



وسهلا

أهلا

الأستاذ الدكتور / يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

رئيس قسم التشريح وعلم الأنسجة وعلم الأجنة - كلية الطب - جامعة مؤتة - الأردن

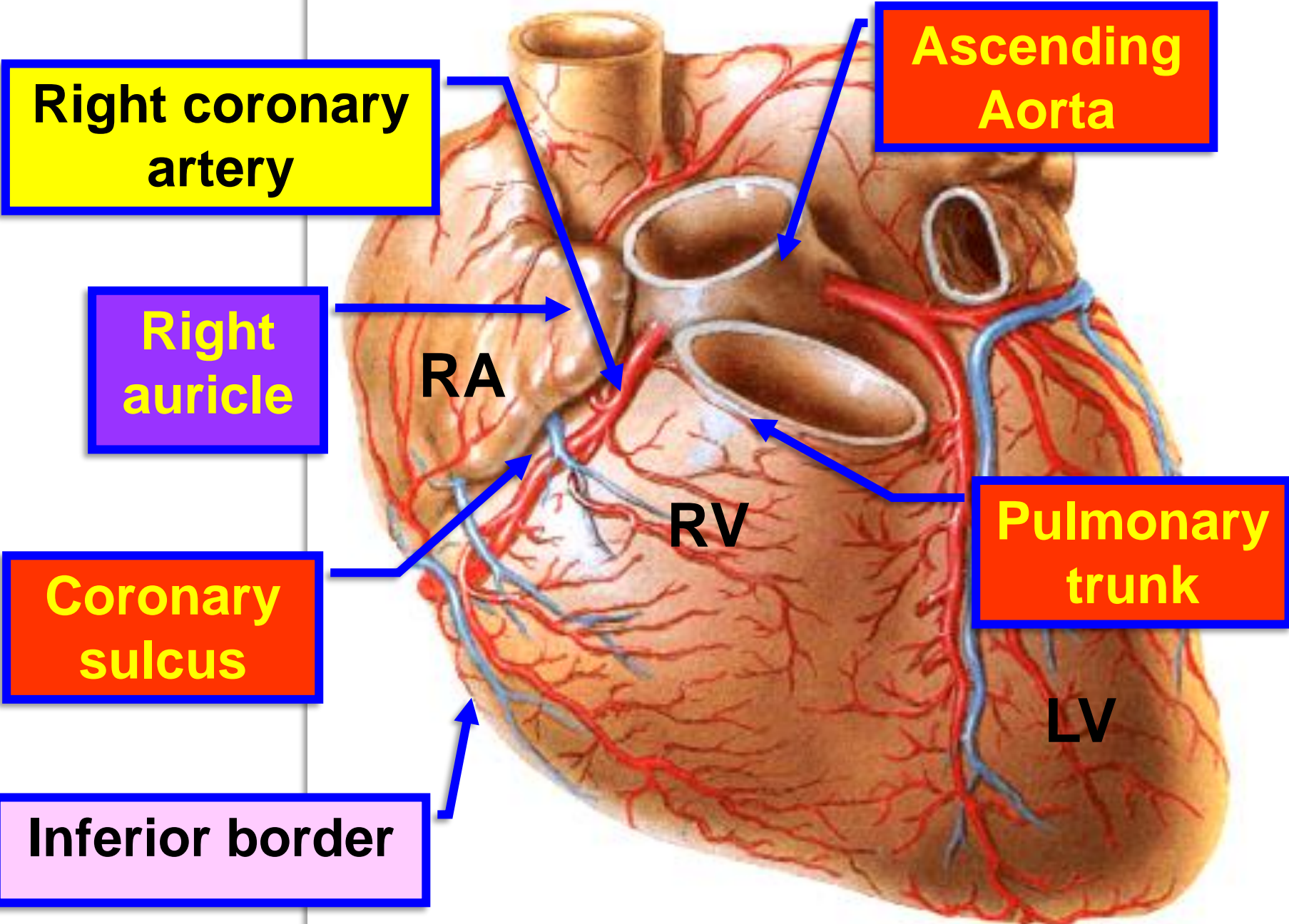
دكتورة من جامعة كولونيا المانيا

Dr. Youssef Hussein Anatomy اليوتيوب

اليوتيوب د. يوسف حسين



Blood supply
Heart



Right coronary artery

Ascending Aorta

Right auricle

RA

RV

Pulmonary trunk

Coronary sulcus

LV

Inferior border

Right coronary artery sternocostal surface

