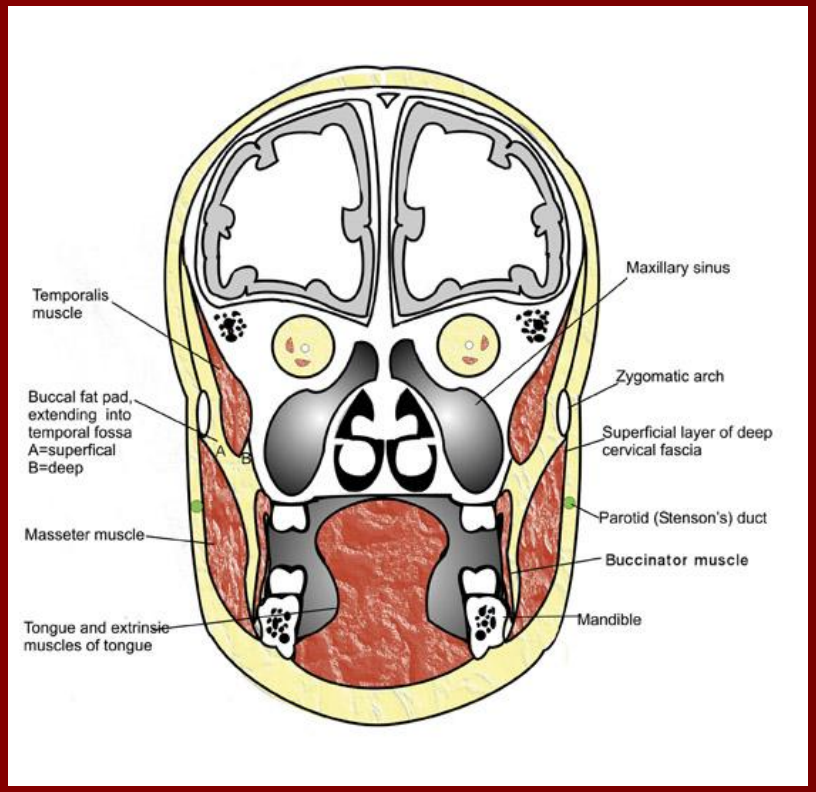
SURGICAL FASCIAL SPACES



Definition

- The fascial spaces in head and neck are the potential spaces between the various layers of fascia normally filled with loose connective tissue (Shapiro) and bounded by anatomical barriers, usually of bone, muscle or fascial layers (Moore).

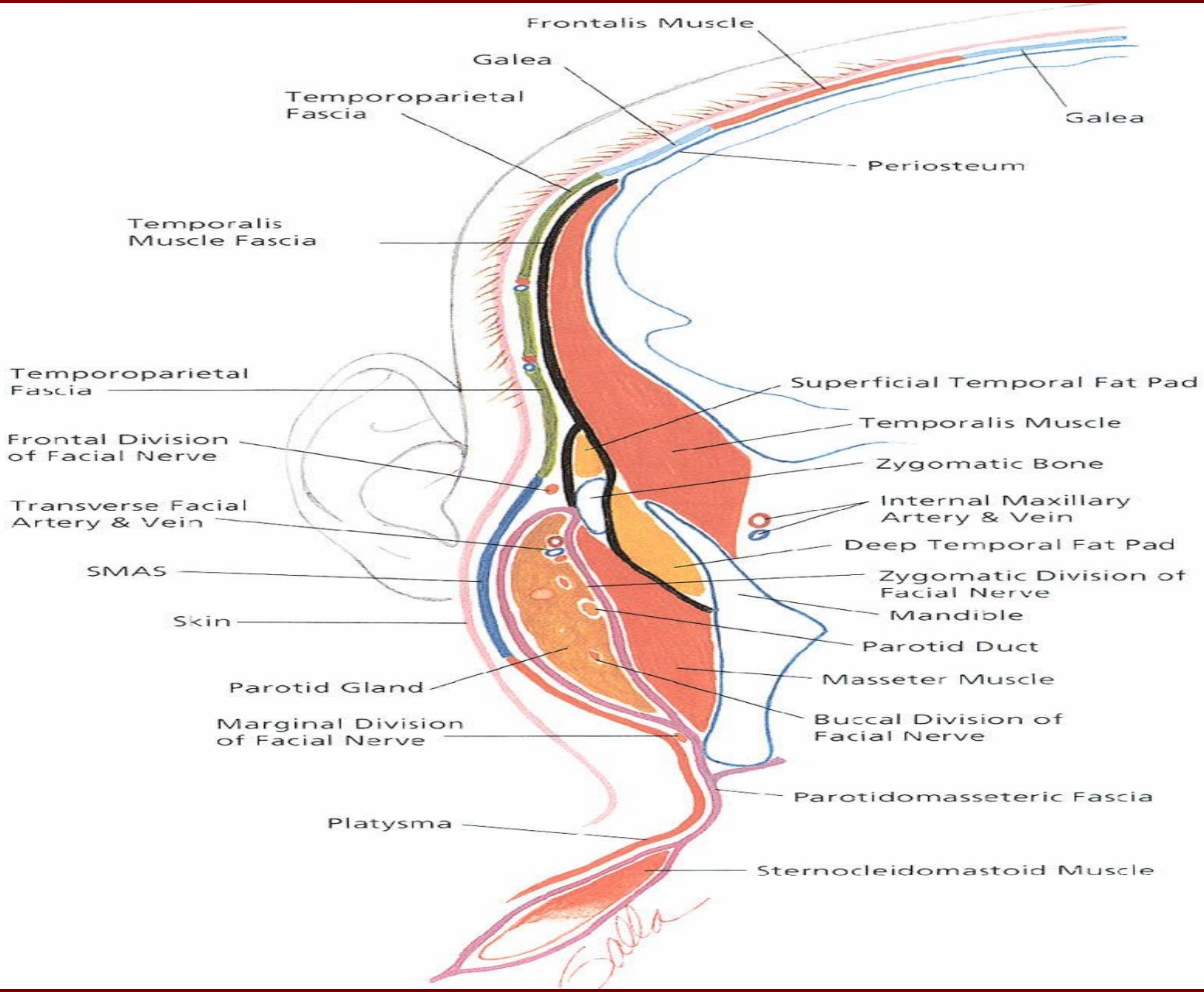
FASCIA OF HEAD AND NECK

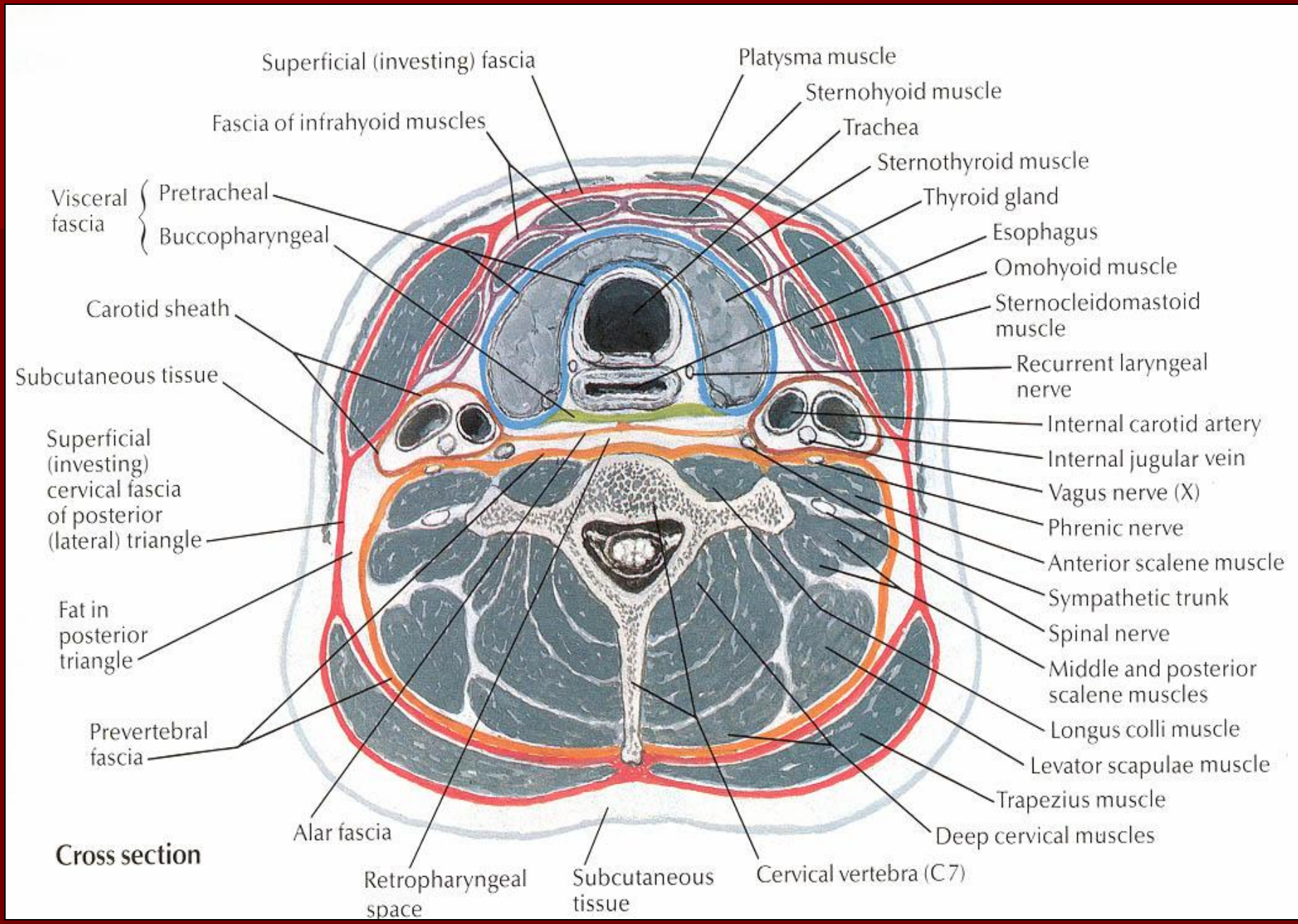
- SUPERFICIAL FASCIA
- DEEP CERVICAL FASCIA

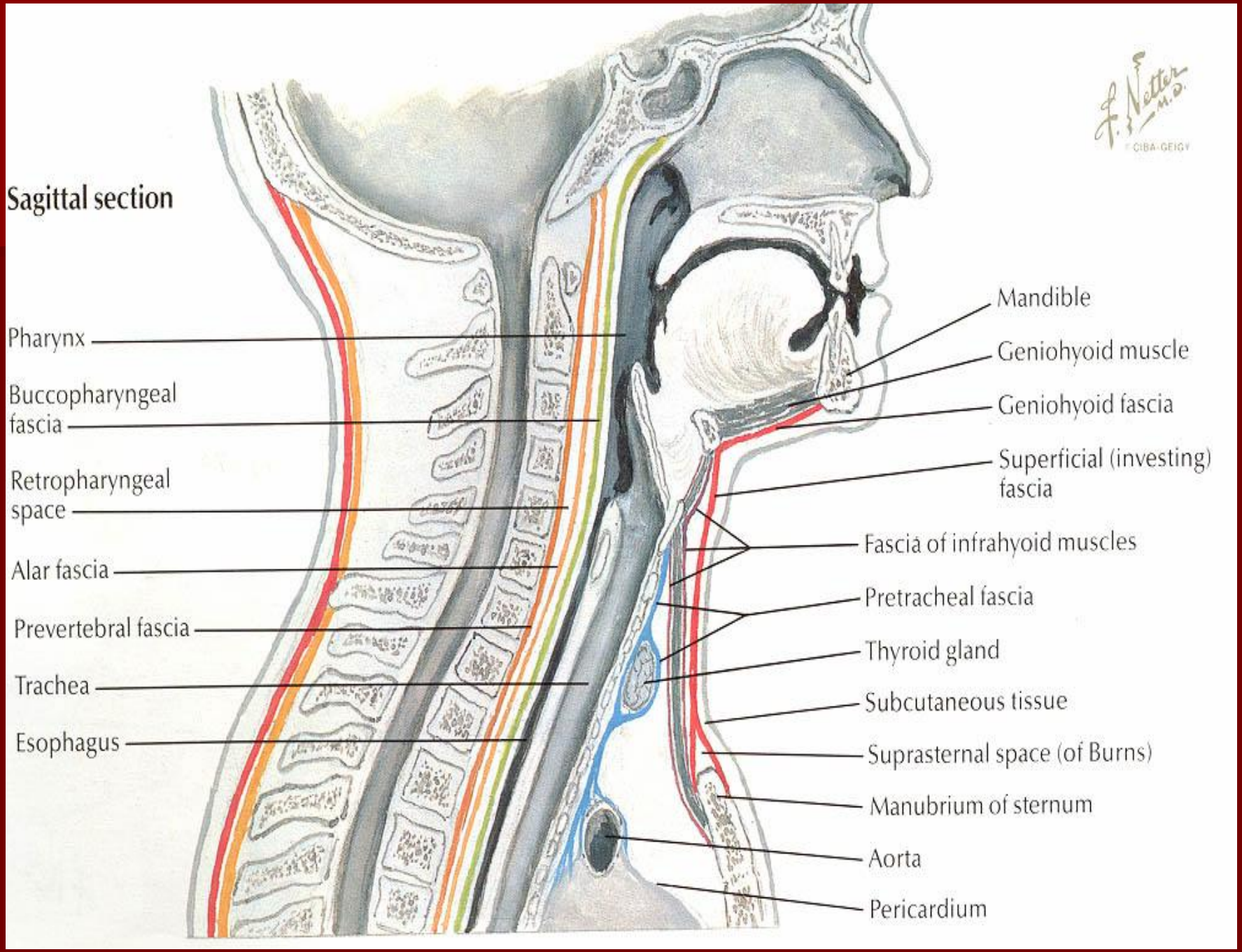
A. ANTERIOR LAYER
   1. Investing layer
   2. Parotideomesseteric
   3.Temporal

B. MIDDLE LAYER
   1.Sternohyoid-omohyoid division
   2.Sternothyroid-thyrohyoid division
   3.Visceral division
      a. Buccopharyngeal
      b. Pretracheal
      c.Retropharyngeal

C. POSTERIOR LAYER
      a. Alar Division
      b. Prevertebral division


Frontalis Muscle
Galea
Temporoparietal Fascia
Galea
Periosteum
Temporalis Muscle Fascia
Temporoparietal Fascia
Superficial Temporal Fat Pad
Temporalis Muscle
Frontal Division of Facial Nerve
Zygomatic Bone
Transverse Facial Artery & Vein
Internal Maxillary Artery & Vein
Deep Temporal Fat Pad
SMAS
Zygomatic Division of Facial Nerve
Mandible
Skin
Parotid Duct
Masseter Muscle
Parotid Gland
Buccal Division of Facial Nerve
Marginal Division of Facial Nerve
Parotidomasseteric Fascia
Platysma
Sternocleidomastoid Muscle


Superficial (investing) fascia
Platysma muscle
Sternohyoid muscle
Fascia of infrahyoid muscles
Trachea
Sternothyroid muscle
Visceral fascia
Pretracheal
Buccopharyngeal
Thyroid gland
Esophagus
Omohyoid muscle
Carotid sheath
Sternocleidomastoid muscle
Subcutaneous tissue
Recurrent laryngeal nerve
Internal carotid artery
Superficial (investing) cervical fascia of posterior (lateral) triangle
Internal jugular vein
Vagus nerve (X)
Phrenic nerve
Anterior scalene muscle
Fat in posterior triangle
Sympathetic trunk
Spinal nerve
Middle and posterior scalene muscles
Prevertebral fascia
Longus colli muscle
Levator scapulae muscle
Trapezius muscle
Alar fascia
Deep cervical muscles
Cross section
Retropharyngeal space
Subcutaneous tissue
Cervical vertebra (C7)


Sagittal section
Pharynx
Buccopharyngeal fascia
Retropharyngeal space
Alar fascia
Prevertebral fascia
Trachea
Esophagus
Mandible
Geniohyoid muscle
Geniohyoid fascia
Superficial (investing) fascia
Fascia of infrahyoid muscles
Pretracheal fascia
Thyroid gland
Subcutaneous tissue
Suprasternal space (of Burns)
Manubrium of sternum
Aorta
Pericardium

