Minimally-Invasive Robotic Mitral Valve Surgery

What 6 Facts Should You Know?

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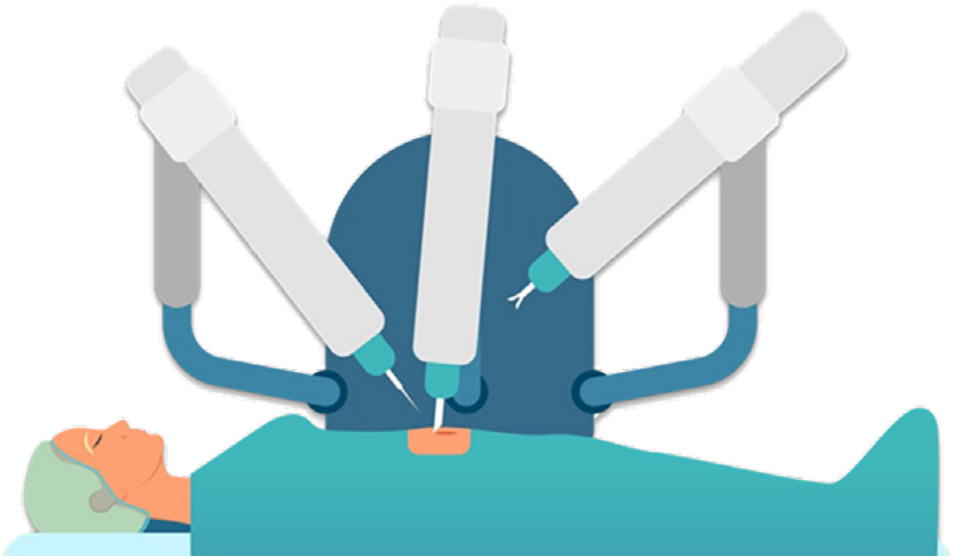
Introduction:

Robotic Surgery Has Transformed Mitral Valve Therapy



During the past 20 years, cardiac surgery has undergone a remarkable transformation with the advent of minimally-invasive robotic surgery. This cutting-edge technology has revolutionized how we treat mitral valve disease, offering patients a less-invasive, safe and effective alternative to traditional surgical approaches.

Mitral valve disease, which impacts 2.5% of the general population[1], can severely impact that patient's heart function and quality-of-life. Traditional surgical methods, while effective, often require large incisions, extended hospital stays, and lengthy recovery periods.

Common benefits of minimally-invasive robotic mitral valve surgery are:

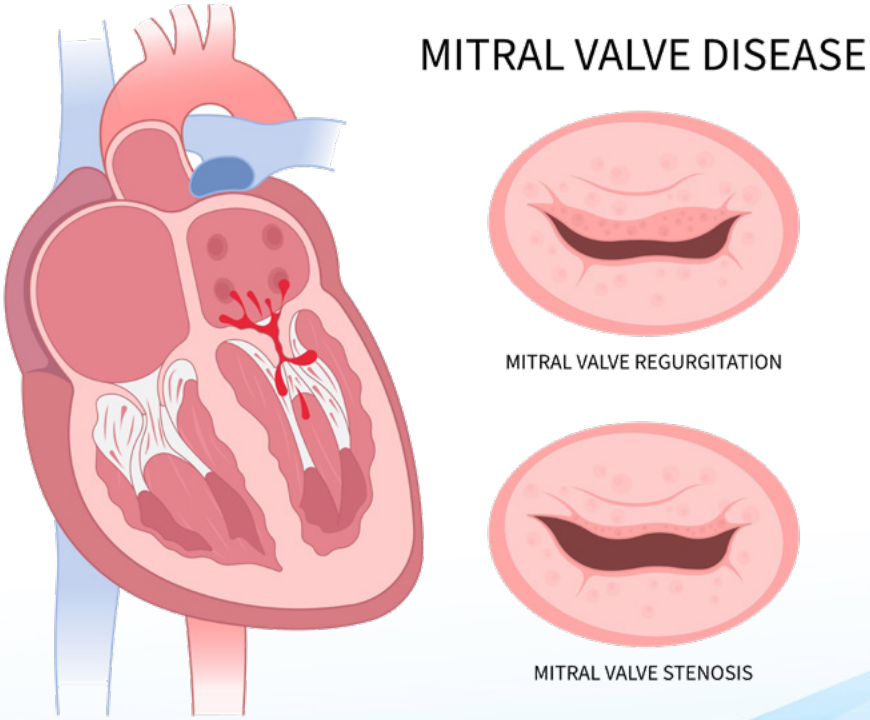
- **Reduced Recovery Time:** Patients typically experience shorter stays in the hospital and shorter recovery periods compared to traditional approaches. This allows patients to return to their normal daily activities faster.
- **Minimal Pain and Scarring:** The use of smaller incisions in robotic surgery typically leads to less post-operative pain and minimal scarring. For example, the incision size of a total endoscopic robotic approach is only 8 millimeters. This improves the cosmetic outcome of the operation and enhances patient recovery.
- **Enhanced Visualization:** Thanks to the three-dimensional (3D) camera that is part of the robot, cardiac surgeons are able to see the mitral valve structure and leaflets up to 12 times magnified.
- **Higher Likelihood of Mitral Valve Repair:** Studies show that patients who have their mitral valve treated using an approach from the right side have a higher likelikhood of repair, which is the optimal treatment for mitral valve regurgitation (a leaky valve).
- **Surgeon Ergonomics:** The cardiac surgeon is able to sit down at a console that is a short-distance from the operating table. As a result, surgeons can conduct the operation in a comfortable position.

