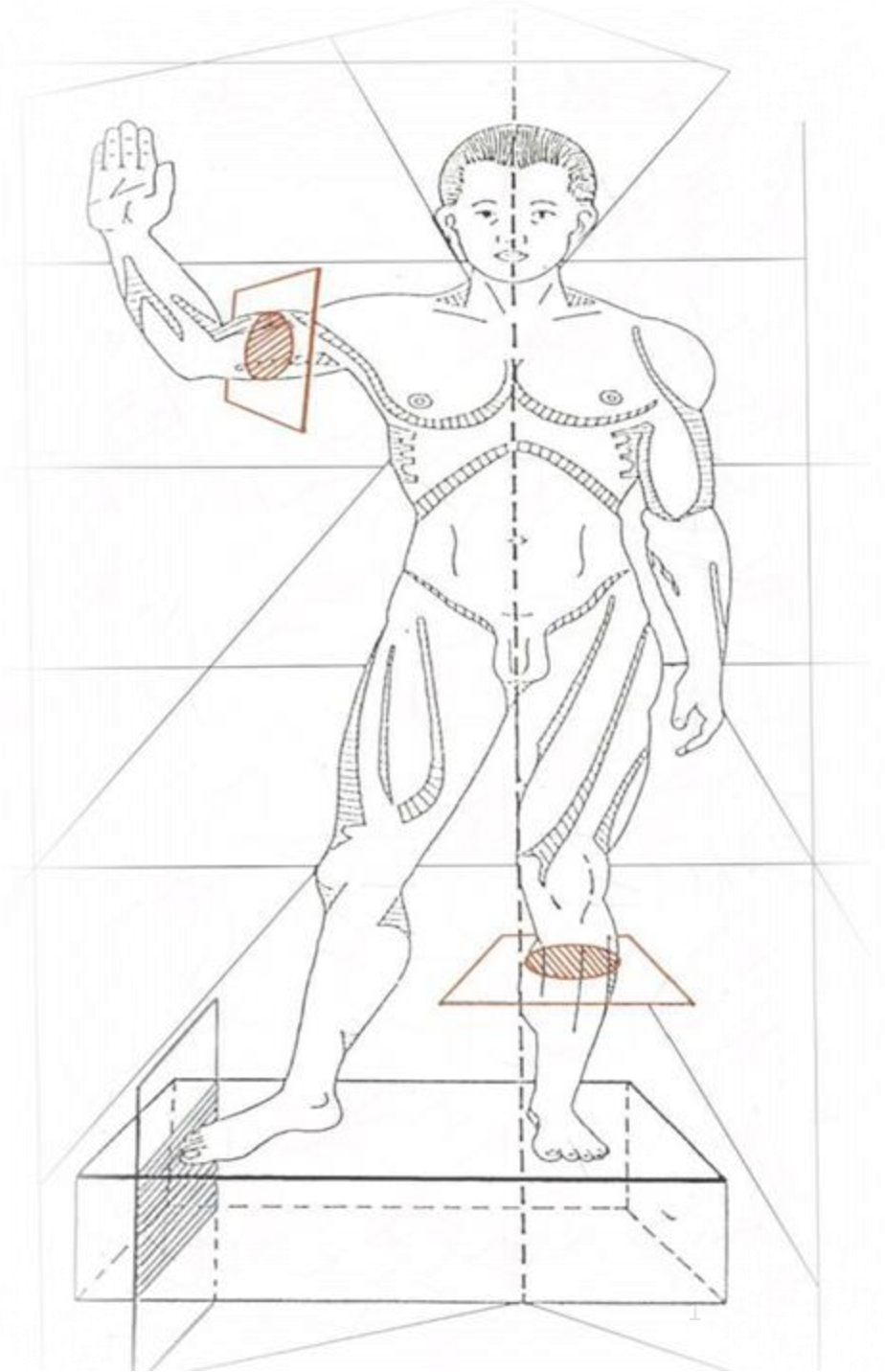
VESSELS OF THE HEART



Pr. M.D. EL AMRANI

Dr. CHAIMA KASSI

PLAN

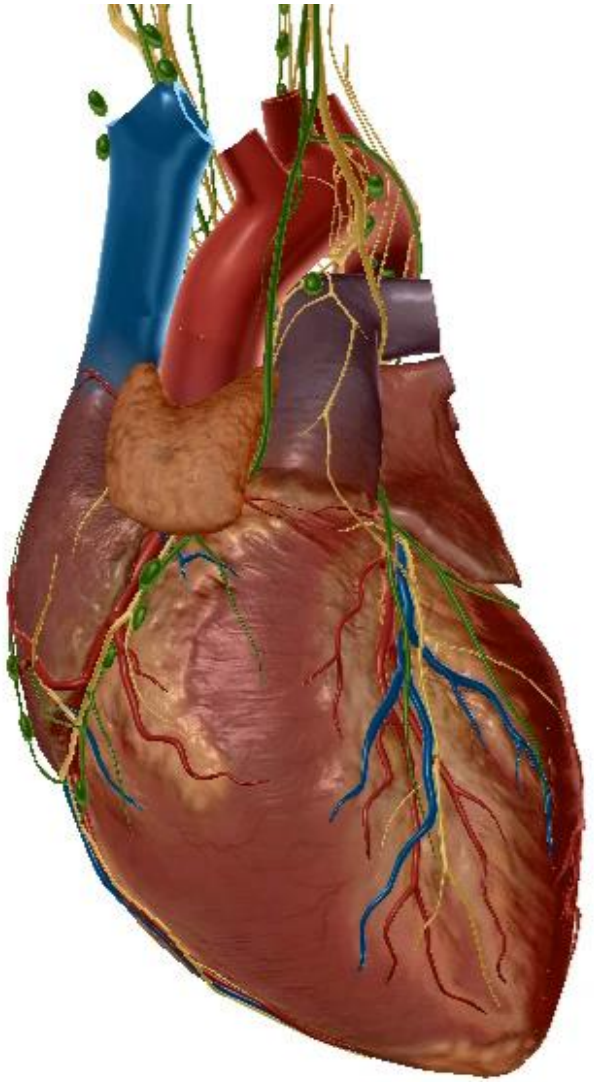
I. CORONARY ARTERIES

II. CARDIAC VEINS

III. LYMPHATICS OF THE HEART

IV. CLINICAL NOTES

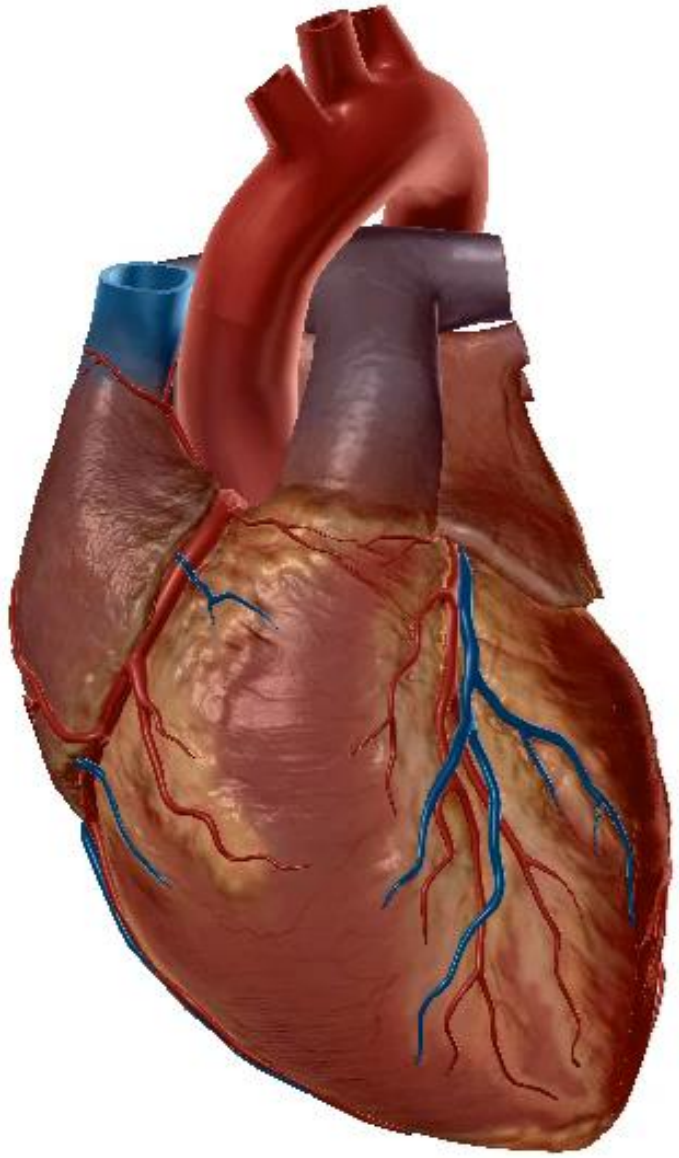
V. CONCLUSION



I-CORONARY ARTERIES

A. LEFT OR ANTERIOR CORONARY ARTERY

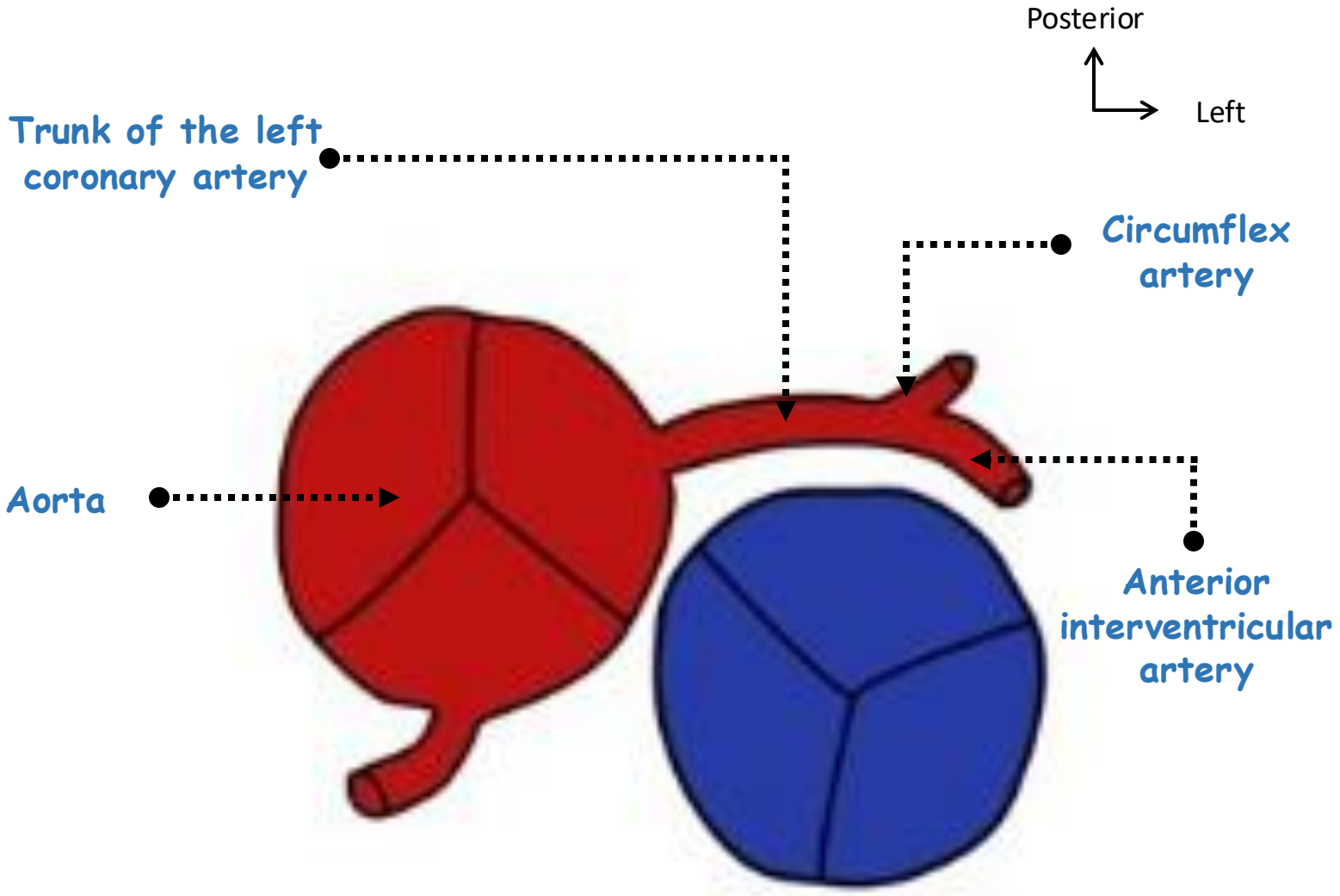
B. RIGHT OR POSTERIOR CORONARY ARTERY



Coronary arteries of the heart

A-LEFT CORONARY ARTERY

ORIGIN – arises from the aorta.



Superior view of the heart (trunk of the left coronary artery)

A-LEFT CORONARY ARTERY

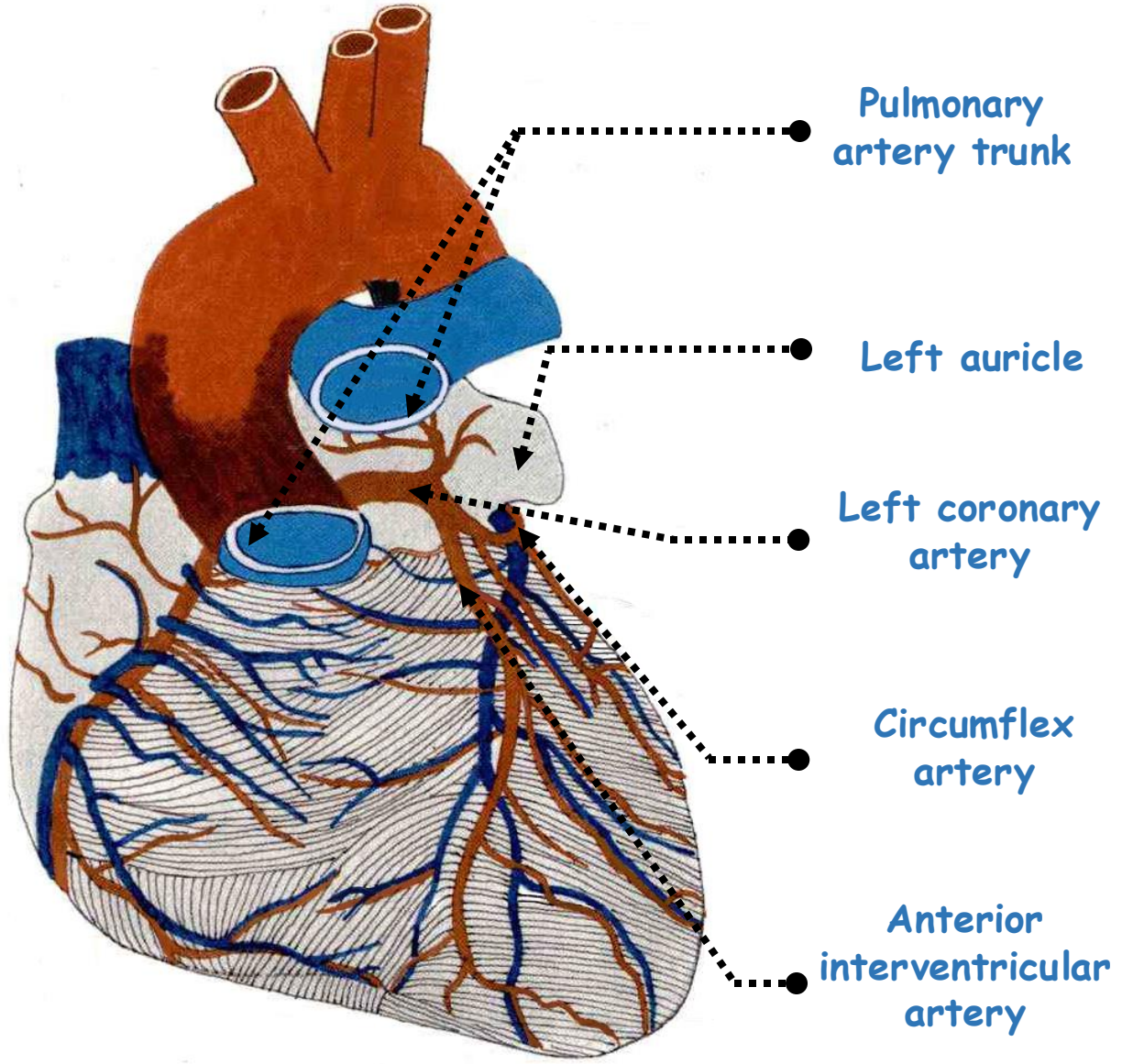
ORIGIN – arises from the aorta.

