

Coronary Artery Bypass Surgery

What is Heart Surgery and Why is it Needed?

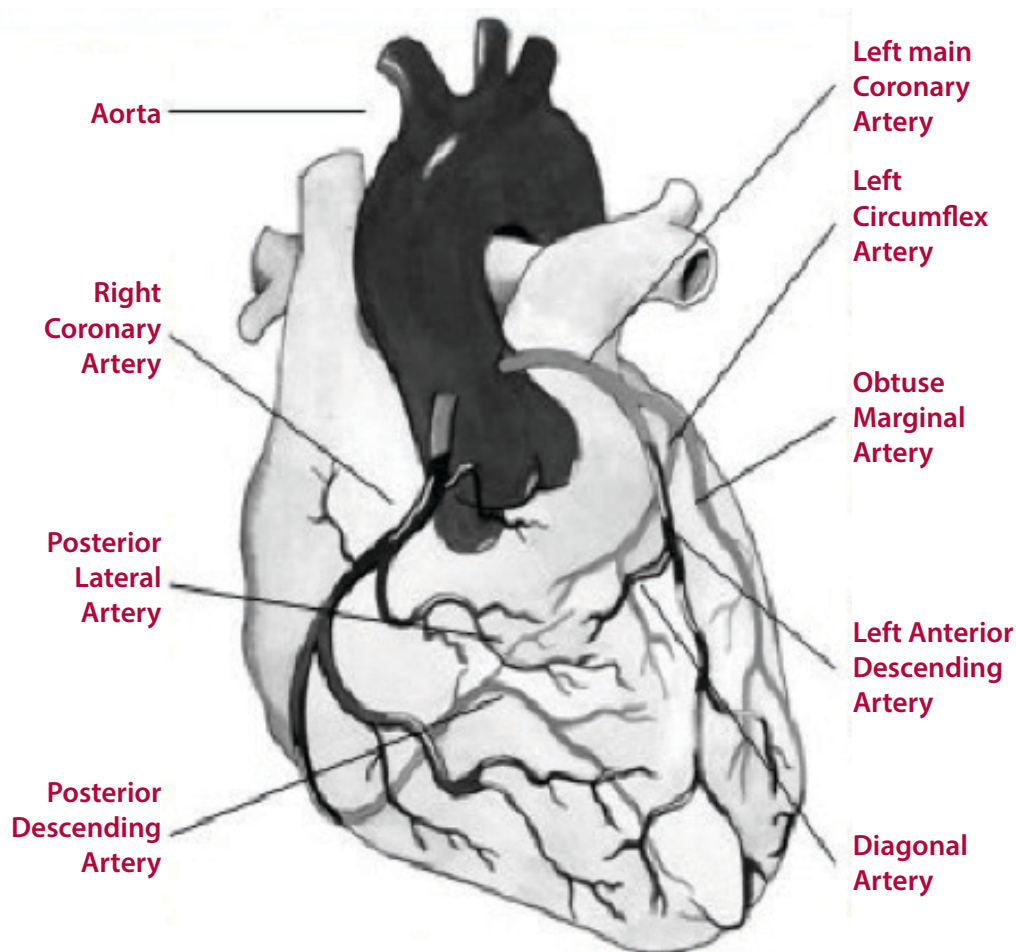
The first question many patients and families ask is, "Why do I need surgery?" There are three types of heart problems that require surgery.

- Coronary Artery Disease
- Heart Valve Disease
- Congenital Heart Disease (heart defect)

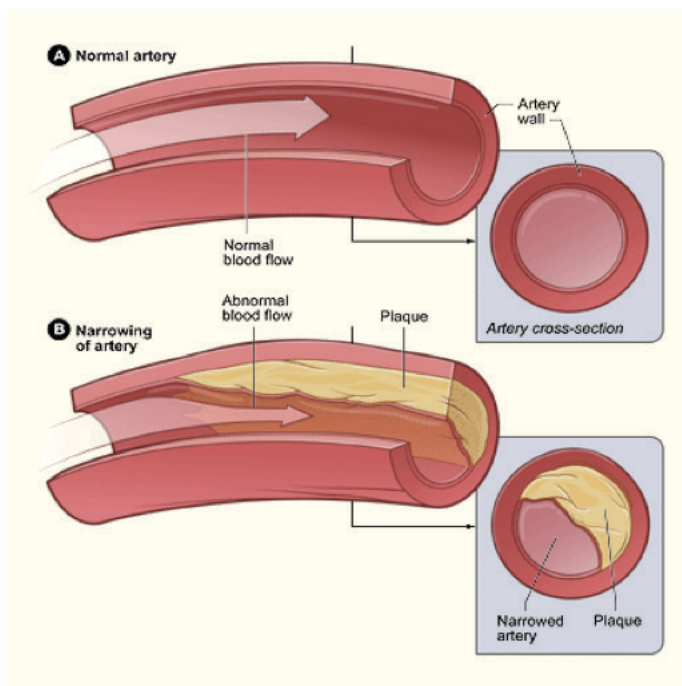
The most common reason for heart surgery is Coronary Artery Disease. The next section will explain Coronary Artery Disease and the surgery for it.