Circumflex br.
of left coronary
artery

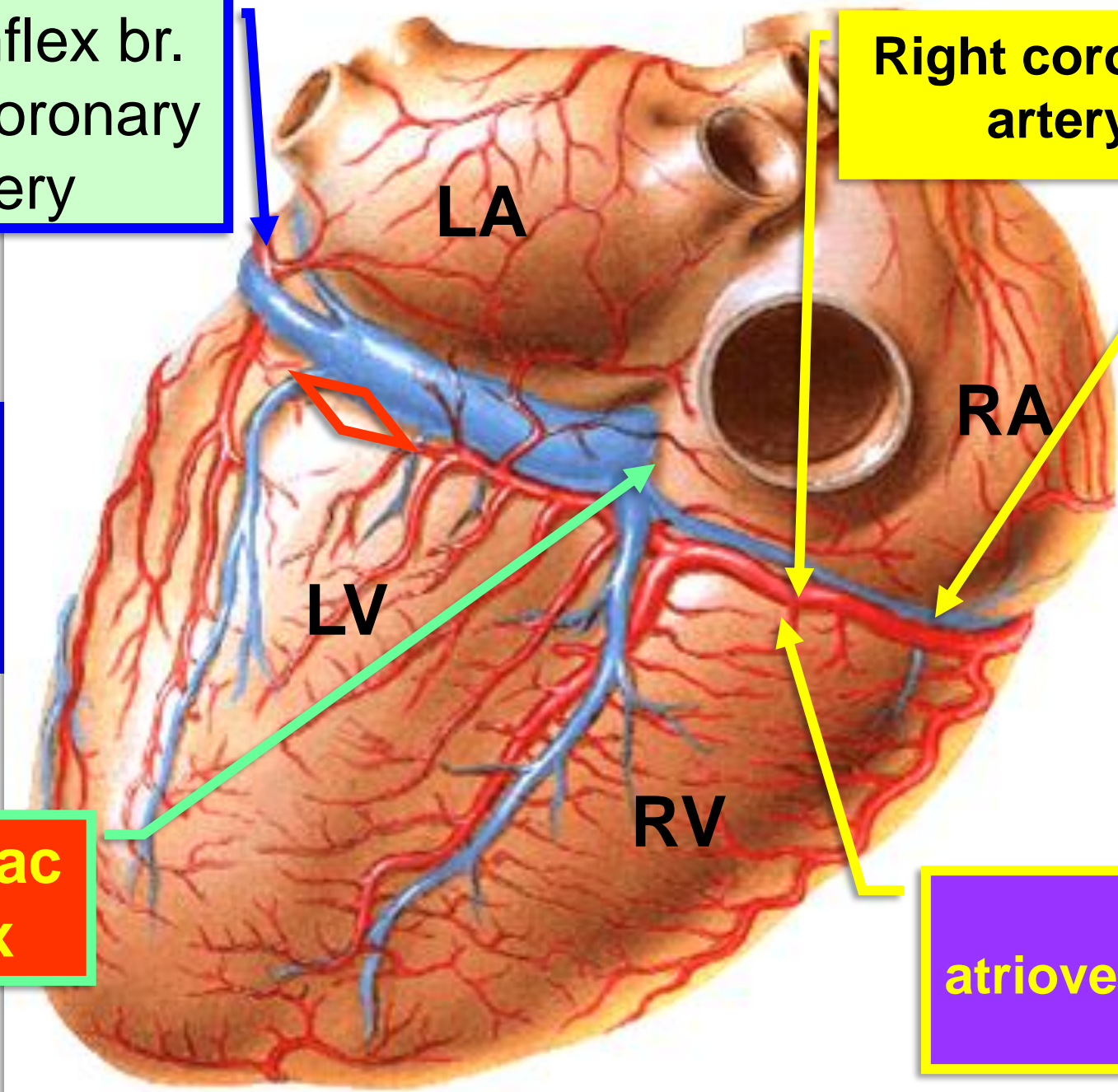
Right coronary
artery

Small cardiac
vein

Right coronary
artery
diaphragmatic
surface

Cardiac
crux

Posterior
atrioventricular
groove

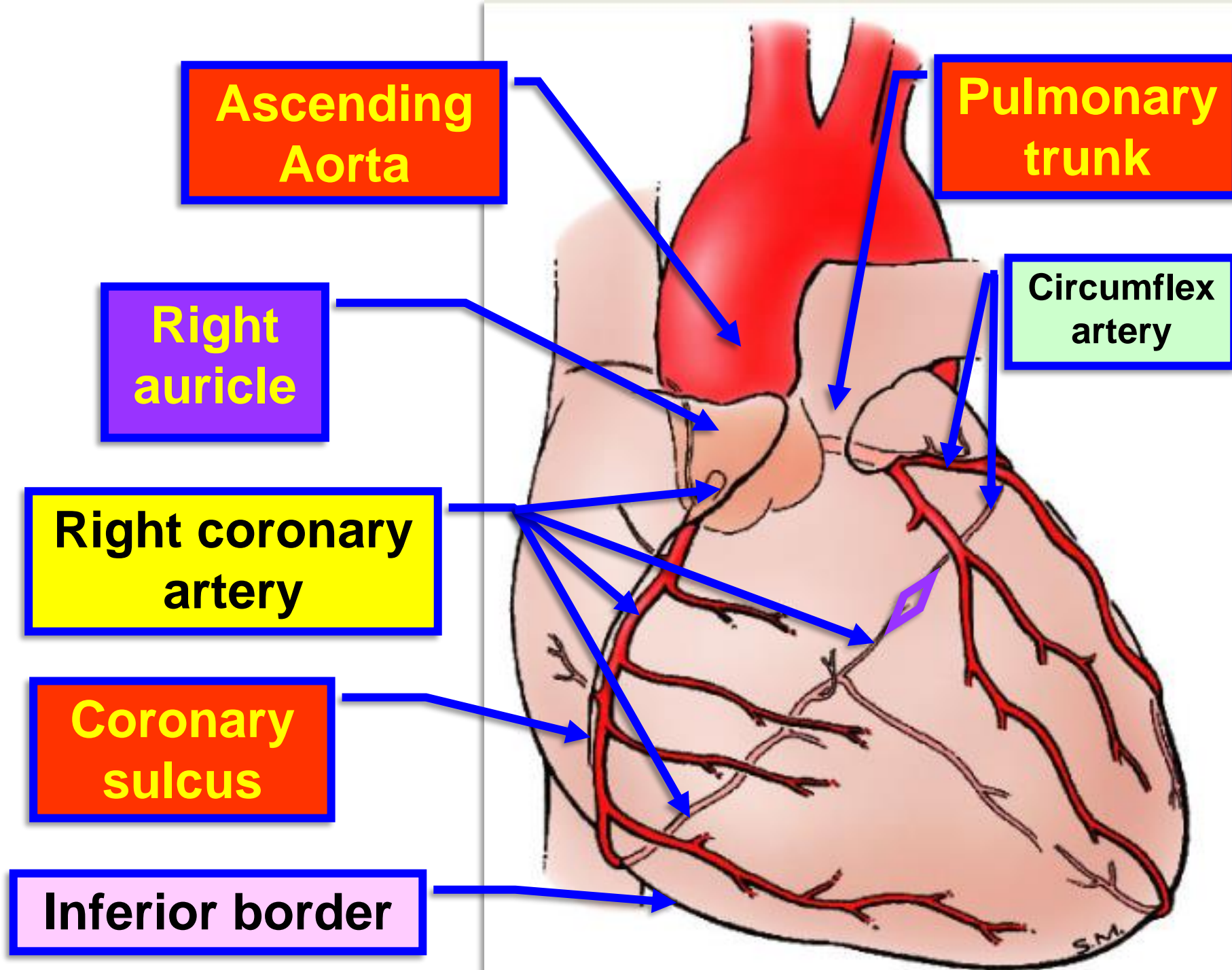


LA

RA

LV

RV



**Artery of SA node
%65**

Branches RCA on front

**Right coronary
artery**

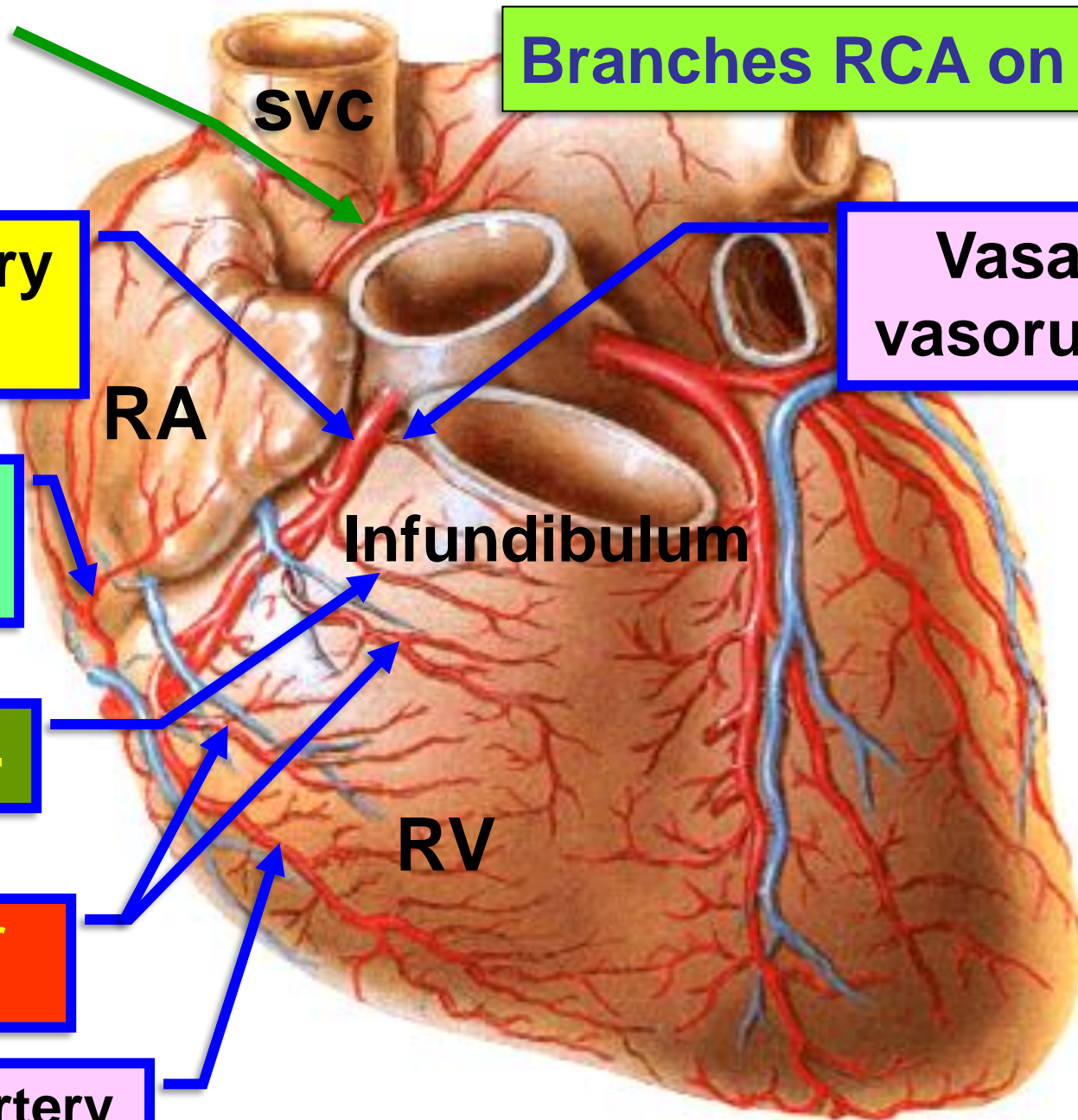
**Vasa
vasorum**

**Ant. Atrial
branches**

Right conus a.

