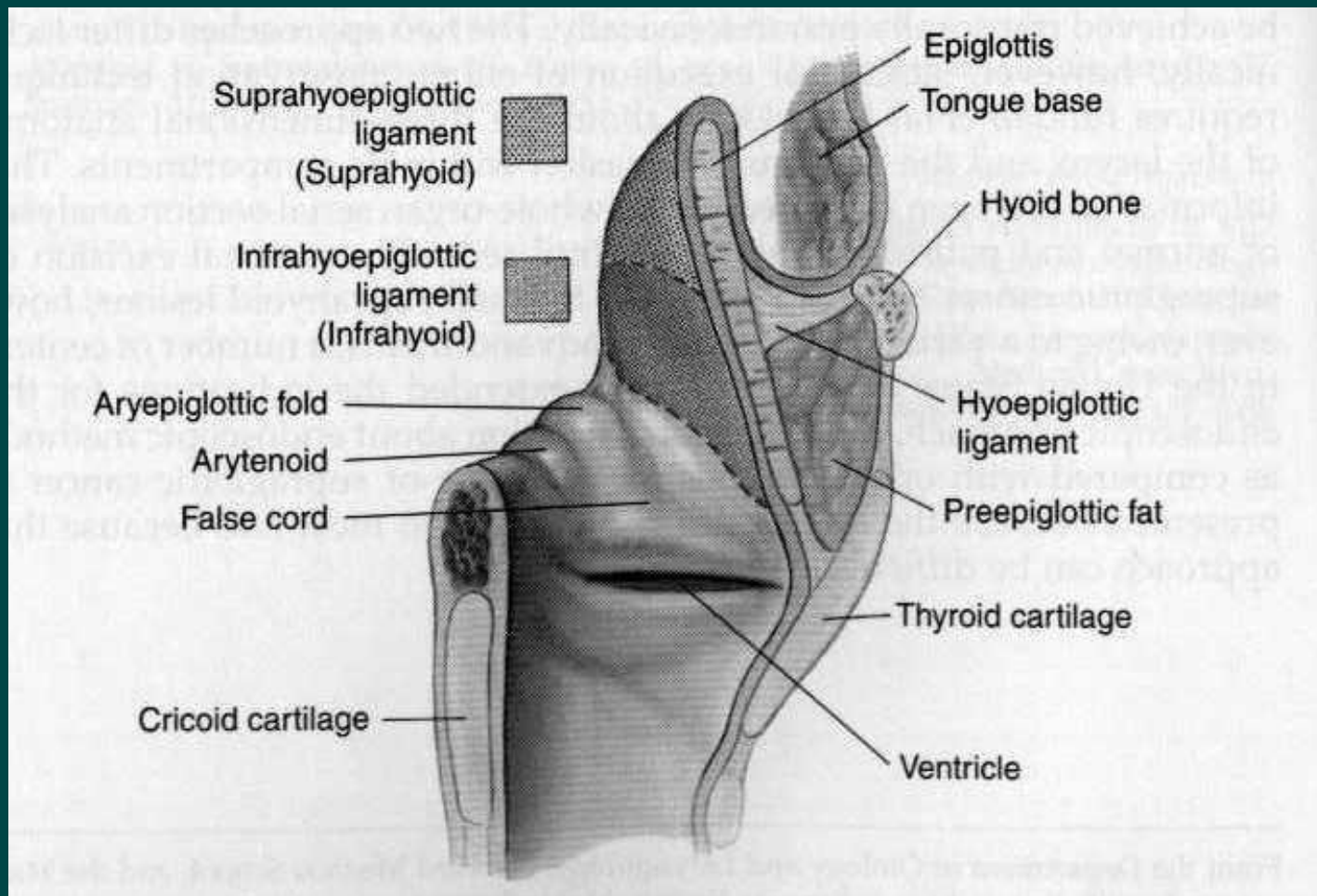


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Anatomy



Anatomy

- ◆ 3 Paired areas – supraglottic, glottic and subglottic
- ◆ 3 unpaired cartilages – thyroid, cricoid and epiglottic
- ◆ 3 Paired Cartilages – arytenoid, cuneiform and corniculate

