



الأستاذ الدكتور يوسف حسين

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

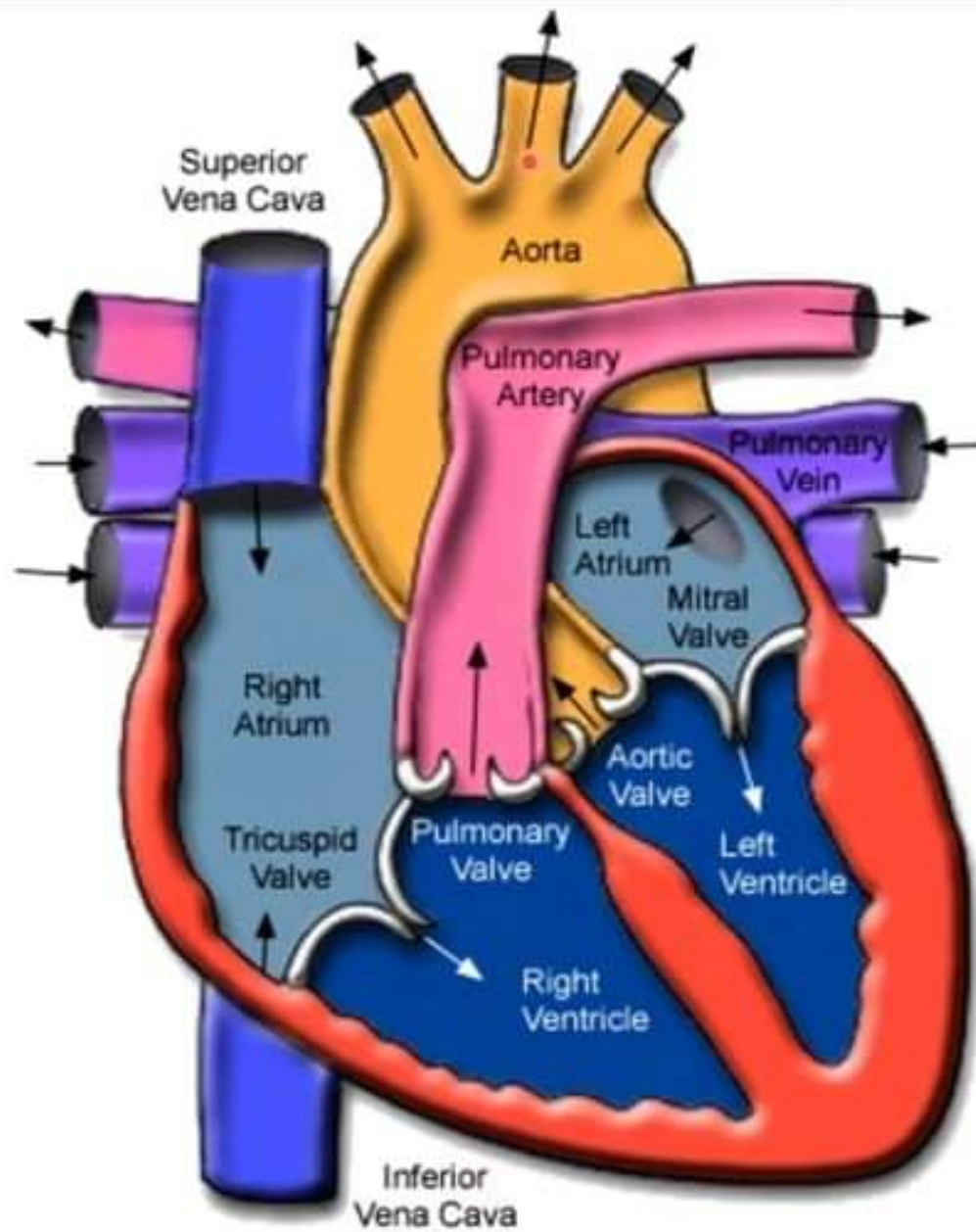
رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

مساعد العميد لشؤون الطلاب والامتحانات - كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

