# FRONTIER

MACQUARIE UNIVERSITY HOSPITAL | AUTUMN 2024

# Orthopaedics redefined:

## Exploring our new world-class unit

Environmental savings in new $13m sterilisation facilities

New lung cancer screening program brings breath of hope

New genetic therapy could be a gamechanger for MND and frontotemporal dementia

MACQUARIE UNIVERSITY Hospital

Macquarie University Hospital offers a new era in Australian healthcare. We are part of MQ Health, Australia's first fully integrated university-led academic health sciences centre.

MQ Health represents the convergence of the continuous learning and research endeavours of Macquarie's Faculty of Medicine, Health and Human Sciences with the clinical care provided at Macquarie University Hospital and multispecialty clinics.

At MQ Health, we multiply our ability to achieve remarkable things. That's **YOU** to the power of *us*.

*Walter Kmet*



*Please note any surgical or invasive procedure carries risks. Before proceeding, seek a second opinion from an appropriately qualified health practitioner.*


**Frontier**
Macquarie University Hospital

**Editor:**
Bernadette Robinson.
**T:** (02) 9812 3167
**E:** bernadette.robinson@muh.org.au

**Writer:** Melissa King.
**Contributors:** Andrea Lewis, Georgia Gowing.

**Designer:** Emorfia Design.

**Photographer:** Tim Robinson.
**Contributors:** Kyisoe Han, Jesse Taylor, Matt Kemp Photography, Lewis Pierce, Ben Tortora, Alice Black, Samantha Christensen, Nicole Anderson.

Macquarie University Hospital
3 Technology Place
Macquarie University NSW 2109
**mqhealth.org.au**
ABN 46 141 203 125


ISSUE 22

# Welcome

TO MACQUARIE UNIVERSITY HOSPITAL

Welcome to the latest edition of *Frontier*, where we delve into the forefront of healthcare innovation and share insights about the amazing work our team is doing.

In this issue, we shine a spotlight on the inauguration of our new world-class orthopaedic unit on Level 5 of our facility, tailored to embrace the enhanced recovery after surgery (ERAS) model of care.

Our team of expert surgeons has gradually implemented a pathway that supports the enhanced recovery of patients after surgery through Macquarie University Hospital since 2021, providing in-home care post-joint replacement surgery and reducing the length of hospital stays.

Having witnessed significant improvements in patient satisfaction, we decided to create our own dedicated facility at the hospital. This facility integrates an expert clinical team, research, education, cutting-edge technology, purpose-built theatres and innovative infection control measures - all geared towards improving patient outcomes.

Focused solely on orthopaedic procedures, the new facility offers a comprehensive range of services, with a choice of post-operative pathways for appropriate patients.

The Orthopaedic Institute will become a 'centre of excellence', promoting the benefits of our model through integrated clinical and translational research.

We also look at the pivotal role of general practitioners in the new national lung cancer screening program. Through collaboration and proactive engagement, we underscore the significance of early detection and preparedness in combating this pervasive disease.

Our journey through medical advancement extends to the realm of cardiology, where innovative procedures offer viable alternatives to traditional heart surgeries. From groundbreaking interventions to intricate cardiac care, we unravel the complexities of modern cardiology and its transformative impact on patient care.

As advocates for medical progress in cardiology, we proudly unveil our involvement in the Half Moon Transcatheter Mitral Valve Repair Pilot Study.

Moreover, our exploration extends to robotic surgery, where collaborative efforts are reshaping the landscape of endometriosis treatment. Through strategic partnerships and technological innovation, we strive to empower patients with minimally invasive solutions and enhanced recovery pathways.

Our dedication to pioneering research is exemplified by our participation in an international bladder cancer trial, yielding promising results that herald a new era in oncological treatment and revolutionising patient care. Macquarie University Hospital was one of just six sites in Australia to participate in the trial.

Additionally we feature articles about our comprehensive breast cancer services, neurosurgery updates and an effective option for the treatment of glaucoma.

In this edition we invite you to embark on a journey of discovery, innovation and excellence.

Together, let us chart the course towards a healthier, brighter future.

**Walter Kmet**
*Conjoint Associate Professor Walter Kmet*
*Chief Executive, MQ Health.*

# Orthopaedics redefined: Exploring our new world-class unit

MACQUARIE'S NEW ORTHOPAEDIC CENTRE OF EXCELLENCE COMBINES SPECIALIST AND ALLIED HEALTH SERVICES IN ONE LOCATION TO PROVIDE A SEAMLESS EXPERIENCE FOR PATIENTS.

