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SingHealth

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Murmurs

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HIGHLIGHTS

- Fellowship in Preventive Cardiology and Echocardiography
- New ECG monitoring system bears heartening results
- NHCS Heart2Heart Fund Gets a Strong Boost

Tracing the Path of Heart Valve Therapy

During a routine medical checkup for national service, Bryan Cheah had a surprise. He found out that he had a leaky heart valve. As he had been relatively symptom-free, Bryan was unaware that he has a heart condition.

Things changed several years later. He began to feel breathless easily and experienced chest pain on exertion. When his condition further deteriorated in 2008, his doctors suggested a surgery to fix his leaky valve. He declined as he had just started a new job. But as he became more symptomatic including palpitations, his surgeon suggested a minimally invasive method using robotic surgery to repair his mitral valve. Bryan agreed.

Explaining his decision, Bryan said: 'Robot-assisted operation is less traumatic than open heart surgery. Plus

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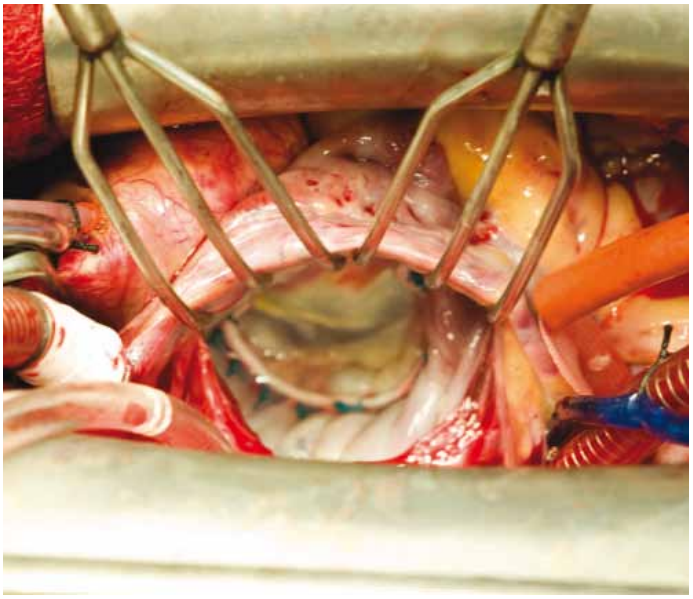

Close-up of a repaired heart valve

a repair is definitely better than a replacement. Replacement meant going on long-term medication, which isn't good for health." After a short hospital stay, Bryan recovered well and went home.

The Evolution

Indeed heart valve surgery has evolved tremendously over the recent years. From valve replacement to repair; from traditional open surgery to minimally invasive and now hybrid transcatheter-surgical techniques, all these new developments have impacted on practices and resulted in improved outcomes for the patients.

A narrowed or leaky heart valve can either be replaced or repaired. Valve repair allows the surgeon to fix a faulty valve, often without the use of artificial parts. The mitral valve is the most commonly repaired valve, but the aortic and tricuspid valves may also undergo some of these repair techniques. During surgical repair of valve defects, such as mitral incompetence, the surgeon reconstructs the valve so that it can close properly. Only some damaged valves may be repaired. If the valves are severely damaged, replacement of the valve will be necessary. The replacement will be an artificial valve which can be made of metal, plastic, or a biologic material made from animal tissue.

The National Heart Centre Singapore (NHCS) is among the early adopters of some of the most advanced techniques in the area of valve therapy and have successfully treated many patients in Singapore and the region. The centre now does more repairs, instead of replacement of heart valves, thus reducing the reliance of patients on blood thinning medications post surgery and giving them a longer and better quality of life.

While open heart surgery is still the gold standard for treatment of valve disease, newer ways of valve therapy have been developed with improved medical and imaging technologies. These include robotic-assisted surgery and trans-catheter implantation, such as Transcatheter Aortic Valve Implantation (TAVI). These minimally invasive methods are more complex to perform and rely on the advanced skills of a multi-disciplinary team, including the anaesthetist, cardiac interventionist, echocardiologist and heart surgeon. As these methods do not involve heart/lung bypass, they have been shown to have a lesser impact on patients, giving improved outcomes with fewer complications.