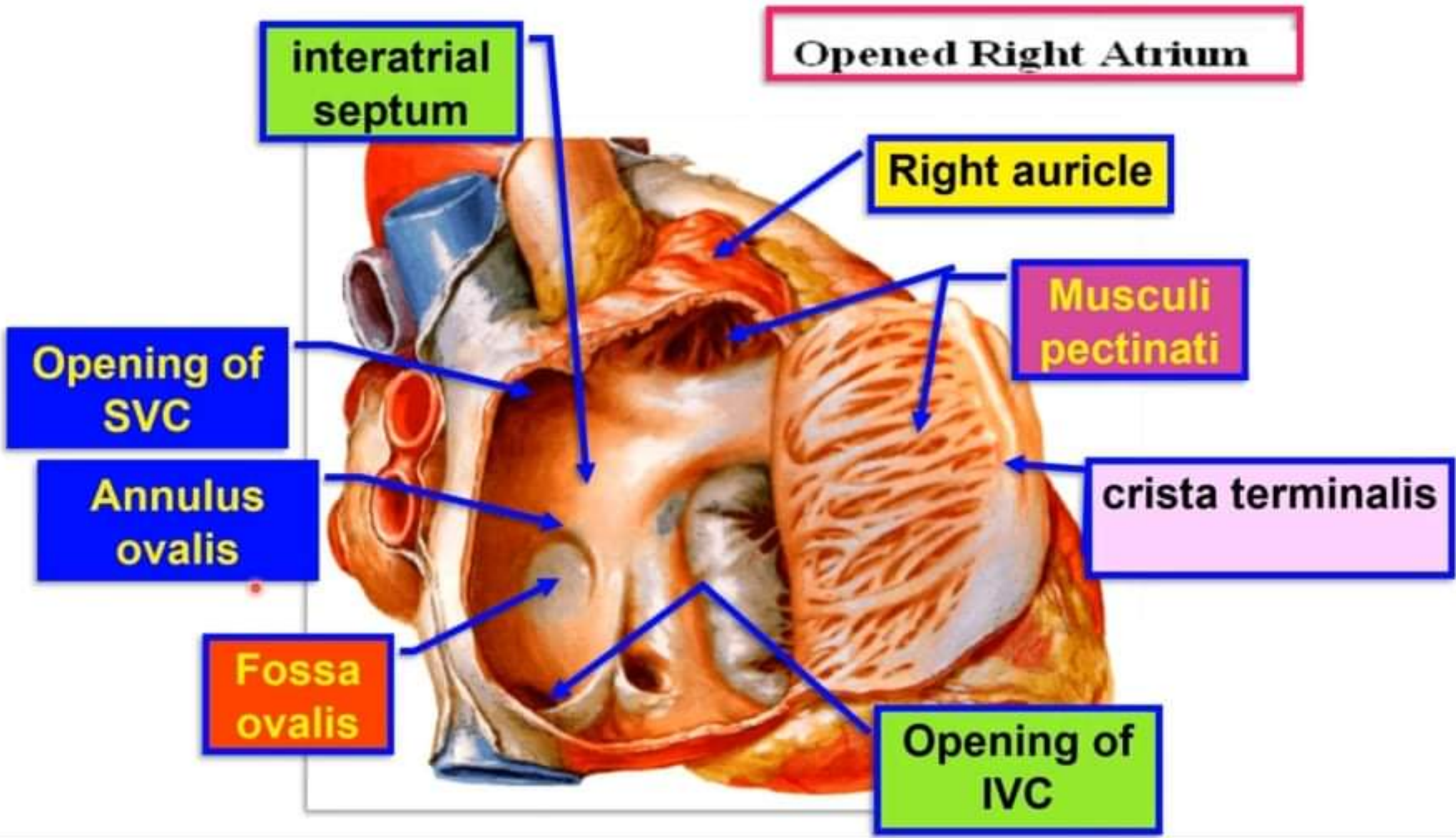
Dr. Youssef Hussein Anatomy اليوتيوب

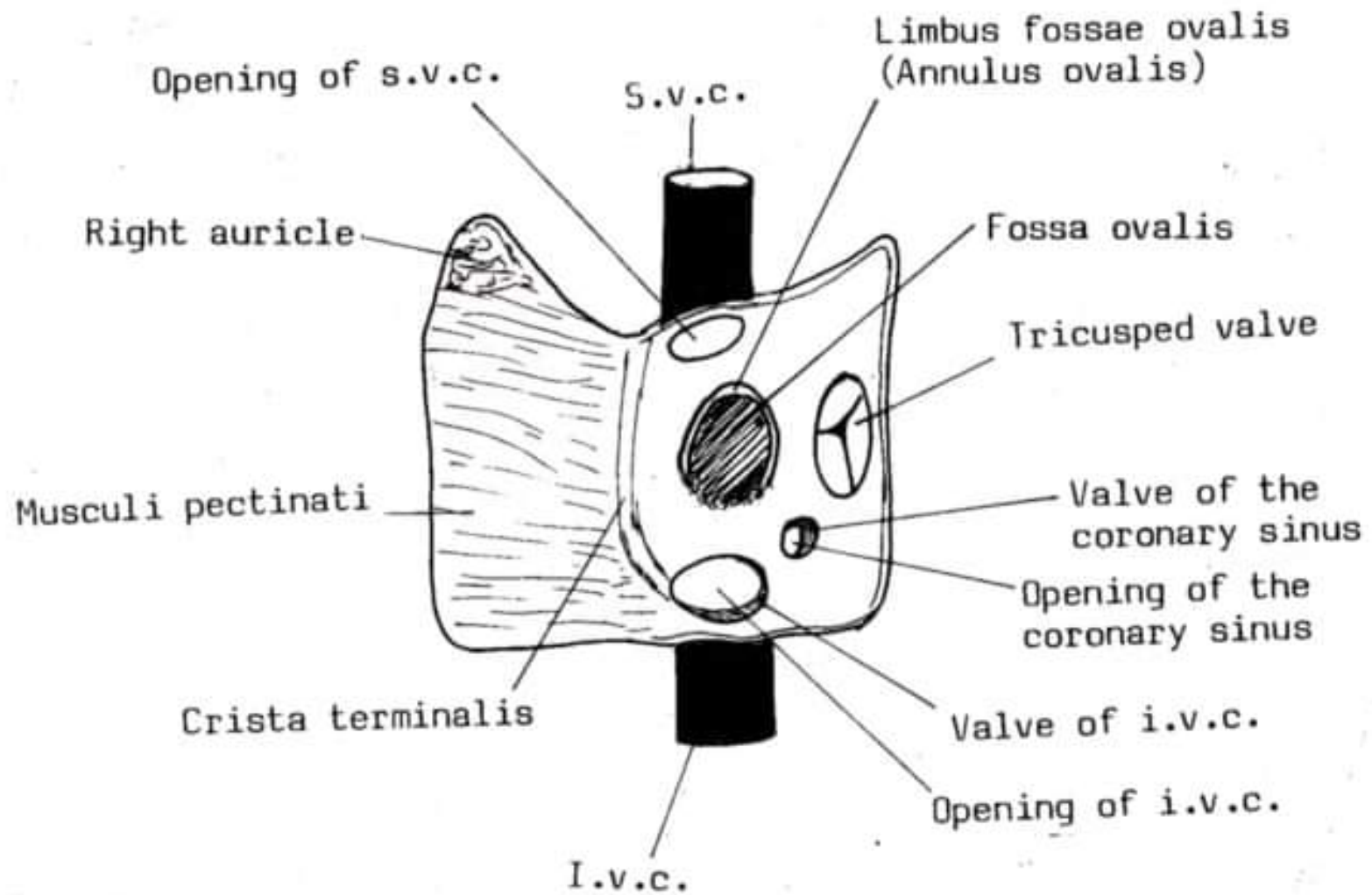
جروب الفيس د. يوسف حسين (استاذ التشريح)



Chambers of heart

**Cavity of
Right Atrium**





Cavity of the right atrium.

**** Cavity of the right atrium;**

A) Crista terminalis;

- It is a muscular ridge extending from opening of SVC to the opening of IVC.
- It contains **S.A. node** in its upper part.
- It is represented on the outer surface by a groove called **sulcus terminalis**.

- It divides the cavity into 2 parts:

1- Rough anterior part (musculi pectinate) is formed by muscular bundles.

- They extend from the crista terminalis to the **right auricle**.

2- Smooth posterior part:

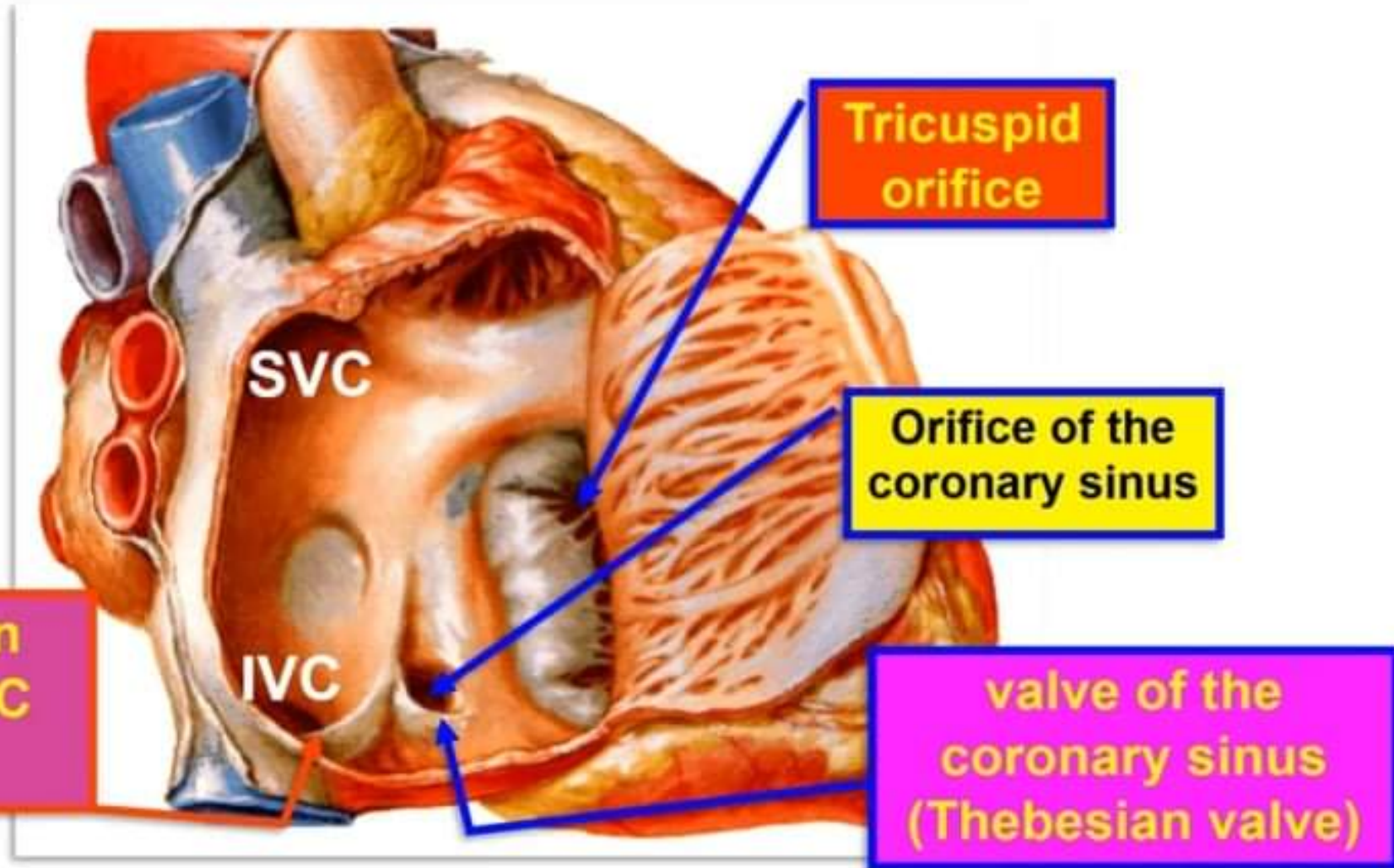