Epithelial lining

Supraglottis

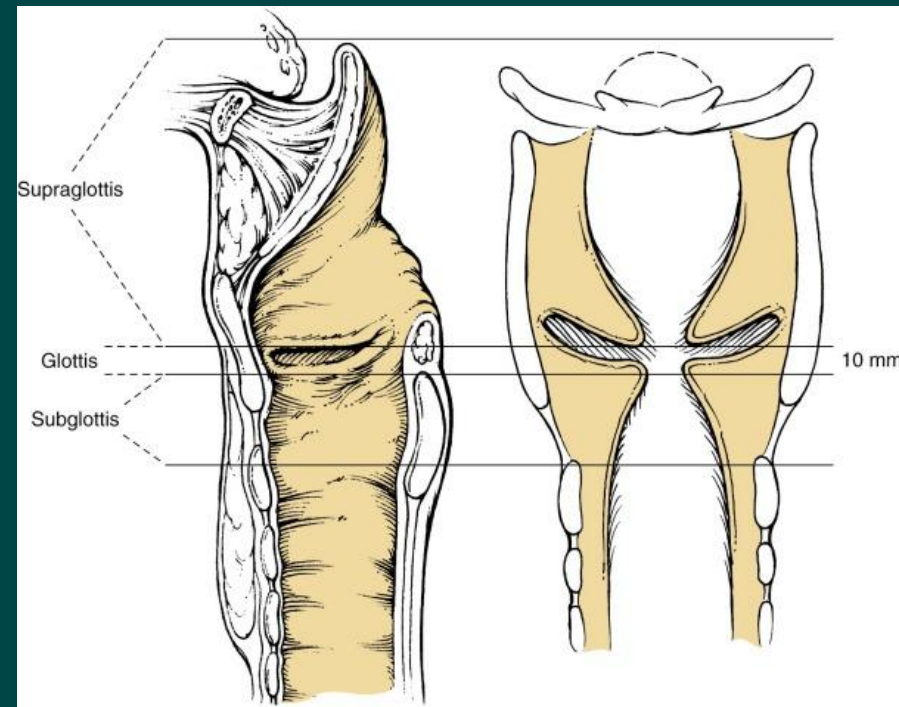
– pseudostratified columnar
with abundant mucous glands and
lymphatics

Glottis

- stratified squamous
epithelium

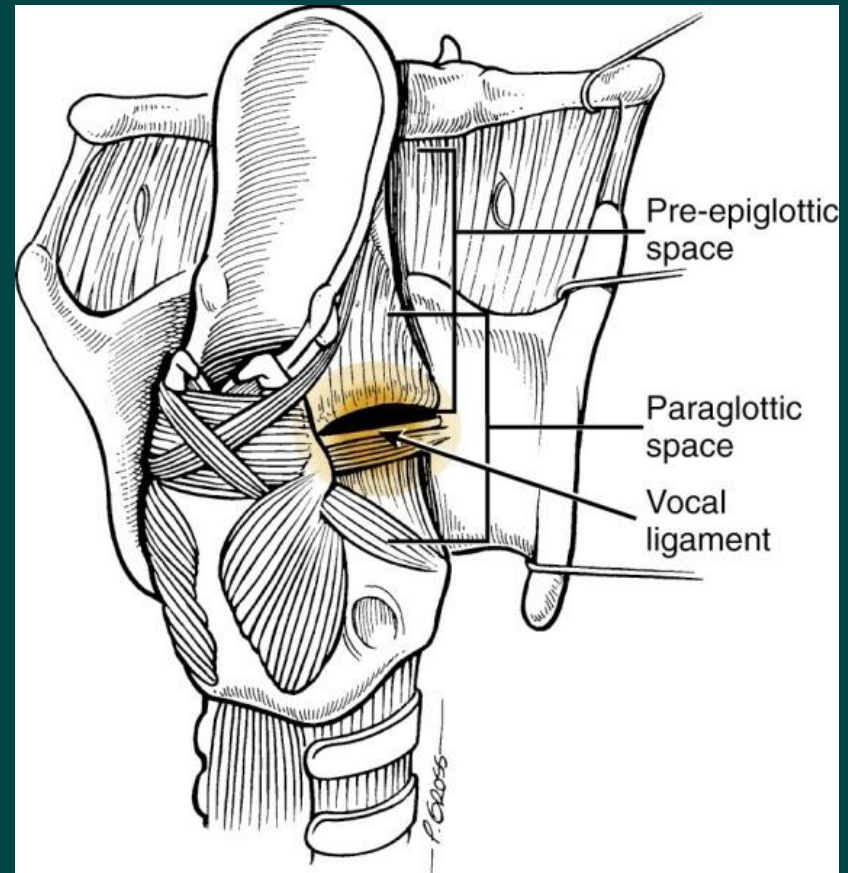
Subglottis

– pseudostratified columnar
epithelium



Laryngeal Spaces

- ◆ Pre-epiglottic space
 - ◆ Frequently involved with tumour because epiglottic cartilage perforated
- ◆ Para-glottic space
 - ◆ Growth along this space is unusual



Embryology



- ◆ **Supraglottis** arises from the buccopharyngeal primordium
 - ◆ Rich lymphatic and bilateral spread to levels II,III mostly