First in Asia

New valve interventions, especially TAVI has brought new hope for more years of quality life to a growing group of high risk patients – such as elderly patients with degenerative valve disease and heart failure patients. Previously, these patients are not eligible for surgery as it may pose a bigger risk to them.

NHCS first introduced TAVI, also known as Percutaneous Aortic Valve Replacement (PAVR), in Asia in February 2009. To date, the centre has completed 20 cases using the transapical and transfemoral approaches.

Sharing the Know-Hows

With its expertise in heart valve therapy, NHCS organised the first SingVALVE 2010 – Symposium of Heart Valve Therapies which took place from 16 –18 September 2010. The three-day symposium attracted about 100 doctors from the Asia-Pacific region.

Elaborating on the significance of the symposium, Associate Professor Chua Yeow Leng, Chairman of SingVALVE said, "This symposium is about sharing information on new trends in valve therapies and new ideas on caring for patients with valve disease, such as when to intervene medically. I hope the programme has benefitted doctors, interventionists and cardiac surgeons from the region and ultimately, benefit their patients."

A/Prof Chua Yeow Leng, Chairman of SingVALVE demonstrating tricuspid valve repair to the delegates.

What is Heart Valve Disease?

A heart has four valves – the tricuspid, pulmonary, mital and aortic valves. Normally, these valves open to let blood flow through or out of your heart, and then shut to keep it from flowing backward. When they fail to function properly, blood can leak back through the valve in the wrong direction, known as regurgitation. If it doesn't close tightly, it's known as mitral valve prolapse, which can sometimes lead to regurgitation. When it becomes narrowed and block blood flow, it's known as stenosis.

Valve problems can be present at birth or caused by infections, heart attacks, or heart disease or damage. Many people with heart valve disease may not have any symptoms. For those who do, common symptoms include shortness of breath, weakness, chest discomfort, palpitations, swelling of the ankles, feet or abdomen.

Left untreated, advanced heart valve disease can cause heart failure, stroke, blood clots, or sudden death due to sudden cardiac arrest.

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NHCS CARDIOTHORACIC SURGERY SERVICES

Cardiac Surgery
- Conventional coronary artery bypass graft surgery
- Off-pump / beating heart surgery
- Congenital heart disease surgery
- Maze surgery for atrial fibrillation
- Left ventricular reconstructive surgery (also known as Dor or Saver surgery)
- Heart transplantation)
- Valvular heart surgery including valve repair and replacement surgery
- Robotic-assisted surgery
- Endoscopic vein harvest

Thoracic Surgery
- Complete muscle sparing thoracotomy
- Video-assisted thoracoscopic surgery (VATS)
- Drainage of empyema
- Lung resection for cancer of the lung
- Lung transplantation for advanced lung disease
- Lung volume reduction surgery (LVRS) for chronic obstructive pulmonary disease (COPD)
- Mediastinoscopy for staging of lung cancer
- Minimally invasive (endoscopic) thoracic sympathectomy
- VATS pleurodesis for spontaneous pneumothorax
- Resection and reconstruction of chest wall tumour including locally advanced breast cancer
- Total oesophagectomy for cancer of oesophagus / other disorders
- VATS thymectomy for myasthenia gravis
- Trachea-resection and reconstruction
- Repair of pectus excavatum

Aortic and Peripheral Vascular Surgery
- Abdominal aortic aneurysm surgery
- Peripheral vascular arterial surgery
- Thoracic and thoraco abdominal aorta surgery
- Surgery for acute and chronic arterial disorders
- Endovascular stent graft surgery for aortic aneurysm

Mechanical Heart Assist Device
- Left ventricular assist device (LVAD)
- Biventricular assist device (BIVAD)
- Extra-corporeal membrane oxygenation (ECMO) for acute cardio respiratory failure

Lung Cancer Multi-Modality Therapy
- Complete workup and full consultation with oncology and pulmonology consultants, prior surgical treatment

