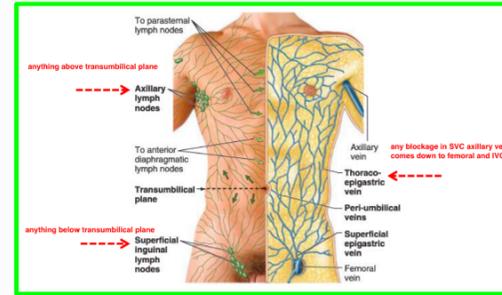


Lymphatic drainage

Drainage of Anterior abdominal wall

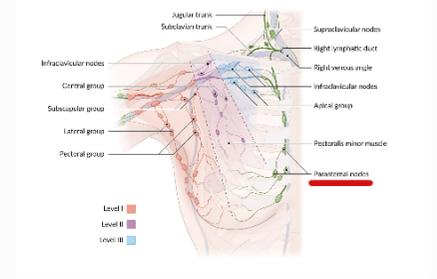
A- Superficial lymphatic :

- **Above the umbilicus:** they drain into the axillary lymph nodes.
- **Below the umbilicus:** They drain into the superficial inguinal lymph nodes.



B- Deep lymphatic :

- **Above the umbilicus:** They drain into the parasternal lymph nodes.
- **Below the umbilicus:** They drain into the external iliac Lymph nodes

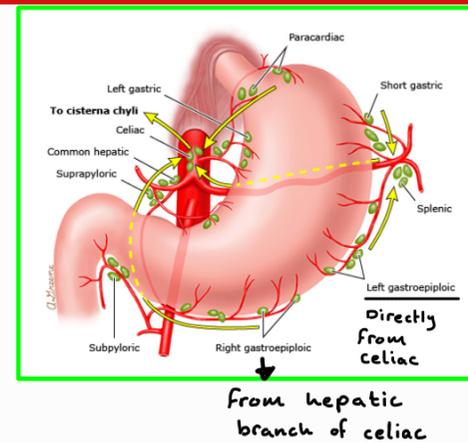


Lymph Drainage of Stomach

The lymph flow into :

1. The left and right gastric nodes
2. The left and right gastroepiploic nodes
3. The short gastric nodes.

All lymph from the stomach passes to the **celiac nodes** located around the root of the celiac artery on the posterior abdominal wall



Lymph nodes

Lymphatic drainage of the duodenum

- **The upper part :** Drains into the hepatic lymph nodes
- **The lower part:** Drains into the superior mesenteric lymph nodes.