CLASSIFICATION OF FASCIAL SPACES

MODE OF INVOLVEMENT

1º maxillary spaces

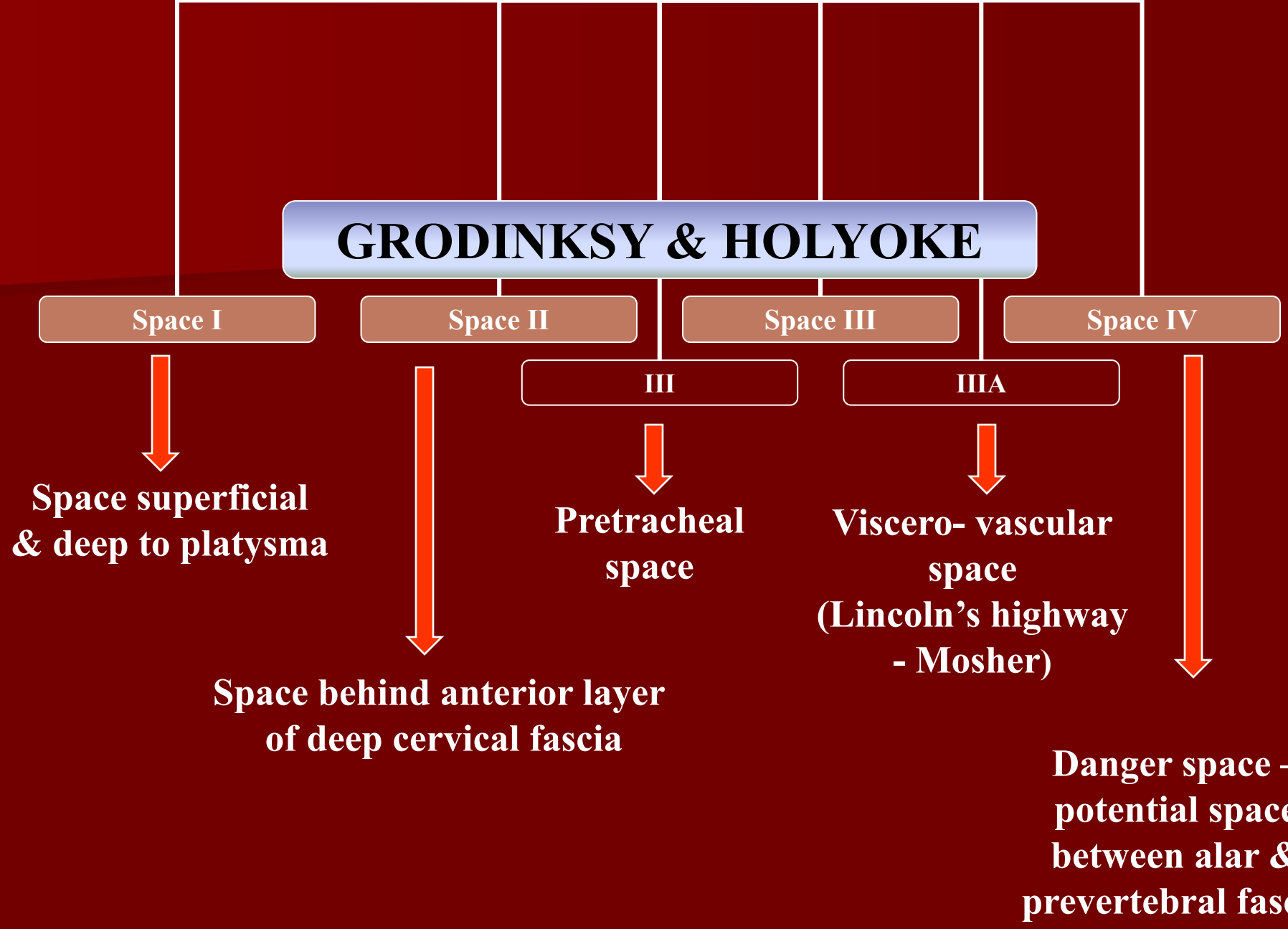
- Canine
- Buccal
- Infratemporal

1º mandibular spaces

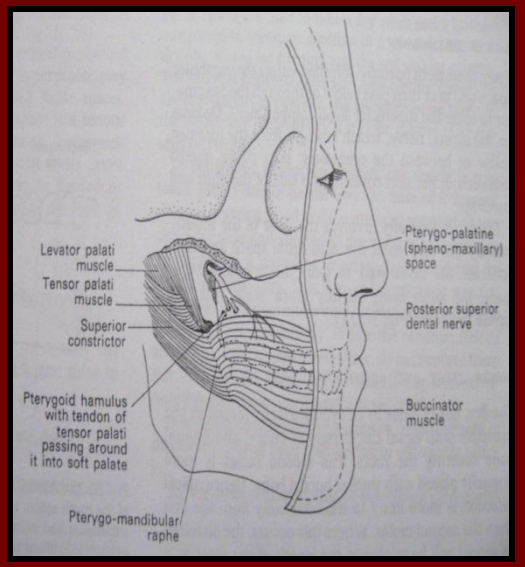
- Submental
- Submandibular
- Sublingual
- Buccal

2º fascial spaces

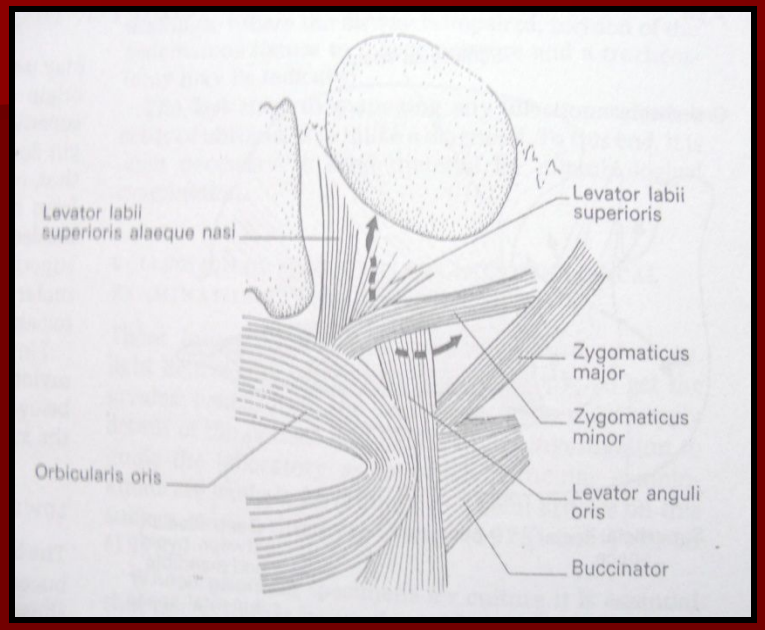
- Massetric
- Pterygomandibular
- Sup. & deep temp.
- Lateral pharyngeal
- Retropharyngeal
- Prevertebral
- Parotid space

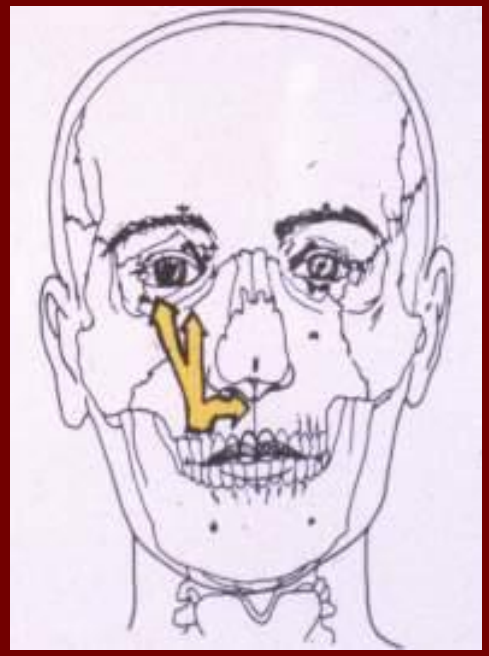

GRODINKSY & HOLYOKE
Space I
Space II
Space III
Space IV
III
IIIA
Space superficial & deep to platysma
Space behind anterior layer of deep cervical fascia
Pretracheal space
Viscero- vascular space (Lincoln's highway - Mosher)
Danger space – potential space between alar & prevertebral fascia

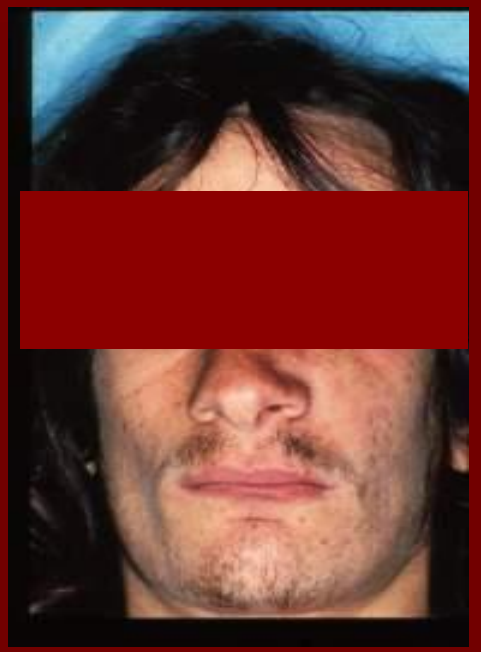
PRIMARY MAXILLARY SPACES



INFRAORBITAL OF CANINE SPACE







BUCCAL SPACE

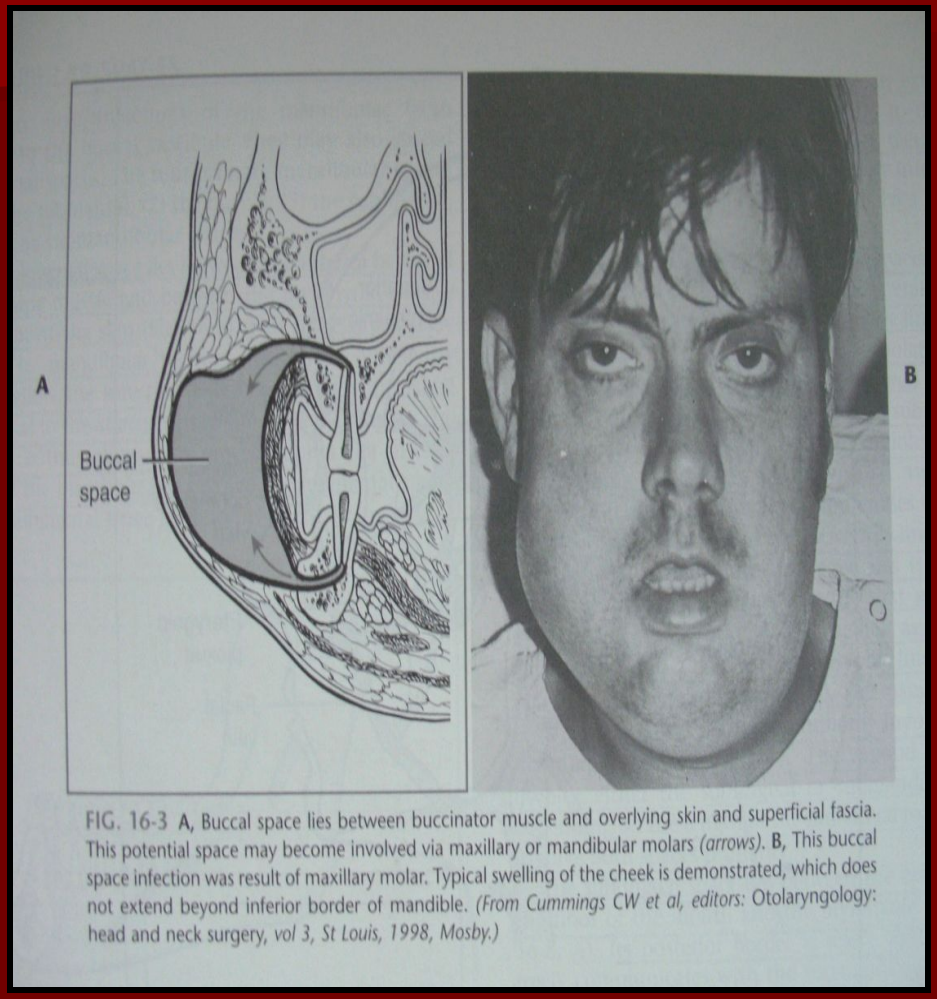
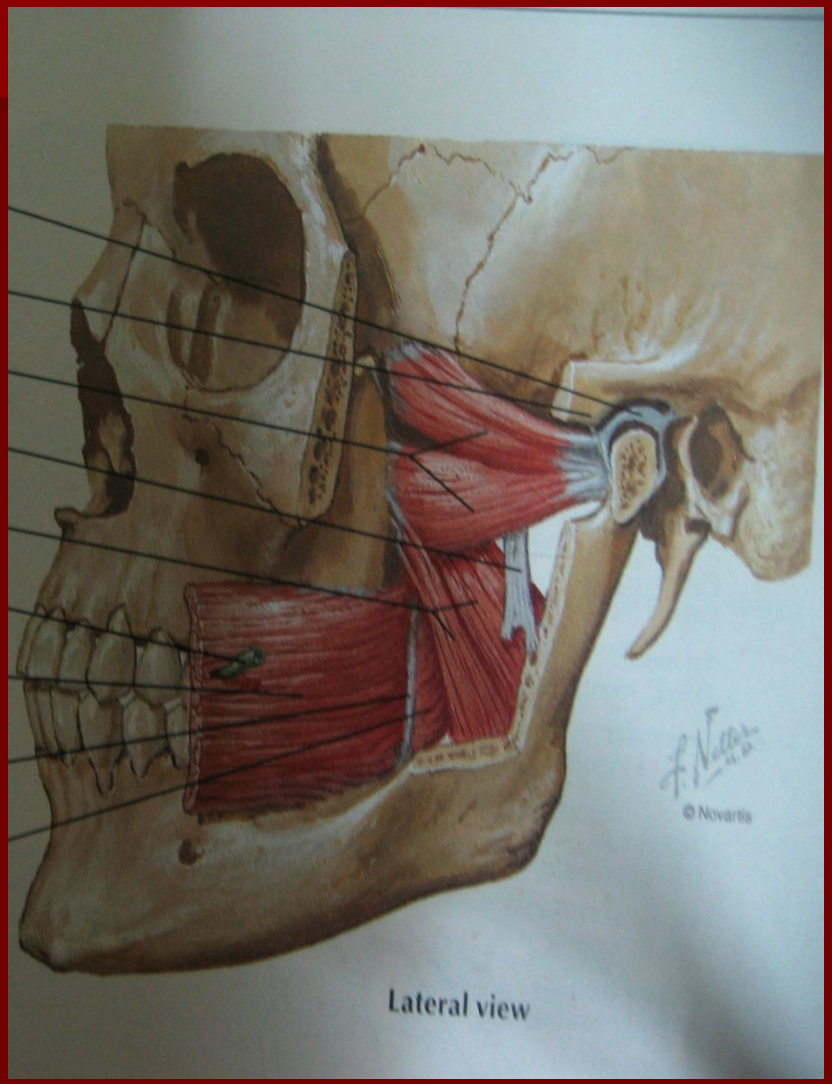


FIG. 16-3 A, Buccal space lies between buccinator muscle and overlying skin and superficial fascia. This potential space may become involved via maxillary or mandibular molars *(arrows)*. B, This buccal space infection was result of maxillary molar. Typical swelling of the cheek is demonstrated, which does not extend beyond inferior border of mandible. *(From Cummings CW et al, editors:* Otolaryngology: head and neck surgery, *vol 3, St Louis, 1998, Mosby.)*