COURSE – runs through the sulcus separating the pulmonary artery from the left atrium and the left auricle, reaching the upper end of the anterior interventricular sulcus.

TERMINATION – divides into two terminal branches : the anterior interventricular artery and the circumflex artery.

BRANCHES

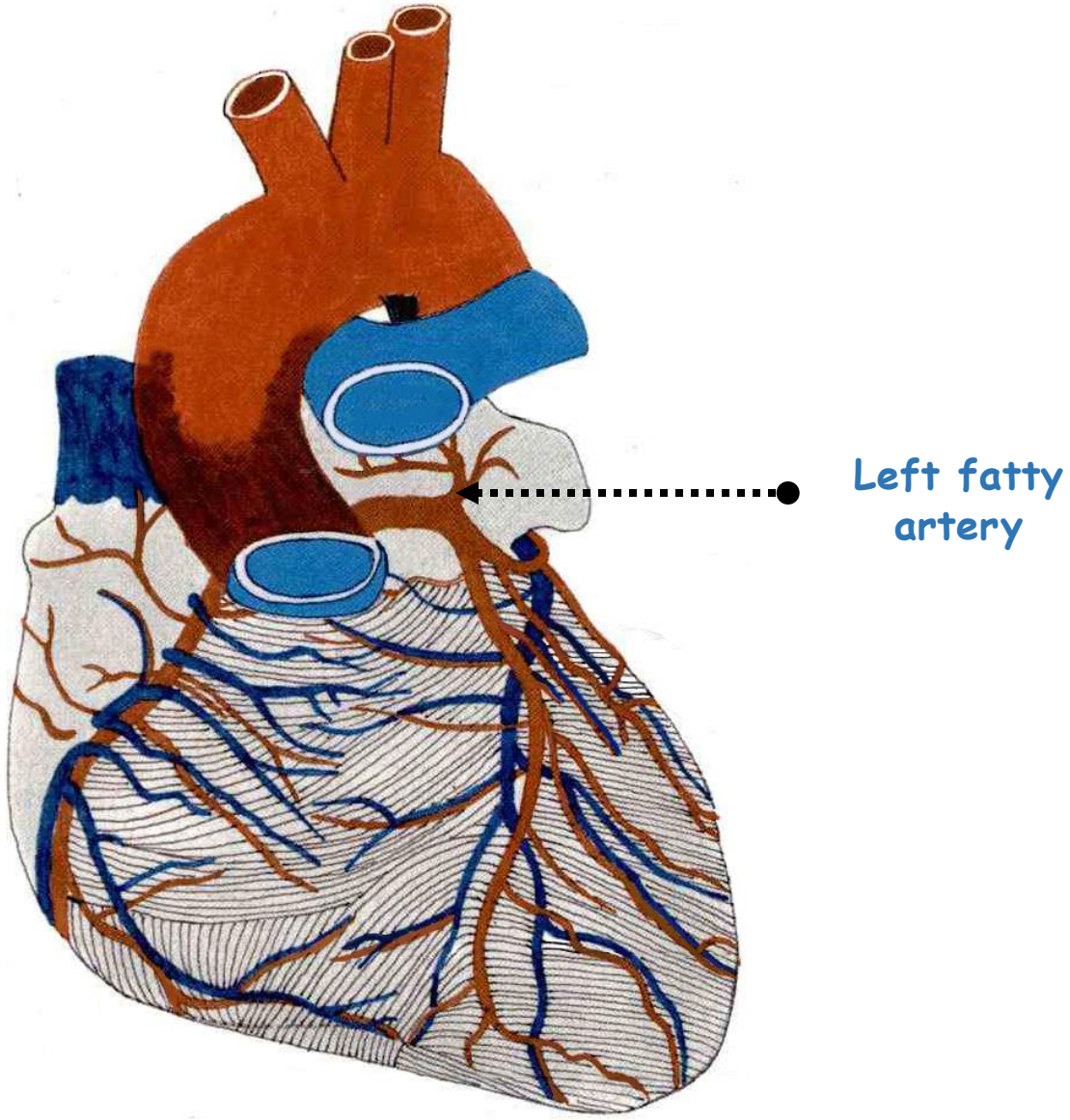
- Vascular branches
- Atrioventricular or circumflex artery
- Anterior interventricular artery



Anterior view of the heart showing the distribution of arterial and venous vessels

VASCULAR BRANCHES

Among its branches : the left fatty artery.

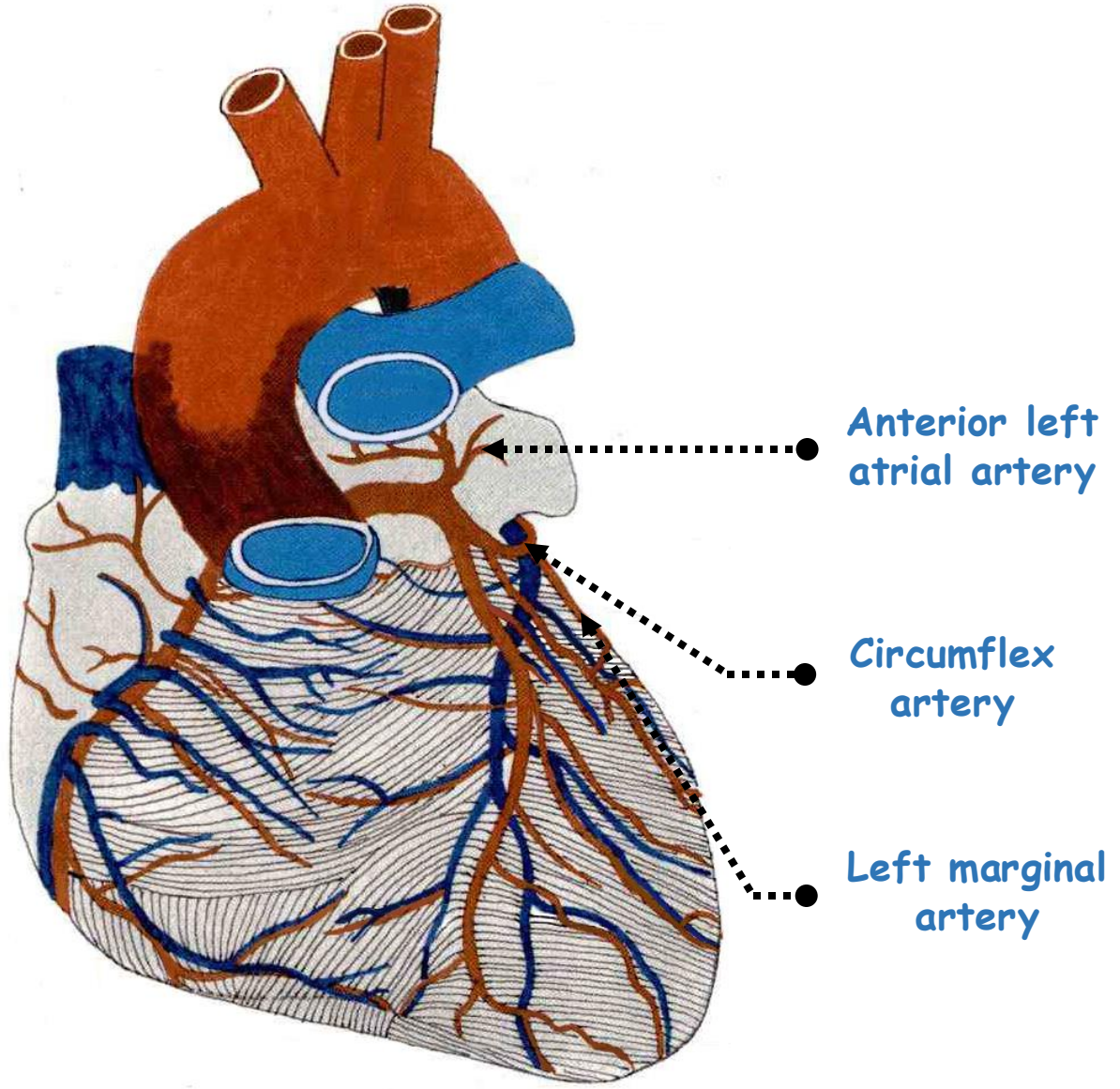


Anterior view of the heart showing the distribution of arterial and venous vessels

ATRIOVENTRICULAR ARTERY OR CIRCUMFLEX ARTERY

Among its branches, we distinguish :

- Anterior left atrial artery.
- Left marginal artery.



Anterior view of the heart showing the distribution of arterial and venous vessels

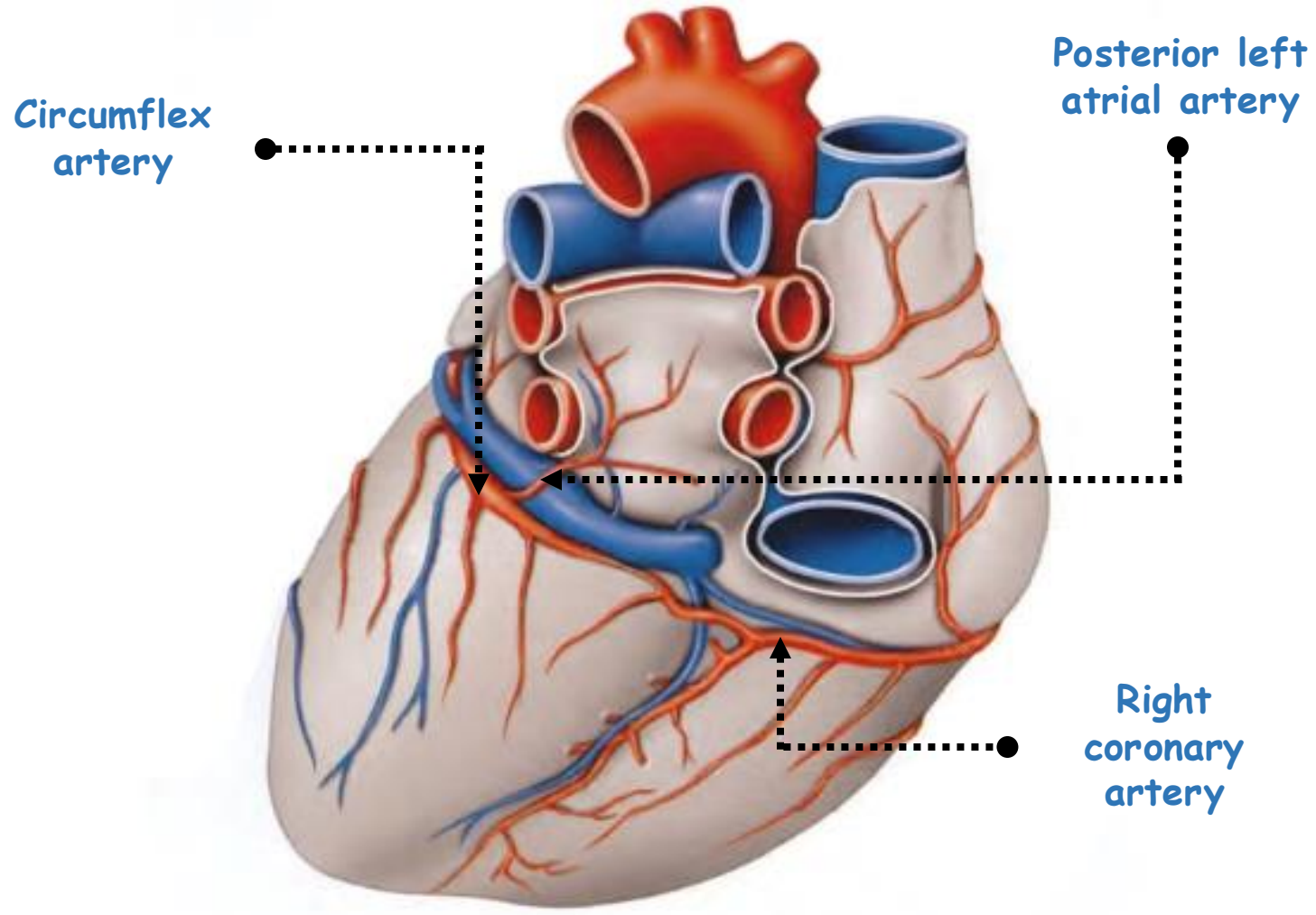
AURICULOVENTRICULAR ARTERY OR CIRCUMFLEX ARTERY

Among its branches, we distinguish :

- Anterior left atrial artery.
- Left marginal artery.
- Posterior left atrial artery.

– It terminates either at the posterior end of the interventricular sulcus, where it anastomoses with the right coronary artery or on the inferior surface of the heart.

According to KAMINA



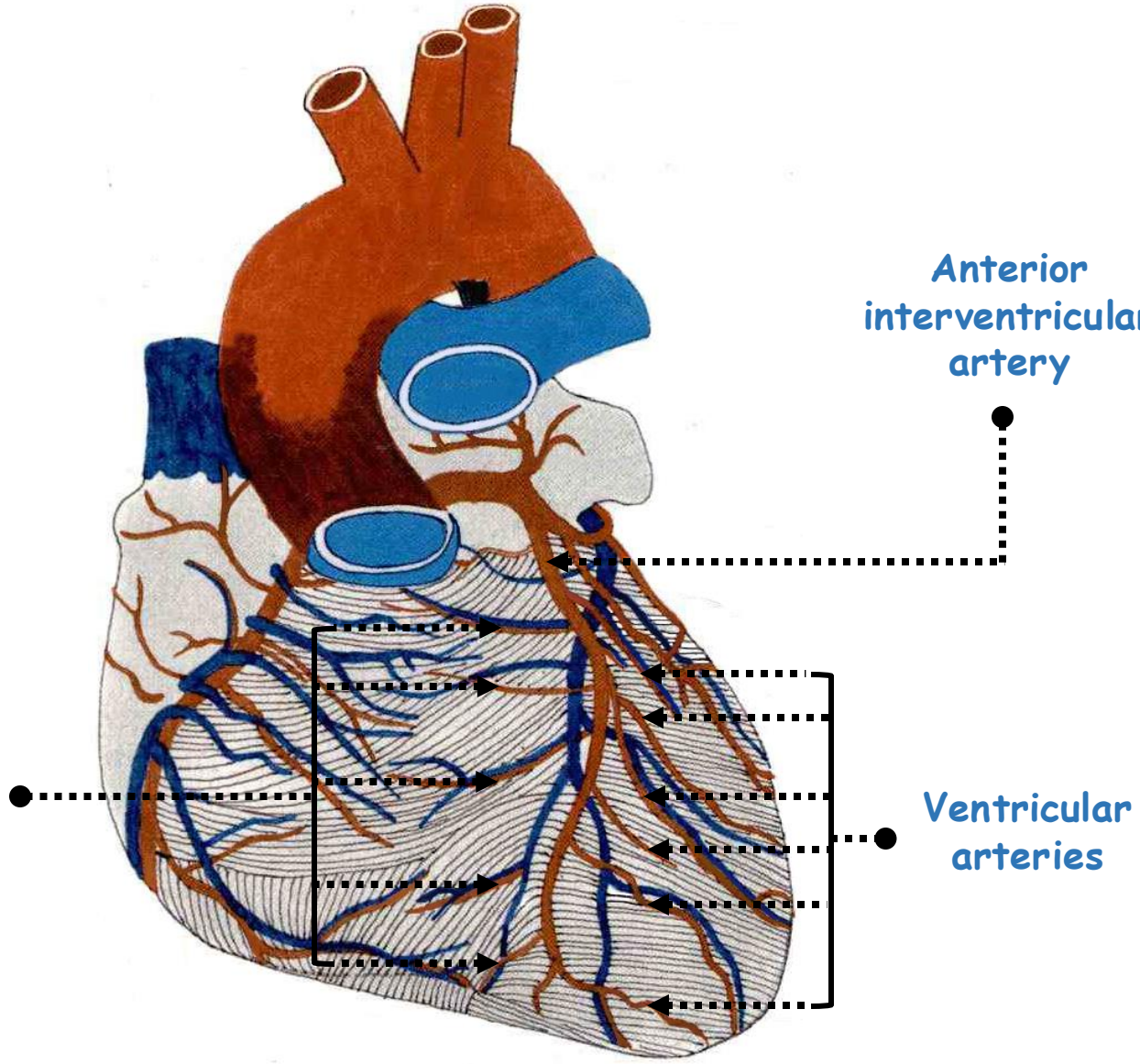
Heart vessels (postero-inferior view)

ANTERIOR INTERVENTRICULAR ARTERY

It gives off :

- The ventricular arteries.

