

# MITRAL STENOSIS

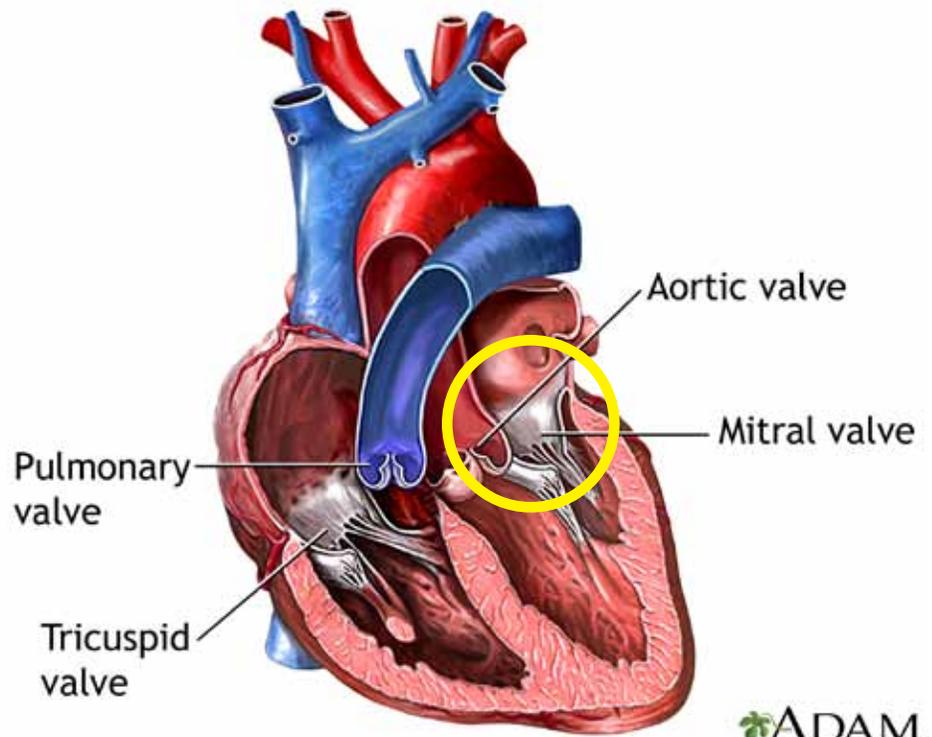


**EDITH AND BENSON FORD  
HEART & VASCULAR INSTITUTE**

# WHAT IS MITRAL STENOSIS?

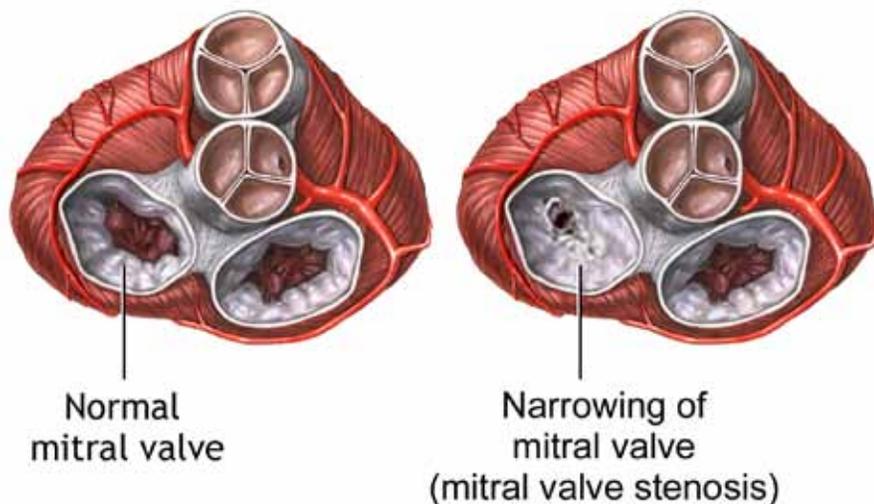
## THE MITRAL VALVE

The heart contains several valves, which help to regulate the flow of blood. When oxygenated blood flows from the lungs into the left side of the heart, it enters the upper chamber. As it makes its way from the top chamber to the bottom chamber, it passes through the mitral valve. This one-way valve is made of two flaps called leaflets, both of which flip open to let blood pass into the lower chamber, and then flip back closed, fitting together, creating a tight seal. In this way, the mitral valve allows blood to flow to the bottom chamber (where it is then pumped out to the body), while preventing this blood from flowing back into the top chamber.



## STENOSIS

Mitral stenosis is a disease in which the two half moon shaped flaps which make up the mitral valve become thick and stiff. These changes prevent them from opening fully, prevent blood from passing through to fill the lower chamber and instead, cause blood to back up into the lungs. The slow fluid buildup in the lungs makes it progressively more difficult to breathe with less and less activity.



