

COMMON CAROTID ARTERIES

- They can be called the main arteries of the head and neck. There are 2 common carotid arteries: left and right.

ORIGIN

- The right common carotid artery originates behind the sternoclavicular joint, in neck from brachiocephalic trunk (innominate artery).
- The left common carotid artery originates directly from the arch of aorta in thorax (superior mediastinum). It ascends to the rear of left sternoclavicular joint and enters the neck and therefore consists of a thoracic and a cervical portion.

RELATIONS OF THE COMMON CAROTID ARTERIES IN THE CERVICAL REGION

Anterior:

- Skin, fascia, platysma muscle;
- Sternocleidomastoid muscle;
- Sternohyoid muscle;
- Sternothyroid muscle;
- Superior belly of omohyoid; Above the superior belly of the omohyoid muscle, the artery is more superficial and enters in the carotid triangle.

Posterior:

- Transverse process of the lower 4 cervical vertebrae;
- Prevertebral muscles
- Sympathetic trunk
- Vertebral vessels

Medial:

- Larynx, pharynx;
- Trachea, esophagus;
- Lobe of the thyroid gland;

Lateral:

- Internal jugular vein;
- Vagus nerve.

BIFURCATION OF THE COMMON CAROTID ARTERY

- Common carotid artery bifurcates into external and internal carotid arteries at the level of upper border of the thyroid cartilage (C4)
- Two structures of importance at the bifurcation are:
 1. Carotid sinus is slight dilatation at the termination of the common carotid artery or the beginning of the internal carotid artery. Carotid sinus is an important

organ that acts as a baroreceptor or pressure receptor and regulates the blood pressure.

2. Carotid body is a small, oval, reddish-brown structure situated deep to the bifurcation of the common carotid artery. Carotid body acts as a chemoreceptor and responds to changes in the oxygen and carbon dioxide and Ph content of the blood

Clinical Significance Carotid Pulse

- The common carotid artery can be compressed against the notable anterior tubercle of transverse process of the 6th cervical vertebrae referred to as carotid tubercle (Chassaignac's tubercle) by pressing medially and posteriorly with the thumb.
- The carotid tubercle of the 6th cervical vertebra is situated about 4 cm above the sternoclavicular joint in the level of cricoid cartilage.
- Above this level, the common carotid artery is superficial and therefore its pulsations can be easily felt.
- The carotid pulse is the steadiest pulse within the body.

EXTERNAL CAROTID ARTERY

- The external carotid artery stretches upwards from the level of upper border of the lamina of the thyroid cartilage(C4) to a stage supporting the neck of the mandible, where it ends in the substance of the parotid gland by splitting into its two terminal branches: superficial temporal and maxillary arteries.

RELATIONS OF THE EXTERNAL CAROTID ARTERY

The external carotid artery:

- is *covered by* the skin, superficial fascia, platysma, deep fascia, and anterior margin of the sternocleidomastoid muscle;
- it is crossed by the hypoglossal nerve, by the lingual, common facial, and superior thyroid veins; and by the digastric and stylohyoid muscles;
- higher up it passes deeply into the substance of the parotid gland, where it lies deep to the facial nerve and the junction of the temporal and internal maxillary veins.
- *Medial* to it are the hyoid bone, the wall of the pharynx, the superior laryngeal nerve, and a portion of the parotid gland.
- *Lateral* to it, in the lower part of its course, is the internal carotid artery
- *Posterior* to it, near its origin, is the superior laryngeal nerve;
- higher up, it is separated from the internal carotid by the styloglossus and stylopharyngeus, the glossopharyngeal nerve, the pharyngeal branch of the vagus, and part of the parotid gland.

BRANCHES OF THE EXTERNAL CAROTID ARTERY

- The 8 branches of the external carotid artery may be divided into four sets:

Anterior: 1.- *superior thyroid artery*,
2.- *lingual artery*,
3.- *facial artery (external maxillary artery)*,
Posterior: 4.- *occipital artery*,
5.- *posterior auricular artery*,
Ascending: 6.- *ascending pharyngeal artery*,
Terminal: 7.- *superficial temporal artery*,
8.- *internal maxillary artery*

1.SUPERIOR THYROID ARTERY

ORIGIN:

It arises from the external carotid artery just below the level of the greater cornu of the hyoid bone and ends in the thyroid gland.