Fact 1:

Mitral Valve Disease Is Deadly and Under-Treated

Mitral valve disease is often under-diagnosed and under-treated. Many patients are either unaware of their condition or hesitant to seek treatment due to the invasive nature of traditional surgical options. Symptoms such as shortness of breath, fatigue, and heart palpitations can gradually worsen over time, significantly impacting the patient's quality-of-life.

Without treatment, 50% of patients diagnosed with severe mitral regurgitation may lose their lives within 5 years of the onset of symptoms.[2] Unfortunately, only 15% of patients with severe mitral valve disease treatment. [3]



Early diagnosis and treatment are critical for improving the outcomes of mitral valve disease patients. However, the fear of undergoing traditional heart surgery often deters patients from pursuing timely intervention. This reluctance can lead to a progression of the disease, resulting in severe health issues.

Delaying treatment for mitral valve disease may have serious consequences. As the disease progresses, the heart becomes increasingly strained, leading to complications such as heart failure, atrial fibrillation (irregular heartbeat), an increased risk of stroke, and death.

“Patients with mitral valve disease are often not referred for surgery early enough. I’ve been using the robot to treat mitral valve disease for almost 20 years.”

Dr. Husam Balkhy
Director of Robotic Surgery, University of Chicago

The under-treatment of mitral valve disease can be attributed to several factors:

- Lack of Awareness
- Symptom Overlap
- Inadequate Screening
- Misdiagnosis

However, minimally-invasive robotic mitral valve surgery offers a transformative solution to this problem. By providing a less-invasive and more patient-friendly alternative, this advanced surgical technique encourages more individuals to seek treatment earlier.