INFRATEMPORAL SPACE



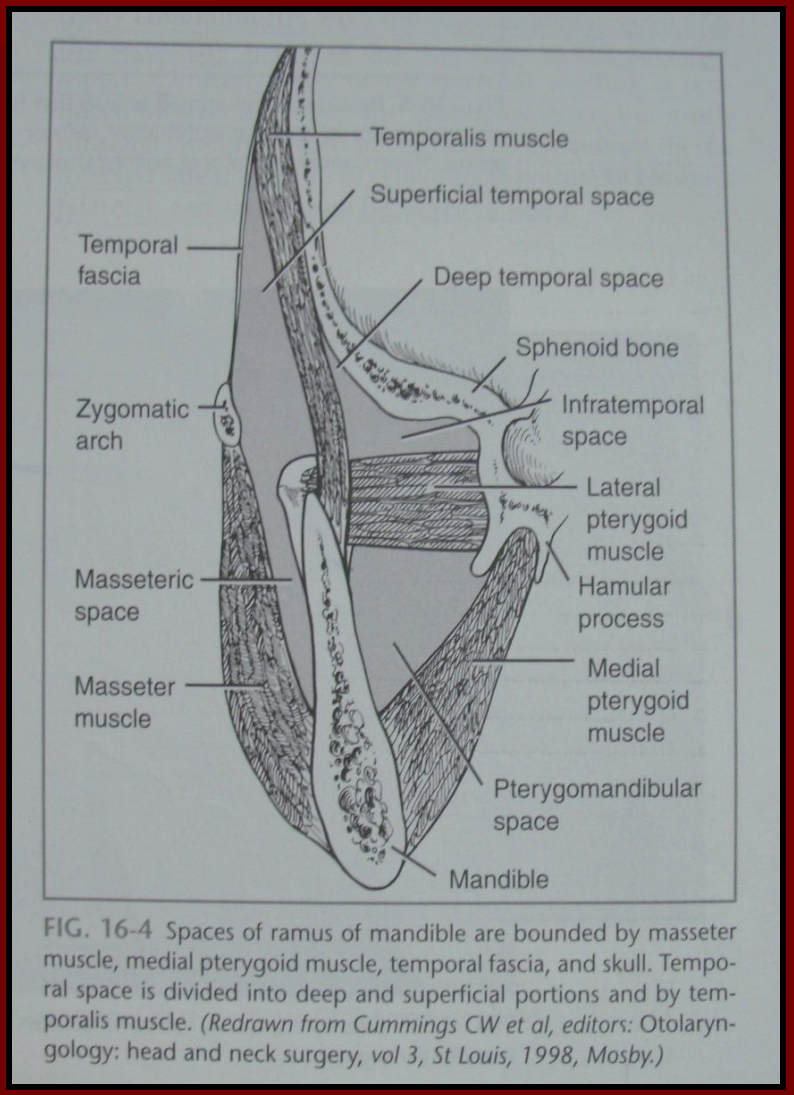
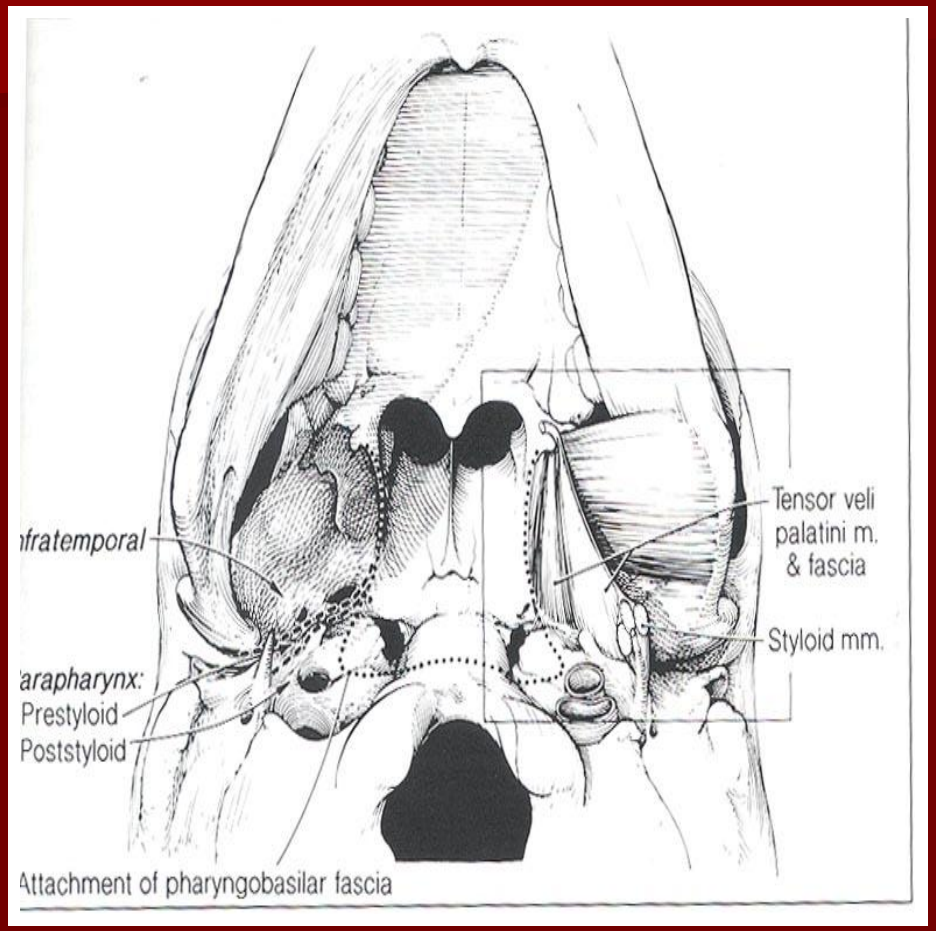
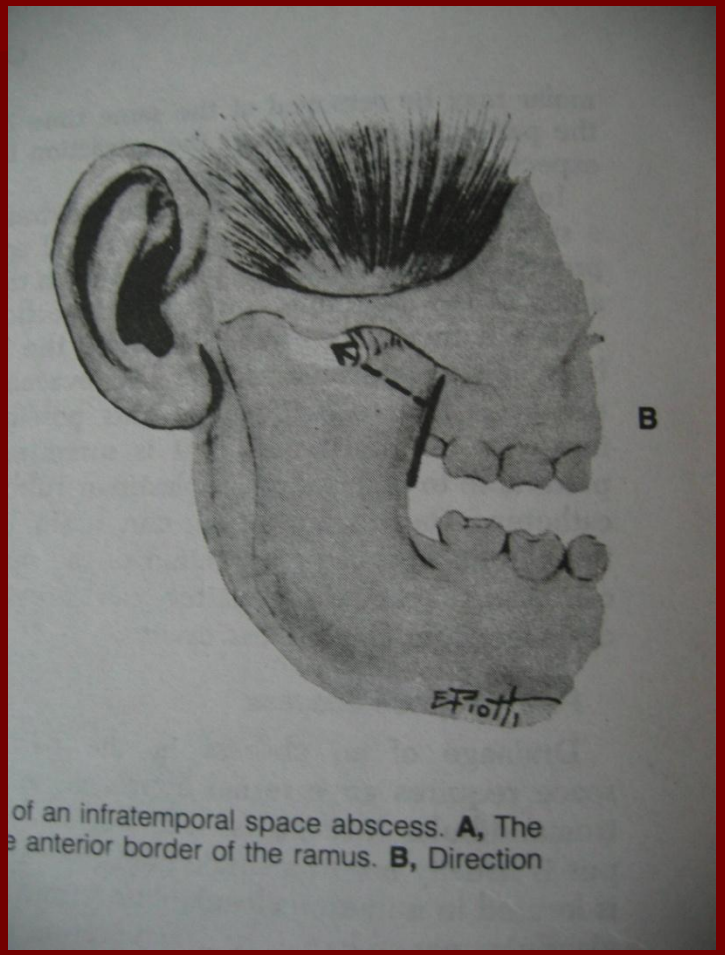


FIG. 16-4 Spaces of ramus of mandible are bounded by masseter muscle, medial pterygoid muscle, temporal fascia, and skull. Temporal space is divided into deep and superficial portions and by temporalis muscle. *(Redrawn from Cummings CW et al, editors:* Otolaryngology: head and neck surgery, *vol 3, St Louis, 1998, Mosby.)*

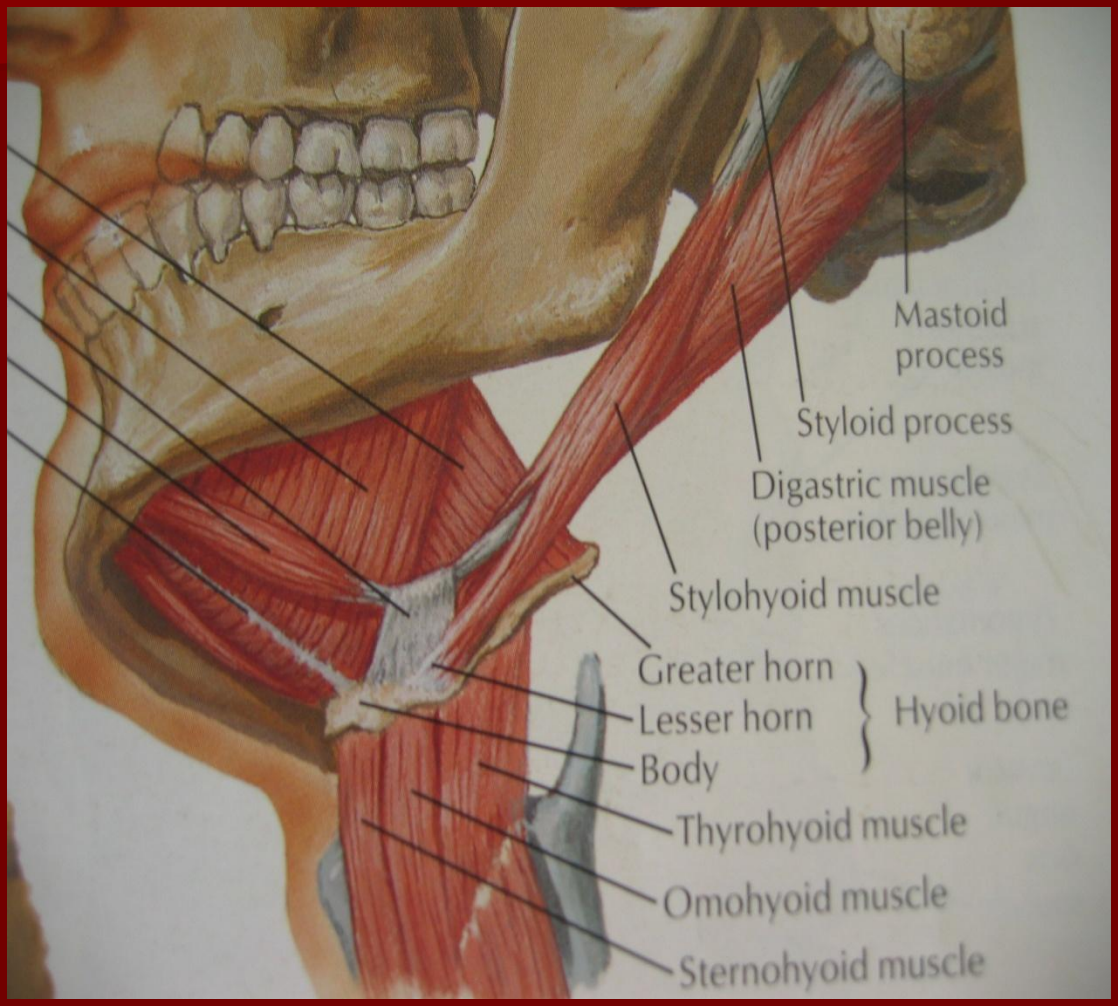




of an infratemporal space abscess. **A,** The anterior border of the ramus. **B,** Direction

