

# **Structure of Blood Vessels wall.**

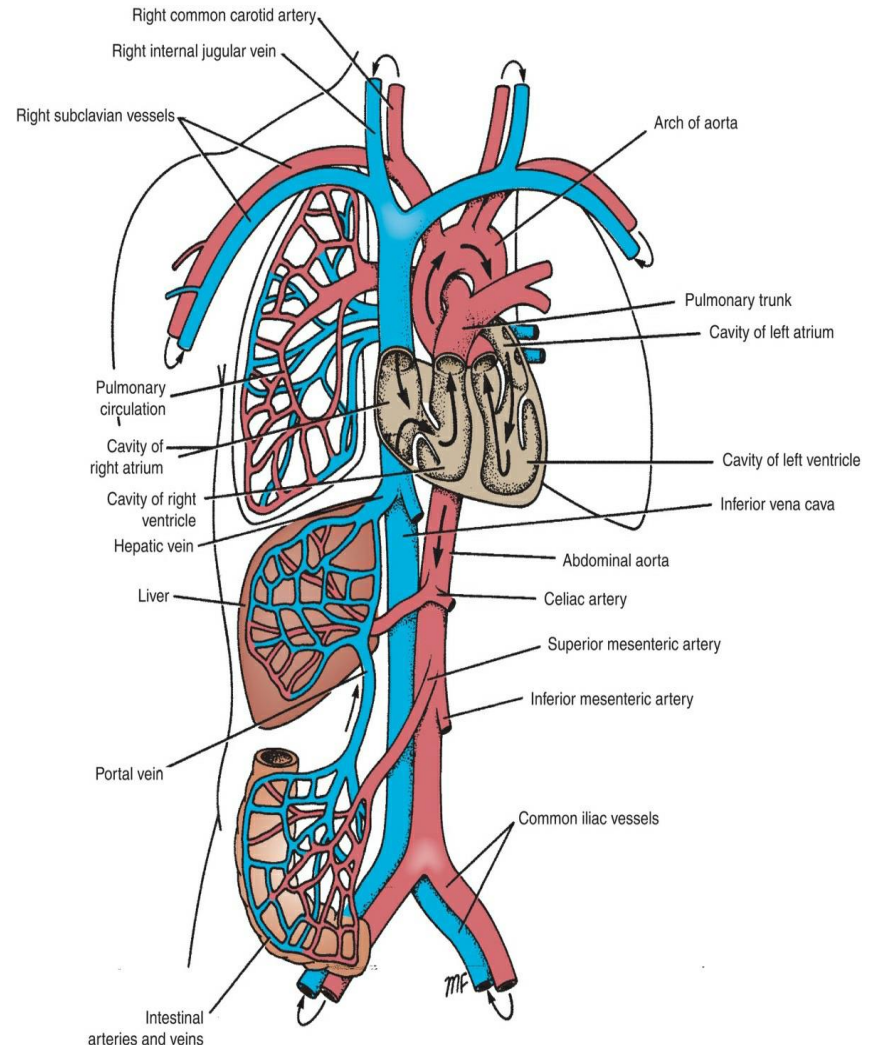
**Arteries,  
Veins, and Capillaries**

## Types of Blood Vessels

The three types of blood vessels are arteries, veins, and capillaries.

### Arteries

**Arteries** transport blood away from the heart and distribute it to the various tissues of the body by means of their branches. The smallest arteries (<0.1 mm in diameter) are referred to as **arterioles**. Individual arteries may connect with other arteries via a communicating branch termed an **anastomosis**. Arteries do not have valves.