- It receives the openings of the great veins (**SVC, IVC & coronary sinus**).

B) Interatrial Septum; between the two atria; it represented the following features;

a- Fossa ovalis is an oval depressed area due to closed foramen ovale.

b- Annulus ovalis, a prominent margin above and on the sides of the fossa ovalis due to edge of septum secundum.

- **Openings of the right atrium**



- **Openings of the right atrium**

1- Opening of the superior vena cava: at the upper part of the posterior wall. It has no valves.

- **Surface anatomy**, it lies behind the right 3rd sternocostal junction.

2- Opening of the inferior vena cava: at the lower part of the posterior wall. It is guarded by **Eustachian valve**.

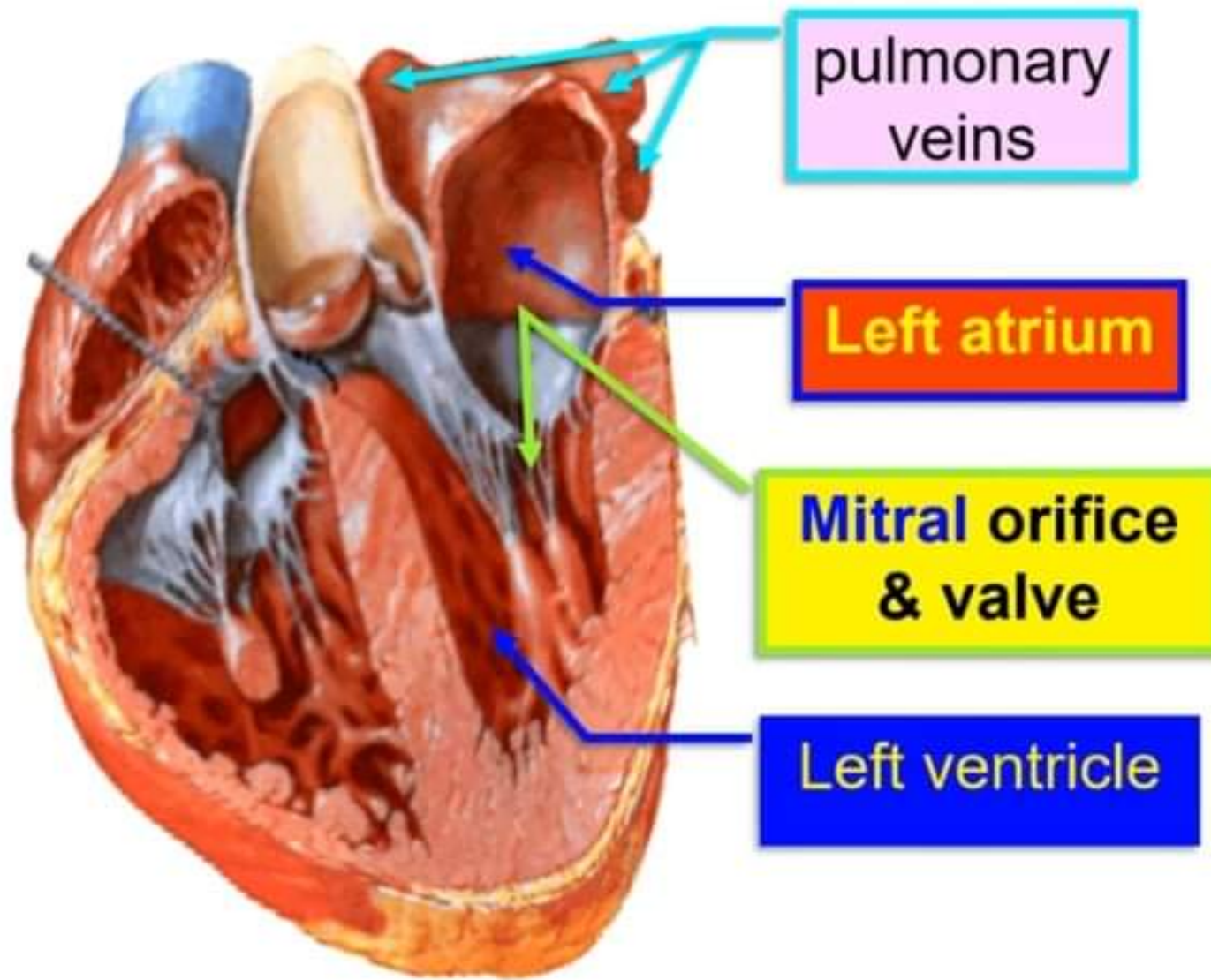
- **Surface anatomy**, it lies behind the right 6th sternocostal junction.

