

Spotlight

At the heart of the matter

Patients who cannot risk open heart surgery can now be treated with a new, minimally invasive procedure

BY THAVA RANI

MADAM MARGARET LIM, A 68-YEAR-OLD RETIRED HAWKER, DOES NOT SMOKE OR DRINK. Yet, for more than two years, she had difficulty walking the length of a room. She would become breathless and tired. In fact, she was so exhausted all the time that she stopped going out to meet her friends.

What she had was a severe form of a heart condition known as mitral regurgitation, which can only be treated with surgery. To complicate matters, she also had chronic lung disease and a severely weakened heart, which made surgery too risky for her.

In the past, patients such as Mdm Lim had few therapeutic options. "They could only take medication to control the symptoms and hope for the best," said Dr Yeo Khung Keong, Consultant, Department of Cardiology, National Heart Centre Singapore (NHCS).

But now, a new minimally invasive procedure called the MitraClip has given new hope to patients like Mdm Lim. In April 2011, she became the first patient in Asia to receive the MitraClip in a procedure led by Dr Yeo at NHCS.

"I didn't feel any pain after the procedure. Before, I was always tired and breathless. Now, I feel more energetic, can do household chores and go out with my friends," said Mdm Lim.

Since April 2011, NHCS has successfully performed the procedure on 11 patients. As Singapore's population ages, NHCS expects to perform the procedure on an estimated 50 patients a year.

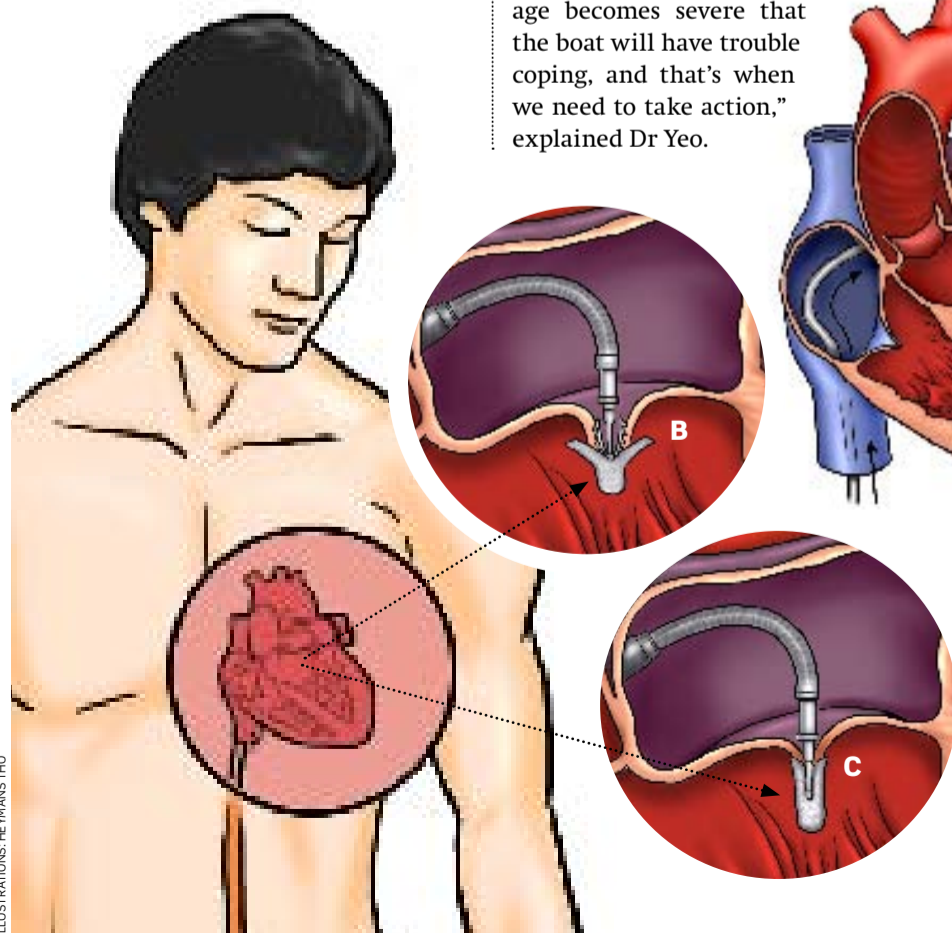
Moderate to severe mitral regurgitation is estimated to affect about 12 per cent of patients over the age of 75. Left untreated, about a third of those with the severe form of the condition are not likely to survive for more than six years.