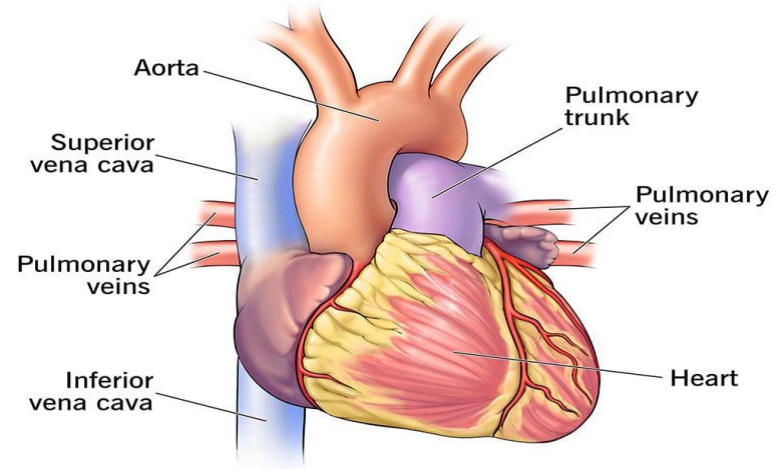


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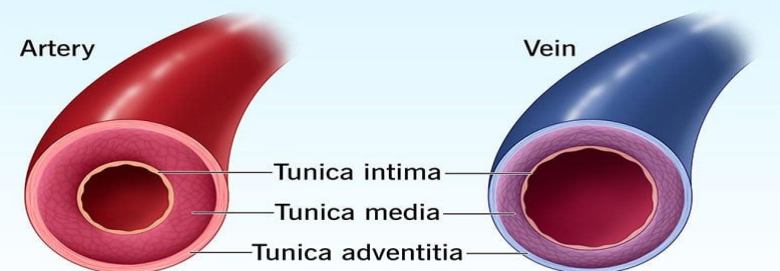
The wall of arteries and veins consists of an outer layer called **adventitia**, a thick muscular layer consist of smooth muscles arranged circularly called **media** and inner layer, **the intima lined by endothelium**. The medial layer in arteries is largely thicker than that of the veins.

The smallest arteries, <0.1 mm in diameter, are referred to as **arterioles**. The joining of branches of arteries is called an **anastomosis**.

Great Vessels of the Heart



Vessel layers



# Different types of blood vessels and their methods of union.

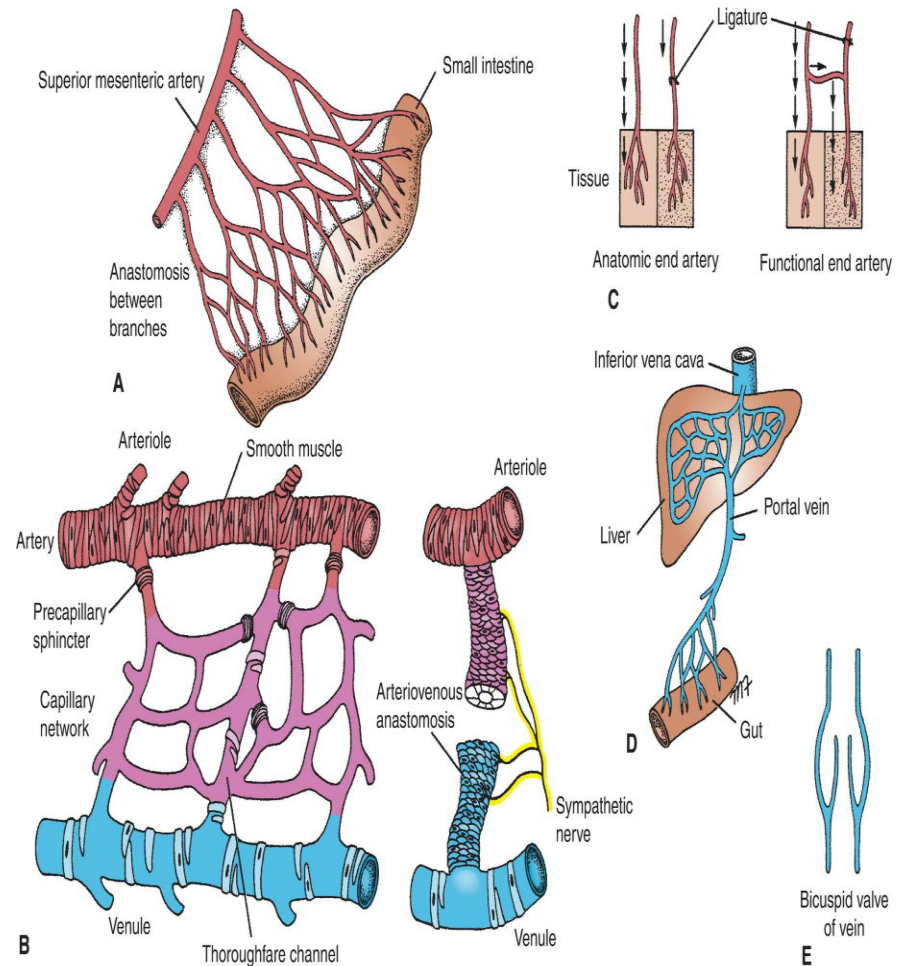
**A.** Anastomosis between the branches of the superior mesenteric artery.