The Orthopaedic Institute, located on Level 5 of Macquarie University Hospital, opened on 29 January. This will be the primary location for managing orthopaedic cases at the hospital.

The first facility of its kind in Australia, it caters to joint replacement, limb reconstruction and various other orthopaedic conditions.

In development for more than two years, the unit boasts four state-of-the-art operating theatres, 29 beds and six same-day beds, supporting Macquarie's enhanced recovery after surgery (ERAS) model.

Under this model, patients visit a pre-admission clinic where all aspects of care, including pre-surgery physiotherapy and preparation, are comprehensively discussed and addressed.

The visionary behind this project is Professor Munjed Al Muderis, leading the Orthopaedic and Sports Medicine department and the Limb Reconstruction Centre at MQ Health. "The unit is unique in Australia, offering the best clinicians and first-class technology, with no out-of-pocket costs for eligible patients," he says.

*Professor Munjed Al Muderis*

*Nurses station*

*Patient room*

"It represents a revolutionary shift in medical care, supported by partnerships with health funds. It is a transformative form of orthopaedic care in Australia because it has not been applied like this before. It is a new style of practice."

Several leading surgeons participate in Macquarie University Hospital's No-Gap Joint Replacement Program for hip and knee replacements. This collaborative effort, combining the expertise of radiologists, physiotherapists and biomechanical engineers and our nursing team, aims to optimise patient outcomes.

Professor Al Muderis and his colleagues have conducted a successful pilot program over the past 18 months to test the unit's protocols, including pre-surgery preparation and post-surgery home-based physiotherapy.

"It has shown a high success rate," he says.

"Our admission rate to the Intensive Care Unit has dropped from 40 per cent of patients to only one per cent. Patients are also very satisfied with rehabilitation in the comfort of their own homes."

Professor Al Muderis says the unit is a nucleus for transforming the medical sector in Australia in general.

"It is patient-tailored care. Doctors are autonomous in their choice of implants and technology and the way they treat their patients. Clinicians are completely independent from external influences," he says.

The unit incorporates state-of-the-art infection prevention measures, including polished glass walls. It has access to two 3.0T MRI machines, EOSedge™ scan imaging and HiRise CT scanning, with the latter's hip-down capability being unique to Australian orthopaedics.

The orthopaedic team uses cutting-edge innovation to offer the best technology in deformity correction and address complex pathologies.

"The unit will also be spearheading innovation in using 3D modelling and virtual reality to provide patients with the very best solutions to their complex orthopaedic problems," Professor Al Muderis says.

*Conjoint Associate Professor Walter Kmet, Dr Tim O'Carrigan, Jerome Laxale MP, Professor Munjed Al Muderis, Dr Janette Randall (Amplar Health) at the official launch of The Orthopaedic Institute.*

*Finny Staples*

Finny Staples, Associate Director of Hospital Operations (Level 5) at MQ Health, envisions the new unit as the future of healthcare delivery. “The patient is at the centre of our care, so the fact we can offer them everything in one facility is wonderful,” she says. “Many people don’t understand medical procedures so preparing patients is vital to achieving the best outcomes. That’s why our tailored style of pre-admission clinic is so important.”

Ms Staples says that while hip and knee replacement surgery will be common, the institute will also treat a vast range of problems, ranging from arthritis and fractures to trauma, limb reconstruction and rotator cuff tears.

Orthopaedic surgeons, allied health professionals and nursing staff collaborate to deliver exceptional service, advancing education and research.

The unit is equipped with robotic surgical systems, including the ROSA® knee system for total knee arthroplasty. It also offers medical imaging, physiotherapy, pathology, exercise physiology and occupational therapy.

The team at the MQ Health Shoulder and Elbow Clinic are engaged in multiple research projects, including the design and testing of advanced shoulder prostheses utilising robotic cadaveric models and artificial intelligence modelling.

“Our vision for the new orthopaedic unit at Macquarie University Hospital has become a reality, merging state-of-the-art facilities, robotic technology, and an exceptional clinical team. This convergence aims to redefine standards, delivering superior clinical outcomes and setting a benchmark for excellence in orthopaedic care.” says Walter Kmet, Chief Executive, MQ Health.

**MORE INFORMATION**
**T:** 0404 768 103 (Finny Staples)

*Nursing team*

*Associate Professor Sumit Raniga*

# Prestigious US Fellowship for Orthopaedic Surgeon

Academic orthopaedic shoulder and elbow surgeon Associate Professor Sumit Raniga has been awarded a prestigious travelling fellowship from the Shoulder and Elbow Society of Australia (SESA).

