

Lymphatic system

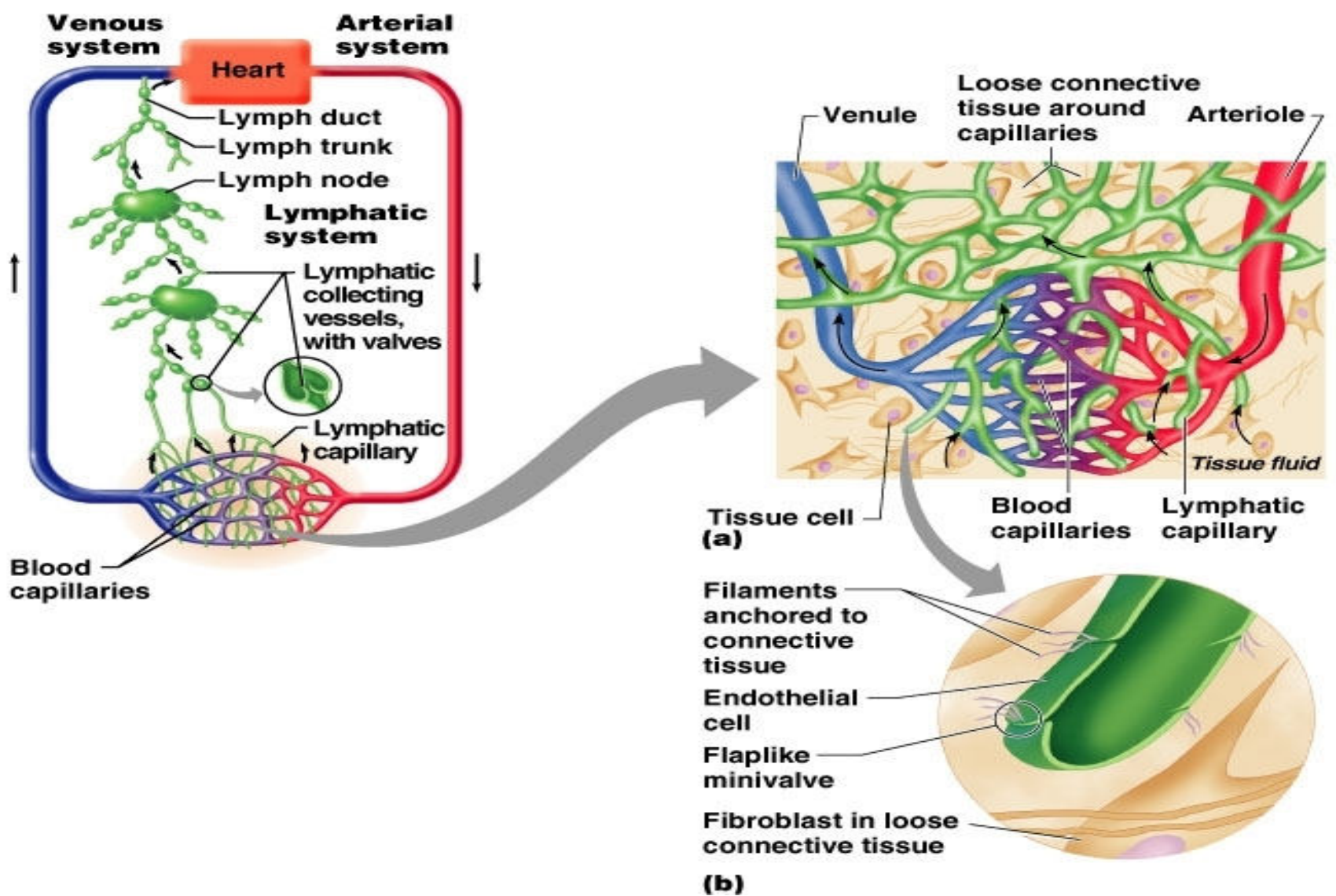
DEPT OF SURGERY

Lymph

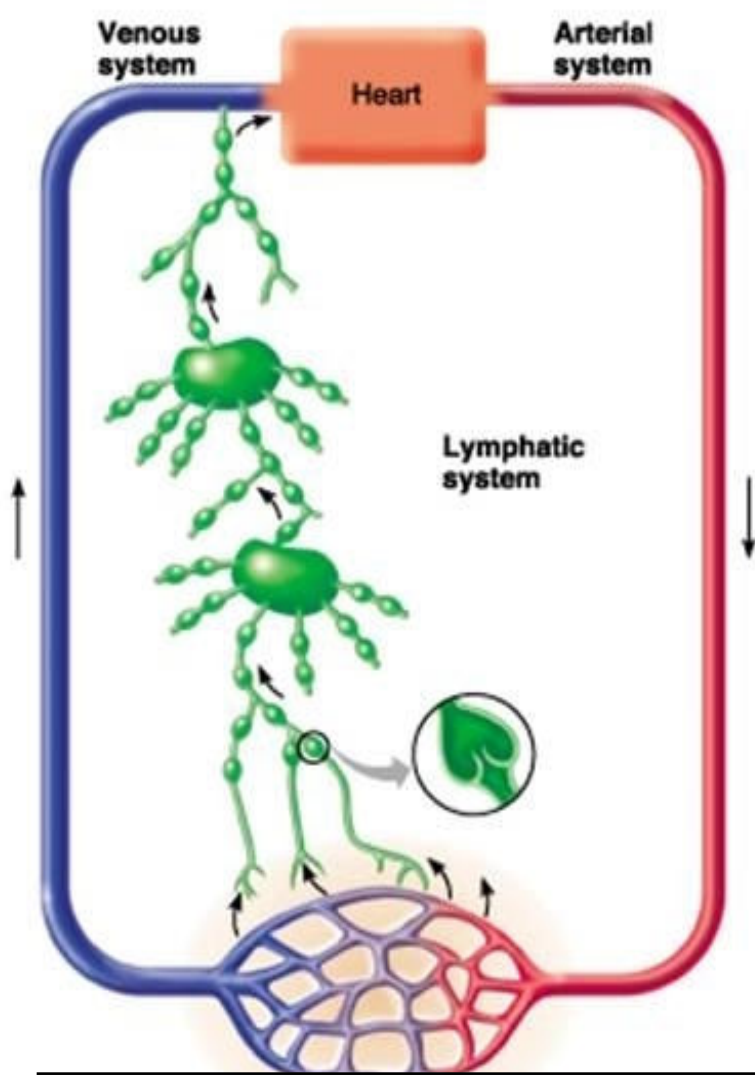
What is lymph ?

Tissue fluid (interstitial fluid) that enters the lymphatic vessels

Formation and transport of tissue fluid



Lymphatic system



Essentially a drainage system accessory to venous system

larger particles that escape into tissue fluid can only be removed via lymphatic system

