THE JUGULAR SYSTEM

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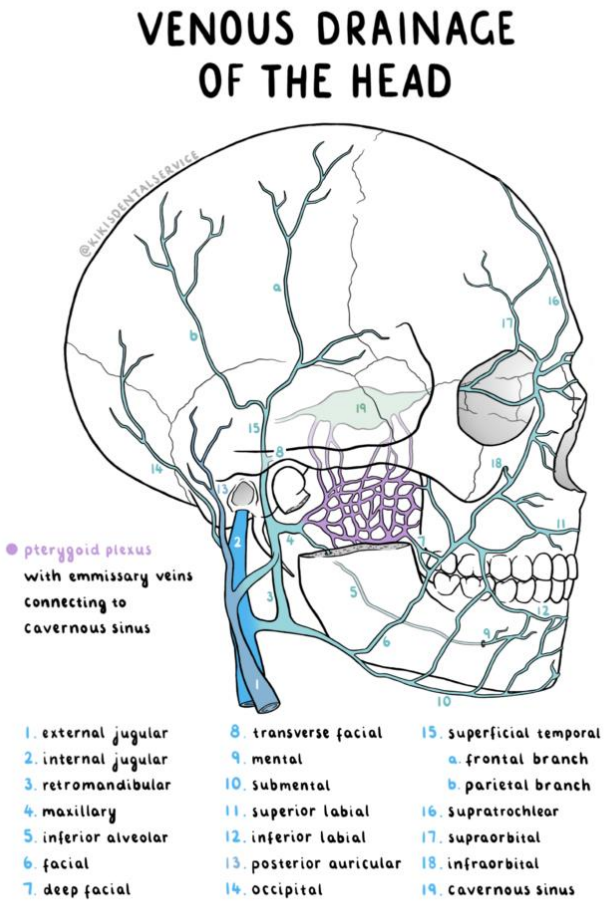
I – INTRODUCTION:

- The jugular system plays a very important role. It ensures the venous drainage of most of the face, neck, and brain.
- The internal jugular system collects blood from the brain, part of the face, and the anterior region of the neck.
- The external jugular system drains the walls of the skull, the deep parts of the face, and the lateral and posterior regions of the neck.



II – INTERNAL JUGULAR VEIN:

It drains the brain, skull, face, and neck.

1. Origin:

The internal jugular vein emerges from the jugular foramen at the base of the skull, then passes between the mastoid process and the mandibular angle.

2. Termination :

It ends at the base of the neck, where it joins to form the brachiocephalic vein.

3. Anatomical relations:

- **Superior portion:**

- Medially, it is related to the vagus nerve and the hypoglossal nerve.
- It is located posterior to the external acoustic meatus.

- **In the neck:**

- The left internal jugular vein is more closely related to the arch of the thoracic duct.
- **Medially**, it is related to the common carotid artery, the internal carotid artery, and the vagus nerve.
- **Laterally**, it is crossed by the digastric muscle.
    - Above the digastric: it is related to the parotid gland.
    - Below the omohyoid muscle: it is associated with the jugular lymph nodes.

4. Tributaries of the internal jugular vein :

They drain the tongue and the submandibular region :

❖ The facial vein :

- It originates at the medial angle of the eye, posterior to the facial artery. It follows the masseter muscle and the mandibular angle, and drains into the thyrolinguofacial trunk (TLF).
- It drains the soft tissues of the face.

❖ The pharyngeal veins.

❖ The superior and middle thyroid veins.

III – EXTERNAL JUGULAR VEIN:

Visible beneath the cervical skin, it drains the parotid gland, the scalp, the maxilla, and the neck.

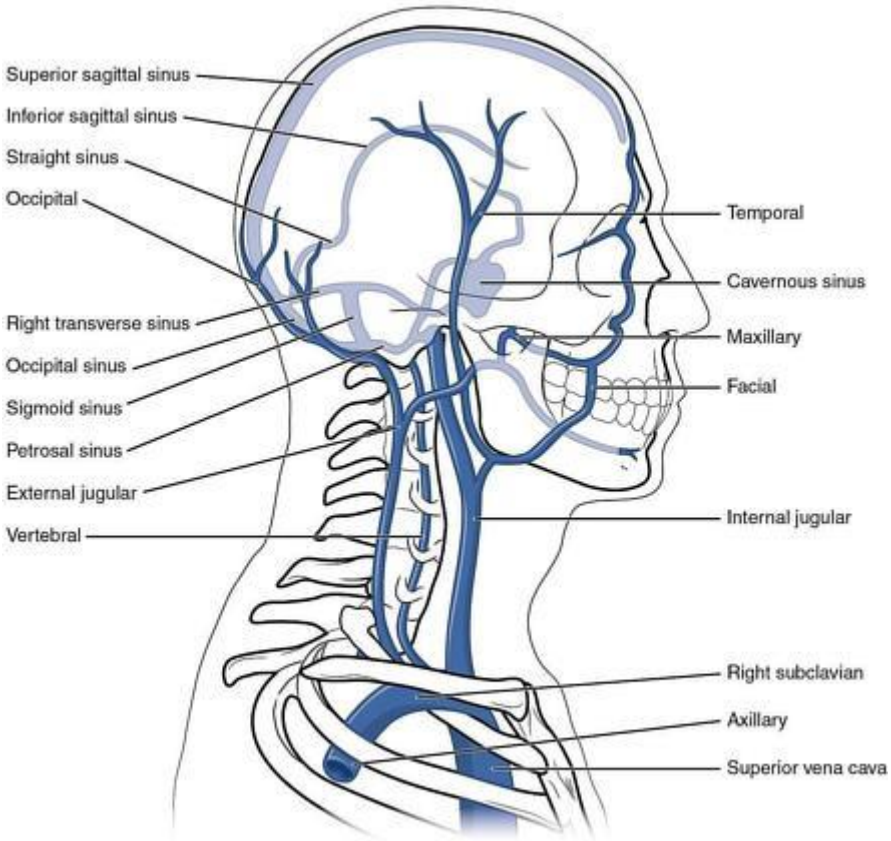
1. Course :