**B.** A capillary network and an arteriovenous anastomosis.

**C.** Anatomic end artery and functional end artery.

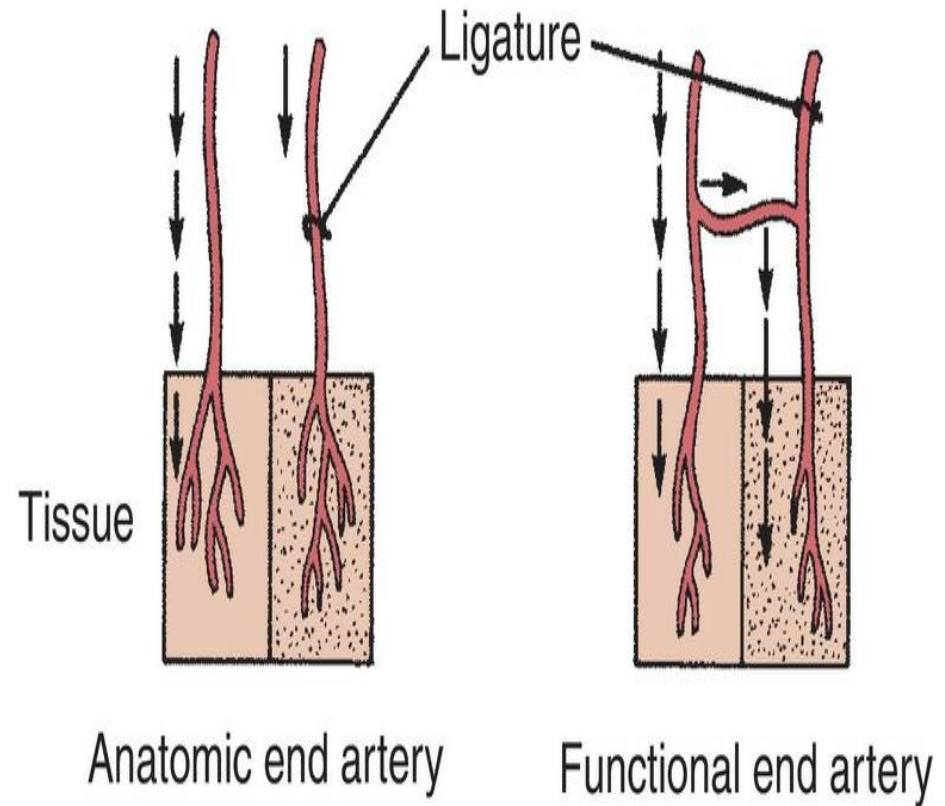
**D.** A portal system.

**E.** Structure of the bicuspid valve in a vein.



**Anatomic end arteries** are vessels whose terminal branches do not anastomose with branches of arteries supplying adjacent areas. Therefore, these provide the sole source of blood to a specific target area. Occlusion of an anatomic end artery will result in death of the target tissues.