**Ant. Ventricular
branches**

Rt. Marginal artery



SVC

RA

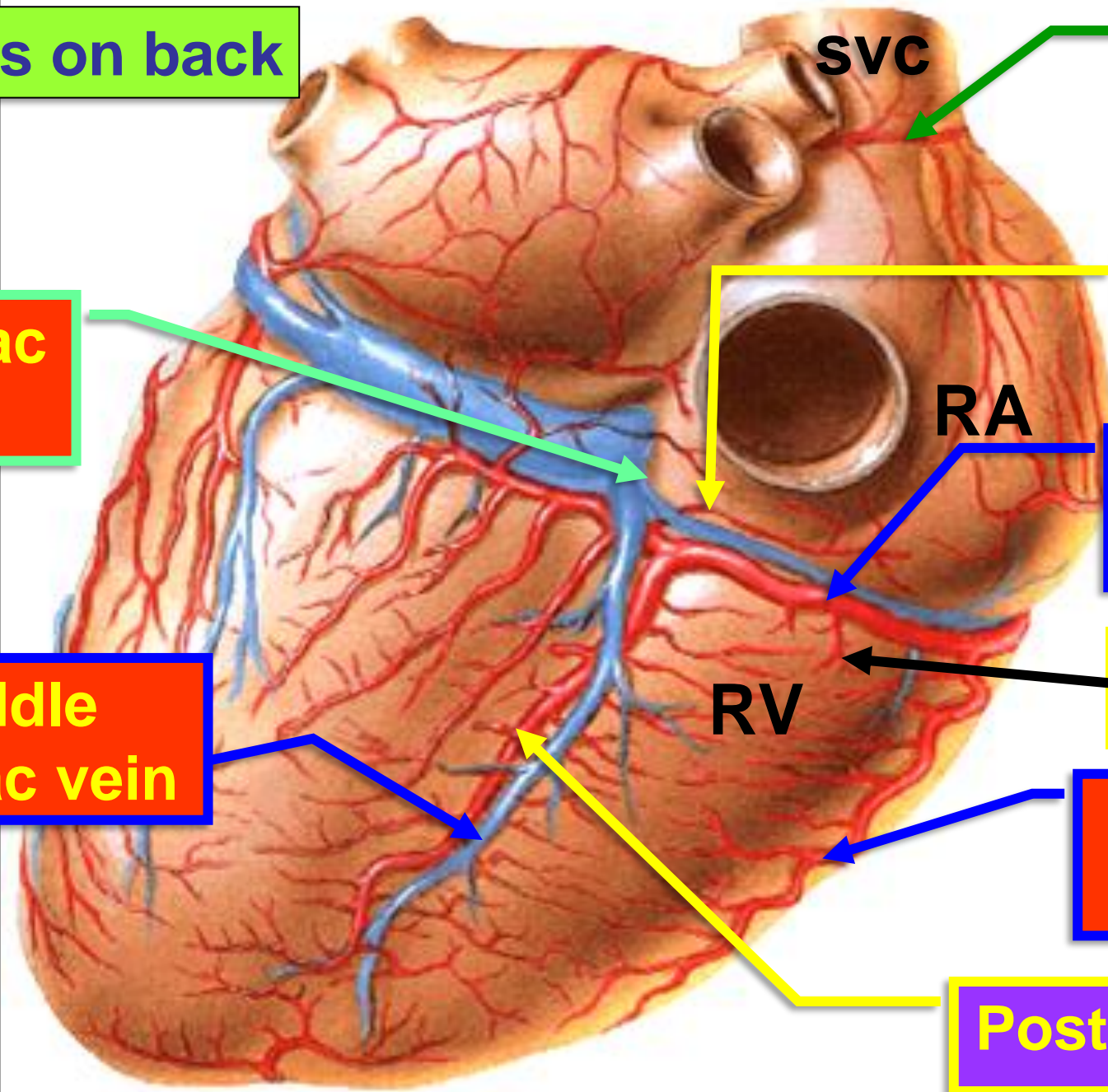
Infundibulum

RV

Branches on back

Cardiac crux

Middle cardiac vein



Artery of SA node

Post. Atrial branches

Right coronary artery

Post ventricular branches

Rt. Marginal artery

Posterior IV a.

SVC

RA

RV

- **Right Coronary Artery RCA**

** **Origin**; - It arises from the anterior aortic sinus of the ascending aorta just above the valve.

** **Course**; passes between pulmonary trunk and right auricle → anterior atrio-ventricular groove curves on lower border of the heart → passes in the posterior atrio-ventricular groove with **small cardiac vein** → **ends** by anastomosing with the circumflex branch of the left coronary artery.

** **Branches**:

1- Vasa vasorum: to the ascending aorta and pulmonary trunk.

2- Nodal branch: to the S. A. node (65% of people).

3- Atrial branches to the anterior and posterior wall of the right atrium

4- Ventricular branches to the anterior and posterior wall of the right ventricle.

5- Right (Acute) Marginal artery : runs along the inferior border to the right ventricle.

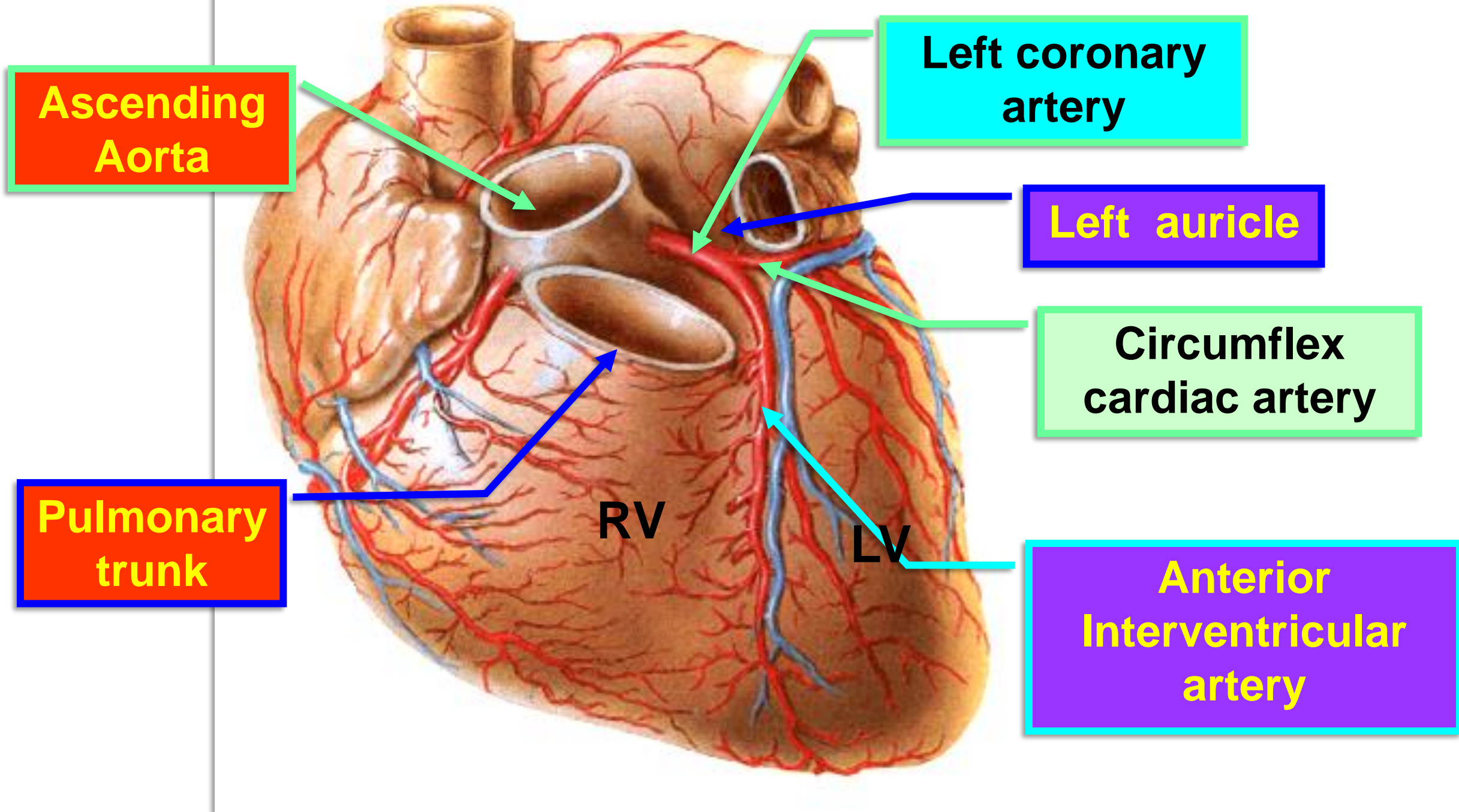
6- Posterior interventricular artery At **crux** of the heart (**junction of interatrial & interventricular septa**)