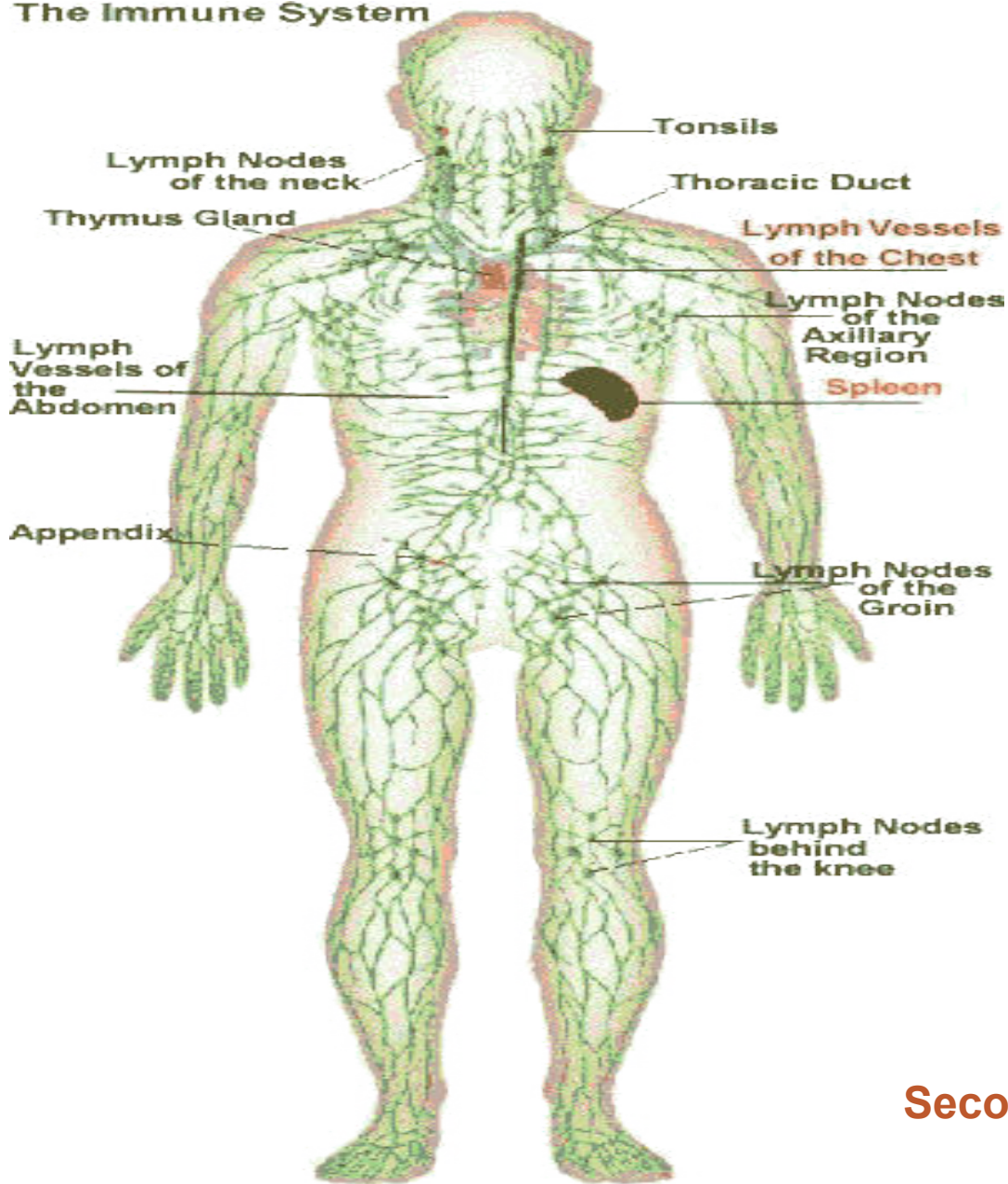
Functions

- Network that filters antigens from the interstitial fluid
- Primary site of immune response from tissue antigens
- Lymphatic drainage in all organs of the body except brain, eyes, marrow and cartilage
- Flaccid thin walled channels → progressive caliber
- 600 lymph nodes in body
- Slow flow, low pressure system returns interstitial fluid to the blood system