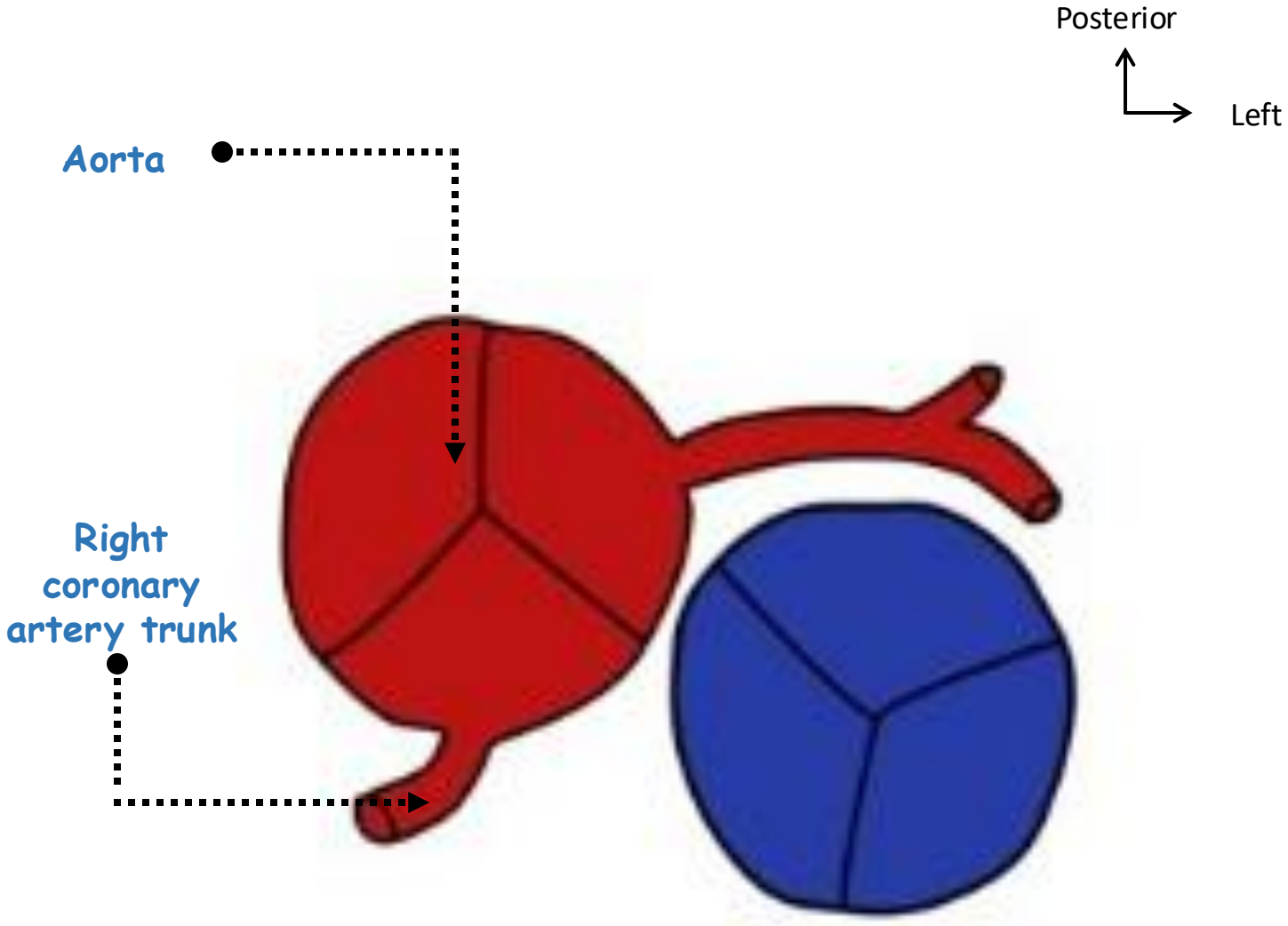
- Anterior septal arteries or anterior arteries of the septum.



Anterior view of the heart showing the distribution of arterial and venous vessels

B-RIGHT CORONARY ARTERY

ORIGIN – arises above the middle part of the right semilunar valve.



Superior view of the heart (trunk of the right coronary artery)

B-RIGHT CORONARY ARTERY

ORIGIN – arises above the middle part of the right semilunar valve.

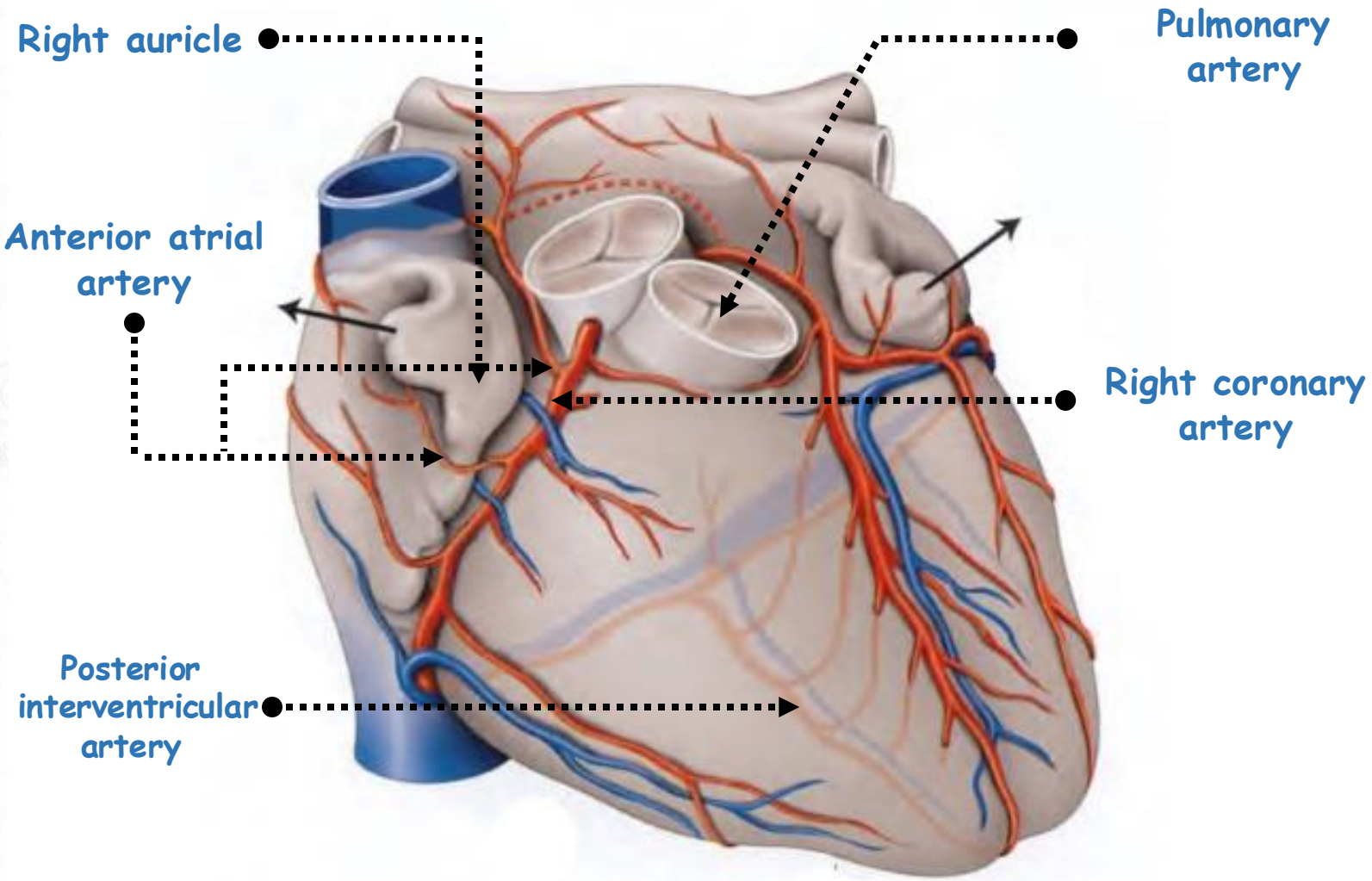
COURSE – runs back to front, between the pulmonary artery and the right auricle, then enters the right part of the atrioventricular sulcus.
Upon reaching the posterior interventricular sulcus, it bends and continues along the sulcus.

TERMINATION – ends at some distance from the apex of the heart.

BRANCHES

- Vascular branches
- Anterior atrial arteries
- Atrial and ventricular branches
- Posterior interventricular artery

According to KAMINA



Vessels of the heart (anterior view)

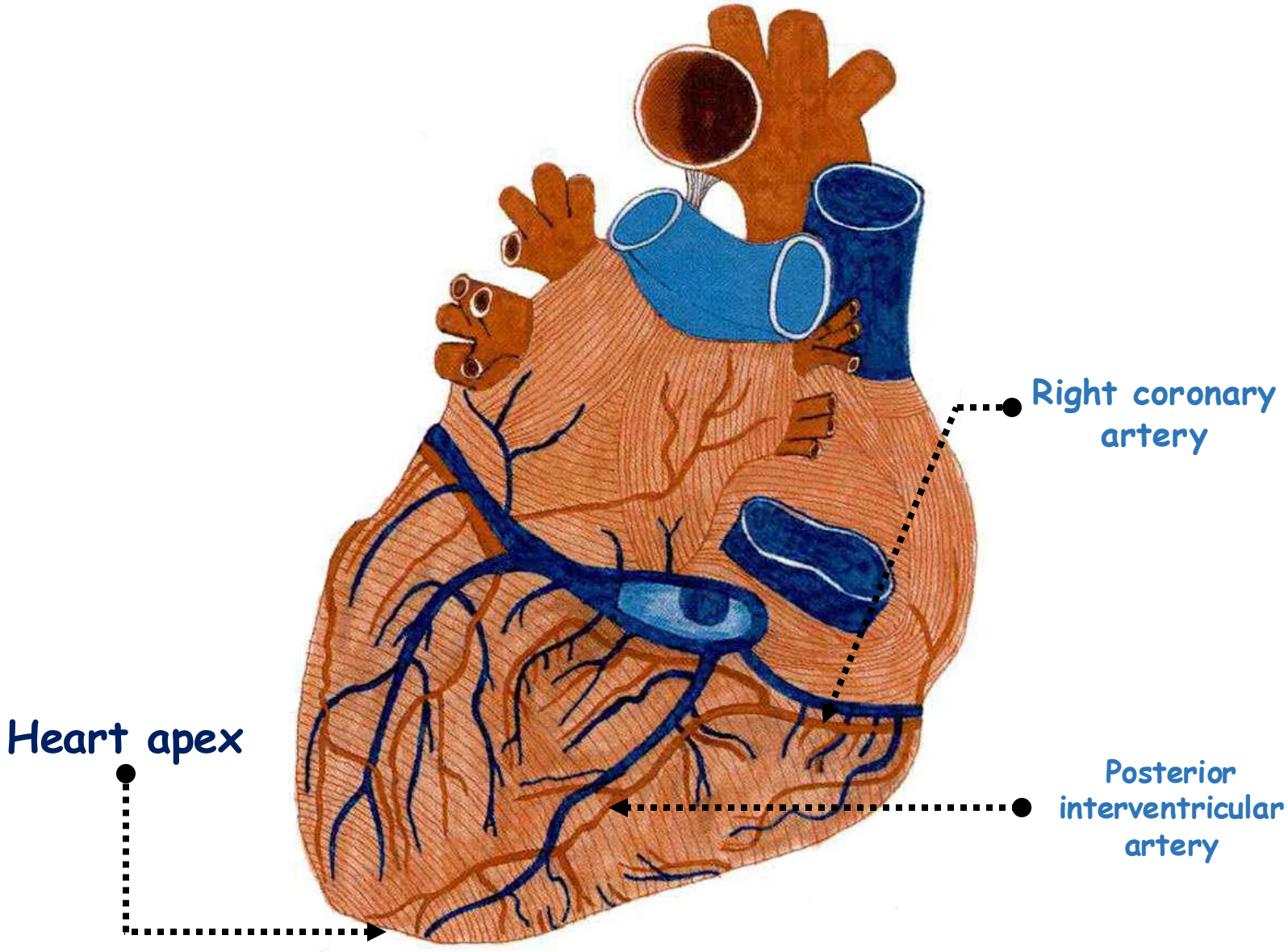
B-RIGHT CORONARY ARTERY

ORIGIN – arises above the right semilunar valve.

COURSE – runs back to front, between the pulmonary artery and the right auricle, then enters the right part of the atrioventricular sulcus.
Upon reaching the posterior interventricular sulcus, it bends and continues along the sulcus.

TERMINATION – ends at some distance from the apex of the heart.

BRANCHES
- Vascular branches
- Anterior atrial arteries
- Atrial and ventricular branches
- Posterior interventricular artery

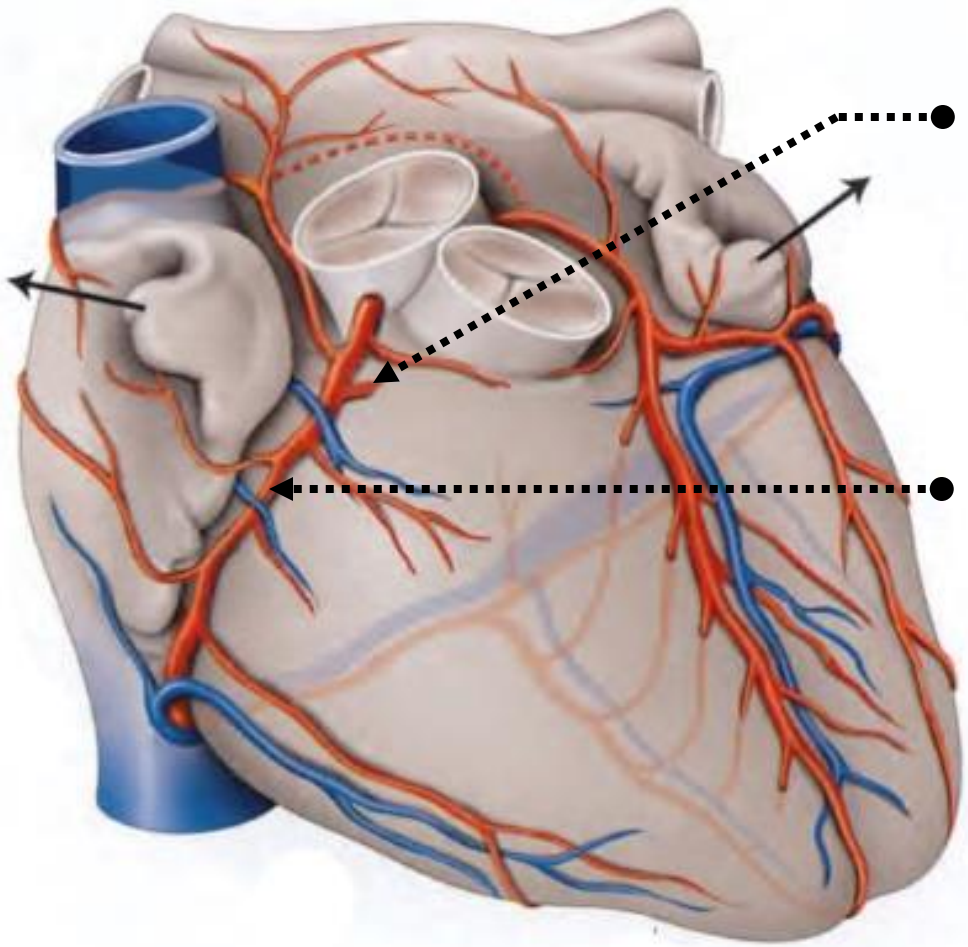


Posterior view of the heart showing the distribution of arterial and venous vessels

VASCULAR BRANCHES

We distinguish : the right fatty artery.