Lymph flow / Drainage

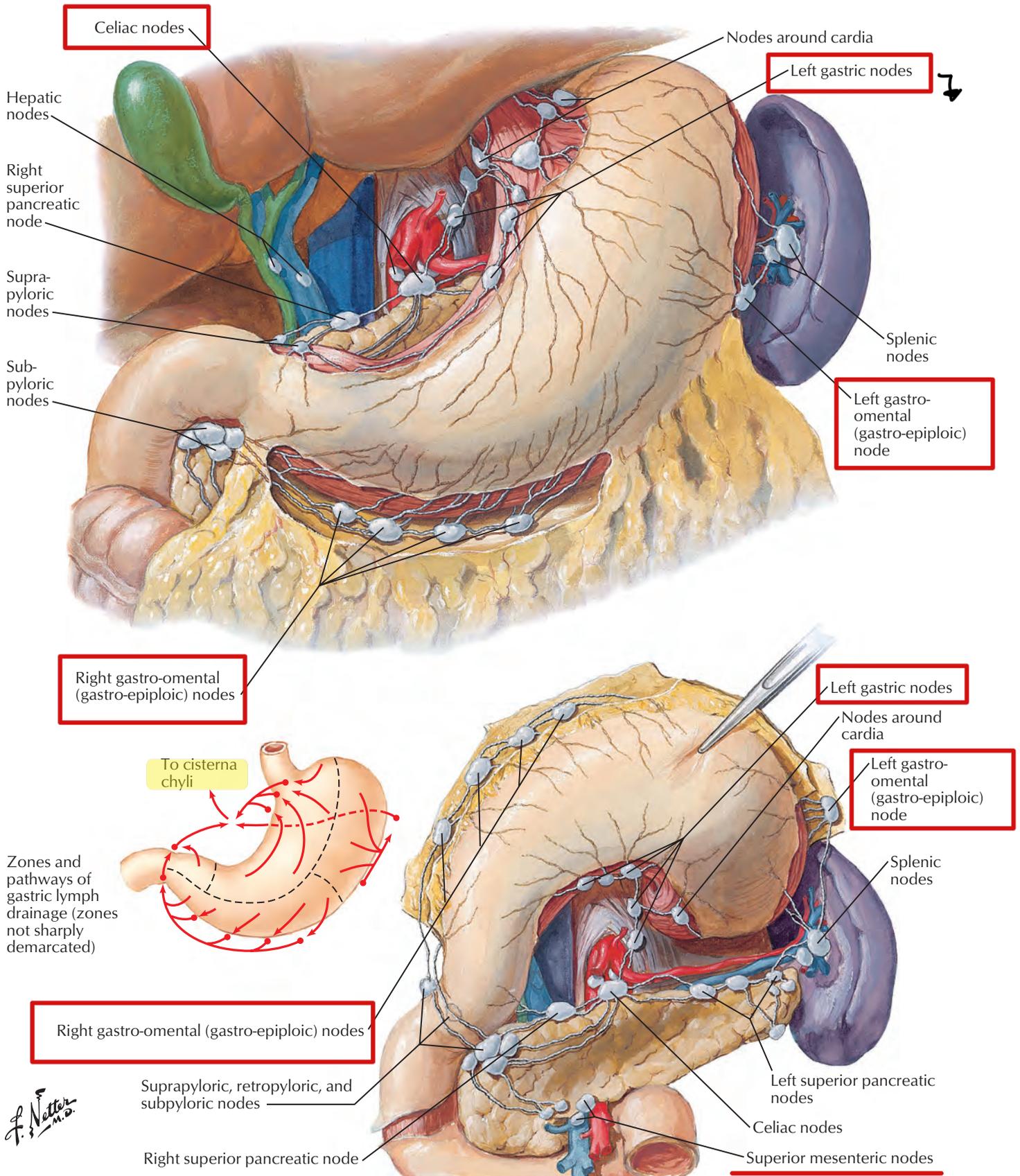
The lymph vessels **drain upward** via

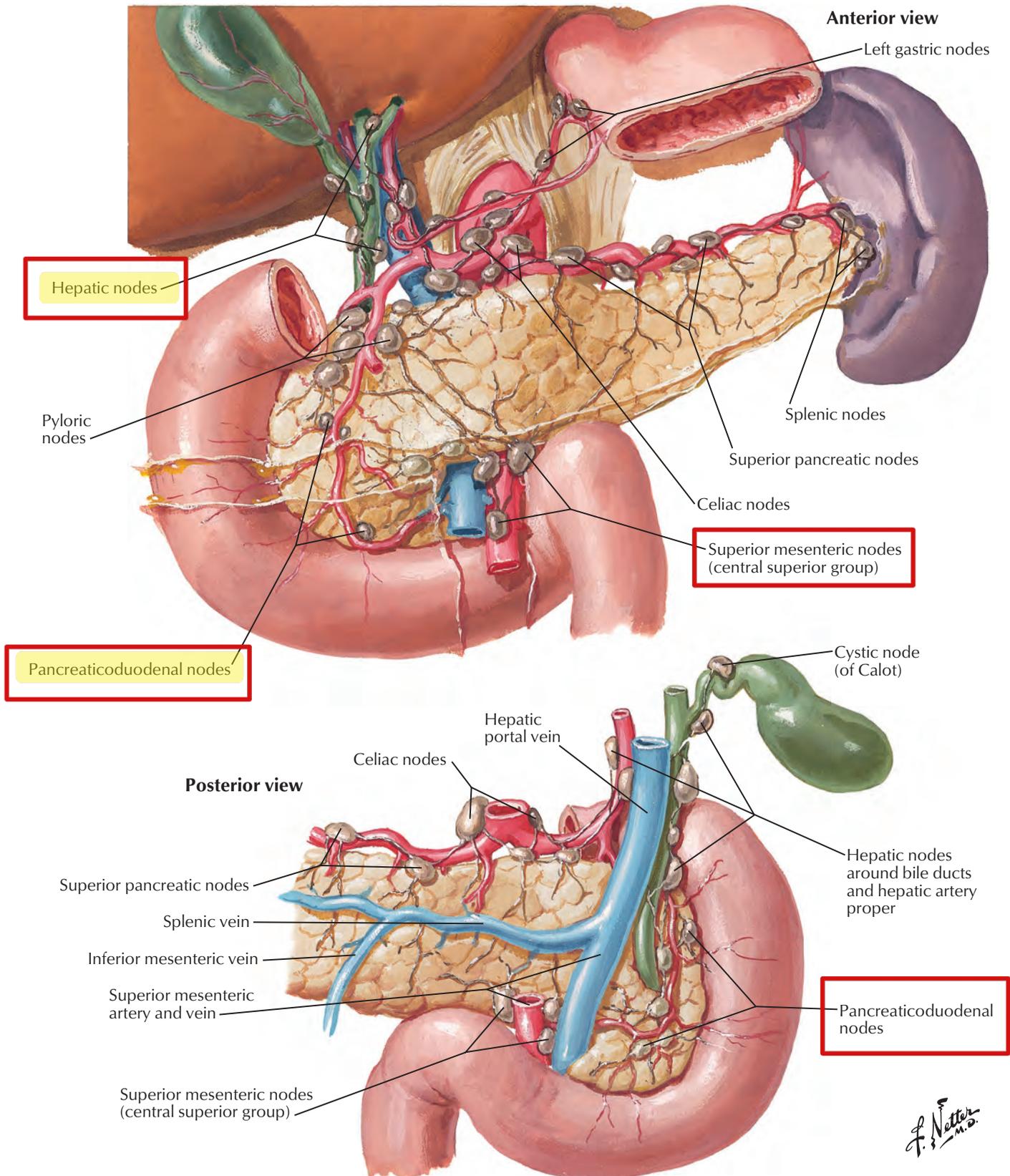
1. Pancreaticoduodenal nodes
2. Gastroduodenal nodes
3. Hepatic
4. Celiac nodes

Downward via

1. Pancreaticoduodenal nodes
2. Superior mesenteric nodes around the origin of the superior mesenteric artery.

Lymph Vessels and Nodes of Stomach





F. Netter M.D.

Lymph nodes

Lymphatic drainage of the Jejunum and Ileum

The mesenteric lymph nodes are arranged into 3 groups:

1. Small and numerous lymph nodes close to the small intestine
2. Larger and fewer lymph nodes along the jejunal and ileal vessels.
3. Larger and fewer lymph nodes along the superior mesenteric vessels

Lymphatic drainage of the colon

The colic lymph nodes are arranged into 4 groups:

- **Epicolic lymph nodes:**
On the wall of the colon.
- **Paracolic lymph nodes:** Along the borders of the colon.
- **Intermediate colic lymph nodes:**
Along the branches of the superior and inferior mesenteric vessels.
- **Terminal colic lymph nodes:**
Along the superior and inferior mesenteric vessels.

