

Circulatory System

Is composed of two separate components:

_ Cardio vascular system

_ Lymphatic vascular system

Cardio vascular system is concerned with the transport of blood and lymph through the body.

The main function of the blood are to transport O_2 , nutrients and hormones to the tissues and to collect the waste products(carbon dioxide and waste metabolites) for removal from the body via excretory system.

The cardio vascular system consist of the: ●

- _Heart (muscular pump). ●
- _Pulmonary circulation (system of blood vessels to and from the lungs). ●
- _Systemic circulation (system of blood vessels bringing blood to and from all the other organs of the body).

Blood Vessels were classified in to: ●

1-Arteries ●

2-Capillaries ●

3-Veins ●

Arteries

Are efferent vessels that transport blood away from the heart to the capillary beds.

There are two major arteries pulmonary and aorta.

The arterial wall is composed of three main layers or tunics:

1-Tunica Intima(internal tunic) consisting of:

Endothelium-single lining layer of endothelial cell (simple squamous epithelium) lining the lumen of blood vessels rest on a basal lamina.

Sub endothelial layer lies immediately beneath the endothelial cells, it is composed of loose connective tissue and a few scattered smooth muscle cells.

Internal elastic lamina beneath the sub endothelial layer ,is composed of elastin which is fenestrated sheet that permits the diffusion of substances in to the deeper region of the arterial wall to nourish the cells there.

2-Tunica media(middle tunic):

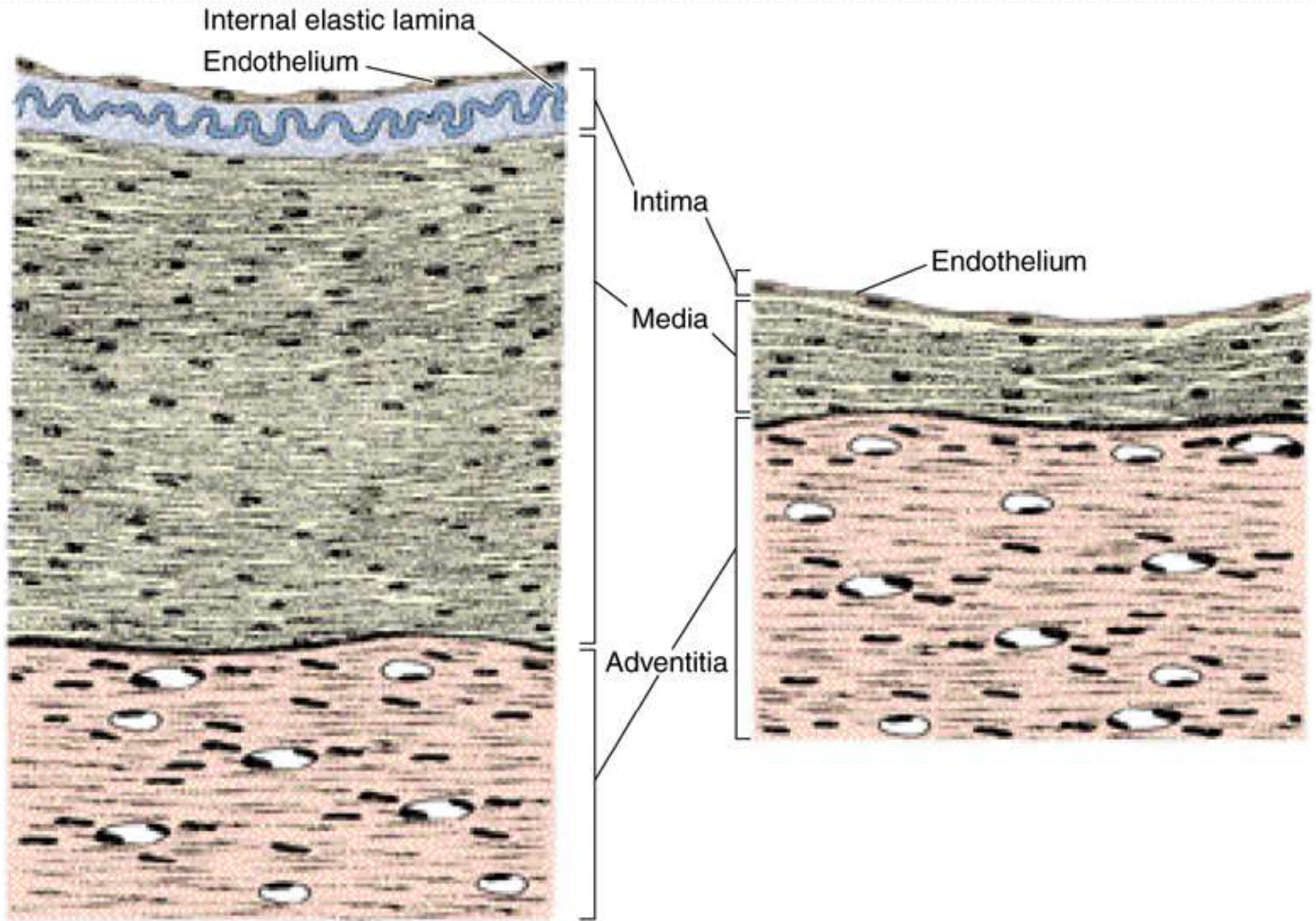
Is the thickest layer of the vessels wall, consisting of circular smooth muscle or(spiral), concentric elastic lamina (have external elastic lamina) formed by the smooth muscle cells circularly arranged, which more delicate than the internal elastic lamina.

