ANATOMY OF THE CERVICAL SPINE

BONES OF THE UPPER CERVICAL SPINE

The cervical spine is made up the following bones:

- Occiput
  - Base of skull surrounding the foramen magnum
  - Pair of occipital condyles
- Vertebrae C1 – C7
  - Atlas Vertabra (C1)
  - Axis Vertarbra (C2)

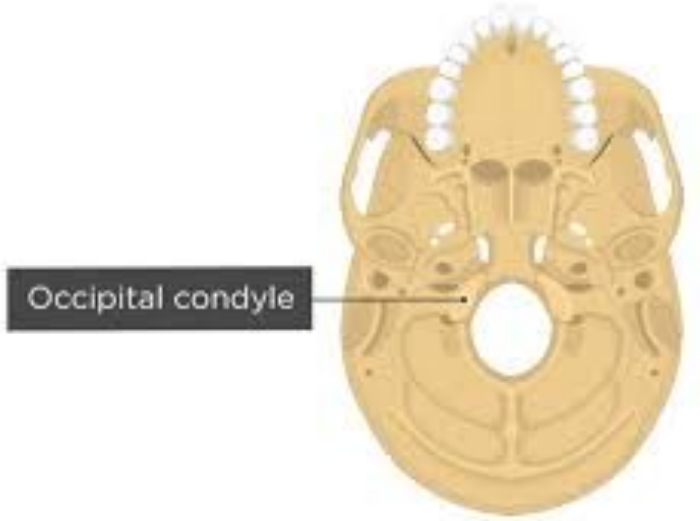
FORAMEN MAGNUM

- Foramen
  - passages or openings between two cavities of an organ or hole in bones for passage of blood vessels, nerves, ligaments, etc.

- Structures that pass through it are the
  - Medulla oblongata & its membranes
  - CN X1
    - ???
  - Vertebral and spinal arteries

OCCIPITAL CONDYLES

- undersurface facets of the occipital bone
- they articulate with the superior facets of the atlas of the vertebra



TYPICAL VERTEBRAE

- the spine varies in size, shape, & some details, but are similar enough in structure and function
- Typical vertebra consist of
  - Vertebral body
    - thick, disc shaped anterior portion is the weight bearing portion of a vertebra
  - Superior and inferior surfaces are attachment sites for the intervertebral discs
  - Anterior and lateral surface contain nutrient foramina
    - where blood vessels supply nutrients and oxygen, remove wastes and carbon dioxide

TYPICAL VERTEBRA CONT

- Vertebral Arch
  - Two short & thick processes
    - the pedicles (foot like structure) project posteriorly from the vertebral body and unite with the flat laminae to form the vertebral arch
    - It extends posteriorly from the body of the vertebrae,
    - together the body and the arch surround the vertebral foramen
    - this foramen contains the spinal cord, adipose tissue, areolar connective tissue and blood vessels
    - collectively the vertebral foramina of all the vertebrae form the vertebral canal
  - Pedicles have superior and inferior indentations called vertebral notches
    - when stacked on top of each they form an opening between adjoining vertebra on both sides of the column
    - this is the intervertebral foramen it permits the passage of a single spinal nerve which carries information to and from the spinal cord

TYPICAL VERTEBRAE CONT.

- Processes – Seven processes arise from the vertebral arch
  - Transverse process
    - formed from the point where the lamina and pedicle meet
    - one transverse process extends laterally on each side
  - Spinous process
    - projects posteriorly from the junction of the laminae
  - The 2 transverse processes and spinous process serve as attachment site for muscles

- The remaining 4 processes form joints with vertebrae above and below. They are:
  - superior articular processes (2) and they articulate with:
  - inferior articular processes on the vertebrae immediately above
    - each inferior articular process articulates with the superior articular process below

- The articulating surfaces of the superior and inferior articular processes are referred to as facets
  - covered in hyaline cartilage
  - these articulations of superior and inferior facets are known as the intervertebral joints

ATLAS VERTEBRA (C1)

- The first cervical vertebra of the spine
- named after Atlas from Greek mythology because it supports the “globe” of the head
- together with the axis (C2) it forms the joint which connects our skull and our spine
- no body
  - consists of anterior and posterior arch with two lateral masses
- superior surfaces of the lateral mass are superior articular facets and are concave and articulate with the condyles of the occipital bone
  - this creates the atlantoccipital joint
  - allows you to nod your head yes

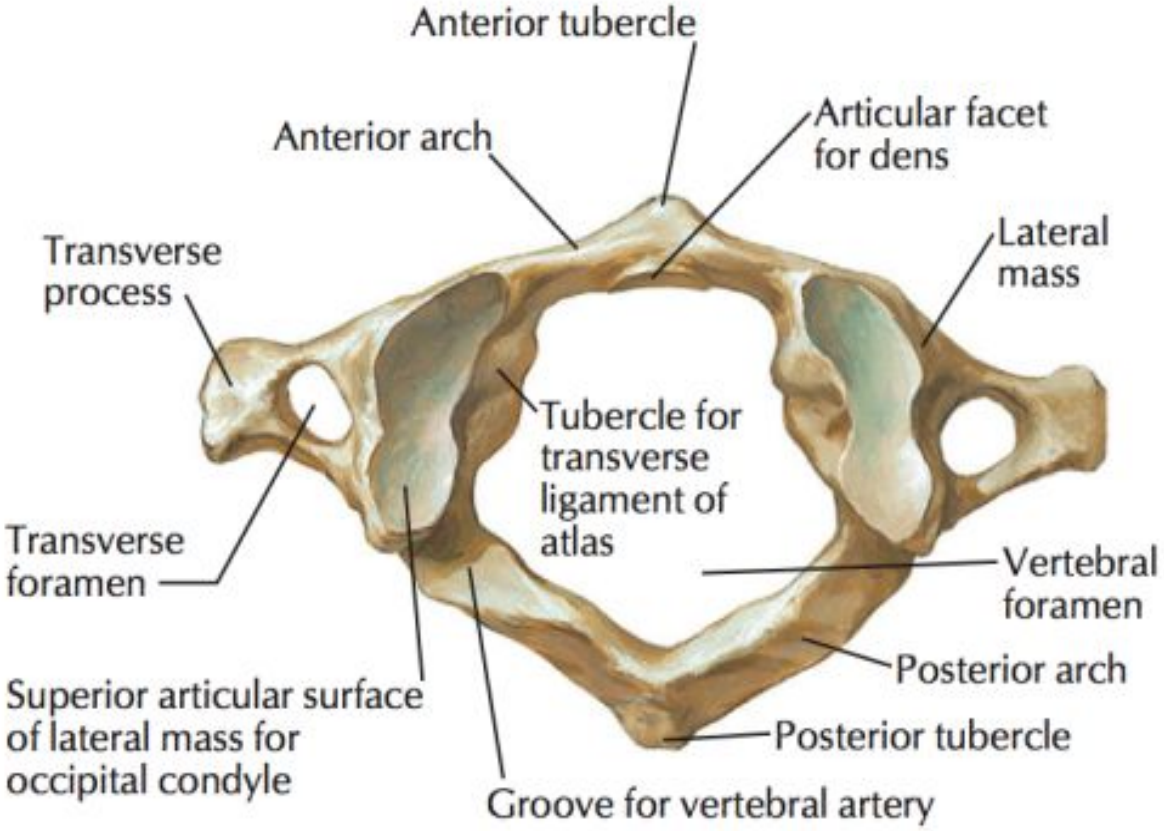
ATLAS CONTINUED

- The inferior surface of the lateral mass is the inferior articular facet
  - they articulate with the axis (C2) vertebra
- No spinous process
- Looks like a ring in appearance
- lateral masses create the majority of the bone mass
- located laterally from these masses you will find the transverse foramina
  - transverse foramina
    - an opening in the transverse process of each cervical transverse process where the vertebral artery and accompanying vein and nerve fibers pass through
- the transverse process and transverse foramina of the atlas are quite large

C1 ATLAS BONY LANDMARKS

- Posterior tubercle (no spinous process)
- Posterior Arch
- Anterior Arch
- Anterior Tubercle
- Lateral Mass (no vertebral body)
- Transverse Process
- Transverse Foramen
- Articular surface for Dens
- Articular Process (inferior & Superior)
- Superior articular facet

C1 ATLAS VERTEBRA



Atlas (C1): superior view

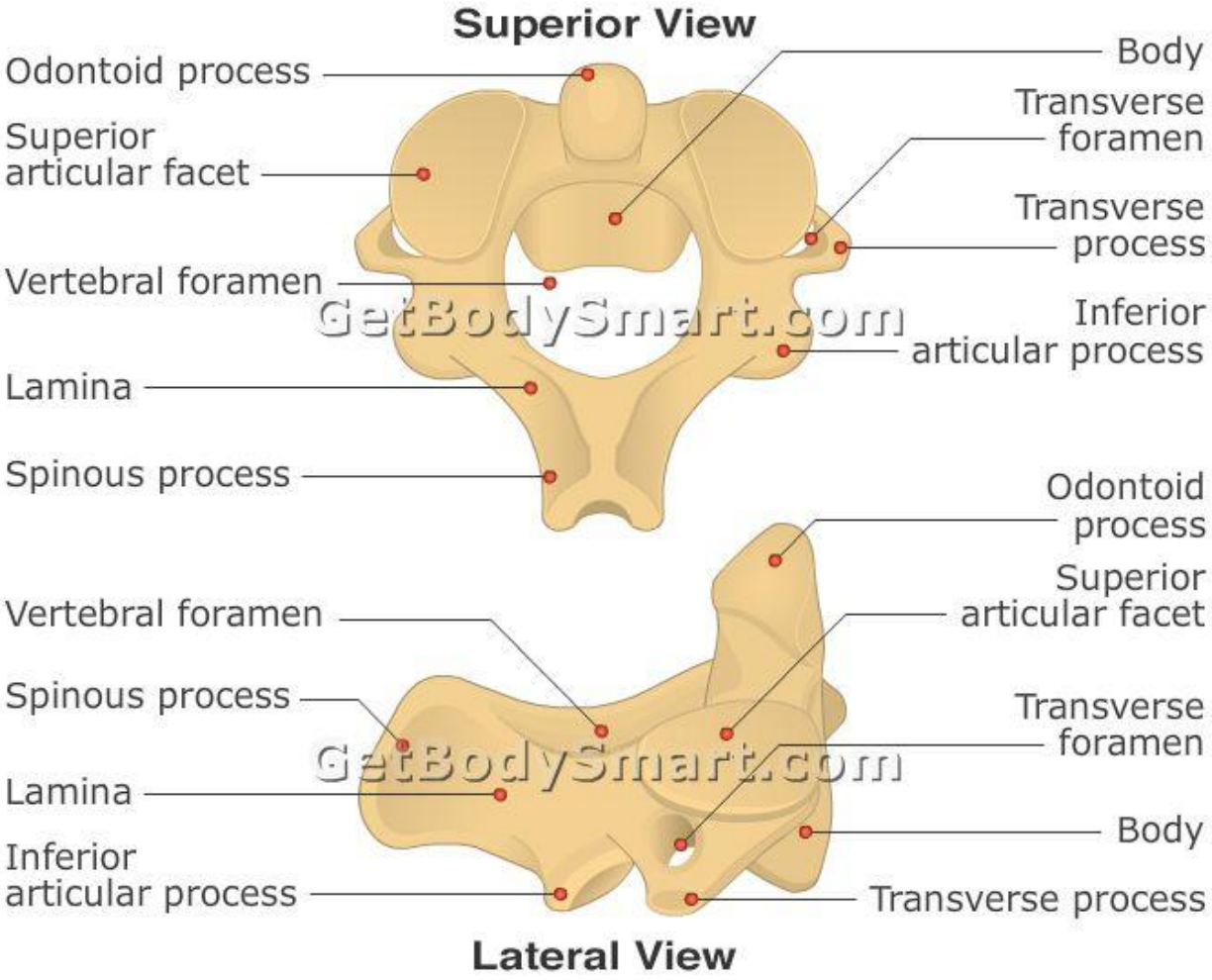
AXIS VERTEBRA (C2)

- Axis (C2) is the 2nd vertebra of the cervical spine
- It has a vertebral body
- a peg like process known as the dens (or odontoid process) projects superiorly through the anterior portion of the vertebral foramen of the atlas
- the dens creates a pivot on which the Atlas and head rotate
- allows for moving your head side to side (shake your head no)
- the articulation between the anterior arch of the atlas, the dens of the axis and their articular facets is called the atlantoaxial joint

