Heart Valve Disease

Your Journey through
Minimal Incision Valve Surgery

Educational content provided by Edwards Lifesciences.
You Are Not Alone

Yearly there are 700,000 heart surgeries performed across the world

- 250,000 of them are valve surgeries
- Heart valve surgery has been shown to be safe and has a low mortality rate (2.4%)
  - Safer in less symptomatic patients
  - Safer in high volume centers

Some valve surgery patients you may know:

- Barbara Walters, Barbara Bush, Robin Williams, Liz Taylor, Arnold Schwarzenegger, and more

1. The Patient’s Guide to Heart Valve Surgery, by Adam Pick

Heart Valve Disease { Your Journey through Minimal Incision Valve Surgery
Why Minimal Incision Valve Surgery?

A decade worth of clinical data shows that minimal incision or minimally invasive valve surgery (MIVS) can achieve great results, comparable to open chest valve surgery. MIVS also includes these additional benefits:

- Less trauma and physical impact to the body
- Faster recovery and return to normal activities
- Less scarring and improved cosmetic results
- Reduced blood loss and risk of post-operative complications

The Human Heart

- Made of a muscle, called myocardium
- Four chambers:
  - 2 atria (upper chambers)
  - 2 ventricles (lower chambers)

Left side (red) receives oxygen-rich blood from the lungs and pumps it to the entire body

Right side (blue) receives oxygen-poor blood from the entire body and pumps it to the lungs
The Heart Valves

- Valves keep blood flowing in one direction through your heart
- Your heart has 4 valves:
  - Mitral and tricuspid valves control blood flow between the upper and lower chambers of the heart
  - Pulmonary and aortic valves control blood flow out of the heart
Heart Valve Disease

- There are two types of heart valve diseases:
  - Congenital (from birth)
  - Degenerative (aging process)
- The most common problems or defects are:
  - Stenosis or hardening where the valves have a problem opening
  - Regurgitation or back-flow of blood where the valves have problems closing
- These problems make your heart work harder to pump the needed amount of blood to your body
  - Symptoms tend to develop over time
Diagnosing Heart Valve Disease

Physicians may use some of the following examinations to detect heart valve disease:

1. **Initial Testing**
   - Stethoscope used to identify heart murmur (sound of an abnormal blood flow)

2. **Secondary Diagnostic Tools**
   - Electrocardiogram (ECG or EKG)
   - Chest X-ray

3. **Additional Diagnostic Tools**
   - Echocardiogram
   - Radionuclide scans
   - Trans-esophageal echocardiogram
   - Exercise Testing

4. **Most Sophisticated Diagnostic Tools**
   - Cardiac Catheterization
   - Magnetic resonance imaging (MRI)

Each patient and their conditions are different. These exams should be conducted by expert diagnosticians.
### Symptoms
- Shortness of breath
- Fatigue during exertion
- Cough (especially when laying down)
- Difficulty sleeping due to coughing
- Heart palpitations (racing)
- Chest pain or tightness
- Dizziness

### Physical Findings
- Heart murmur
- Swollen feet or ankles

---

Treatment with Medication

“...There is no specific medical therapy for patients who have not yet developed symptoms. **Patients who developed symptoms require surgery, not medical therapy.**”

Aortic Valve Stenosis
Aortic Stenosis

- Narrowing of the valve opening that results in less blood flow through the valve
- Caused by a progressive build-up of calcification or hardening of the valve leaflets (flaps)
- The most common type of disease associated with the aortic valve

A narrowed aortic valve reduces efficient blood flow from the left ventricle to the aorta, thus to the rest of the body.
Aortic Stenosis Grades

- Aortic stenosis (AS) is best described as a disease continuum with varying grades:
  - Mild
  - Moderate
  - Severe
- Physicians establish how severe the disease is based on the amount of blood that moves appropriately through your valves.
Aortic Valve Replacement
Surgical Options

Conventional

Minimal Incision

Open-chest or Sternotomy

Right Anterior Thoracotomy

Mini-sternotomy
Mitral Valve Regurgitation
Mitral Valve Disease

- Prolapsed cusps (flaps) are the most common disease to affect the mitral valve.
- Many people have prolapsed cusps with no other problems.
- Some patients with more progressive disease, however, will have what is called mitral regurgitation.
- Mitral regurgitation is a condition where the mitral valve does not close tightly, allowing blood to flow backward inside the heart.
- Mitral regurgitation can also be referred to as mitral insufficiency or mitral incompetence.
Causes of Mitral Valve Regurgitation

- Degeneration – age related wear and tear
- Infection:
  - Prior infection such as rheumatic fever that causes scarring and valve damage
  - Active infection such as endocarditis
- Congenital heart defects – acquired from time of birth
- Weakened heart muscle from prior heart attacks can also affect the function of the heart valves
Mitral Valve Regurgitation Grades