: It passes in the posterior interventricular groove with **middle cardiac vein** and supplies;

a- Posterior wall of both right and left ventricles.

b- The posterior **1/3** of the interventricular septum.

7- Right conus artery supplies the right ventricular outflow (infundibulum).



Ascending Aorta

Left coronary artery

Left auricle

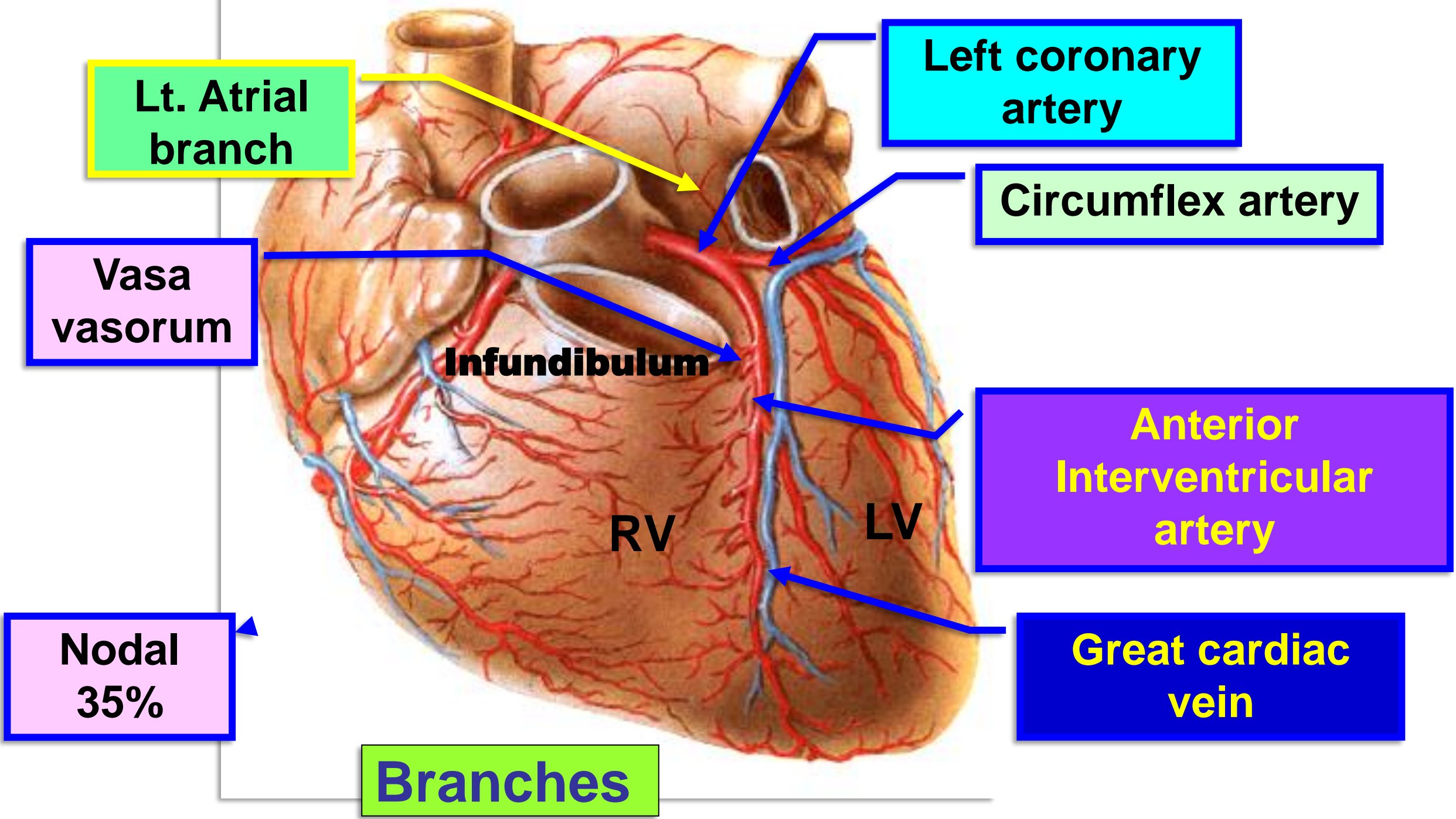
Circumflex cardiac artery

Pulmonary trunk

Anterior Interventricular artery

RV

LV



Lt. Atrial branch

Left coronary artery

Circumflex artery

Vasa vasorum

Infundibulum

Anterior Interventricular artery

RV

LV

Great cardiac vein

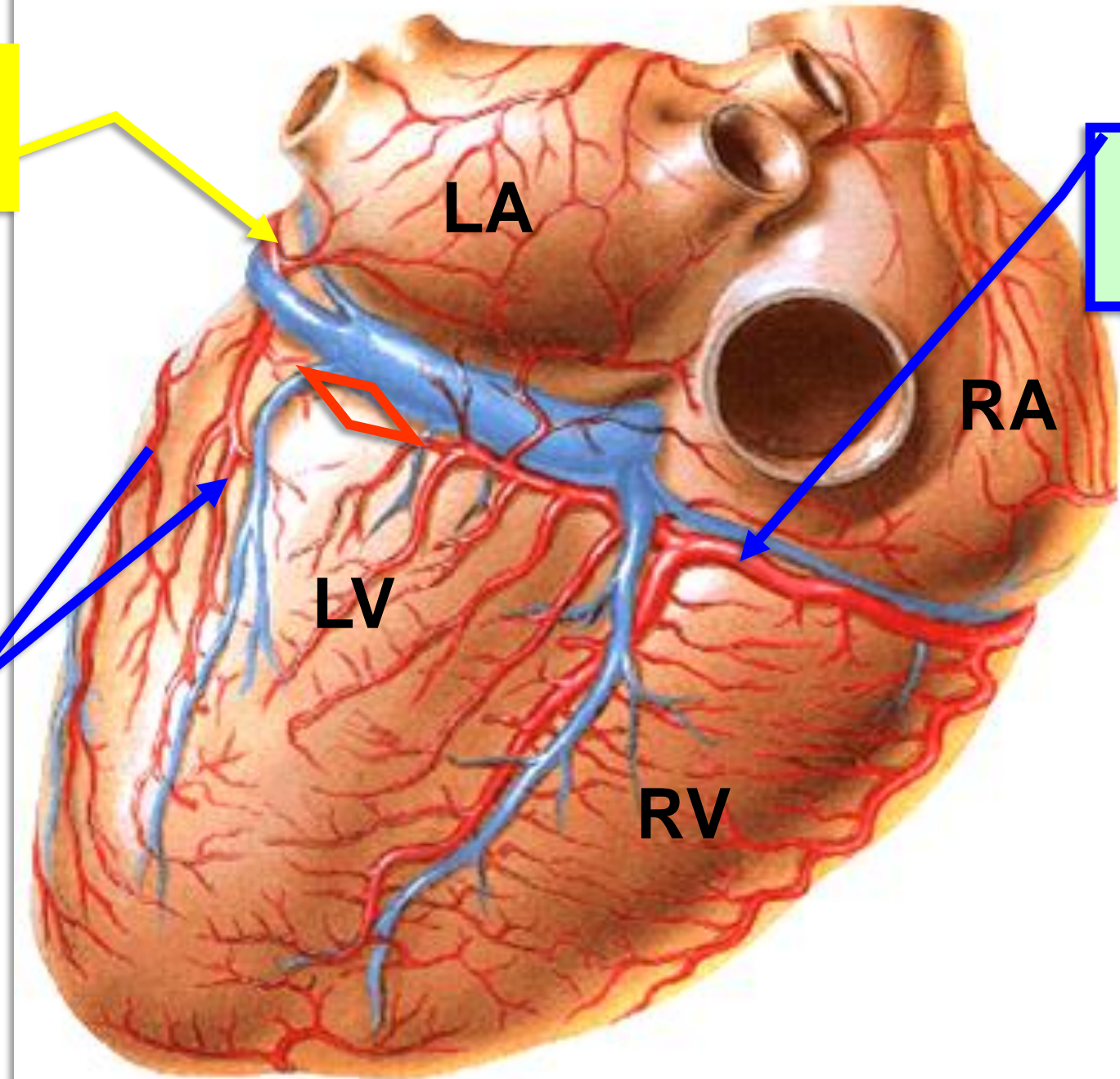
Nodal 35%

Branches

**Circumflex
cardiac artery**

**Right coronary
artery**

**Lt. Marginal
artery**



- **Left Coronary Artery LCA**

**** Origin;** It arises from the left posterior aortic sinus of the ascending aorta.

**** Course:** passes behind the pulmonary trunk → between the pulmonary trunk and the left auricle → **ends** by dividing into 2 branches;

a- Anterior interventricular artery.

b- Circumflex artery.

**** Branches** of the left coronary artery:

1- Vasa vasorum: to the pulmonary trunk and ascending aorta

2- Nodal branch: to the S. A. node (35% of people).

3- Atrial branches to the anterior wall of the left atrium.

4- Anterior interventricular artery (LADA): It supplies,