C2 AXIS VERTEBRA BONY LANDMARKS

- Dens (odontoid Process)
- Spinous process
- Lamina
- Transverse Process
- Superior articular Facet
- Body
- Pedicle
- Transverse Foramen
- Inferior articular Facet
- Facet for anterior arch of C1

C2 AXIS VERTEBRA



LOWER CERVICAL SPINE - VERTEBRAE C3 – C6

- also known as sub axial spine
  - as it is located below the axis
  - includes the C3 – C7 vertebrae

- lower cervical are generally very similar in anatomical structure to each other
  - smaller than all other vertebrae except those that form the coccyx
  - their vertebral arches are larger
  - the vertebral foramina is the largest is cervical region due to the cervical enlargement of the spinal cord
  - each transverse process in the cervical spine has a transverse foramen
  - the spinous processes C2 – C6 are often bifid
    - branch into two small projections at the tips

Source Tortora

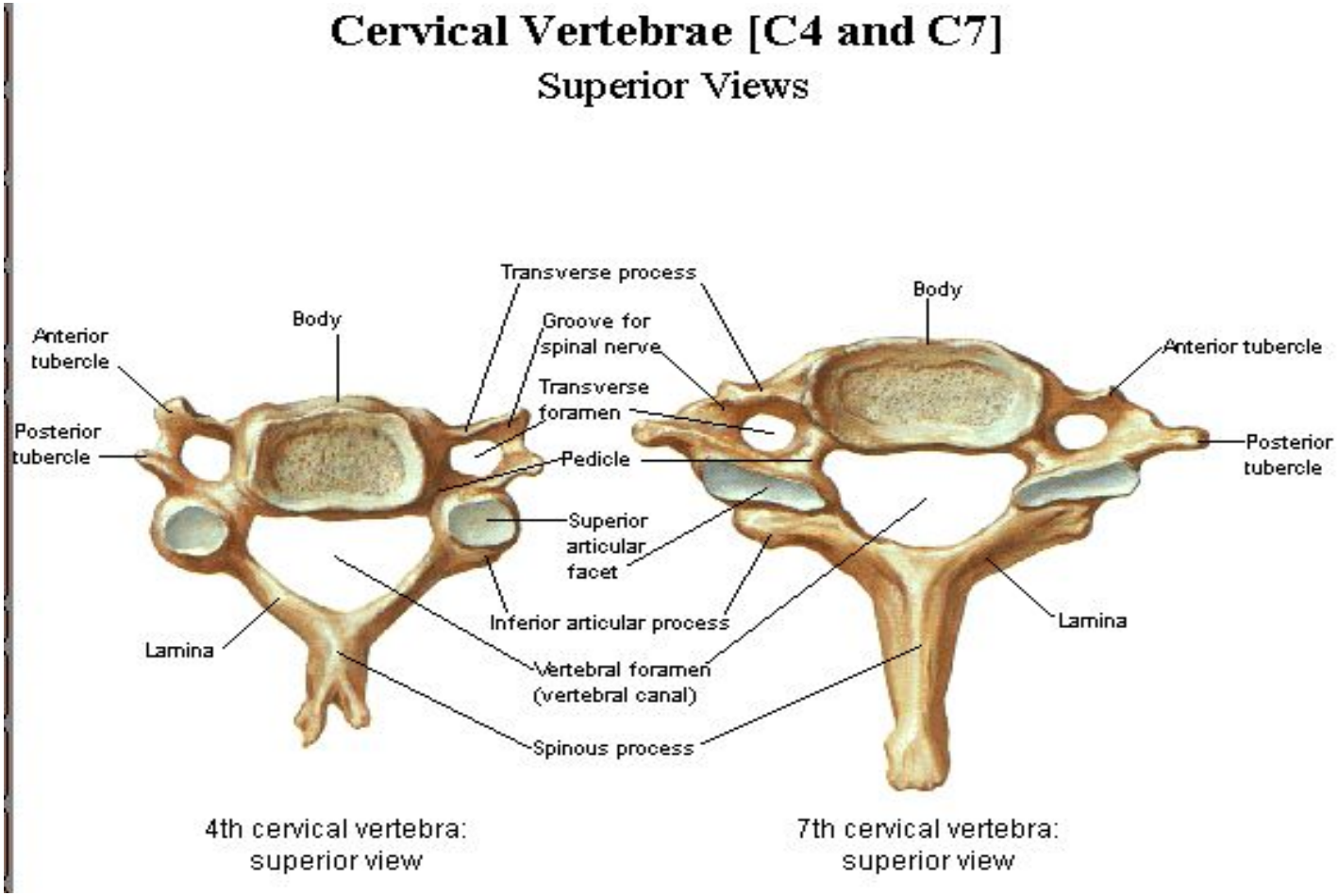
LOWER CERVICAL VERTEBRAE - C7

- C7 is also known as the vertebra prominens
- it has a large, non bifid spinous process that can be easily seen and palpated at the base of the neck
- otherwise C7 is a typical cervical vertebra

TYPICAL CERVICAL VERTEBRA BONY LANDMARKS

- Spinous Process
- Lamina
- Transverse Process
- Transverse Foramen
- Body
- Pedicle
- Superior articular process/facet
- Inferior articular process/facet
- Vertebral canal

TYPICAL CERVICAL VERTEBRA



Joints of the Cervical Spine

ATLANTOCCIPITAL JOINT

- Joint Classification
  - synovial, condyloid
- Functional joint classification
  - diarthrosis, joint permitting free motion

- occipital (C0) condyles (convex) articulate with the superior articular facet of the atlas (on concave)

- Motions
  - flexion and extension of the head
  - slight lateral flexion of the head (controversial)
    - lateral flexion is limited at this joint by the contact of the occiput on the dens

ATLANTOAXIAL JOINT

- Joint classification
  - synovial, pivot (allows rotation only)
- Functional joint classification
  - diarthrotic

- The articular surfaces are
  - between dens of axis and anterior arch of atlas
  - between lateral masses of atlas and axis facets are convex on convex
    - like two balls balancing on each other

- Motions
  - rotation

ZYGAPOPHYSEAL FACET JOINT

- Joint classification
  - synovial, plane
- Functional joint classification
  - diarthrosis

- Articular surfaces
  - inferior Articular Facets
  - superior Articular Facets
  - these Facets are more flattened in the cervical spine and accommodate a variety of motions

- Motions include
  - Flexion and Extension
  - Side bending
  - Rotation

- facet joints are highly innervated and when dysfunctional may be a primary cause of deep aching pain

INTERVERTEBRAL ARTICULATIONS

- made up of two vertebral bodies and an intervertebral disc
  - aka: ???
- THERE ARE NO DISCS BETWEEN C0-C1, C1-C2
- intervertebral disc is made up of the annulus fibrosus surrounding a nucleus pulposus
- the outer ring is made up of collagen fibers and joins two vertebral bodies together
- motions
  - Flexion, extension
  - Lateral flexion
  - Rotation of vertebral column

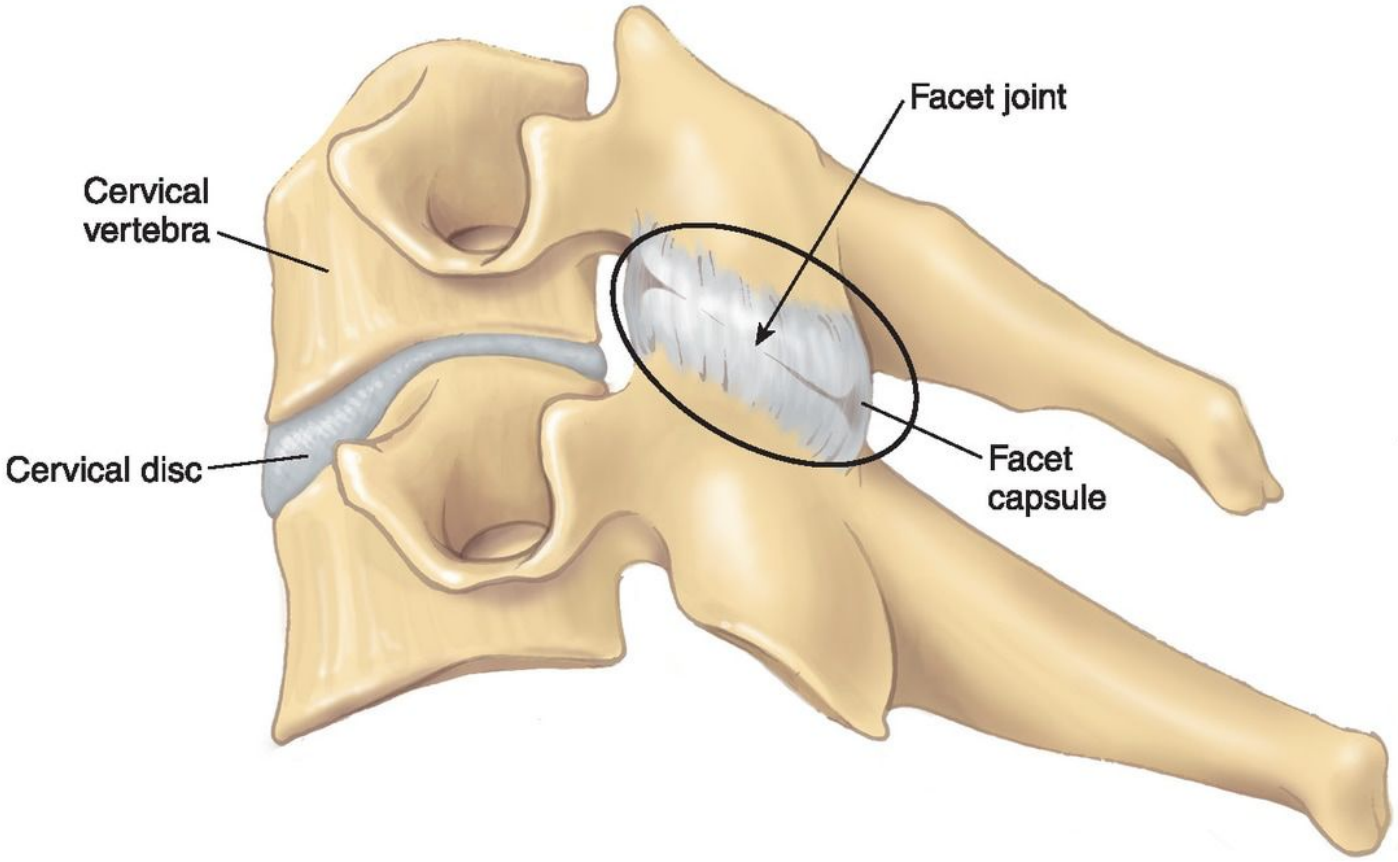
Ligaments

LIGAMENTS

- Supraspinous Ligament
  - starts at SP of C7 and follows SP to the sacrum
  - slightly limits spinal flexion
- Nuchal ligament (Ligamentum Nuchae)
  - Continuation of supraspinous ligament
  - extends from C7 – occiput
  - supports the head, fan shaped
- Anterior longitudinal ligament
  - begins at the occipital bone or anterior tubercle of the atlas (C1) and travels to the sacrum
  - located on the anterior surface of vertebral bodies but does not attach to the intervertebral discs
  - limits spinal extension
- Posterior longitudinal ligament
  - begins at the occipital bone and runs posterior surface of vertebral bodies, travels to sacrum
  - attaches to intervertebral discs and upper and lower margins of vertebral bodies, limits flexion of the spine and protects the disc

