

Happy da Vinci

Hualien Tzu Chi Hospital da Vinci Cardiothoracic Surgery

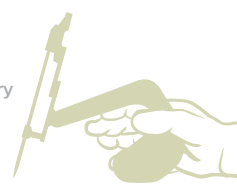
By Huang Szu-Chi



“Dream a dream, a cut with precision; Awakened from dream, a splendid life awaits.” After a mitral valve repair surgery, 75-year-old Mr. Zhang wrote down his thoughts and his appreciation, a line that perfectly depicted the advantages of the da Vinci surgical system.

Mitral Valve Surgery with Teamwork

Zhang Jien-Tai suffered from mitral valve insufficiency and was recommended by a doctor to fix the



problem via surgery. He pondered on the recommendation of heart surgery for two years and remained indecisive. After hearing about the introduction of the da Vinci surgical system in Hualien Tzu Chi Hospital, he seek the advice of Cardiologist Hsieh Jen-Jer and Cardiothoracic Surgeon Chang Jui-Chih, and eventually decided to accept the mitral valve repair using the da Vinci system.

The major difference between the conventional mitral valve repair and the one performed via the da Vinci surgical system is that the conventional surgery would need to saw open patients' sternum. The bone and muscle damage from the opening could lead to stronger postoperative pain and longer recovery time. Acute recovery stage can take from 10 to 14 days, and chronic recovery stage to complete bone recovery can take 3 to 6 months, and the patients must not lift heavy objects. Mitral valve repair supported by the da Vinci robotic arms will only leave an incision less than 2 cm, and with minimal bleeding and faster recovery. Zhang was transferred to the general ward the morning after his surgery, and was discharged 5 days after the surgery.

"I never thought I'd have a heart problem," Zhang said. As a person who was aware of his physique and had been exercising at a relatively young age, he runs 3 km every morning. It wasn't until 11 years ago when he visited a clinic for

flu symptoms did the doctor informed him that his heart beat sounds strange. After referring to the cardiology of Hualien Tzu Chi Hospital, was the diagnosis confirmed - he had mitral valve insufficiency. He had been receiving regular treatment in the hospital ever since.

Dr. Chang Jui-Chih explained that although Zhang was visiting the clinic regularly to follow-up on his mitral valve insufficiency, but as he grew older and his organs aged, the insufficiency and its impact on the body would become increasingly apparent. An echocardiography revealed an increasingly severe blood reflux, as well as arrhythmia. Without surgical repair, Zhang risked the chance of cardiac failure, cardiomegaly, severe arrhythmia and infections, which can be life-threatening.

Zhang, who recovered well, said that life after the surgery was as normal as it gets. He could eat and walk unassisted. A month later he began brisk walking and cycling with no issues at all. Three months later he went buying rice from a local farmers' market, and could carry a 20 kg pack on his own.

Dr. Chang Jui-Chih explained that valvular diseases, except for aortic valve, can be surgically treated using the robotic arms of the da Vinci surgical system. For senior patients like Zhang, minimally invasive surgery with minimal blood loss and faster recovery is a suitable choice.

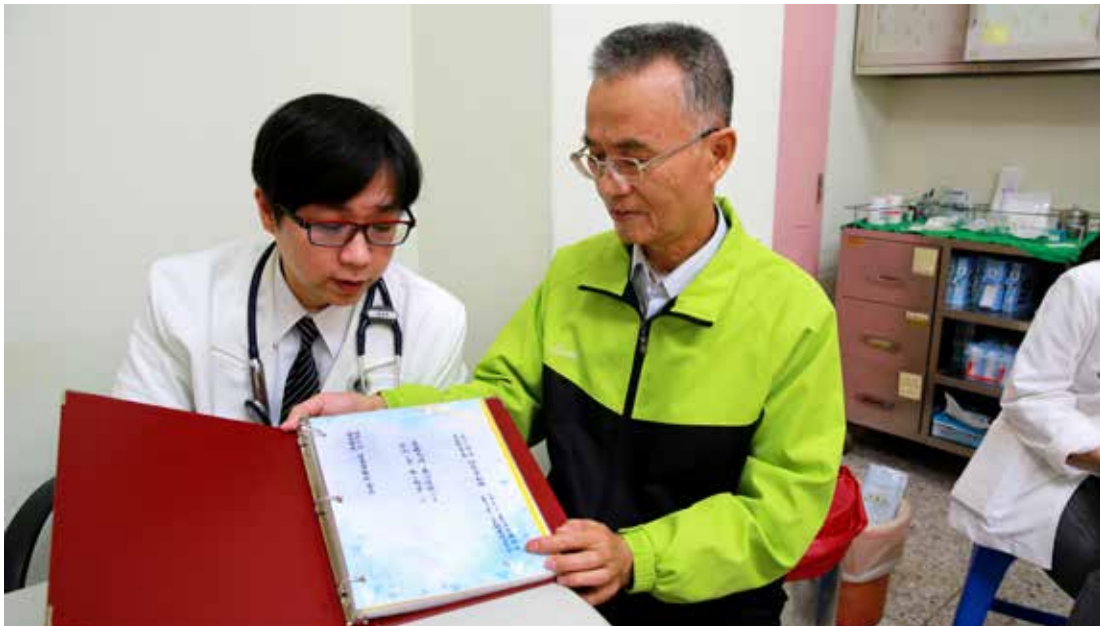
Coronary Artery Bypass with Robotic Arms and Video

Not only can the robotic arms of the da Vinci surgical system applied in mitral valve repair and replacement, it is also suitable for coronary artery bypass.