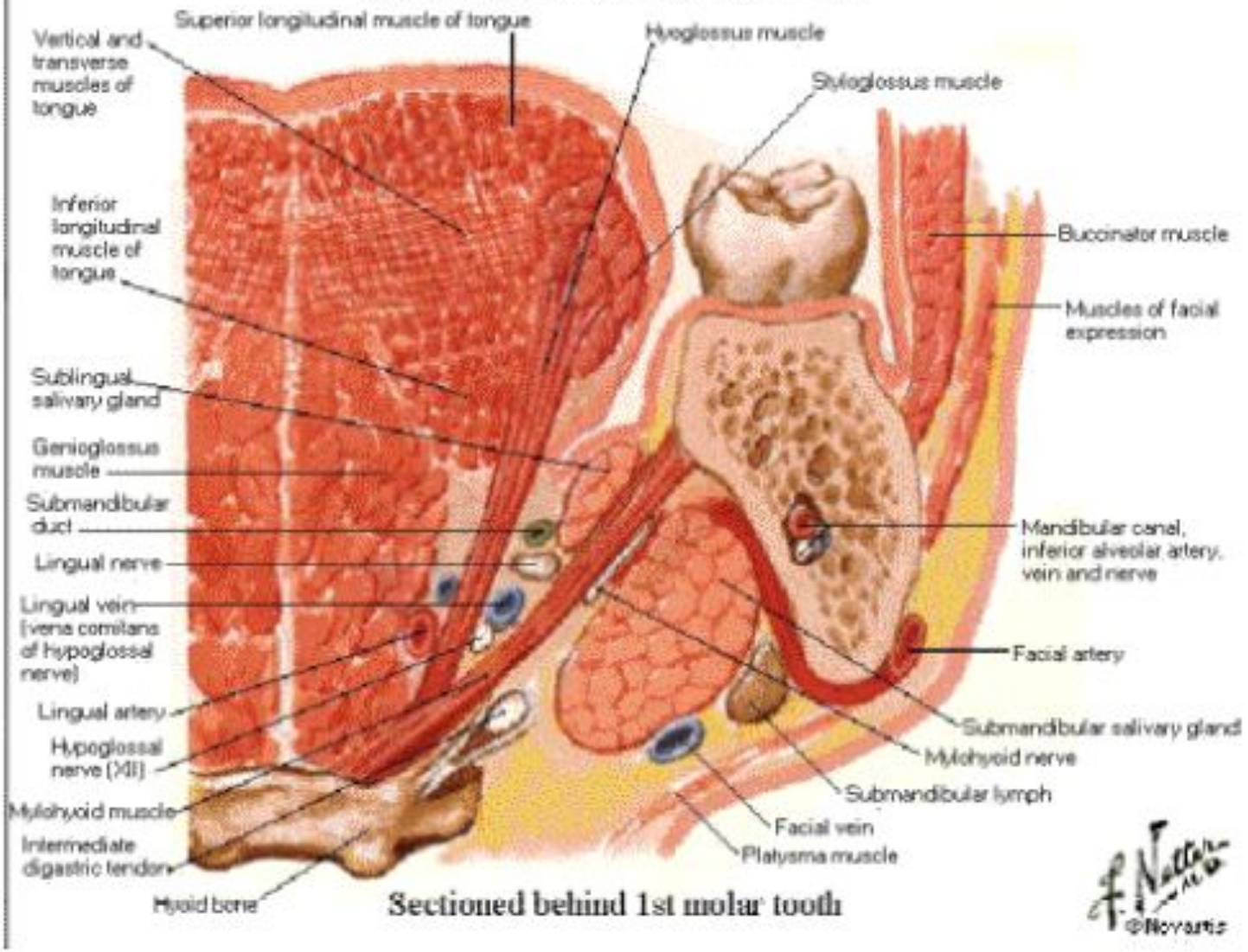
PRIMARY MANDIBULAR SPACES

SUBMANDIBULAR SPACE

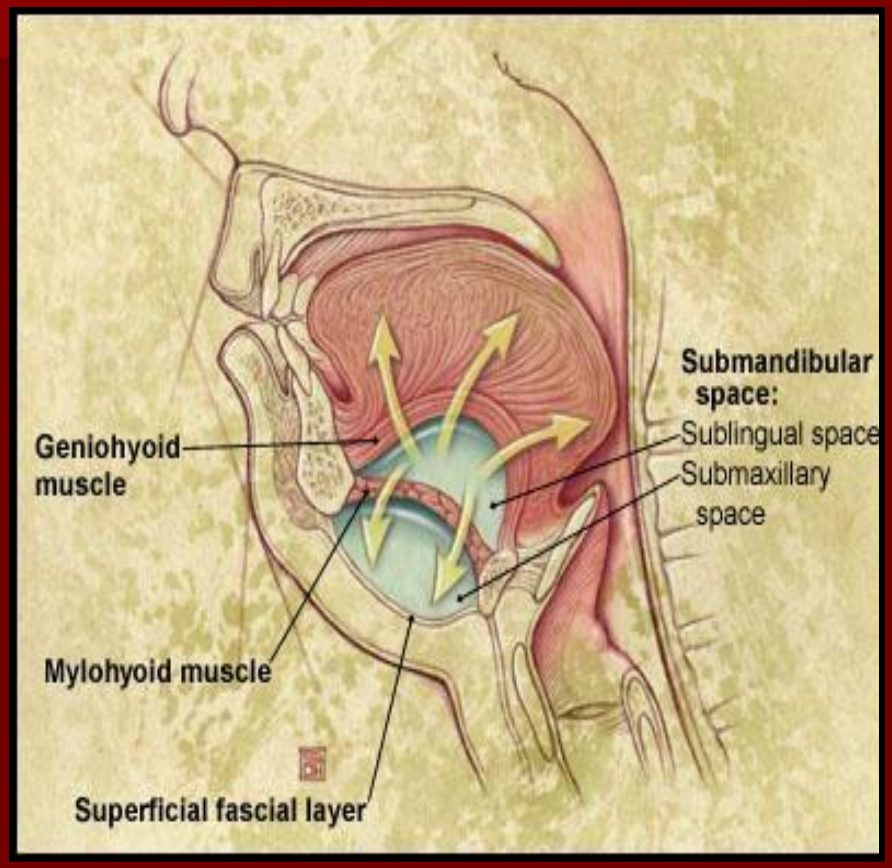


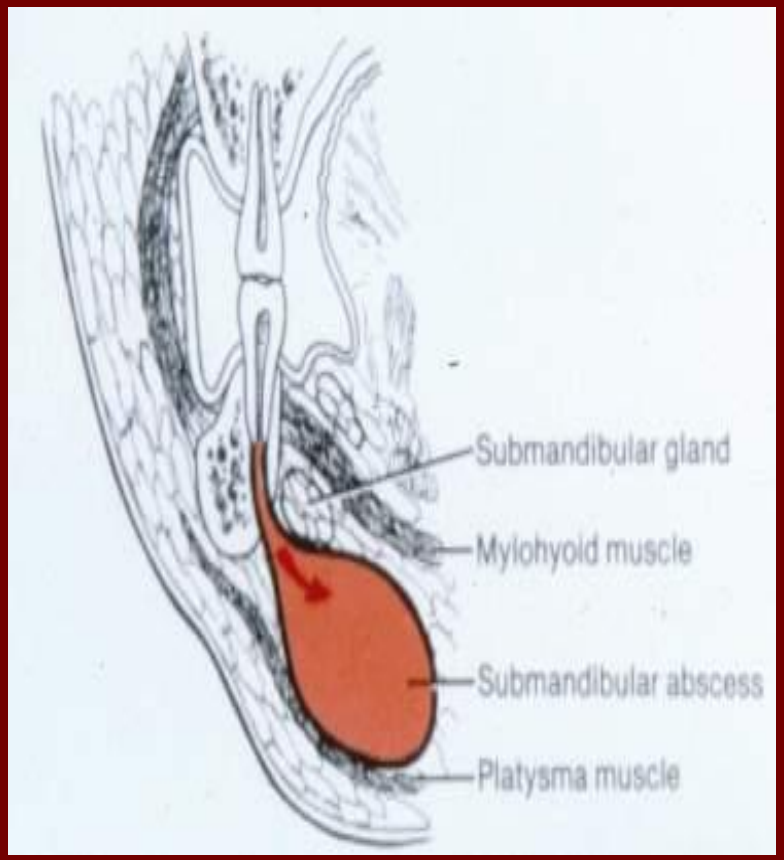
Tongue and Mouth

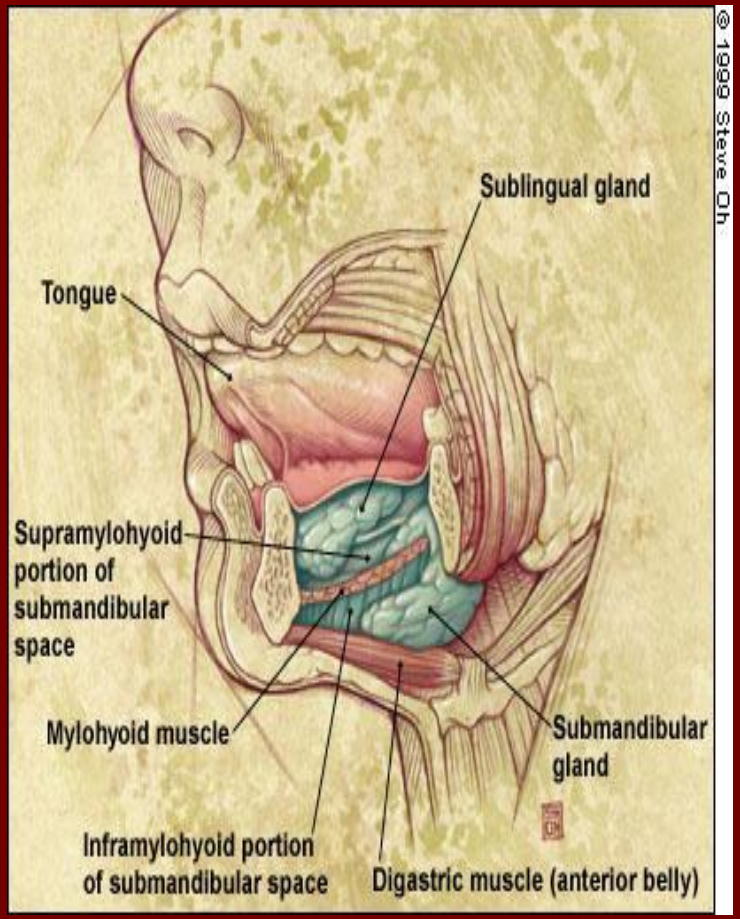
Frontal Section - Anterior View



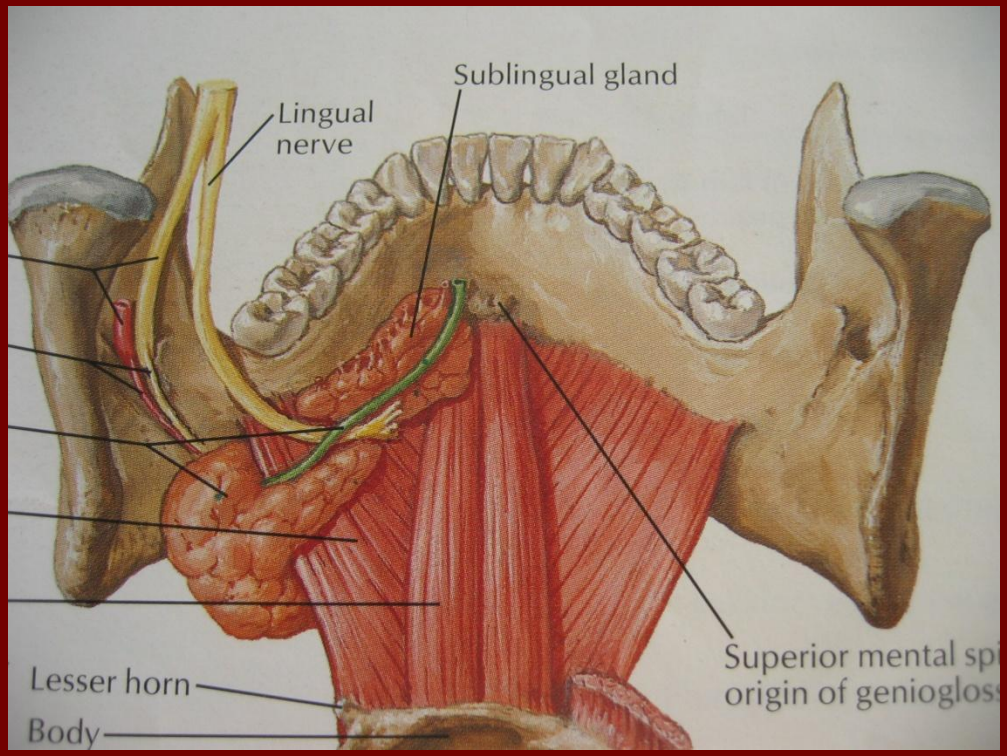
Sectioned behind 1st molar tooth

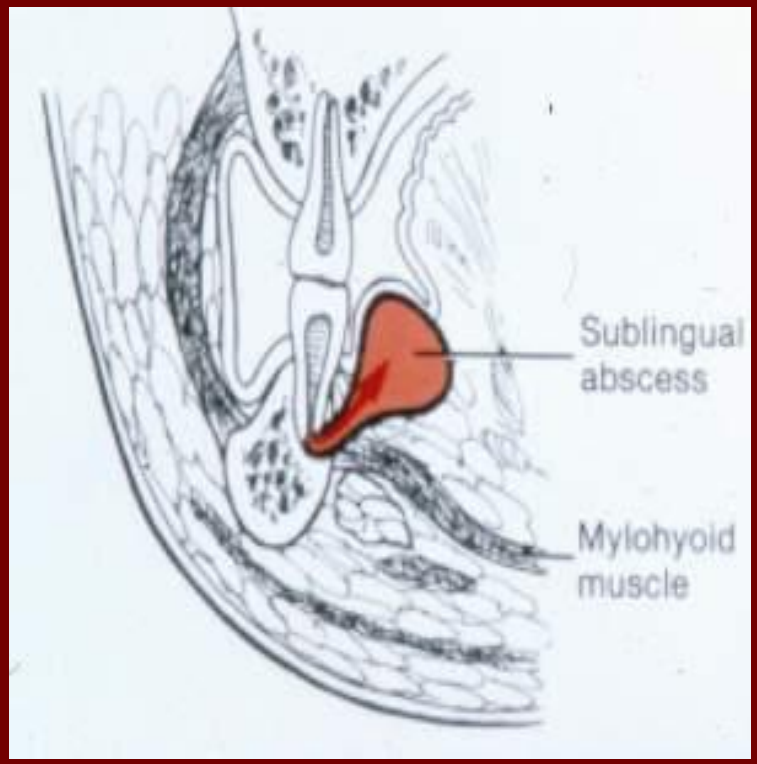

Submandibular space:
Sublingual space
Submaxillary space
Geniohyoid muscle
Mylohyoid muscle
Superficial fascial layer

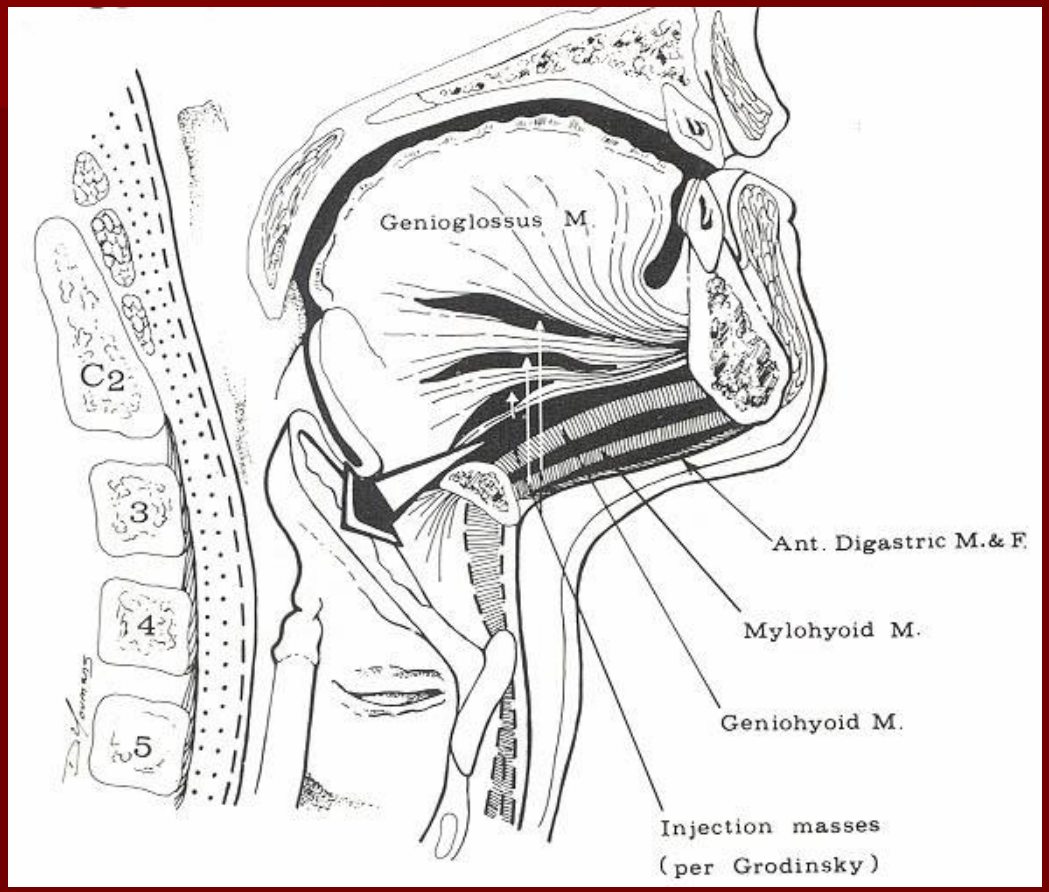

Submandibular gland
Mylohyoid muscle
Submandibular abscess
Platysma muscle


© 1999 Steve Oh
Sublingual gland
Tongue
Supramylohyoid portion of submandibular space
Mylohyoid muscle
Submandibular gland
Inframylohyoid portion of submandibular space
Digastric muscle (anterior belly)