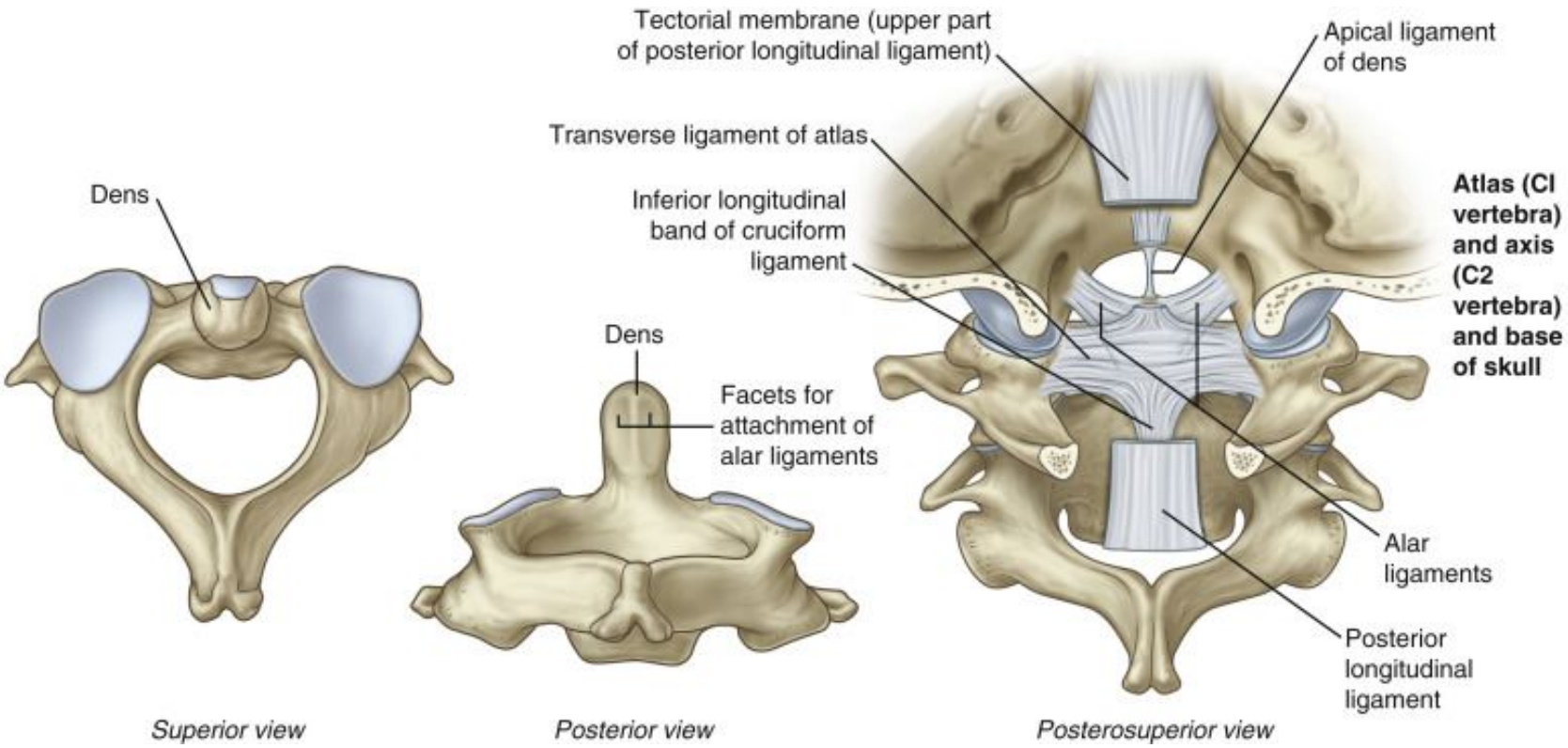
LIGAMENTS CONTINUED

- Capsular ligaments (zygapophyseal ligament)
  - Covers joint capsule of each facet
  - limits gliding motion (opening and closing) of the facets
- Ligamentum Flavum
  - NON CONTINUOUS ligament
  - extends from posterior vertebral arch to posterior vertebral arch
  - always under tension – even at rest, stretched more during flexion
  - plays a role in returning the spinal column to an erect position


Facet joint
Cervical vertebra
Cervical disc
Facet capsule

UPPER CERVICAL LIGAMENTS

- Alar ligaments
  - attaches on the lateral dens travel to medial occipital bone
  - holds the dens in place so it doesn't interfere with medulla oblongata
  - damage of this ligament can lead to VBI
- Transverse Atlantal Ligament/Atlantal Cruciform Ligament
  - Divides atlas in into two parts
    - large posterior part that the spinal cord runs through
    - a smaller portion anterior portion that accommodates the dens of the C2
    - this ligament has an anterior cartilage which attaches to the dens
    - then its fibers branch off to attach the axis to the occiput
    - it gives the appearance of a cross/or crucifix
    - responsible for holding the dens of axis in close approximation to the atlas C1 & prevents anterior displacement of C1 on C2
- Apical Ligament
  - extends from the apex of dens to the anterior margin of the foramen magnum between the alar ligaments
  - merges deep with the deep anterior atlanto-occipital membrane and superior crus of the transverse ligament of the atlas


Tectorial membrane (upper part of posterior longitudinal ligament)
Apical ligament of dens
Transverse ligament of atlas
Inferior longitudinal band of cruciform ligament
Atlas (Cl vertebra) and axis (C2 vertebra) and base of skull
Dens
Dens
Facets for attachment of alar ligaments
Alar ligaments
Posterior longitudinal ligament
Superior view
Posterior view
Posterosuperior view

MEMBRANES

- Posterior atlanto-occipital membrane
  - Attaches upper border of the posterior arch of the atlas to the outer margin of the foramen magnum
- Posterior atlantoaxial membrane
  - Continuous with the ligamentum Flavum, attaches the posterior arches of the atlas and the axis
- Anterior atlantoaxial membrane
  - Continuous with anterior longitudinal ligament, attaches anterior arches of the atlas and dens of axis
- Anterior Atlanto-occipital membrane
  - Joins upper border of the anterior arch of atlas to outer margin of the foramen magnum
- Tectorial membrane
  - Continuous with posterior Longitudinal ligament, attaches posterior side of Dens of axis(C2) to occiput

INTERVERTEBRAL DISCS

- Made up of outer & inner ring of collagen fibers
  - outer: annulus fibrosus
  - inner: nucleus pulposus
- Annulus fibrosus
  - appears to be made up of collagen rings with inner fibers more diagonal and the outer rings more vertical, making for a very strong and stable outer ring
- Disc growth completed by adulthood
- Discs do not have a large blood supply, not easily repaired, receives nutrients from diffusion through the bone – this occurs best during activity
- Discs held into place by 4 ligaments on vertebra above and 4 ligaments on vertebra below

https://youtu.be/RNUpMNd_u1U

INTERVERTEBRAL DISCS

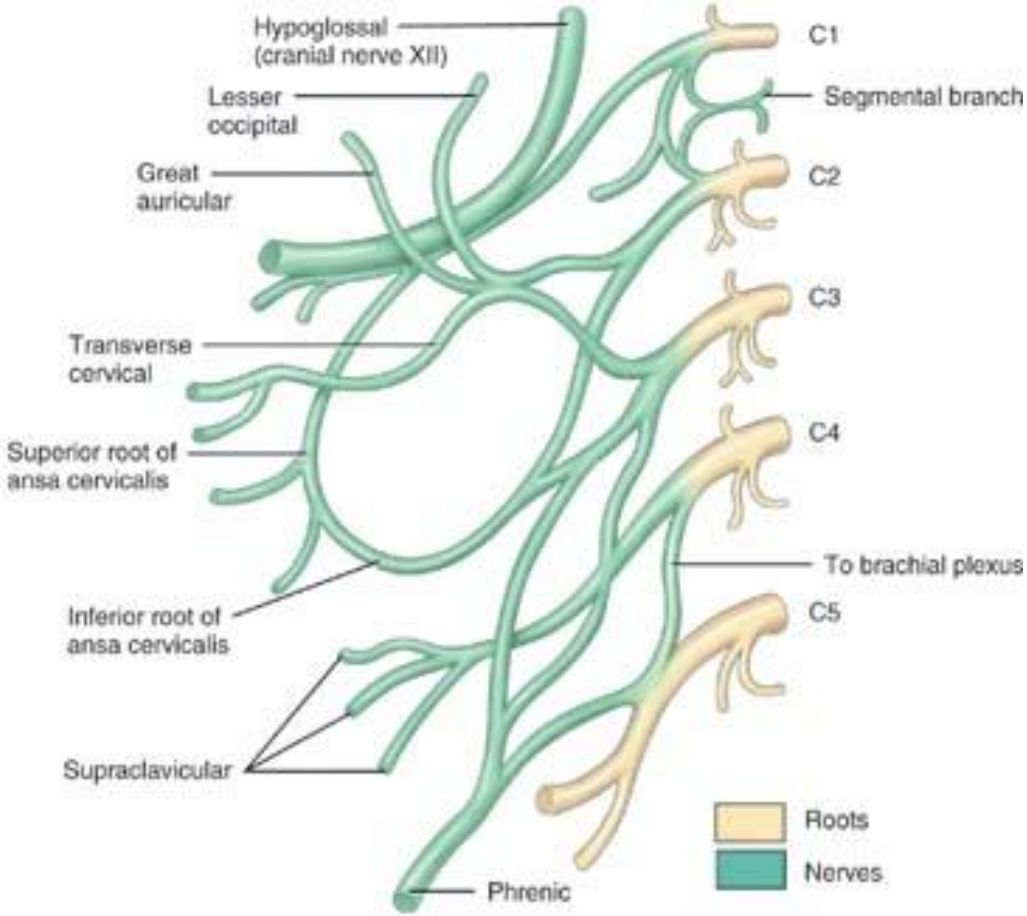
- made up of 80% water
  - decreases with age and also throughout the day, as water content percentage decreases it becomes thinner and more worn
  - this can decrease the length of the spine but does not cause pain
  - water and nutrients is replenished during sleep
- herniated discs are when the annulus fibrosus becomes damaged and the nucleus pulposus leaks out is difficult to repair
- if the pulposus causes pressure on a nerve pain or neurological sensations may be felt
- along with the pain, muscle spasm may occur which leads to lack of mobility and can cause more damage to the disc
- discs become thinner as you move up the spine

VIDEO

Cervical Spine Anatomy (eOrthopod)

NERVES

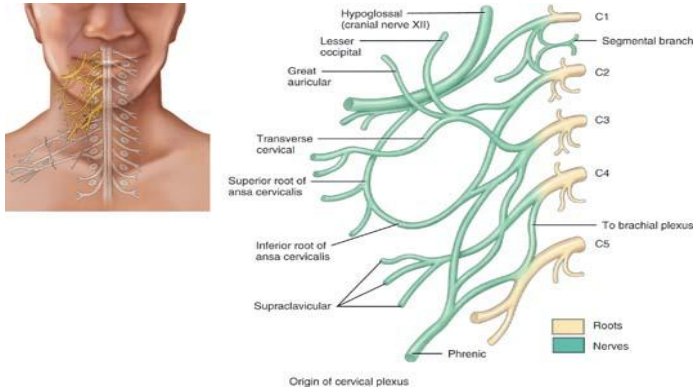
CERVICAL PLEXUS



Origin of cervical plexus

CERVICAL PLEXUS CONTINUED

- The cervical plexus is formed by the ventral rami of C1-C4 (and some contribution from C5)
- There is a cervical plexus on each side of the neck
- It lies **anteromedial** to the **levator scapula and middle scalene muscles and deep to the SCM**



STRUCTURES SUPPLIED BY THE CERVICAL PLEXUS

Superficial (sensory Branches NERVE	ORIGIN	DISTRIBUTION
Lesser Occipit	C2	Skin of scalp posterior and superior to the ear
Great Auricular	C2 – C3	Skin anterior, inferior, over ear and over parotoid gland
Transverse Cervical	C2 – C3	Skin over posterior aspect of the neck
Supraclavicular	C3 – C4	Skin over superior portion of chest and shoulder

Skin and muscles of head, neck and superior part of shoulders and chest.