3- Opening of tricuspid valve between right atrium and right ventricle.

4- Opening of the coronary sinus: between I.V.C. opening and tricuspid valve. It is guarded by the **Thebesian valve** of the coronary sinus.

5- Openings of the anterior cardiac veins.

6- Venae cordis minimi (Thebesian veins)



- **Left Atrium**

* It forms most of the base of the heart.

* **The interior of the left atrium presents:**

A) A large smooth wall.

B) A rough wall localized to the **left auricle**.

** **Openings of the left atrium:**

- 1- The **4 pulmonary veins** (2 right and 2 left). They have no valves and carry the oxygenated blood from the lungs
- 2- **Opening of the mitral valve** between the left atrium and left ventricle.
- 3- **Venae cordis minimi**.



**Cavity of
Right Ventricle**

• Right Ventricle

* It **forms** most of the sternocostal surface and most of the inferior border.

* There is a muscular ridge called **supraventricular crest** divided the cavity into:

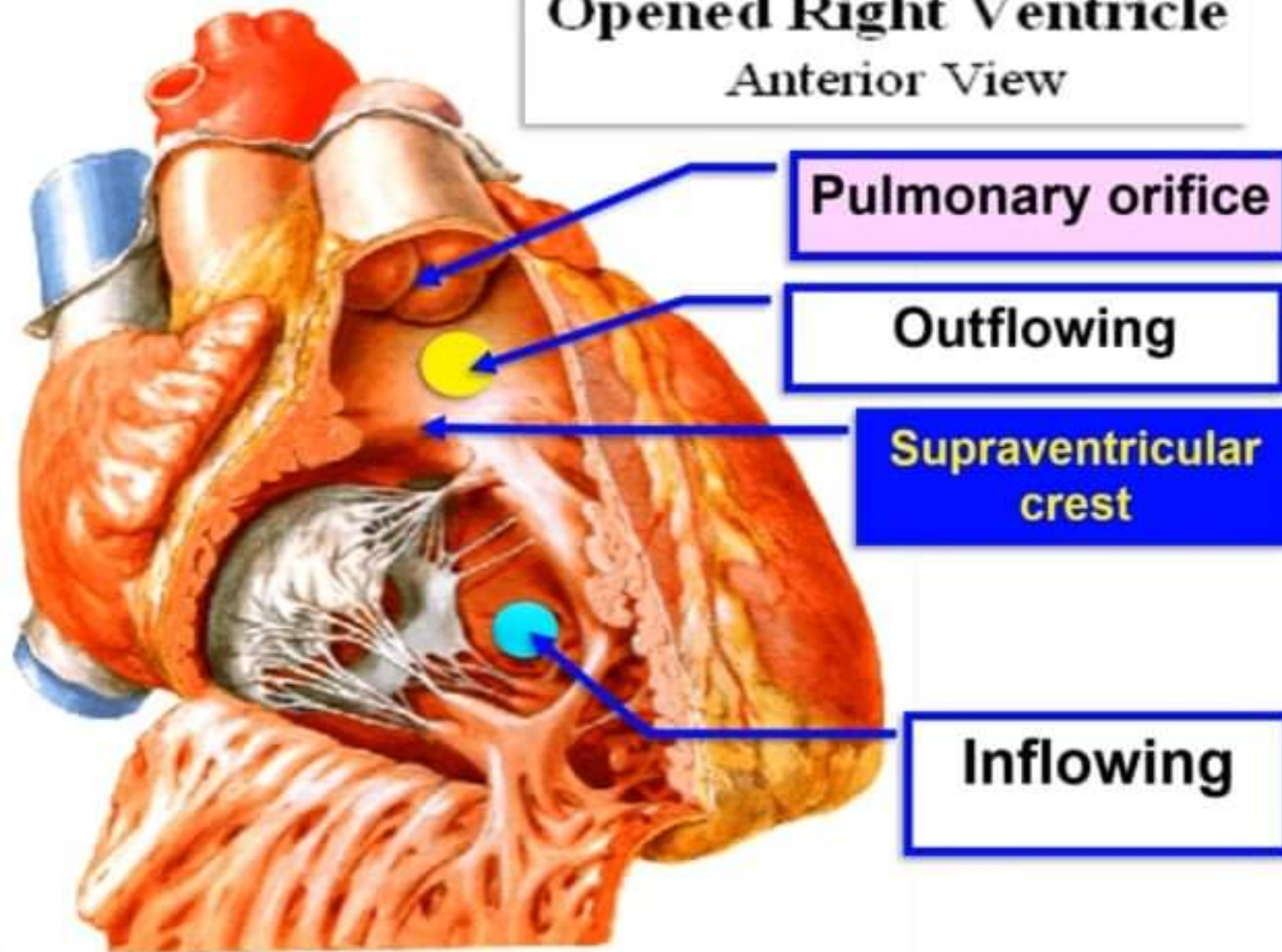
A) Outflowing part:

- It is the **smooth** upper part which leads to opening of **pulmonary valve**.

- It is known as **infundibulum** قمع of the right ventricle.

B) Inflowing part (rough)