Lymph Drainage of the liver

- **Superficial lymphatic**

Drain the whole surfaces of the liver and end into:

1. The lymph nodes around the terminal part of IVC. \Rightarrow phrenic
2. Hepatic lymph nodes (along hepatic artery).
3. Para-cardiac group (around the lower part of oesophagus).
4. Coeliac lymph nodes (around the coeliac trunk).

- **Deep lymphatics**

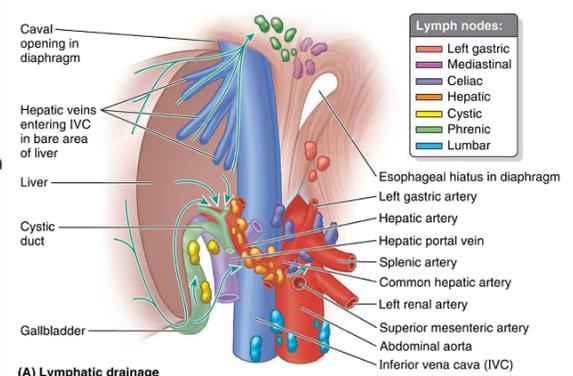
Divided into :

- **Ascending trunk** end in the lymph nodes around the I.V.C.
- **Descending trunk** end in the hepatic lymph nodes.

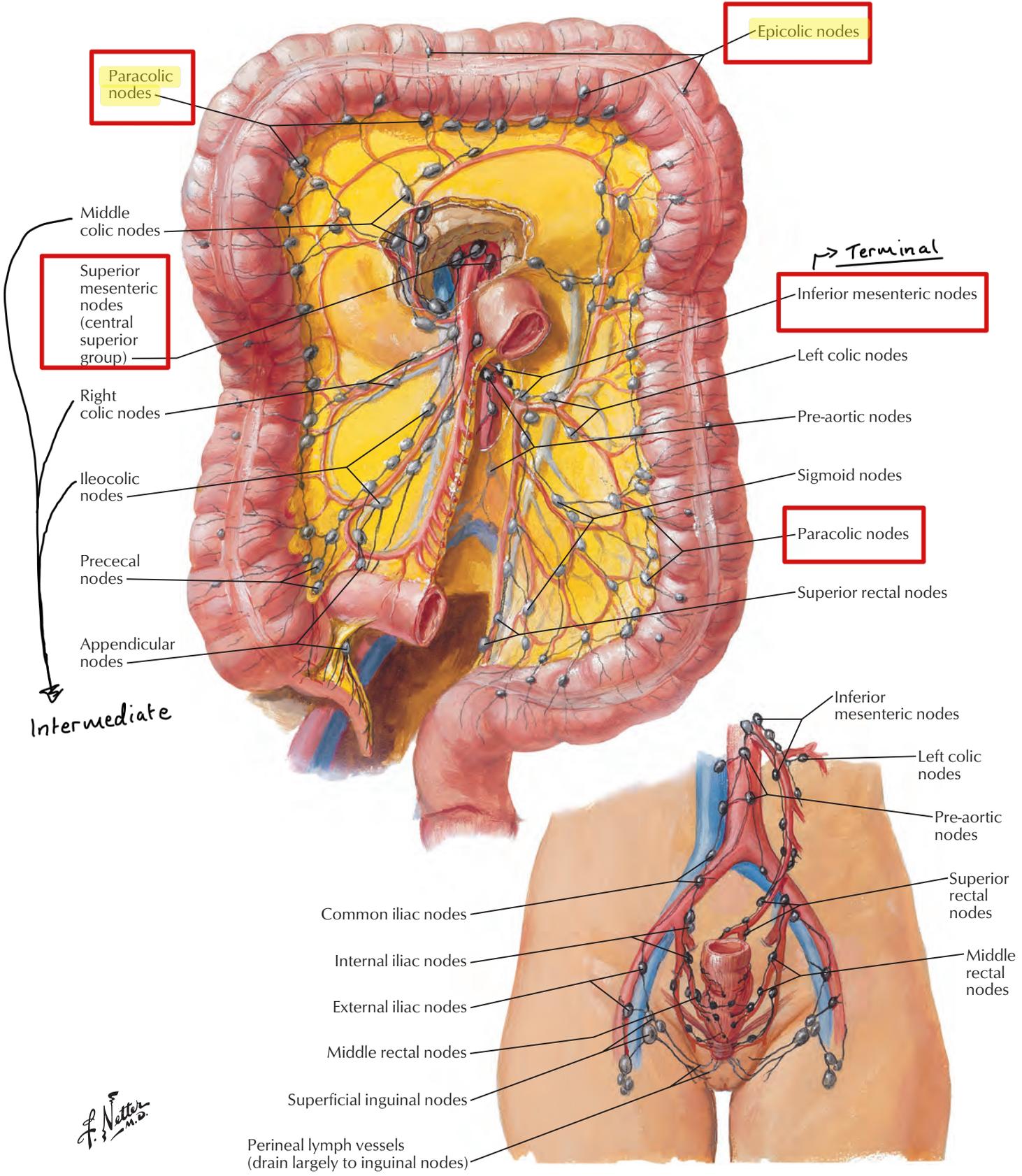
The liver produces a large amount of lymph about **one third to one half of all body lymph**.