a- Anterior wall of both right and left ventricles (**diagonal artery**).

b- Anterior **2/3** of the interventricular septum.

5- The circumflex cardiac artery: It supplies

a) Posterior wall of the left atrium and left ventricle.

b) **Left (obtuse) marginal artery** to the left ventricle.

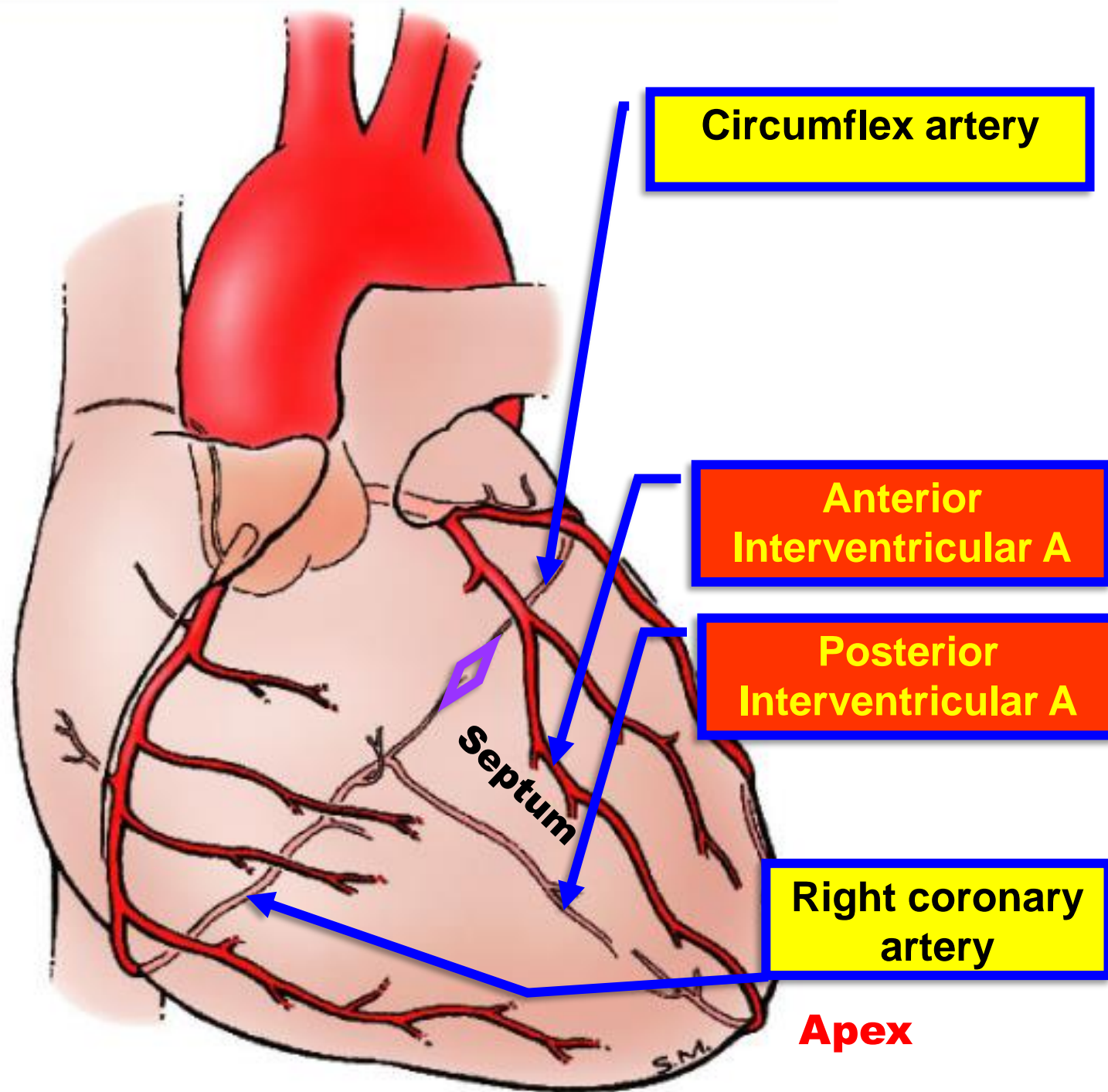
- **Anastomosis between branches of coronary arteries**

It is **poor Sites of anastomosis;** and **not adequate** compensate any obstruction of a large artery.

1- In the posterior atrio-ventricular groove, between right coronary and circumflex arteries.

2- In the inter-ventricular septum; between anterior and posterior inter-ventricular arteries.

3- Near the apex of the heart, between the anterior and posterior inter-ventricular arteries.



- **Why the coronary arteries filling occur during diastole:**

- a- The openings of the arteries closed during systole.

- b- The wall of the heart is relaxed and received its blood during diastole.

- **Some of Variations in the posterior inter-ventricular artery**

- a- It is a branch from the **right coronary artery** (the heart is called **right dependent or dominant**).

- b- It may be a continuation of the **circumflex artery** (the heart is called **left dependent or dominant**).

- In rare case the **right coronary arises** from the **left coronary** (the heart is called **preponderant heart**).

