CERVICAL FASCIA AND POSTERIOR TRIANGLE

Describe the boundaries, parts and contents of posterior triangle of neck (LE)

Boundaries:

Anterior

Posterior border of sternocleidomastoid

Posterior

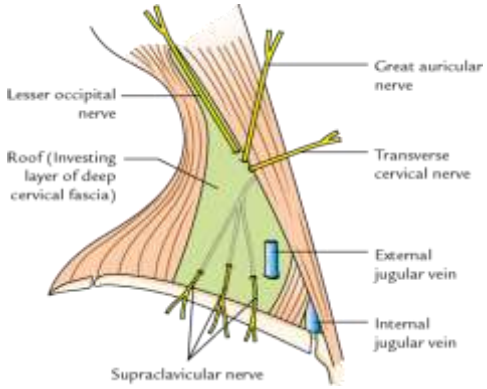
Anterior border of trapezius

Apex

Meeting point of sternocleidomastoid and trapezius at mastoid process

Base

Middle 1/3rd of clavicle



Roof

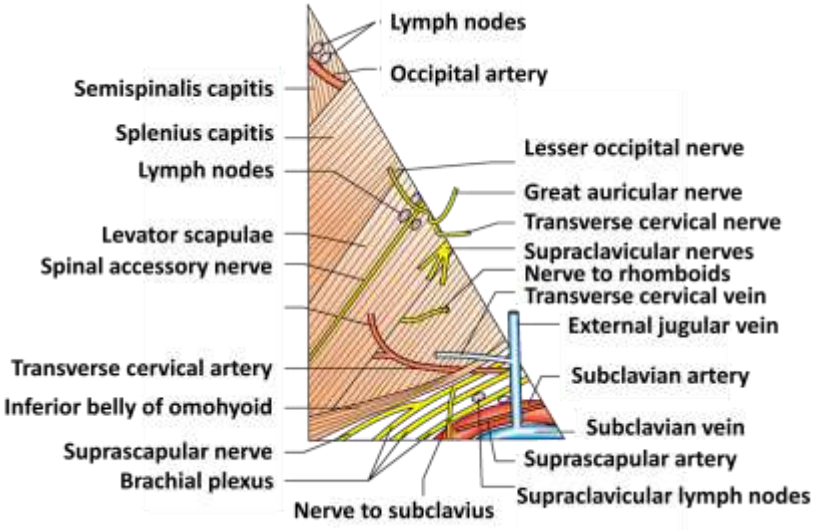
skin; superficial fascia with platysma, external jugular vein, parts of supraclavicular nerve, great auricular nerve, transverse cutaneous and lesser occipital nerves, lymph vessels; investing layer of deep cervical fascia

Floor

prevertebral fascia covering the muscles - splenius capitis, levator scapulae, scalenus medius

Parts

Inferior belly of omohyoid divides the triangle into upper occipital and lower subclavian / supraclavicular triangles



Contents

	Occipital triangle	**Supraclavicular / subclavian triangle**
Nerves	Spinal accessory nerve Lesser occipital nerve Great auricular nerve Anterior cutaneous nerve Supraclavicular nerves Nerve to levator scapulae C3, C4 fibers to trapezius Nerve to rhomboideus	Three trunks of brachial plexus Nerve to serratus anterior Nerve to subclavius Suprascapular nerve

Vessels	Transverse cervical artery and vein Occipital artery	3rd part of subclavian artery Subclavian vein Origin of transverse cervical artery Termination of transverse cervical vein Lower part of external jugular vein
Lymph nodes	Lymph nodes along the posterior border of sternocleidomastoid	Supraclavicular lymph nodes