What is Coronary Artery Disease?

Your heart weighs under a pound and is about the size of your fist. It is a powerful, hardworking muscle that pumps blood to the lungs and to all parts of the body. The heart muscle needs blood to supply it with oxygen and nutrients. There are three major arteries that bring blood to the heart muscle. These arteries are called coronary arteries. If the arteries become clogged, oxygen-rich blood cannot get to the heart muscle. Clogged heart arteries can cause damage to the heart.



Coronary Artery Disease means narrowing or blockage in the coronary arteries. This narrowing is caused by the buildup of fatty deposits called “plaques” on the inside of the arteries of the heart. Over time, the plaques tend to increase in size. These plaques can cause narrowing of an artery and may eventually block the flow of blood. When the coronary arteries become narrowed or blocked, the heart muscle does not receive enough oxygenated blood. Narrowing of a coronary artery may cause chest pain. A blood clot may form in the narrowed artery and cause a heart attack. There are no medicines that can shrink or remove plaques. The only way to open up an artery is with angioplasty/stenting or surgery. If the artery cannot be opened with angioplasty/stenting, surgery is needed. Sometimes surgery is recommended because the blockages are in places that are too dangerous to stent. Surgery is needed if there are too many blockages to treat with stents.



How Will I Know if I Have Coronary Artery Disease?

You can be diagnosed with Coronary Artery Disease by having a test, such as a stress test. Some of the symptoms associated with Coronary Artery Disease are the following:

- Pain, pressure or tightness in the chest, arms, back, neck or jaw
- Heartburn
- Nausea and/or vomiting
- Abnormal sweating
- Shortness of breath

You may experience any one of these symptoms or a combination of them.

Coronary Artery Disease is a disease that can progress very slowly over several years, often without any symptoms. Many people experience chest pain or angina as their first sign of Coronary Artery Disease. Each person experiences the pain or discomfort of angina differently. Some people have severe pain, while others have only slight discomfort. Many people have a feeling of pressure or tightness in the chest that feels like indigestion. Angina occurs most often during exercise or at times of stress or strong emotions, but you may also feel angina when you are resting.

Many people who experience chest discomfort also have shortness of breath with the chest pain. Others experience only the shortness of breath without chest pain. The shortness of breath usually occurs with activity, but may happen at rest. You may also experience nausea, fatigue, or sweating with chest discomfort.

Some people have a heart attack as their first sign of Coronary Artery Disease. Your doctor will tell you if your chest pain was a heart attack or angina.

How Did I Get Coronary Artery Disease?

Doctors do not know the exact reason why plaques form in the arteries of some people. But we do know what factors increase your risk for forming plaques and developing Coronary Artery Disease.

You are at greater risk for Coronary Artery Disease if you:

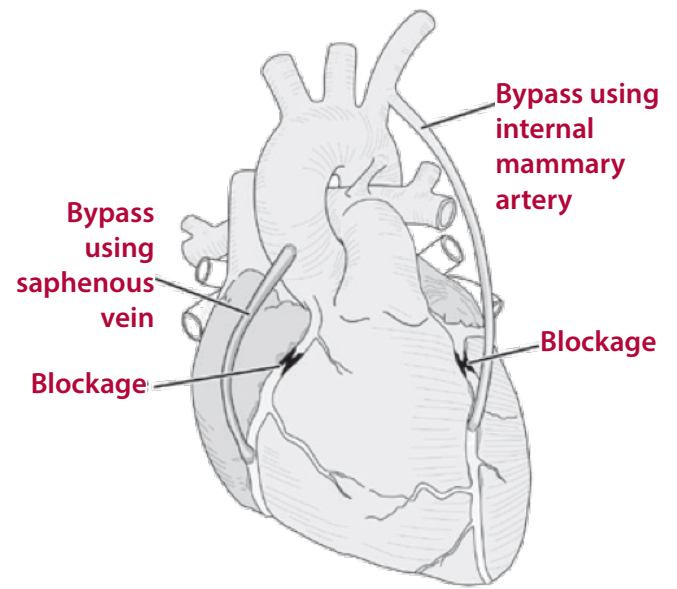
- Smoke cigarettes
- Are diabetic
- Have high blood pressure
- Have high cholesterol
- Have a family history of heart disease
- Are overweight
- Do not exercise