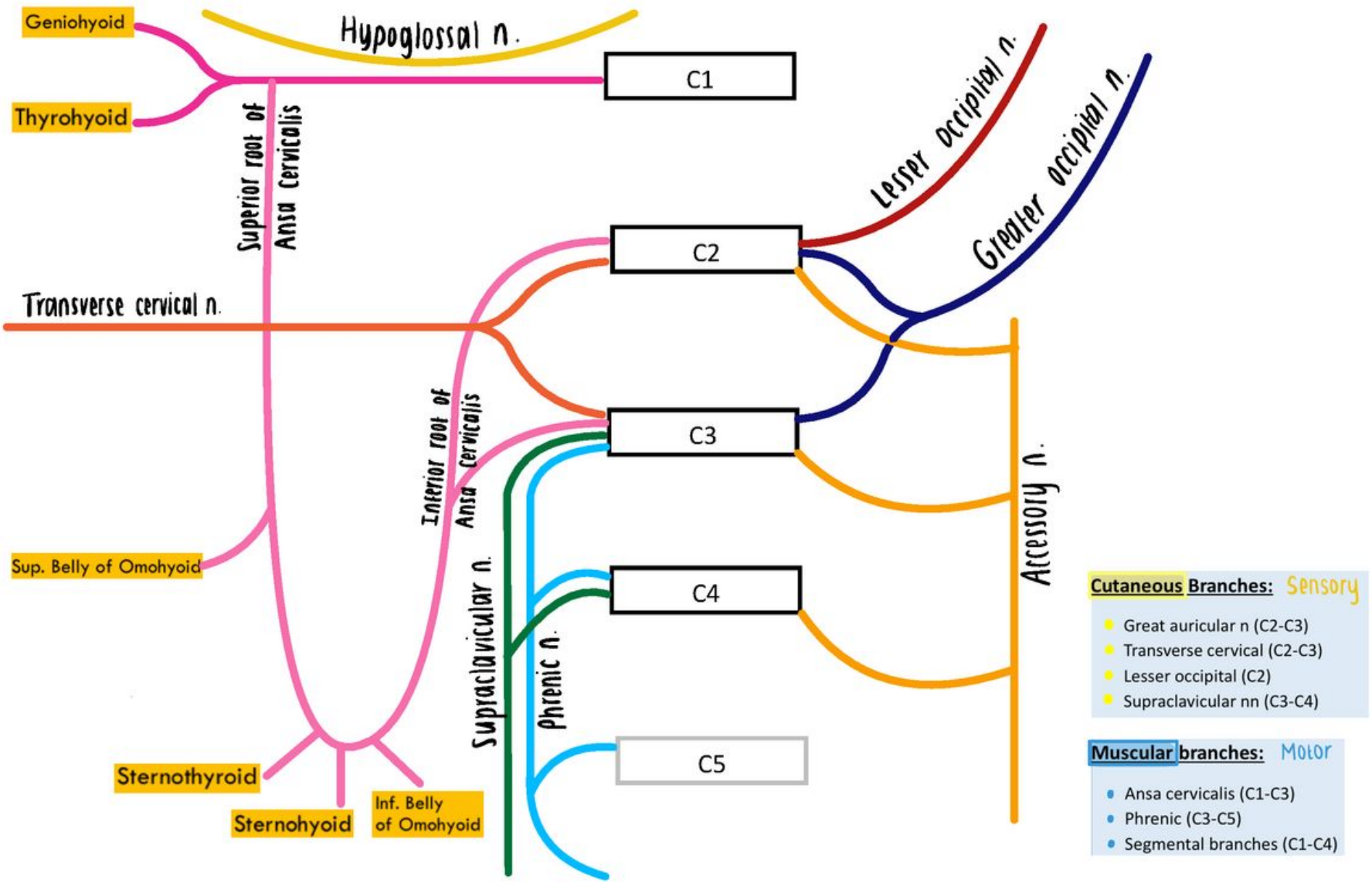
STRUCTURES SUPPLIED BY THE CERVICAL PLEXUS

Deep (Largely Motor) Branches Nerve	Origin	Distribution
Ansa Cervicalis		Divides into Superior and Inferior roots
Superior Root	C1	Infrahyoid and Geniohyoid muscles of the neck
Inferior Root	C2 – C3	Infrahyoid muscle
Phrenic Nerve	C3 – C5	Diaphragm
Segmental Branch	C1 – C5	Prevertebral (deep) muscles of the neck, levator scapulae and middle scalene muscles

VIDEO

Cervical Plexus - Anatomy Tutorial

Cervical plexus [Root spinal values: C1-C4]



Cutaneous Branches: Sensory

- Great auricular n (C2-C3)
- Transverse cervical (C2-C3)
- Lesser occipital (C2)
- Supraclavicular nn (C3-C4)

Muscular branches: Motor

- Ansa cervicalis (C1-C3)
- Phrenic (C3-C5)
- Segmental branches (C1-C4)

PHRENIC NERVE

- **“C3,4,5 keeps the diaphragm alive”**
- Phrenic nerves are formed at the lateral borders of the anterior scalene muscles
- They then **descend anterior to the anterior scalene deep to the internal jugular veins and the SCM’s**
- They **pass between the subclavian arteries and veins and proceed to the thorax to supply the diaphragm**

SPINAL NERVES C1 – C8

- Although there are seven cervical vertebrae there are eight cervical nerves C1–C8
- All cervical nerves except C8 emerge above their corresponding vertebrae, while the C8 nerve emerges below the C7 vertebra
- Elsewhere in the spine, the nerve emerges below the vertebra with the same name.

SPINAL NERVES C1 - C8 CONT.

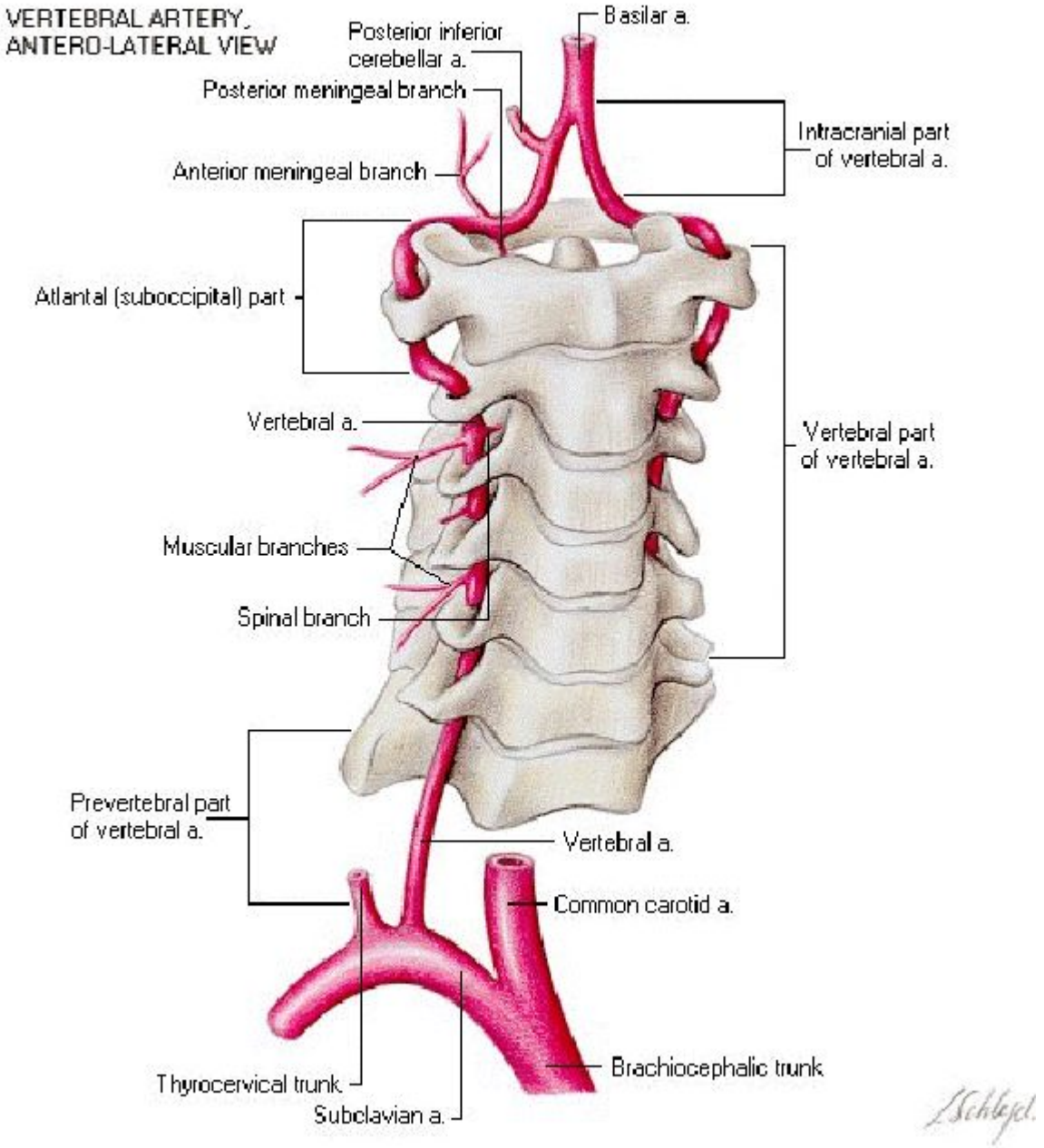
Nerve	Function
C1	Head & Neck
C2	Head & Neck
C3	Diaphragm
C4	Diaphragm, shoulder shrug
C5	Deltoid/Bicep
C6	Wrist Extensors
C7	Triceps
C8	Hands and fingers

BLOOD AND LYMPH

- The vertebral artery
  - Arises from subclavian artery and runs between the longus colli and anterior scalene
  - enters the transverse foramen of C6 and travels up to the axis
  - then travels medial to the rectus capitis lateralis and curves backwards behind the lateral mass of the atlas
  - lies in a groove on the posterior arch of c1 and enters the spinal canal
  - the artery pierces the dura and arachnoid mater and travels to the front of the medulla oblongata where it unites with the other vertebral artery (from the opposite side of the body)
  - here it becomes the BASILAR ARTERY
  - branches from the vertebral artery enter the spinal cord through nutrient foramen