Opened Right Ventricle Anterior View

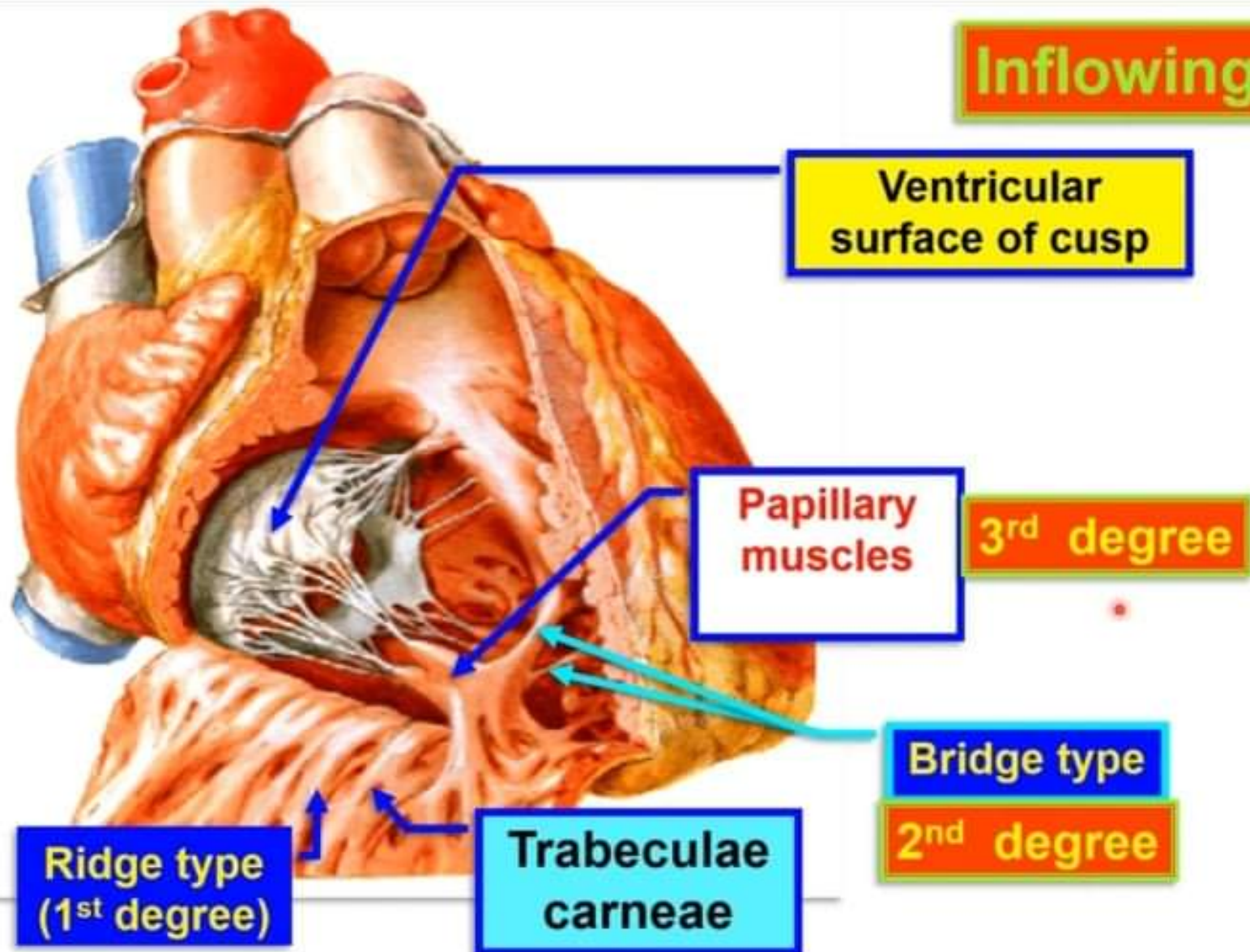


Pulmonary orifice

Outflowing

Supraventricular crest

Inflowing



Inflowing part

Ventricular surface of cusp

Papillary muscles

3rd degree

Bridge type

2nd degree

Ridge type (1st degree)

Trabeculae carneae

The degrees of Trabeculae carneae



**1st Ridge type
(degree)**

fused completely
with the wall



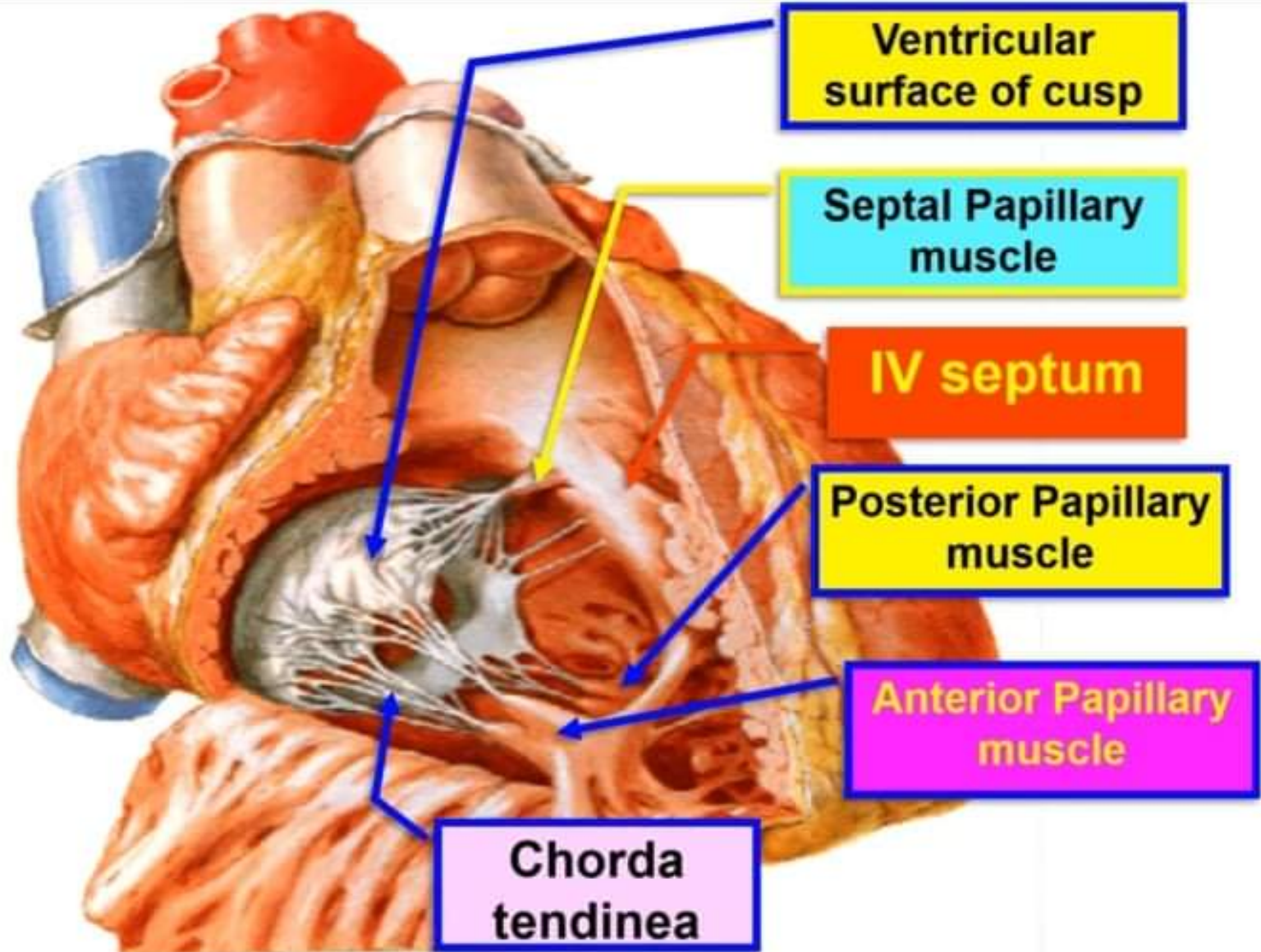
**Bridge type
(2nd degree)**

fused with the wall at
their ends



**Pillars (Papillary
muscles) 3rd
degree**

Papillary muscles



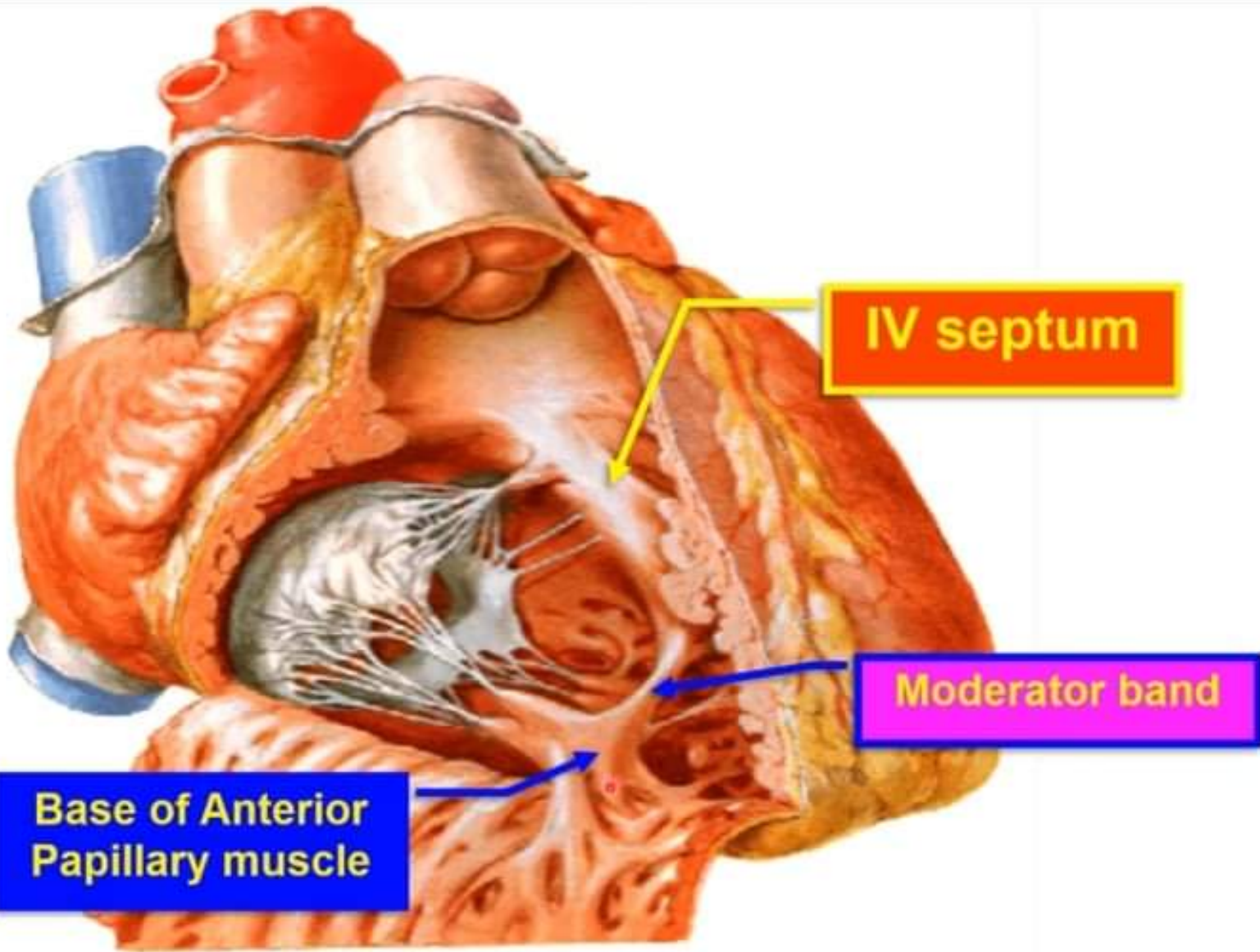
- **Three Papillary muscles:-**

a- Anterior papillary muscle: arises from the anterior wall.

b- Posterior papillary muscle: arises from the posterior wall.

c- Septal papillary muscle: arises from interventricular septum.

