Anatomy of Head and Neck
Why is knowledge of anatomy necessary?

• therapy depends on localization and extension of disease

• communication with clinical partners
Anatomy of Head and Neck

Basic subdivision:

**Suprahyoid Neck**
- Nasopharynx
- Oral cavity
- Oropharynx

**Infrahyoid Neck**
- Larynx
- Hypopharynx

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Anatomy of Head and Neck

• Why is this subdivision necessary?

• The primary tumors in each of these areas have different routes of
  • spread
  • nodal dissemination
  • prognosis
Nasopharynx

Boundaries:

**Anterior:**
posterior nasal cavity

**Posterosuperior:**
Lower clivus, upper cervical spine, and prevertebral muscles

**Inferior:**
Divided from the oropharynx by a horizontal line drawn along the hard and soft palates.
Nasopharynx

Sphenoidal sinus

Fossa of Rosenmüller

Torus tubarius

Pharyngeal entrance of the Eustachian tube
Nasopharynx

- Torus tubarius
- Orifice of the Eustachian tube (symmetric)
- Fossa of Rosenmüller with air (can be asymmetric)
Lymphatics in Nasopharynx

- Rich capillary lymphatic plexus
- Drainage to lateral retropharyngeal nodes and Level II, V

Retropharyngeal nodes cannot be palpated
What is another name for the lateral retropharyngeal nodes?

A  Virchow`s node  
B  Rouviere`s node  
C  Rodin`s node  
D  sentinel node
Oral cavity and oropharynx

The oral portion of the upper aerodigestive tract is divided into two major components: the oral cavity and the oropharynx.
Oral cavity and oropharynx

Borders of the oral portion are the palate and the tip of the epiglottis.
The oral cavity is separated from the oropharynx by

- the anterior tonsillar pillars,
- the circumvallate papillae,
- and the junction of the hard and soft palate.
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and the junction of the hard and soft palate.
Anatomic definition

Oral cavity

Contents of oral cavity

- Oral tongue
- lips
- buccal mucosa
- hard palate
- alveolar ridge and retromolar trigone
- floor of the mouth: sublingual and submandibular space

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The tongue comprises

- **intrinsic** (no bony attachment) and
- **extrinsic** (with bony attachment) muscles

**Intrinsic**
- Sup and inf longitudinal
- Vertical
- Horizontal
The tongue comprises

- **intrinsic** (no bony attachment) and
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**Intrinsic**
- Sup and inf longitudinal
- Vertical
- Horizontal

**Extrinsic**
- Hyoglossus
- Genioglossus
- Palatoglossus
- Styloglossus
Floor of mouth

- extrinsic muscles of the tongue

- mylohyoid muscle separates sublingual and submandibular space
Imaging issues

Oral cavity

First drainage node of oral cavity cancers

Jugulodigastric nodes
Lymph node levels

- Level I: submental, submandibular
- Level II: upper jugular
- Level III: mid-jugular
- Level IV: lower jugular
- Level V: posterior triangle
- Level VI: prelaryngeal, pre-/paratracheal
- Level VII: upper mediastinal

Hyoid bone
Inferior border of cricoid

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Drainage lymph nodes of posterior oral cavity
Oropharynx

Lateral glossopharyngeal fold (pharyngoepiglottic fold)

Medial glossopharyngeal fold / glossoepiglottic fold

incidence of SCCa:
- tonsil (50%)
- base of tongue/vallecula (20%)
- Soft palate (10%)
- pharyngeal wall

Vallecula epiglottica

Palatine tonsil

Tongue base and posterior third of the tongue
Cartilaginous skeleton

- Epiglottis
- Thyroid cartilage
  - superior cornu of thyroid cartilage
  - superior thyroid notch
  - lamina of thyroid cartilage
- Arytenoid cartilages
- Cricoid cartilage
  - posterior lamina
  - anterior arch
Invasion of thyroid cartilage

Sclerosis

Sclerosis is sign of beginning invasion. Later: osteolysis

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Larynx

**Lymphatic drainage**

- Two embryological separate parts of the larynx

- The *supraglottis* develops from the buccopharyngeal origin: rich lymphatic pathways

- The *glottis and the subglottis* are derived from the tracheobronchial buds: fewer lymphatic pathways

LN metastases are more frequent

LN metastases are rare
Larynx

Supraglottis: above true vocal cords

Paraglottic space
Preepiglottic space: clinical blind spots

aryepiglottic fold
epiglottis
piriform sinus

level of scan

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Supraglottic Larynx

*Epiglottic SCCa*

Infiltration of the pre- and paraglottic space

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To what region does the piriform sinus belong?

A nasopharynx
B oropharynx
C larynx
D hypopharynx
Intimate relationships between Larynx and Hypopharynx
Intimate relationships between Larynx and Hypopharynx

Larynx: Aryepiglottic Fold

Hypopharynx: Piriform sinus

Posterior hypopharyngeal wall

Low dose CT

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Intimate relationships between Larynx and Hypopharynx

Larynx: Arytenoid Cartilages

Hypopharynx: Piriform sinus

Low dose CT

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Larynx

Glottis: true vocal cords

In case of tumor invasion of the anterior commissure, all neighboring structures are at risk for neoplastic destruction.
Hypopharynx

*piriform sinus*-posterior hypopharyngeal wall-
postcricoid area
Hypopharynx

Piriform sinus-posterior wall-postcricoid area

- glossoepiglottic fold
- Enlarged retropharyngeal space
- Necrotic LN metastasis
Hypopharynx

Piriform sinus-posterior wall-postcricoid area