## CAUSES

In adults, mitral stenosis occurs most often in people who have had rheumatic fever. Rheumatic fever occurs when scarlet fever or strep infection is not treated. Other less common causes of mitral stenosis include infections in the heart, calcium buildup in the valve, flaws from birth, radiation treatment to the chest, and conditions that cause stiffening of heart tissues (such as lupus or rheumatoid fibrosis).

# HOW IS MITRAL STENOSIS DIAGNOSED?

## SYMPTOMS

Mitral stenosis is a lifelong disease that progresses slowly; for most people it takes 10–20 years before symptoms appear. Initial symptoms may be mild, such as shortness of breath with any activity that increases heart rate. Sometimes symptoms first appear with an irregular heart rhythm called atrial fibrillation, during pregnancy or other body stressors such as an infection in the heart or lungs. As the mitral valve becomes stiffer and the opening becomes narrower, the symptoms become more limiting and may include:



- Shortness of breath or difficulty breathing with little activity
- Feeling very tired or weak
- Feeling your heart pounding or racing
- Frequent respiratory infections such as bronchitis
- Swelling in your feet or ankles
- Coughing or spitting up blood



## DIAGNOSIS

When the first symptoms of mitral stenosis appear, your health care provider will ask about your health and your activity level. They will perform a physical exam, using a stethoscope to listen for a distinctive murmur, other abnormal sounds and for fluid in your lungs. Additional tests may include:

- Electrocardiogram (ECG): Looks at how the electrical currents are traveling in the heart and shows the heart's rhythm.
- Echocardiogram (2D and 3D Echo) and Doppler ultrasounds: Show how the valves open and close as the heart beats, and whether or not there is blood backing up in the upper heart and lungs.
- Chest X-ray: Looks for causes of shortness of breath such as lung congestion or infection.
- Trans-Esophageal Echocardiogram (TEE): An internal ultrasound of your heart using a smaller "scope" that is swallowed, and which gives close-up pictures of the heart valves opening and closing.
- Cardiac catheterization: This is a minimally invasive test that measures pressures in your heart and looks at the blood flow in the vessels that feed your heart. Thin tubes known as catheters are inserted through major vessels (in your wrist or groin area), and then threaded up to your heart.



# HOW IS MITRAL STENOSIS TREATED?

## TREATMENT OVERVIEW

Treatment is based on how you feel, how hard the heart is working and if there is fluid buildup in the lungs. You may be advised to schedule regular visits with your heart team to assess progress, undergo tests as necessary to assess valve and heart function, or take medication to alleviate symptoms. If your symptoms become severe, you may need to have your mitral valve replaced or repaired.

## MEDICAL THERAPY

Medications can be used to relieve symptoms, they will probably include:

- **Water pills:** To help reduce fluid buildup in the lungs and legs by increasing urine flow, which helps to improve breathing and ability to exercise.
- **Beta-blockers or other heart rate pills:** To help control how fast the heart is beating and prevent pounding in the chest.
- **Blood thinners:** If an irregular heart rhythm called atrial fibrillation is present, blood thinners may be used to prevent strokes that can occur when blood clots form in the heart, break loose and travel to the brain.
- **Antibiotics:** May be recommended before routine procedures such as dental work, which can introduce bacteria into the bloodstream that can lead to heart valve infection.



## REPAIR THERAPY: PERCUTANEOUS MITRAL BALLOON VALVULOPLASTY (PMBV)

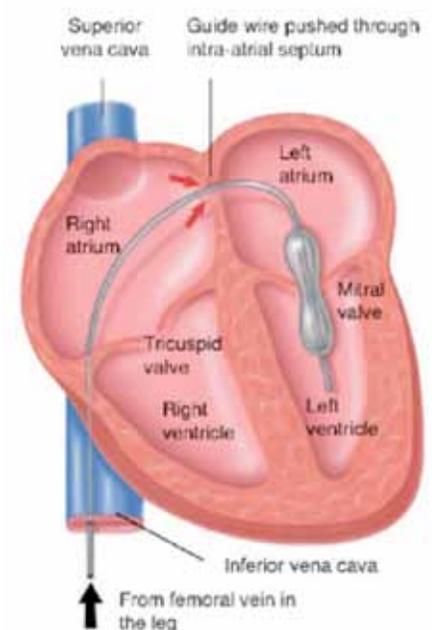


PMBV is a minimally invasive procedure in which the mitral valve is repaired by using thin tubes known as catheters that have a sausage shaped balloon mounted on the tip.

During the procedure:

- The balloon catheter is inserted into a major vessel in the groin. The catheter travels up into the right side of the heart and is inserted across the wall between the right and left upper chambers.
- The balloon-tipped catheter is then turned and directed through the faulty mitral valve and the balloon is inflated.
- This widens the opening of the mitral valve so that it can open and close more freely and blood can flow through more easily.
- After the heart valve and movement of the walls are assessed with an echocardiogram, the balloon is deflated and removed.
- You will stay overnight in the hospital and have another echocardiogram the day after the procedure.
- Balloon valvuloplasties usually require staying in the hospital for one to two days.
- After hospital discharge, cardiac rehabilitation is recommended for strength and exercise training.