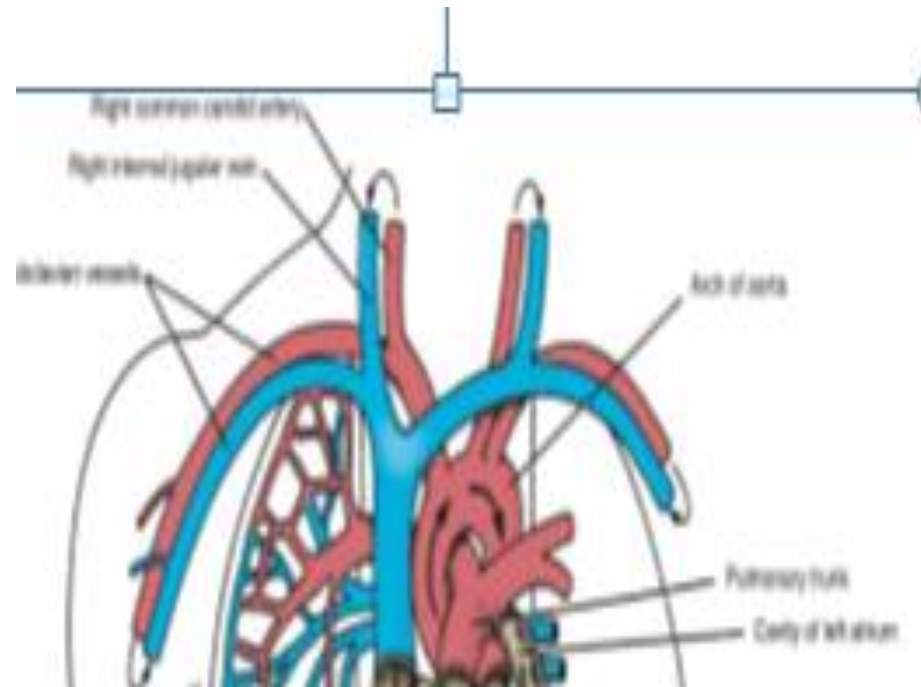
**Functional end arteries** are vessels whose terminal branches do anastomose with those of adjacent arteries; however, the caliber of the anastomosis is insufficient to keep the target tissue alive if one of the arteries becomes blocked. Thus, although some blood may enter a functional end artery, it is not enough blood to be functionally meaningful.



