Lec 6 / coronary arteries extra notes ☺

**Isovolumetric contraction phase :**

During this phase there is no change in length of fibers , Also the inlet and outlet valves are close .

After that when BP inside the ventricles increased more than the the pressure in the aorta the aortic valve will open >>>> systemic circulation .

**The coronary arteries :**

They are branches of the **ascending aorta**

1. Right coronary artery
2. Left coronary artery

The right coronary artery are more important. This is because it gives the **nodal artery** , Which supply the SA node .

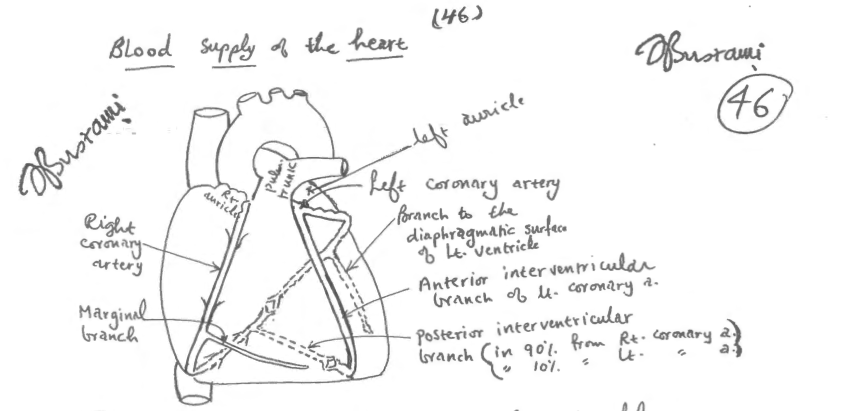
* If the blood supply to the SA node decreases , the heart will beat at 30 – 40 beat per minute instead of 70 – 80 beats per min >>> we need an artificial peacemaker

The left coronary artery gives two terminal branches :

1 – **Anterior interventricular** or **LAD** , gives >>>> **diagonal artery**

2 – **Circumflex Artery** , give >>>>> **obtuse marginal artery**

**A - Cardiac anastomosis :**



**(( 1 )) The right coronary artery** will anastomose with the **Circumflex Artery** a branch of left coronary artery and form a **circle** around the heart

**(( RT.Coronary >>>><<<< LT.Coronary )) .**

**(( 2 )) Anterior interventricular** artery or LAD : left anterior descending artery will anastomose with **posterior intervenricular** artery and form a **loop** around the heart .

It’s a inadequate anastomosis ( functional end artery ) .

* It is found adequate in less than 10% of normal hearts .

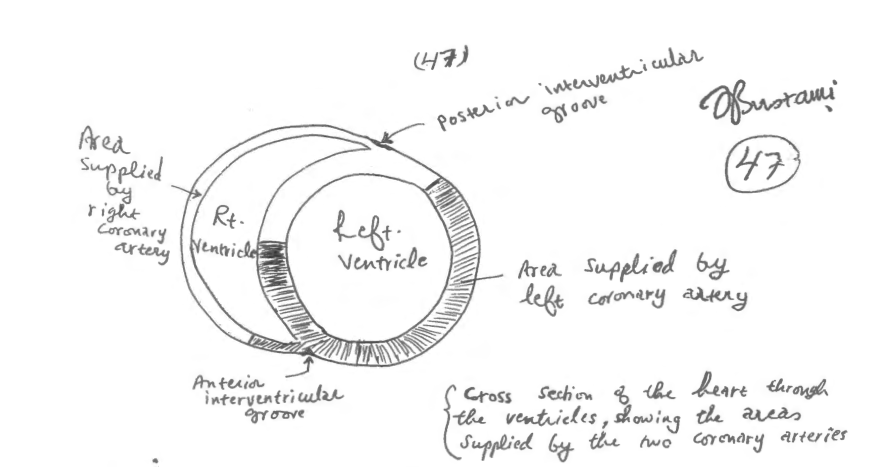
This ratio tend to be 40% in patients with chronic anemia .

Also it is going to be 100% in patients with previous infarction .

**B – Extracardiac Anastomosis :**

This anastomosis is mostly inadequate

**-Bronchial** and **Phrenic** artery are branches of the **descending aorta** .

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**Right coronary artery** supplies the posterior half of interventricular septum and also supplies all the right ventricle wall **except** the anterior portion near the anterior interventricular groove .

**Left coronary artery** supplies the anterior half of the interventricular septum. Its also supply all the left ventricle wall **except** the posterior portion near the posterior interventricular groove .

* **Coronary Sinus :**
* **Starts** as oblique vein of the left atrium .

**Ends** in the right atrium between the inferior vena cava and the tricuspid opening

**# Right common cardinal vein :** in fetus will develop to **right superior vena cava** will open in  **>>>> right atrium (( normal )) .**

**# Left common cardinal vein** should be atrophied later in adult life and form

**Oblique vein of Marshall** . On the other hand ,if it is not going to form **left superior vena cava** which will drain into coronary sinus **>>>> right atrium (( not directly** intoright atrium **)) .**

\* The **right intercostal artery** are **longer** thanthe **left intercostal artery.** This isbecause the descending aorta start at the left side of T-4 vertebra and ends up at median plane of T-12 vertebra .