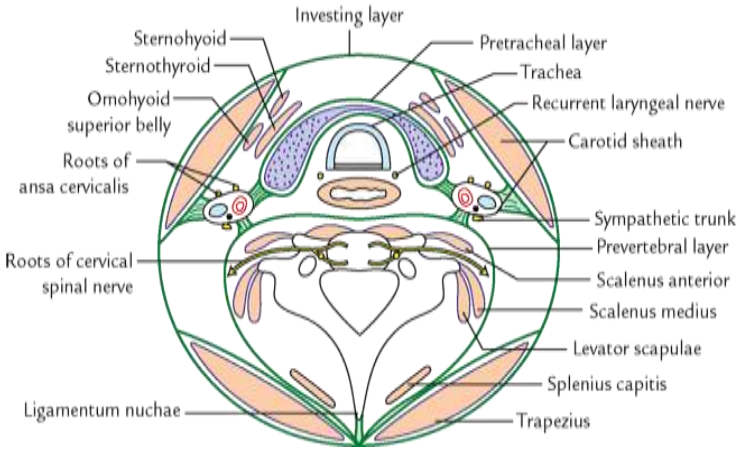
GENERAL INVESTING LAYER OF DEEP CERVICAL FASCIA (SE)

Surrounds the neck like a collar

Attachments:

Superior:

External occipital protuberance, superior nuchal line, mastoid process, base of mandible, symphysis menti.



Inferior:

Spine of scapula, acromian process, clavicle, manubrium sterni

Posterior:

External occipital protuberance, ligamentum nuchae, spine of C7

Anterior:

Symphysis menti, hyoid bone, continuous with opposite fascia

The fascia in its course splits to enclose

Two glands

Parotid and submandibular glands

Between angle of mandible and mastoid process, the fascia splits to enclose parotid gland.

The superficial layer forms the parotid fascia which is thick and dense, is attached to zygomatic arch.

Deep layer is thin attached to styloid process, mandible and tympanic plate.

Between the angle of mandible and styloid process the fascia thickens to form stylomandibular ligament.

Above the hyoid bone it splits to enclose the submandibular gland.

Two spaces

Suprasternal and supraclavicular spaces

suprasternal space (contents- sternal heads of sternocleidomastoid, jugular venous arch, lymph nodes, interclavicular ligament) and

supraclavicular space (contents- external jugular vein, supraclavicular nerves)

Two muscles:

Sternomastoid and trapezius

sternocleidomastoid and trapezius

PRETRACHEAL FASCIA (SE)

It is present in front of the trachea

Attachments:

Superior:

Hyoid bone, oblique line of thyroid cartilage, cricoid cartilage

Inferior:

Blends with apex of fibrous pericardium

On either side:

Merges with carotid sheath and investing layer of deep cervical fascia enclosing sternocleidomastoid

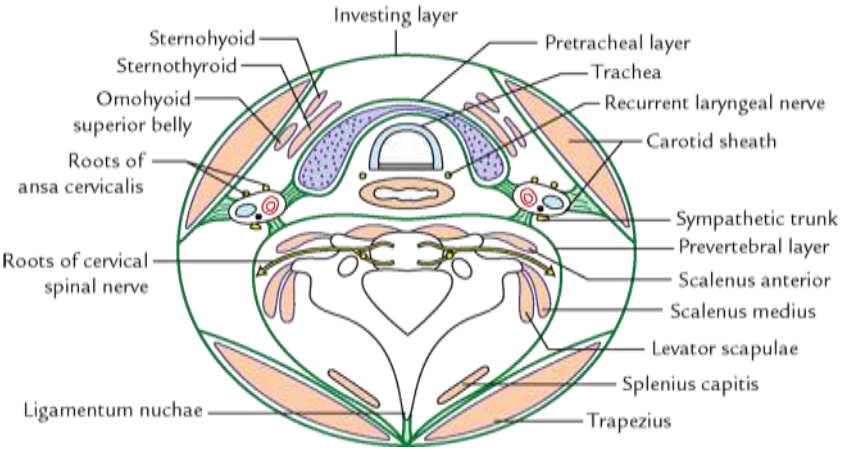
It splits to enclose the thyroid gland forming its capsule.