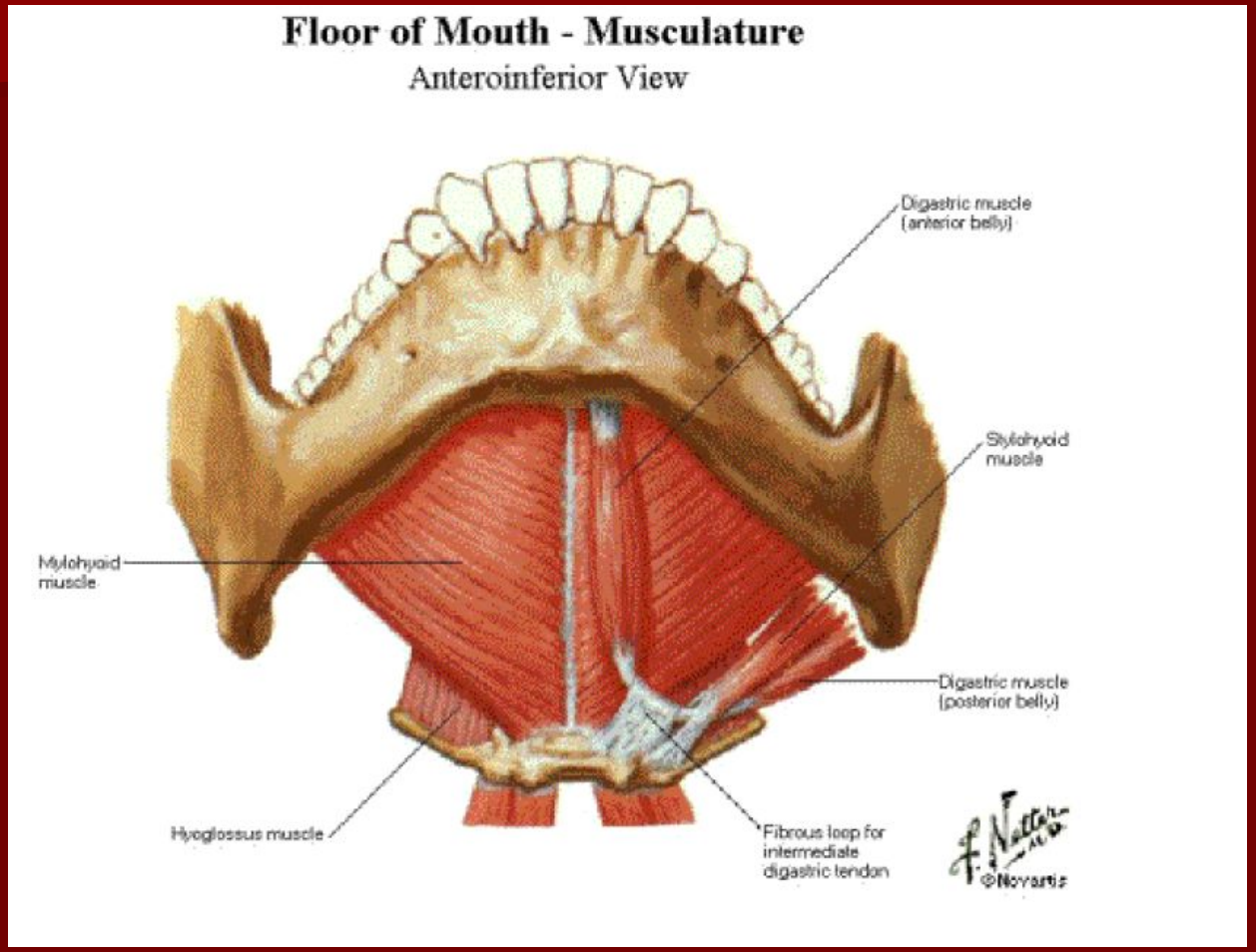
SUBLINGUAL SPACE





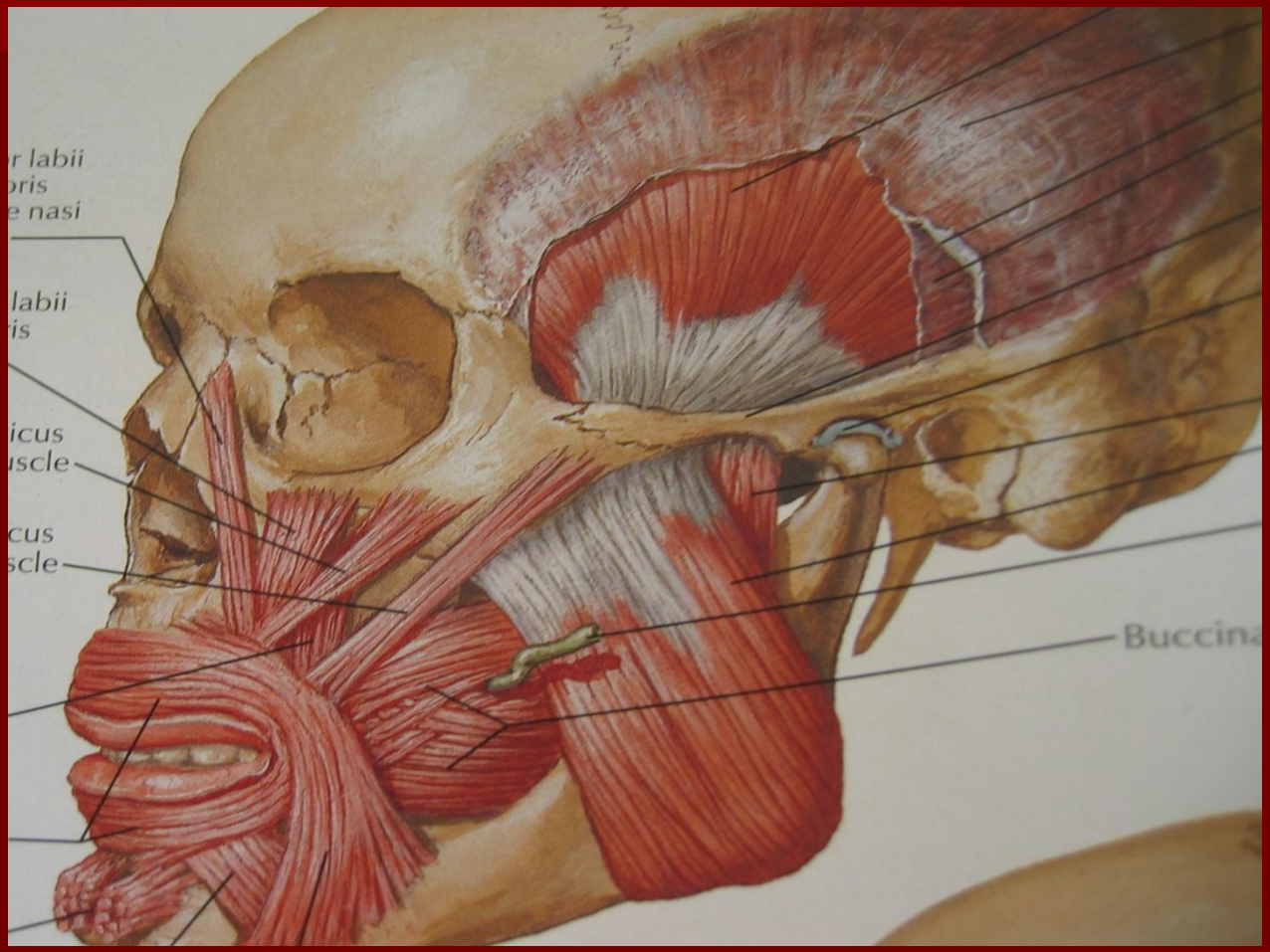

Genioglossus M.
C2
3
4
5
Ant. Digastric M.& F.
Mylohyoid M.
Geniohyoid M.
Injection masses
(per Grodinsky)

SUBMENTAL SPACE

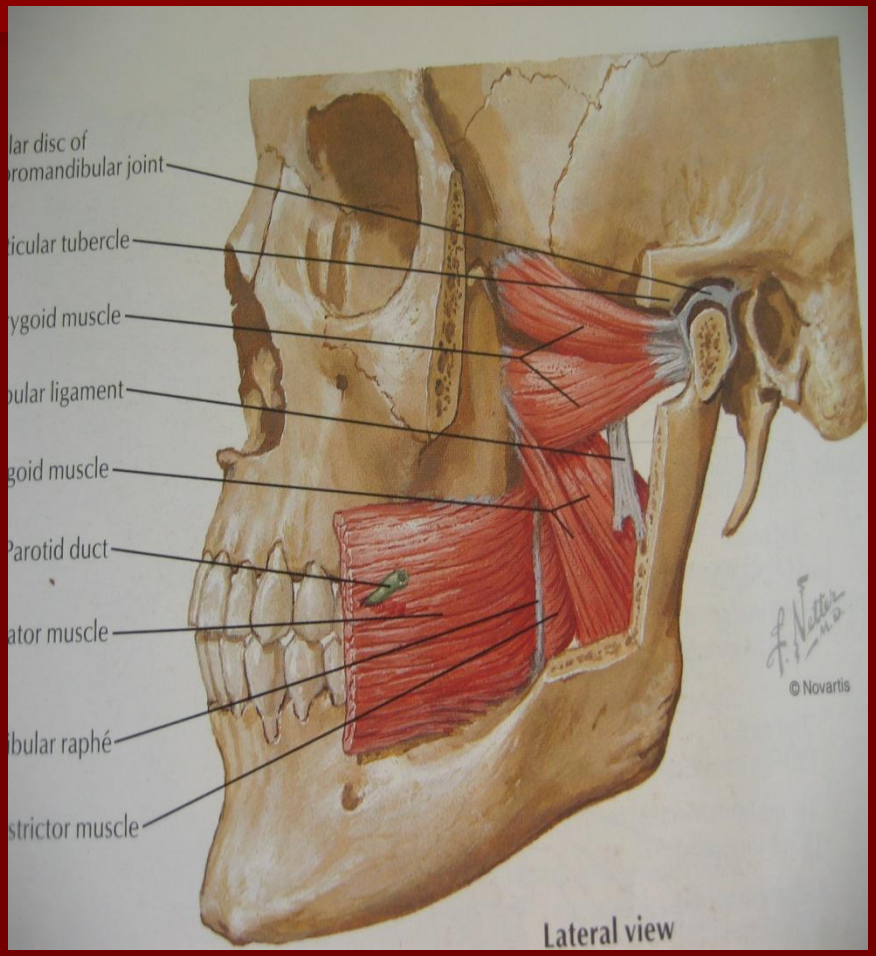


MASTICATORY SPACES

SUB MASSETERIC SPACE



PTERYGOMANDIBULAR SPACE



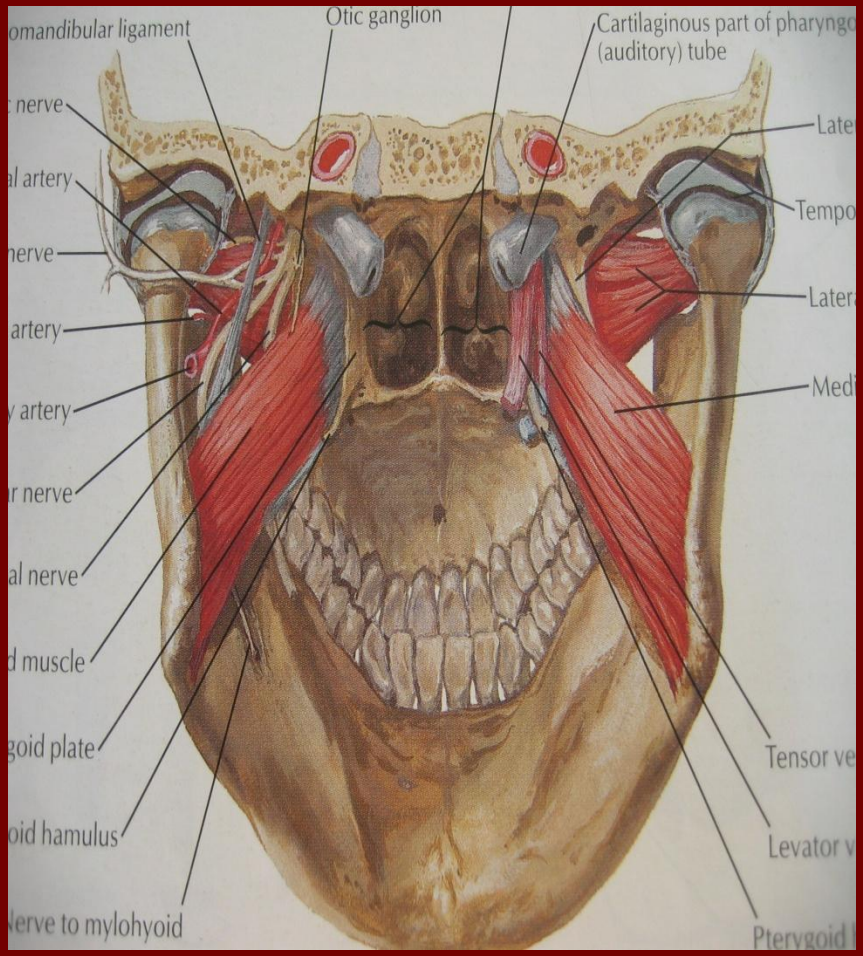


FIGURE 15-4 *Right pterygomandibular space abscess. Note the swelling of the anterior tonsillar pillar and the deviation of the edematous uvula to the opposite side. Reproduced with permission from Flynn TR and Topazian RG.*[30]

SUPERFICIAL TEMPORAL SPACE

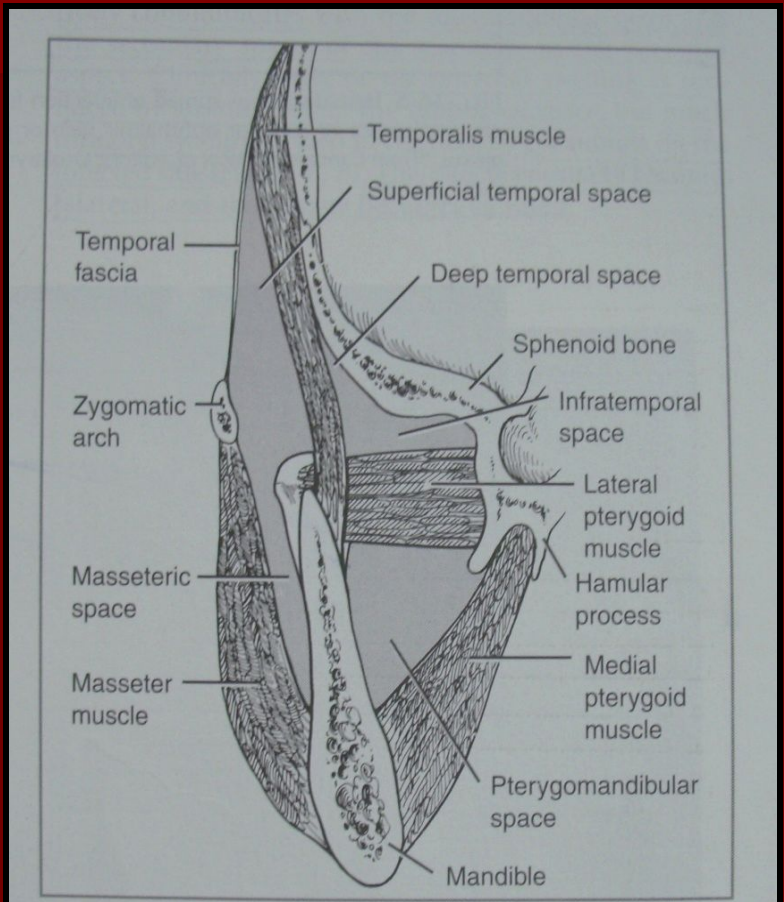
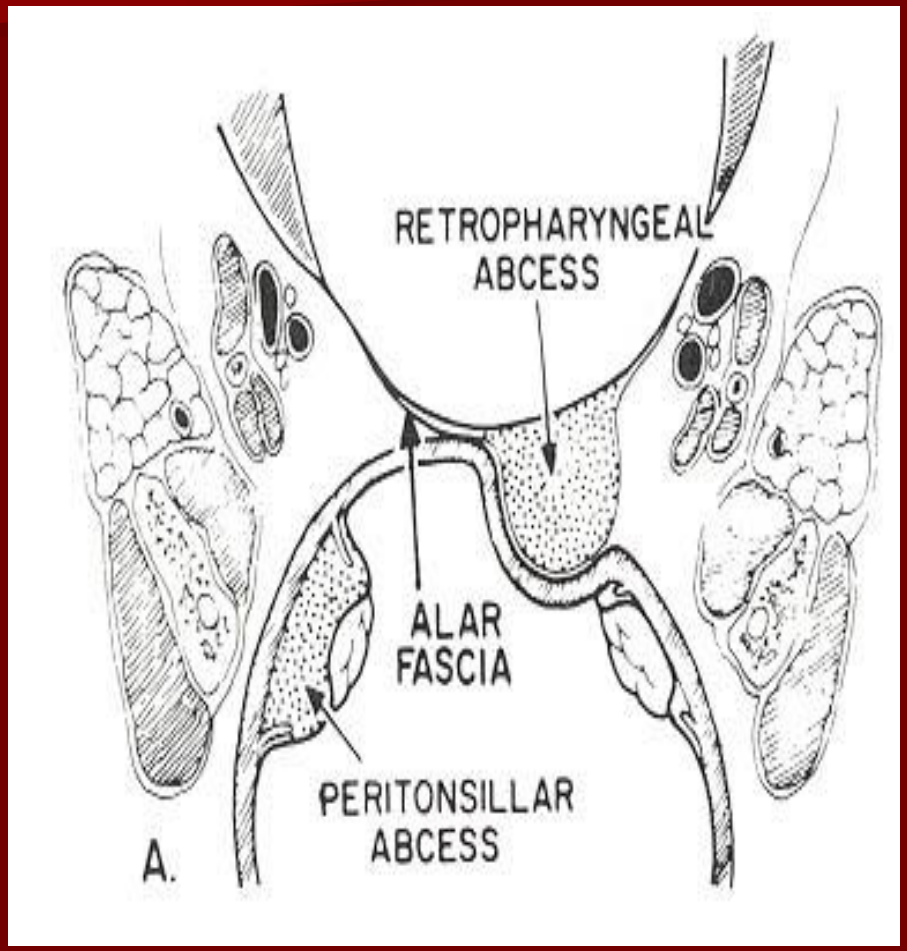
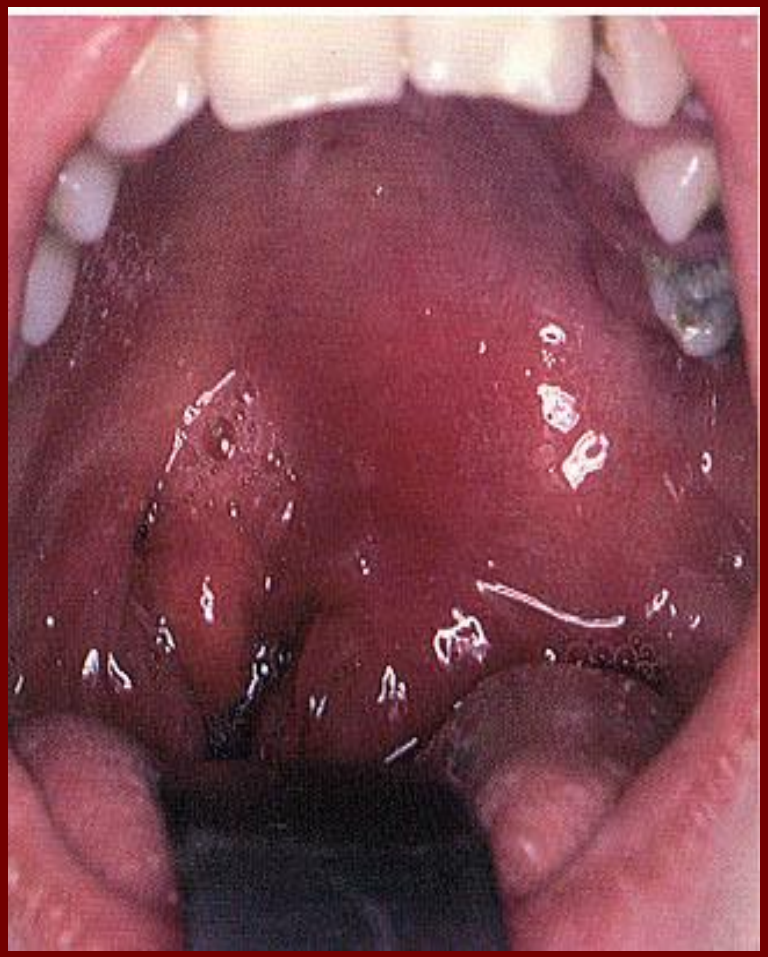