What Surgery Will I Have for Coronary Artery Disease?

CABG (Coronary Artery Bypass Grafts) Surgery:

Coronary Artery Disease causes decreased blood flow to the heart muscles which can lead to chest pain or a heart attack. If you have Coronary Artery Disease, the operation that you will have is called Coronary Artery Bypass Grafts or CABG for short. The surgeon creates a new path for blood to flow around the blocked part of the artery.

To create this “detour,” veins or arteries are connected above and below the blockage, so that blood will flow around the blockage. This allows your heart muscle to get the blood flow it needs. The surgeon will take a vein from your leg to make a bypass on your heart. The surgeon may also use an artery from the inside of your chest (internal mammary artery) or an artery from your arm (radial artery) to create a heart artery bypass.



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The doctor uses a blood vessel to make a path for blood to flow around the blockage.

Is CABG Surgery Usually Successful?

Yes, CABG surgery is usually very successful. CABG surgery usually prevents chest pain and heart attacks for years to come. After surgery, your body will still have a tendency to form plaques in your arteries. Plaques may form in new places in the heart arteries and in the bypass grafts.

Still, after 10 years, only about 5% of patients need a repeat CABG surgery.

Heart Valve Surgery

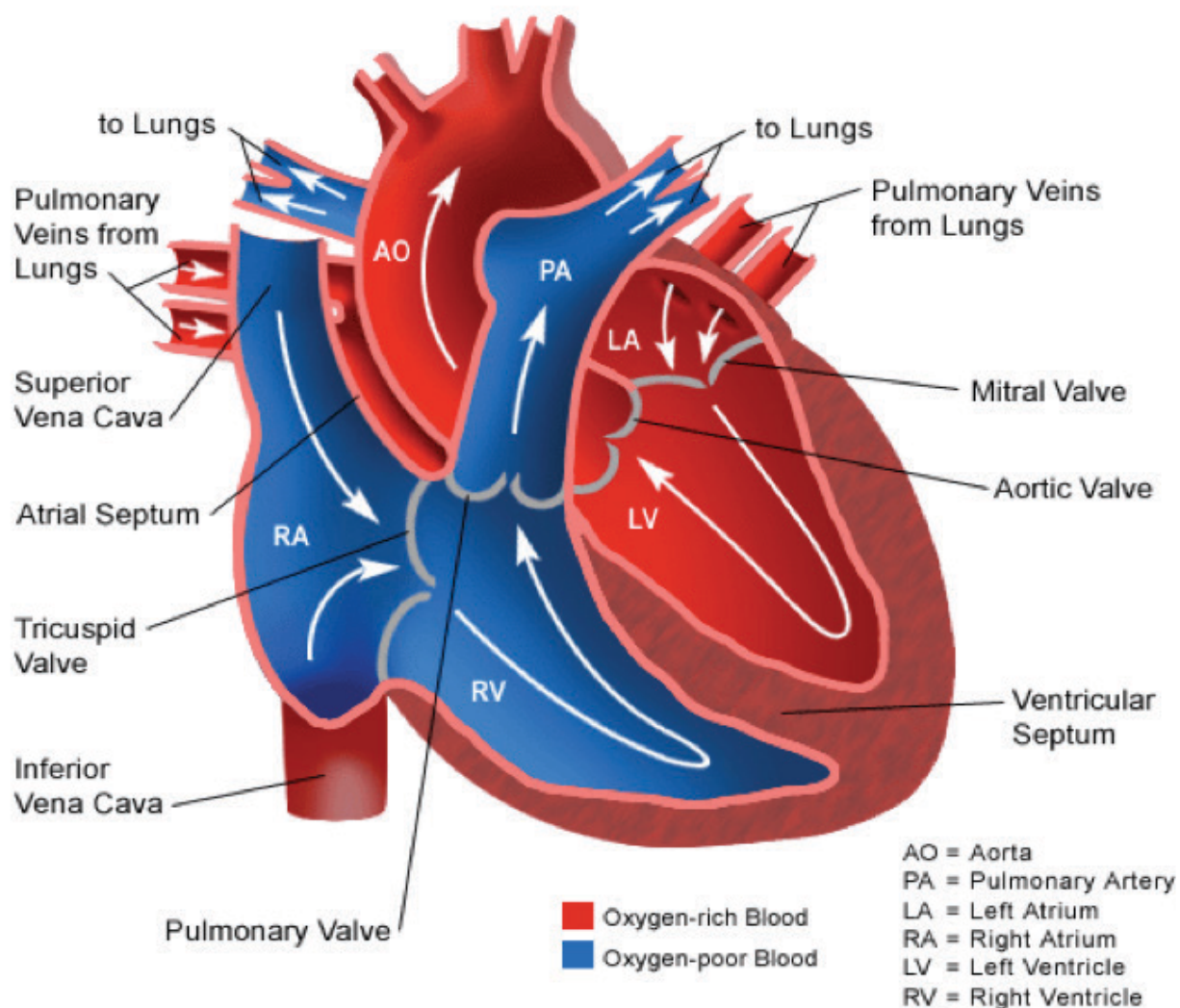
What is Heart Valve Disease?