Components of lymphatics

- **Lymph**
- **Lymphatic Vessels**
- **Lymphatic Organs**
- **Lymphatic cells**

The Immune System



Secondary lymphoid tissue

Lymphatic Capillaries

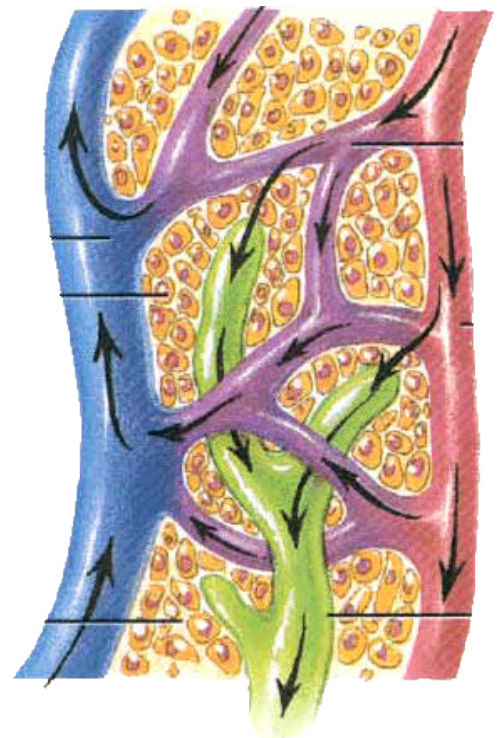
Features of structure:

Blind end

Single layer of overlapping endothelial cells

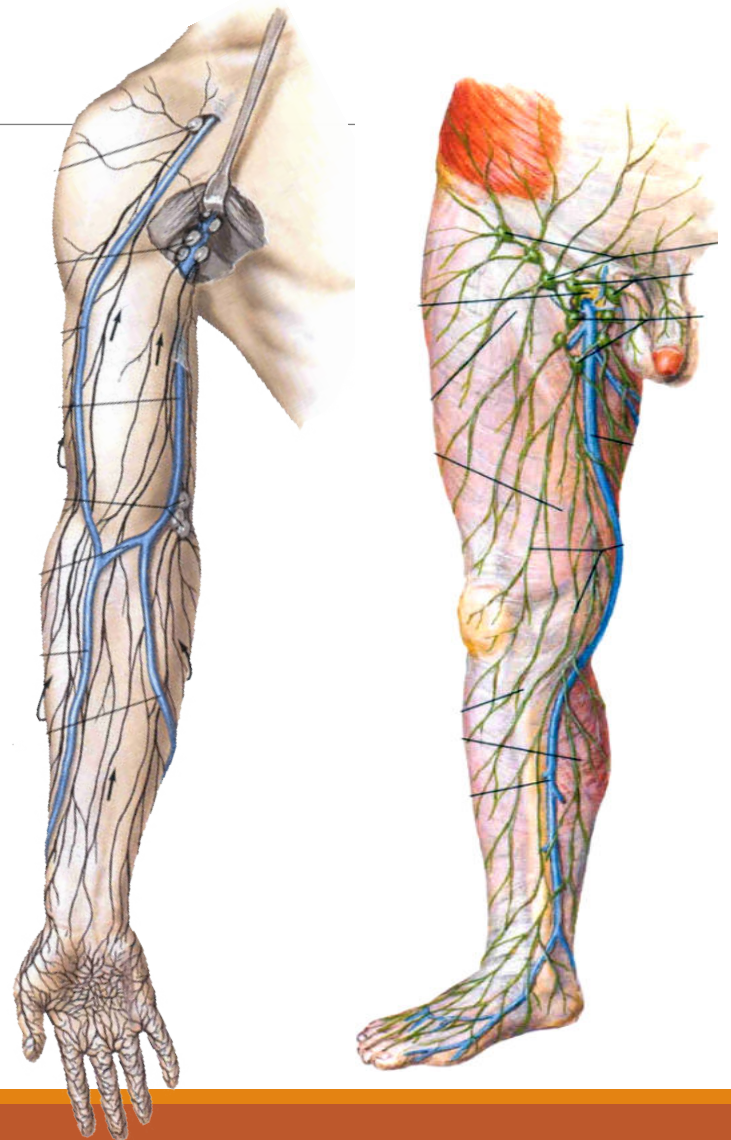
More permeable than that of blood capillary