OUR CARDIOTHORACIC SPECIALISTS	
Dr Kenny Sin Yoong Kong	Head and Senior Consultant
A/Prof Chua Yeow Leng	Senior Consultant
Dr Lim Chong Hee	Senior Consultant
Dr Tan Teing Ee	Senior Consultant
Dr Lim See Lim	Senior Consultant
Dr Lim Yeong Phang	Senior Consultant
Dr Victor Chao Tar Toong	Consultant
Dr Su Jang Wen	Consultant
Dr Loh Yee Jim	Consultant (away for HMDP)
Dr Soon Jia Lin	Consultant (away for HMDP)

For a comprehensive list of NHCS services and specialists, please visit **www.nhcs.com.sg**

Fellowship in Preventive Cardiology and Echocardiography

This issue, the Murmurs team sat down with Dr Peter Ting, Consultant, Department of Cardiology at National Heart Centre Singapore (NHCS) to learn of his enriching fellowship at the Mazankowski Alberta Heart Institute, University of Alberta Hospital, Canada from September 2008 – July 2010.

Dr Peter Ting and his wife, Elizabeth Oei (standing on the right) with his mentors, Dr Harald Becher (standing, far left), A/Prof William Dafoe (seated, far left) and Dr Jonathan Choy (seated, far right).

Why the Mazankowski Alberta Heart Institute

The Mazankowski Alberta Heart Institute (MAHI) is Canada's newest heart institute, and the first of its kind in Western Canada. Besides providing a full range of heart care services, the 132-bed facility has a special focus on prevention of heart disease and complex heart care. The new heart institute houses Canada's first research hospital within a hospital: the state-of-the-art Alberta Cardiovascular and Stroke Research Centre. It also has a formalised relationship with the University of Alberta that allows access to the best medical technology for physicians in training.

The Enriching Experience

In my first year of training, I did preventive cardiology and cardiac rehabilitation under Associate Professor William Dafoe. A/Prof Dafoe is one of the pioneers in cardiac rehabilitation in Canada. Heart disease is the top killer in Canada. MAHI sees a high volume of 1000 – 1500 cardiac rehab patients a year, compared to 500 – 600 at NHCS. The care delivery system in Alberta is very different. They use innovative technology to make cardiac rehab more acccessible to the patients. For example, they have a Telehealth system that uses live interactive video-conferencing technology and high-speed telecommunications networks to facilitate patient consultation over large and small distances. Their rehab programme is also menu-based, customised to each patient's needs. In addition, they provide a helpline to give patients a greater role in managing their own health so that they can make informed decisions about their health situations and what healthcare resources to use from their own homes. A comprehensive internet-based programme is also available for patients who have opted for home rehabilitation. The programme has also tied up seamlessly with the general practitioners, gyms and equipment services in the community to integrate services and complete a circle of care that links heart health promotion to prevention, early detection, treatment and rehabilitation.

I spent the second year of my training in advanced echocardiography, focusing on myocardial contrast echocardiography and 3-Dimensional (3-D) echocardiography. My mentors were Dr Jonathan Choy and Dr Harald Becher. At MAHI, around 10,000 transthoracic echocardiography are done yearly. Echocardiogram is a diagnostic procedure using high frequency sound waves (ultrasound) to take moving pictures of the heart and its related structures (e.g. valves). From these pictures, cardiologists can measure the size and function of heart chambers, study the motion of heart valves, and evaluate the blood flow pattern across the valves and within the heart chambers. Transthoracic echocardiogram (TTE) is the most common type. At the heart institute, echo contrast is frequently employed to improve the image quality of the heart in order to give a more accurate assessment. A good view may be hard to get in up to 1/3 of the cases because of conditions such as obesity or chronic lung disease. By applying contrast echo, it saves patients the need for another diagnostic test. Myocardial contrast also offers the exciting prospect of assessing perfusion in the heart muscle, much like the conventional nuclear perfusion scan, and this is an area of intensive research. 3-D echocardiography on the other hand, enables detailed assessment of cardiac pathology, particularly valvular defects. Viewing and manipulating the images in 3D allows us to better appreciate the anatomical and spatial orientation of the pathology in question which is very useful for the cardiothoracic surgeons when planning for heart valve surgeries.

