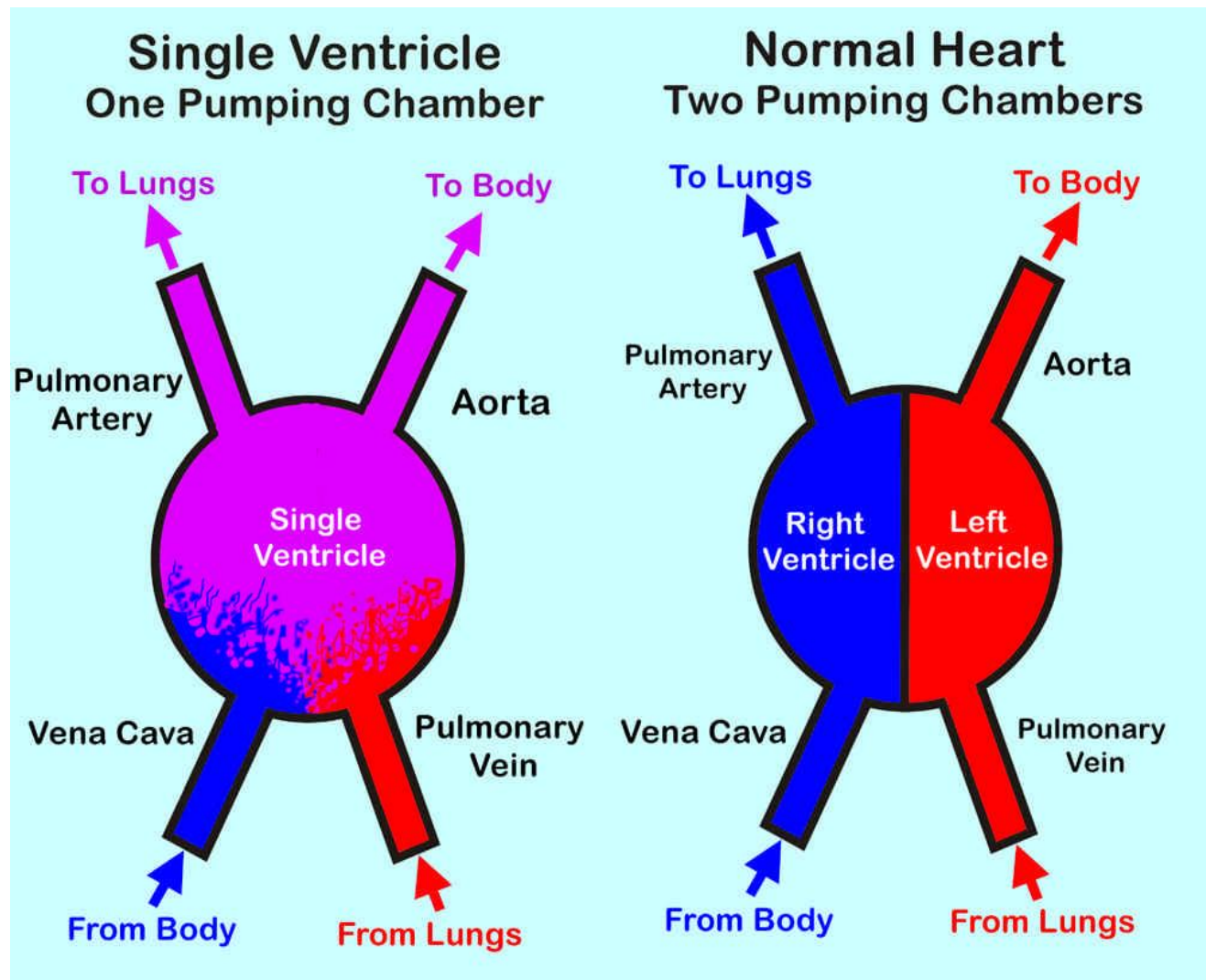


# Single Ventricle



## What Is It?

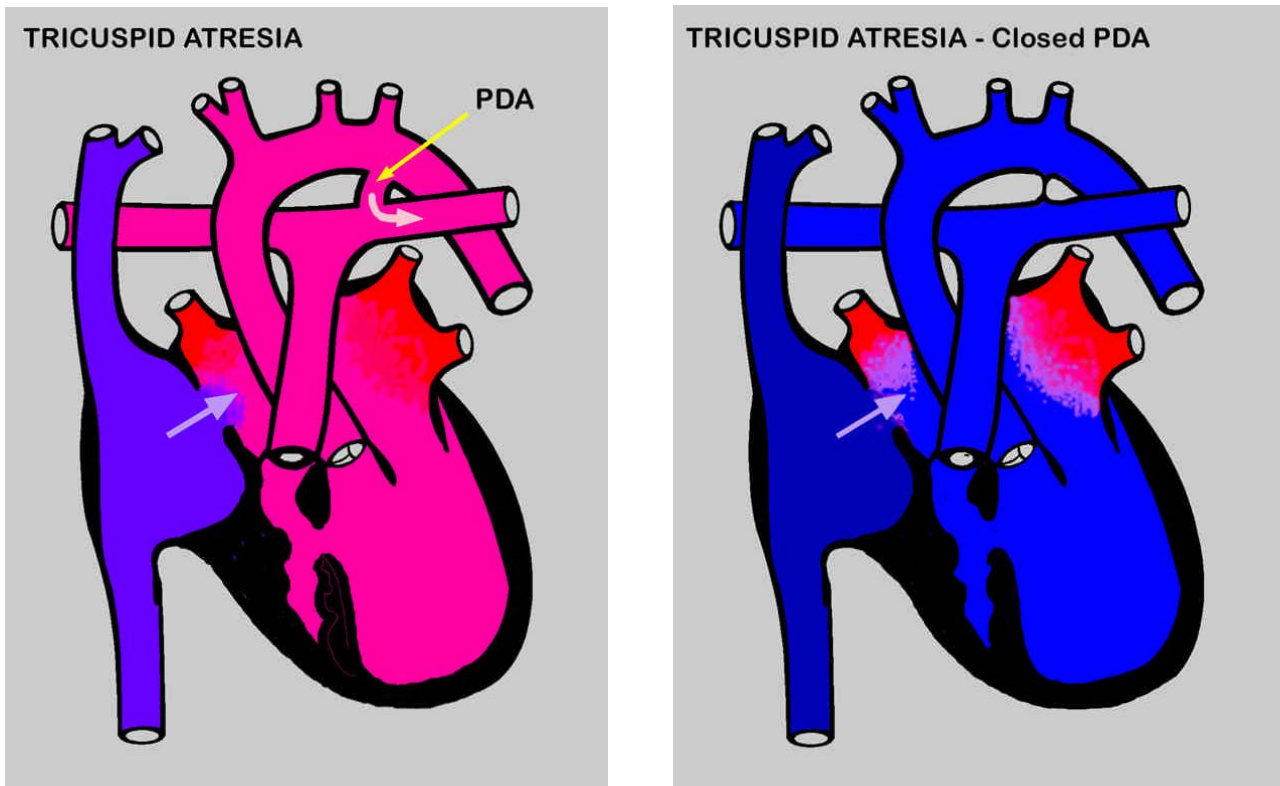
Single Ventricle refers to a group of congenital heart defects in which the heart functionally has only one pumping chamber. In the normal heart, there are two pumping chambers, the right and left ventricles.



## What Are Its Effects?

In Single Ventricle, there is complete mixing of the blood returning from the body with blood returning from the lungs. Therefore, blood leaving the heart through the pulmonary artery will have basically the same oxygen content as that leaving the heart through the aorta on its way to the body.

In the example defect shown below (Tricuspid Atresia), oxygen reaches the body tissues immediately after birth because of the patent ductus arteriosus (PDA) as well as any flow that can cross the often narrowed pulmonary artery. When the PDA closes, the infant can become cyanotic ("blue"), with insufficient blood flow to the lungs and inadequate oxygen supply to the body.