Not all patients are good candidates for this procedure. If this is the case, the valve might need to be repaired or replaced through surgery.

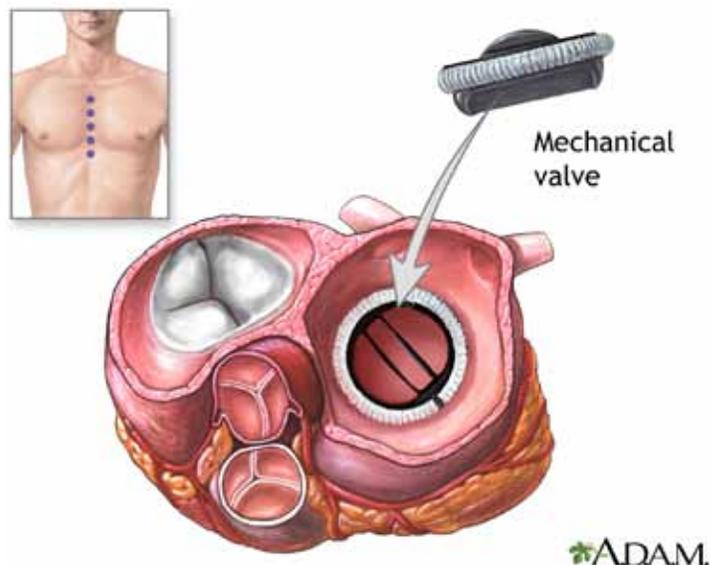


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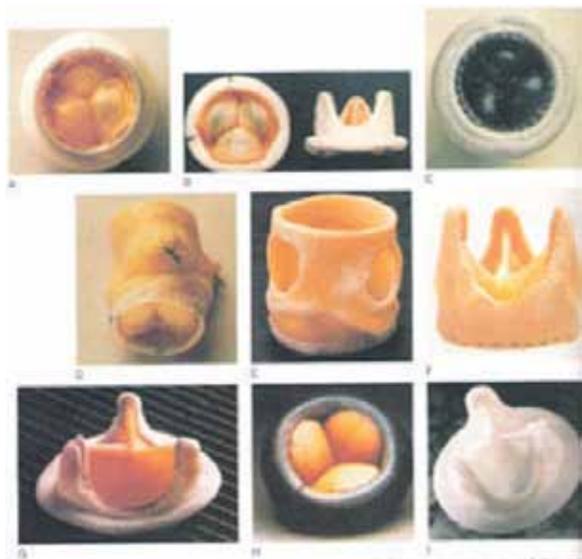
## REPLACEMENT THERAPY: MITRAL VALVE REPLACEMENT

In this open-heart procedure, the surgeon removes the faulty valve and replaces it with a biological or mechanical valve. The decision as to the type of valve will be made between you and your surgeon.

- Prior to the procedure, you and your surgeon will decide what type of valve will be used.
- Before the procedure begins, you are put completely to sleep by anesthesia.
- During the procedure your heart is stopped and a heart-lung bypass machine is used to do all the work of your heart and lungs.
- Next, the replacement valve is sewn in place.
- After the valve is replaced, your heart is restarted and a breathing machine is used until all anesthesia has worn off.
- The surgery usually requires staying in the hospital for five to seven days, a period of recovery at home and exercise rehabilitation therapy.

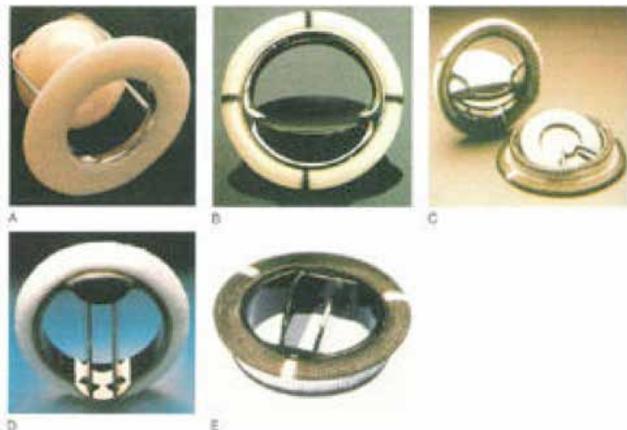


## BIOLOGICAL VS. MECHANICAL VALVES



- **Biological valves:** These are made of cow, pig or human heart tissue that has been specially treated to decrease the chances of rejection or infection. Biological valves do not require any blood thinners to prevent clots from forming. They last approximately 10 years, but some of the newer valves may last 15 years or more.

- **Mechanical or man-made valves:** These are made of metal or polymers. They last longer than biological valves and sometimes do not require replacement during your lifetime. However, they do require lifelong blood thinners to prevent blood clots from forming on the valve.





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