Research was another major focus in my training. I was the principal investigator for several studies including one which looks at the haemodynamic, ECG, echocardiographic and biochemical responses of patients with significant aortic stenosis during

physical activity. Much of my other research revolved around the use of myocardial echo contrast in transplanted hearts, in the assessment of myocardial viability and during stress echocardiography. Many of the findings have been or will be presented at major international scientific meetings.

During my training, I had the oppportunity to visit several leading cardiac rehabilitation centres in North America such as Boston General Hospital and Toronto Cardiac Rehabilitation, and places in Europe such as the Imperial College of London and the Inselspital, Universitätsspital Bern, Switzerland.

Beautiful Moments

I became a father during the sixth month of my training. My daughter turns two in a few months. Besides this joyous event, I'm also entralled by Canada's stunning natural beauty. The weather there is pretty chilly. I remember the lowest was a freezing –42°C. But the upside was I had the opportunity to learn skiing from my mentor's son who is a ski instructor.

Dr Peter Ting's lovely family.

What's next

I'm planning to devise a syllabus and training programme in preventive cardiology and rehabilitation for medical trainees rotating through cardiac rehabilitation, and eventually also for medical students at the university. I firmly believe that preventive medicine should be an integral part of the training of medical doctors, and while its effects and benefits are not immediate or obvious, its impact on the health of the individual or population can be profound. Additionally we are also exploring individualising the cardiac rehabilitation programme content and duration to better suit the needs and preferences of the cardiac rehab patients, as well as investigating and implementing new and innovative training programmes for other less conventional cardiac rehabilitation patients such as adult congenital heart disease, valvular heart disease and patients with severe heart failure.

When he was young, Dr Peter Ting had aspired to be a soldier. But he eventually joined the medical profession. He chose to specialise in cardiology as he had good experience during his medical officer days. To stay in top form, Dr Ting hits the gym every evening and enjoys an occasional game of tennis.

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NHCS Cardiovascular Rehabilitation and Preventive Cardiology Programme

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- Pharmaceutical counselling
- Psychological counselling
- Cardiovascular risk factor modification
- Exercise testing
- Exercise prescription
- Supervised exercise programmes on an inpatient and outpatient basis

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DIRECTOR, CARDIOVASCULAR REHABILITATION AND PREVENTIVE CARDIOLOGY AND SENIOR CONSULTANT

Dr B A Johan

CONSULTANTS

Dr Tan Swee Yaw

Dr Peter Ting

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Trial on New ECG Monitoring System Bears Heartening Results

National Heart Centre Singapore (NHCS) and Web Biotechnology Pte Ltd jointly conducted a user acceptance trial on a new wireless electrocardiogram (ECG) monitoring system. The results of the two-week trial with 20 cardiac rehab patients at NHCS showed that 100% of the heart patients find the new system easier to use and 95% feel more comfortable with it.

"The preliminary trial results are encouraging. Without the hassle associated with the wired system, patients are more likely to be compliant to the test. This is crucial for us to identify their symptoms early and render timely treatment to prevent or delay the progression of heart disease," said Dr Tan Swee Yaw, Consultant, Department of Cardiology, NHCS and principal investigator of the trial.

Sharing her experience, NHCS patient Mdm Clara Wong, 57, said, "Previously with the old ambulatory ECG monitoring system, it was cumbersome and heavy. When I go to the washroom, I always drop it and the wires got detached. With the new wireless ECG monitoring device, it's so light that I don't feel anything at all. It's also easy to use, like carrying your handphone with you."

The new wireless ECG monitoring system, known as Spyder, is developed by a team of local doctors, researchers and engineers. With a small battery powered unit attached to the patient's chest, it allows continuous ECG monitoring for several hours. The system transmits wirelessly using a conventional handphone unit to display the ECG signal, allowing patients to view their own heart rate and rhythm instantaneously. The handphone unit is simultaneously used to transmit the ECG signal via 3G networks to a central database. Once information is stored here, healthcare providers are able to log onto the database and review the ECG signal from any location with an internet access. Using high speed wireless networks available, this allows patients to transmit their signal to a healthcare provider within seconds. This rapid feedback system allows healthcare providers to respond promptly to patients' symptoms, no matter where they are.

Demonstration on the use of Spyder

Comparison of the current holter monitoring device (top left) with the new wireless ECG monitoring system, Spyder.