- **Third coronary artery** (When **Right conus artery** arises separately from the anterior aortic sinus with right coronary artery)

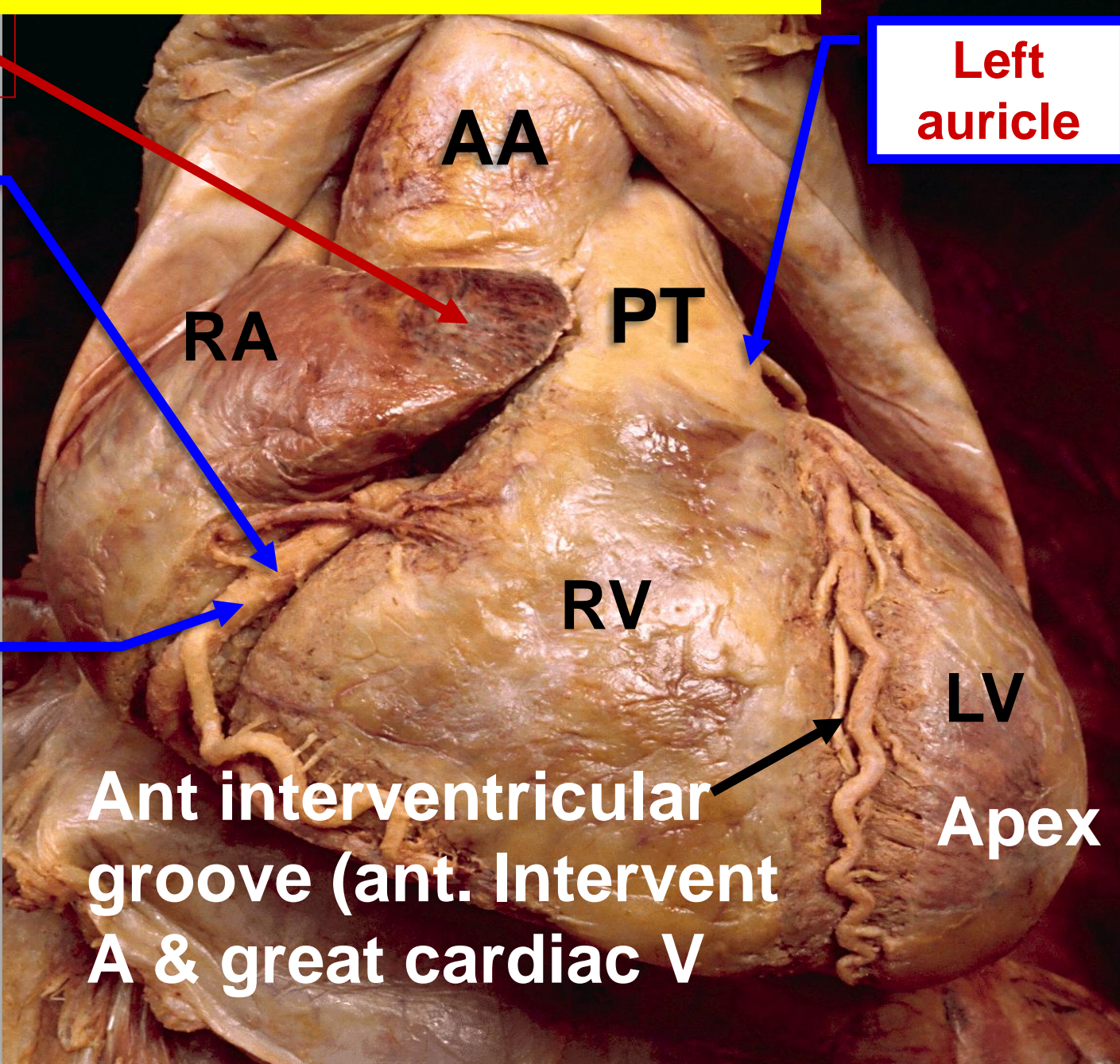
Sternocostal surface

R. auricle

Left auricle

Right coronary artery

A-V groove (coronary)



AA

RA

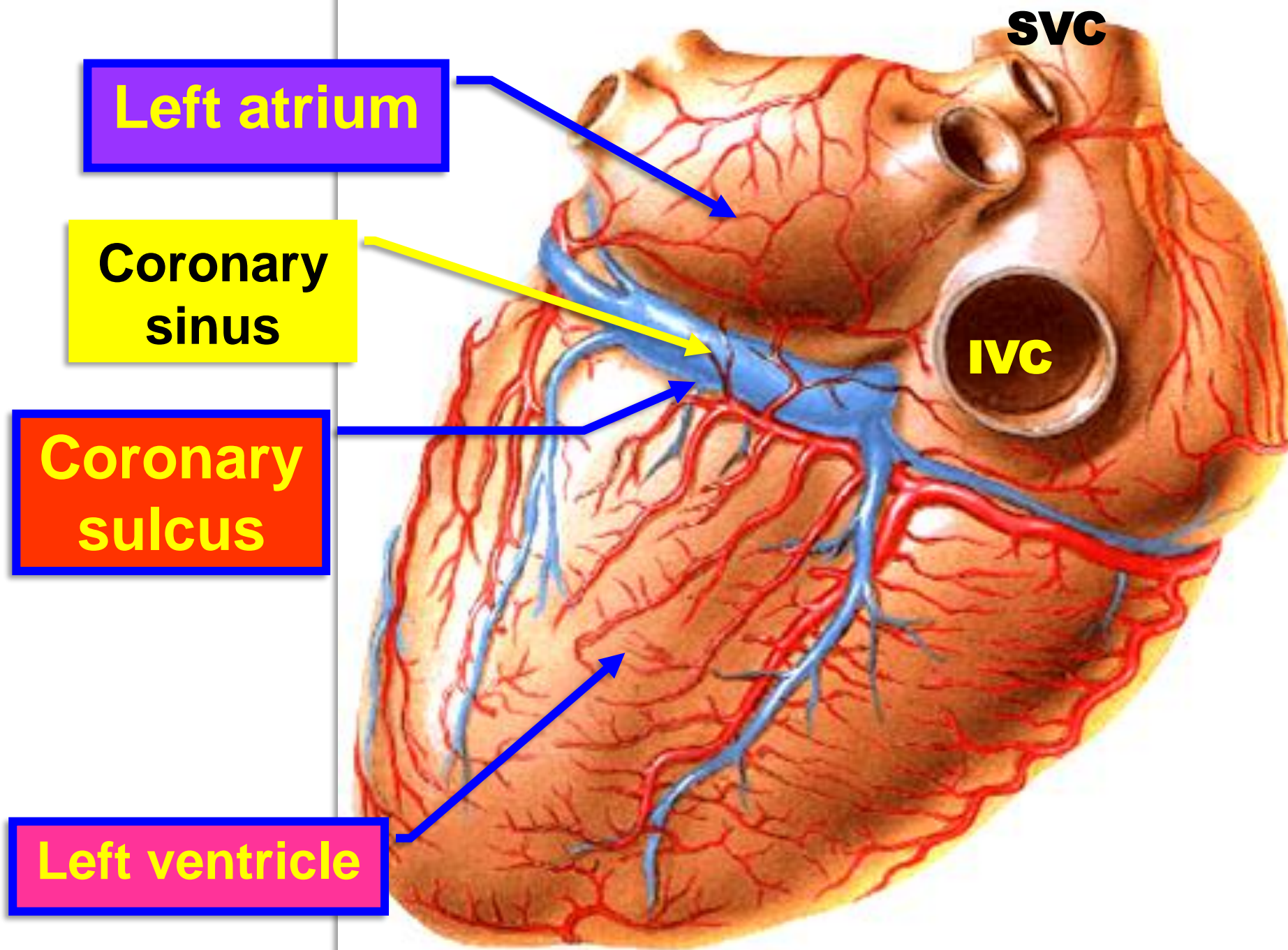
PT

RV

LV

Ant interventricular groove (ant. Intervent A & great cardiac V)