The lymph vessels leave the liver and enter several lymph nodes in the porta hepatis. ^{Liver hilum}

The efferent vessels pass to the coeliac nodes



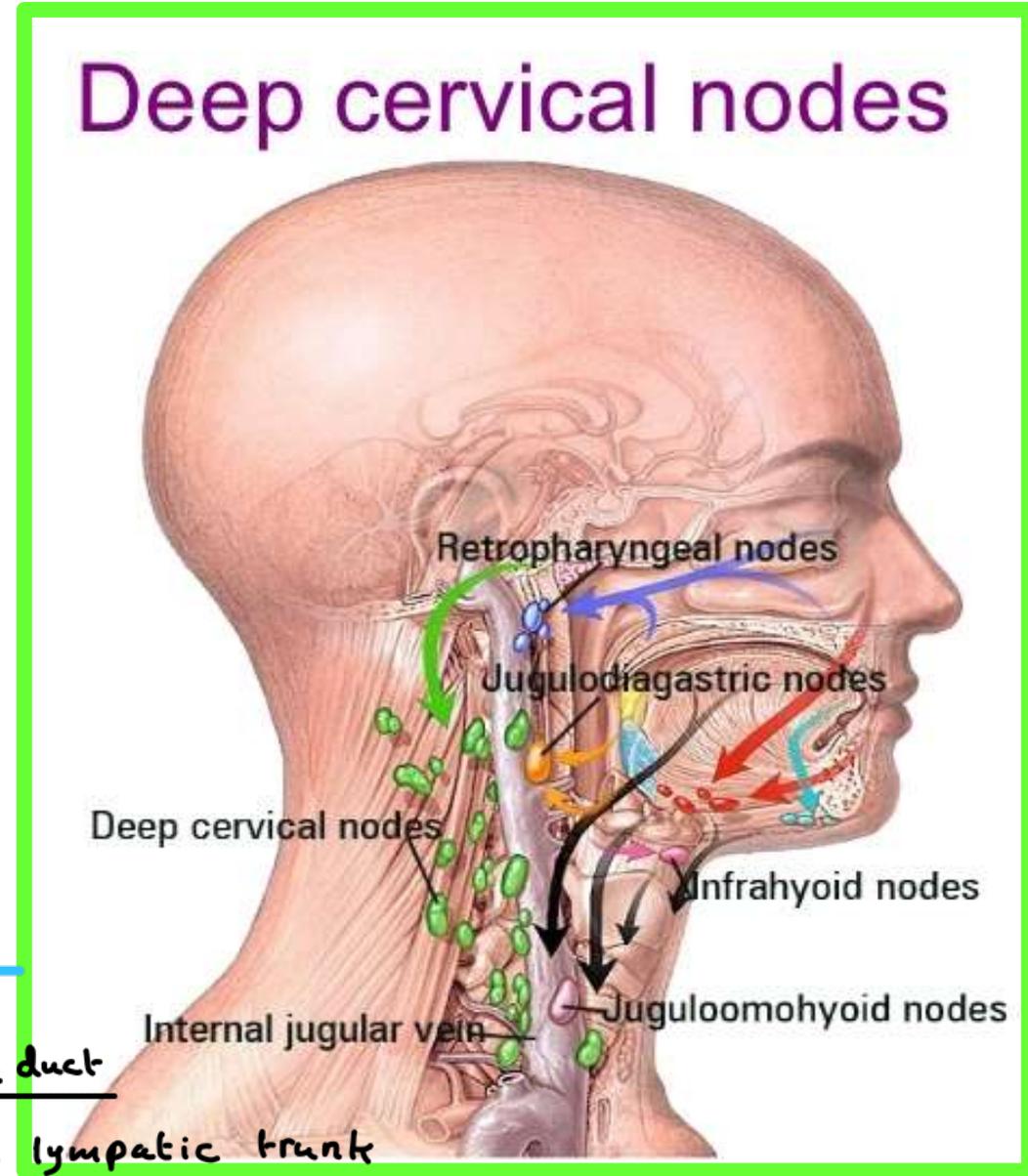
Lymph Vessels and Nodes of Large Intestine



Lymph drainage of head and neck

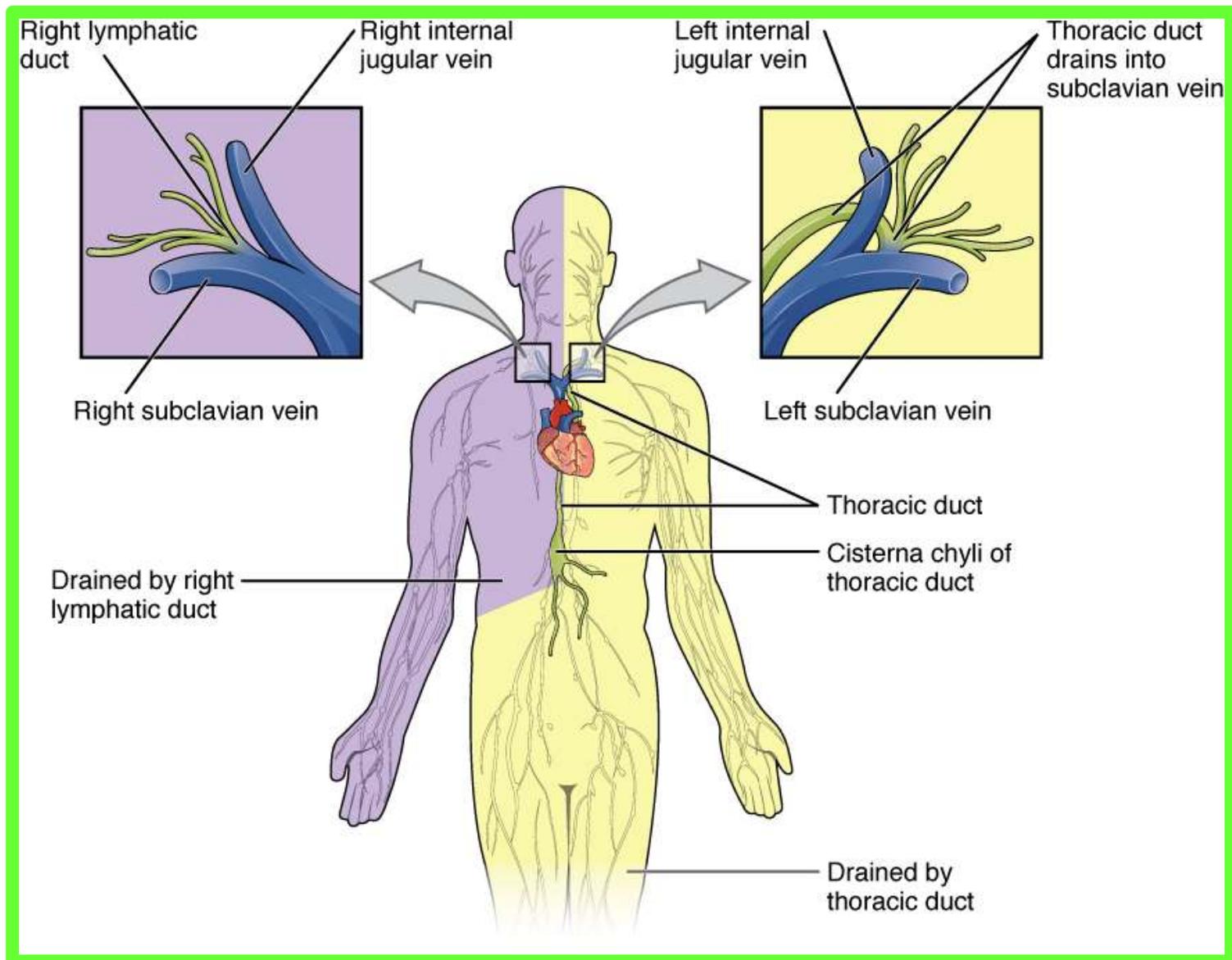
- ❖ All the lymph drainage from the head and neck goes to the deep cervical nodes.
- ❖ They receive afferents from other lymph node groups in the head and neck as well as directly from organs in these regions.
- ❖ Efferents from the deep cervical nodes form the jugular trunk which on the left drains into the thoracic duct and on the right into the right lymphatic duct.