Continuous ECG monitoring can record the heart's electrical signals over a prolonged period at the patient's own home or work environment. It is useful for detecting transient rhythm disorders of the heart, which are not detected at the time when an ECG is done. The test is suitable for patients with palpitations, giddiness or fainting spells.

ADN Lim Suh Fen Wins President's Award for Nurses

President Award for Nurses (Ms Lim Suh Fen)

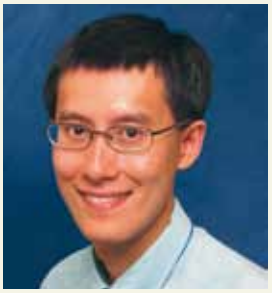
Ms Lim Suh Fen, Assistant Director of Nursing, National Heart Centre Singapore (NHCS) flew the centre's flag high when she bagged the prestigious President's Award for Nurses 2010. Started in 2000, the President's Award for Nurses recognises exemplary nurses who show outstanding professional competence, resourcefulness, and innovation in their work. They are role models with the ability to motivate and inspire younger nurses, and are active in community outreach and voluntary work. This is the third time NHCS has won the award. Past recipients included A/Prof Lim Swee Hia and Ms Tan Ah Pang.

Promotions

DR HO KAY WOON
Consultant,
Department of Cardiology

DR DAVID SIM
Consultant,
Department of Cardiology

DR CHEE FANG YEE
Associate Consultant,
Department of Cardiology



DR DANIEL CHONG
Associate Consultant,
Department of Cardiology

2010 SingHealth Best Junior Doctors Award (Cardiology)

Dr Leow Khang Leng, Registrar (right in photo), Department of Cardiology, National Heart Centre Singapore received the 2010 SingHealth Best Junior Doctors Award (Cardiology) from Professor Tan Ser Kiat, Group CEO, SingHealth at the award ceremony on 14 September 2010. This is the second year that Dr Leow has won this award.

NHCS Bags Work-Life Excellence Award 2010

National Heart Centre Singapore was among the 25 recipients in Singapore to be awarded the Work-Life Excellence Award this year. The centre has clinched various categories of the award since its first win in 2004. Among the initiatives include flexible work arrangement, and employee support schemes such as bulk purchase of Chinese New Year goodies.

Work-Life Excellence Award

NHCS Heart2Heart Fund Gets a Strong Boost

Mrs Wong-Mah Jia Lan

Renowned philanthropist, Mrs Wong-Mah Jia Lan recently donated $50,000 to the National Heart Centre Singapore (NHCS) Heart2Heart Fund, of which $25,000 was in memory of her late husband Mr Wong Kwok Leong. Sharing on her support for the fund, Mrs Wong said, "When I was hospitalised for a heart bypass surgery in June 2010, I spoke to the heart patients in the subsidised wards. They told me they received good care at NHCS but when they return home, they have no money for follow-up care. I felt the need to do something to help these needy patients. I also believe we need to have a better heart centre to take care of our people."

The NHCS Heart2Heart Fund aims to improve the quality of life of heart patients through financial assistance to needy patients, new treatment modalities, research and development, training and education and new NHCS building.

President's Challenge 2010 – We are One Family

Supporting the President's Challenge 2010, National Heart Centre Singapore (NHCS) rolled out a slew of activities. From food bazaars and book sale to raise funds, to friendly water telematches with 50 youth beneficiaries from the Care Corner Family Service Centre (Woodlands) to spread warmth and love. The centre raised over $17,000 which will go to the various adopted beneficiaries of the charity event.

Are You at Risk of Heart Disease?

Are you concerned about chest pain, cholesterol and blood pressure problems? Check out the advice by NHCS cardiologists, Dr Tan Ju Le and Dr Peter Ting on "Meet The Specialists" September online forum via the Health Xchange portal. Visit www.healthxchange.com.sg for more details.

Upcoming Events

AsiaPCR-SingLIVE 2011

Date 13 - 15 Jan 2011 (Thu - Sat)

Venue Suntec Singapore

For registration and event details, please check out www.asiapcr.com.

For feedback on Murmurs, please direct to
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