Apex



Left atrium

Coronary sinus

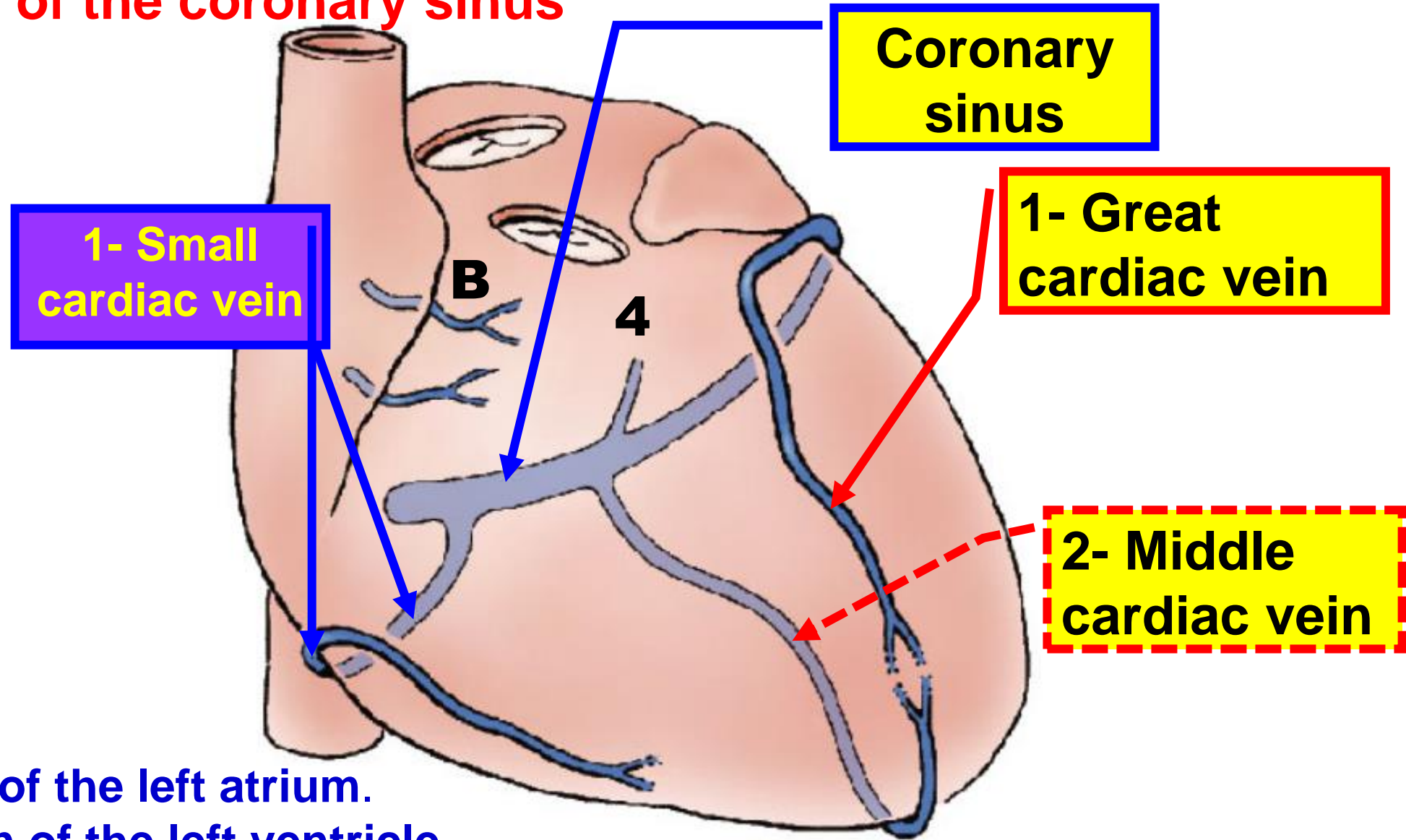
Coronary sulcus

Left ventricle

SVC

IVC

A- Tributaries of the coronary sinus



- 4- Oblique vein of the left atrium.
- 5- Posterior vein of the left ventricle.

B- Anterior cardiac vein

Venous Drainage of the Heart (CORONARY SINUS)

**** Site;** It lies in the posterior atrio-ventricular groove between LA & LV.

****** It ends in the right atrium (its opening has a valve).

**** Tributaries of the coronary sinus,**

a- Great cardiac vein:- ascends in the **anterior** interventricular groove with the **anterior** interventricular artery.

b- Middle cardiac vein: runs in the **posterior** inter-ventricular groove with the **posterior** inter-ventricular artery.

c- Small cardiac vein: Along the **inferior** border of the heart. It turns backwards with the right coronary artery.

d- Oblique vein of the left atrium

e- Posterior vein of the left ventricle.

2- Anterior cardiac veins: open directly into the right atrium.

3- Venae cordis minimae (Thebesian veins): very small veins that open directly into chambers of heart. These veins are responsible for non-oxygenated blood to the oxygenated blood. Their orifices into the chambers are termed foramina venarum minimarum

- **Angina**

Chest pain due to ischemic myocardium, coronary artery narrowing or spasm; no necrosis.

f Stable: Exertional chest pain, feel like pressure or squeezing in your chest. Angina pain may even feel like indigestion, resolving with rest or nitroglycerin. ECG

f Vasospastic: occurs at rest due to coronary artery spasm. Tobacco smoking is a risk factor; hypertension and hypercholesterolemia. ECG

f Unstable: thrombosis with incomplete coronary artery occlusion; no cardiac biomarker elevation; increase frequency or intensity of chest pain or any chest pain at rest.

- **Myocardial infarction**

- Commonly occluded coronary arteries: LAD > RCA > circumflex.
- Symptoms: diaphoresis, nausea, vomiting, severe retrosternal pain, pain in left shoulders, arms, neck, jaw, abdomen or back, shortness of breath, fatigue and cold sweating. Elevation of cardiac biomarker (enzyme) Creatine kinase CK, Creatine phosphokinase CPK, Cardiac Troponin