In order to understand Heart Valve Disease, you must first understand how your heart works.

Blood Flow through the Heart

The heart works like a double pump. The left side pumps blood to the body. The right side pumps blood to the lungs. Your heartbeat is the sound of your heart at work. From the left side of the heart, your blood is pumped through

the body in a network of arteries and veins. Along the way, the blood releases oxygen and nutrients to the body's cells and carries away carbon dioxide and other waste. The blood then travels back to the right side of the heart. The right side of the heart pumps the blood to the lungs where it releases carbon dioxide. In the lungs, the blood receives oxygen. The oxygenated blood then returns to the left side of the heart and is pumped to all parts of the body once again.

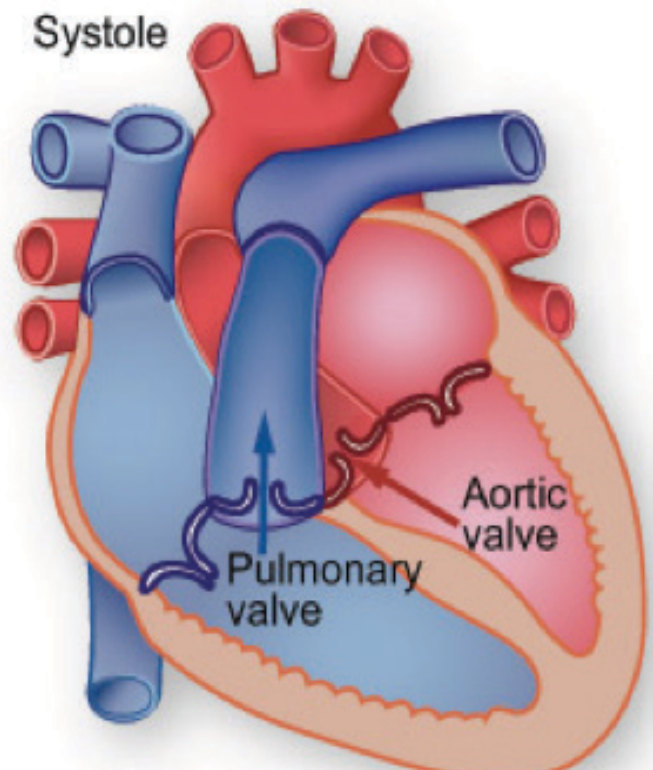
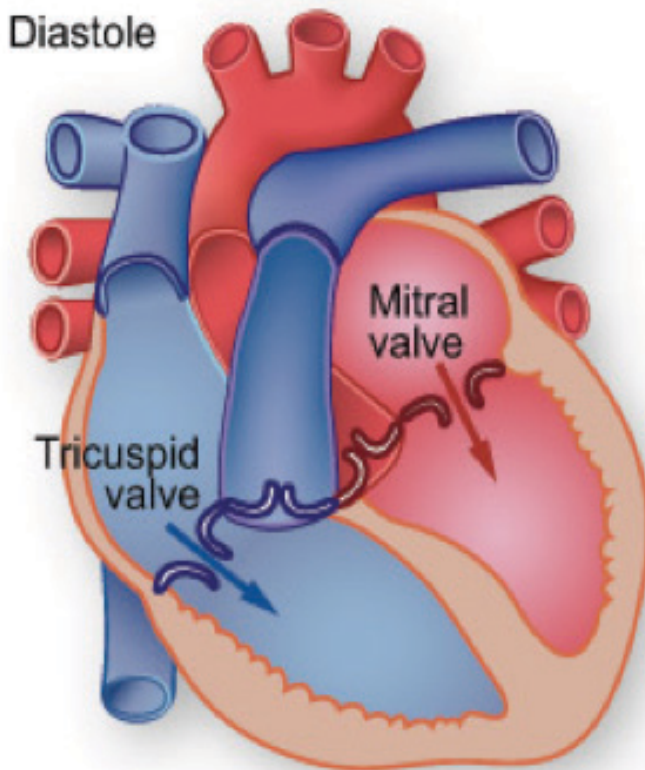