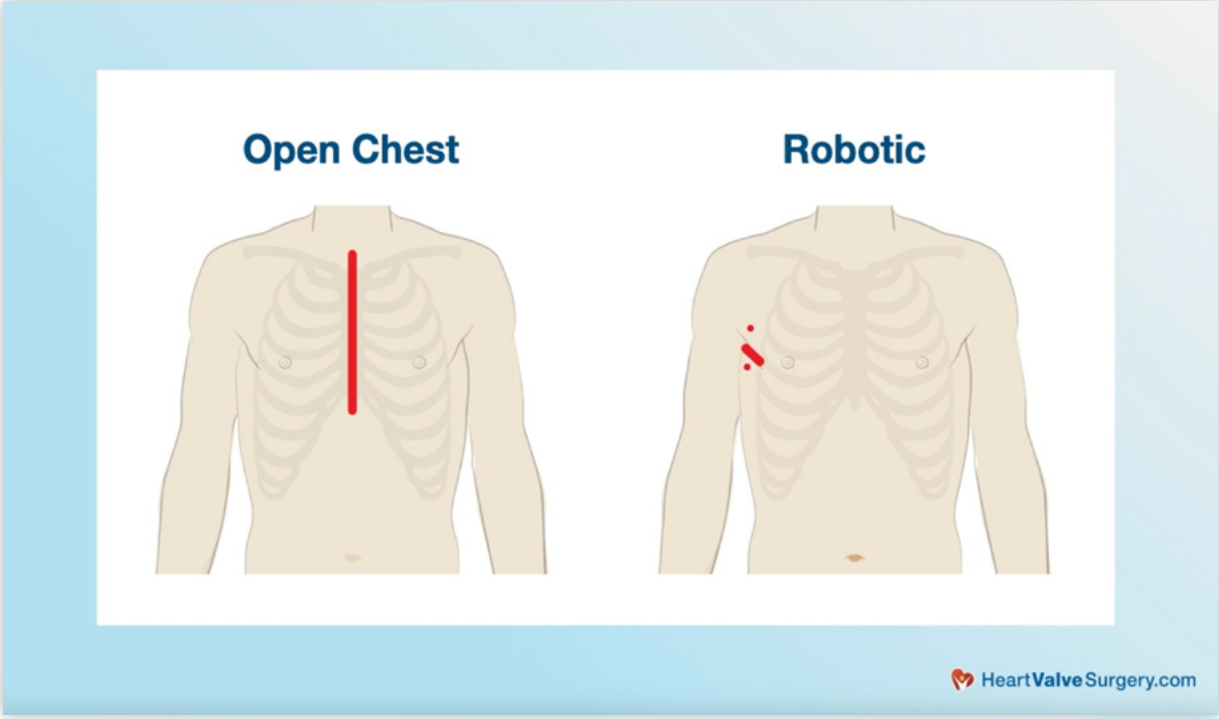
“Robotic mitral valve surgery is a less-invasive procedure that does not break the sternum. Instead, the surgeon goes between the ribs.”

Dr. Kevin Hodges
Assistant Professor of Cardiac Surgery,
Northwestern Medicine, Chicago, Illinois

Fact 2:

Robotic Surgery Uses Minimally Invasive Techniques

There are many differences between robotic mitral valve surgery and traditional approaches. The main differences are (i) robotic surgery does not require a broken sternum or broken ribs, (ii) patients who undergo robotic surgery typically have shorter recovery times, and (iii) patients who undergo robotic surgery typically experience less pain.



How Does It Work? At the start of the procedure, your surgeon will make a few small incisions between your ribs to provide access for the robotic instruments. Using a high-definition 3D camera, the surgeon will guide the robotic arms to reach the diseased mitral valve.

The robotic system allows the surgeon to perform precise movements to repair or replace the mitral valve with minimal disturbance to the surrounding tissue and bone. Once the procedure is complete, the surgeon will remove the instruments and close the small incisions.

"Patients don't like a sternotomy. The robot is a game changer. Patients recover faster and nearly 100% of my patients are off narcotics in 24 hours."

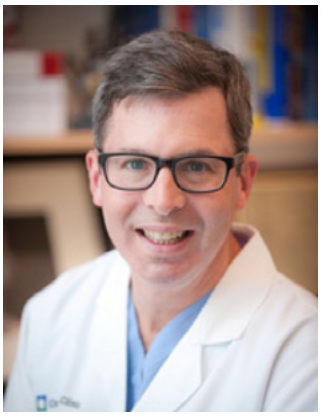
Dr. Thomas Molloy
Medical Director of Cardiac Surgery at Adventist Health Northwest Heart Center, Portland, Oregon

Fact 3:

It's Critical To Find An Experienced Robotic Mitral Valve Team

Minimally-invasive robotic mitral valve surgery requires a highly skilled and experienced surgical team. The success of the procedure largely depends on the expertise and the coordination of this team which includes cardiac surgeons, anesthesiologists perfusionists and imaging specialists. Together, the robotic team ensures that each patient receives the best possible care and outcomes.

A "Robotic Mitral Valve Team" is dedicated to the treatment of mitral valve disease and essential for optimal patient care. This team collectively evaluates each patient's condition and determines the most appropriate treatment plan. The use of advanced robotic technology requires specific training and experience to maximize the benefits of this minimally-invasive approach.



“The Cleveland Clinic has done over 2,400 mitral valve surgeries. It’s very important that patients find an experienced robotic team.”

Dr. Marc Gillinov
Chairman of the Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic

To determine if robotic mitral valve surgery is the best treatment option for you, the medical team may conduct a series of diagnostic tests including angiograms, echocardiograms, computer tomography (CT) scans, and magnetic resonance imaging (MRIs).

When meeting with your Robotic Mitral Valve Team, it is important for you to feel empowered and ask questions specific to your heart and your treatment options.