It travels superficial to the external surface of the sternocleidomastoid muscle (SCM).

2. Termination:

It ends at the base of the neck, forming the brachiocephalic vein.

3. Tributaries of the external jugular vein:



- **Superficial temporal vein.**
- **Occipital vein.**
- **Posterior auricular vein.**
- **Transverse cervical vein.**

- **Suprascapular veins.**

IV – ANTERIOR JUGULAR VEIN:

It is visible beneath the cervical skin and drains the parotid gland, the scalp, the maxilla, and the neck.

1. Course:

It runs superficial to the anterolateral surface of the sternocleidomastoid muscle (SCM).

2. Termination:

It ends at the base of the neck in the subclavian vein.

3. Tributaries of the anterior jugular vein:

It receives the submental veins.

V – POSTERIOR JUGULAR VEIN:

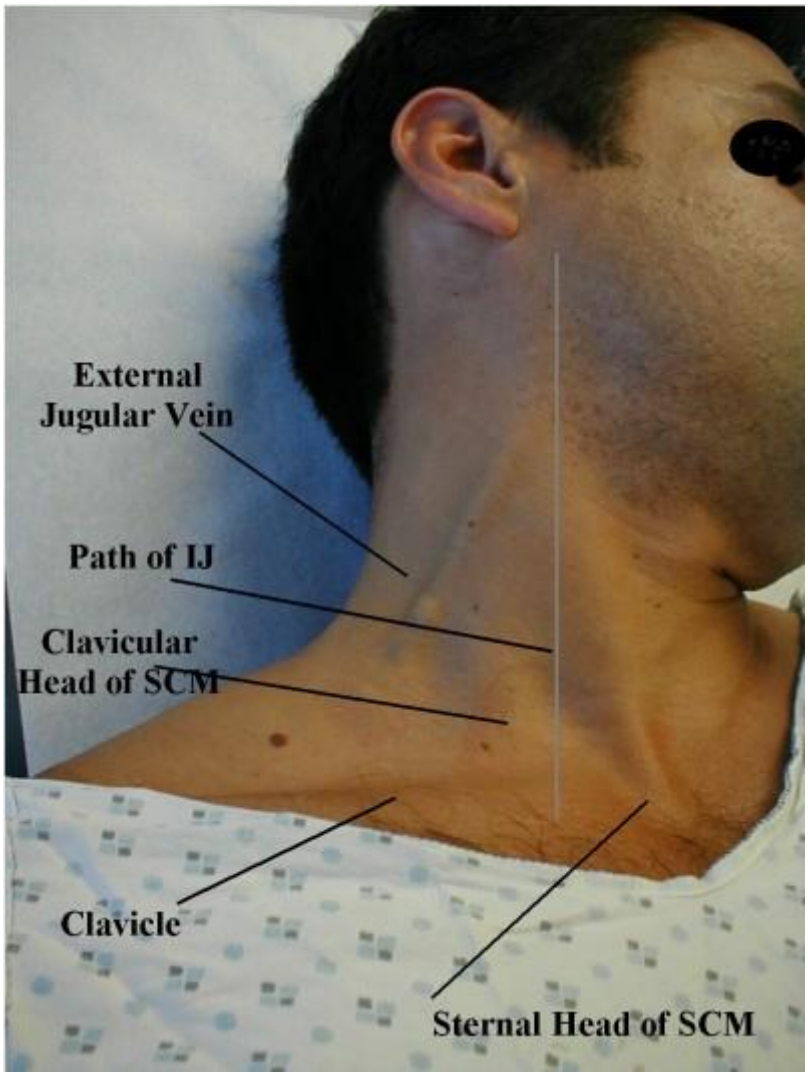
It drains the posterior scalp, originates from the suboccipital plexus, and ends in the jugulo-subclavian venous confluence.