The layer between the gland and the two cartilages thickens to form suspensory ligament of Berry which helps in keeping the gland in position.

It moves along with trachea during deglutition.

The fascia covering posterior surface of gland is thin.

Hence an enlarged thyroid gland bulges posteriorly and compress esophagus causing dysphagia.



CAROTID SHEATH (SE)

It is a condensation of the deep cervical fascia around the main vessels and nerves of neck. It is strengthened and wedged between the Investing layer, pretracheal and prevertebral layers of deep cervical fascia.

Extent:

Above base of skull attached to margins of carotid canal and jugular fossa. Below to arch of aorta and blends with tunica adventitia

Contents:

Common carotid, internal carotid arteries, internal jugular vein, vagus nerve present posterior to the vessels

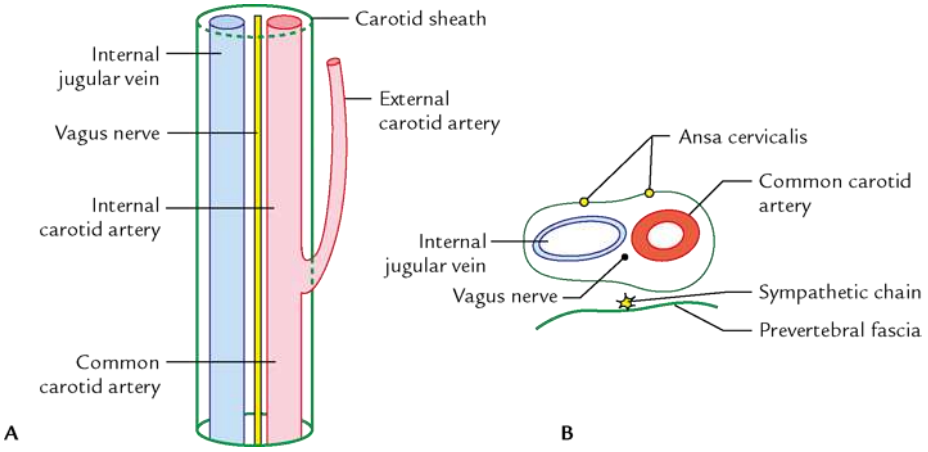
Relations:

Anterior:

Ansa cervicalis, sternocleidomastoid

Posterior:

Cervical sympathetic chain, prevertebral fascia



EXTERNAL JUGULAR VEIN- FORMATION, RELATIONS, TRIBUTARIES AND APPLIED ASPECTS (SE)

Formation:

Union of posterior auricular vein and posterior division of retromandibular vein just below the angle of mandible.

Relations:

It crosses the sternocleidomastoid obliquely, pierces the antero-inferior angle of roof (investing layer of deep cervical fascia) of posterior triangle and opens into subclavian vein. As it pierces the fascia the wall of the vein gets adherent to the fascia.

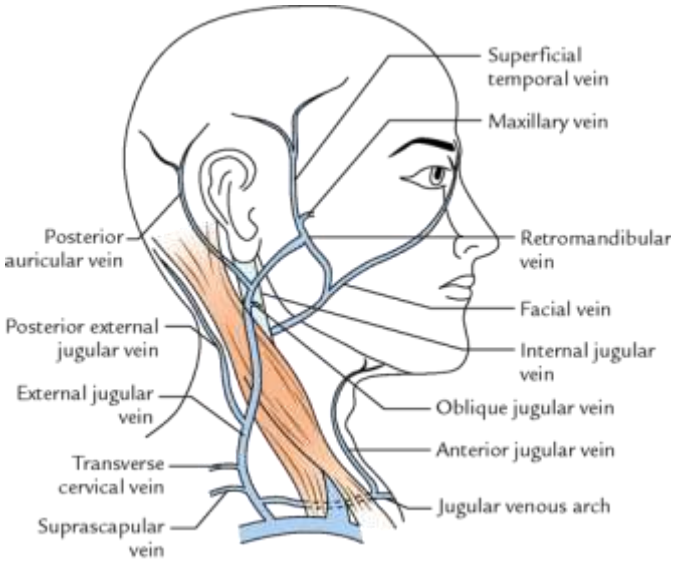
Tributaries:

Posterior auricular, retromandibular vein, posterior external jugular vein, transverse cervical vein, suprascapular vein, anterior jugular vein

Applied aspect:

When the vein gets cut at the site of piercing the deep fascia the walls cannot retract. So the air enters the vein due to negative intrathoracic pressure causing air embolism which may lead to death. To prevent this pressure has to be applied over it or deep fascia has to be cut.

In lying down position, lower 1/3rd of the vein becomes filled with blood, but collapses on reclining to 45^{0}. If it remains full even when the patient reclines at 45^{0} it suggests increased right atrial pressure which is often seen in congestive heart failure.



STERNOCLEIDOMASTOID (SE)

Attachments:

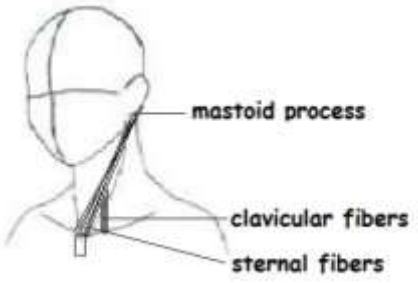
Origin:

sternal head- superolateral part of front of manubrium sterni

Clavicular head- medial 1/3rd of superior surface of clavicle

Insertion:

Lateral surface of mastoid process, lateral half of superior nuchal line.



Nerve supply:

Motor: spinal accessory nerve

Proprioception: ventral rami of C2

Actions:

When one muscle contracts- turns chin to opposite side, tilt head towards shoulder of same side

When both contract- anterior flexion of head,

Helps in forced inspiration

Relations:

Superficial: skin, superficial fascia containing external jugular vein, cutaneous nerves of neck, superficial cervical lymph nodes

Deep: cervical plexus, carotid sheath with contents (carotid arteries, internal jugular vein vagus nerve), last four cranial nerves (9, 10, 11, 12), deep cervical lymph nodes

Applied aspect:

Torticollis

Due to the spasm or contracture of the sternocleidomastoid muscle the head is bent to one side and the chin points to other side. Common types are – rheumatic, reflex, congenital and spasmodic torticollis.

VIRCHOW'S NODE (SA)

It is a lymph node in the left supraclavicular fossa and drains lymph vessels in the abdominal cavity.

If it becomes enlarged and hard, it is indicative of presence of cancer in the abdomen.

The metastasis blocks the thoracic duct leading to regurgitation into Virchow's node causing it to enlarge.

It is sometimes called signal node or sentinel node.

CONTENTS OF SUPRASTERNAL SPACE OF BURNS (SA)

Contents-

sternal heads of sternocleidomastoid,

jugular venous arch,

lymph nodes,

interclavicular ligament

SUSPENSORY LIGAMENT OF BERRY (SA)

Pretracheal fascia splits to enclose the thyroid gland.

Between the gland and the thyroid/cricoid cartilages, the deep layer thickens to form suspensory ligament of Berry which helps in keeping the gland in position without sinking.

PRETRACHEAL FASCIA (SA)

Attachments:

Superior:

Hyoid bone, oblique line of thyroid cartilage, cricoids cartilage

Inferior:

Blends with arch of aorta

On either side:

Blends with carotid sheath

It splits to enclose the thyroid gland. The deep layer thickens to form suspensory ligament of Berry between the gland and the two cartilages which helps in keeping the gland in position

CONTENTS OF CAROTID SHEATH (SA)

Contents: common carotid, internal carotid arteries, internal jugular veins, vagus nerve

BOUNDARIES OF POSTERIOR TRIANGLE (SA)