COURSE:

- Runs downward and forward parallel and just superficial to the external laryngeal nerve.
- It passes deep to omohyoid, sternohyoid, sternothyroid and reaches the upper pole of the lateral lobe of the thyroid gland and divides into its terminal branches
- It is accompanied by same-named vein

BRANCHES OF THE SUPERIOR THYROID ARTERY

1. Infrahyoid branch runs along the lower border of the hyoid bone beneath the thyrohyoid muscle and anastomoses with the vessel of the opposite side.
2. Sternocleidomastoid branch supplies the sternocleidomastoid m. and neighboring muscles and integument.
3. Superior laryngeal artery accompanies the internal laryngeal branch of the superior laryngeal nerve, it pierces the thyrohyoid membrane, and supplies the muscles, mucous membrane, and glands of the larynx.
4. Cricothyroid branch is small and runs transversely across the cricothyroid membrane, communicating with the artery of the opposite side.

2.LINGUAL ARTERY

- The lingual artery *arises* from the external carotid between the superior thyroid and facial arteries
- it first runs obliquely upward and medialward to the greater cornu of the hyoid bone, being contained within the carotid triangle
- it then curves downward and forward, forming a loop which is crossed by the hypoglossal nerve,
- passing beneath the digastric and stylohyoid muscles it runs horizontally forward, beneath the hyoglossus muscle,
- finally, ascending almost perpendicularly to the tongue, turns forward on its lower surface as far as the tip, under the name of the profunda linguæ.
- The artery supplies structures in the floor of the oral cavity.
- It is the principal artery of the tongue
 - It is divided into three parts by the hyoglossus muscle:
 - (a) *First part* lies in the carotid triangle and forms a characteristic loop with convexity upwards above the greater cornu. The loop is crossed superficially by the hypoglossal nerve. The loop permits free movement of the hyoid bone.
 - (b) *Second part* lies deep to the hyoglossus muscle along the upper border of the hyoid bone.
 - (c) *Third part* (also called *arteria profunda linguæ*) or *deep lingual artery* first runs upwards along the anterior border of the hyoglossus muscle and then forwards on the undersurface of the tongue, where it anastomoses with its fellow of opposite side.

BRANCHES OF THE LINGUAL ARTERY

1. Suprahyoid artery runs along the upper border of the hyoid bone, supplying the muscles attached to it
2. Sublingual artery supplies the gland and gives branches to the Mylohyoideus and neighboring muscles, and to the mucous membrane of the mouth and gums
3. Dorsales linguæ consist usually of two or three small branches which *arise* beneath the Hyoglossus; they ascend to the back part of the dorsum of the tongue, and supply the mucous membrane in this situation, the glossopalatine arch, the tonsil, soft palate, and epiglottis;
4. Profunda linguæ (deep lingual artery) is the terminal portion of the lingual artery; it pursues a tortuous course and runs along the under surface of the tongue. In the mouth, these vessels are placed one on either side of the frenulum linguæ.

3.FACIAL ARTERY

- It arises in the carotid triangle, from the front of the external carotid artery just above the tip of the greater cornu of the hyoid bone.
- It is divided into two parts —cervical and facial:
 - (a) *Cervical part* of the facial artery ascends deep to the digastric and stylohyoid muscles, passes deep to the ramus of mandible where it grooves the posterior border of the submandibular gland. Then it makes S-shaped bend, first bending down (with convexity upwards) over the submandibular gland, and then up (with convexity downwards) over the base of the mandible.
 - (b) *Facial part* of the facial artery begins where the facial artery winds around the lower border of the body of the mandible at the anteroinferior angle of the masseter. In the face, the artery passes tortuously, medial to the anterior facial vein, lateral to the angle of the mouth, and then ascends along the side of the nose to the medial angle of the eye where it ends by anastomosing with the *dorsal nasal branch of ophthalmic artery*. The terminal part of facial artery is called angular artery.