Absent from avascular structures, brain, spinal cord splenic pulp and bone marrow



Lymphatic Vessels

- Three layered wall but thinner than vein
- More numerous valves than in vein
- Interposed by lymph nodes at intervals
- Arranged in superficial and deep sets



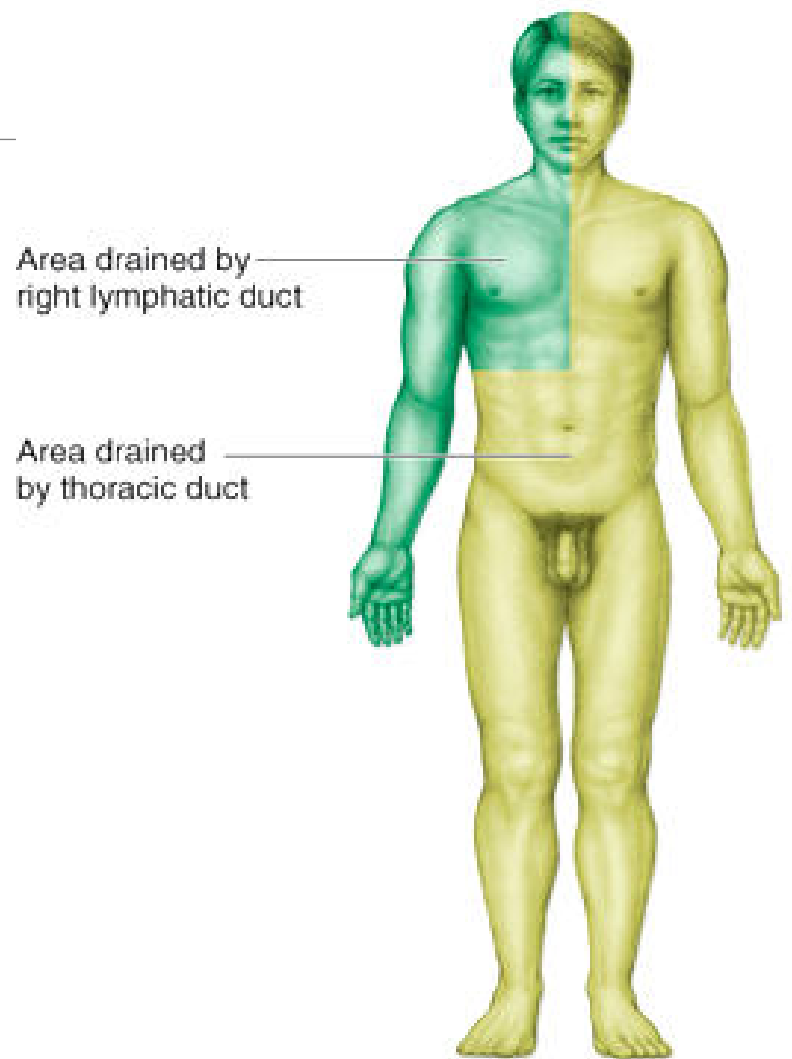
Lymph Trunks

- Right and left jugular trunks
- Right and left subclavian trunks
- Right and left bronchomediastinal trunks
- Right and left lumbar trunks
- Intestinal trunk

Lymphatic Ducts

Right lymphatic duct

Thoracic duct



(b) Lymph drainage pattern

Lymphatic Cells

Also called lymphoid cells

Located in both the lymphatic system and the cardiovascular system.