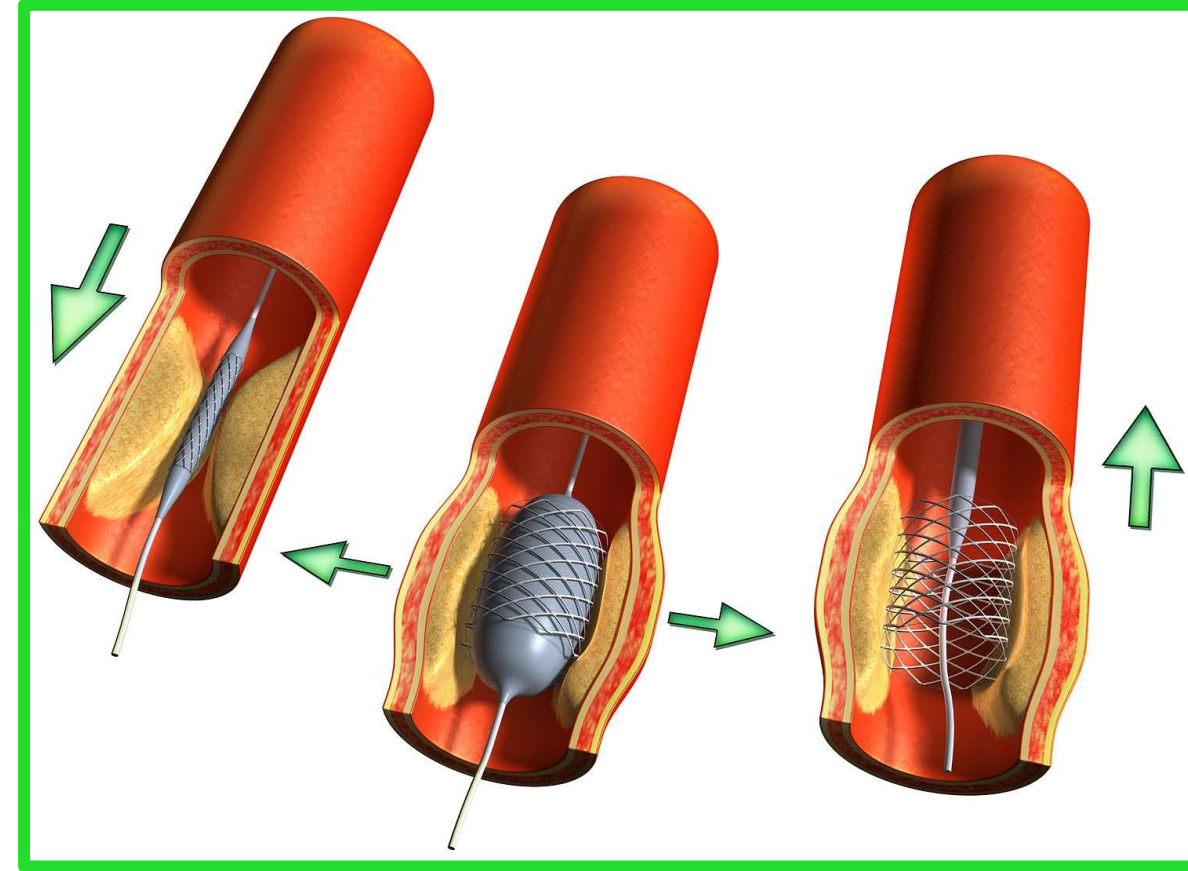
Coronary Angiography

➤ تصوير الأوعية بالصبغة

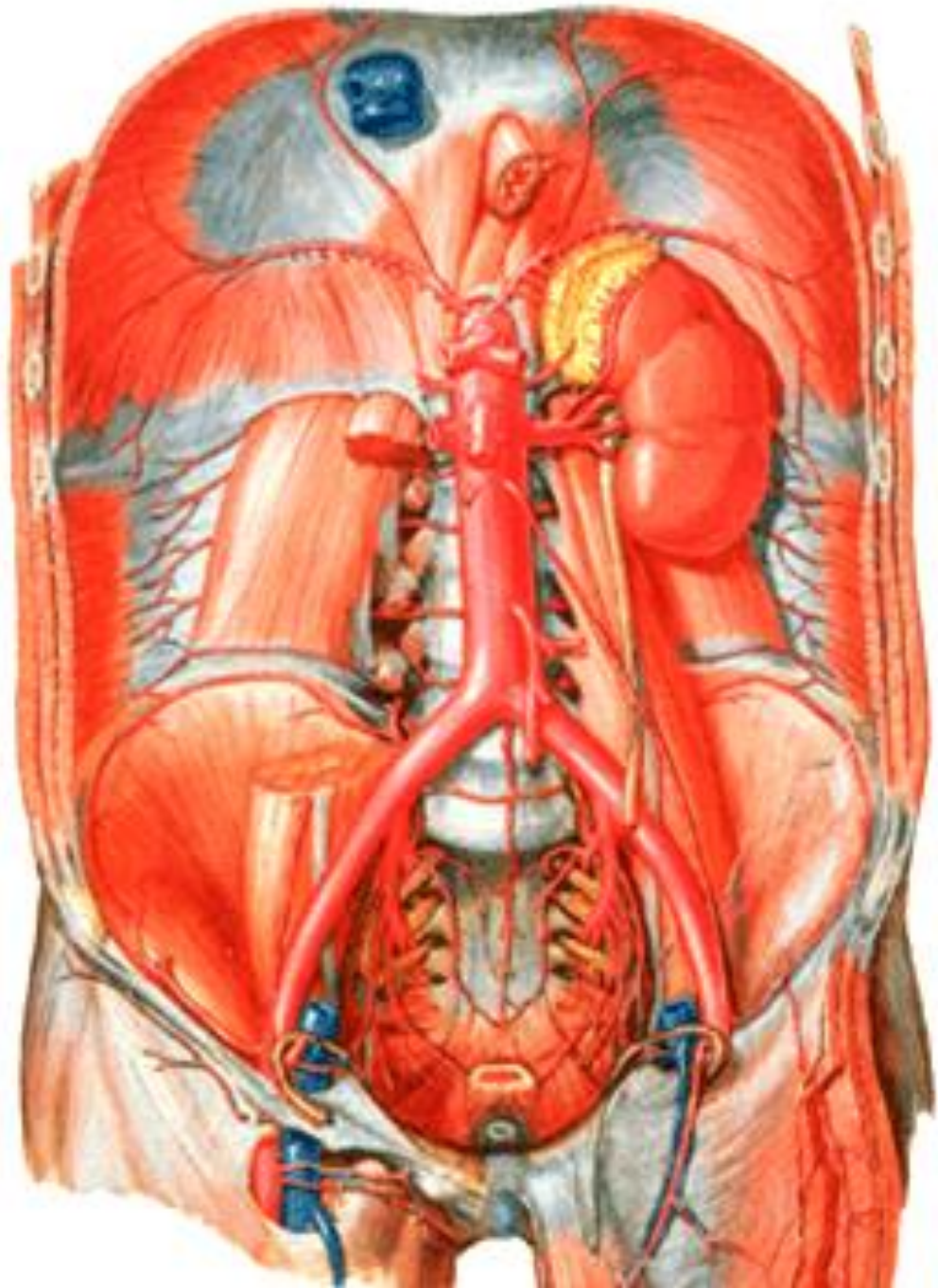
- The coronary arteries can be visualized with A catheter which is passed into **the ascending aorta** via **the femoral artery** in the inguinal region.
- Under **fluoroscopic control**, the tip of the catheter is placed just inside the opening of a **coronary artery**.
- A small injection of **radiopaque contrast material** to show the lumen of the artery and its branches, as well as any stenotic areas that may be present.
- Insufficiency of blood supply to the heart (**myocardial ischemia**) may result in **myocardial infarction**.
 - Anterior IV (LADA) branch of the LCA **(40-50%)**.
 - RCA **(30-40%)**.
 - Circumflex branch of the LCA **(15-20%)**.

- Surgeons use **transluminal coronary angioplasty** in which they pass a **catheter** with a small **inflatable balloon** attached to its tip into the obstructed coronary artery
- When the catheter reaches the obstruction, the **balloon is inflated**, flattening the atherosclerotic plaque **against** the vessel's wall.
- The vessel is stretched to increase the size of the lumen, thus improving blood flow.

Coronary Angioplasty



دعامة (قسطرة) القلب



➤ **Cardiac Catheterization**

Femoral artery ----- External iliac artery ---
---- Common iliac artery ----- Abdominal
aorta ----- Descending thoracic aorta -----
Arch of aorta ----- Ascending aorta ----
Coronary arteries.

➤ **Beginning of femoral artery** as a
continuation of the external iliac artery at
the midinguinal point (between
symphysis pubis & ASIS)

Thigh is Slight flexion, abduction, lateral rotation



تصوير

الدعامة القلبية هي أنبوب معدني صغير قابل للتمدد منها الشبكات السلكية تستخدم لتوسيع الشريان التاجي و هي تقلل من اصابة المريض بالسكتة القلبية تضيق الشريان التاجي سبب ترسيب المواد الدهنية على جدار الشريان او حدوث جلطة دموية في الشريان

تترك الدعامة تضخ كمية من الدواء في المكان الضيق لضمان بقاء الشريان مفتوح انواع الدعامات

1- الدعامة المعدنية: هي عبارة عن شبكة معدنية يتم وضعها في المكان المصاب بانسداد الشرايين حتى يظل الشريان مفتوح

2- الدعامة المعدنية الدوائية: مثل الدعامة المعدنية ولكنها تضخ كمية من الدواء لمنع انسداد الشريان مرة اخري

3- الدعامة الحيوية الدوائية هي دعامة تصنع من اللدائن القابلة للذوبان والتي تذوب على مدار من 3 شهور حتى عامين وهي تلقي نجاح كبير