Boundaries:

Anterior- posterior border of sternocleidomastoid

Posterior- anterior border of trapezius

Apex- meeting point of sternocleidomastoid and trapezius at mastoid process

Base- middle 1/3rd of clavicle

Roof- skin; superficial fascia with platysma, external jugular vein, parts of supraclavicular nerve, great auricular nerve, transverse cutaneous and lesser occipital nerves, lymph vessels; investing layer of deep cervical fascia

Floor- prevertebral fascia covering the muscles - splenius capitis, levator scapulae, scalenus medius

EXTERNAL JUGULAR VEIN- FORMATION, TERMINATION, TRIBUTARIES (SA)

Formation:

Union of posterior auricular vein and posterior division of retromandibular vein within the parotid gland.

Termination:

It pierces the antero-inferior angle of roof (investing layer of deep cervical fascia) of posterior triangle and opens into subclavian vein.

Tributaries:

Posterior external jugular vein, transverse cervical vein, suprascapular vein, anterior jugular vein

STERNOCLEIDOMASTOID MUSCLE- ORIGIN, INSERTION, NERVE SUPPLY AND ACTIONS (SA)

Attachments:

Origin:

sternal head- superolateral part of front of manubrium sterni

Clavicular head- medial 1/3rd of of superior surface of clavicle

Insertion:

lateral surface of mastoid process, lateral half of superior nuchal line

Nerve supply:

Motor: spinal accessory nerve

Proprioception: ventral rami of C2

Actions:

When one muscle contracts- turns chin to opposite side, tilt head towards shoulder of same side

When both contract- anterior flexion of head, helps in forced inspiration

TORTICOLLIS / WRY NECK (3 marks)

It is a deformity in which the head is bent to one side and the chin points to other side.

It is Due to the spasm or contracture of the muscles supplied by spinal accessory nerve (sternocleidomastoid & trapezius)

Common types are –

Rheumatic:

Due to exposure to cold

Reflex:

Irritation of spinal accessory nerve by inflamed or suppurating cervical lymph nodes

Congenital:

Birth injury

Spasmodic torticollis:

Due to repeated painful contraction of sternocleidomastoid & trapezius of one side.

SUB OCCIPITAL TRIANGLE

SUBOCCIPITAL SPACE (TRIANGLE)- BOUNDARIES AND CONTENTS (SE)

Boundaries:

Superomedial

Rectus capitis posterior major, rectus capitis posterior minor

Superolateral

Oblique capitis superior

Inferior

Oblique capitis inferior

Roof

Medially semispinalis capitis, laterally longissimus capitis

Floor

Posterior atlanto-occipital membrane, posterior arch of atlas

Contents:

3rd part of vertebral artery

Branch from subclavian artery extends from the foramina transversarium of C1 to the posterior atlanto occipital membrane

Greater occipital nerve (C2)