Branches of the Facial Artery in the cervical part (neck)

- (1) *Ascending palatine artery* arises near the origin of facial artery, ascends, and accompanies the levator palati muscle, passes over the upper border of the superior constrictor muscle and supplies mainly the palate.
- (2) *Tonsillar artery* (main artery of tonsil) pierces the superior constrictor muscle and ends in the tonsil.
- (3) *Glandular branches* supply the submandibular gland.
- (4) *Submental artery*, a large artery which runs forwards on the mylohyoid muscle in company with mylohyoid nerve. It supplies the mylohyoid muscle and submandibular and sublingual salivary glands.

Branches of the Facial Artery in the Face

In the face it gives branches:

1. Inferior labial artery, to supply the lower lip.
2. Superior labial artery, to supply the upper lip.
3. Lateral nasal artery, to supply the ala and dorsum of the nose. All these branches arise anteriorly.
4. Angular artery is the terminal part of the facial artery it ascends to the medial angle of the orbit, imbedded in the fibers of the angular head of the quadratus labii superioris, and accompanied by the angular vein. On the cheek it distributes branches which anastomose with the infraorbital; after supplying the lacrimal sac and orbicularis oculi, it ends by anastomosing with the dorsal nasal branch of the ophthalmic artery.

FACIAL ARTERY- anastomoses and clinical considerations

The *tortuosity of facial* artery prevents its walls from being unduly stretched during the movements of mandible, lips, and cheeks.

- The facial artery takes part in the formation of numerous anastomoses:
 - Across the midline with the branches of the opposite side. In the lips, the

anastomoses between the superior and inferior labial arteries of two sides are large and so efficient that if cut blood spurts from both cut ends.

- At the medial angle of eye, it anastomoses with the branches of ophthalmic artery, a branch of internal carotid artery and hence the site of anastomosis between the branches of external and internal carotid arteries.
- Since the face is richly vascular, the wounds of face bleed profusely but fortunately they heal quickly.

Clinical correlation

- The pulsations of facial artery can be felt at two sites:
 - At the base of the mandible close to anteroinferior angle of the masseter.
 - About 1.25 – 2 cm lateral to the angle of the mouth.

4. OCCIPITAL ARTERY

- It arises from the posterior aspect of the external carotid artery at the same level as the facial artery.
- It runs backwards and upwards under cover of lower border of the posterior belly of digastric muscle superficial to internal carotid artery, internal jugular vein, and last four cranial nerves, crosses the apex of the posterior triangle.
- Then it runs deep to the mastoid process grooving the lower surface of the temporal bone medial to the mastoid notch.
- It crosses the superior oblique and semispinalis capitis and apex of suboccipital triangle to reach underneath the trapezius muscle, which it pierces 2.5 cm away from the midline and comes to lie just lateral to the greater occipital nerve. It supplies most of the back of the scalp.

BRANCHES OF THE OCCIPITAL ARTERY

- (1) *Sternomastoid branches* are usually two in number. They run downwards and backwards, and supply the sternocleidomastoid. The upper one accompanies the spinal accessory nerve and lower one is hooked by the hypoglossal nerve.
- (2) *Mastoid branch* enters the cranial cavity through mastoid foramen and supplies mastoid air cells.
- (3) *Meningeal branches* enter the cranial cavity through jugular foramen and hypoglossal canal to supply dura mater of posterior cranial fossa.
- (4) *Muscular branches* supply adjoining muscles.
- (5) *Auricular branch* (occasional) supplies the cranial surface of the auricle.
- (6) *Descending branch* divides into superficial and deep branches.
 - The superficial branch anastomoses with the superficial branch of transverse cervical artery and
 - Deep branch anastomoses with the deep cervical artery—a branch of the costocervical trunk of subclavian artery on the superficial and deep surfaces of the semispinalis capitis, respectively.

The descending branch of the occipital artery provides the chief collateral circulation after ligation of the external carotid or the subclavian artery.

- The *hypoglossal nerve* hooks the occipital artery under its site of origin.
- The *upper sternomastoid branch* of occipital artery accompanies the spinal accessory nerve and the lower sternomastoid branch crosses the hypoglossal nerve.
- *Occipital artery* crosses the apical part of the posterior triangle.