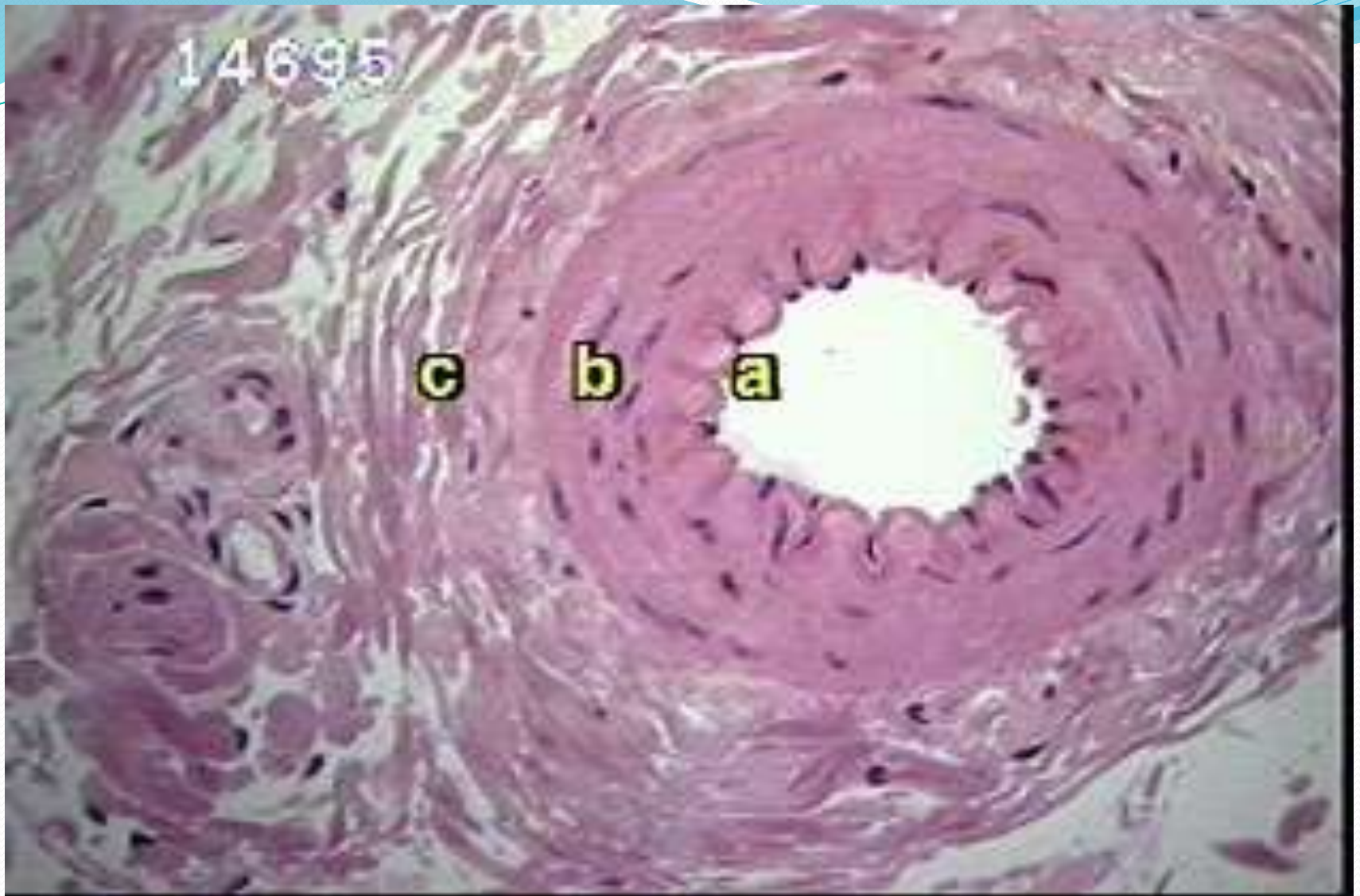
3-Tunica adventitia (external tunic):

Composed of connective tissue (fibroblast, collagen fibers and elastic fibers) surrounding the vessel.

Artery

Vein





Small muscular artery

Classification of Arteries

The arterial blood vessels are classified according to their diameter in to :

1-Large (elastic) arteries •

2-Medium(muscular) arteries •

3-Arteriols •

1-Arteriol

- Are arterial vessels with a diameter below 0.1-0.5mm .
 - have relatively narrow lumen.
- endothelial cells are smaller than in larger arteries, the endothelium still rests on a internal elastic lamina . which may be in complete . Which is not always will define in histological section
- the tunica media consist of 1-3 concentric layers of smooth muscle cells.
- it is difficult to identify an external elastic lamina.
- the tunica adventitia, which consist mainly of c.t fibers, this layer blends with the connective tissue surrounding the vessel.

Arteriol