FIG. 16-4 Spaces of ramus of mandible are bounded by masseter muscle, medial pterygoid muscle, temporal fascia, and skull. Temporal space is divided into deep and superficial portions and by temporalis muscle. *(Redrawn from Cummings CW et al, editors:* Otolaryngology: head and neck surgery, *vol 3, St Louis, 1998, Mosby.)*

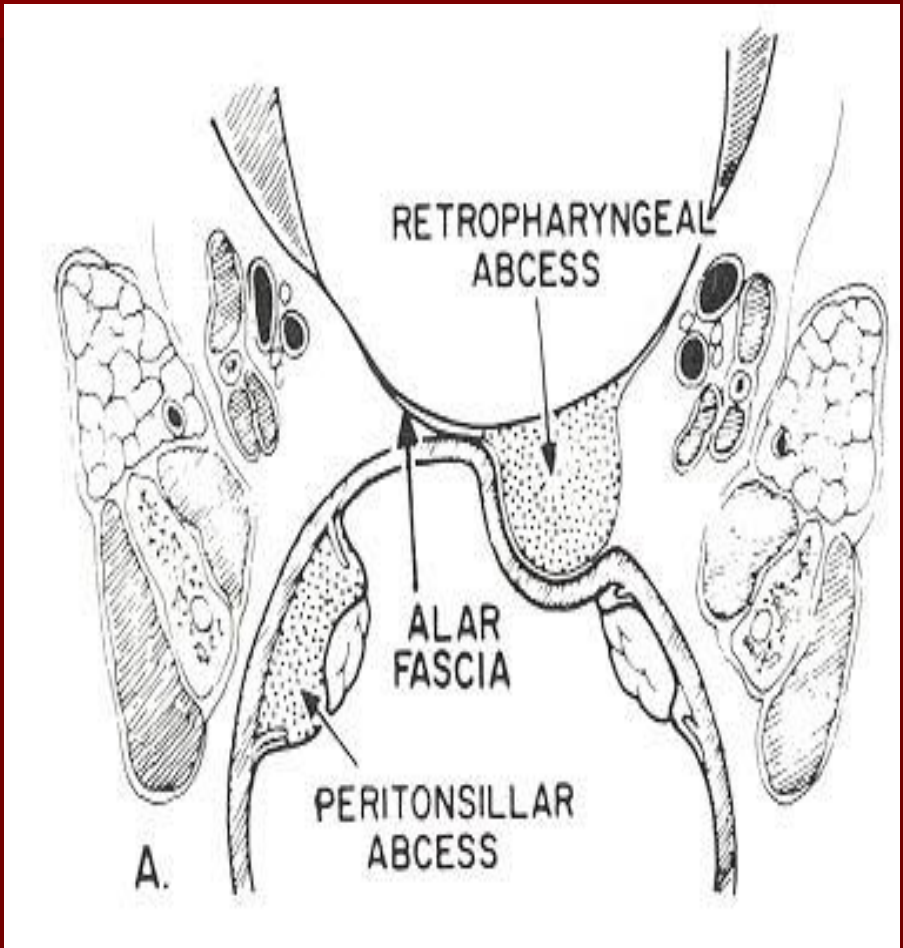
SECONDARY FASCIAL SPACES

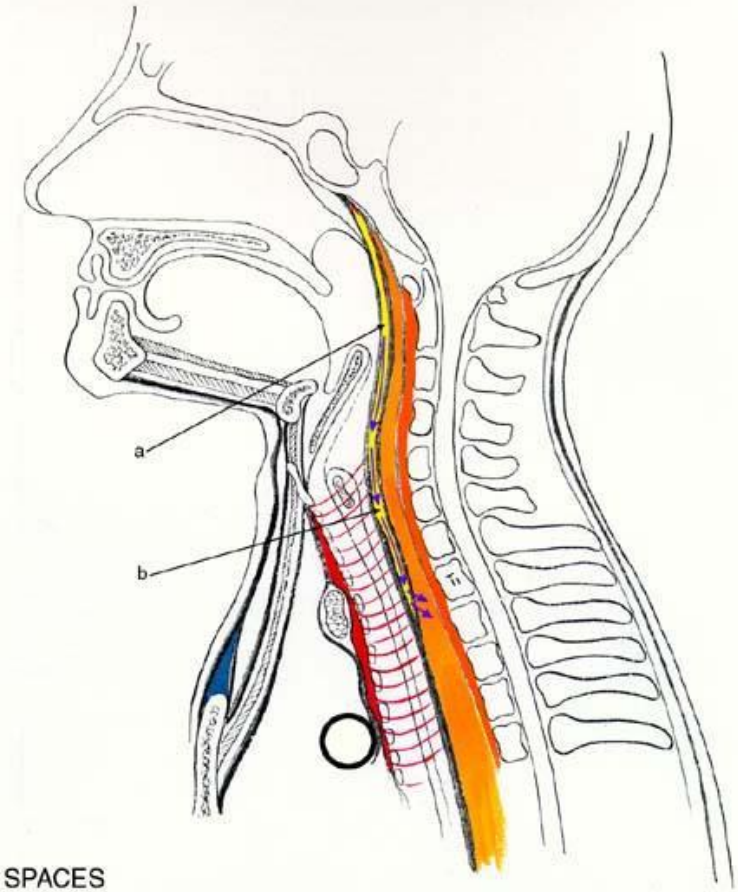
PERITONSILLAR SPACE





RETROPHARYNGEAL SPACE





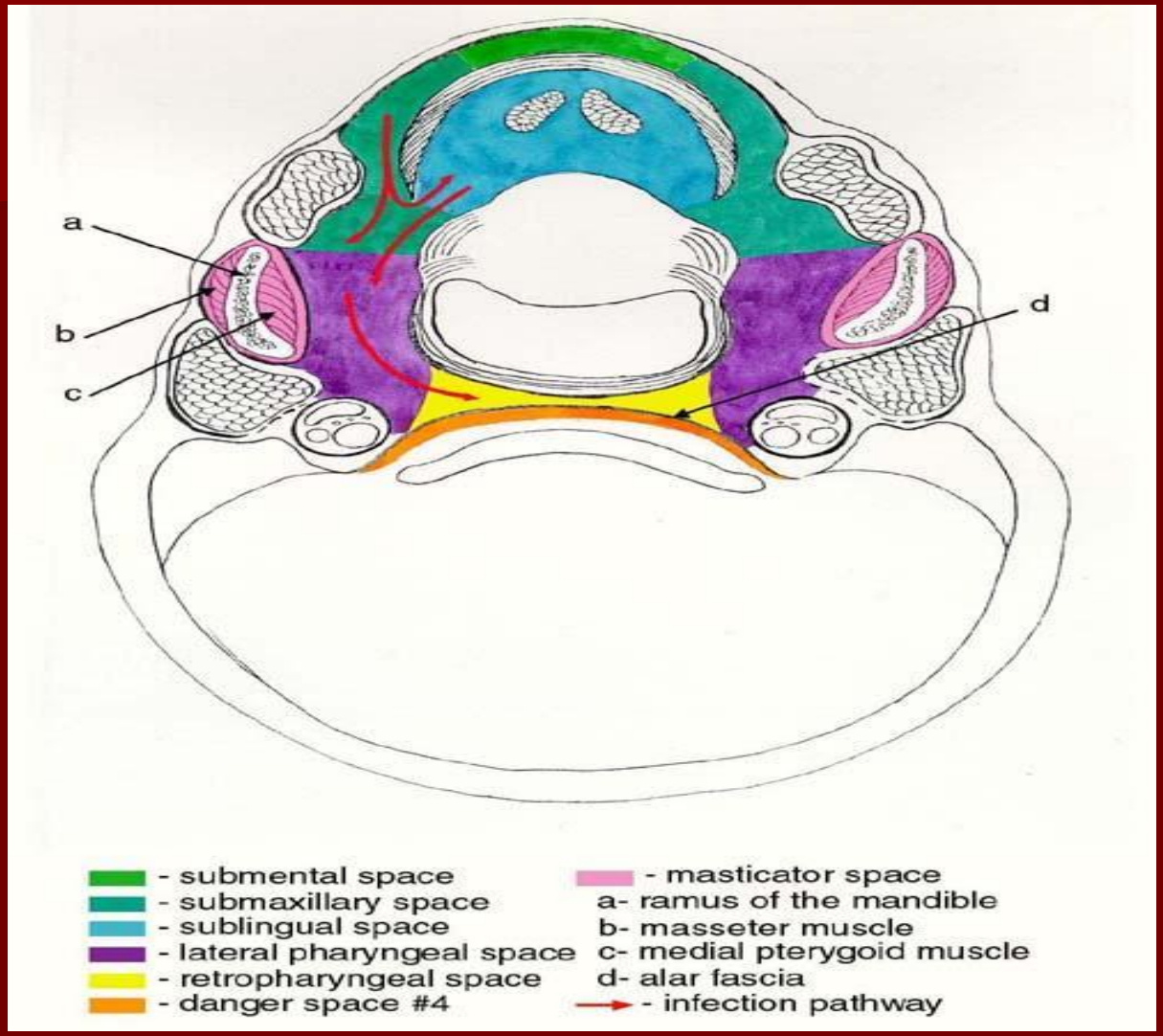
SPACES

- suprasternal space
- pretracheal space
- retrovisceral and retropharyngeal spaces

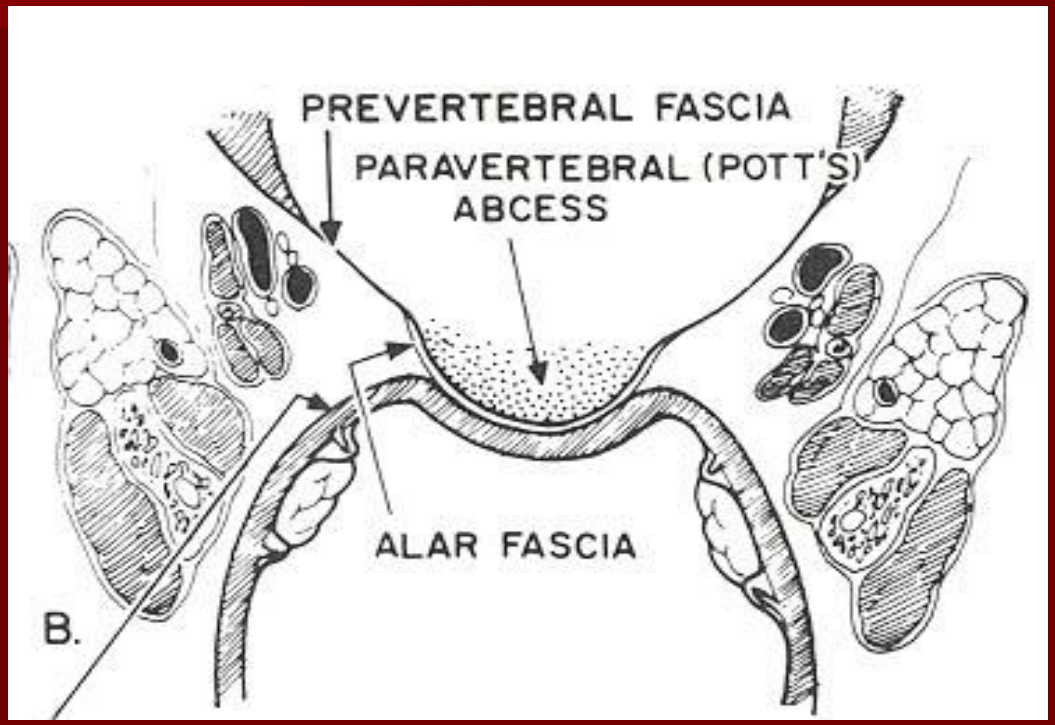
a- retropharyngeal space

b- retrovisceral space

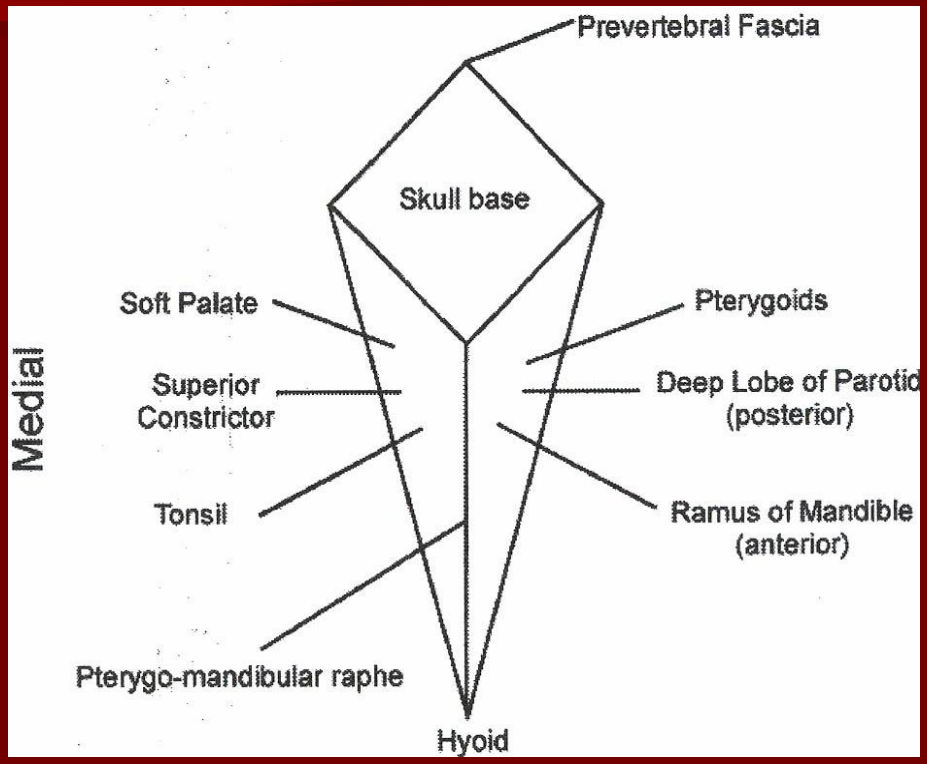
- danger space #4
- prevertebral space
- infection pathway