5. POSTERIOR AURICULAR ARTERY

- It arises from the posterior aspect of the external carotid artery a little above the occipital artery.
- It crosses superficial to the stylohyoid muscle.
- It runs upwards and backwards parallel to the occipital artery along the upper border of the posterior belly of digastric muscle and deep to the parotid gland.
- Then it becomes superficial and lies on the base of mastoid process behind the ear which it supplies.

BRANCHES OF THE POSTERIOR AURICULAR ARTERY

- (1) *Stylomastoid artery* enters the stylomastoid foramen to supply middle ear, mastoid air cells, and facial nerve.
- (2) *Auricular branch* supplies both cranial and lateral surfaces of the auricle.
- (3) *Occipital branch*, supplies scalp above and behind the auricle.

6. ASCENDING PHARYNGEAL ARTERY

- It is a slender artery that arises from the medial aspect of the external carotid artery near its lower end.
- It runs vertically upwards between the side wall of the pharynx and internal carotid artery up to the base of the skull.

BRANCHES OF THE ASCENDING PHARYNGEAL ARTERY

- (1) *Pharyngeal and prevertebral branches* to corresponding muscles.
- (2) *Meningeal branches*, which traverse foramina in the base of the skull (posterior meningeal a.- jugular foramen; ascending pharyngeal-hypoglossal canal; small branches-foramen lacerum) .
- (3) *Inferior tympanic*, which supplies medial wall of tympanic cavity.
- (4) *Palatine branches*, which accompany levator veli palatini to the palate.

7. SUPERFICIAL TEMPORAL ARTERY

- It is the smaller but more direct terminal branch of the external carotid artery.
- It begins behind the neck of the mandible deep to the upper part of the parotid gland. It runs vertically upwards crossing the root of zygoma in front of the tragus where its pulsation can be felt.
- About 5 cm above the zygoma, it divides into anterior and posterior branches, which supply the temple and scalp

BRANCHES OF THE SUPERFICIAL TEMPORAL ARTERY

- (1) *Transverse facial artery* runs forwards across the masseter below the zygomatic arch.

- (2) *Anterior auricular branch*, supplies the lateral surface of auricle and external auditory meatus.
 - (3) *Zygomatico-orbital artery* runs forwards along the upper border of zygomatic arch between two layers of temporal fascia and reaches the lateral angle of the eye.
 - (4) *Middle (deep) temporal artery* runs on the temporal fossa deep to temporalis muscle and supplies temporalis muscle and fascia.
 - (5) *Anterior (frontal) and posterior (parietal) terminal branches*.
 - The *anterior branch* supplies the muscles and skin of the frontal region. It is very tortuous and anastomoses with the branches of the ophthalmic artery.
 - The *posterior branch* supplies skin and the auricular muscles.
 - Superficial temporal pulse
- The pulsations of superficial temporal artery can be readily felt in front of the tragus of the ear (*where it crosses the root of zygoma, the preauricular point*). It serves the useful purpose to anesthetists to whom the radial pulse is not available during surgery. For this reason, it is also called anesthetist's artery.
- The course of anterior terminal branch of the superficial temporal artery on the forehead can clearly be seen in a bald angry man. It becomes noticeably more tortuous with increasing age.

8. MAXILLARY ARTERY

- It is the larger terminal branch of the external carotid artery.
- It arises behind the neck of the mandible, runs horizontally forward up to the lower border of lower head of lateral pterygoid. Now it turns upwards and forwards, crosses the lower head of lateral pterygoid superficially (sometimes deep).
- After emerging between the two heads of lateral pterygoid it enters the pterygopalatine fossa by passing through pterygomaxillary fissure. Here it ends by giving its terminal branches.
- The maxillary artery has a wide territory of distribution.
 - It supplies:
 - (a) upper and lower jaws,
 - (b) muscles of temporal and infratemporal fossae,
 - (c) nose and paranasal sinuses,
 - (d) palate and roof of pharynx,
 - (e) external and middle ear,
 - (f) pharyngotympanic tube, and
 - (g) dura mater.