Deep cervical lymph nodes → Jugular trunk
left → Thoracic duct
Right → right lymphatic trunk



Lymph drainage of head and neck

- ❖ The thoracic duct and
 - ❖ The right lymphatic duct usually empty into the junction of the subclavian and internal jugular veins on their respective sides;
- Otherwise they open into either of these veins.



Lymph drainage of head and neck

Superficial lymph nodes

- There is a horizontal, encircling band of lymph node groups at the **craniocervical junction**.
- Nodes in all these groups are **clinically palpable when enlarged**

- Submental Nodes

1. Lie across the midline, below the chin in the submental triangle.
2. Not bilateral (central)

- One or two mastoid (postauricular) nodes

Lie on the mastoid process

- Submandibular Nodes

Lie in the digastric triangle in relation to the submandibular salivary gland

- Two or three occipital nodes

Are present at the apex of the posterior triangle of the neck.

- Preauricular Nodes are found

Either superficial or deep to the fascial capsule of the parotid, as well as within the gland

- A few superficial cervical nodes

- Lie along the external jugular vein, on the superficial surface of the sternocleidomastoid.

- **Drain :**

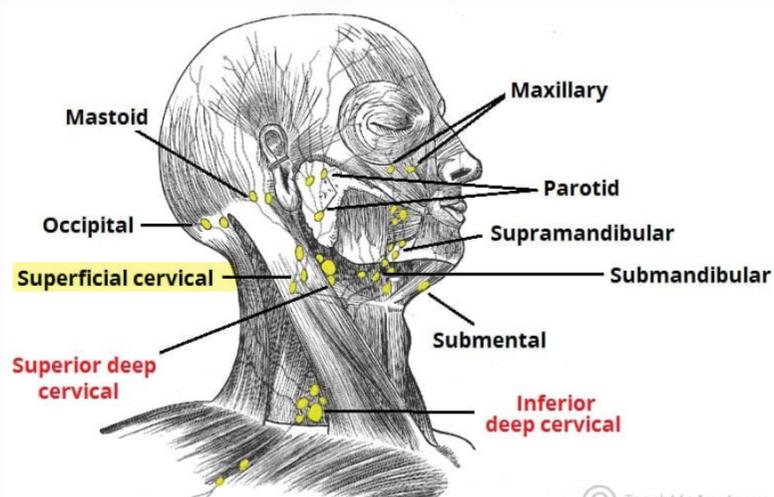
1. The lobule of the auricle
2. Floor of the external acoustic meatus
3. Skin over the lower parotid region
4. The lateral cervical skin.

- A Small Mandibular Node

Is frequently present where the facial vessels cross the lower border of the mandible.

- A Small Buccal Node

Lie on the lateral surface of the buccinator.



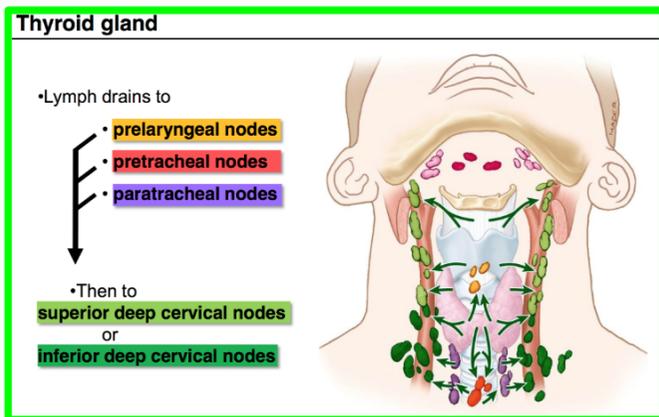
- Anterior cervical nodes
- Superficially located along the anterior jugular veins
- One such node frequently lies in the suprasternal space.

