Surgical treatment for mitral valve disease includes either repairing the patient's diseased valve or replacing it with a metal, mechanical valve or an animal tissue valve. The majority of those procedures are open-heart operations that require a major incision in the chest. Now, after a six-year study, surgeons at the University of Maryland Medical Center in Baltimore conclude that minimally invasive mitral valve repair techniques, through only a two-inch incision in the right side of the chest, are safe, durable and effective. The results are published in the September 2009 Annals of Surgery.

"Our experience with 187 patients demonstrates that small-incision mitral valve surgery can be performed safely and effectively with a short hospital stay and a rapid recovery," says lead author James S. Gammie, M.D., a cardiac surgeon at the University of Maryland Medical Center and associate professor of surgery at the University of Maryland School of Medicine.

The most common complications from mitral valve surgery are stroke, kidney failure and infections, none of which occurred among the 187 consecutive patients who received the minimally invasive procedure at the University of Maryland Medical Center, beginning in 2003. Echocardiograms taken just prior to discharge, which were read by cardiologists who did not know the method of mitral repair or surgical approach, showed that 99 percent of the repaired valves were working properly. The median hospital stay was four days. All patients survived the surgery and 2½ years later, 99 percent of the patients were still alive.

Mitral valve surgery was first performed in 1960, when surgeons replaced the diseased, native valve with an artificial valve. For the next 20 years, replacement with a metal or animal tissue valve was the gold standard. Dr. Gammie says no device is as good as a patient's own valve. The metal valve tends to form blood clots, which can lead to a stroke, so patients must take a blood-thinning medication for the rest of their lives, with the risk of bleeding. The tissue valves are less likely to cause clots, but they last only 10-15 years. However, patients with a repaired valve can expect it to last for the rest of their lives.

Rates of mitral valve repair compared to valve replacement vary widely by institution and by surgeon. The repair rate among patients in this study was 96.7 percent for all small-incision mitral valve procedures and 100 percent for patients with mitral valve regurgitation (leakage of blood through the valve). This is well above the current national average of 60 percent repair for all mitral valve operations and 70 percent with procedures to correct pure mitral valve regurgitation.

While there has been widespread adoption of minimally invasive, patient-friendly techniques in most areas of surgery, there has been little data to prompt the routine use of these techniques in mitral valve surgery, especially in cases where the valve can be repaired.

"The small-incision approach fits with our emphasis on mitral valve repair rather than replacement," says the study's senior author, Bartley P. Griffith, M.D., chief of Cardiac Surgery at the University of Maryland Medical Center and professor of surgery and head of the Division of Cardiac Surgery at the University of Maryland School of Medicine. "We prefer to fix a broken mitral valve rather than replace it, because a repair lasts longer and rarely requires another operation down the road."

The study was conducted between May 2003 and March 2009. The mean age of patients was 53.6 years and 64 percent of the patients were male. "The minimally invasive approach is not usually applicable for patients who are markedly obese, elderly or who have significantly reduced cardiac pumping function, or those who require aortic valve
or coronary artery bypass grafting along with mitral valve surgery," says Dr. Gammie.

The minimally invasive mitral valve repair takes, on average, just over 2½ hours to complete. The heart is stopped during the operation for just over an hour, a relatively short time for complex heart surgery, according to Dr. Gammie.

He adds that because this surgery is more technically demanding than an open-heart repair, "We are uncertain if this approach is appropriate for hospitals that only occasionally perform mitral valve surgery or for surgeons who have not yet had a lot of experience with mitral valve repair," says Dr. Gammie.

"This minimally invasive approach to mitral valve repair exemplifies the commitment of our faculty physicians to provide the best care for their patients," says E. Albert Reece, M.D., Ph.D., M.B.A., vice president for medical affairs at the University of Maryland and dean of the University of Maryland School of Medicine. "Very few surgeons across the United States perform this complex, small-incision procedure, yet the long term benefit to patients is unquestionably superior to valve replacement."

The mitral valve (named after the miter, a distinctive cap that bishops wear) is the "inflow valve" for the left ventricle, the main pumping chamber of the heart. Blood flows from the lungs, where it picks up oxygen, across the open mitral valve and into the left ventricle. When the heart squeezes, the two leaflets of the mitral valve snap shut and prevent blood from backing up to the lungs. Blood is directed out of the heart to the rest of the body through another valve, the aortic valve.


Source: University of Maryland Medical Center