- ◆ **Glottis** and **Subglottis** arise from the tracheobronchial primordium
 - ◆ Glottis has sparse lymphatics and unilateral drainage
 - ◆ Subglottis has unilateral lymphatic drainage to level IV

Differential Diagnosis



◆ Non-Neoplastic Lesions

Mucus retention cyst
Laryngocele/saccular cyst
Heterotopic thyroid tissue
Vocal fold polyp
Vocal process granuloma
Infections Tuberculosis
Histoplasmosis

Inflammatory Wegener's granulomatosis
Foreign body granuloma (e.g., Teflon)
Relapsing polychondritis

Pseudoepitheliomatous hyperplasia
Squamous cell hyperplasia
Keratoses

◆ Benign Neoplasms

Epithelial Papilloma
Pleomorphic adenoma

Oncocytic papillary cystadenoma Nonepithelial
Soft tissue Lipoma
Schwannoma
Neurofibroma
Leiomyoma
Rhabdomyoma
Hemangioma
Lymphangioma
Granular cell tumor
Paraganglioma

Inflammatory myofibroblastic tumor
Bone and cartilage Chondroma
Giant cell tumor

Differential Diagnosis



Malignant Laryngeal tumours

Premalignant Lesions Squamous cell dysplasia

Carcinoma in situ

Primary Laryngeal Malignancies Epithelial Squamous cell carcinoma (SCC) Verrucous SCC

Spindle cell carcinoma

Adenoid SCC

Basaloid SCC

Clear cell carcinoma

Adenosquamous carcinoma

Giant cell carcinoma

Lymphoepithelial carcinoma

Malignant salivary gland tumors Adenocarcinoma

Acinic cell carcinoma

Mucoepidermoid carcinoma

Adenoid cystic carcinoma

Carcinoma ex pleomorphic adenoma

Epithelial-myoepithelial cell carcinoma

Salivary duct carcinoma

Neuroendocrine tumors Carcinoid tumor

Atypical carcinoid tumor

Small cell carcinoma

Malignant paraganglioma

Malignant soft tissue tumors Fibrosarcoma

Malignant fibrous histiocytoma

Liposarcoma

Leiomyosarcoma

Rhabdomyosarcoma

Angiosarcoma

Kaposi's sarcoma

Malignant hemangiopericytoma

Malignant nerve sheath tumor

Alveolar soft part sarcoma

Synovial sarcoma

Ewing's sarcoma

Malignant tumors of bone and cartilage Chondrosarcoma

Osteosarcoma

Hematolymphoid tumors Lymphoma

Extramedullary plasmacytoma

Secondary Laryngeal Malignancies Contiguous primary site Hypopharynx

Oropharynx

Thyroid

Distant primary site Kidney

Skin (melanoma)

Breast

Lung

Prostate

Gastrointestinal tract

Squamous Premalignant Lesions



- ◆ Epithelial Dysplasia
 - ◆ Classified : mild; moderate; severe
- ◆ Carcinoma in situ (CIS)
(very similar to solar keratosis and IEC of skin)
- ◆ Progression to invasive malignancy related to time and extent of lesion (longer lasting and larger lesion more likely to progress)
- ◆ Diagnosis is by biopsy, difficult clinically
- ◆ Treatment is microsurgical, radiotherapy or PDT

Invasive Squamous Cell Carcinoma



- ◆ 90% of laryngeal malignancy
- ◆ Supraglottis and glottis is most common
- ◆ Subglottis is rare (2%)
- ◆ Incidence in supraglottis and glottis varies in different populations
- ◆ 90% of SCCs are in over 40 year old, peak incidence 60-70 yo
- ◆ 4:1 male to female (related to risk factors)
- ◆ 11th most common cancer in males
- ◆ Most common head and neck cancer world wide

SCC Risk Factors



- ◆ Tobacco and Alcohol
 - ◆ Proportional to duration and intensity
 - ◆ Risk decreases slowly with cessation over 20 years
 - ◆ Tobacco and alcohol are synergistic in risk increase
 - ◆ Alcohol more important in supraglottic carcinoma
 - ◆ Tobacco more important in glottic carcinoma

SCC Risk Factors



- ◆ Laryngopharyngeal reflux
 - ◆ Associated with an increased risk
 - ◆ ?Causal or association
- ◆ Toxins
 - ◆ Implicated - diesel exhaust, asbestos, organic solvents, wood dust, stone dust, cement etc
- ◆ HPV
 - ◆ Causative factor in head and neck SCC
 - ◆ A lower risk factor for SCC of the larynx than oropharynx
- ◆ Genetic susceptibility