- The papillary muscles have **bases** attached to the wall while their **apices** give origin to the **chordae tendineae** which attached to the **ventricular surfaces** of two adjacent cusps of the tricuspid valve.



- **Moderator band**

- It is a muscular band crossing the lumen of the right ventricle connecting the **interventricular septum** with the **base of the anterior papillary muscle**.

- **Functions:-**

1) It prevents overdistention of the right ventricle.

2) It carries the right branch of the atrio ventricular (A-V) bundle

• Left Ventricle

* It **forms** most of diaphragmatic surface and left border.

* It **forms** apex of the heart.

* Its **wall** is **thicker** than the right (3 times thicker) because it pumps the blood to the systemic circulation.

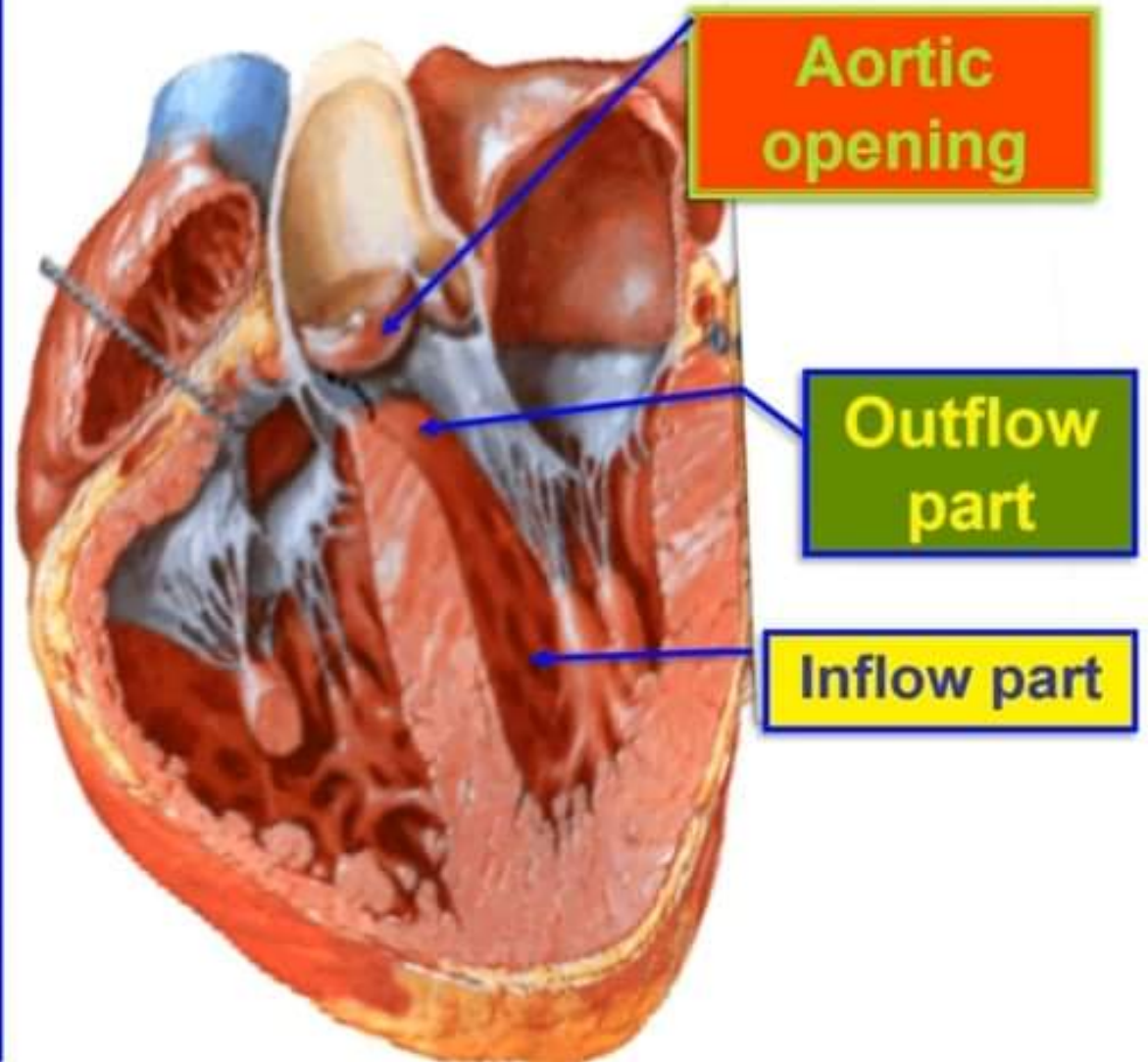
• The cavity is divided into two parts:

A) Outflowing part (smooth):

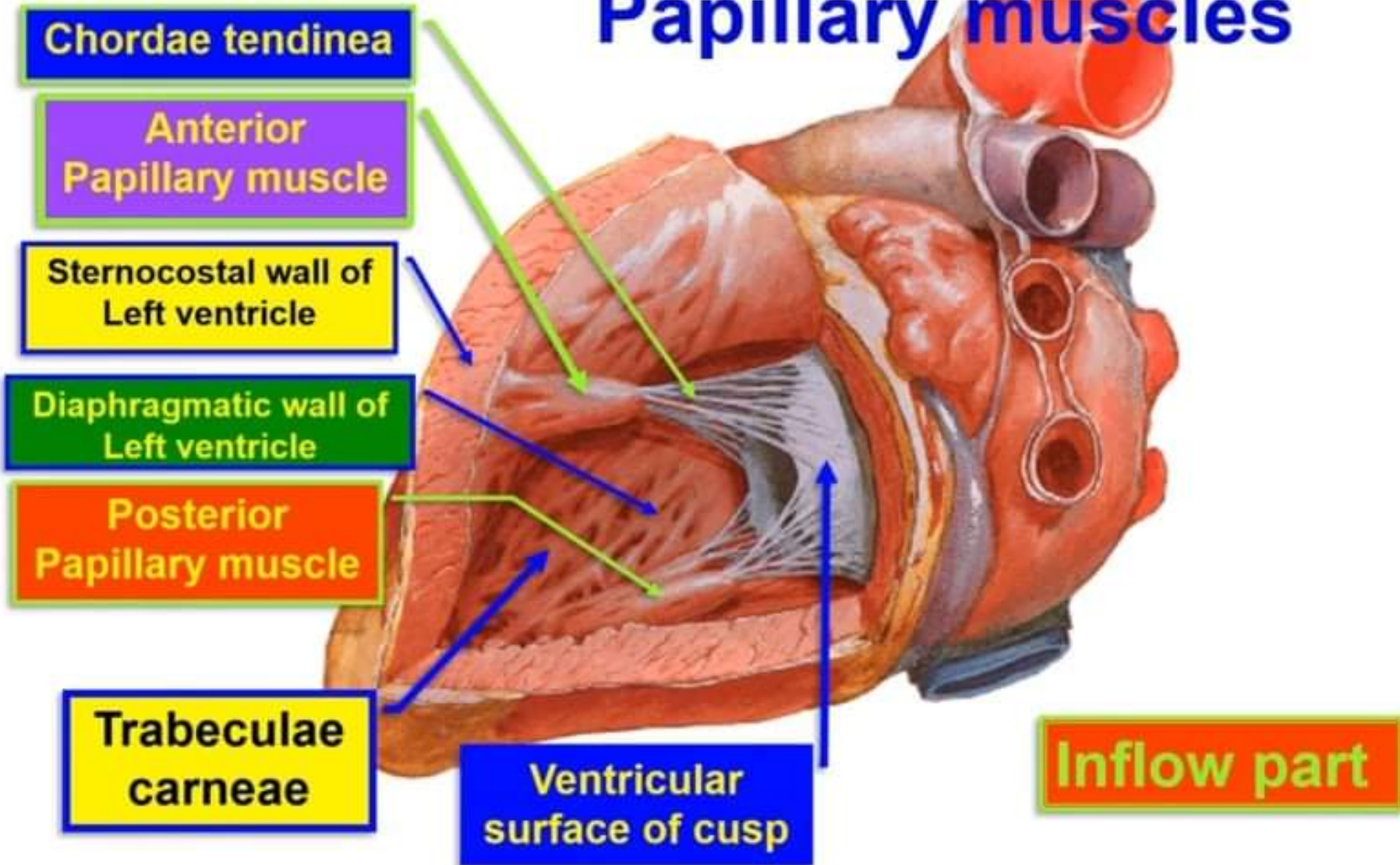
- Just below the aortic opening.

- It is known as the **vestibule** دهليز.