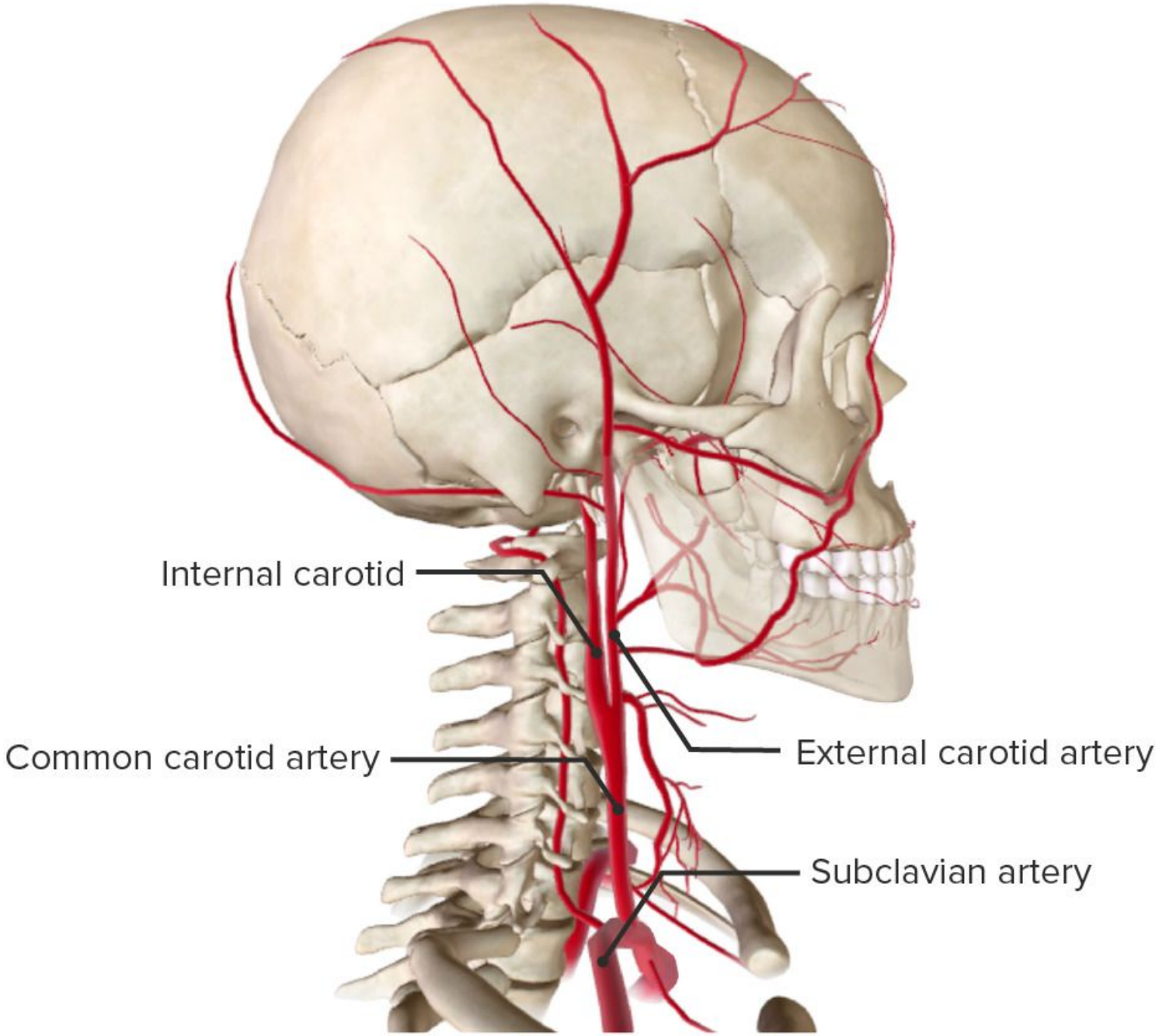
VIDEO

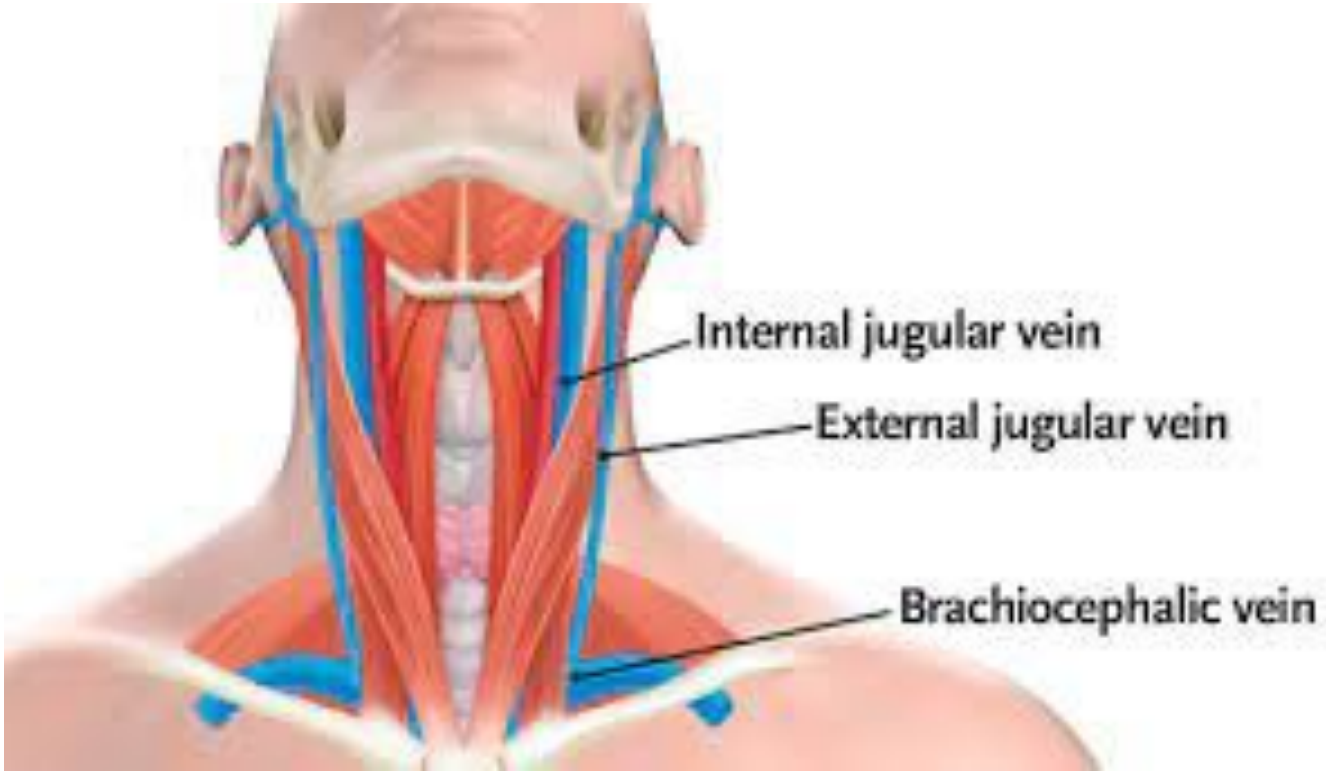
Anatomy Tutorial - The Vertebral Artery

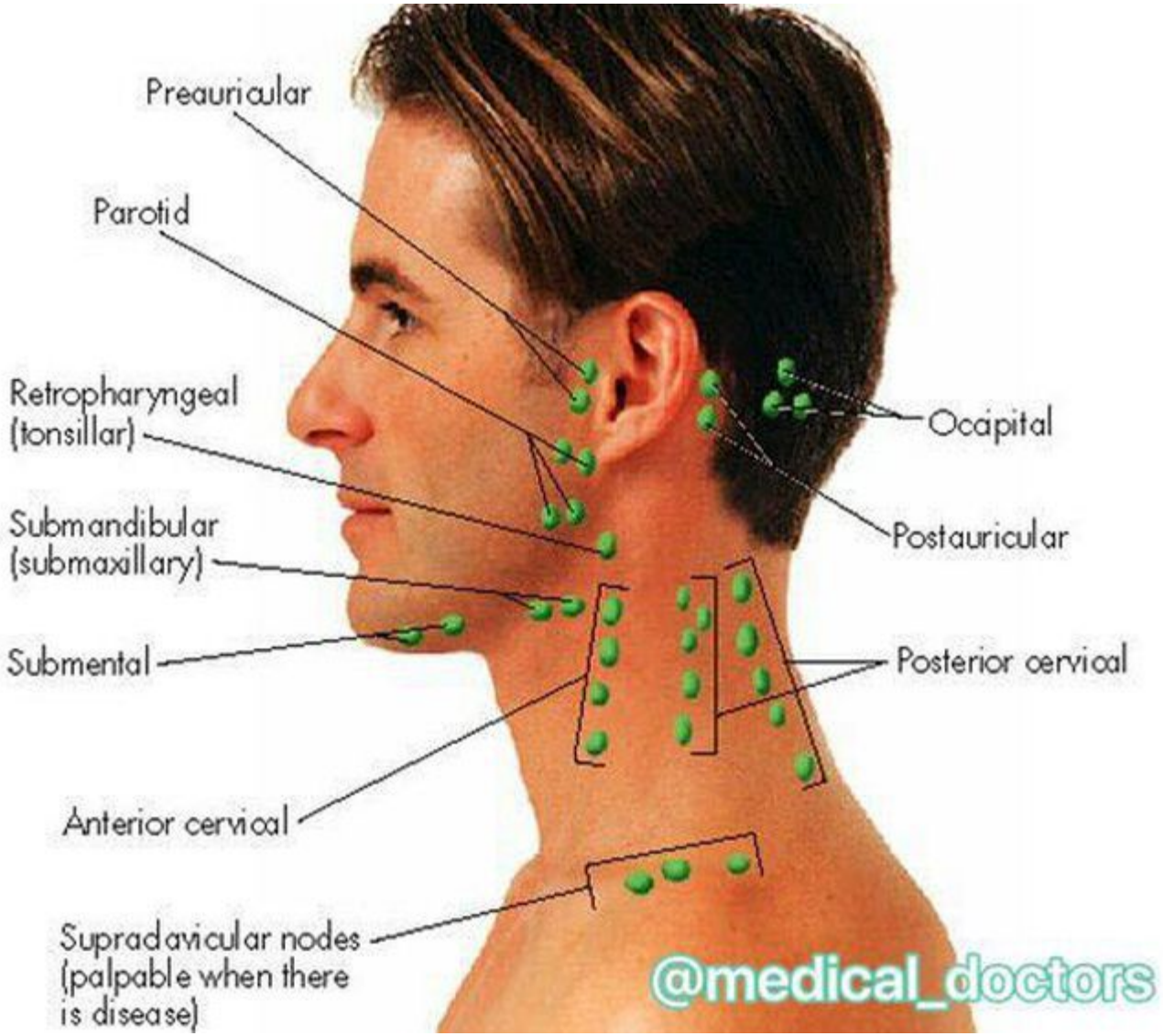

VERTEBRAL ARTERY, ANTERO-LATERAL VIEW
Basilar a.
Posterior inferior cerebellar a.
Posterior meningeal branch
Intracranial part of vertebral a.
Anterior meningeal branch
Atlantal (suboccipital) part
Vertebral a.
Vertebral part of vertebral a.
Muscular branches
Spinal branch
Prevertebral part of vertebral a.
Vertebral a.
Common carotid a.
Brachiocephalic trunk
Thyrocervical trunk
Subclavian a.

CONTINUED

- Common Carotid Artery
  - Arises posterior to the SC Joint and travels to the superior edge of thyroid cartilage (Adam's apple)
  - it divides into the internal and external carotid artery
- Internal jugular vein
  - arises from the jugular foramen on the posterior cranial fossa and travels inferior leaving the neck deep to the Sternocleidomastoid
- Lymph ducts
  - The cervical area is rich in lymph nodes, which are primarily located along jugular veins and SCM muscle


Internal carotid
Common carotid artery
External carotid artery
Subclavian artery


Internal jugular vein
External jugular vein
Brachiocephalic vein


Preauricular
Parotid
Retropharyngeal (tonsillar)
Submandibular (submaxillary)
Submental
Anterior cervical
Supraclavicular nodes (palpable when there is disease)
Occipital
Postauricular
Posterior cervical
@medical_doctors

MUSCLES

Neck Musculature

STERNOCLEIDOMASTOID - (NAMED BY ATTACHMENT SITES)

Origin – Sternal Head – Manubrium of Sternum

Clavicular Head – Medial 1/3 of clavicle

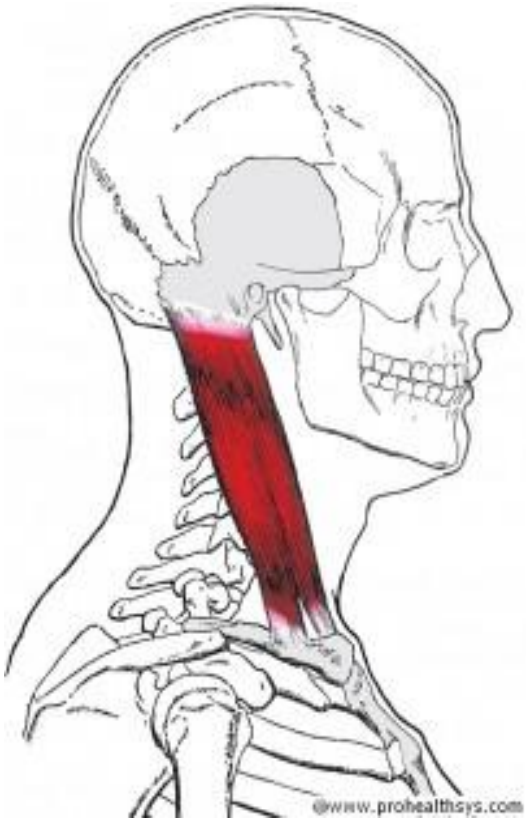
Insertion – Mastoid process of temporal bone

Action – Unilateral - Rotation of head to contralateral side, lateral flexion to same side

Bilateral – neck flexion and Capital extension

Nerve – Motor Spinal Accessory (CN XI)

Blood – Occipital & posterior auricular arteries, superior thyroid artery



SCALENE MUSCLES

- There are generally four scalene muscles
  - Scalenus Minimus (commonly absent)
  - Anterior Scalene
  - Middle Scalene
  - Posterior Scalene
- Scalene origins are the TP of Cervical Vertebrae
  - Anterior 3-6
  - Middle 2-7
  - Posterior 5-7

SCALENES AND BRACHIAL PLEXUS

- The brachial plexus generally runs between the anterior and middle scalenes, however there are other anatomical variations that may occur
  - 66% between anterior and middle scalenes
  - 33% have brachial plexus roots that penetrate the anterior scalene
  - 1% have subclavian artery that passes behind or peirces through the anterior scalene
  - If the scaleneus minimus is present may cause symptoms of brachial plexus compression
  - Cervical ribs may influence scalene function
- Tightness or contracture of scalenes can compress the brachial plexus which can cause symptoms of numbness, tingling, and muscle weakness in the upper limb and can also be a contributing factor with Thoracic outlet syndrome