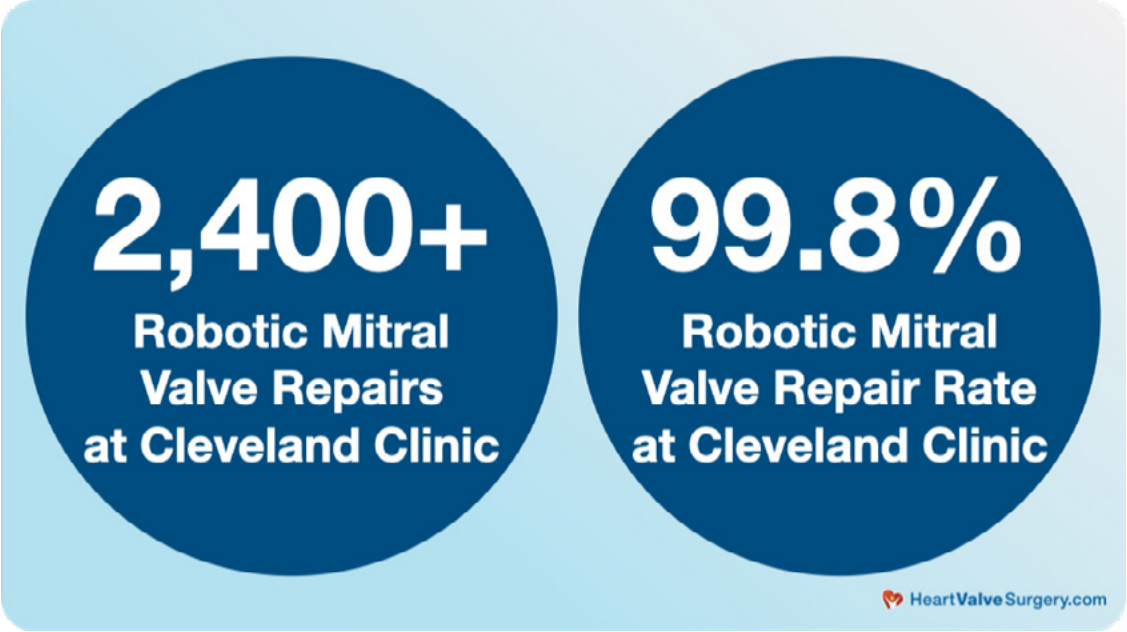
Key questions to ask your doctors include:

- Why is treatment necessary for my specific mitral valve disease?
- What treatment options are available?
- How do I know what is the best treatment for me?
- Do you offer minimally-invasive approaches including robotics?
- Am I a candidate for a less-invasive robotic procedure?
- What are your outcomes for robotic mitral valve surgery of my specific mitral valve disease?
- What are the risks associated with robotic mitral valve surgery?
- How does your team manage those risks?

Fact 4:

Robotic Mitral Valve Surgery Outcomes Are Excellent at Experienced Cardiac Centers

Minimally-invasive robotic mitral valve surgery has proven to be a highly effective treatment option for patients with mitral valve disease, particularly when performed at experienced cardiac centers. For example, the Cleveland Clinic has performed over 2,400 robotic mitral valve procedures with over a 99% repair rate, less than 0.5% complication rate, and an equivalent durability to traditional surgical approaches.



Robotic Mitral Valve Repair Outcomes (Cleveland Clinic, 2024)

Achieving these excellent outcomes is closely tied to the experience and the expertise of the cardiac centers performing the robotic procedure. Centers with a high volume of robotic mitral valve surgeries and specialized teams are better equipped to handle the complexities of mitral valve repair and mitral valve replacement procedures.

“Find the surgeon that has a proven track record of providing great care and great outcomes for mitral valve surgery.”

Dr. Arnar Geirsson
Director of the Surgical Heart Valve Program,
NewYork-Presbyterian Hospital / Columbia University Irving Medical Center, New York, New York

Fact 5:

Patient Recovery Is Accelerated Using Robotics

Minimally-invasive robotic mitral valve surgery offers patients a faster and more comfortable recovery compared to traditional approaches. Leila Saeid, a dentist and mother from Southern California, underwent minimally-invasive robotic mitral valve repair surgery performed by Dr. Joanna Chikwe at Cedars-Sinai in Los Angeles, California.