- Mitral valve regurgitation is best described as a disease continuum with varying grades:
  - Mild
  - Moderate
  - Severe
- Physicians establish how severe the disease is based on the amount of blood that is moving backward through the mitral valve.
- They also evaluate the size of the left ventricle (pumping chamber) of your heart.
Mitral Valve Surgical Approaches

- With the mitral valve, surgeons do one of two things to the valve:
  - Repair – place a ring around the valve to help stabilize the valve leaflets (indicated by guidelines\(^3\) as primary approach)
  - Replacement – remove the damaged valve completely and replace with a new valve (either mechanical or tissue)
- Depending on the severity of the regurgitation, a repair can very often be performed instead of a full valve replacement

Mitral Valve Surgical Options

Conventional
Open-chest or Sternotomy

Minimal Incision
Thoracotomy

Heart Valve Disease: Your Journey through Minimal Incision Valve Surgery
Minimal Incision Valve Surgery
What is Minimal Incision Valve Surgery?

Minimal incision valve surgery is a minimally or less invasive approach to surgery that is designed to offer patients an option for valve surgery that is equivalent⁴ to traditional open-chest heart valve surgery.

Minimal incision valve surgery can treat various cardiac diseases, including:

- Aortic valve stenosis
- Mitral valve regurgitation

Additional indications and contraindications

Why Choose Minimal Incision Valve Surgery?

- Less pain
- Less trauma to the body
- Faster recovery and return to normal activity
- Less scarring and better cosmetic results
- Less risk of infection or complications in the chest bone
- Less time in the hospital and intensive care unit
- Shorter amount of time on a breathing machine
- Less potential need for blood transfusions

---


---

**Heart Valve Disease**

Your Journey through Minimal Incision Valve Surgery
Questions to Ask your Surgeon

- Do you perform minimal incision valve surgery?
- Of all the isolated valve surgery you perform, what percentage are minimal incision valve surgery procedures? If not 100%, why?
- Am I a minimal incision valve surgery candidate?
- Do I have any of the risk factors that exclude me from minimal incision valve surgery?
- [For mitral patients] What is the likelihood that my valve will be repaired versus replaced? Why?
Questions and Answers
Clinical Resources

- [www.YourHeartValve.com](http://www.YourHeartValve.com)
- [www.AmericanHeart.org](http://www.AmericanHeart.org)
- [www.acc.org](http://www.acc.org)
- [www.HeartValveSurgeons.com](http://www.HeartValveSurgeons.com)
- [www.heart-valve-surgery.com](http://www.heart-valve-surgery.com)
- *The Patient’s Guide to Heart Valve Surgery*” by Adam Pick
Minimal Incision Valve Surgery

<table>
<thead>
<tr>
<th>Indications (patients who may be candidates for this surgery)</th>
<th>Contraindications (who can’t have this surgery)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Patients undergoing the:</td>
<td>• Relative contraindications include:</td>
</tr>
<tr>
<td>• Aortic valve replacement</td>
<td>• Moderate to severe peripheral or aortic artherosclerosis</td>
</tr>
<tr>
<td>• Mitral valve repair/replacement</td>
<td>• History of thoracic trauma</td>
</tr>
<tr>
<td>• Tricuspid valve surgery</td>
<td>• Absolute contraindications include:</td>
</tr>
<tr>
<td>• Intra-cardiac myxoma resection</td>
<td>• Aneurysm of the ascending aorta</td>
</tr>
<tr>
<td>• Patent foramen ovale repair</td>
<td>• Severe aortic regurgitation</td>
</tr>
<tr>
<td>• Atrial/ventricular septum defects repair</td>
<td>• Severe peripheral artherosclerosis</td>
</tr>
<tr>
<td>• Ablative maze procedures for atrial fibrillation</td>
<td>• Other contraindications for cardiopulmonary bypass</td>
</tr>
</tbody>
</table>

Heart Valve Disease

Your Journey through Minimal Incision Valve Surgery
References

1. The Patient’s Guide to Heart Valve Surgery, by Adam Pick
Minimal incision valve surgery (MIVS) is not indicated for patients with moderate to severe peripheral or aortic atherosclerosis, a history of thoracic trauma, aneurysm of the ascending aorta, or for people suffering from severe aortic regurgitation.

Complications for this procedure are similar to those with any heart surgery procedure and may include injury to the vessels and other structures in the heart, plaque embolization, stroke, sepsis, hematoma at the access site, arrhythmia, arterial thrombosis, cardiac failure, peripheral nerve damage, allergic reaction to contract medium, or death.

Discuss all of these risks with your physician, and other options available to you for the treatment of heart disease.

The information in this booklet was compiled as an educational service by Edwards Lifesciences Corporation, a leader in advanced cardiovascular disease treatments, the number one heart valve company in the world, and the global leader in acute hemodynamic monitoring. Edwards is a trademark of Edwards Lifesciences Corporation. Edwards Lifesciences is a service mark of Edwards Lifesciences Corporation and is registered in the United States Patent and Trademark Office.

All rights reserved. AR05987