MAJOR FUNCTIONS

- As a group they flex and laterally flex the neck, or elevate first and second ribs
- Considered prime move of the lateral flexion
- They can be a muscle of forced inspiration

OTHER INFORMATION

- Superficial muscles in the posterior triangle
- Middle scalene is longest and largest, posterior scalene shortest and smallest
- Brachial plexus and subclavian artery exit between the anterior and middle scalene
- Often part of whiplash injuries
- Anterior scalene syndrome (one of the four types of thoracic outlet syndrome) occurs if tightness causes the nerves or artery to become entrapped between the middle and anterior scalene
- Tight scalenes can also contribute to Costoclavicular syndrome (another type of TOS) when the nerves/artery is trapped between the clavicle and the first rib. Tight scalenes pull the first rib up and against the clavicle

ANTERIOR SCALENE

Origin – TP's of C3-C6

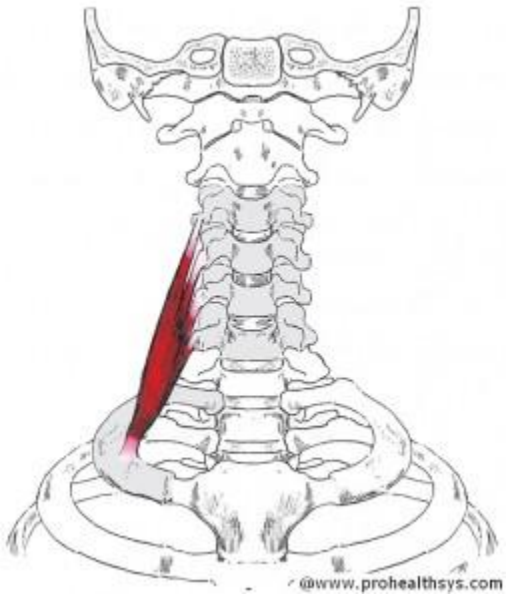
Insertion – 1st rib

Action – Flexion and same side lateral flexion, contralateral rotation (weak)

RMA elevation of 1st rib

Nerve – Cervical spinal nerves C4 – C6

Blood – Ascending cervical artery



MIDDLE SCALENE

Origin – TP's C2 – C7

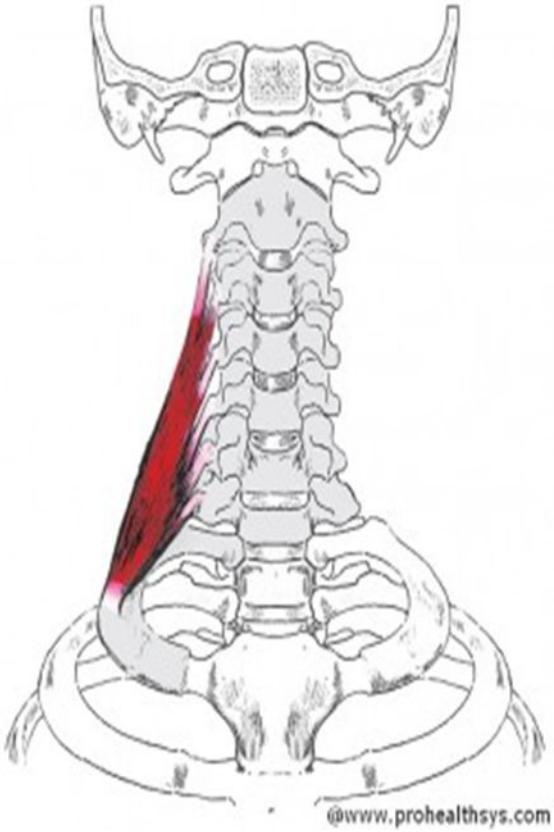
Insertion – 1st rib ~ *behind anterior scalene*

Action – Flexion and lateral flexion to same side

RMA elevation of 1st rib

Nerve – Cervical Spinal nerves C3-C8

Blood – Transverse Cervical Artery



POSTERIOR SCALENE

Origin – TPs C5 – C7

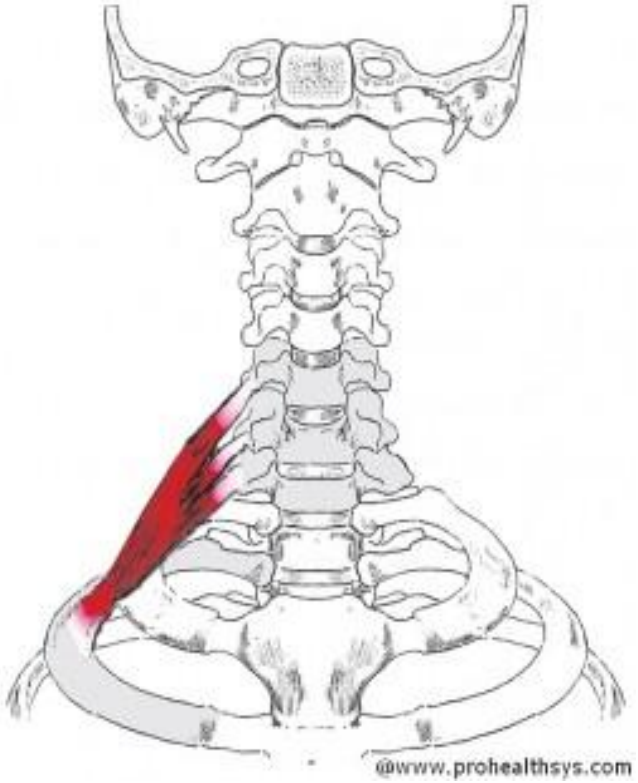
Insertion – 2nd Rib

Action – Same side lateral flexion

RMA - Elevation of 2nd rib

Nerve – Cervical spinal nerves C6-C8

Blood – Transverse cervical



PREVERTEBRAL GROUP

- Four muscles deep in the anterior neck
- “Prevertebral” they are situated just before the vertebral column
- They are the
  - Longus Colli
  - Longus capitis
  - Rectus Capitis Lateralis
  - Rectus capitis Anterior
- Important because they help stabilize the head and neck
- Are clinically important because they are commonly injured in whiplash injuries
- When injured or overused can give the feeling of a sore throat when swallowing

LONGUS COLLI (REFERS TO THE NECK)

Origin – Anterior vertebral bodies and TPs C3-T3

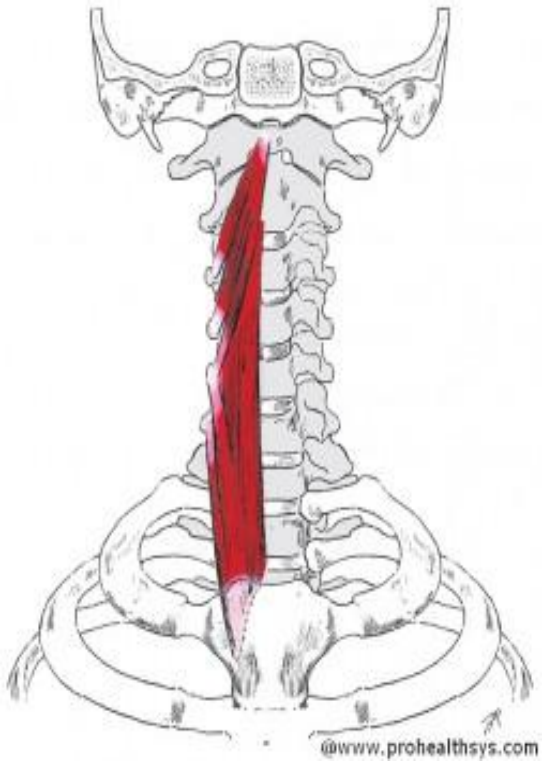
Insertion – Anterior vertebral bodies & TP's of C2- C6 anterior arch of C1

Action – Flexion of Neck;

lateral flexion of neck

Nerve – Cervical spinal nerves C2 – C8

Blood – inferior thyroid, vertebral and ascending pharyngeal arteries



LONGUS CAPITIS

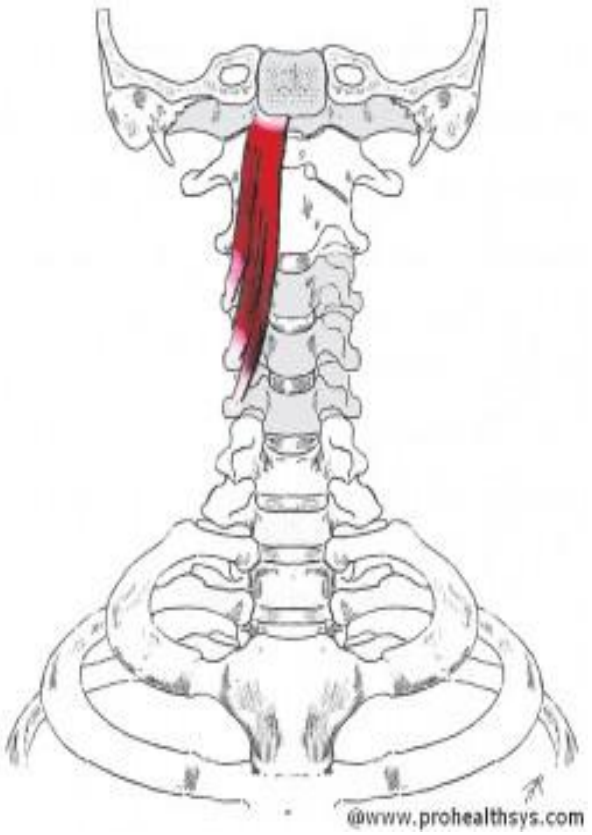
Origin – TP's C3 – C5

Insertion – Occipital bone *anterior to foramen magnum*

Action – Flexion of Head and neck

Nerve – Cervical spinal nerves C1- C3

Blood -Inferior thyroid, vertebral and ascending pharyngeal arteries



RECTUS CAPITIS ANTERIOR (STRAIGHT, HEAD, IN FRONT)

Origin – Atlas *anterior base of TP*

Insertion – Occipital bone (Basilar part anterior to foramen magnum)

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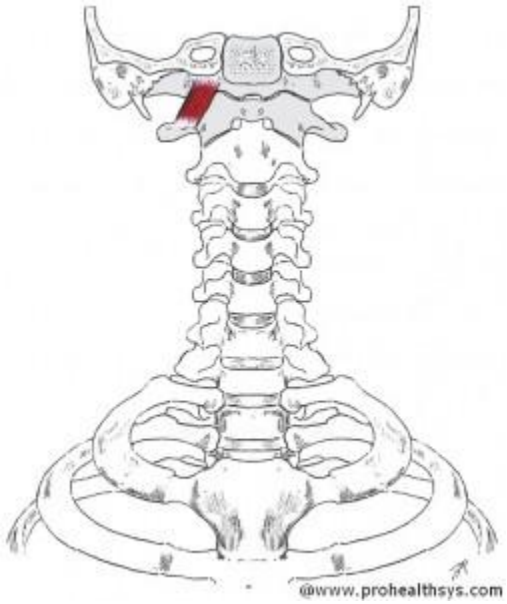
Action – Flexion of HEAD

Nerve – Cervical Spinal nerves C1 – C2

Blood – Vertebral artery



RECTUS CAPITIS LATERALIS

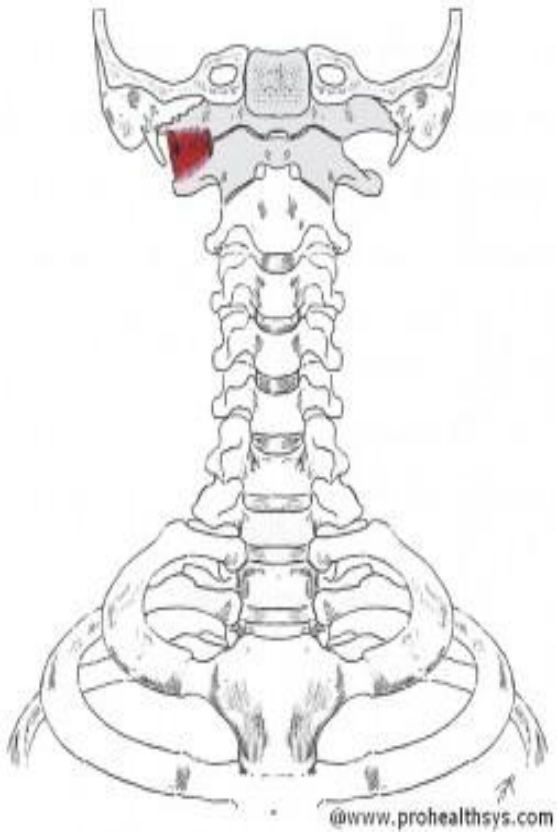
Origin –Atlas
~Superior Surface of TP

Insertion – Occipital Bone (Jugular process)