What is mitral regurgitation?

Mitral regurgitation occurs when the mitral valve (the valve that separates the upper and lower chambers on the left side of the heart) does not close as tightly as it should. This causes blood, which normally flows in one direction from the left ventricle (the lower chamber of the heart) to the rest of the body, to leak and flow backwards into the left atrium (the upper chamber).

As a result, the heart has to work harder to pump blood around the body, making patients breathless, tired and unable to do the things they used to be able to, such as playing sports or carrying heavy things. In mild cases, patients usually do not experience any symptoms, as the heart has the capacity to cope. However, symptoms appear if the heart is unable to compensate or deal with the regurgitation adequately.

"You can look at it as a boat. We accept that there is no boat that does not leak. It is only when the leakage becomes severe that the boat will have trouble coping, and that's when we need to take action," explained Dr Yeo.



NHCS' multidisciplinary team behind Asia's first MitraClip procedure, from left: Dr Yeo Khung Keong (holding the MitraClip device), Assoc Prof Chua Yeow Leng, Assoc Prof Koh Tian Hai, Medical Director, NHCS, and Assoc Prof Ding Zee Pin, with the first MitraClip patient Mdm Margaret Lim (centre).

In younger patients, mitral regurgitation may be due to some form of valve degeneration. But in older patients like Mdm Lim, the most common cause is functional, which means the valve itself is not at fault. Rather, it may be due to a heart that is weakened by heart attacks or damaged by viruses.

Dr Yeo likened it to a door that is in good working condition, but with cracks on the frame or the walls surrounding it. "With time, the leaky valve can cause heart failure, an irregular heartbeat or increased pressure in the lungs."

Treatment options

The first line of treatment is medication, which does not treat the underlying problem, but helps the heart pump more efficiently and reduces the risk of complications such as an irregular heartbeat. Patients are also advised to continue with a healthy lifestyle, as regular moderate exercises like brisk walking or light jogging can help alert them if their condition worsens.

Once symptoms appear, surgery to repair the valve is the treatment of choice. But it is not suitable for all patients, as conventional surgery is too dangerous or risky for patients with other underlying problems.

- (A) The MitraClip and catheter enter the body through a small incision in the groin, go through the femoral vein, cross the atrial septum (the wall of tissue separating the right and left atrium) and enter the left atrium.
 (B) The device is aligned over the site of the leakage and the open clip is sent into the heart's left ventricle.
 (C) The mitral leaflets, which are causing the leakage, are grasped and the clip is closed to seal them. This reduces the leakage significantly.

More on the MitraClip

- The minimally invasive procedure was first performed in Venezuela in 2003.
- The procedure involves implanting a 4mm-wide cobalt chromium clip covered with Dacron fibre in the heart using a minimally invasive route.
- The clip is attached to a catheter and inserted into the body through a 1cm incision in the leg vein.
- The catheter is then directed to the heart, where the clip is used to bring the two valve leaflets together to reduce the leakage.
- It is performed under ultrasound guidance to ensure accurate placing of the clip.
- The whole procedure takes an average of three hours and involves a multidisciplinary team.

Advantages

Both conventional open-heart surgery and the MitraClip procedure help to improve symptoms of mitral regurgitation by fixing the underlying problem. But the MitraClip procedure offers some extra advantages:

- The heart beats normally and, hence, does not require a heart-lung bypass machine.
- There is a reduced need for blood transfusion.
- Patients recover faster with a shorter hospital stay.
- Patients avoid the risk of wound infection and other complications.