DTAN 601
Applied Anatomy of Head and Neck
Surface anatomy of head and neck
Outlines of content

- Regions of head and surface landmark of each region
- Regions of neck and surface landmark
- Underlying structures of head and neck
  - Skin
  - Muscles
  - Glandular tissue
  - Blood vessels
  - Lymphatics
  - Fascial space
Surface anatomy

- Provide essential landmarks of deeper anatomical structures, by visualization and palpation.
  - Bone, cartilage, muscle and tendon provide most of visible and palpable landmarks.
  - Superficial artery and nerve can be indicated as pulsation, or rolled under skin against bone.
- Can give information about the health of deeper tissues, any changes in surface features may signal a condition of clinical significance.
Pericranio-cervical line

- Separate between the head and neck
  - Anterior - Symphysis menti
  - Posterior - Inion
  - Inferior border & angle of mandible, mastoid process, superior nuchal line, external occipital protuberance
Regions of the head

- Frontal, parietal, occipital, temporal
- Orbital, nasal, Infraorbital, zygomatic
- Oral, mental, buccal, parotid
- Retromandibular fossa
Frontal, parietal, occipital and temporal regions

- **Scalp**
  - Skin & hair
  - Connective tissue
  - Aponeurosis
  - Loose connective tissue
  - Periosteum

- **Calvaria / skullcap**
  - Frontal tuberosity
  - Parietal tuberosity

- **Frontal region**
  - Frontal eminence
  - Superciliary arch / eyebrow ridge
  - Glabella
Frontal, parietal, occipital and temporal regions

- Temporal region
  - External ear
  - Superficial temporal artery and vein
  - Temporal muscle
  - Pterion
    - Anterior branch of middle meningeal artery
Orbital and nasal regions

- **Orbital region**
  - Bone
    - Orbital rims
    - Supraorbital notch
  - Soft tissue
    - Eyelid
    - Eyeball

- **Nasal region**
  - Nose
  - Nasion
  - Danger triangle of face

Wanida Sripairojthikoon, Department of Anatomy, Faculty of Dentistry, Mahidol University
Infraorbital, zygomatic and buccal regions

- **Infraorbital region**
  - Infraorbital foramen
  - Maxillary sinus
  - Canine eminence & fossa

- **Zygomatic region**
  - Body of zygomatic bone
  - Zygomatic arch

- **Buccal region**
Infraorbital, zygomatic and buccal regions

- **Buccal region**
  - Masseter muscle
  - Buccinator muscle
  - Buccal fat pad
  - Parotid gland
  - Parotid duct
  - Facial artery
  - Superficial temporal artery

- **TMJ**
Infraorbital, zygomatic and buccal regions

- Temporomandibular joint and related muscles
  - Masseter muscle
  - Temporalis muscle
  - Lateral pterygoid muscle
  - Medial pterygoid muscle
Oral and mental regions

- Oral region
  - Nasolabial sulcus
  - Labiomental sulcus
  - Labiomarginal sulcus
  - Modiolus of face
  - Lip

- Mental region
  - Chin
  - Mental protuberance
  - Mental foramen
Retromandibular region

- **Boundary**
  - Ant – mandibular neck
  - Post – mastoid process
  - Sup – inferior wall of external acoustic meatus

- **Content**
  - Parotid gland
  - Facial nerve
  - External carotid artery & its branches
  - Styloid process & its attachment
Neck

- **Boundary**
  - **Superior**
    - pericranio-cervical line
  - **Inferior**
    - manubrium sterni
    - clavicle
    - spine of scapula
Regions of neck

- **Triangle of neck**
  - Anterior
  - Posterior

- **Landmark**
  - Bone
    - Mandible
    - Superior nuchal line
    - Clavicle
  - Muscle
    - Sternomastoid muscle
    - Trapezius
Surface anatomy of neck