SCC histopathology



- ◆ Usually straight forward
 - ◆ Stains - cytokeratin and epithelial membrane antigen.
- ◆ Variants
 - ◆ Verrucous – slow growing, less aggressive, do not metastasize, less radiosensitive
 - ◆ Basaloid - more aggressive, rare
 - ◆ Spindle Cell Carcinoma – sarcomatoid, less radiosensitive
 - ◆ Adenosquamous Carcinoma – rare
 - ◆ Acantholytic SCC - rare
 - ◆ Papillary SCC - uncommon

Presentation



- ◆ **Supraglottic SCC**
 - ◆ Variety of symptoms – dysphonia, dysphagia, odynophagia, otalgia, stridor, dyspnea, haemoptysis
 - ◆ May present with cervical metastases
- ◆ **Glottic SCC**
 - ◆ Cardinal symptom is dysphonia and usually presents early.
- ◆ **Subglottic SCC**
 - ◆ Often presents late. Dyspnoea and stridor most common presentations.

Examination of the Larynx



- ◆ Indirect Laryngoscopy
- ◆ Flexible fibreoptic laryngoscopy
- ◆ Panendoscopy
- ◆ Examination
 - ◆ Lesion location and extent
 - ◆ Cord movement
 - ◆ Shape/asymmetries
 - ◆ biopsy

Investigations

- ◆ CT scan
- ◆ MRI scan
- ◆ CT PET scan

Larynx, neck and chest



Anatomic Sites and Subsites of the Larynx



Site	Subsite
Supraglottis	Suprahyoid epiglottis Infrahyoid epiglottis Aryepiglottic folds, right and left (laryngeal surfaces) Arytenoids, right and left Ventricular bands, right and left
Glottis	True vocal cords, right and left (including the anterior and posterior commissures)
Subglottis	No separate subsites defined

From Greene F, Page D, Fleming I, et al. AJCC Cancer Staging Manual. 6th ed. New York: Springer; 2002.

Tumor Node Metastasis System for the Larynx



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 supraglottis with normal vocal cord mobility
- T2 Tumor invades mucosa of more than one adjacent subsite of 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 larynx with vocal cord fixation and/or invades any of the following: postcricoid area, pre-epiglottic tissues, paraglottic space, and/or minor thyroid cartilage erosion (e.g., inner cortex)
- T4a Tumor invades through the thyroid cartilage and/or invades tissues beyond the larynx (e.g., trachea, soft tissues of neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus)
- T4b Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

Glottis

- T1 Tumor limited to the vocal cord(s) (may involve anterior or posterior commissure) with normal mobility
- T1a Tumor limited to one vocal cord
- T1b Tumor involves both vocal cords
- T2 Tumor extends to supraglottis and/or subglottis, or with impaired vocal cord mobility
- T3 Tumor limited to the larynx with vocal cord fixation, and/or invades paraglottic space, and/or minor thyroid cartilage erosion (e.g., inner cortex)
- T4a Tumor invades through the thyroid cartilage and/or invades tissues beyond the larynx, (e.g., trachea, soft tissues of neck including deep extrinsic muscles of the tongue, strap muscles, thyroid, or esophagus)
- T4b Tumor invades prevertebral space, encases carotid artery, or invades mediastinal structures

Subglottis

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

Regional Lymph Nodes (N)

- NX Regional lymph nodes cannot be assessed
- N0 No regional lymph node metastasis
- N1 Metastasis in a single ipsilateral lymph node, ≤ 3 cm in greatest dimension
- N2a Metastasis in a single ipsilateral lymph node, >3 cm but not >6 cm in greatest dimension
- N2b Metastasis in multiple ipsilateral lymph nodes, none >6 cm in greatest dimension
- N2c Metastasis in bilateral or contralateral lymph nodes, none >6 cm in greatest dimension
- N3 Metastasis in a lymph node, >6 cm in greatest dimension

Distant Metastasis (M)

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

Treatment



- ◆ Curative where possible
- ◆ Laryngeal preservation where possible

- ◆ Stage I and II single modality
 - ◆ Partial laryngeal surgery
 - ◆ Vertical partial laryngectomy
 - ◆ Supraglottic laryngectomy
 - ◆ Laser resection
 - ◆ radiotherapy

- ◆ Stage III and IV dual modality therapy
 - ◆ Total laryngectomy and radiotherapy
 - ◆ Chemotherapy and radiotherapy

Summary



- ◆ SCC larynx is most common world wide head and neck malignancy.
- ◆ Managed by ENT surgeons through a head and neck clinic.
- ◆ Plastic Surgeons are involved with reconstruction following pharyngolaryngectomy and rarely for breakdown of laryngeal surgery.