Deep cervical lymph nodes (2 groups)

• In the middle line

Deep to the investing fascia at the front of the neck are :

1. Infrathyroid nodes
Lying on the thyroid membrane.
2. Prelaryngeal nodes
On the cricothyroid membrane
3. Pretracheal nodes
On the tracheal rings.



They drain :

1. The anterior cervical nodes
2. Receive lymph from the larynx, trachea and thyroid gland.

4. Paratracheal nodes

- On either side of the trachea and oesophagus
- Receive lymph from pretracheal nodes and directly from the trachea and oesophagus.

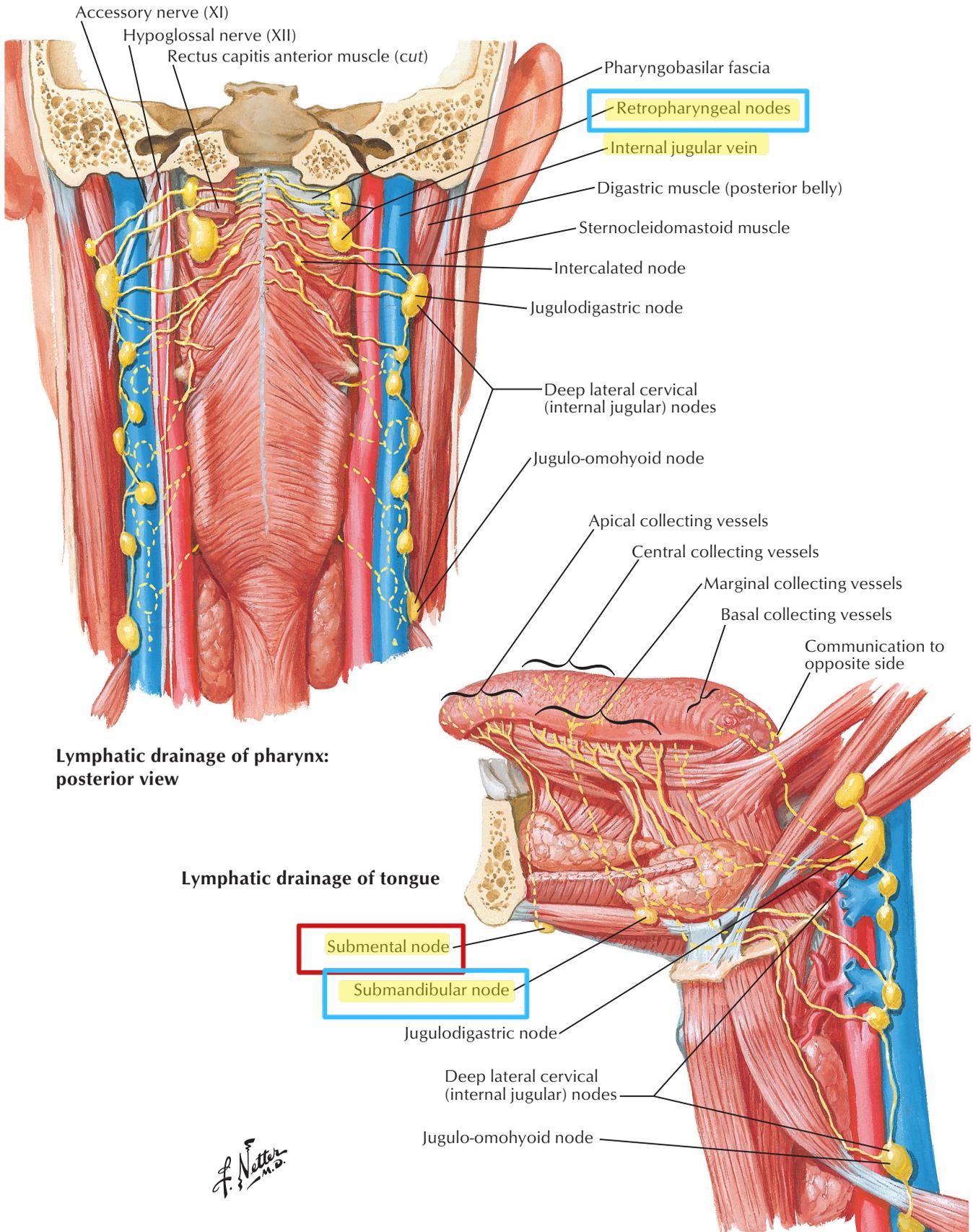
5. Retropharyngeal nodes

- Lie posterior to the pharynx and anterior to the prevertebral fascia.

They drain :