According to Kamina



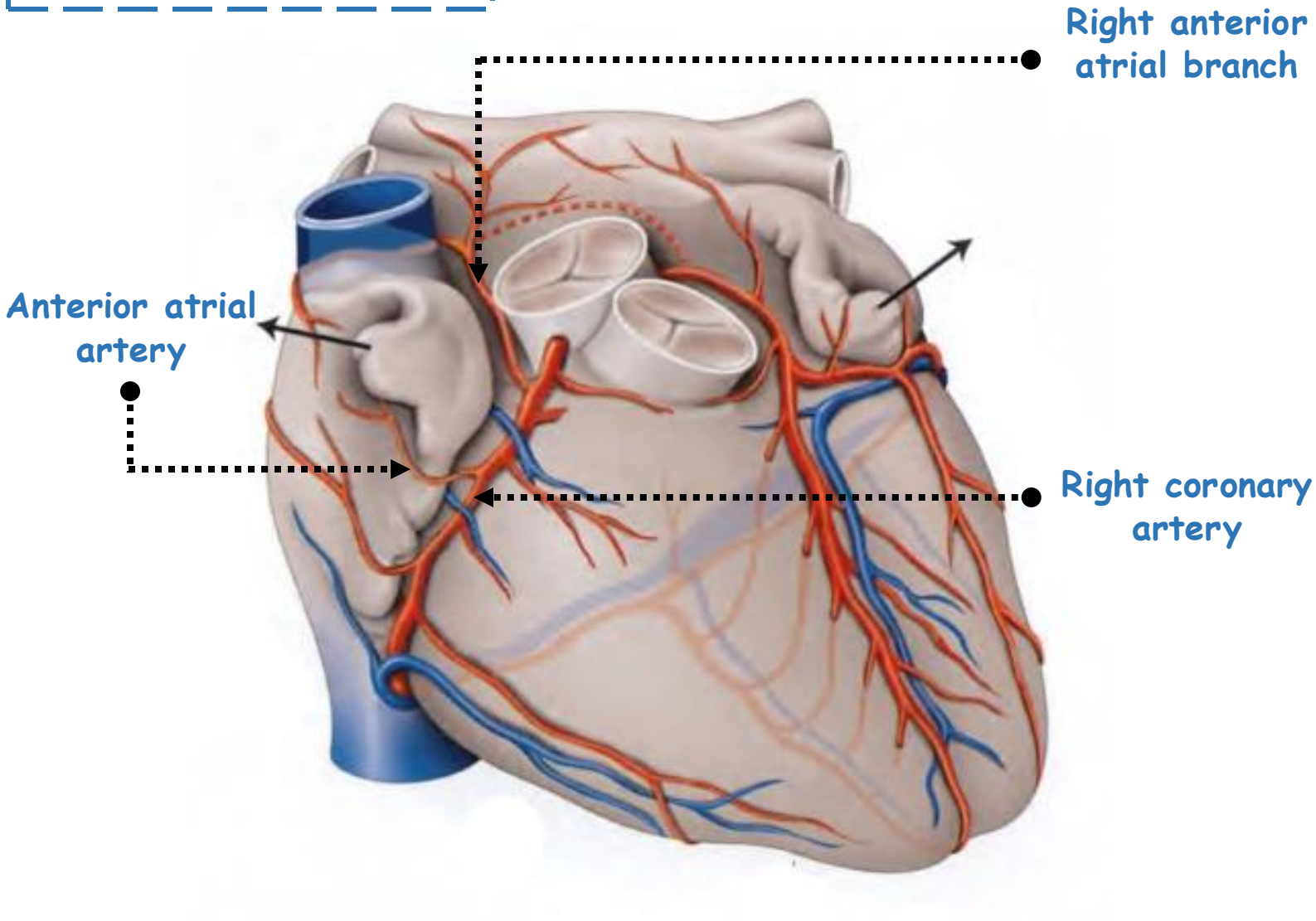
Anterior view of the vessels of the heart

VASCULAR BRANCHES

We distinguish : the right fatty artery.

ANTERIOR ATRIAL ARTERIES

According to KAMINA



Anterior view of the heart vessels

VASCULAR BRANCHES

We distinguish : the right fatty artery.

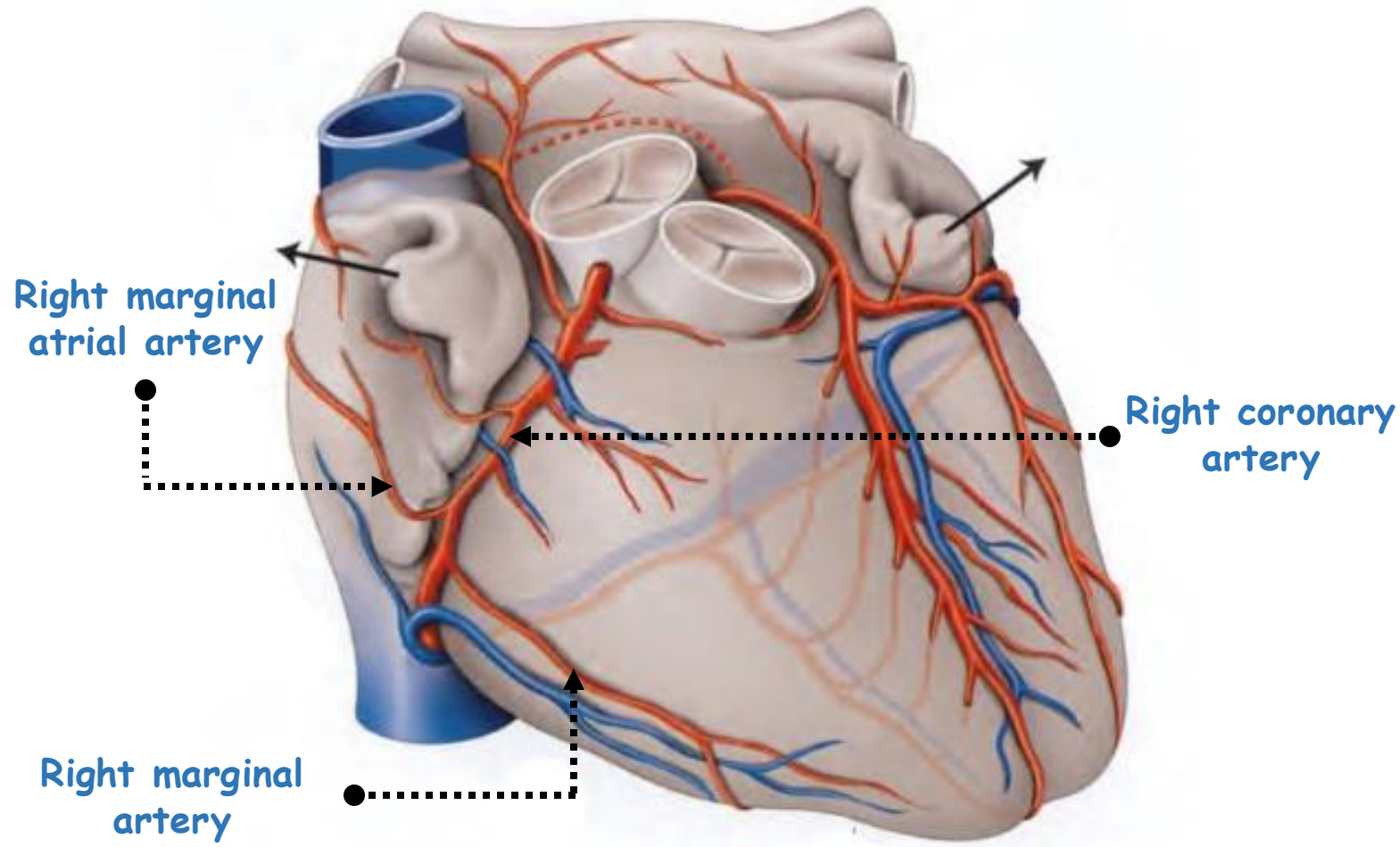
ANTERIOR ATRIAL ARTERIES

ATRIAL AND VENTRICULAR BRANCHES

Among the atrial branches : the right marginal atrial artery.

The most important of the ventricular branches : the right marginal artery of the heart.

According to Kamina



Anterior view of the heart vessels

VASCULAR BRANCHES

We distinguish : the right fatty artery.

ANTERIOR ATRIAL ARTERIES

ATRIAL AND VENTRICULAR BRANCHES

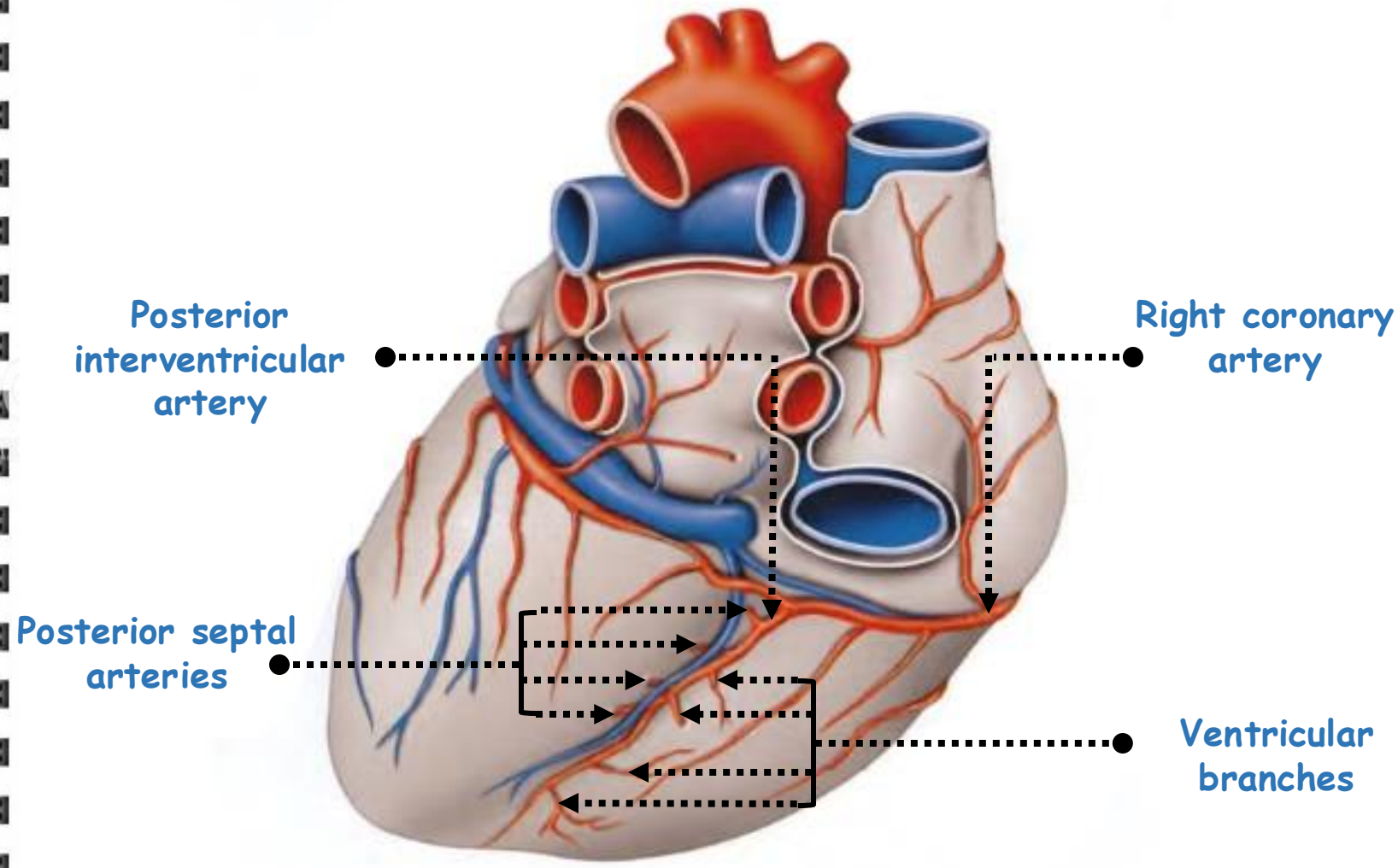
Among the atrial branches : the right marginal atrial artery.

The most important of the ventricular branches : the right marginal artery of the heart.

POSTERIOR INTERVENTRICULAR ARTERY

Gives off ventricular branches for both ventricles and posterior septal arteries for the septum.

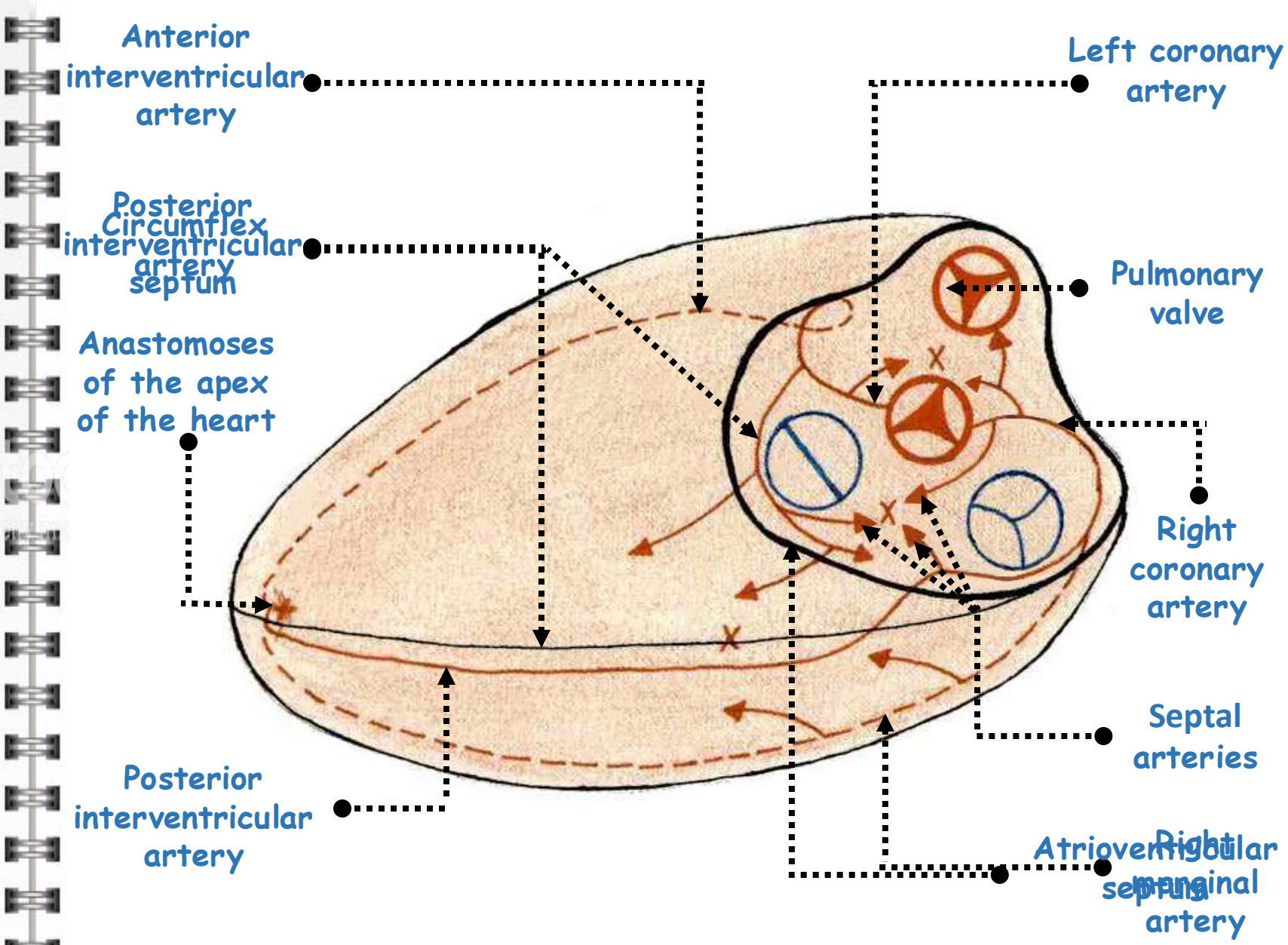
According to KAMINA



Heart vessels (postero-inferior view)

