Anatomy of the Oral and Perioral Regions

PFN: SOMDSL02

Terminal Learning Objective

- **Action:** Identify the anatomy of the oral cavity including the perioral regions; describe the normal structures of the oral and perioral regions
- **Condition:** Given a lecture in a classroom environment
- **Standard:** Received a minimum score of 75% on the written exam IAW course standards

References

- *The CIBA Collection of Medical Illustration*, Frank H. Netter, MD (1906-1991)
- *Introduction to Dental Local Anaesthesia* (sic), Evers, Hans; Haegerstam, Glenn; Mediglobe SA, 1990
References

- Medical Subjects - Dental, JSOMTC, as issued.

Reason

- As a SOF Medic you will diagnose and treat dental conditions. You must distinguish normal from abnormal, manage these injuries and know when to refer to a dental officer.
- Mission First - Treat US military and then local population (Civil Affairs mission) as needed

Agenda

- Identify the bony anatomy of the head and neck
- Identify the soft tissue anatomy of the head and neck
- Describe the important dental nerves in the head and neck and why they are important
Bony Anatomy of the Head and Neck

Skeletal Frame of the Middle and Lower Face
- Maxilla
- Mandible
- Temporomandibular Joint (TMJ)

Skeletal Frame of the Face
Frontal View
- Maxilla
- Mandible

Lateral View
- TM Joint
Skeletal Framework: Maxilla

- Maxilla
- Right & left sides fuse at puberty
- Antrum is the space inside the Maxillary sinus

Sinusitis and Tooth Pain

- Development of maxillary sinus extends over maxillary first molar ("6-year-molar")
- Inflamed Sinus membrane can mimic tooth pain
  
  Diagnose by:
  1) Jump up and down: pain in tooth
  2) Hold toes: pain should move to inferior of orbit

Maxillary First Molar (Nos. 3, 14) erupts, then sinus grows around it.

- The 3 molar roots are not IN the sinus just as the fingers are not IN the glove
Slide 13

Mandible

- Condyles
- Body
- Mental foramen

Slide 14

Mandible check on learning

Slide 15

Ramus of the Mandible

- Coronoid process (muscle attachment)
- Condyle
- Ramus
Alveolar process of Mandible

Mandibular bone which surrounds the roots of the teeth. Resorbs when teeth are absent

Temporomandibular Joint

Note “translation”

Subject to trauma with a blow to the chin

TMJ’s Disc slides forward

Closed | Half Open | Open
Rotation | Translation

Lateral pterygoid muscle pulls both the disc, blue portion, and mandible, red portion, forward
“Pop”: disc slides onto condyle
Condyle rests on retrodiscal tissue
Disc pops over condyle as condyle moves down and forward in opening

Soft Tissue Anatomy of the Head and Neck

Four major muscles Mastication
Masseter, Temporalis
Medial Pterygoid, & Lateral Pterygoid
- Motor innervation by the trigeminal nerve
- Masseter, temporalis and medial pterygoid close the mandible
- The lateral pterygoid opens the mandible and moves it laterally
Masseter
Masseter Temporalis
‘Elevator Muscles ’, Close the Mandible
Myofascial Pain Dysfunction Syndrome

Major Muscles: Medial Pterygoid
( viewed from the dorsal)
Elevates the mandible

Major Muscles: Lateral Pterygoid
Moves the jaw anteriorly and side to side.
If spasms, can dislocate TMJ.
Soft Tissues: Lips

- Philtrum
- Vermillion border
- Labial frenum

Cleft Lip
- 6 weeks post-conception
- Failure of mersion of mesenchymal cell layer
- Philtrum is part of the nasal process

Clefts develop under nares
Philtrum is center

Cleft Lip
- Affected children may be hidden
- In mission area assessment, learn of possible cleft lip-palate surgical teams available in that country. Correct with various “Z” plasties.
Cleft Lip
Close early Neglected closure
Will need long term care with multiple surgeries

Cleft Palate
Palate only Bilateral
Never clip or trim the tissue in the, “stalk”.
It is important tissue for subsequent surgeries.

Possible Clefts
Civilian teams exist
- Hospital Boats and Mobile Units
- Staffed for a multidisciplined approach
- Refer to higher echelon as needed

Soft Tissues: Vestibule
Site to infiltrate anesthesia,
Bounded by the lips, cheeks, and gingiva
Mucosa: nonkeratinized, mobile NOT “skin”

Tongue
- Mostly muscle
- Epithelium: four types of papillae
- Very vascular
The parotid gland empties into the parotid duct and papilla near upper first molar.

Salivary Ducts adjacent to mandibular incisors. Calcium from saliva hardens dental plaque called calculus.
Soft Tissues: Soft Palate & Tonsils

- Critical for speech
- Pharyngeal Tonsils
- Associated with sleep apnea

Soft tissues: Hard Palate

- Incisive Papilla
- Greater Palatine Foramen
- Rugae

Soft tissues: Gingiva

- Highly keratinized
- The Periodontal Probe checks the Gingival Sulcus depth
- Interdental papilla
Important Dental Nerves in the Head and Neck

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Trigeminal Nerve, Fifth (V) Cranial Nerve

- The main sensory nerve for dentistry

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Trigeminal Nerve
Cranial Nerve V

- V1: Ophthalmic Branch
- V2: Maxillary Branch
- V3: Mandibular Branch
Trigeminal Nerve
Cranial Nerve V2: Maxillary

Superior Alveolar Branches

Palatal Branches

Posterior Superior Alveolar Nerve

- Pterygomaxillary fissure: site to deposit anesthetic before nerves enter maxilla

Mandibular Nerve V3

- Inferior Alveolar Branch: gives innervation to the mandibular teeth, some gingiva, and lower lip
Mandibular Nerve V3

- Lingual Branch-gives innervation to the tongue and lingual gingiva

Mandibular Nerve V3

- Long Buccal branch-gives innervation to the buccal gingiva adjacent to the posterior mandibular teeth

Check on Learning

- The coronoid process is...
- a. The attachment of the temporalis muscle.
- b. The fusion of the Maxilla at 6 months of age.
- c. The type of curing for dental composite.
- d. The healing noted after extraction.
Answer

- A. The attachment of the Temporalis muscle.

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