Work together to elicit an immune response.

Types of lymphatic cells are:

- Macrophages
- Epithelial cells
- Dendritic cells
- Lymphocytes

Lymphatic Organs

Primary organs

- Red bone marrow
- Thymus gland

Secondary organs

- Lymph nodes
- Lymph nodules
- Spleen

Lymph nodes

Capsular shell

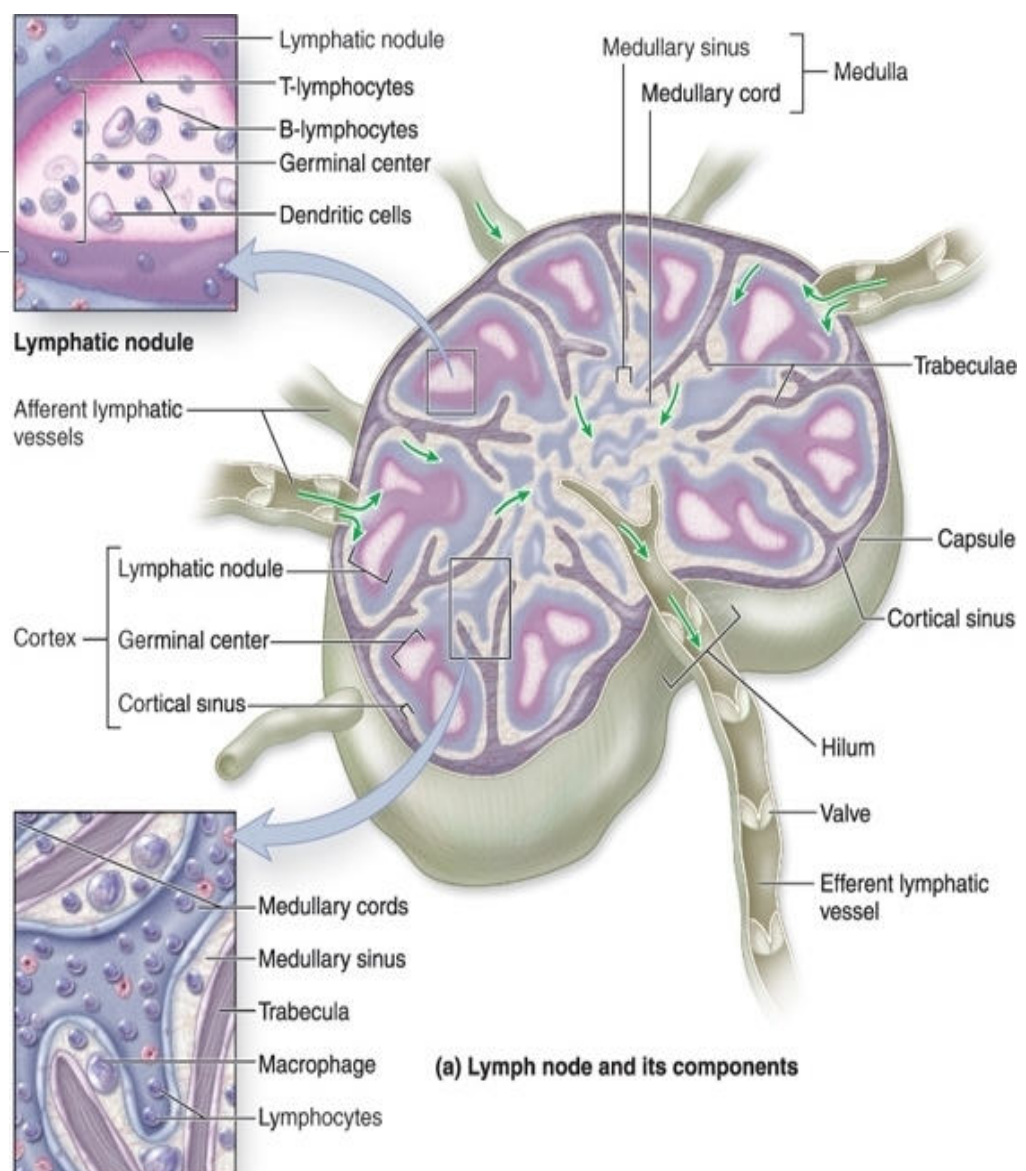
Fibroblasts and reticulin fibers

Macrophages