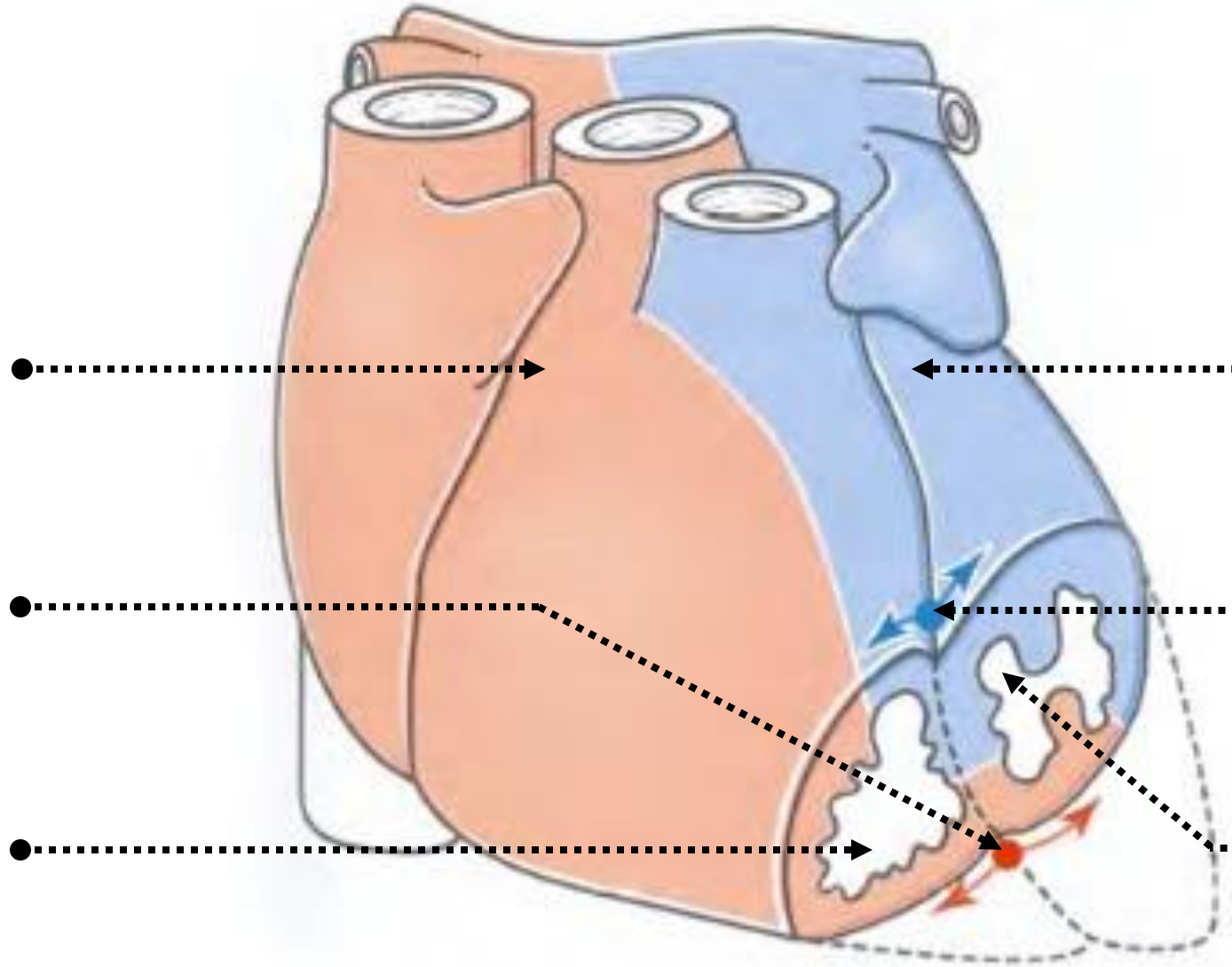
B-ANASTOMOSES

- The right and left coronary arteries are anastomosed in 50% of cases.
- These anastomoses are located in:
  - ✓ the interventricular septum.
  - ✓ the posterior interventricular and atrioventricular sulci.
  - ✓ at the apex of the heart.
  - ✓ And around the pulmonary artery.



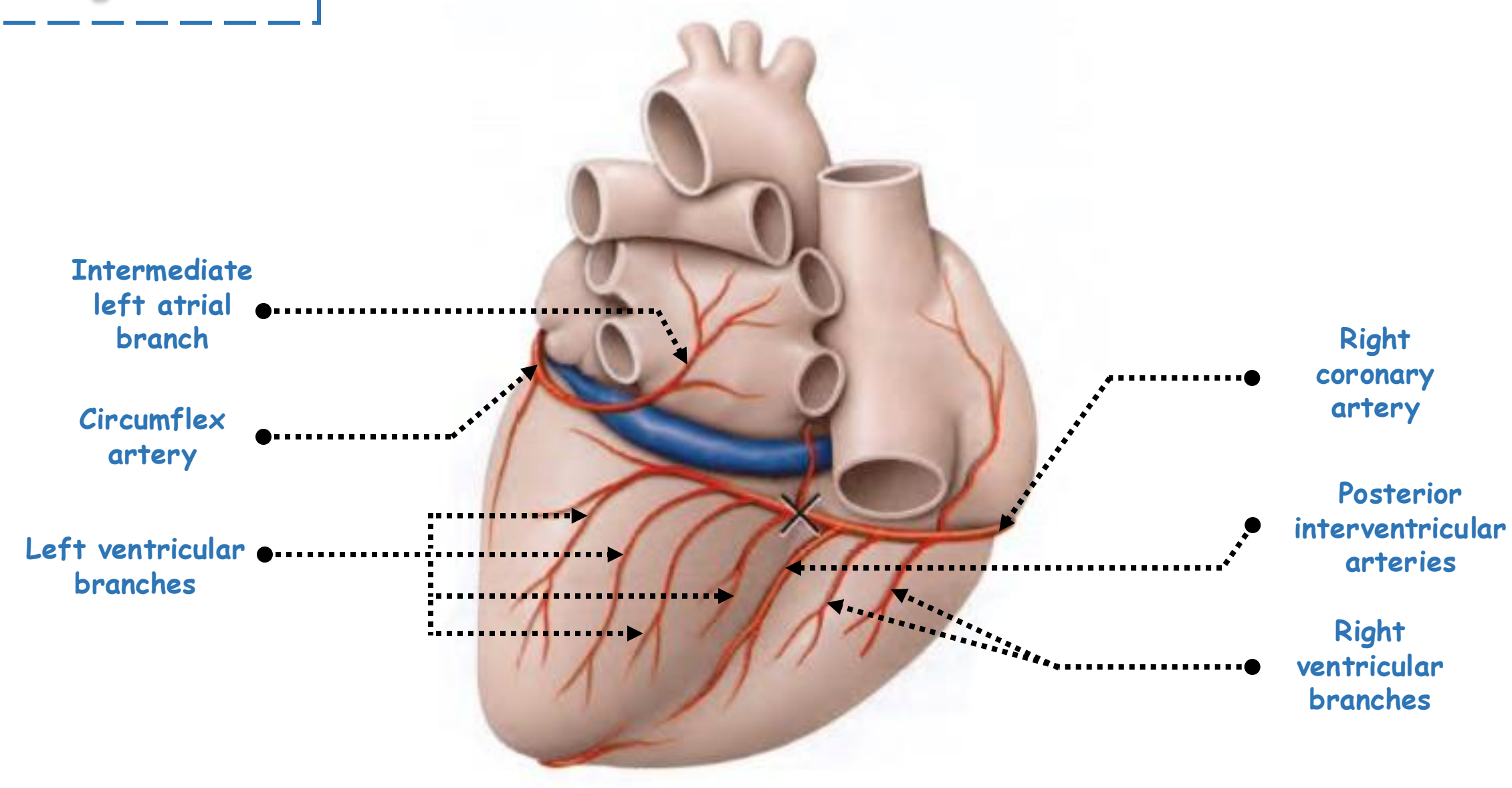
Schematic distribution of the coronary arteries

According to Kamina



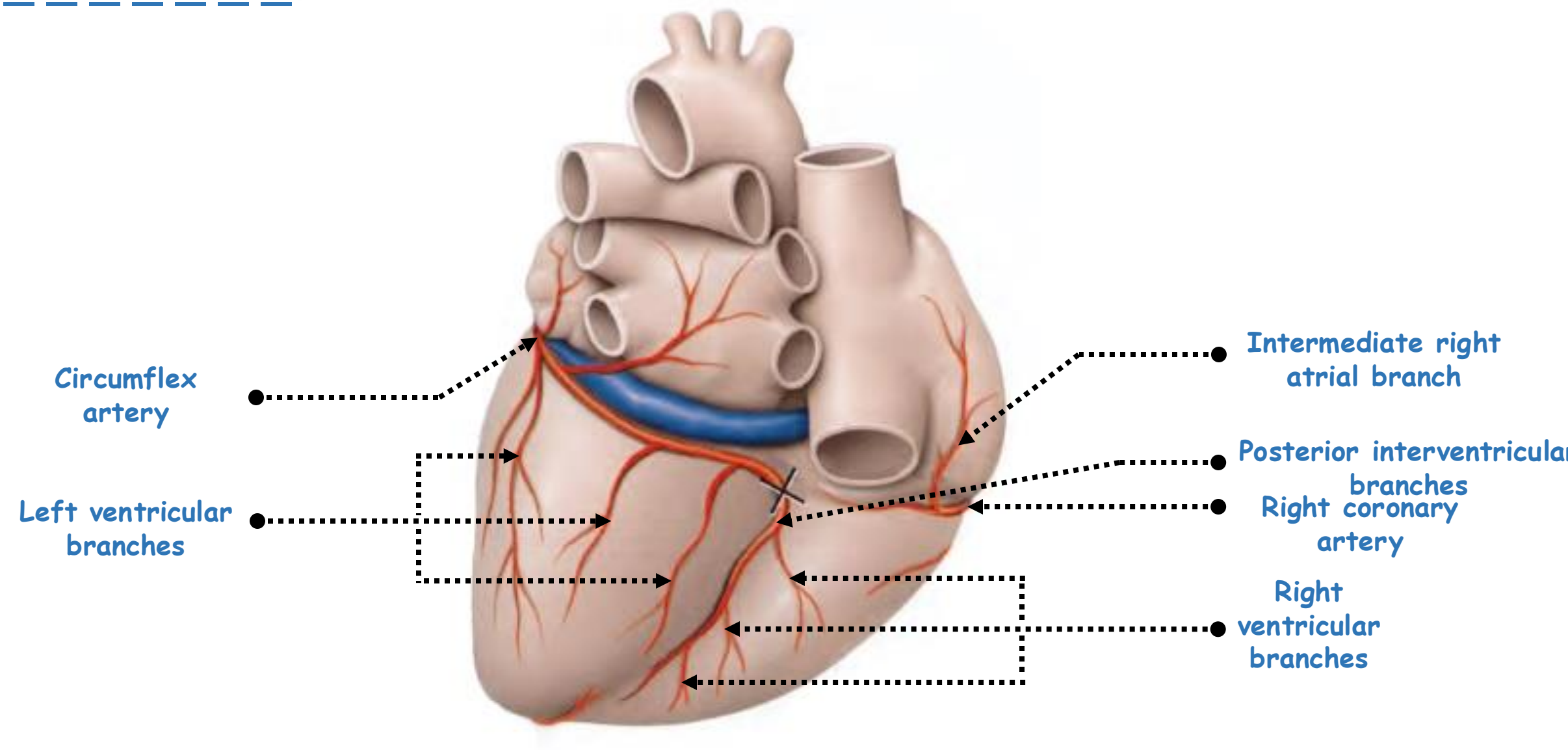
Anterior view of the vascular territories

According to KAMINA



Posterior interventricular artery: variations (inferior view)

According to KAMINA

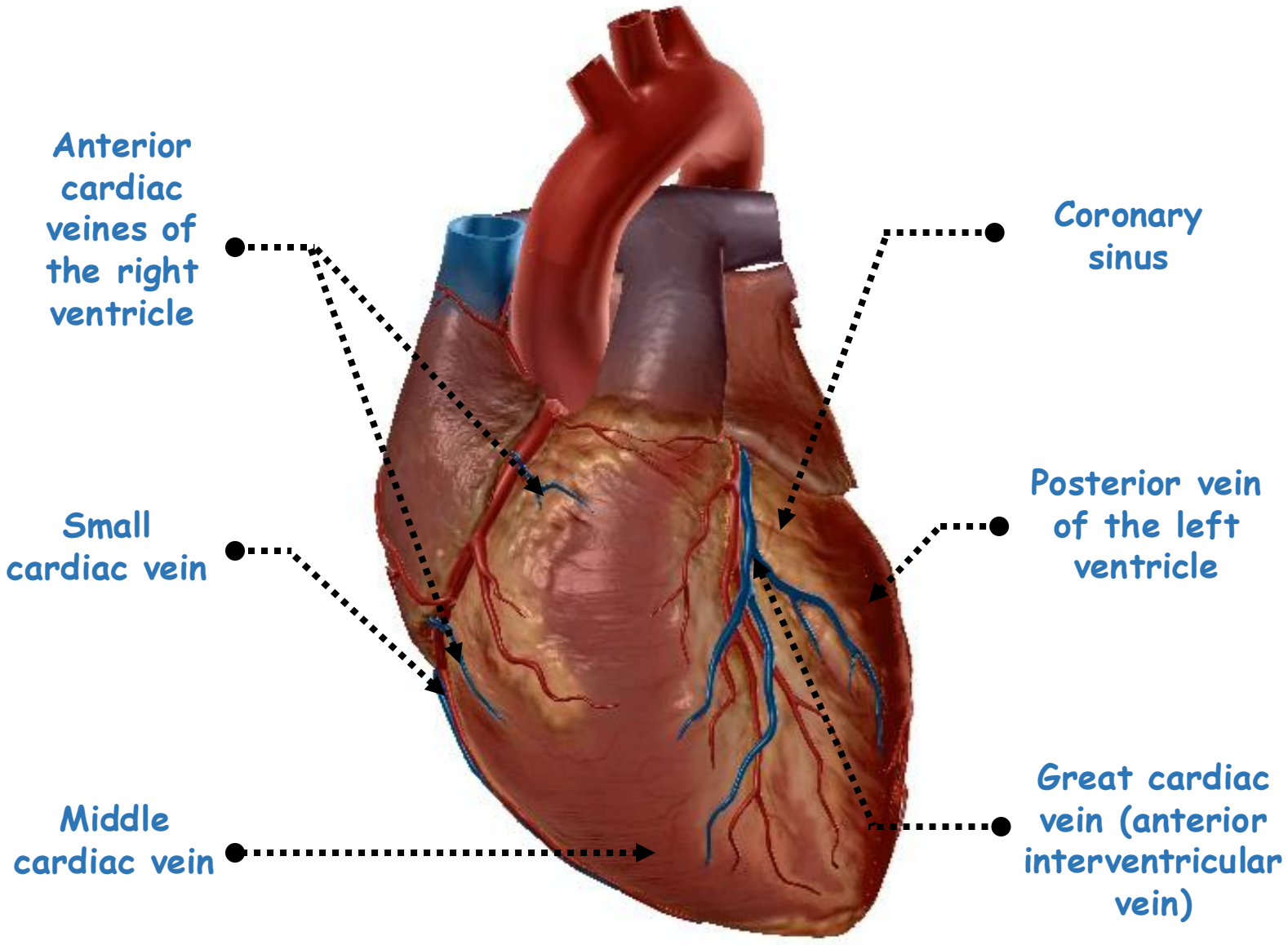


Posterior interventricular artery: variations (inferior view)