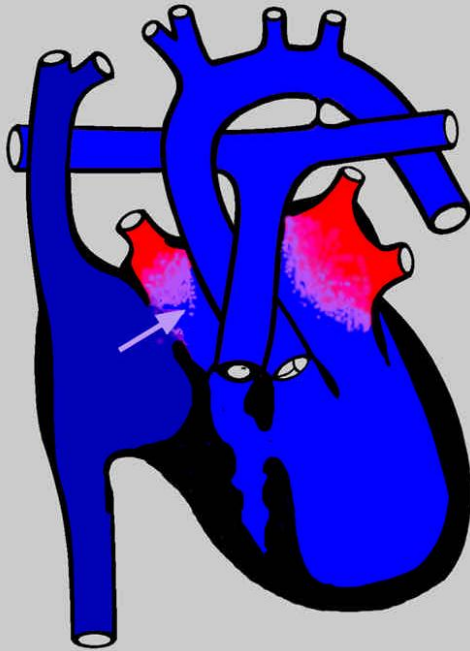
## How Is It Treated?

The treatment of single ventricle depends on the particular defect. It is necessary to separate the pulmonary (heart to lung) and systemic (heart to body) circulations so that oxygen-rich blood can be pumped to the body tissues.

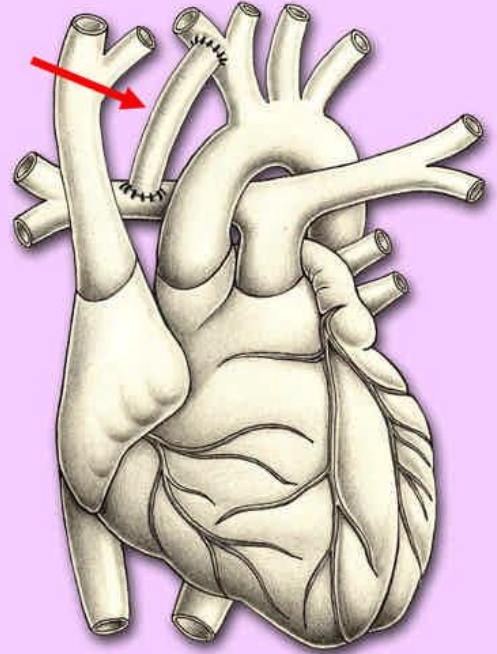
### *Example One - Tricuspid Atresia*

After early treatment with medications to keep the ductus open, an operation called a Blalock-Taussig shunt (yellow tube in diagram below right) is performed to increase blood flow to the lungs.