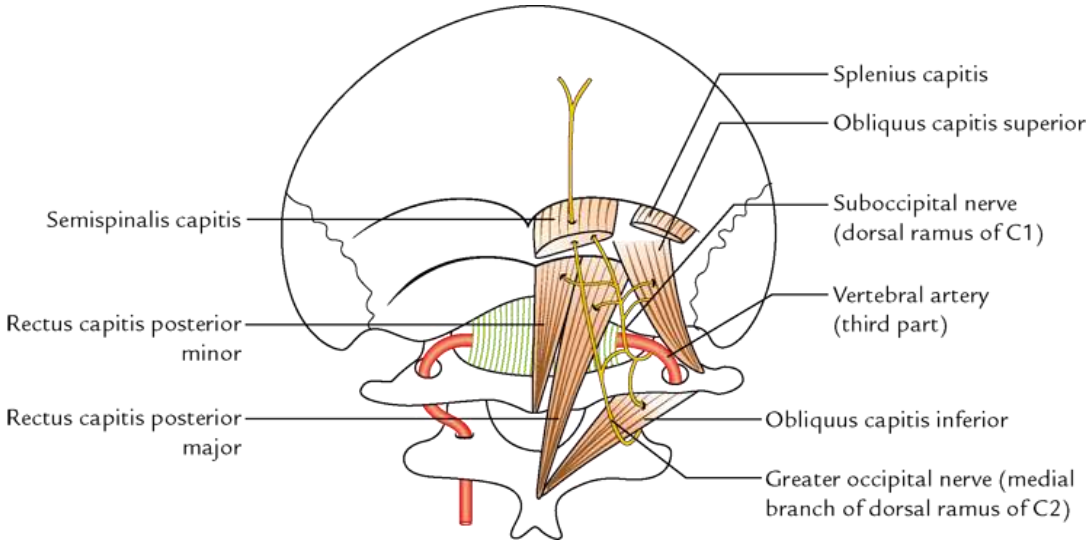
Winds round the inferior border of obliquus capitis inferior, runs in the triangle, pierces the semispinalis capitis, becomes superficial and supplies skin of back of scalp.

Dorsal ramus of 1st cervical nerve

Passes between the 3rd part of vertebral artery and posterior arch of atlas, splits into 5 muscular branches for rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis superior, obliquus capitis inferior, and semispinalis capitis.

suboccipital plexus of veins –

Spread in the triangle drains the following veins- muscular veins, occipital veins, internal vertebral venous plexus and itself drains into deep cervical veins, external vertebral venous plexus.



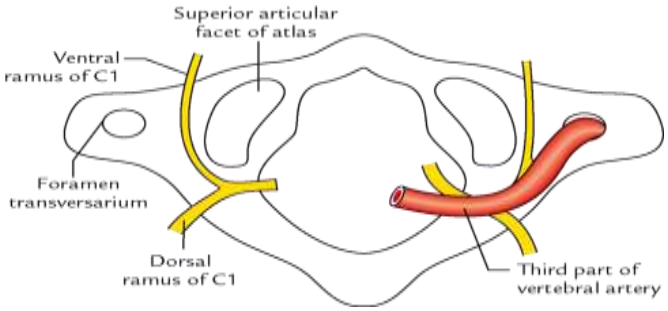
SUBOCCIPITAL NERVE (SE)

The first cervical nerve passes behind the lateral mass of atlas between the posterior arch of atlas and 3rd part of vertebral artery where it divides into dorsal and ventral rami.

The dorsal ramus of C1 emerges between the posterior arch of atlas and 3rd part of vertebral artery and splits into 5 muscular branches to supply rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis superior, obliquus capitis inferior, semispinalis capitis.

The ventral ramus lies deep to the third part of vertebral artery. It supplies rectus capitus laterlis and rectus capitus anterior muscles. The ventral ramus C1 and C2 join together. A branch from this union travels along with the hypoglossal nerve and through a branch of the hypoglossal it forms superior root of ansa cervicalis and supplies thyrohyoid and geniohyoid.

It does not possess a dermatome since it has no cutaneous branch.



SUBOCCIPITAL TRIANGLE (SA)

Boundaries:

Superomedial

Rectus capitis posterior major, rectus capitis posterior minor

Superolateral

obliquus capitis superior

Inferior

obliquus capitis inferior

Roof

medially semispinalis capitis, laterally longissimus capitis

Floor

posterior atlanto-occipital membrane, posterior arch of atlas

Contents:

3rd part of vertebral artery,
Greater occipital nerve,
Dorsal ramus of 1st cervical nerve,
suboccipital plexus of veins

SUBOCCIPITAL NERVE (SA)

Dorsal ramus of C1 or suboccipital nerve or emerges between the posterior arch of atlas and 3rd part of vertebral artery.

It splits into 5 muscular branches to supply rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis superior, obliquus capitis inferior, semispinalis capitis.

It does not possess a dermatome since it has no cutaneous branch.