B- Inflowing part (rough)

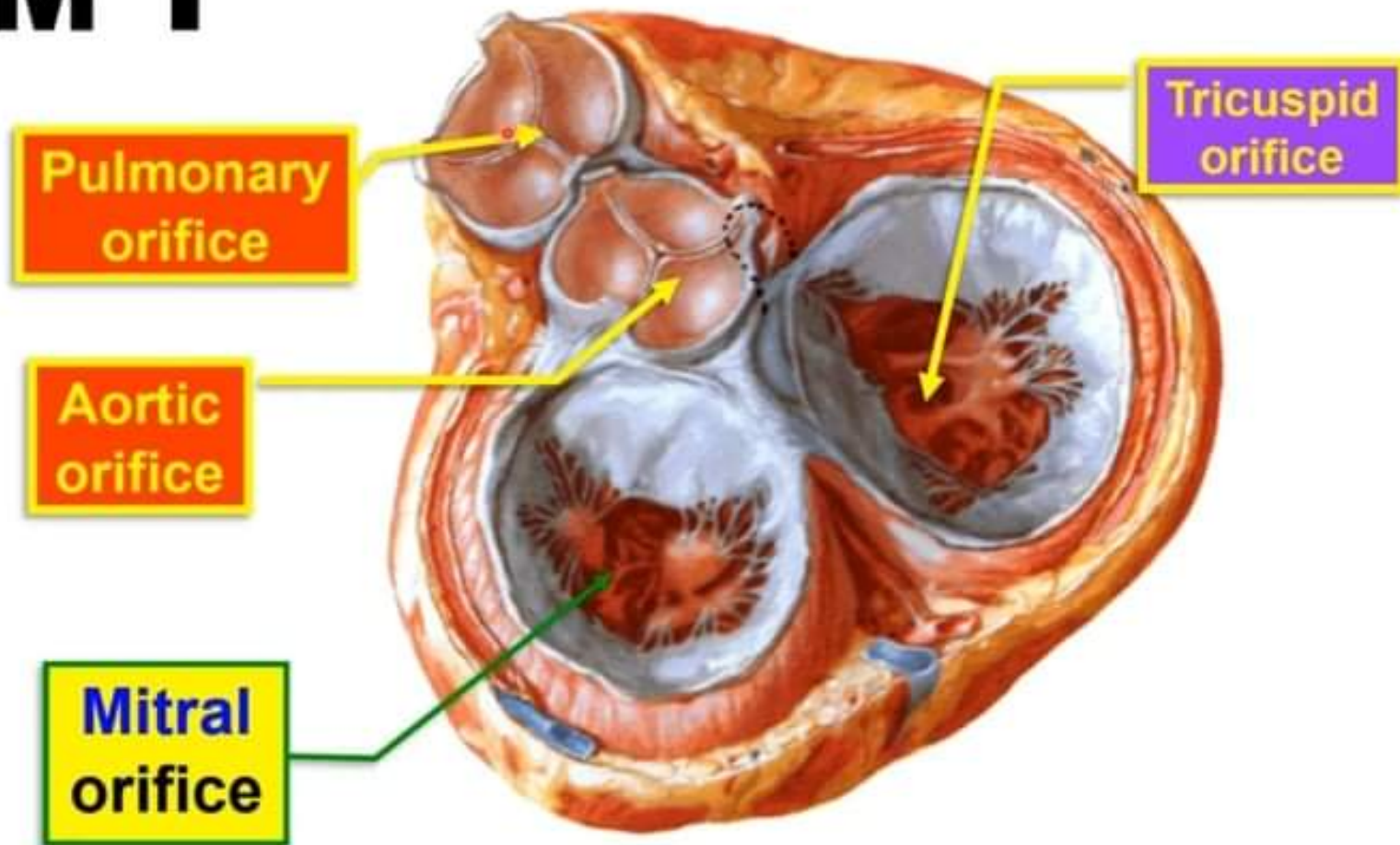


Papillary muscles

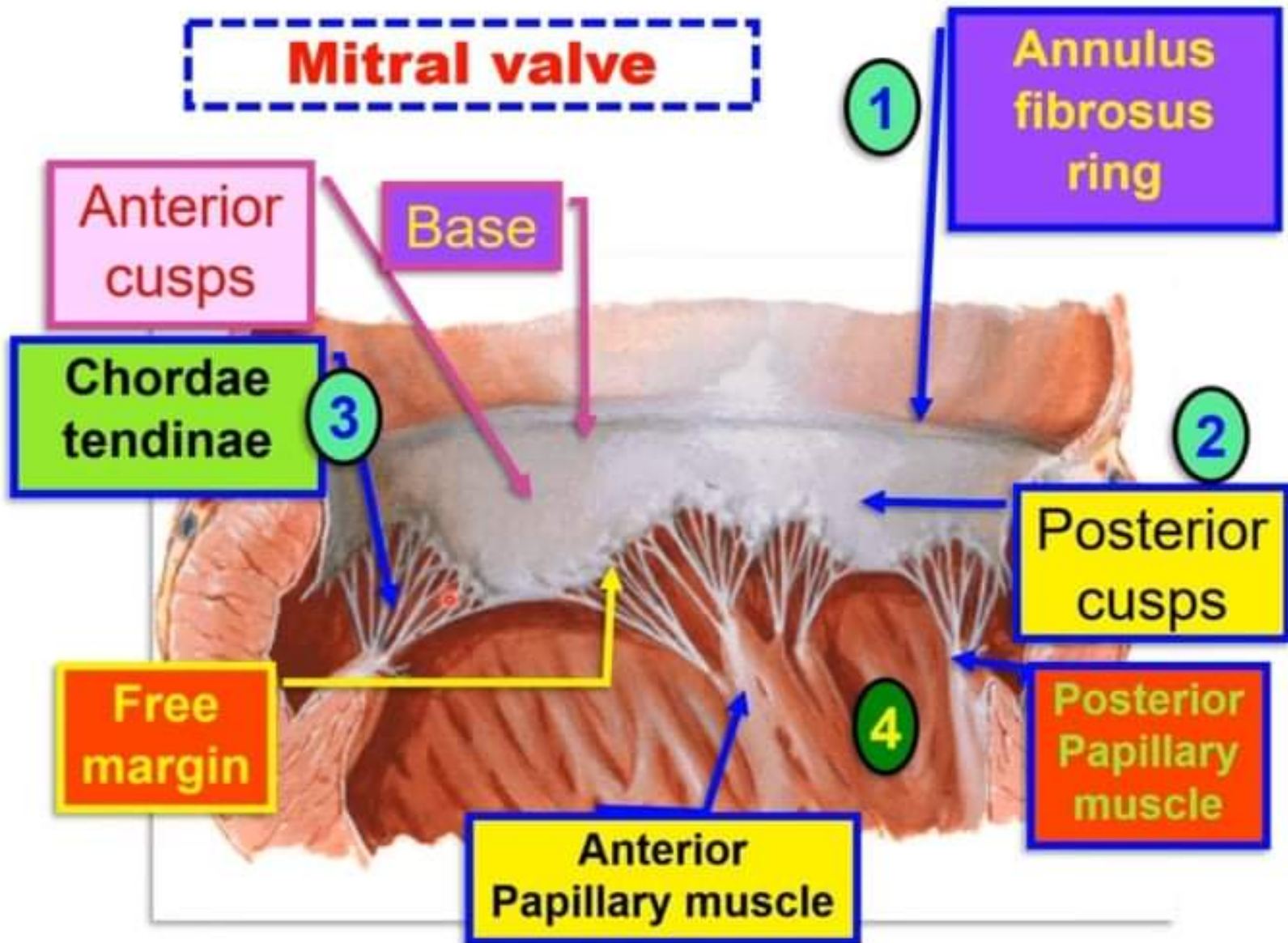


Valves of the Heart

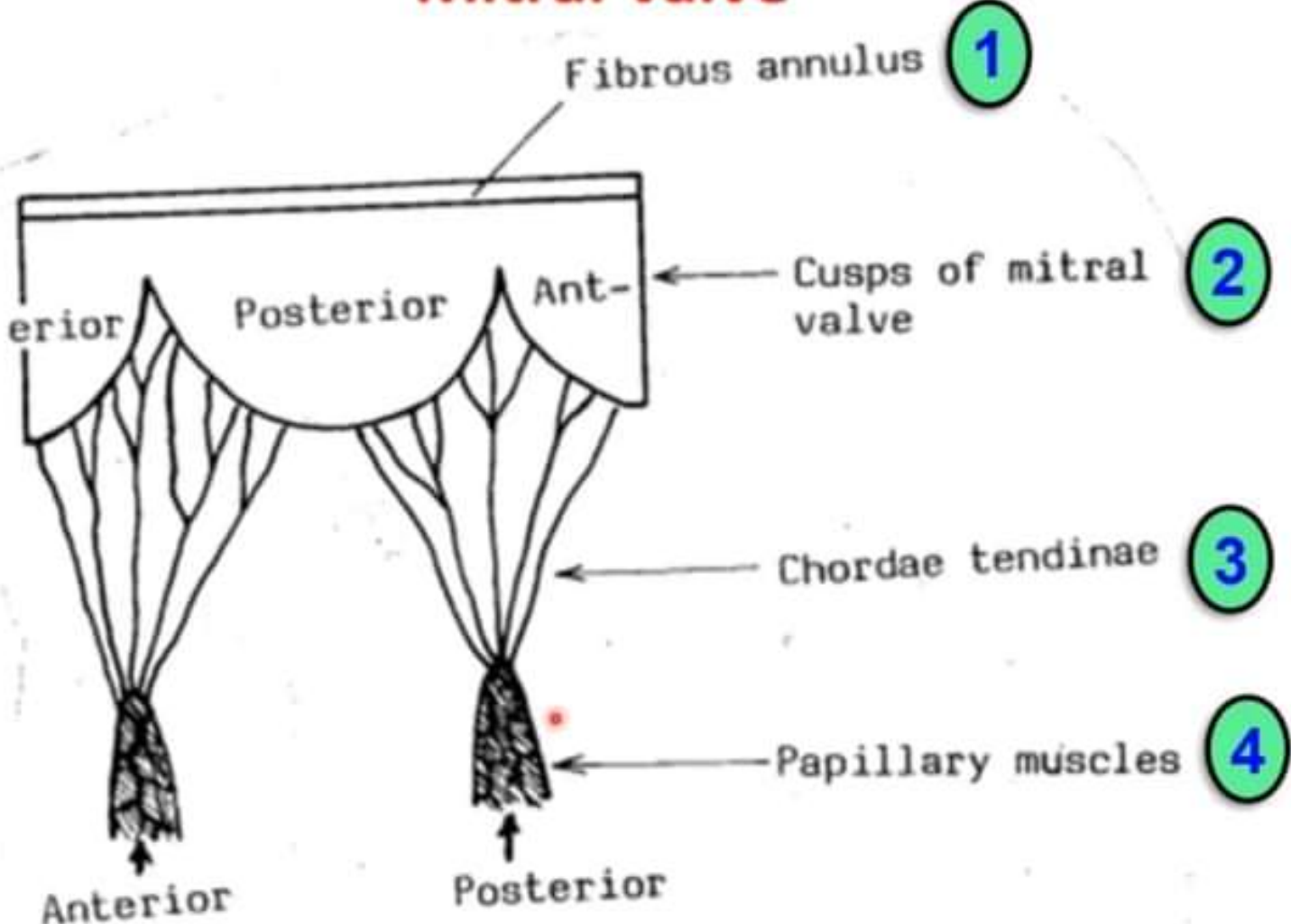
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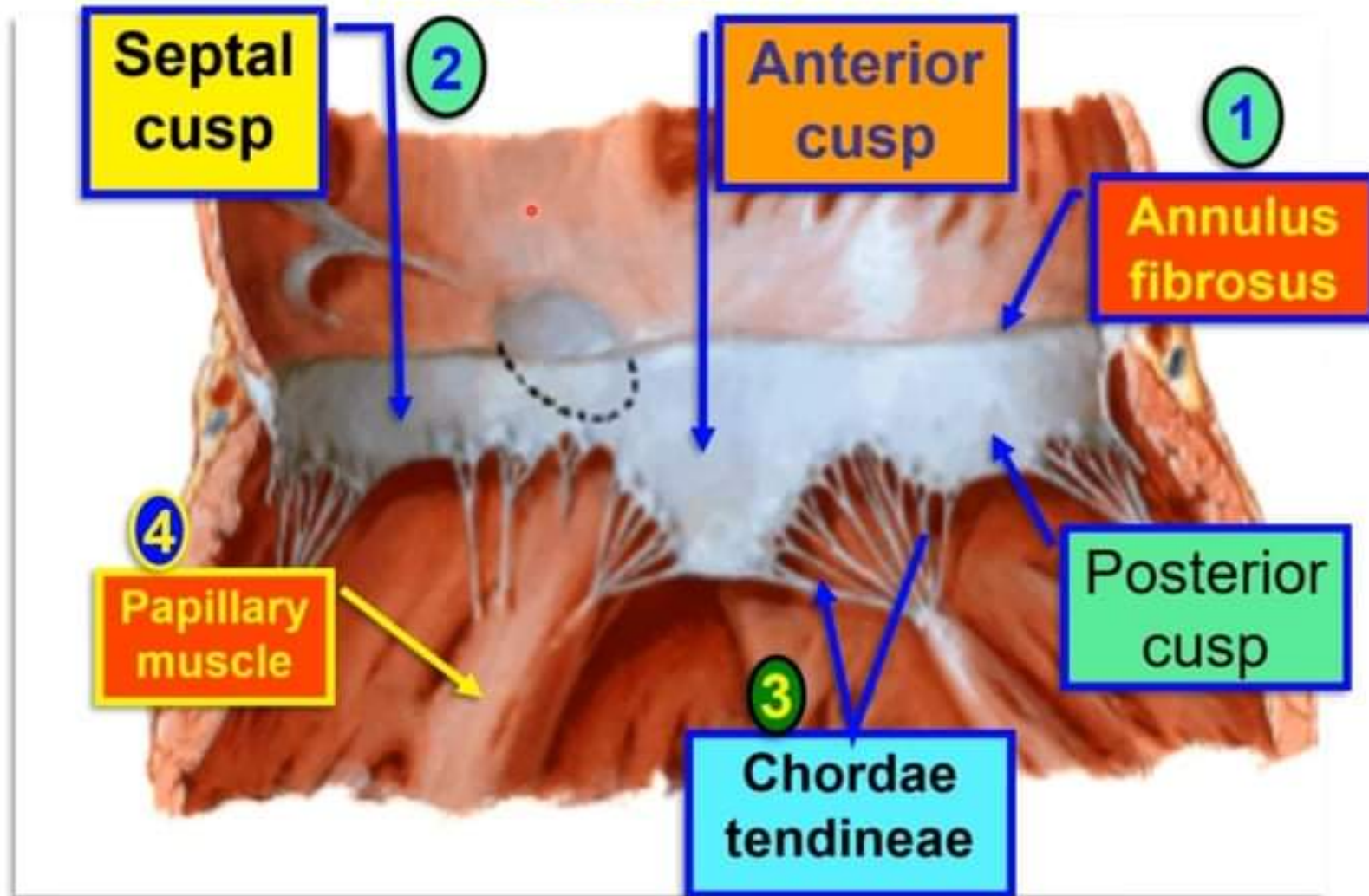
Mitral valve



Mitral valve



Tricuspid valve



- **Mitral and Tricuspid valves complex**

** They are formed of;

1- Annulus fibrous ring which gives attachment to the base of the cusp.

2- The cusps; Each cusp is flat and **project** into the ventricular cavity.

- The **base** is attached to the fibrous ring.

- **Free margin** is attached to the **chordae tendineae** of the papillary muscles.

- a- Tricuspid valve** is formed by 3 cusps (anterior, posterior and septal).

- b- Mitral valve** is formed by 2 cusps (anterior and posterior).

3- The chordae الحبل tendineae:

- They connect free margin of two adjacent cusps to the papillary muscles.

4. Papillary muscles,

- a- Tricuspid valve** has 3 muscles (anterior, posterior and septal).

- b- Mitral valve** has 2 muscles (anterior and posterior).

N.B;- The valves are closed during ventricular systole.