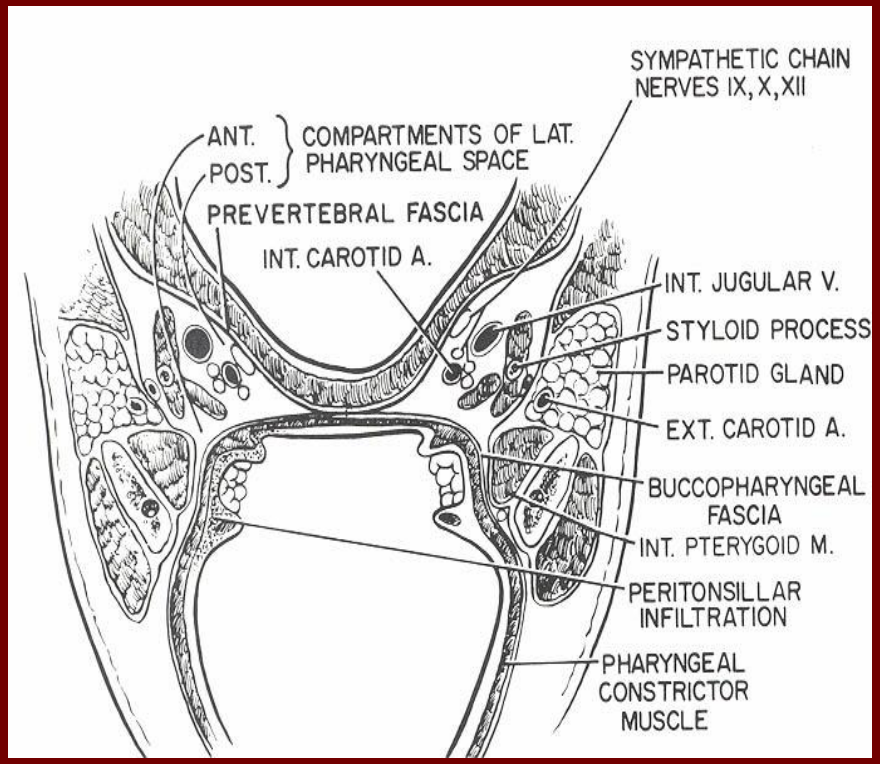

a
b
c
d
- submental space
- submaxillary space
- sublingual space
- lateral pharyngeal space
- retropharyngeal space
- danger space #4
- masticator space
a- ramus of the mandible
b- masseter muscle
c- medial pterygoid muscle
d- alar fascia
- infection pathway

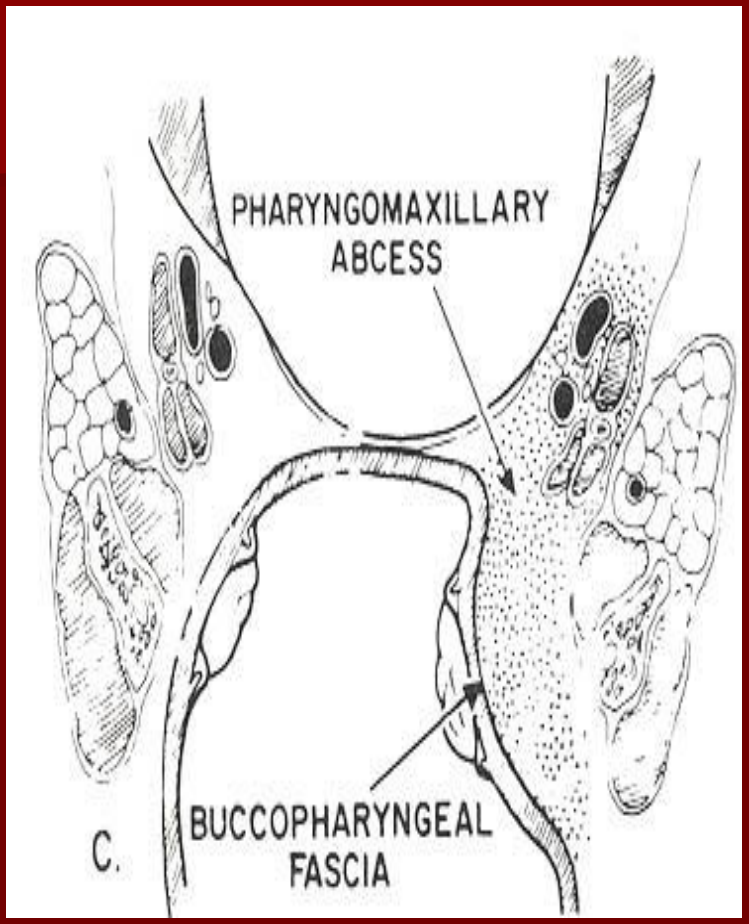
PRE VERTEBRAL SPACE

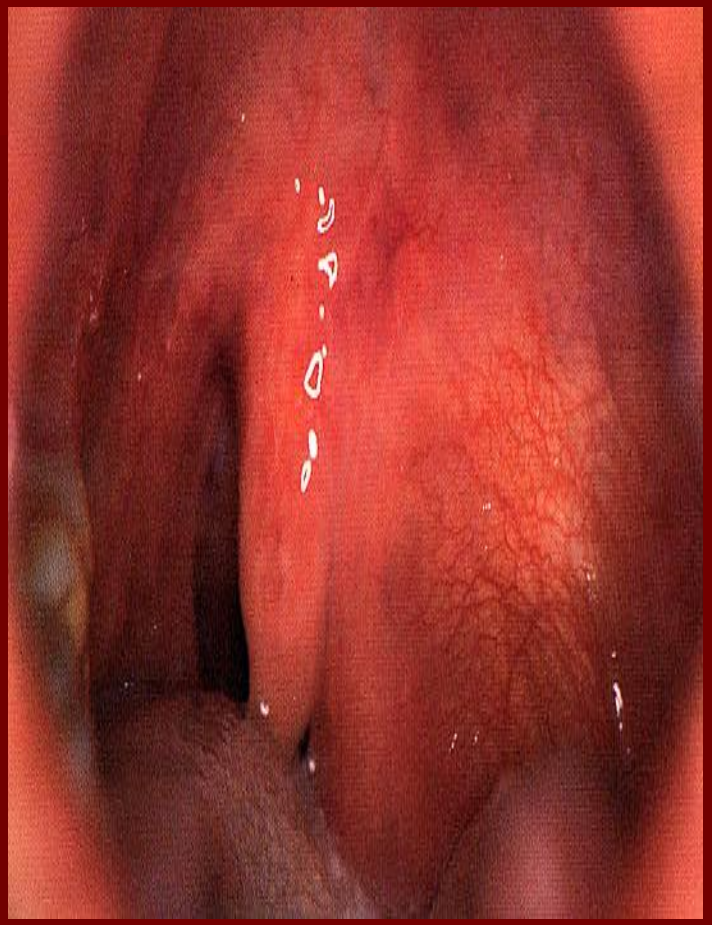


PARAPHARYNGEAL SPACE

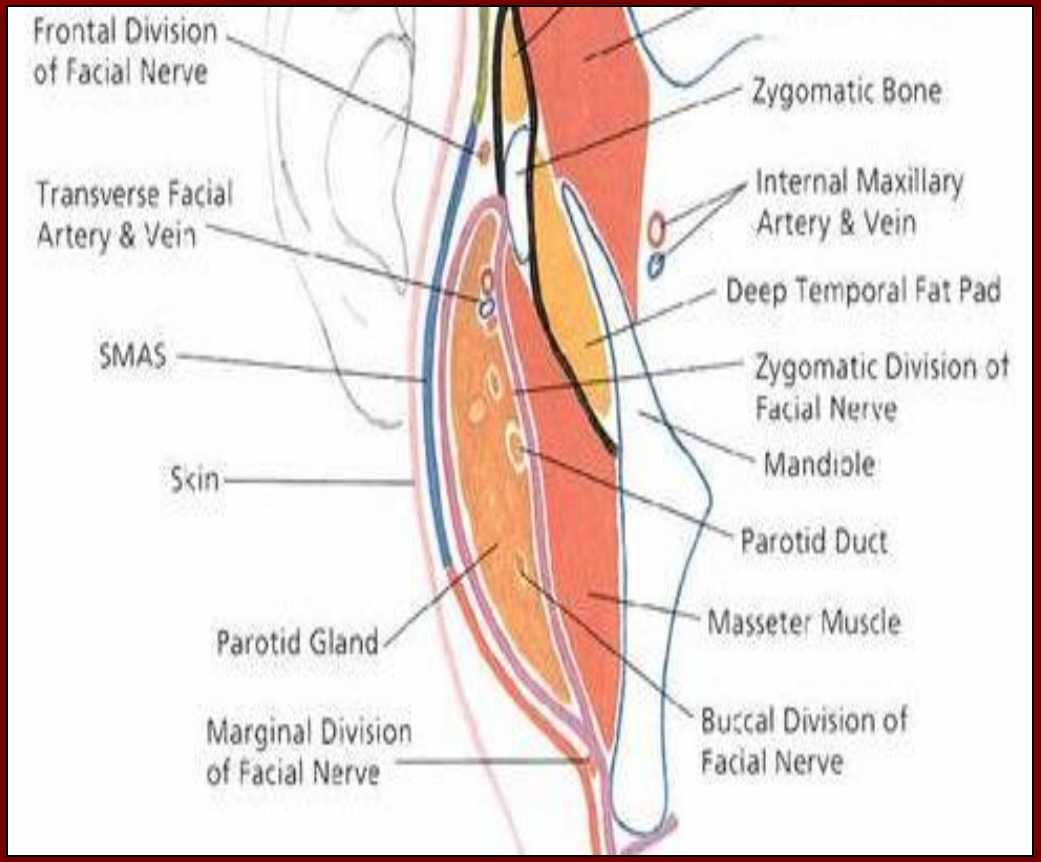




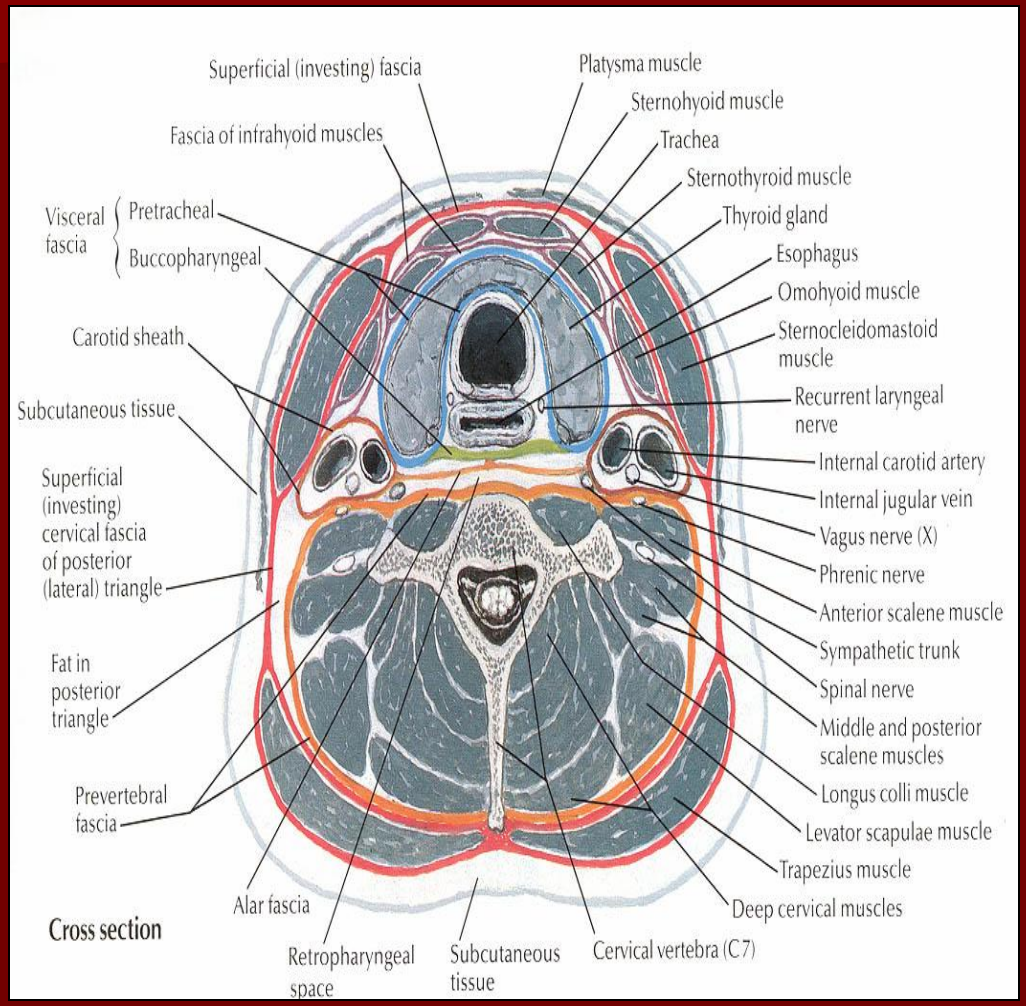

PHARYNGOMAXILLARY
ABCESS
BUCCOPHARYNGEAL
FASCIA
C.