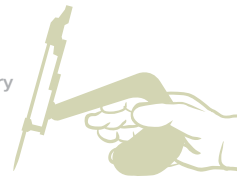
Generally speaking, over 80% of the patients with coronary artery disease are not aware of their conditions, since the blood flow through coronary artery when patients' are stationary has no apparent changes, and even general electrocardiogram (ECG) may not be able to identify the disease, only via exercise ECG. Clinically patients with coronary artery disease would feel sustained

chest tightness when exercising, and the symptom usually goes away when the patients cease the activity and take a brief rest. However, if the tightness continues for over 5 to 10 minutes, it may lead to acute myocardial infarction. Mr. Ho, 55-year-old, is a patient with a typical coronary artery disease. Cardiology Director Michael Yu-Chih Chen of Hualien Tzu Chi Hospital explained that a cardiac catheterization examination revealed that Ho's left anterior descending artery was occluded the most, and he recommended a referral to the cardiothoracic department for a coronary artery bypass.

Working in the fields every day, with jogging and occasional golfing on the side, Ho was particularly proud of his



Patient Zhang sent Dr. Chang Jui-Chih his poem of gratitude during a follow-up. Photo by Huang Szu-Chi



health. However, at the end of 2015, he began to feel chest tightness, which went away after a little rest. It wasn't until an entire day in the field left him breathless, did he realize that he needed it checked out. He came to Hualien Tzu Chi Hospital for cardiac catheterization examination, only to discover that out of the three main branches of his coronary artery, two were occluded.

"The opening of the traditional surgery is so huge, and the da Vinci only need a few holes, of course I'll choose the da Vinci," said Ho. He never heard about the da Vinci surgical system and its robotic arms prior to surgery. Simply by listening to the doctors explaining the different surgical procedures, he decided to choose minimally invasive surgery with the da Vinci system that has faster recovery. Ho never thought that he was able to sit up and eat breakfast unassisted, which made him doubt whether the surgery took place at all.

Thymoma Surgery with the Da Vinci System

"During the time when I was ill, I couldn't even leave the house," said Lady Li who was in her fifties. In early 2016 she began to experience blurry vision, and sometimes even diplopia. At first she thought she was having presbyopia, but after her visits from clinics to hospitals,

from ophthalmology, neurology to cardiothoracic surgery, she eventually ended up in Hualien Tzu Chi Hospital where she received a confirmed diagnosis - she had thymoma.

Li said that it was blurry vision at first, and eventually followed by eyes and facial drooping, slurred speech, and weakness in eye movement, neck, and limb movements; by then, she needed help with even the fundamental mobility like getting on and off the bed and in and out of the car. Originally she could prepare a meal in half an hour, with the symptoms it takes 2 hours or more. Her grandchild described her abnormal appearance and behavioral changes "like a monster".

What Li had is myasthenia gravis, Dr. Chang explained, a weakness in skeletal muscles induced by thymoma. Cardiothoracic surgery and neurology teamed up to treat the tumor and the neuromuscular disorder. First, Dr. Chang and Neurologist Liu An-Bang use medications to control Li's muscle weakness. Once the symptoms were controlled, the team moved onto the minimally invasive surgery.

By operating the robotic arms, Dr. Chang removed a 6 cm thymoma and performed an extensive thymectomy. The surgery was a success. Li was discharged 3 days later. Thymus is composed of lymphoid tissue, benign thymic tumor may not be clinically symptomatic, but



**Hualien Tzu Chi Hospital
Cardiothoracic Surgeon
Chang Jui-Chih and
his team performed a
coronary artery bypass
surgery with the da Vinci
surgical system. On the
top is Surgeon Chang
setting the position of
the robotic arms, and on
the bottom is Surgeon
Chang performing the
surgery by using the
robotic arms and 3D
high definition video.
Photo by Huang Szu-Chi**





if the tumor continues to grow, there is a possibility for the benign tumor to turn malignant and spread to nearby organs and lymphoid tissues, hence must be closely monitored.

“The da Vinci surgery is truly different, the wound is small and doesn’t hurt that much,” Li said. She had underwent other surgeries before, and was pleasantly surprised by how fast she recovered after the da Vinci surgery, and the fact that she was discharged only 3 days after. Li’s husband, Mr. Chiu said, “when she was really ill, I was so afraid of losing her. Thanks to Dr. Chang’s precise diagnosis, my wife not only recovered, she was able to return to her normal routine.”

Conventional thymoma surgery, which requires sawing open patients’ sternum, has a hospitalization period of 7 to 10 days, and a recovery period of 6 to 8 weeks. Dr. Chang pointed out that a minimally invasive surgery performed via the da Vinci robotic arms has the advantages of a small incision, less pain and bleeding, poses less harm to patients, and yet with equal or higher precision than conventional surgery. However, even the cutting edge technology requires the cooperation of patients and families, so Dr. Chang gave his thanks to trust and cooperation from his every patients and their families to accomplish the treatment plans together.



Top: the incision of conventional cardiovascular surgery

Bottom: the incision of the da Vinci surgery.