- **Tricuspid valve admits 3 fingers while Mitral valve admits 2 fingers**

**2 Anterior
pulmonary cusps**

Semilunar valves

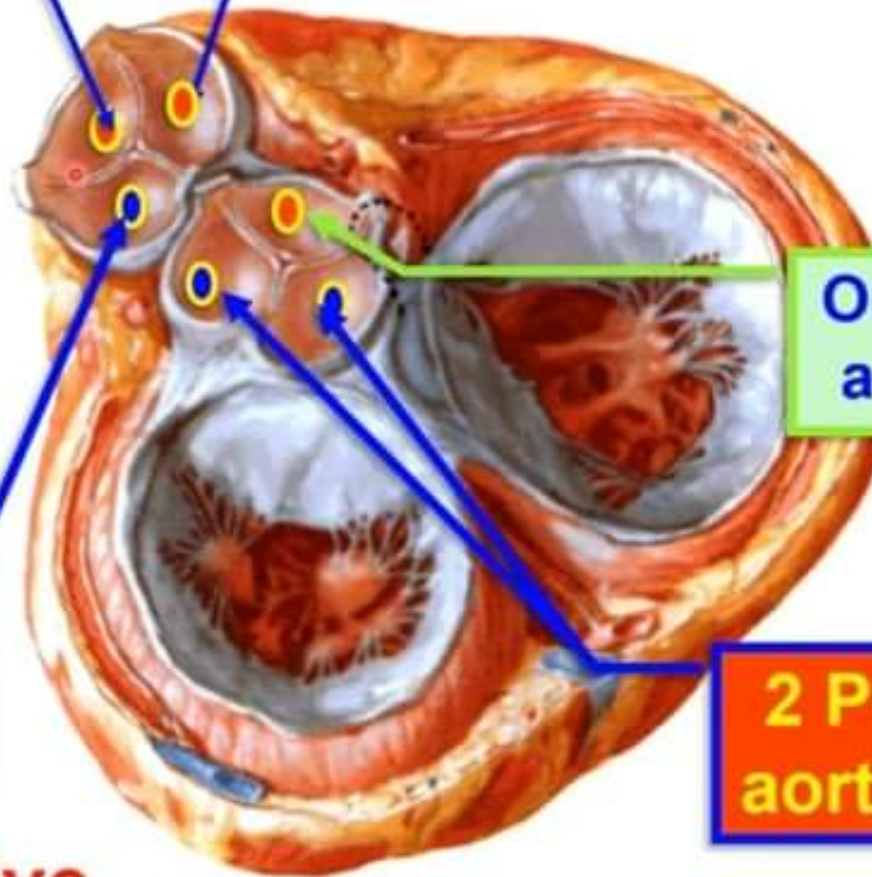
Aortic valve

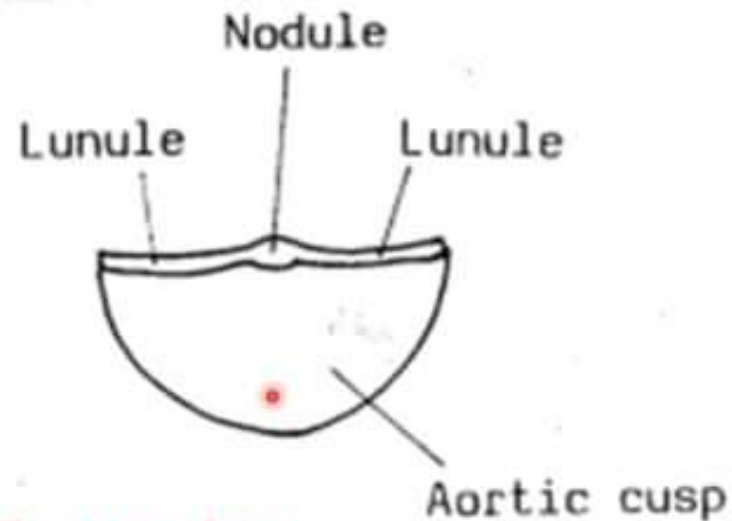
**One anterior
aortic cusp**

**One
posterior
pulmonary
cusp**

**2 Posterior
aortic cusps**

Pulmonary valve





- **Semilunar valves**
Aortic and pulmonary valves

1- They are semilunar in shape

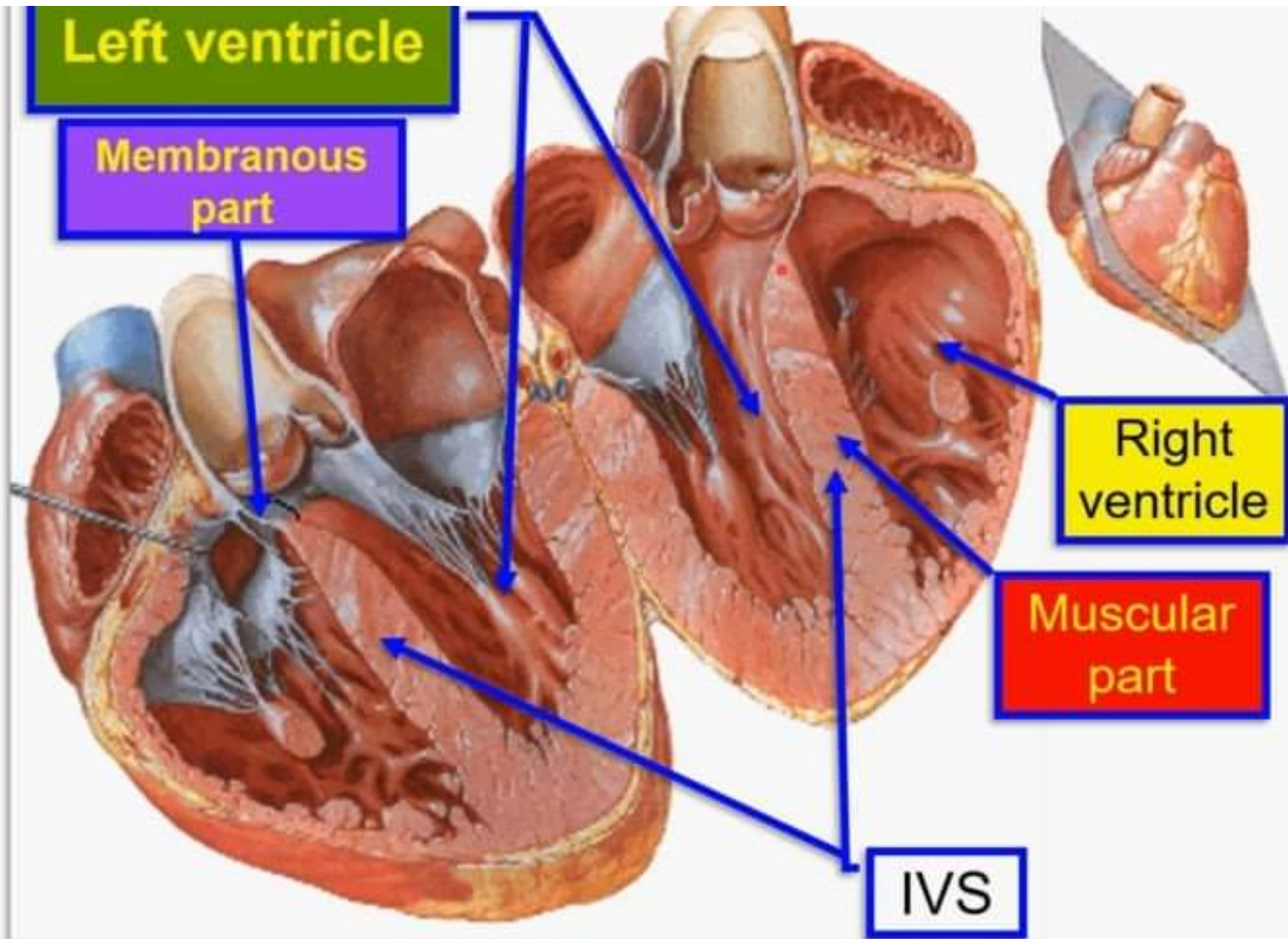
2- **The cusps** attached directly to the vessel wall (**no fibrous ring**).

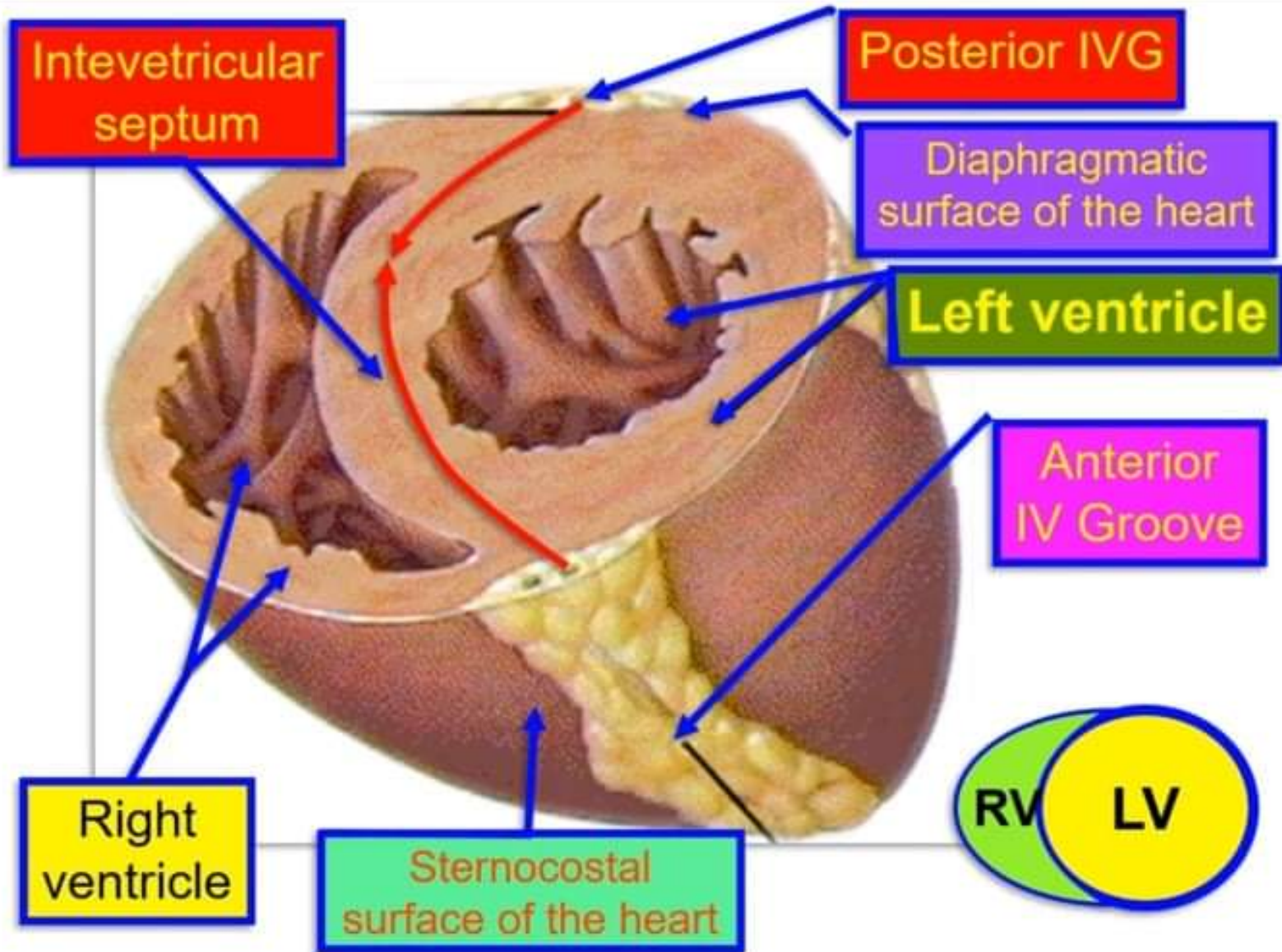
- The **free margin** of each cusp contains a central fibrous **nodule** and a thin margin **lunule** on each side.

3- **Opposite the cusps**, the wall is slightly dilated to form **sinuses**.

a- Aortic valve has 3 cusps: Anterior, Right posterior, Left posterior.

b- Pulmonary valve has 3 cusps: Right anterior, Left anterior, Posterior.





- **Interventricular septum**

- It is a septum between the right and left ventricles.
- It is formed of 2 parts

A- Muscular part: lower and thickest part.

B- Membranous part: upper and thinner part. This part is the commonest site of ventricular septal defect (VSD).

- It is convex to the right so the **right** ventricle is **semilunar** while the **left** is **circular**.
- It is indicated in the surfaces by **anterior and posterior interventricular grooves**.