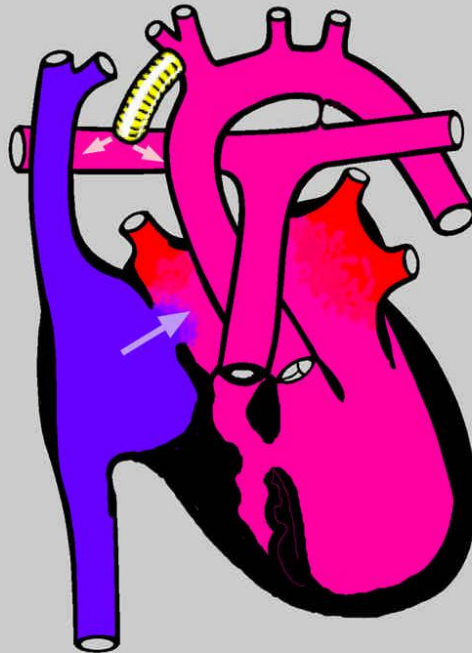
TRICUSPID ATRESIA - Closed PDA



Modified Blalock-Taussig Shunt

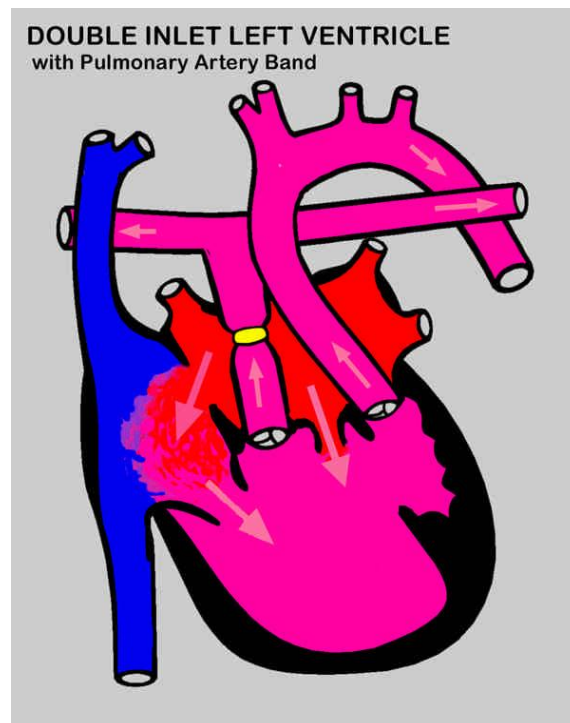
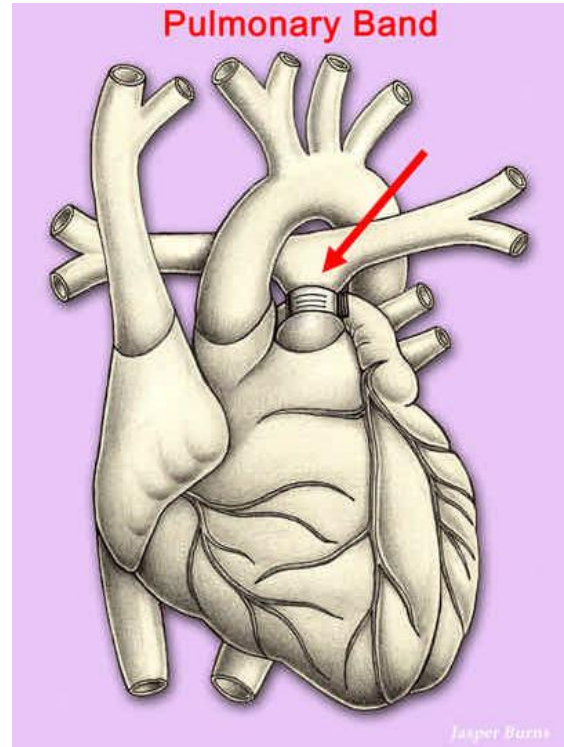
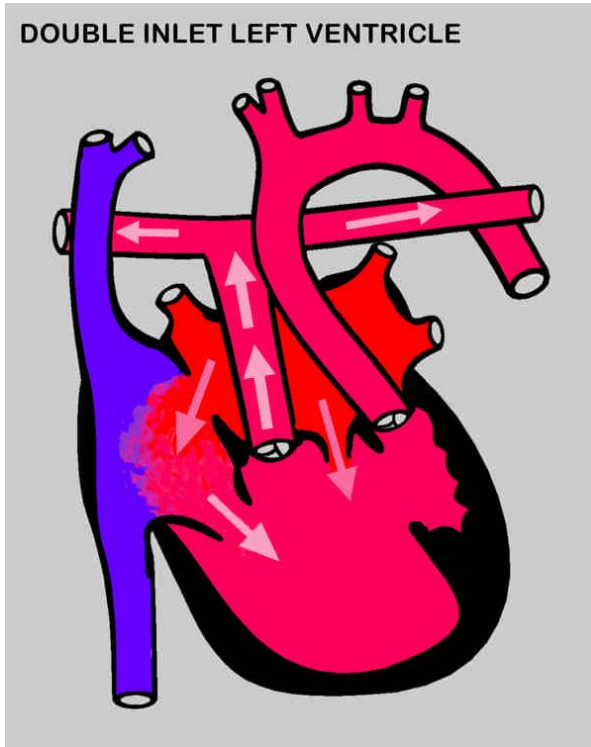


TRICUSPID ATRESIA  
Modified Blalock-Taussig Shunt



**Example Two - Double Inlet Ventricle**

In this defect, pulmonary blood flow (through the pulmonary artery to the lungs) is excessive. This is corrected by the insertion of a band (yellow in the lower right diagram) around the trunk of the pulmonary artery, which reduces blood flow.



