Head & Neck Surgery Course

Salivary Glands: Surgical anatomy and technique

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Introduction

• The Major Salivary Glands
  – Parotid
  – Submandibular
  – Sublingual

• The Minor Salivary Glands
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Parotid gland

Parotid gland
Parotid compartment

- Superior – Zygoma
- Posterior – EAC, SCM muscle
- Inferior – Styloid and digastric
- Anterior – mandible, masseter intern pterygoid muscles
- Lateral – skin and SMAS
Parotid space contents

**Nerves**
- VII, Great Auricular, Auriculotemporal

**Blood vessels**
- Venous
  - Retromandibular Vein, Extern Jugular Vein, Intraparotid Communicant, Superficial Temporal, Intern Maxillary
- Arteries
  - Extern carotid, Superficial Temporal/Transverse Facial, intern maxillary

**Lymphatics**
Superficial muscular aponeurotic system (SMAS)

Continuity with: Superficial temporal fascia, Platysma, galea
Superficial muscular aponeurotic system

SMAS

Superficial layer of deep cervical fascia
Deep neck spaces

- **Parotid space**
  
  *Parotid gland tumors*

- **Parapharyngeal Space**
  
  - Prestyloid Compartment
    
    *deep lobe parotid gland tumors*

  - Poststyloid Compartment
    
    *Paraganglioma, Schwannoma, lymphoma*
Parotid Space

Contains:

- External carotid artery
- Posterior facial vein
- Facial nerve
- Lymph nodes
- Auriculotemporal nerve (V3)
Parapharyngeal space

- **Boundaries**
  - **Superior**—skull base
  - **Inferior**—hyoid
  - **Anterior**—pterygomandibular raphe
  - **Posterior**—prevertebral fascia
  - **Medial**—buccopharyngeal fascia
  - **Lateral**—superficial layer of deep fascia
Parapharyngeal space

- **Prestyloid**
  - *between tonsillar fossa and medial pterygoid*
  - **Contents:**
    - *fat*
    - *connective tissue*
    - *nodes*

- **Poststyloid**
  - **Contents:**
    - *Carotid sheath*
    - *Cranial nerves IX, X, XI, XII*
    - *Sympathetic chain*
Parapharyngeal space

Stylopharyngeal aponeurosis

Stylohyoidien, stylopharyngeal, and styloglossus muscles
Parapharyngeal space

Stylomandibular Tunnel
Facial nerve: introduction

- Pes Anserinus – 1.3 cm
- Temperofacial Division
- Cervicofacial Division
- 5 Terminal branches
Parotid space: major structures

- Parotid gland
- Nerves
- Blood vessels
- Lymphatics
Parotid Gland

- Major salivary gland
- Production of Saliva
- 2 lobes
  - Superficial
  - Deep
Parotid Gland

- Superficial lobe: 80%, overlies Masseter & Mandible
- Deep lobe: 20%, Retromandibular
- Stylomandibular Tunnel, Isthmus of Parotid
Parotid Gland

Salivary tissue

Salivary ducts

→ Stensen’s duct
Stensen’s Duct

- Arises from anterior border
- 1.5 cm inferior to Zygomatic arch
- Pierces Buccinator at 2\textsuperscript{nd} Molar
- 4-6 cm in length, 5 mm in diameter
Stensen’s Duct

- Parotid duct
- Skin and subcutaneous fat
- SMAS
- Masseter
- Branches of facial n.
- Buccal fat pad
- Buccinator m.
- Mucosa
Facial nerve: anatomy
Facial nerve: anatomy
Facial nerve: physiology

Motor innervation
Facial nerve: physiology

- **Sensory innervation**
- **Parasympathetic innervation**
Other nerves

Great Auricular nerve
  • Cervical plexus

Auriculo-temporal nerve
  • Superficial Temporal vessels
  • Frey’s Syndrome
Great auriculo-temporal nerve
Auriculo-temporal nerve
Blood Vessels
Nerfs and Blood Vessels
relationship (posterolateral view)
Nerfs and Blood Vessels

relationship (lateral view)
Lymphatics

– Paraparotid & Intraparotid nodes
– Superficial & Deep Cervical nodes

(1\textsuperscript{st} echelon nodes : levels II-III; then levels IV and V)
Lymphatics

Lymph Vessels and Nodes of Head and Neck

Submandibular nodes
Submental nodes
Suprathyroid node
Superior deep lateral cervical (internal jugular) nodes
Jugulothyroid node
Anterior deep cervical (globothryoid and hyoid) nodes (deep to thyrohyoid muscle)
Anterior superficial cervical nodes (anterior jugular nodes)
Jugular trunk
Suprachiavicular nodes
Subclavian trunk and nodes
Superior lateral superficial cervical (cervical jugular) nodes
Jugulodigastric node
Posterior lateral superficial cervical (spinal accessory) nodes
Inferior deep lateral cervical (sternocleidomastoid) node
Thyroid duct

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Parotidectomy surgical technique

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Parotidectomy

Superficial portion
Localization of CN VII

- Tragal pointer
- Tympanomastoid suture
- Posterior belly Digastric
- Styloid process
Bleeding that announces FN
Parotidectomy

Deep portion
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Submandibular gland
Submandibular Gland

- Major salivary gland
- Salivary tissue + salivary ducts
  - Warthon’s duct
- Level Ib: *submandibular space*
Submandibular space

(level Ib)
Submandibular Space

Boundaries

– Superior – oral mucosa
– Inferior - superficial layer of deep fascia
– Anterior border – mandible
– Lateral border - mandible
– Posterior - hyoid and base of tongue musculature
Sublingual space

- Contents
  - Areolar tissue
  - XII and lingual nerves
  - Sublingual gland
  - Wharton’s duct

Submaxillary space

- Submental (level Ia)
- Submaxillary (level IB)

- Contents
  - Submandibular gland
Submandibular Space
Wharton’s duct

- Exits medial surface
- Between Mylohyoid & Hyoglossus
- 5 cm in length
- Lingual nerve & CN XII
Wharton’s duct
Wharton’s duct
Arterial & venous supply

Artery: Submental branch of Facial artery
Vein: Anterior Facial vein
Arterial & venous supply
Lymphatics

levels Ib, II, III
Nerves

• **Innervation**
  - Lingual nerve and Submandibular Ganglion
  - Superior Cervical Ganglion (symp)

• **Other nerves**
  - XII
  - Marginal mandibular branch
Innervation

- Superior Cervical Ganglion (symp)
- Submandibular Ganglion (para)
Hypoglossal nerve (XII) and lingual nerves
Marginal Mandibular branch

- Most commonly injury dissection level Ib
- Landmark
  - 1 cm anterior and inferior to angle of mandible
- Subplatysmal
- Deep to fascia of the submandibular gland
- Superficial to facial vein
- More than one branch often present
Marginal Mandibular branch
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Submandibulectomy
Surgical technique