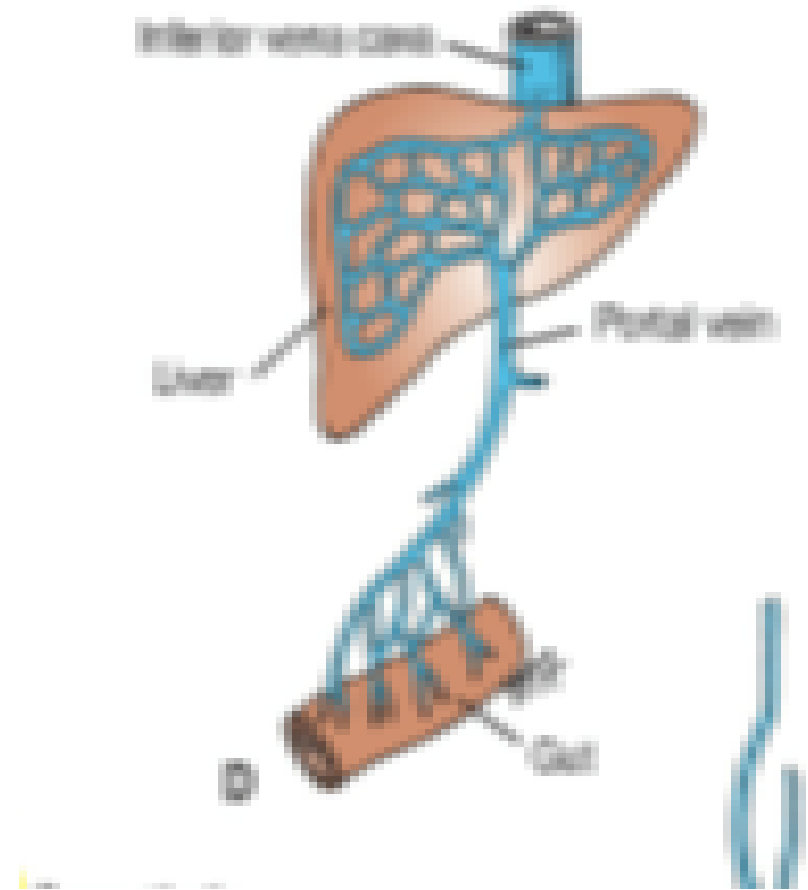
C

# Veins

**Veins** are vessels that transport blood toward the heart. Many veins possess **valves**, which function to prevent reflux of blood. The smallest veins are called **venules**. The smaller veins, or tributaries, unite to form larger veins, which commonly join with one another to form venous plexuses. Two veins often accompany medium-size deep arteries, one on each side of the artery. Such veins are called **venae comitantes**.

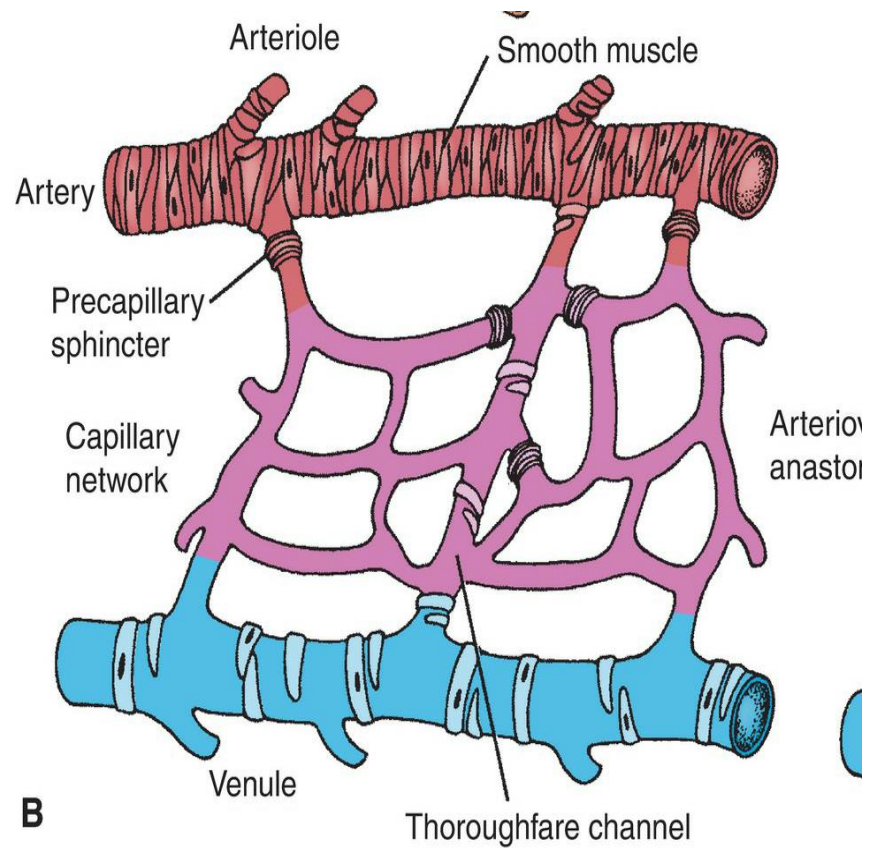


**Veins leaving the** gastrointestinal tract do not go directly to the heart but converge on **the portal vein**. This vein enters the liver and breaks up again into veins of diminishing size, which ultimately join capillary-like vessels, termed **sinusoids**, in the liver. **A portal system** is thus a system of vessels interposed between two capillary beds.



# Capillaries

**Capillaries** are microscopic vessels in the form of a network connecting the arterioles to the venules. Sinusoids resemble capillaries in that they are thin-walled blood vessels, but they have an irregular cross diameter and are wider than capillaries. They are found in the bone marrow, the spleen, the liver, and some endocrine glands.





In some areas of the body, principally the **tips of the fingers and toes**, direct connections occur between the arteries and the veins without the intervention of capillaries. The sites of such connections are referred to as **arteriovenous anastomoses**.