VI – CLINICAL APPLICATIONS:

- **Jugular venous distention :**

- This refers to the visible swelling or engorgement of the external jugular vein in the neck, typically observed when the patient is in a semi-upright position.
- It is a key clinical sign of elevated central venous pressure and may indicate:

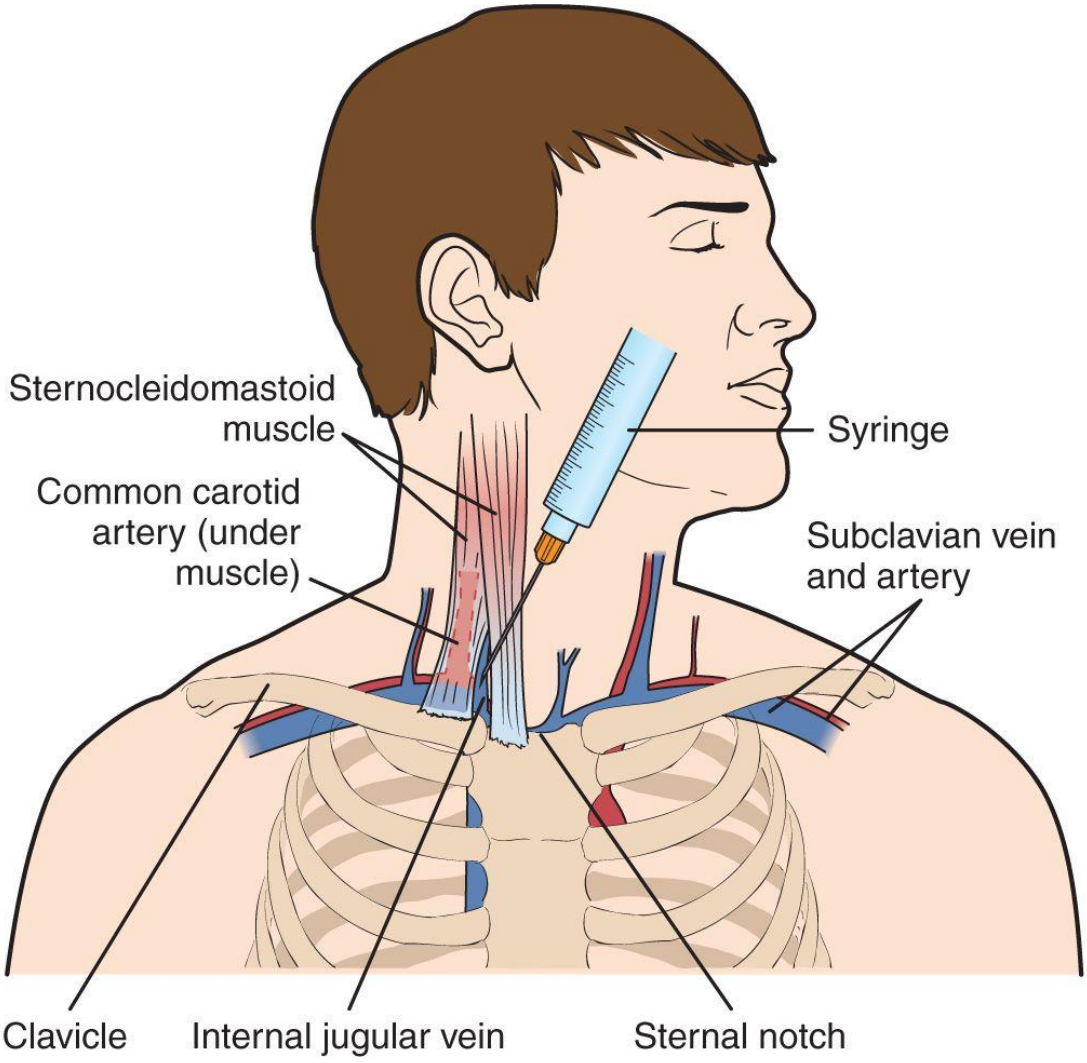
- Right-sided heart failure, where the heart struggles to pump blood effectively, causing venous backflow.
- Constrictive pericarditis, where the pericardium becomes thickened and limits cardiac filling.
- Large pericardial effusion, where fluid accumulation around the heart compresses the chambers and impedes venous return.



❖ Internal jugular vein catheterization:

- A catheter is inserted into a large-calibre vein in the neck, specifically the internal jugular vein.

- This is an invasive procedure that carries certain risks, including accidental arterial puncture—where the carotid artery is mistakenly punctured instead of the vein.
- Such a complication may lead to the formation of a haematoma, which can become infected or compress the carotid artery, potentially causing serious consequences.



VII – CONCLUSION:

- The jugular venous system plays a crucial role in draining blood from the brain, face, and neck.
- Comprised of both deep (internal jugular) and superficial (external and anterior jugular) veins, it provides multiple pathways for venous return.

- Clinically, it is important not only for diagnostic observation, such as in jugular venous distention, but also for therapeutic access, like central venous catheterization.