MAXILLARY ARTERY- PARTS AND RELATIONS

The maxillary artery is divided into three parts by the lower head of lateral pterygoid muscle. The parts are:

1. First part (mandibular part): From beginning (origin) to lower border of lateral pterygoid. It lies between the neck of the mandible laterally and

sphenomandibular ligament medially. The auriculotemporal nerve lies above this part.

2. Second part (pterygoid part): From lower border to the upper border of the lower head of lateral pterygoid (second part lies on or deep to lower head of lateral pterygoid).
 3. Third part (pterygopalatine part): From upper border of the lower head of lateral pterygoid to pterygopalatine fossa. In pterygopalatine fossa it lies in front of the pterygopalatine ganglion.
- Most of the branches from the first and second parts of maxillary artery accompany the branches of the mandibular nerve.
 - Branches from the third part of the maxillary artery accompany the branches of maxillary nerve and pterygopalatine ganglion.
 - Branches from the second part of the maxillary artery are muscular only and supply muscles of mastication.
 - All the branches (1st and 3rd part) of the maxillary artery pass through bony foramina and fissures except branches from its second part.

BRANCHES OF THE MAXILLARY ARTERY

I. BRANCHES FROM THE FIRST PART

1. Deep auricular artery —passes upwards and backwards to enter the external acoustic meatus by piercing its floor and supplies:
 - (a) skin of external acoustic meatus, and
 - (b) outer surfaces of tympanic membrane.
2. Anterior tympanic artery—enters the tympanic cavity by passing through petrotympanic fissure and it supplies the inner surface of the tympanic membrane.
3. Middle meningeal artery—is the largest meningeal branch. It supplies meninges as well as the skull bone. Clinically it is the most important branch of the maxillary artery. It ascends upwards deep to the lateral pterygoid, behind the mandibular nerve. Passing between the two roots of the auriculotemporal nerve, to enter the cranial cavity through foramen spinosum in company with meningeal branch of mandibular nerve . As it emerges in the cranial cavity, it courses laterally on the floor of the middle cranial fossa and turns upwards and forwards on the greater wing of the sphenoid, where it divides into frontal and parietal branches.

Distribution: The middle meningeal artery and its branches lie outside the dura and deep to the inner surface of the skull. Both of these are supplied by the artery.

N.B. The middle meningeal artery and its branches are accompanied by corresponding veins, which lie between the artery and the bone.
4. Accessory middle meningeal artery —runs upwards and enters the cranial cavity through foramen ovale. It supplies meninges and structures in the infratemporal fossa.
5. Inferior alveolar/dental artery —runs downwards between the sphenomandibular ligament and the ramus of the mandible, enters the mandibular foramen, runs through the mandibular canal, supplies molar and premolar teeth and adjoining gum. It then divides into mental and incisive branches:
 - The incisive branch supplies the canine and incisor teeth.

- The mental artery emerges through the mental foramen to supply the skin of the chin.

Before entering the mandibular foramen the inferior alveolar artery gives off two branches, namely,

- (a) *Lingual branch*: accompanies the lingual nerve and supply the mucous membrane of the cheek.
- (b) *Mylohyoid branch*: pierces the lower end of the sphenomandibular ligament, passes downwards and forwards to run in the mylohyoid groove. It supplies the mylohyoid muscle.

II. BRANCHES FROM THE SECOND PART

1. **Deep temporal arteries (usually two in number)** — ascend up on the lateral aspect of the skull deep to the temporalis muscle, which they supply.
2. **Pterygoid branches** — supply the medial and lateral pterygoid muscles.
3. **Masseteric artery** — passes laterally through the mandibular notch and supplies the masseter muscle from its deep surface.
4. **Buccal artery** — supplies buccinator muscle.

III. BRANCHES FROM THE THIRD PART

1. Posterior superior alveolar artery arises from maxillary artery just before it enters the pterygomaxillary fissure. It divides into two or three branches, which enter the foramina on the posterior surface of the body of maxilla, runs into alveolar canals and supply the molar and premolar teeth and mucous membrane of maxillary air sinus.

