



The researchers from NUS and the National University Heart Centre (from left) Mr Kenneth Chan, Associate Professor Leo Hwa Liang, Dr Elynn Phang and Dr Jimmy Hon with their novel prosthetic heart valve called VeloX, that can be implanted in a patient's heart while it is still beating. ST PHOTO: SEAH KWANG PENG

## Valve offers new hope for heart patients

### Samantha Boh

Researchers from the National University of Singapore (NUS) have developed a novel prosthetic heart valve that offers a less risky alternative to open heart surgery.

The procedure, using the newly designed valve called VeloX, does not require the patient's heart to be stopped the way open heart surgery does.

Instead, a 5cm incision is made in the patient's chest before the valve – measuring about 32mm in diameter and 30mm in height – is delivered via a catheter straight to the left chamber of the heart while it is still beating.

The new treatment targets patients with mitral regurgitation, a condition in which the mitral valve – which is between the left upper and lower chambers of the heart – does not close properly.

This degenerative disease, commonly caused by coronary artery blockage, results in a backflow of blood to the heart, forcing it to pump harder to circulate blood around the body. Often, this eventually leads to heart failure.

About 300 patients in Singapore undergo open heart surgery to treat the condition yearly.

However, many more go untreated as they are usually either too old or suffering from multiple chronic diseases, and are deemed unsuitable for the risky procedure.

Such patients are typically only given medication to control symptoms such as breathlessness and body swelling, which does not give them long-term relief.

According to European research, one in three of such patients with severe form of the condition will die within six years.

“Their symptoms get worse, they take more medicine, their lifespan

is reduced and they eventually die of heart failure,” said Dr Jimmy Hon of the Department of Surgery at the NUS Yong Loo Lin School of Medicine. He was co-leader of the research.

Dr Hon noted that there is one other procedure done on a beating heart but that is only suitable for a very small group of patients, compared to the procedure his team is proposing.

He said the new procedure could also cut the post-surgery hospital stay by half, to about four days, and the outpatient recovery period to about two weeks from the two to three months, both in comparison with open heart surgery.

“They go back to society, functional state, much faster,” he said.

The team started pre-clinical trials in January and aims to start clinical trials in about two years.

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