II-CARDIAC VEINS

A. VEINS THAT OPEN DIRECTLY INTO THE CARDIAC CAVITY

B. CORONARY VENOUS NETWORK



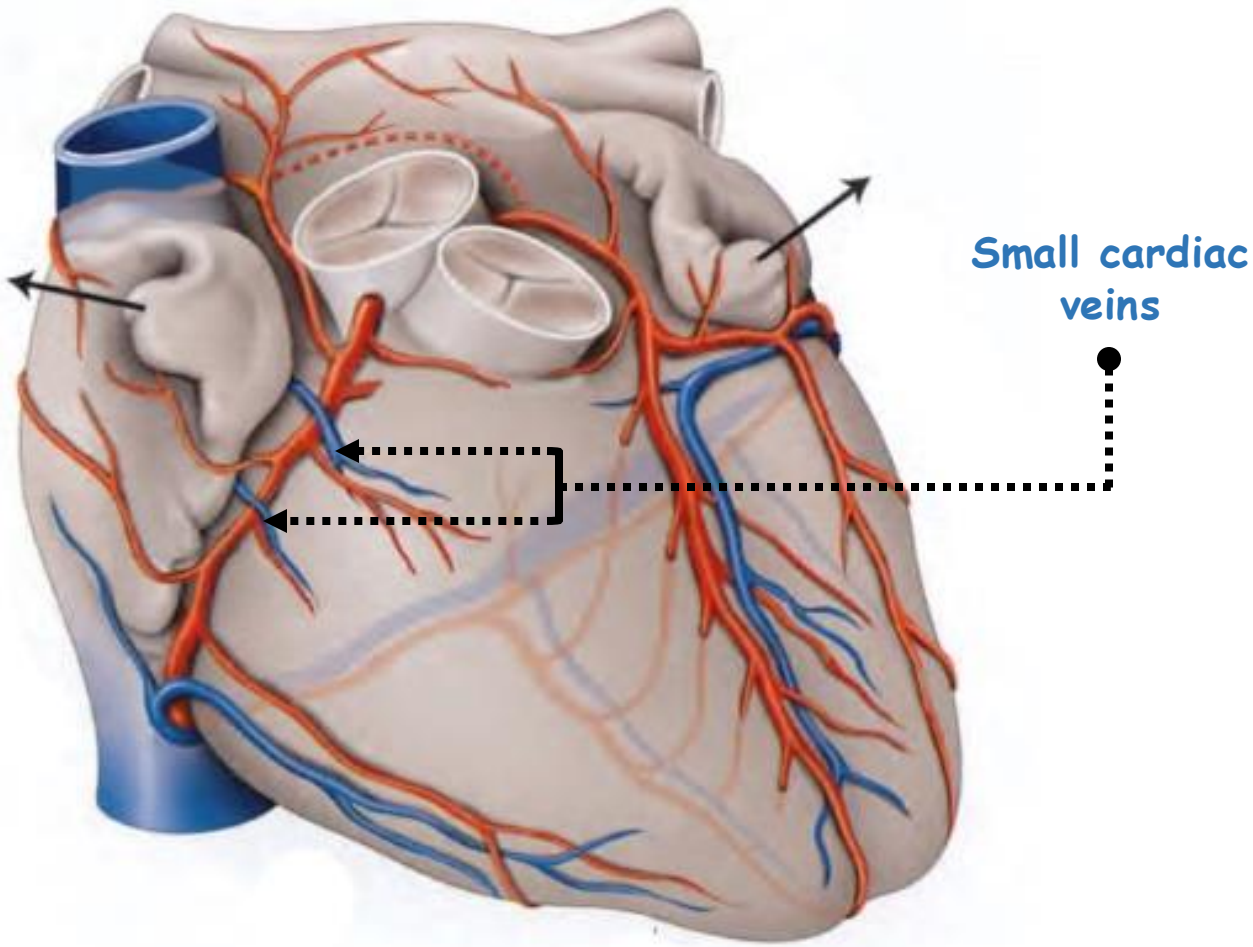
Cardiac veins

A-VEINS THAT OPEN INTO THE CARDIAC CAVITY

1. SMALL CARDIAC VEINS - ACCESSORY CARDIAC VEINS

2. THEBESIAN VEINS

According to KAMINA



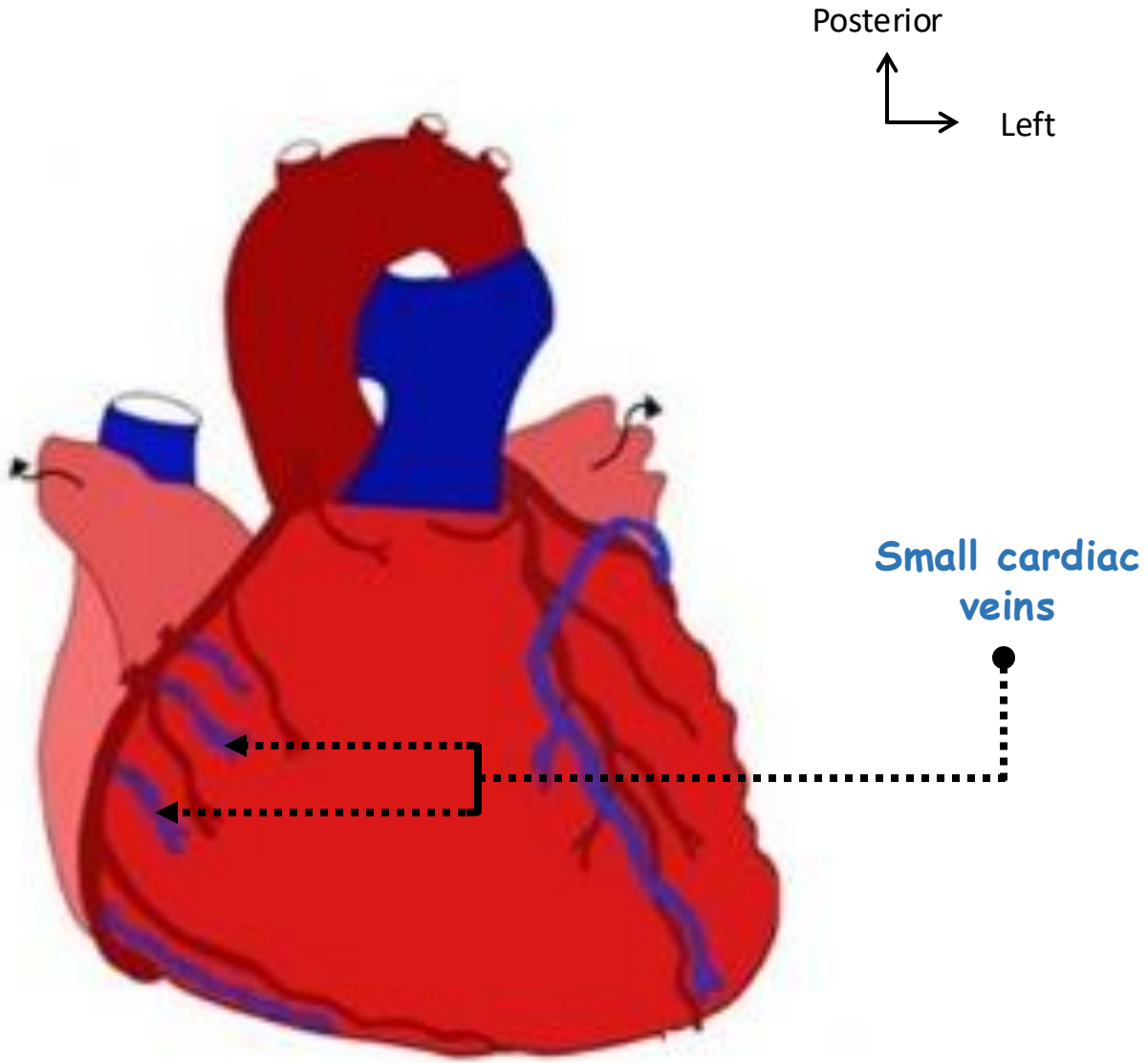
Anterior view of the heart vessels

1-SMALL CARDIAC VEINS

ORIGIN – arise from the anterior and right part of the right ventricle.

TERMINATION – open directly into the right atrium above the atrioventricular sulcus through openings called foramina.

The most important of these veins is the right marginal vein of the heart or vein of Galen.



Deep vein system (anterior view of the heart)

2-THEBESIAN VEINS

ORIGIN – Small venules originating from the walls of the heart.

TERMINATION – open into adjacents cavities through small openings called the foramina of Lannelongue.

The Thebesian veins are found in the walls of the atria and in the papillary muscles of the ventricles.

Anterior view of the deep vein system

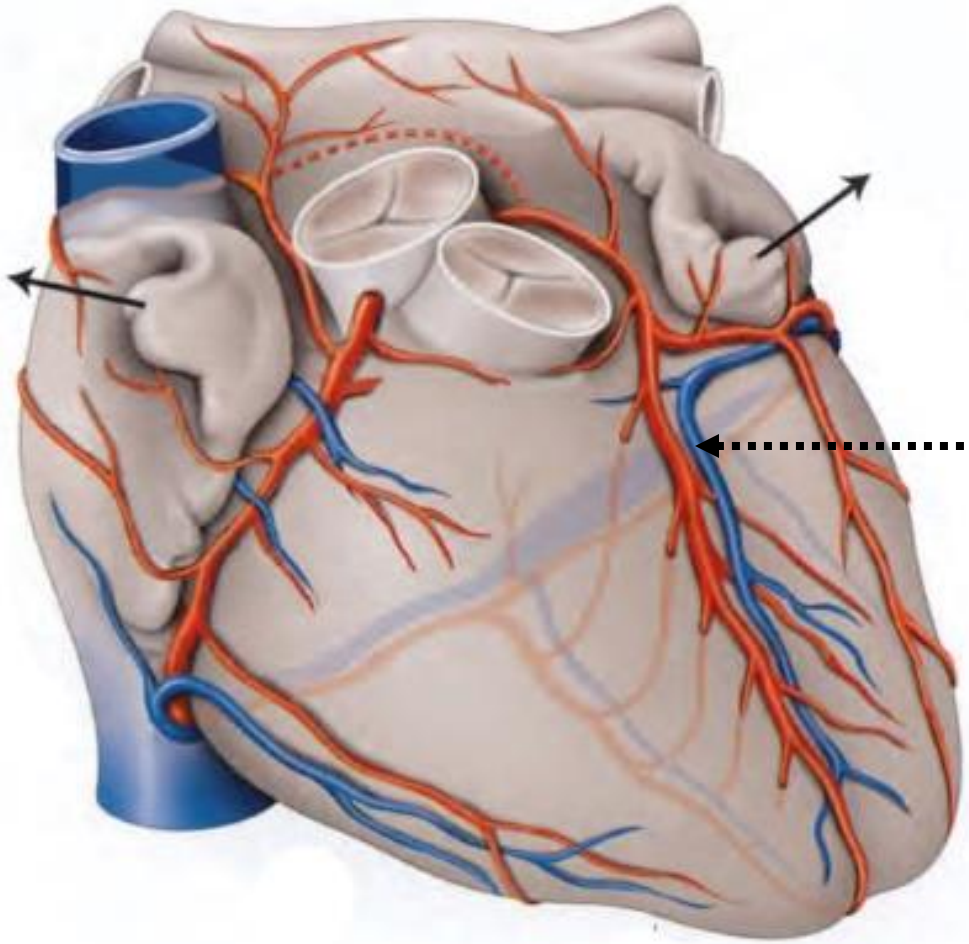
B-CORONARY VENOUS NETWORK

GREAT CORONARY VEIN AND CORONARY SINUS

ORIGIN – Apex of the heart.

COURSE – initially runs in the anterior interventricular sulcus, then follows the atrioventricular sulcus.

According to KAMINA



Anterior view of the heart vessels

B-CORONARY VENOUS NETWORK

GREAT CORONARY VEIN AND CORONARY SINUS

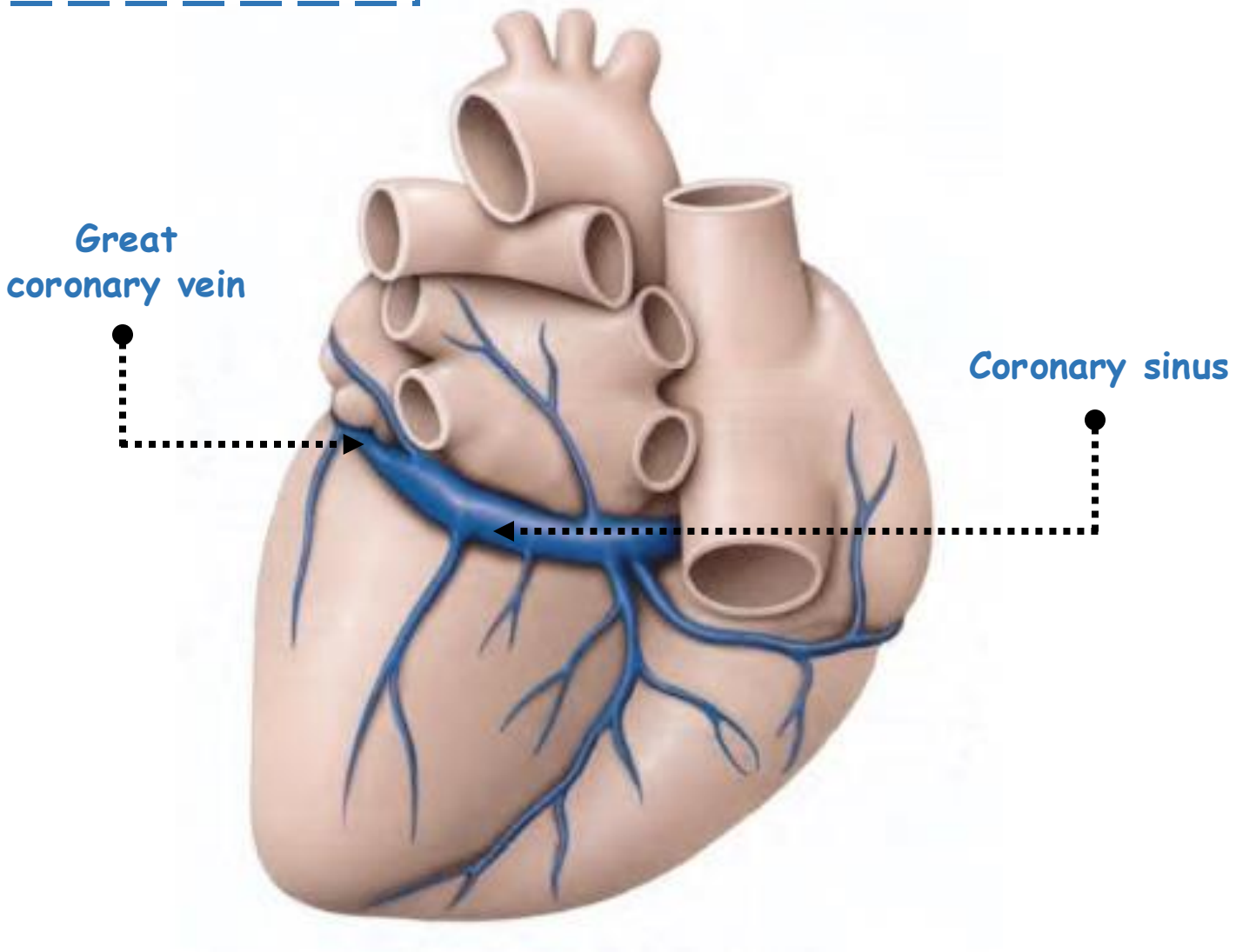
ORIGIN - Apex of the heart.

COURSE - initially runs in the anterior interventricular sulcus, then follows the atrioventricular sulcus.

TERMINATION

- It forms the coronary sinus.

According to KAMINA



Heart veins (postero-inferior view)

B-CORONARY VENOUS NETWORK

GREAT CORONARY VEIN AND CORONARY SINUS

ORIGIN – Apex of the heart.

COURSE – initially runs in the anterior interventricular sulcus, then follows the atrioventricular sulcus.