2. Infraorbital artery also arises from maxillary artery just before it reaches the pterygopalatine fossa. The artery passes successively through inferior orbital fissure, infraorbital groove, and infraorbital canal, and appears on the face through the infraorbital foramen. It gives the following branches:

In the orbit:

- (a) Branches to orbital contents.
- (b) Middle superior alveolar artery to premolar teeth.
- (c) Anterior superior alveolar artery, which descends through canaliculus sinuosus in the anterior wall of the maxillary sinus. It supplies the maxillary air sinus, and canine and incisor teeth of the upper jaw.

In the face, It gives off branches to supply the lacrimal sac, medial angle of the eye, side of nose, and upper lip.

3. **Descending palatine artery**

Arises from the maxillary artery in the pterygopalatine fossa and descends in the greater palatine canal with the greater palatine nerve. After emerging from the greater palatine foramen at the palate the artery becomes *greater palatine artery*, having already given off several small *lesser palatine branches*.

- (a) *The greater palatine artery* courses to the incisive canal. Branches of the artery are distributed to the gums, palatine glands, and mucous membrane of the roof of the mouth. A terminal branch anastomoses with the nasopalatine branch of the sphenopalatine artery in the incisive canal.

(b) The lesser palatine arteries course through the lesser palatine canals to emerge at the lesser palatine foramina. They supply the oral surface of the soft palate

- 4. Pharyngeal artery** passes backwards through the palatovaginal canal and supplies the mucus membrane of the nasopharynx, auditory tube, and the sphenoidal air sinus.
- 5. Artery of pterygoid canal** runs backwards in the pterygoid canal and supplies the pharynx, auditory tube, and the tympanic cavity.
- 6. Sphenopalatine artery** is considered as the continuation of the maxillary artery. It is the most important branch of the third part of the maxillary artery. It enters the nasal cavity in the posterior part of the superior meatus through sphenopalatine foramen. Here it divides into:
 - (a) posterior lateral nasal,** and
 - (b) posterior septal branches.**

The posterior lateral nasal branches supply the lateral wall of the nose and sphenoidal and ethmoidal air sinuses, the posterior septal branches cross the undersurface of the body of the sphenoid, and then pass forwards and downwards along the nasal septum. One of the branches (nasopalatine artery) of this group is long, runs in a groove on the vomer towards the incisive canal and anastomoses with the terminal branch of the greater palatine artery.

INTERNAL JUGULAR VEIN

- The internal jugular vein is usually the largest vein in the neck.
- It begins as the direct continuation of the sigmoid sinus at the base of the skull below the jugular foramen and descends vertically downwards to end behind the sternal end of the clavicle by joining the subclavian vein to form the brachiocephalic vein.
- The internal jugular vein drains brain and most of the tissues of the head and neck

1. It presents two dilatations:

- First, at its commencement, which lies in the jugular fossa of the temporal bone. It is known as superior bulb and is related to the floor of the middle ear.

- Second, close to its termination, which lies in the lesser supraclavicular fossa between the sternal and clavicular heads of sternocleidomastoid. It is known as inferior bulb and is guarded by a pair of valves.

2. It is vertically applied to the lateral side of

- the internal and common carotid arteries,
- enclosed with them and the vagus nerve
- in the facial sheath called carotid sheath.

3. The deep cervical lymph nodes lie along

- its entire course.

4. It is remarkably constant in position and

- can be marked on the surface by a vertical
- line extending from midpoint between the
- tip of the mastoid process and the angle of
- the mandible, to the sternoclavicular joint.

Relations

Deep (posterior):

From above downwards, these are as follows:

1. Rectus capitis lateralis.
2. Transverse process of atlas.
3. Levator scapulae.
4. Scalenus medius and cervical plexus.
5. Scalenus anterior and phrenic nerve.

6. Thyrocervical trunk and first part of vertebral artery.
7. First part of the subclavian artery.
8. Thoracic duct on the left side.
9. The sternocleidomastoid overlaps the upper part and covers the lower part of the vein.