How the Heart Valves Work

Heart Valve Disease is malfunction of one or more of the valves in the heart. The heart has four chambers and four valves. The chambers are separated by valves. Each valve has leaflets that are able to open and close like a swinging door. When the chamber of the heart pumps, the doors or leaflets swing open to allow the blood to flow through. When the chamber relaxes, the leaflets close tight so no blood can flow backwards through the valve.

The four heart valves are:

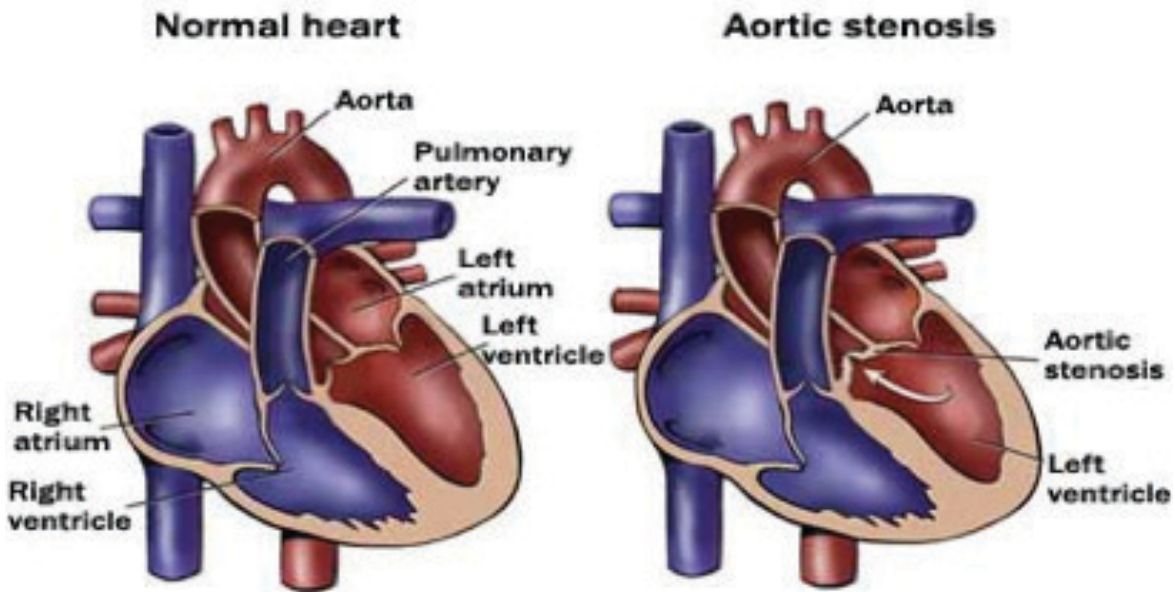
- **Mitral Valve** – separates the left atria from the left ventricle
- **Aortic Valve** – separates the left ventricle from the aorta (the largest artery of the body)
- **Tricuspid Valve** – separates the right atrium from the right ventricle
- **Pulmonic Valve** – separates the right ventricle from the pulmonary artery