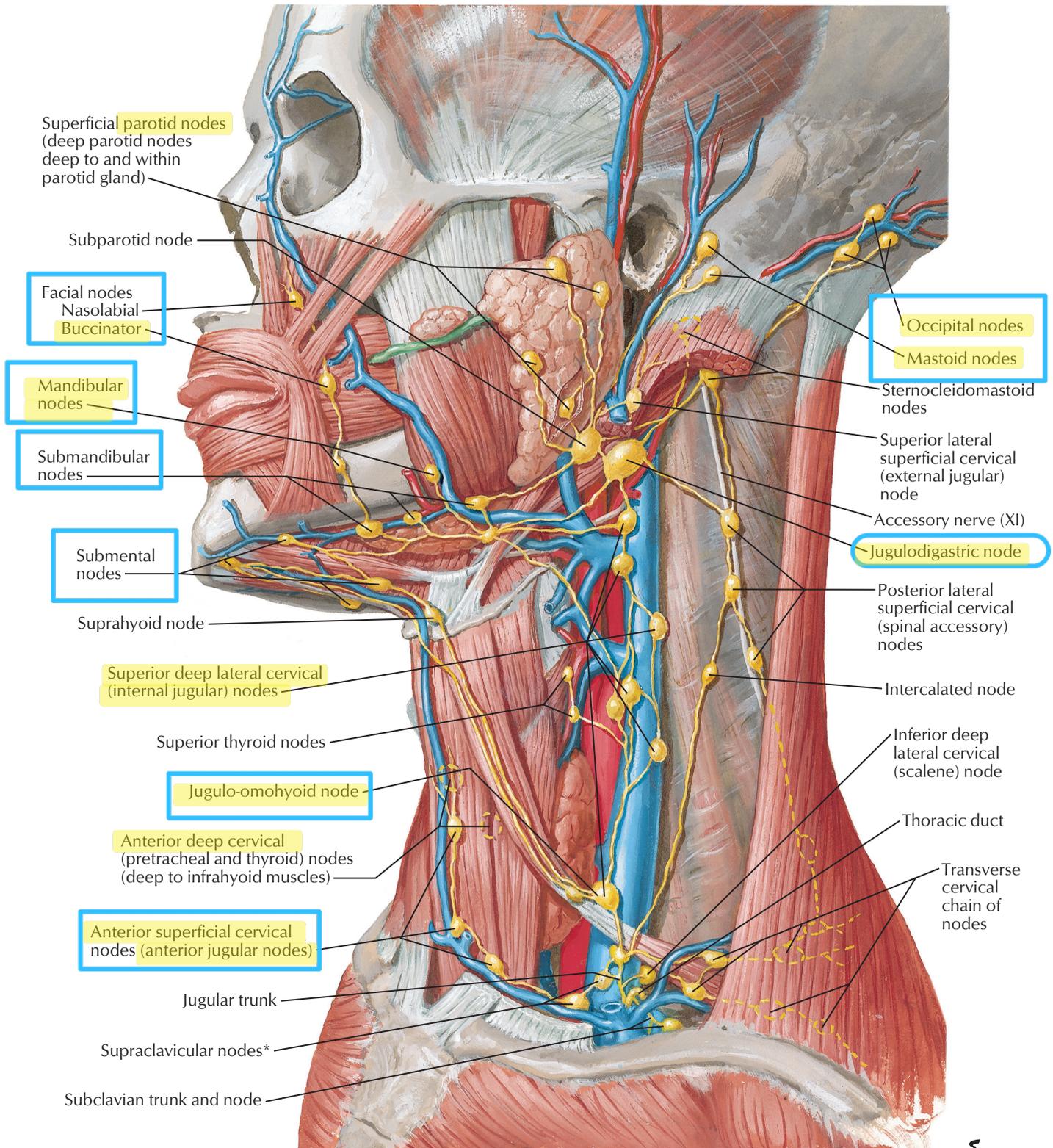
1. The pharynx
 2. Soft palate
 3. Posterior parts of hard palate and nose
 4. The cervical vertebrae.
- When enlarged, these nodes can cause difficulty in swallowing (dysphagia) due to pressure on the pharynx

Lymph Vessels and Nodes of Pharynx and Tongue



Lymph Vessels and Nodes of Head and Neck

See also **Plates 73, 105**



*The supraclavicular group of nodes (also known as the lower deep cervical group), especially on the left, are also sometimes referred to as the signal or sentinel lymph nodes of Virchow or Troisier, especially when sufficiently enlarged and palpable. These nodes (or a single node) are so termed because they may be the first recognized presumptive evidence of malignant disease in the viscera.

Deep Cervical Lymph Nodes

- On the side of the neck

These are the main lymph nodes in the neck.

Divided into 2 main groups :

1. The upper deep cervical lymph nodes.

Along the upper part of the internal jugular vein deep to the sternomastoid muscle.

The most important one is called the

Jugulo-digastric Lymph nodes.

They lie in the angle between the posterior belly of digastric and the internal jugular vein.

It is concerned with the drainage of the tongue.

2. The lower deep cervical lymph nodes

Along the lower part of the internal jugular vein deep to the sternomastoid muscle.

The most important one is called the Jugulo-omohyoid lymph nodes.

They lie in the angle between the intermediate tendon of omohyoid and the internal jugular vein.

It is concerned specially with the drainage of the tongue.

Efferent, The upper groups → lower groups → jugular lymph trunk

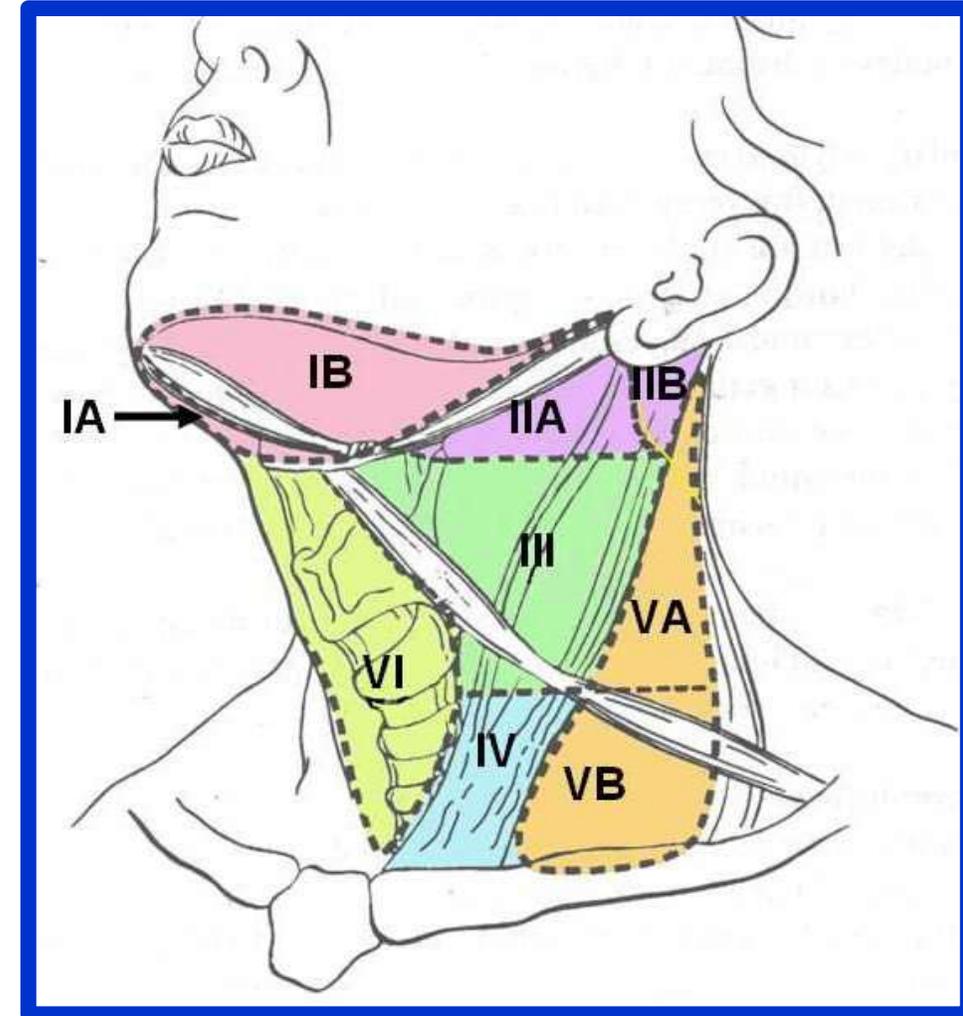
- Deep cervical lymph nodes include the followings EXCEPT?