Action – Lateral Flexion of head

Nerve – Cervical Spinal nerves C1-C2

Blood – Vertebral and occipital arteries



SPLENIUS CAPITIS (SPLENIUS - BANDAGE, CAPITIS - REFERS TO HEAD)

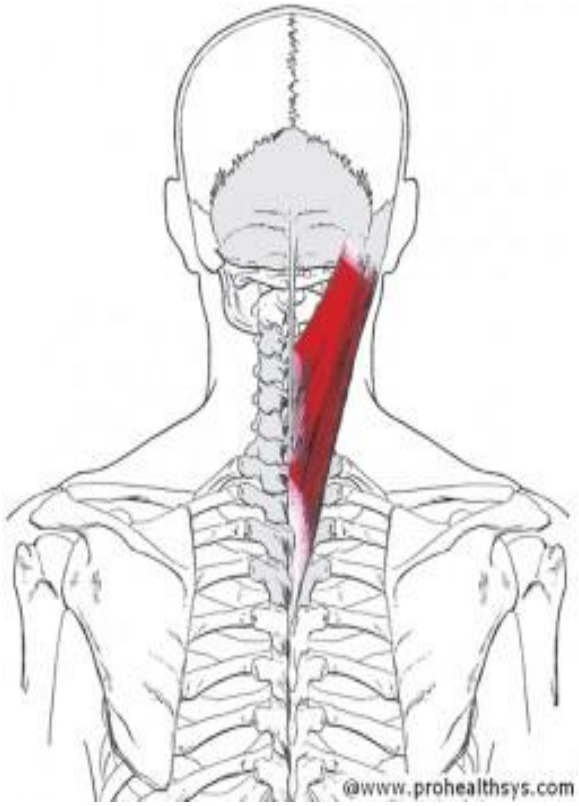
Origin – SP's of C3-T4 & Nuchal Ligament (lower portion)

Insertion – Mastoid Process of temporal bone & superior nuchal line

Action- extension, lateral flexion, ipsilateral rotation

Nerve – Cervical Spinal Nerves (dorsal rami)

Blood – Occipital Artery



SPLENIUS CERVICIS

Origin – SP's of T3-T6

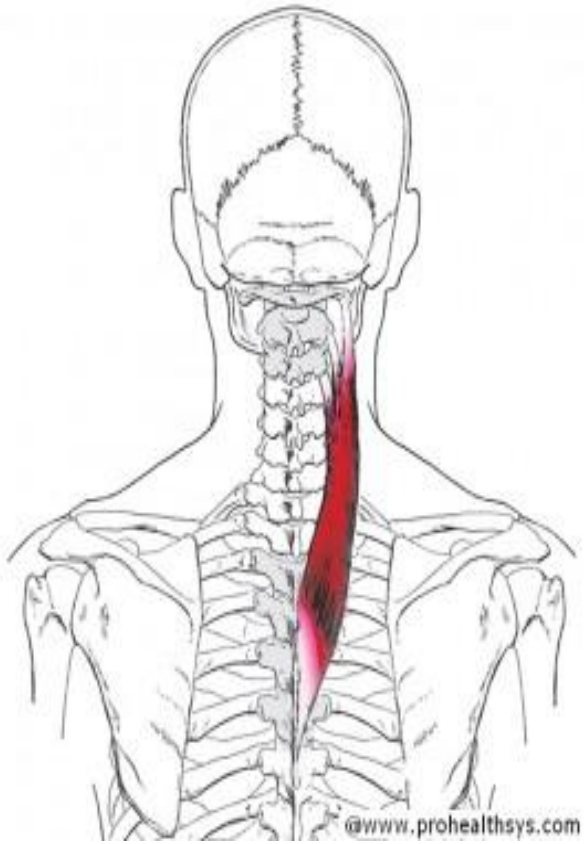
Insertion – TP's of C1 – C3

Action – Unilateral – Ipsilateral rotation and Lateral flexion

Bilateral – Extension of the neck

Nerve – Cervical Spinal Nerves (Dorsal Rami)

Blood – Occipital Artery



SUBOCCIPITAL GROUP

- A group of short muscles located deep in the posterior suboccipital region
  - Rectus Capitis Posterior Major
  - Rectus Capitis Posterior Minor
  - Obliquus Capitis Inferior
  - Obliquus Capitis Superior
- The names of the of the muscle generally describe the muscle fiber direction
  - Rectus meaning straight
  - Obliquus means slanted

FUNCTIONS

- The primary functions of the suboccipital group are extension and anterior translation (aka protraction) of the head/neck at the AOJ
- Obliquus capitis inferior rotates the atlas on the axis at the AAJ
- Thought to be more important as posture stabilization muscles, providing fine control of the head

MISCELLANEOUS

- Not the only muscles located in the suboccipital region. Tight muscles can also be the superior attachments of the trapezius, splenius capitis, splenius cervicis and semispinalis capitis
- If suboccipital muscles are chronically tight tension headaches are often the result

RECTUS CAPITIS POSTERIOR MAJOR

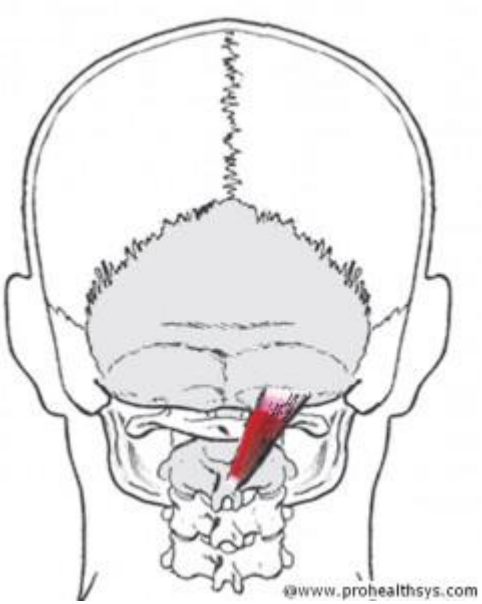
Origin – Spine of Axis

Insertion – Lateral portion of the inferior nuchal line

Action – Extension, Ipsilateral rotation & lateral flexion of the head

Nerve- Suboccipital nerve

Blood – Occipital Artery, deep cervical artery & muscular branches of vertebral artery



RECTUS CAPITIS POSTERIOR MINOR

Origin – Posterior tubercle of Atlas

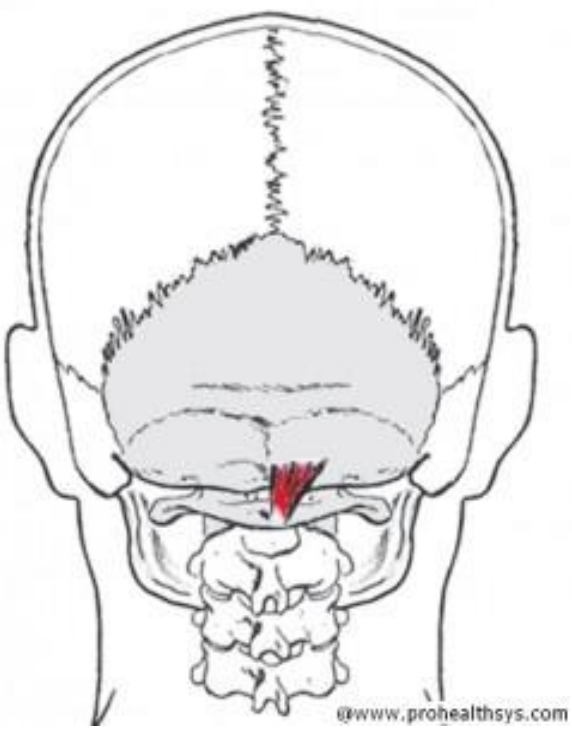
Insertion – Medial portion of inferior nuchal line

Action – Protraction at the AOJ

Extension, Ipsilateral lateral flexion of head (weak)

Nerve – Suboccipital nerve

Blood – Occipital Artery, deep cervical artery, muscular branches of vertebral artery



OBLIQUUS CAPITIS INFERIOR

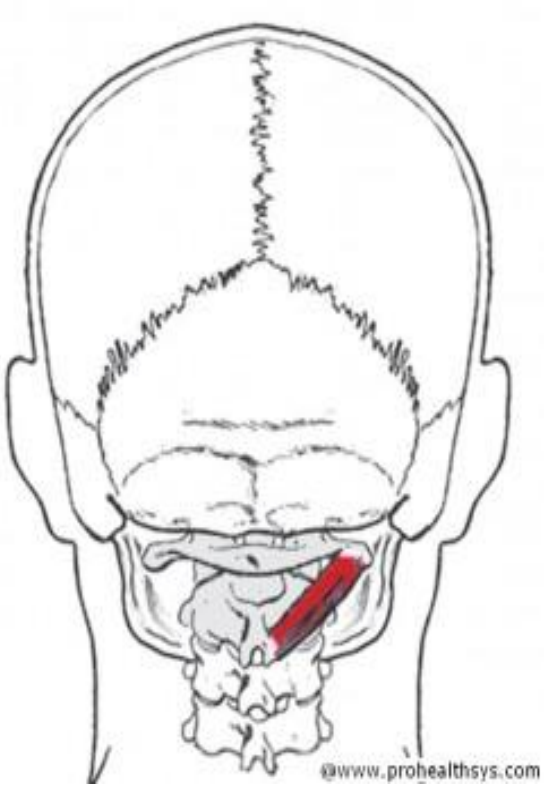
Origin – Spine of Axis

Insertion – TP of Atlas

Action – Ipsilateral rotation of head

Nerve – Suboccipital nerve

Blood – Occipital Artery, deep cervical artery, muscular branches of vertebral artery



OBLIQUUS CAPITIS SUPERIOR

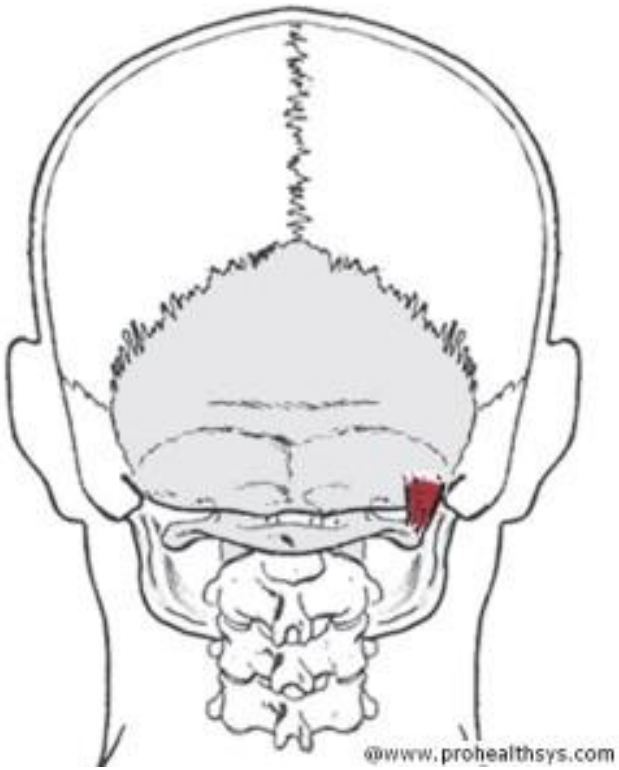
Origin – TP of Atlas

Insertion – Occiput b/w superior & inferior nuchal line

Action – Protraction at AOJ, Extension, lateral flexion of the head, Contralateral rotation of the head at AOJ

Nerve – Suboccipital nerve

Blood – Occipital Artery, deep cervical artery & muscular branches of the vertebral artery