Heart Valve Disease:

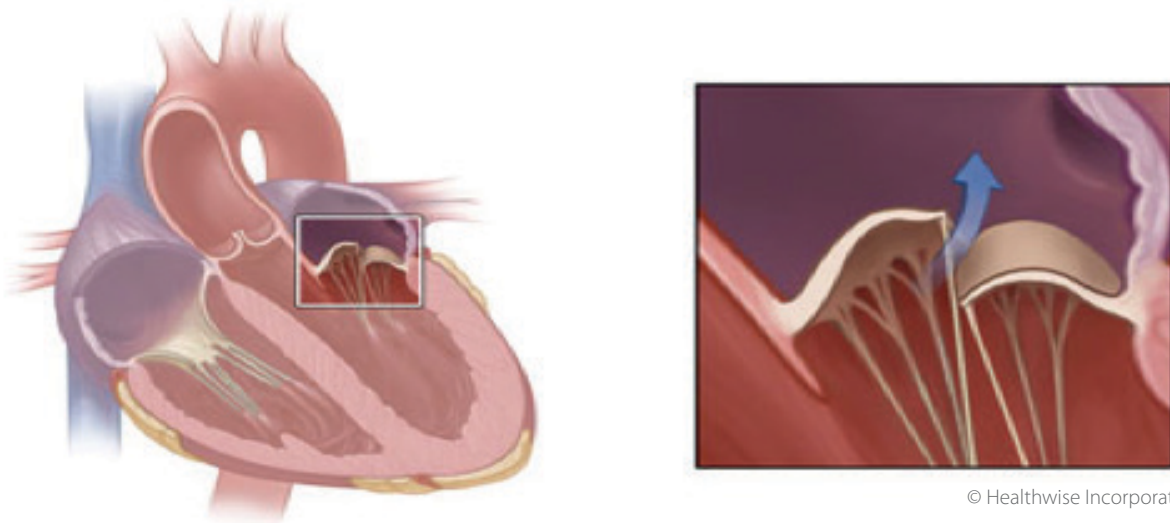
There are two types of valve disease: Stenosis and Regurgitation.

- **Stenosis:** The leaflets become thick and stiff. The stiffened leaflets are not able to open fully, so the blood must go through a narrower opening.



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- **Regurgitation, also known as insufficiency:** The leaflets do not close tightly. This causes the blood to go backwards through the valve.



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Some people have stenosis and regurgitation of a heart valve at the same time.

How Will I Know if I Have Heart Valve Disease?

The symptoms that you may experience depend on the type and severity of your valve disease. Some people do not have any symptoms at all. You may have some of the following symptoms:

- Fatigue
- Weakness
- Light headedness
- Shortness of breath
- Difficulty breathing while lying flat

Disease of the heart valves cause the heart muscle to work harder than normal, and can cause congestive heart failure. Both stenosis and regurgitation of the heart valves can lead to symptoms of congestive heart failure. Some of the symptoms of heart failure are shortness of breath, swelling of the legs and ankles, and fatigue. You may have one of these symptoms or several of them. The symptoms generally progress slowly over a long period of time. For example, most people who experience shortness of breath initially only feel short of breath while walking uphill or up stairs. Eventually, they may have shortness of breath while walking a few feet or at rest.

What Causes Heart Valve Disease?

The causes of Heart Valve Disease are:

- Degeneration or aging
- Coronary artery disease
- Heart attack
- Congenital heart disease (birth defect)
- Infection in the blood and heart (infective endocarditis)
- Rheumatic heart disease (rheumatic fever)

What Surgery Will I Have for Heart Valve Disease?

If you have Heart Valve Disease, your heart surgeon will replace or repair the defective valve. Many times, the surgeon will decide whether to repair or replace the valve during your operation.

Valve Repair:

The leaflets or valve openings may be repaired to help your valve work properly. Not all valves can be repaired. If your valve cannot be repaired, then it may be replaced.

Valve Replacement:

If the valve cannot be repaired, it will be replaced with a mechanical valve or a tissue valve.

A mechanical valve is created from manmade materials. The mechanical valve should last for the rest of your life. You will need to take a blood thinner for all of your life if you have a mechanical valve.

A tissue (biological) valve is made of tissue from a pig, cow or human donor. Tissue valves do not last as long as mechanical valves. Lifelong blood thinners may not be needed with the tissue valve.