According to Leila, her recovery was swift and relatively pain-free. She compared robotic mitral valve repair surgery to recovering from wisdom teeth removal. When reflecting upon her recovery, Leila stated, "The first couple of nights after surgery were tough. After that, I experienced minimal pain and I was driving five days later."

"I couldn't believe it. I was back to work 7 days after my robotic mitral valve repair surgery."

Leila Saeid
Robotic Mitral Valve Surgery Patient of
Dr. Joanna Chikwe at Cedars-Sinai

“When a patient has robotic mitral valve surgery, the typical recovery time is 2 weeks. Patients may be able to send emails in bed on day one.”

Dr. Joanna Chikwe
Chair of Cardiac Surgery,
Cedars-Sinai, Los Angeles, California

Fact 6:

Mitral Valve Repair and Replacement Can Be Performed Robotically

While the robot was initially used to perform mitral valve repair procedures, the use of robotic techniques are now available for patients needing mitral valve replacement operations as well.

"Using little ports in the side of the chest and the heart-lung machine, we can repair or replace the mitral valve. "

Dr. Robert Smith
Chairman of Cardiovascular Surgical Services, Baylor Scott & White The Heart Hospital - Plano, Plano, Texas

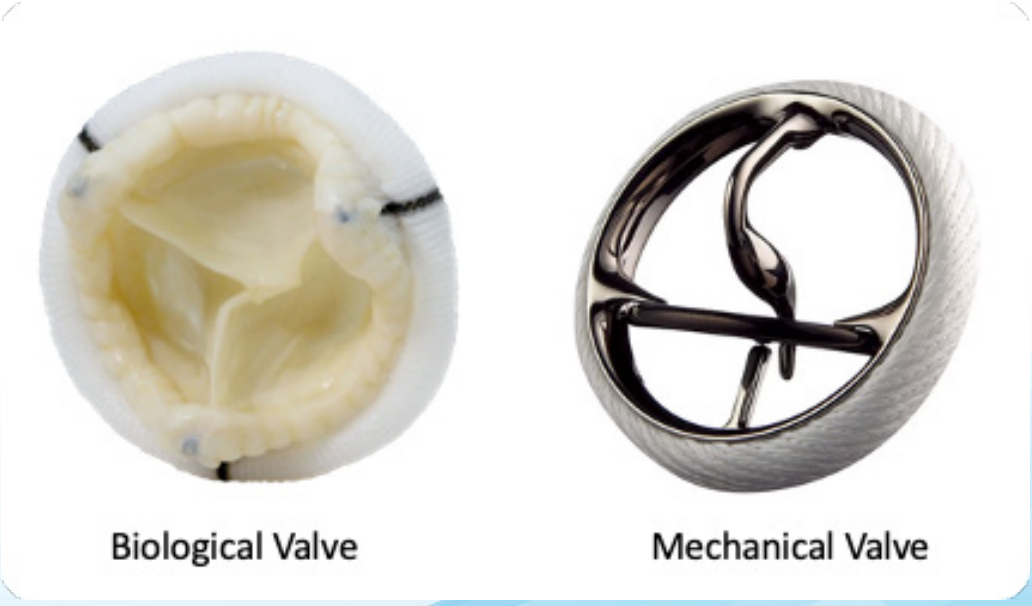
Robotic mitral valve replacement utilizes state-of-the-art technology and materials to ensure the best possible outcomes. The robotic system enhances the surgeon's ability to perform the procedure with precision, while the choice of valve—whether mechanical or biological—can be tailored to the patient's needs and lifestyle.

“The robotic approach is now a growing standard of care for mitral valve repair and replacement along with concomitant procedures.”

Dr. Vinay Badhwar
Executive Chair, West Virginia University Heart & Vascular Institute, Morgantown, West Virginia

Biological Valves: These are made from animal tissue and are more compatible with the body’s natural tissues. They may not last as long as mechanical valves but do not typically require long-term use of blood thinners.

Mechanical Valves: These are made from durable materials such as titanium and carbon. They are designed to last a lifetime but require patients to take blood-thinning medication to prevent clot formation.



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2. Alliance for Aging Research, The Silver Book: Valve Disease, 2018

3. Volha Dziadzko, MD, Outcome and Undertreatment of Mitral Regurgitation: A Community Cohort Study, The Lancet, 2018

For more information, please visit:

www.RoboticMitralSurgery.org

To find medical teams that specialize in the Robotic Mitral Valve Surgery, please click here.