In order to treat atherosclerosis , in the past they used (sympathectomy) to cut 3 or 4 ganglia in the sympathetic chain in order to dilate the vessels . But after the procedure they notice the patients had a flushing in the areas , which is lose their sympathetic innervation due to increased blood flow , The point that doctor mentioned here was about that the sympathetic chain runs anterior to the **right posterior intercostal artery** so whenever u make sympathectomy you should careful

to avoid **right posterior intercostal artery** injury or cut and prevent bleeding .

**Left brachiocephalic vein** is **longer** than **right brachiocephalic vein**

the structures inside pericardium : from lateral to medial

**left brachiocephalic vein**  pass **anteriorly** to :

1- brachiocephalic artery

1. left common carotid artery
2. left subclavian artery

The **veins** are more susceptible to compress than **artery**, because of their thin walls .

\* obstruction of the **superior vena cava** is not common .

scan

\*The esophagus runs **anteriorly** to the **descending aorta** .

\*Enlargement of arch of aorta (( aneurism )) will compress the trachea and esophagus .

**Arch of aorta :**

start : sternal angle

end : T-4 vertebra

- have 2 surface :

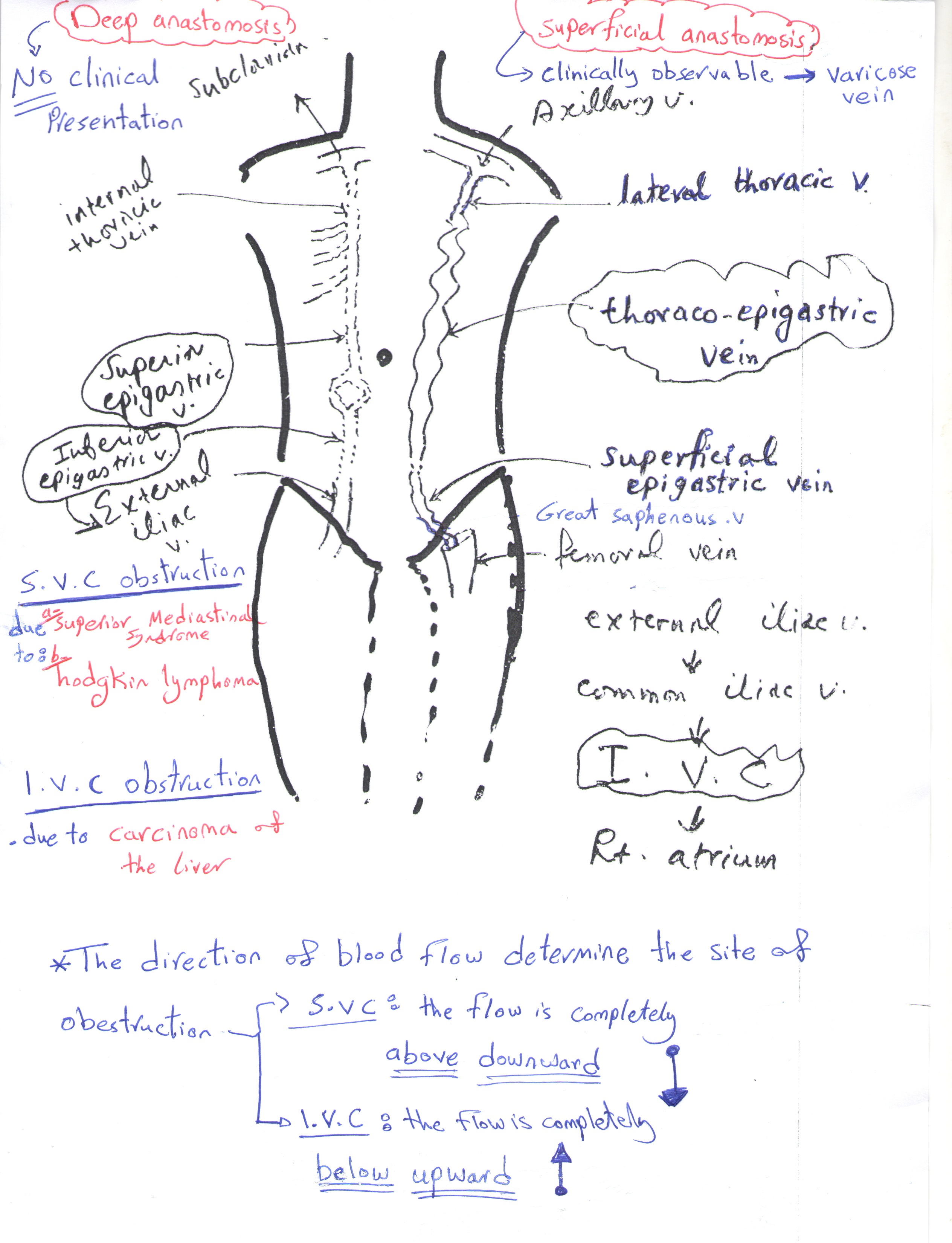
1. **superficial** & anterior to the left .
2. **deep** & posterior to the right .

The **right pulmonary artery** passes **posteriorly** to the :

1- arch of aorta & 2- superior vena cava

**Ligamentum arteriosum :**

\*\* the heart in fetal life was developed in the neck so that’s why it receives sympathetic innervation from the neck .



What goes around, goes around, goes around , Comes all the way back around ! …….. Justin Timberlake

**Done by :** **DAWOOD AL- JANABY**