- **Anterior aspect**
  - **Skeletal prominence**
    - Hyoid bone
    - Laryngeal prominence & thyroid cartilage
    - Cricoid cartilage
    - Tracheal ring
  - **Muscle**
    - Platysma
    - Sternomastoid muscle
    - Trapezius
  - **Fossa / notch**
    - Jugular notch
    - Lesser supraclavicular fossa
    - Greater supraclavicular fossa
  - **Superficial vein**
Surface anatomy of neck

- **Anterior aspect**
  - Superficial veins
    - External jugular vein
    - Anterior jugular vein
  - Artery
    - Subclavian artery
    - Carotid artery
    - Facial artery
Surface anatomy of neck

- Lateral aspect
  - Carotid line
  - Platysma
  - Sternodomastoid muscle
  - Trapezius muscle
  - Clavicle
  - Anterior and posterior triangles
  - Supraclavicular fossa
  - Superficial vein
Surface anatomy of neck

- **Posterior aspect**
  - External occipital protuberance
  - Superior nuchal line
  - Spine of vertebra
  - Spine of scapula
  - Trapezius muscle
Underlying structures of head and neck

- Skin
- Muscles
- Glandular tissue
- Blood vessels
- Lymphatics
- Fascial space
The **appearance of the skin** can have considerable clinical significance. Its color and texture can reveal much about underlying physiology.

- **Color**: Skin is moderately transparent. Light which penetrates the skin is reflected back from varying depths by epidermal cells, by collagen, and by blood.

- **Texture**: Skin texture is affected the thickness and smoothness of the epidermis, by the quality of fibers in the dermis, and by the amount of fluid in dermal connective tissue.
Skin lines of the head and neck

- **1861 Langer’s line**
  - mapped out pattern of parallel lines on cadaver
  - which indicate the direction of elastic tension of skin in particular areas

- **1951 Kraissl’s line**
  - Lines of greatest tension
  - Which coincide with wrinkle line
  - are more appropriate lines for surgical incision

- **1962 Borges & Alexander**
  - termed lines of greatest tension as ‘relaxed skin tension lines’
Wrinkle lines

- Caused by contraction of underlying muscle
- Usually disposed perpendicular to their axis of shortening
- On face, they are known as *lines of expression*
- With progressive loss of skin elasticity due to aging, they become permanent
Muscles of head

- **Muscles of facial expression**
  - In superficial fascia
  - Originate from bone
  - Insert on skin
  - Cause wrinkles at right angle to muscle’s action line
Muscles of head

- Muscles of mastication
  - 4 pairs of muscles, attached to mandible
  - Move mandible during speech and mastication at TMJ
Glandular tissue in head and neck

- Salivary glands
  - Parotid gland
  - Submandibular gland
  - Sublingual gland
- Lacrimal gland
- Thyroid gland
- Parathyroid gland
Blood vessels of head and neck

- **Head**
  - Facial artery and vein
  - Superficial temporal artery and vein
  - Deep lingual vein

- **Neck**
  - Subclavian artery
  - Carotid artery
  - Superficial vein
Blood vessels of head and neck

- **Head**
  - Facial artery and vein
  - Superficial temporal artery and vein
  - Deep lingual vein

- **Neck**
  - Subclavian artery
  - Carotid artery
  - Superficial vein
Lymphatics of head and neck

- **Lymph nodes**
  - Superficial LN
  - Deep LN

- **Tonsillar tissue**
  - Palatine tonsil
  - Lingual tonsil
  - Pharyngeal tonsil

Wanida Sripairojthikoon, Department of Anatomy, Faculty of Dentistry, Mahidol University
Fascial space of head and neck

- Potential spaces between layers of fascia, contain loose connective tissue
- They are not actually spaces in healthy patient
- These spaces are important, because they can be involved in infections from dental tissues
- These spaces can communication with each other directly, allow infection spread to deeper structure
Bibliography

- http://www.siumed.edu/~dking2/intro/skin.htm - Histology of skin
- http://www.kjm.keio.ac.jp/past/50/1/31.pdf - Arterial anatomy of subdermal plexus of the face
- จิรพันธ์ พันธุ์วุฒิกร การวินิจฉัยและการรับบัดการติดเชื้อสาเหตุจากพื้น, 2542