Relations

Superficial (anterolateral)

These are as follows:

1. Crossed by two muscles
 - (a) Posterior belly of digastric muscle in the upper part.
 - (b) Inferior belly of omohyoid in the lower part.
2. Crossed by two arteries
 - (a) Occipital artery.
 - (b) Posterior auricular artery.
3. Crossed by one vein: anterior jugular vein
4. Crossed by two nerves
 - (a) Spinal accessory nerve.
 - (b) Inferior root of ansa cervicalis (descendens cervicalis).
5. At the base of skull the internal carotid artery lies in front of the internal jugular vein and the last four cranial nerves intervene between the vein and the artery.

Medial:

Medially the vein is related to:

1. Internal carotid artery and 9th, 10th, 11th, and 12th cranial nerves in the upper part.
2. Common carotid artery and vagus nerve in the lower part.

TRIBUTARIES OF THE INTERNAL JUGULAR VEIN

1. Inferior petrosal vein—is usually the first tributary and joins the internal jugular vein immediately below the jugular foramen.
2. Pharyngeal veins —from pharyngeal plexus.
3. Common facial vein.
4. Lingual vein.
5. Superior thyroid vein.
6. Middle thyroid vein.
7. Occipital vein (only sometimes).

In addition to the above mentioned tributaries, the right lymphatic duct on the right side and thoracic duct on the left side, usually open into internal jugular vein or into the junction between the internal jugular vein and the subclavian vein.

N.B. In the upper part of the neck internal jugular vein may communicate with the external jugular vein by an *oblique jugular vein* across the anterior border of sternocleidomastoid muscle.

SUPERFICIAL VEINS OF THE NECK

There are two superficial veins of the neck. These are as follows:

1. External jugular vein.
2. Anterior jugular vein.

EXTERNAL JUGULAR VEIN

- It begins just below the angle of the mandible by the union of posterior division of retromandibular vein and posterior auricular vein.
- It then runs almost vertically downward across the sternocleidomastoid under the cover of platysma to pierce the deep cervical fascia in the anteroinferior angle of the posterior triangle about 2.5 cm above the clavicle along the posterior border of the sternocleidomastoid and enters the supraclavicular space.
- After passing through this space it terminates in the subclavian vein
- The external jugular vein varies considerably in its size and course.
- It becomes visible in old age particularly when the individual holds his breath or blows his cheek with mouth closed, as it impedes the venous return to the right side of the heart and distends the vein.

Surface anatomy:

- The external jugular vein can be marked on the surface by a line extending downward and backward from angle of the mandible to the middle of the clavicle.
- Its tributaries are as follows:
 1. Posterior auricular vein
 2. Retromandibular vein
 3. Posterior external jugular vein
 4. Oblique jugular vein
 5. Transverse cervical vein
 6. Suprascapular vein
 7. Anterior jugular vein

N.B.

- The posterior auricular vein descends behind the auricle to join the posterior division of retromandibular vein.
- Posterior external jugular vein descends along the posterior border of sternocleidomastoid to join the external jugular vein a little below the midpoint of posterior border of the muscle.
- The oblique jugular vein communicates with the internal jugular vein in the upper part of the neck.
- The suprascapular, transverse cervical, and anterior jugular veins join the external jugular vein in the posterior triangle.
- There are two pairs of valves in the lumen of the external jugular vein, one at its site of termination into the subclavian vein and the other about 4 cm above the clavicle. These valves, however, do not prevent regurgitation of blood.

ANTERIOR JUGULAR VEIN

- Anterior jugular vein It begins below the chin in the submental region by the union of small unnamed veins from the chin.
- It descends in the superficial fascia about 1 cm lateral to the midline. At about 2.5 cm above the suprasternal notch, it pierces the investing layer of deep cervical fascia to enter the suprasternal space (of Burns), where it turns sharply laterally and passes deep to sternocleidomastoid and terminates in the external jugular vein. In the suprasternal space, the anterior jugular vein is united across the midline to its fellow of opposite side by a transverse venous channel called jugular venous arch.

References : Text cited from-exclusive educational and demonstrative purposes to best illustrate the syllabus in the current conditions, the wirtten text is addapted from consulting the books listed below

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