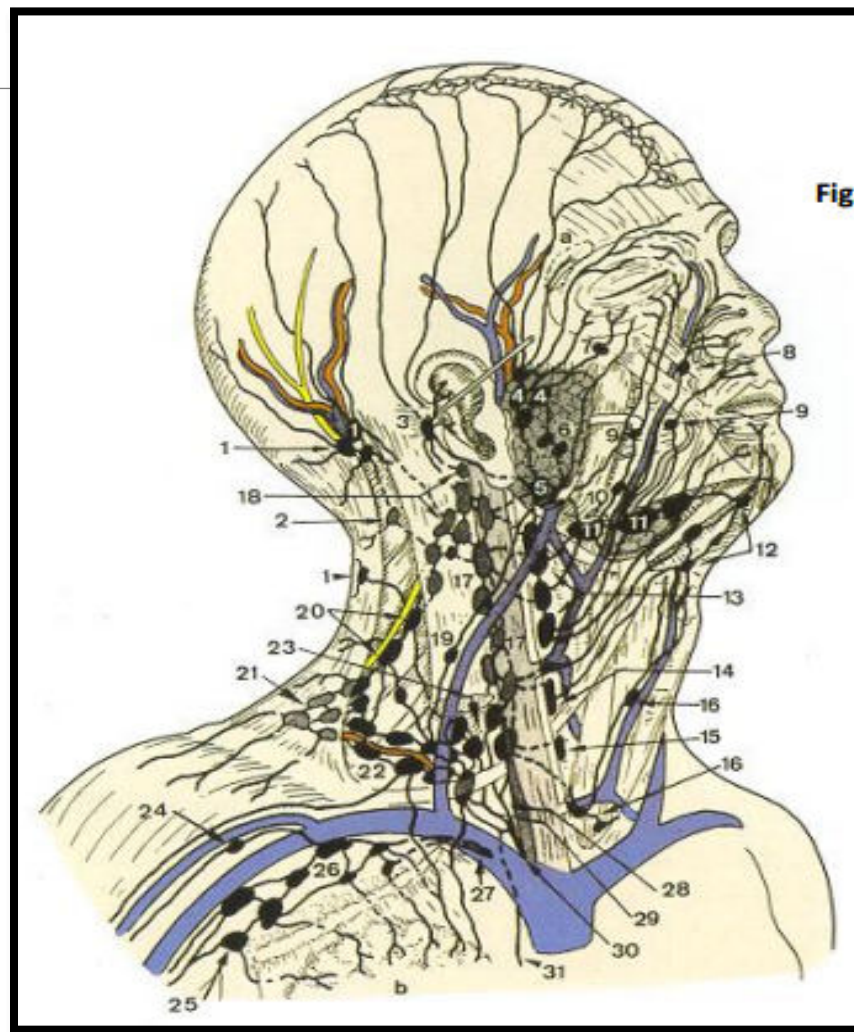
Dendritic cells

T cells

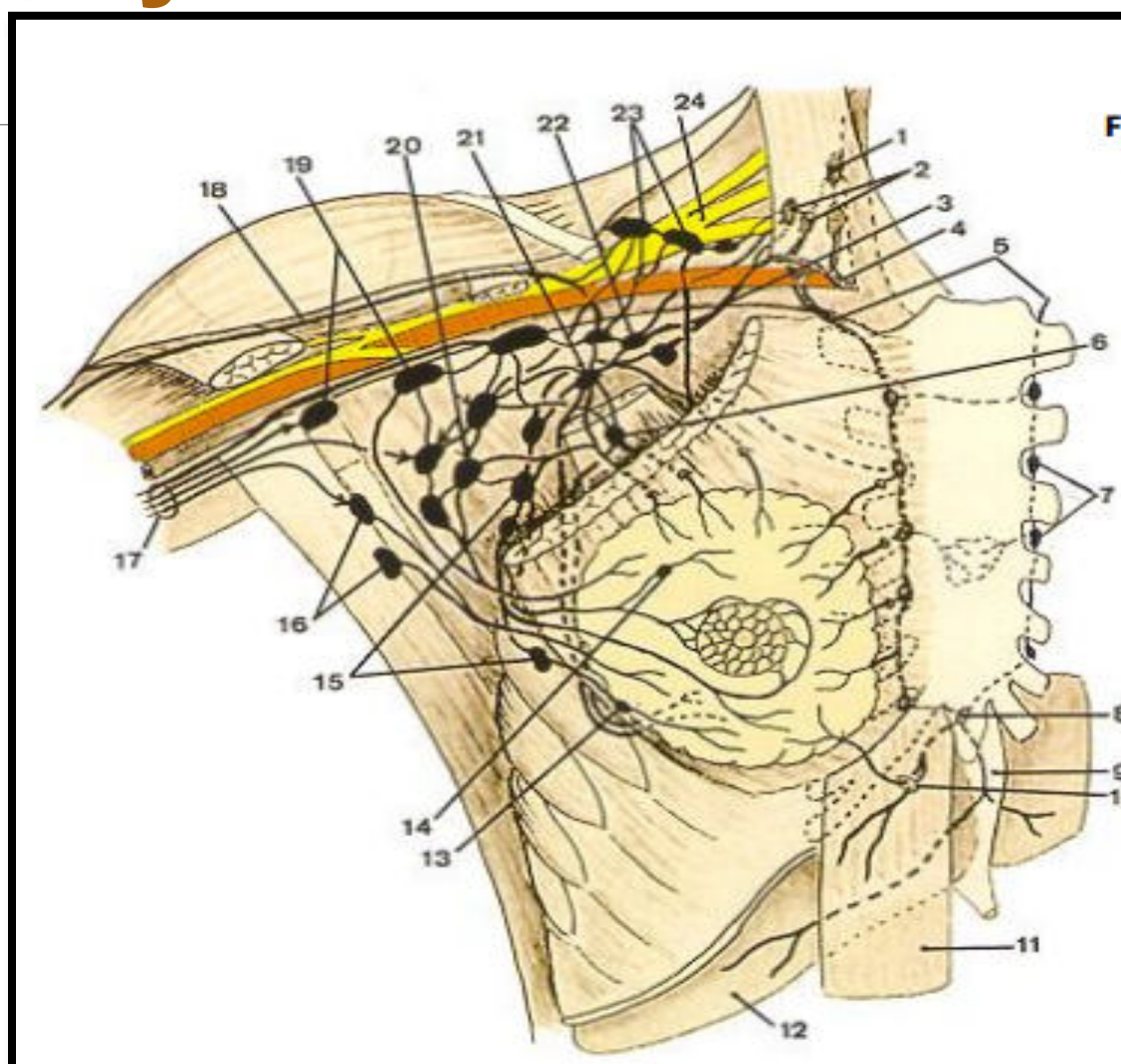
B cells



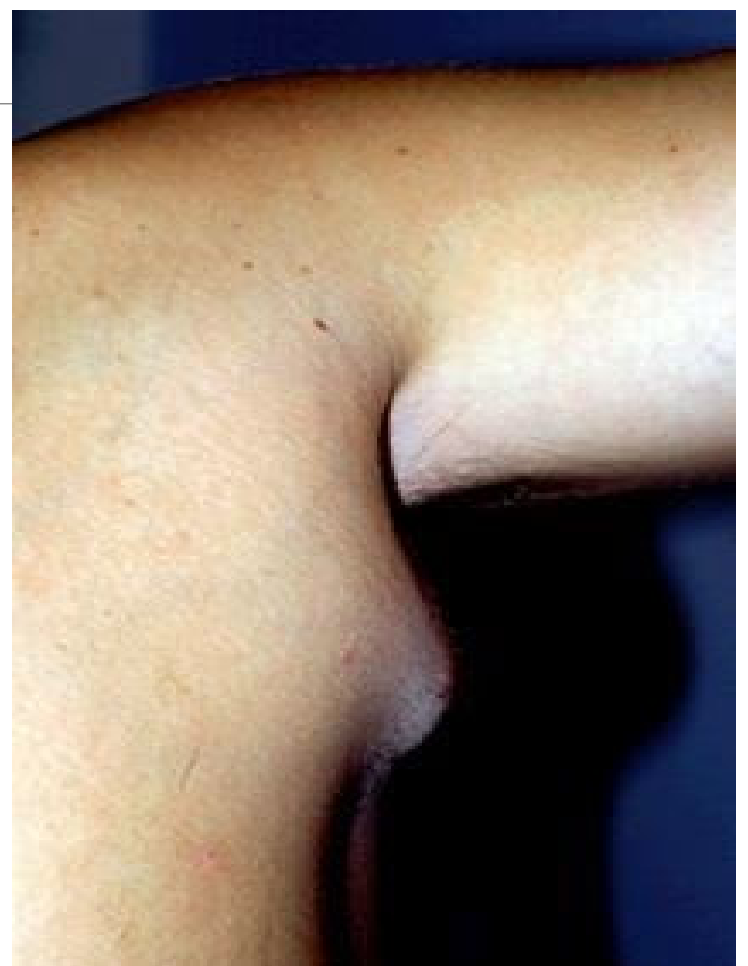
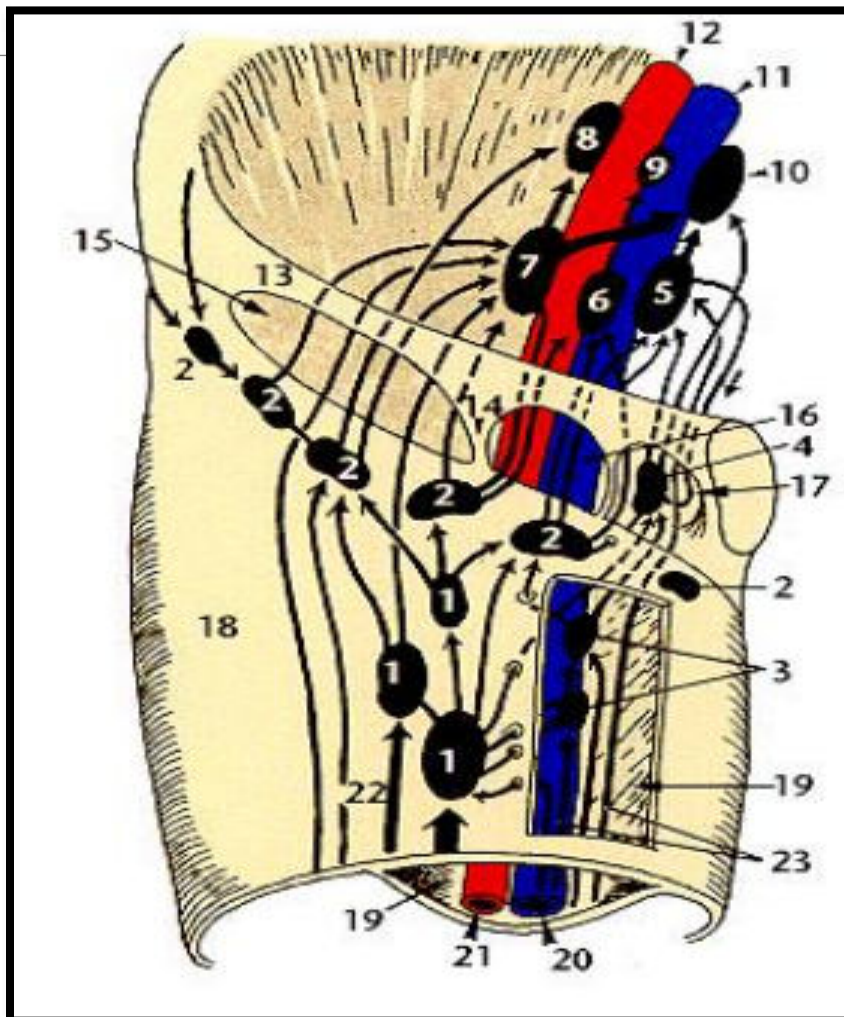
Head & Neck Nodes