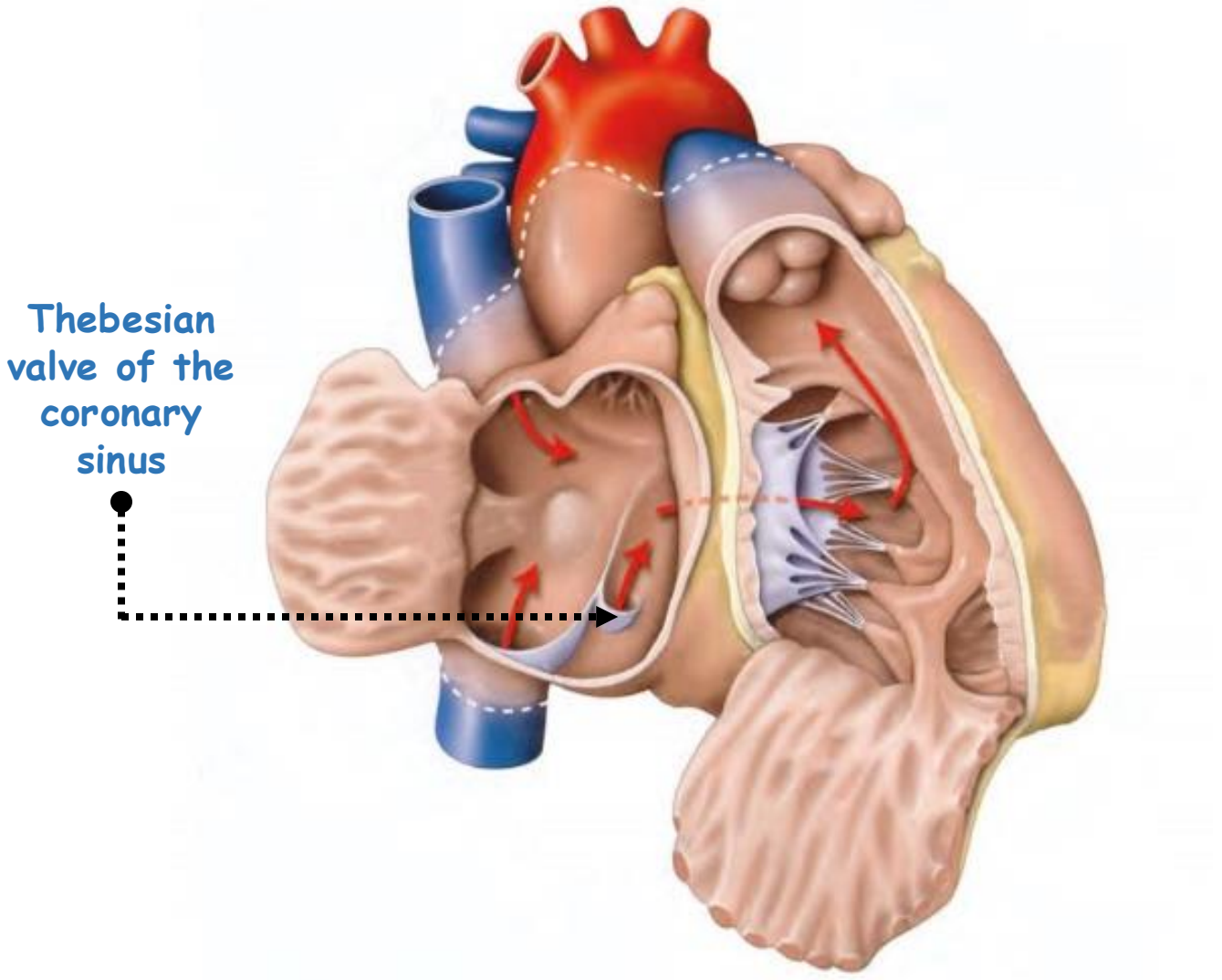
TERMINATION

– It forms the coronary sinus.

– This sinus is equipped with :

- the Thebesian valve at its auricular opening.

According to KAMINA



Right atrium and ventricle opened (right view)

B-CORONARY VENOUS NETWORK

GREAT CORONARY VEIN AND CORONARY SINUS

ORIGIN – Apex of the heart.

COURSE – initially runs in the anterior interventricular sulcus, then follows the atrioventricular sulcus.

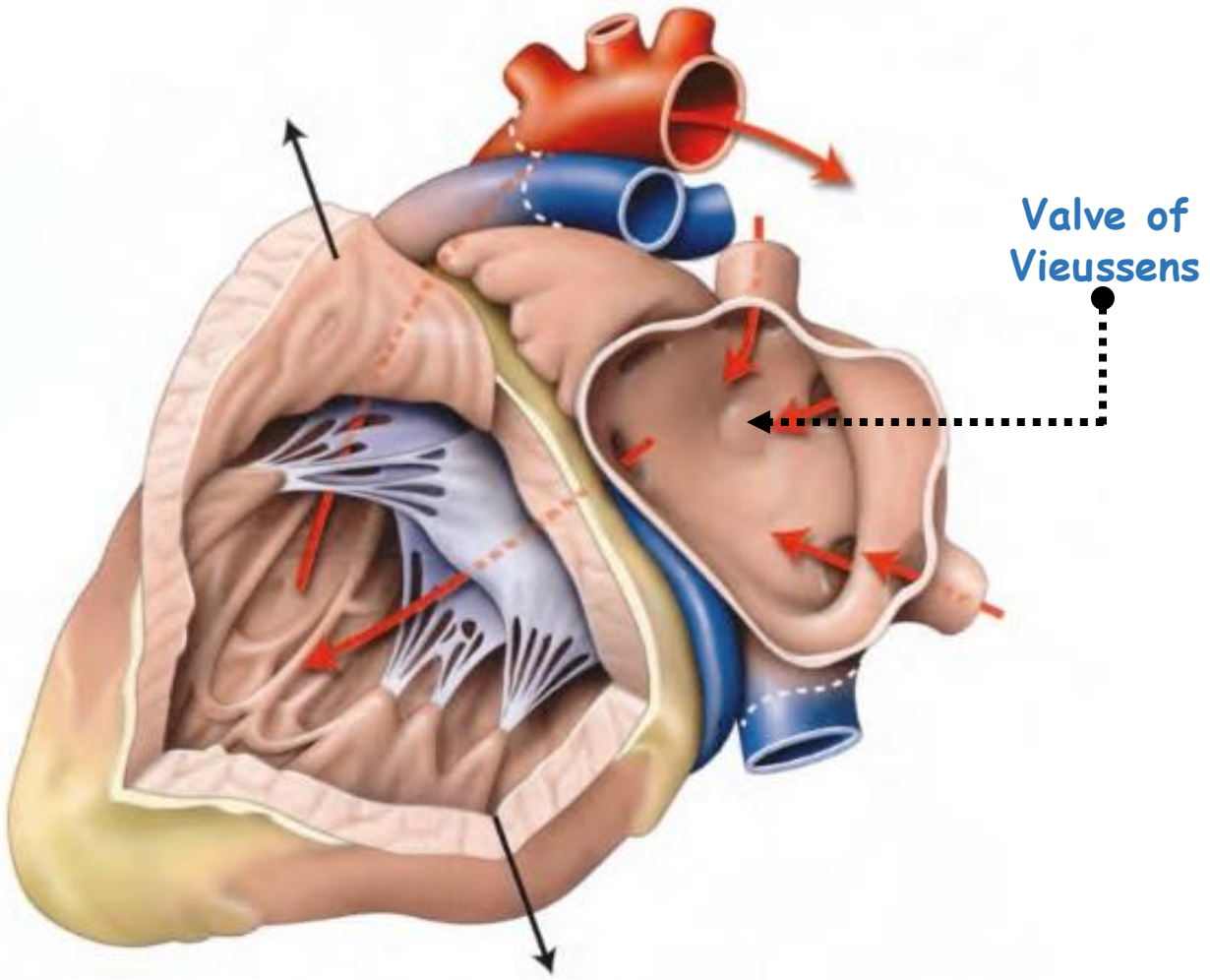
TERMINATION

– It forms the coronary sinus.

– This sinus is equipped with

- The Thebesian valve at its auricular opening.
- The valve of Vieussens at its origin.

According to KAMINA



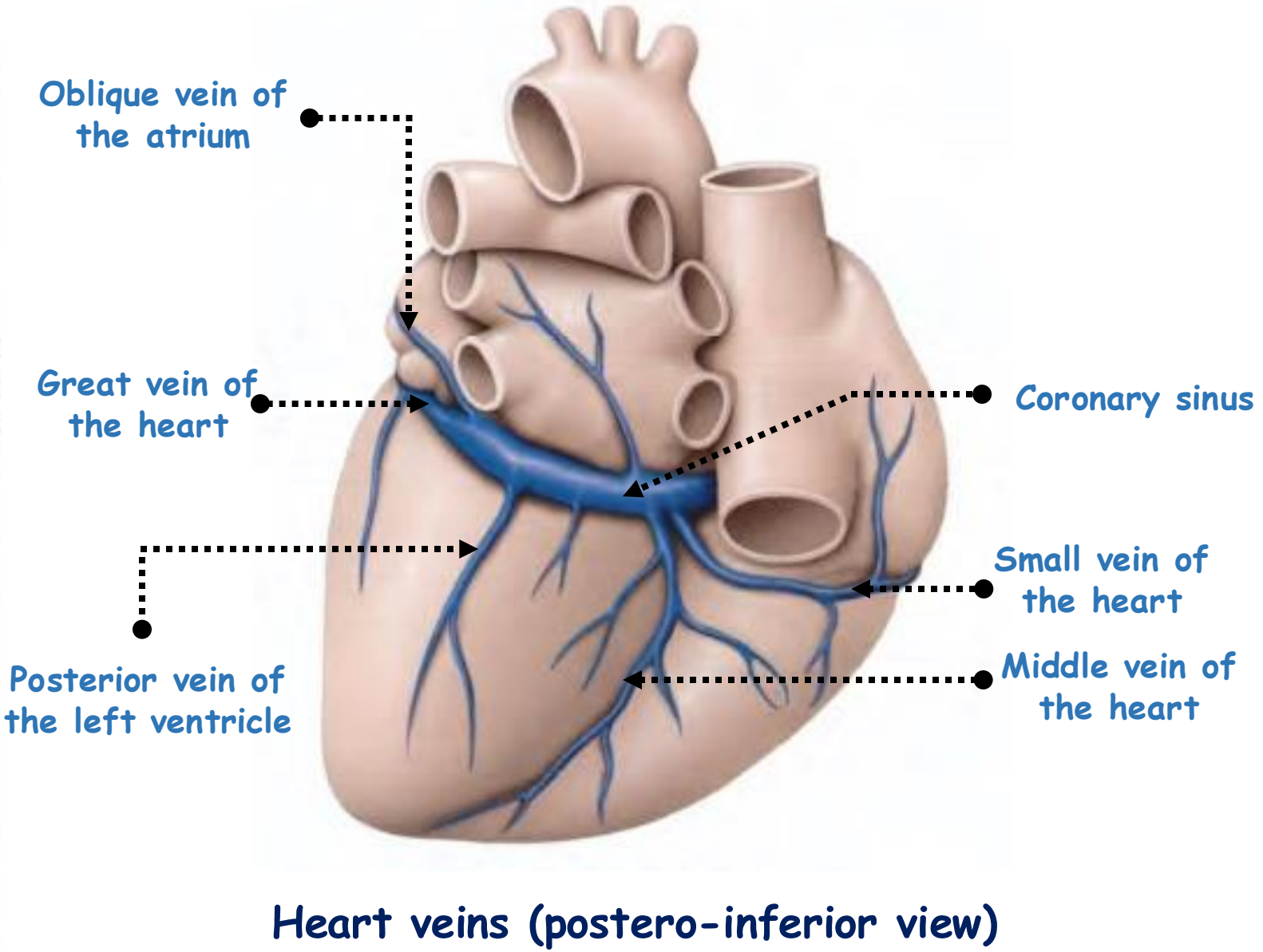
Right atrium and ventricle opened (left view)

B-CORONARY VENOUS NETWORK

- The coronary sinus receives :

- The posterior vein of the left ventricle.
- The great vein of the heart.
- The oblique vein of the left atrium.
- The middle vein of the heart.
- The small coronary vein.

According to KAMINA

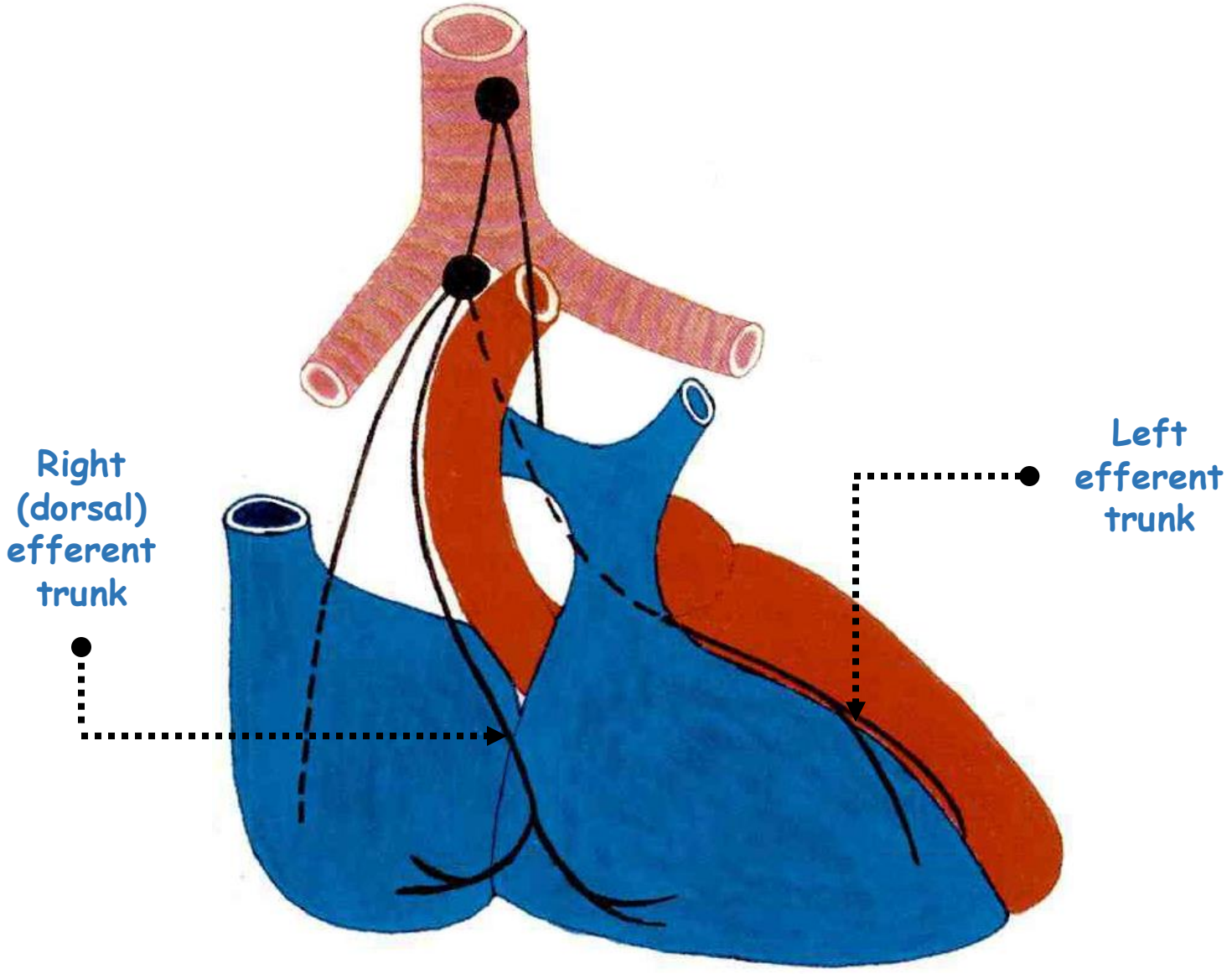


Heart veins (postero-inferior view)