- a. The jugulo-digastric Lymph nodes.
- b. Retropharyngeal nodes
- c. Mastoid (postauricular) nodes.
- d. The jugulo-omohyoid lymph nodes.
- e. Pretracheal nodes.

Surgical approach

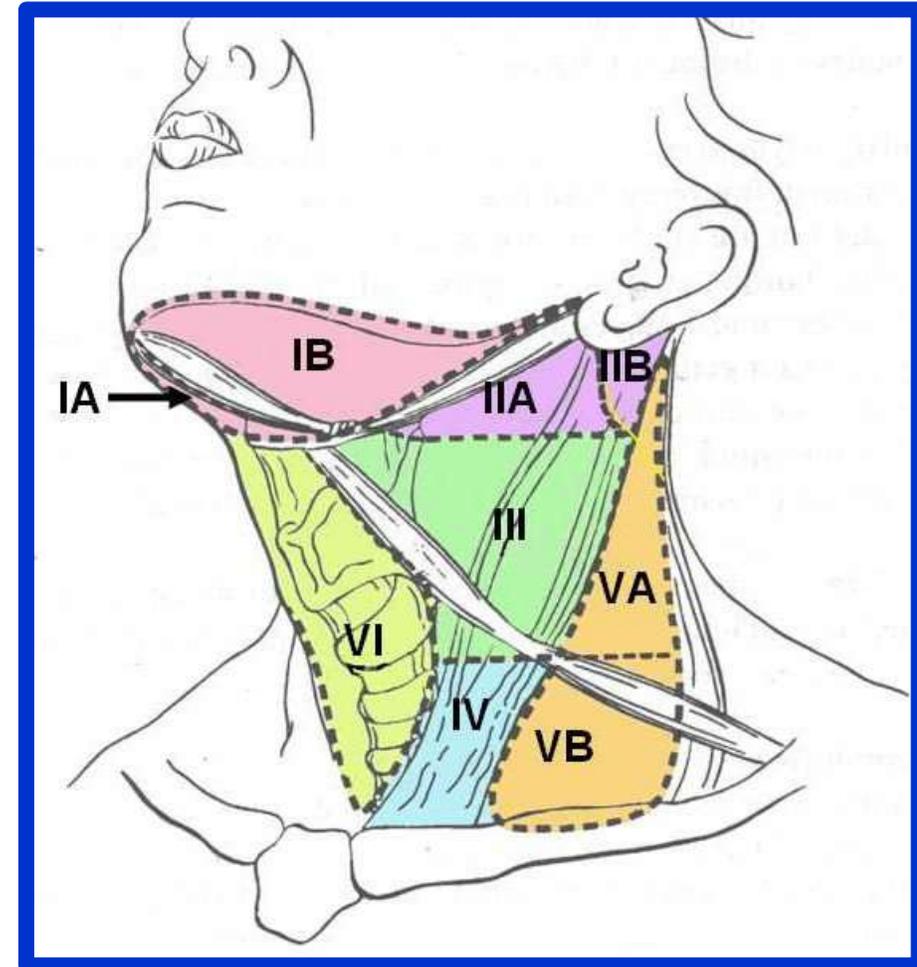
Surgeons treating malignant lymph nodes in the neck tend to classify them by levels.

- ✓ Level I nodes are in the submental and submandibular triangles
- ✓ Level II–IV nodes are deep cervical nodes
- ✓ Level II being from the base of the skull to the carotid bifurcation (hyoid bone),



Surgical approach

- ✓ Level III from there to the intermediate tendon of omohyoid (cricoid cartilage), and
- ✓ Level IV from there down to the clavicle and including the supraclavicular nodes.
- ✓ Level V nodes are in the posterior triangle of the neck, related to the accessory nerve.
- ✓ Level VI nodes are nodes surrounding the midline visceral structures and include the pretracheal and paratracheal nodes.
- ✓ Level VII nodes are in the superior mediastinum.



Surgical approach

Classical radical neck dissection removed **Level I–V nodes** with the **sternocleidomastoid muscle**, **internal jugular vein** and **accessory nerve**.

Modified radical neck dissection (also called **functional neck dissection**) preserves some or all of these latter three structures.

Selective neck dissection removes some but not all **Level I–V nodes**.