Axillary Nodes



Inguinal Lymph nodes



Lymphangitis

Inflammation of the lymph vessels

Commonest cause bacteria called streptococcus pyogenes(most common).

Lymph vessels appear as red streaks through the skin



Filariasis



Lymphedema

Occurs due to accumulation of lymphatic fluid in the interstitial tissue

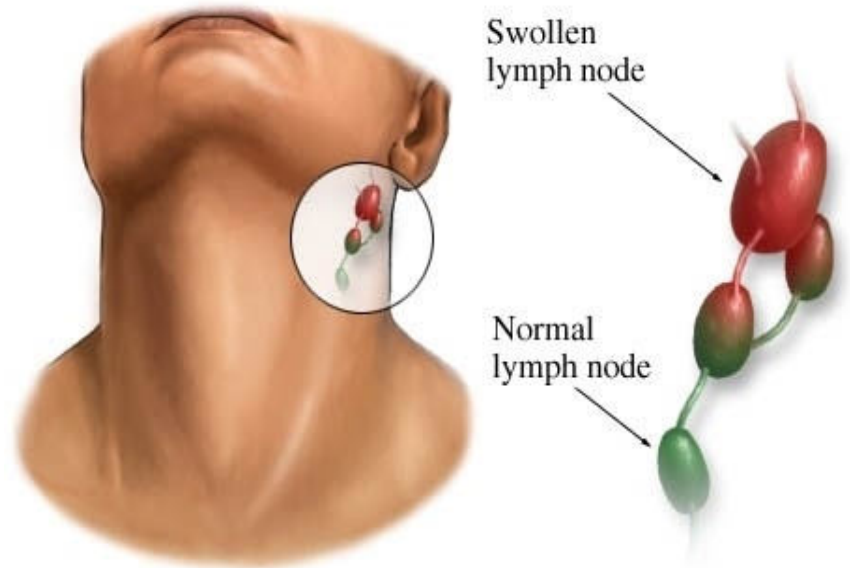
Sometimes can be appreciated after wearing tight clothing or jewellery on affected limb



Lymphadenopathy

Means a disease of the lymph nodes

Lymph nodes become swollen/ enlarged and may be painful to touch



Lymphomas

Cancers originating either from the lymphocytes in the lymph nodes or the lymphatic tissue in organs



Tonsillitis

Infection of the pharyngeal tonsils

Tonsils are swollen,

Fever and pain during swallowing usually present