III-LYMPHATICS OF THE HEART

A. LEFT ANTERIOR MAIN COLLECTING TRUNK

B. RIGHT MAIN COLLECTING TRUNK



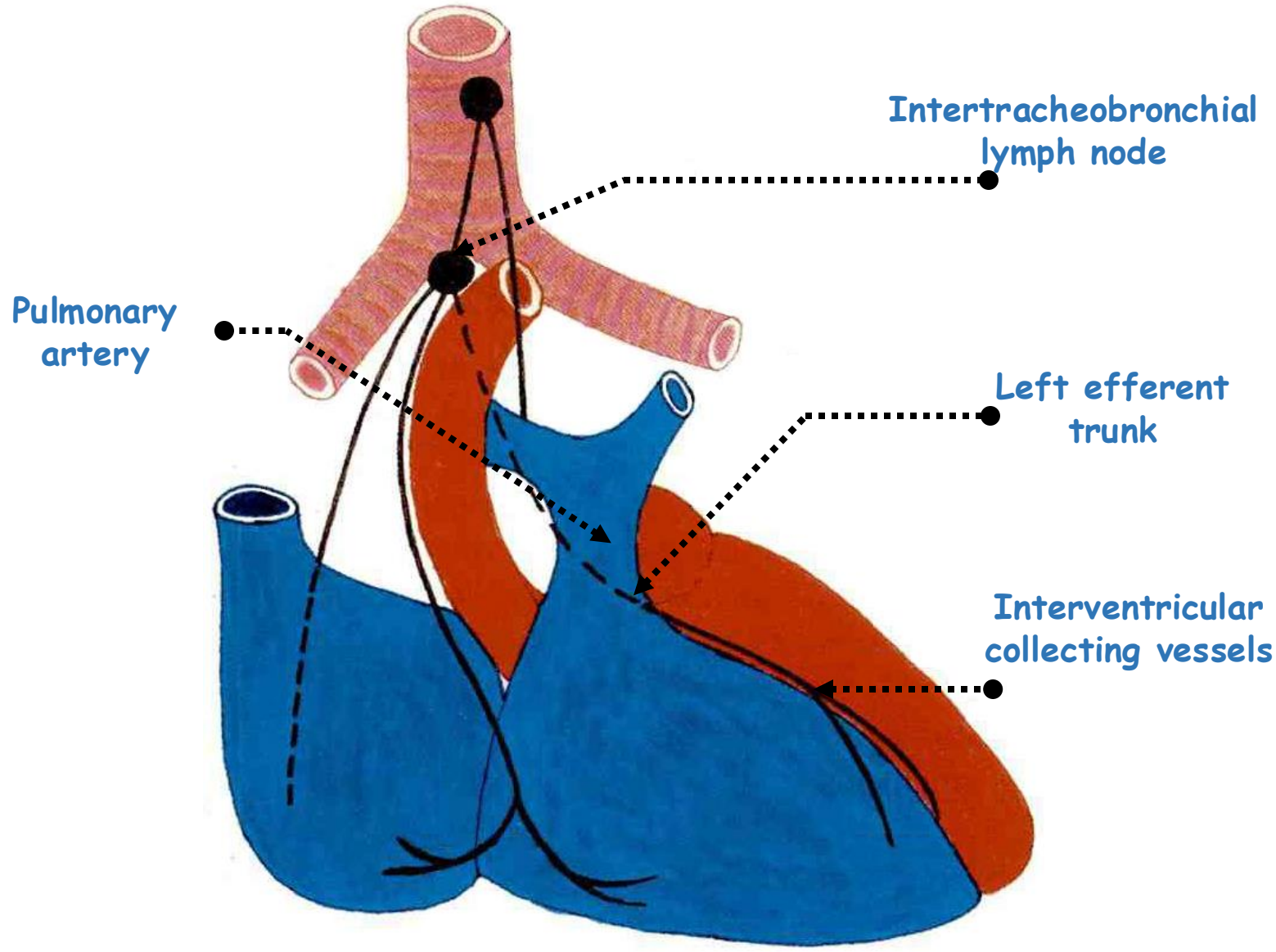
Schematic anterior view of the heart showing its lymphatic drainage pathways

A-LEFT MAIN ANTERIOR COLLECTING TRUNK

ORGIN – left part of the lymphatic network.

TRAJECTORY – ascends, passing around the left side and then the posterior surface of the pulmonary artery.

TERMINATION – in an intertracheobronchial lymph node.



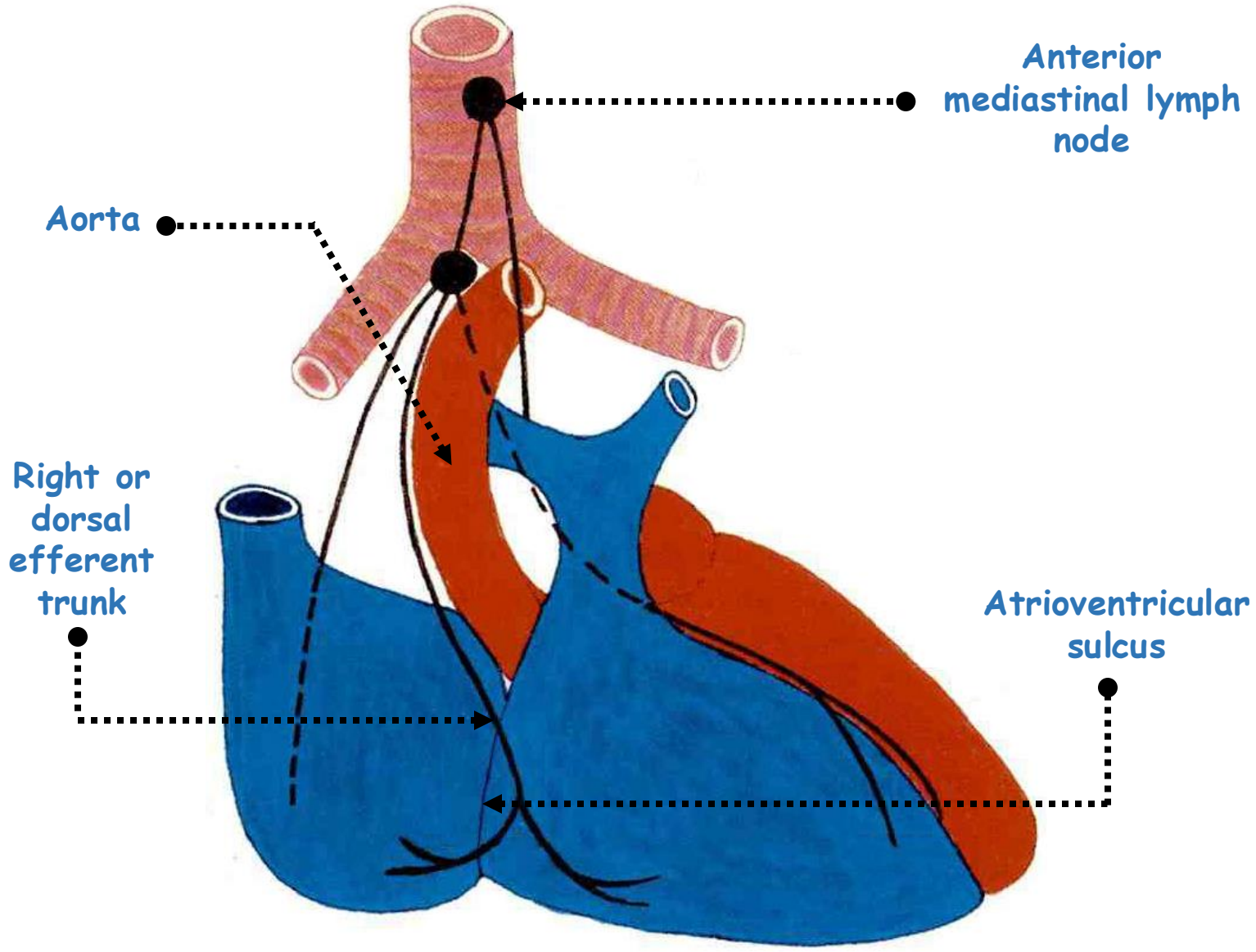
Schematic anterior view of the heart showing its lymphatic drainage pathways

B-RIGHT MAIN COLLECTING TRUNK

ORIGIN – right part of the lymphatic network.

COURSE – follows the right coronary artery in the atrioventricular sulcus, then ascends along the anterior surface of the aorta, along the interaortic-pulmonary sulcus.

TERMINATION – terminates in a precervical lymph node of the anterior mediastinal chain.



Schematic anterior view of the heart showing its lymphatic drainage pathways

IV- CLINICAL NOTES:

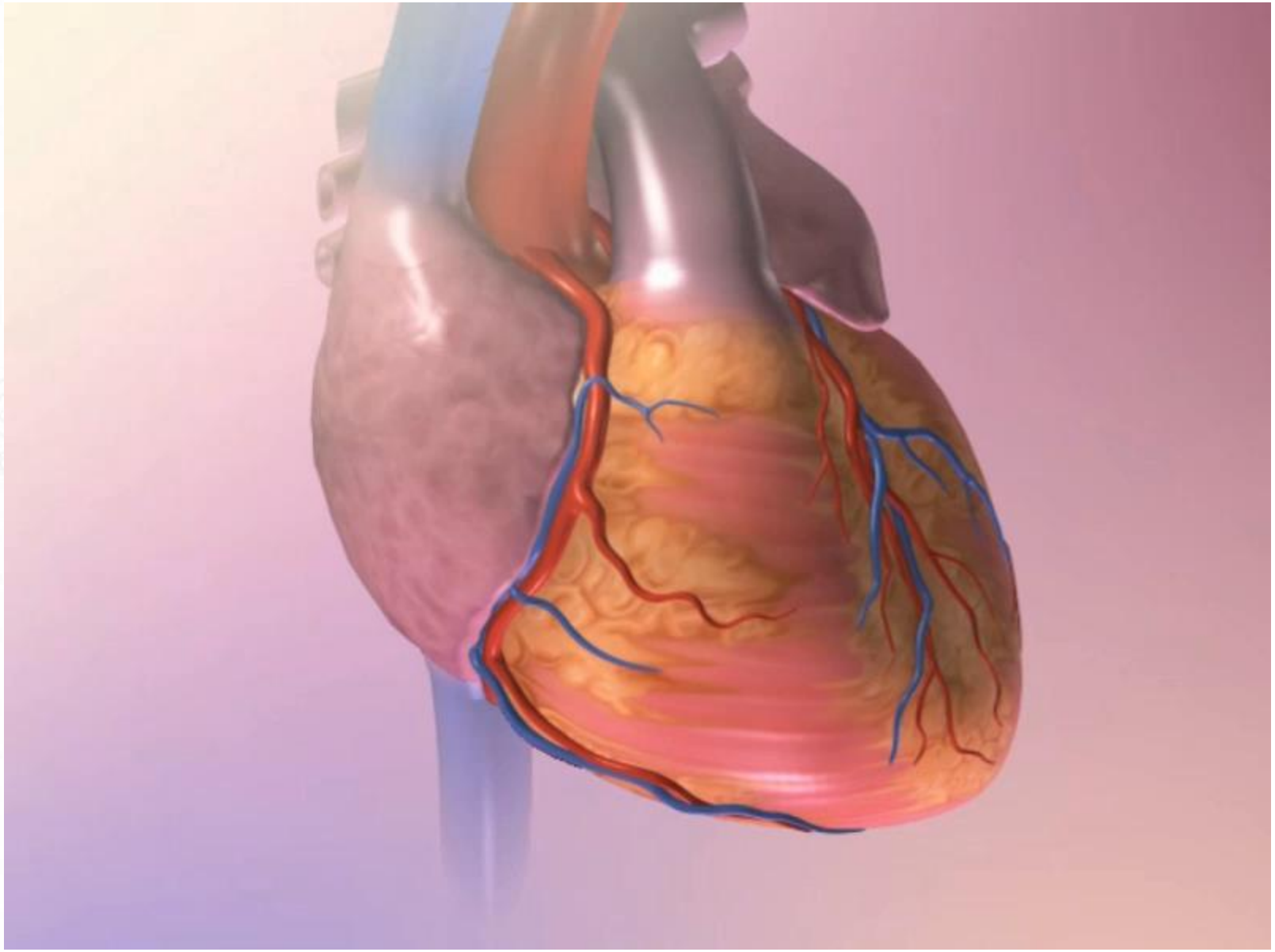
➢ Atherosclerosis

Atherosclerosis is a condition where fatty deposits, called plaques, build up inside the arteries.

Over time, this narrows the vessels, reduces blood flow, and increases the risk of heart attacks and strokes. It often develops silently and progresses slowly, making early detection essential.

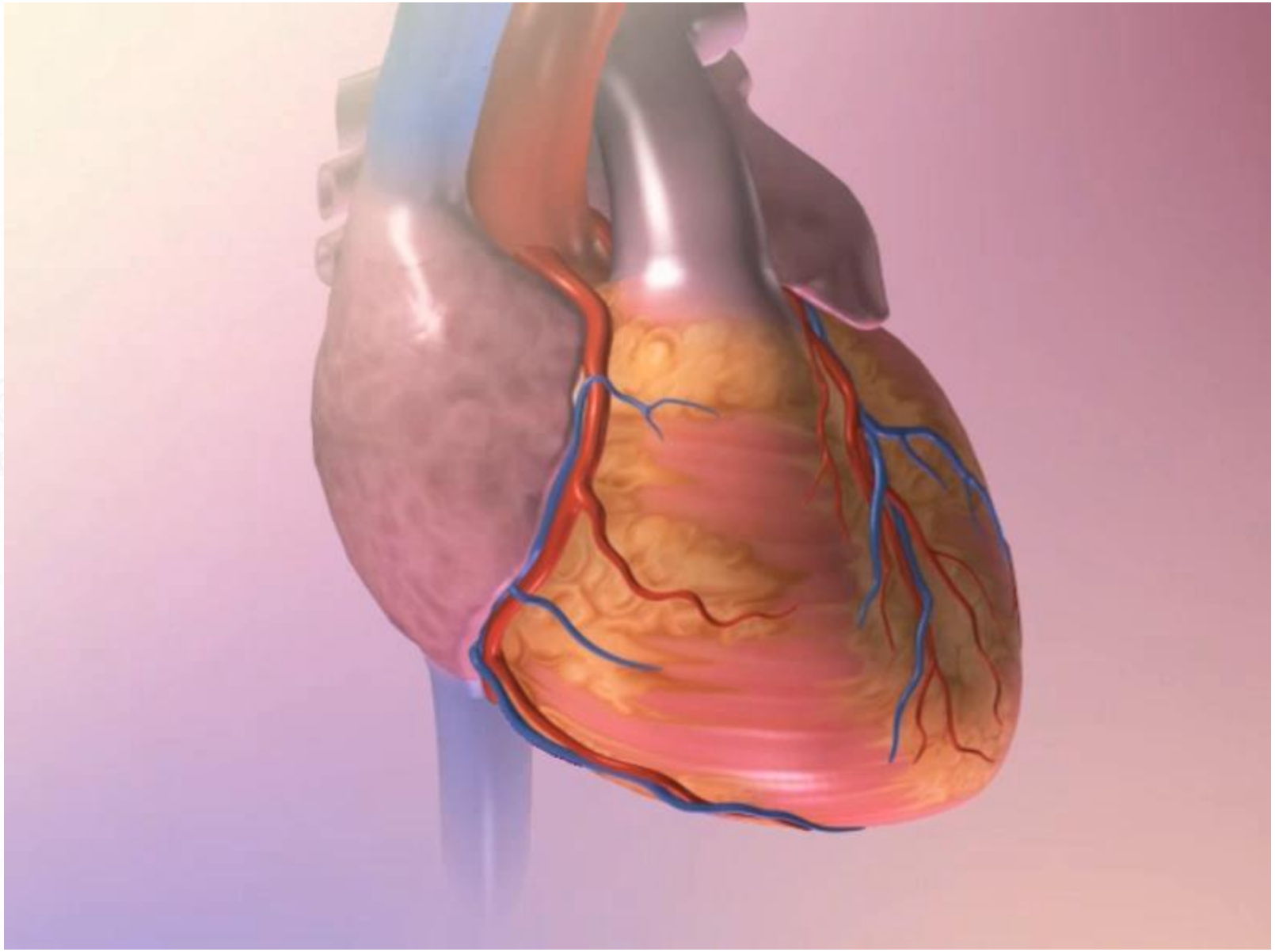
➢ Coronary artery disease.

Coronary artery disease occurs when the coronary arteries become narrowed or blocked, usually by atherosclerosis, reducing blood flow to the heart muscle.



➢ Myocardial infraction

A myocardial infarction, commonly known as a heart attack, happens when a coronary artery becomes suddenly blocked. This cuts off oxygen supply to part of the heart muscle, causing the tissue to become damaged or die. Immediate treatment is vital to limit the extent of the injury.



V- CONCLUSION:

The vessels of the heart include the coronary arteries, which supply blood to the heart muscle, and the cardiac veins, which return it to the right atrium. A lymphatic network also drains excess fluid, helping to maintain tissue balance.