PAROTID SPACE

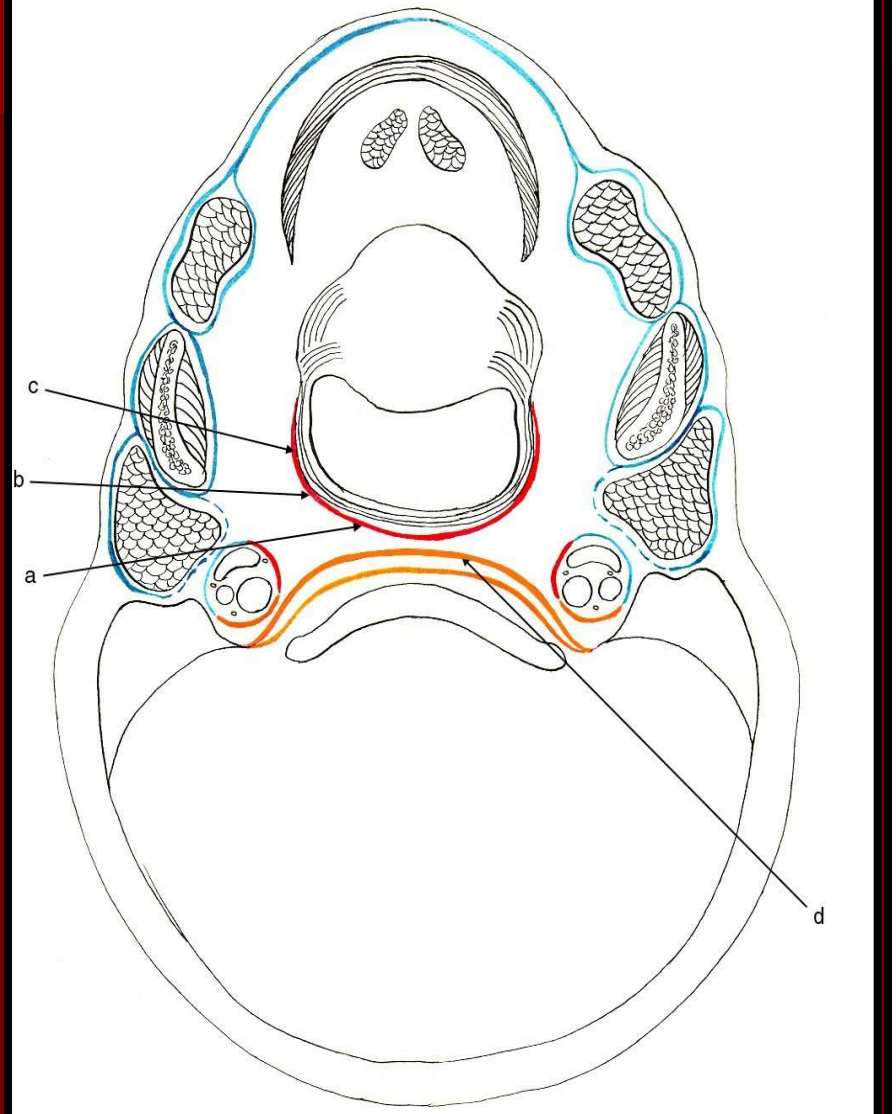


CAROTID SHEATH SPACE

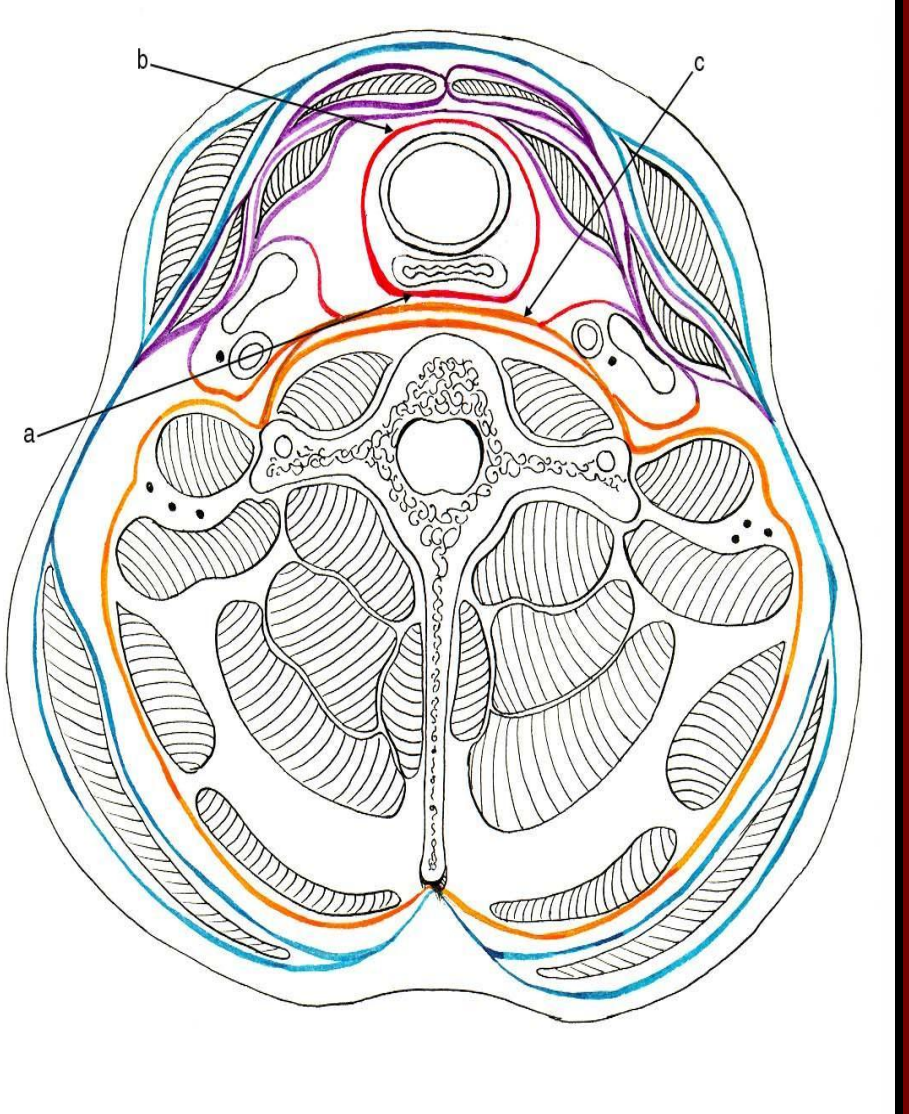


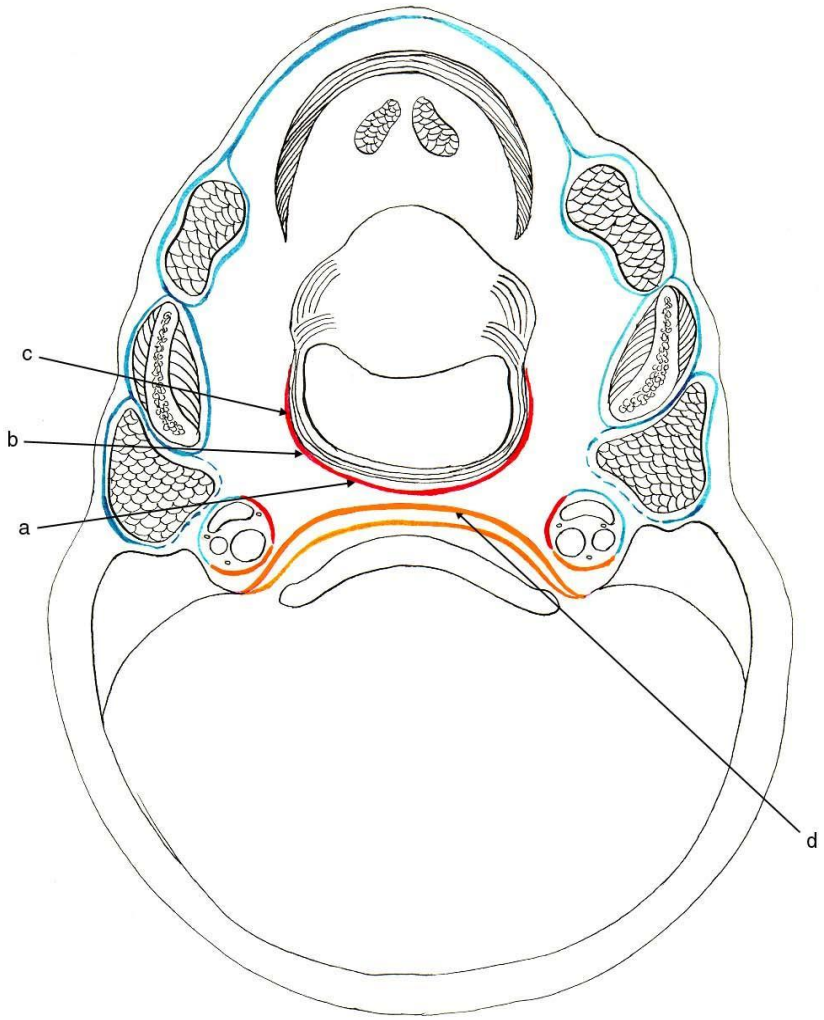
VESTIBULAR SPACE

CONCLUSION



Deep Layers of Cervical Fascia

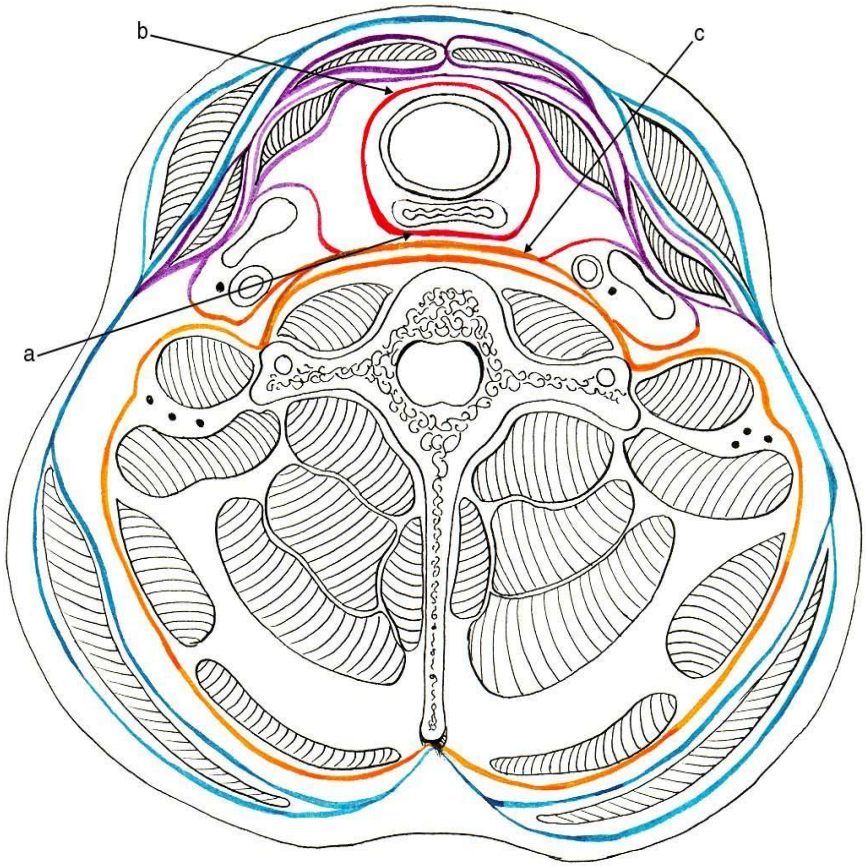




Deep Layers of Cervical Fascia

Investing Layer
Pharyngeal Layer
Vertebral Layer
d- Alar fascia

a- Retropharyngeal
b- Lateral pharyngeal
c- Buccopharyngeal

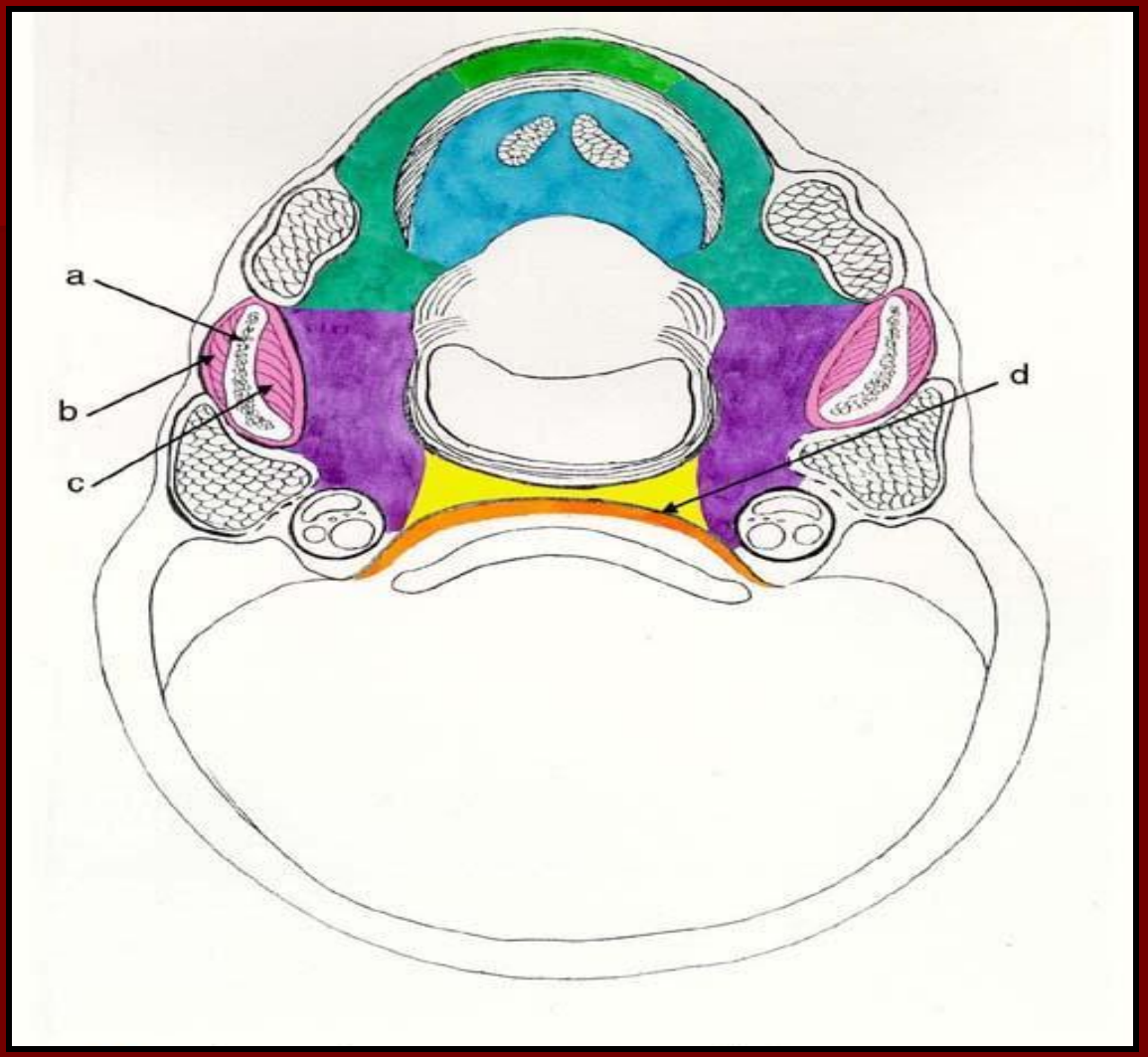


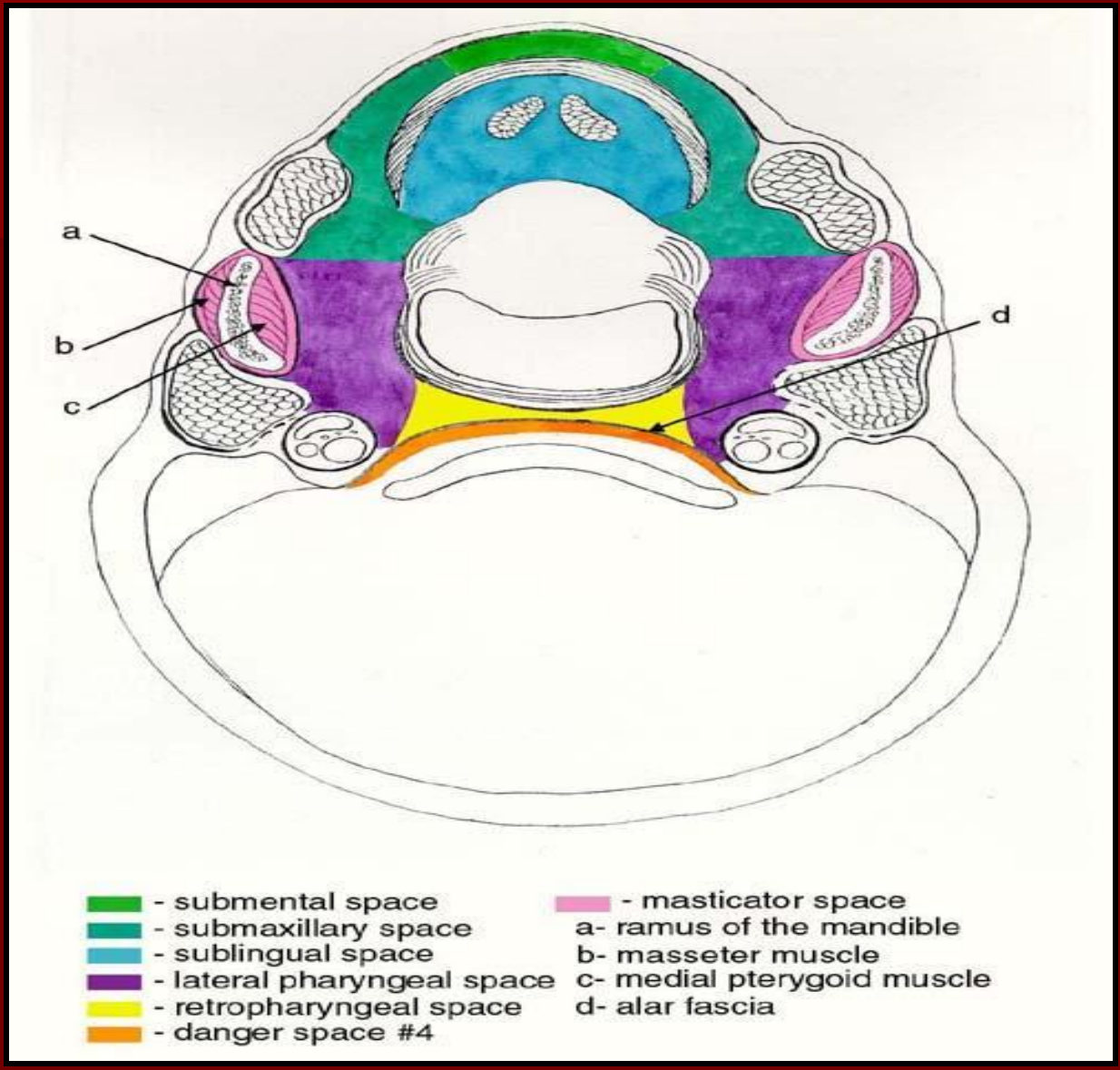
Deep Layers of Cervical Fascia

Investing Layer
Middle Layer
Visceral Layer
a- Retrovisceral (esophageal) fascia
b- Pretracheal fascia

Vertebral Layer
c- Alar fascia

Carotid Sheath


a
b
c
d


a
b
c
d
- submental space
- submaxillary space
- sublingual space
- lateral pharyngeal space
- retropharyngeal space
- danger space #4
- masticator space
a- ramus of the mandible
b- masseter muscle
c- medial pterygoid muscle
d- alar fascia

THANK YOU