HYOID MUSCLES

HYOID GROUP

- Group of 8 muscles in the anterior neck
- Divided into two groups
  - Suprahyoids
    - Diagastric
    - Mylohyoid
    - Geniohyoid
    - Stylohyoid
  - Infrahyoids
    - Sternohyoid
    - Sternothyroid
    - Thyrohyoid
    - Omohyoid

CONTINUED

- Except Sternothyroid all hyoid muscles have an attachment to the hyoid bone
  - Supra's are superior
  - Infra's are inferior
- Involved in movement of the mandible at the TMJ

SUPRAHYOIDS

DIGASTRIC

Origin – posterior belly: mastoid notch of temporal bone

Anterior belly: digastric fossa of internal mandible

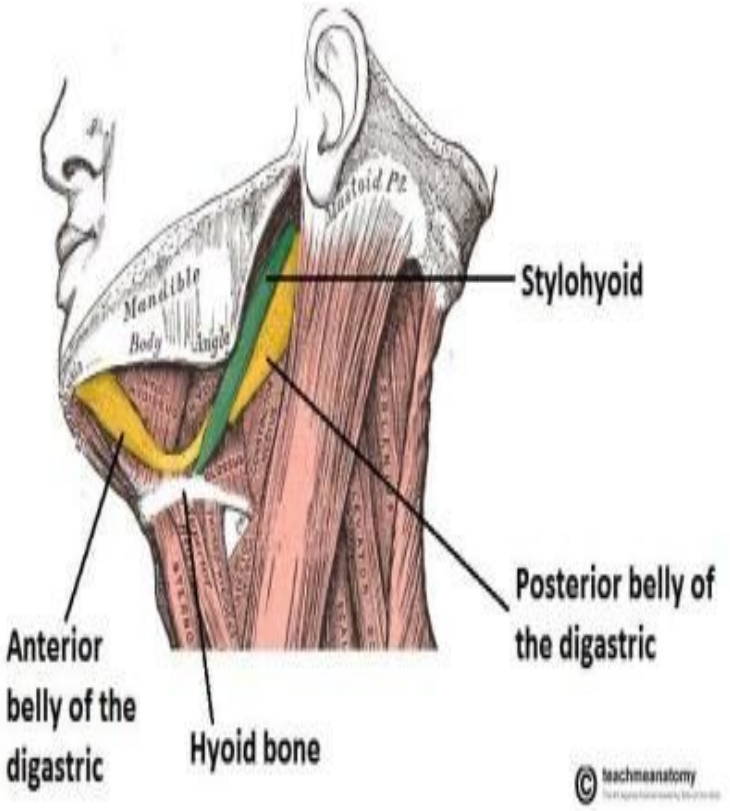
Insertion – Body of hyoid

Action –Depression of mandible, stabilize hyoid bone for infrahyoid muscle action, neck and head flexion

Nerve – posterior belly – Facial CN VII

Anterior belly – Trigeminal Nerve CN V

Blood – Occipital, posterior auricular & facial arteries



MYLOHYOID (MYLO REFERS TO MOLAR TEETH)

Origin – mylohyoid line of mandible

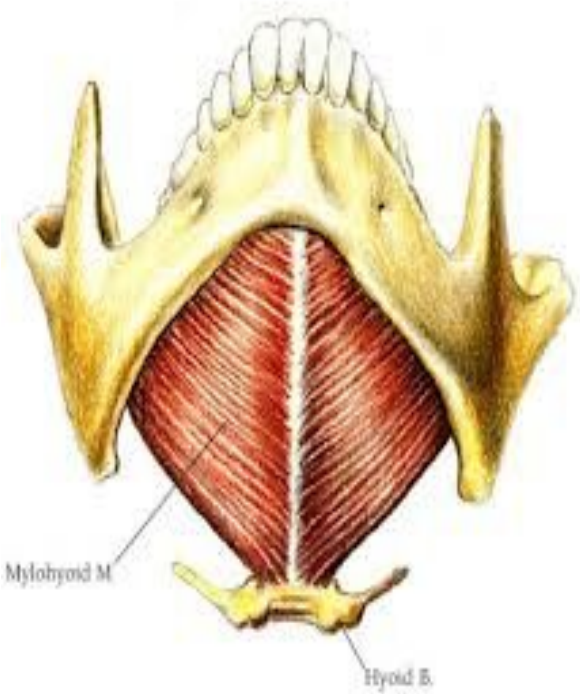
Insertion – Anterior surface of Hyoid bone

Action - Depression of mandible, head and neck flexion

RMA Elevation of Hyoid bone

Nerve – Trigeminal Nerve(CN V)

Blood – Alveolar Artery



GENIOHYOID (GENIO = CHIN)

Origin – Inner surface of mandible

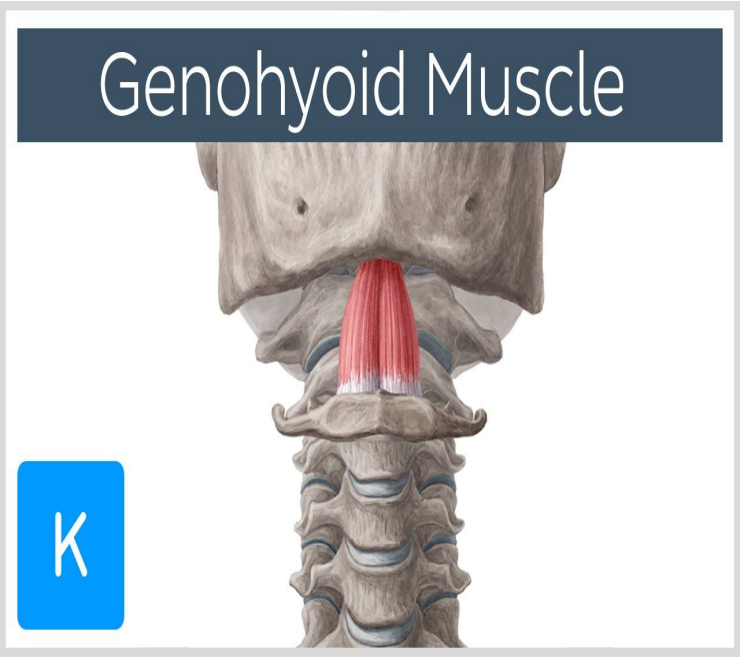
Insertion – Anterior surface of Hyoid body

Action – Depression of mandible, flex head and neck

RMA Elevation of hyoid bone

Nerve – Hypoglossal Nerve CN XII

Blood – Lingual Artery



STYLOHYOID (STYLO = STYLOID PROCESS)

Origin – Styloid process of temporal bone

Insertion – lateral margin of hyoid body

Action – Elevation of Hyoid bone

Nerve – facial Nerve CN VIII

Blood – occipital, posterior auricular and facial arteries

INFRAHYOIDS

STERNOHYOID

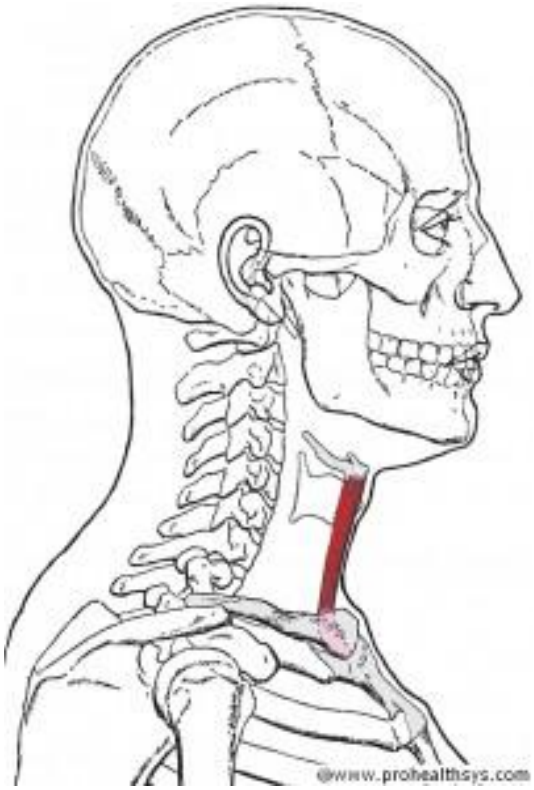
Origin –Posterior surfaces of Manubrium & medial clavicle

Insertion – Inferior surface of Body of hyoid

Action – Depression of hyoid, flexes head and neck

Nerve – Ansa Cervicalis (C1,2,3)

Blood – superior thyroid arteries



STERNOTHYROID

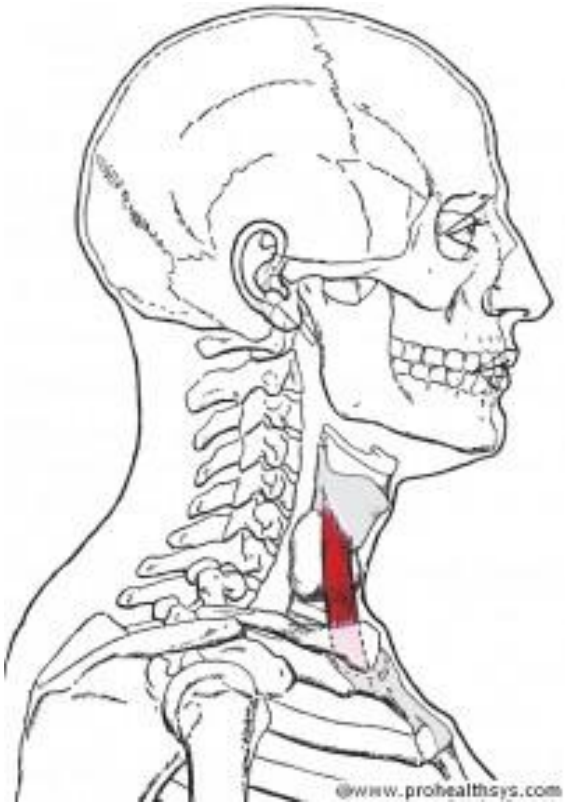
Origin –Posterior surface of manubrium and cartilage of the first rib

Insertion – Thyroid Cartilage

Action – Depression of thyroid cartilage flexes head and neck

Nerve – Ansa Cervicalis

Blood – Superior thyroid Artery



THYROHYOID

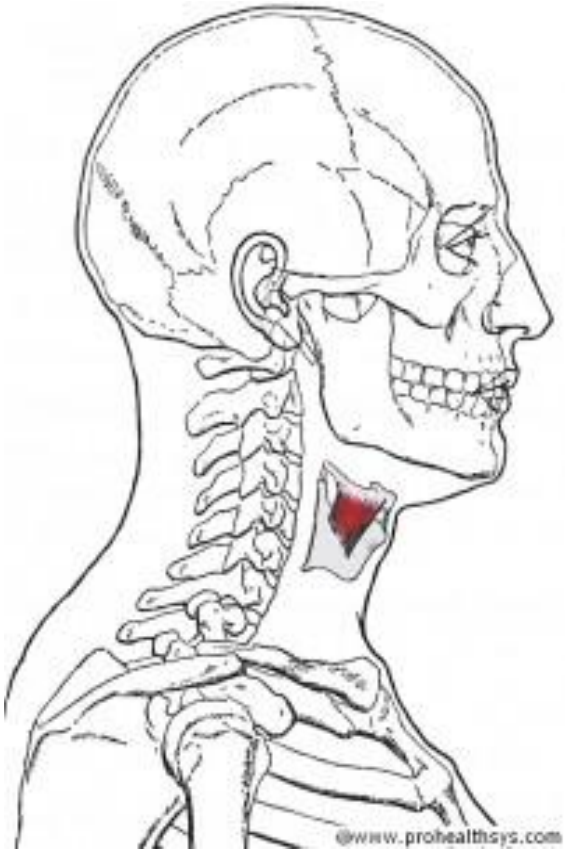
Origin – Thyroid Cartilage (oblique line)

Insertion – Inferior hyoid bone

Action – Depression of hyoid bone, flexes head and neck

Nerve- C1 (via hypoglossal nerve)

Blood - superior Thyroid arteries



OMOHYOID (OMO = SHOULDER)

Origin – Inferior belly – superior border of scapula

Superior belly - clavicle

Insertion – Inferior belly – clavicle

Superior belly – Inner surface of the Hyoid bone

Action – Depression of hyoid, flexion of head and neck

Nerve – Ansa cervicalis (C1,2,3)

Blood - Superior thyroid and transverse cervical arteries

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