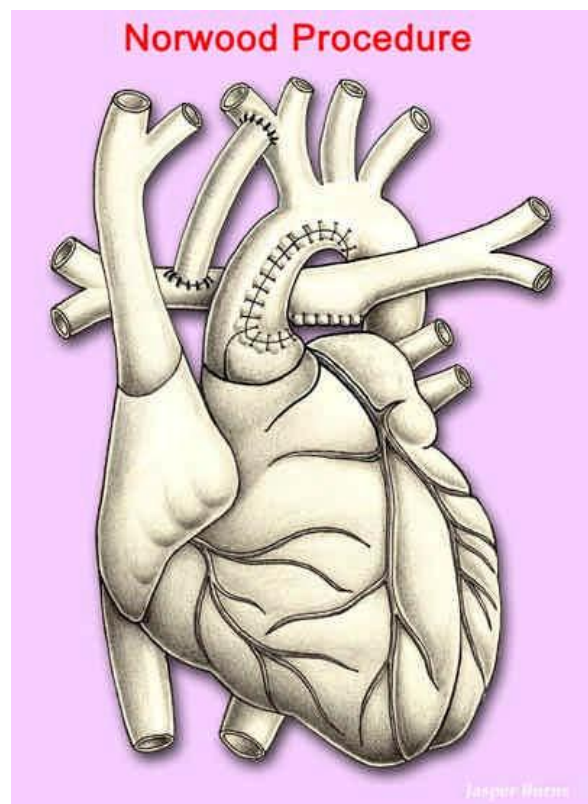
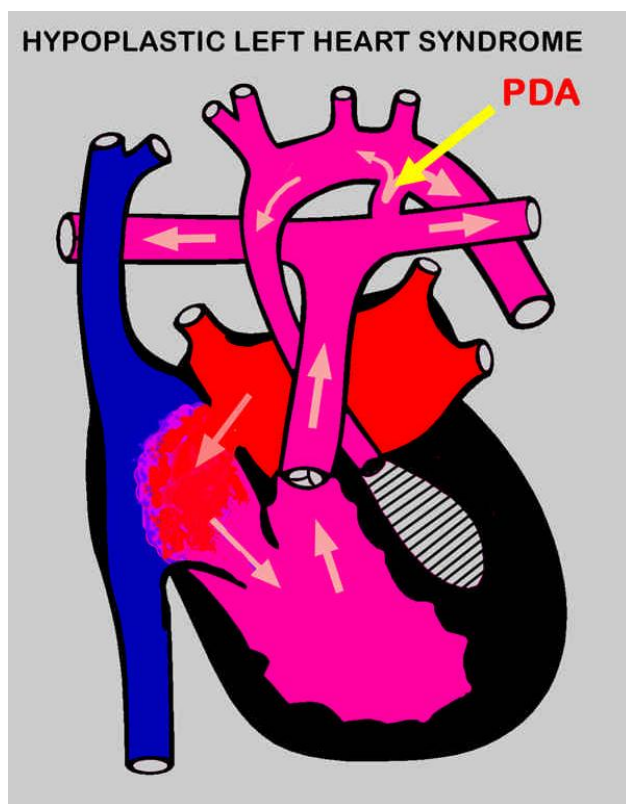


**Example Three - Hypoplastic Left Heart Syndrome**

In Hypoplastic Left Heart, blood flow to the body is severely restricted. When the Patent Ductus Arteriosus (PDA) closes, the infant enters profound shock.

In a surgical operation known as the Norwood Procedure (see the diagram below), a major blood vessel to the body (aorta) is constructed from the base of the pulmonary artery and the narrowed aorta.

In addition, a small tube made of Gore-Tex (known as a Modified Blalock-Taussig Shunt), shown in yellow on the diagram, is inserted between the branches of the pulmonary artery (PA) and a branch of the aorta to ensure blood flow to the lungs after the PDA closes.



**HYPOPLASTIC LEFT VENTRICLE  
Norwood Procedure**