Presented every two years, the SESA Travelling Fellowship has previously provided recipients with a month of travel to visit leading European orthopaedic centres. In recognition of his contribution to the field of shoulder and elbow surgery, Associate Professor Raniga is the first recipient to be offered a choice between visiting Europe and the United States. As part of the award, he will receive a full scholarship to visit and represent SESA at the Mayo Clinic, Harvard University, Hospital for Special Surgery (New York), Columbia University and the Rothman Orthopaedic Institute. It will allow him to present cutting-edge research from the MQ Health Translational Orthopaedic Research Laboratory at these world renowned centres of excellence in shoulder and elbow surgery before presenting at the closed meeting of the American Shoulder and Elbow Surgeons in San Antonio, Texas. He expects to leave Australia in September 2024 for 4 weeks.

## MQ Health Shoulder and Elbow Clinic

At MQ Health, we house one of Australia’s premier privately run shoulder and elbow clinics, offering multidisciplinary orthopaedic expertise. Our specialist doctors actively engage in research, teaching, and training at Macquarie University, ensuring they remain at the forefront of the latest techniques and evidence-based treatments.

Our research endeavours encompass various aspects of shoulder and elbow surgery, biomechanical studies, prosthetic design, and emerging treatments, aiming to advance knowledge in the field. We address a wide spectrum of conditions including arthritis, fractures, rotator cuff tears, tennis and golfers elbow, ACJ problems, calcific tendonitis, frozen shoulder, and dislocation, instability, and labral tears.

Situated alongside Macquarie University Hospital and MQ Health’s specialist clinics, our Shoulder and Elbow Clinic offers comprehensive care for patients with complex health conditions. Our clinic collaborates with pain and infectious disease consultants when complex problems require input from other specialists. We also work closely with the MQ Health Physiotherapy Clinic, which has a specialist interest in rehabilitation of complex shoulder problems.

**MORE INFORMATION**
**T:** (02) 9812 3583

# Environmental savings in new $13m sterilisation facilities

*Helen HE*


*Isha Madhikarmi*


*Queeny Ramos*


*Melanie Angell, Senior Manager Sterilising Services Unit*

A new state-of-the-art central sterilisation department at Macquarie University Hospital has already improved workflow and efficiency, and will result in significant environmental savings.

The $13 million upgrade includes the latest in washing and sterilising equipment, a one-way flow for staff and equipment, segregated rooms for sterile stock and consumables, an airlock to assist with infection control, and an expanded loans area to provide storage space for specialised surgical hire equipment.

Melanie Angell, Senior Manager of the Central Sterilisation Services Department, says the new space on Level 2 of the hospital building is much bigger than the old one.

“We now have eight workstations in the main area, each with its own computer and label printer, which has improved the workflow,” Melanie says.

“There are five washers and four sterilisers, all of which are to the highest environmental standards, meaning we’ll save about $70,000 a year on consumables.

“The chemistry now comes from a 110-litre drum that dispenses straight into the washers, sinks and ultrasonics, instead of from bottles. Staff don’t have to handle it anymore, and the new system is more efficient.

The new steriliser machines are fitted with a tank that recycles the cold water used to cool the vacuum pump. This allows the machine to use 200 litres of fresh water instead of 400 litres per cycle.

“Washer cycles are also shorter, now down to a maximum of 45 minutes compared to an hour, and smart sensors reduce water usage for smaller loads.”

Daily testing of medical equipment, which previously took 90 minutes every morning, has now been automated. The process concludes before staff arrive, providing significant time efficiencies and enabling earlier commencement of theatre lists.

The unit is also now connected to back-up generators to keep operating during power outages.

Work on the upgrades began in June 2023, with the completion of stage 1 in December. Stage 2, which includes office space, change rooms and break rooms, is due to be finished in March.

This project was partly undertaken to facilitate the additional sterilising requirements for the four theatres in the new orthopaedic unit on Level 5 of the hospital.

**MORE INFORMATION**
**T:** (02) 9812 3213

# New lung cancer screening program brings breath of hope

**The program – aimed at improving early detection and treatment – will be rolled out in July 2025, with GPs set to play a key role.**

The National Lung Cancer Screening Program will offer lung cancer screening for Australians to detect pulmonary nodules – an important early sign of lung cancer.

Associate Professor Jonathan Williamson, a respiratory physician at Macquarie University Hospital, says that the significant numbers of asymptomatic lung nodules found during routine investigations, such as chest X-rays and CT coronary angiograms, have created a need for a streamlined, efficient and evidence-based approach to the investigation and management of these nodules.

"Lung cancer is a leading cause of cancer-related deaths worldwide and a significant public health concern in Australia," says Associate Professor Williamson. "The federally funded program will use proven clinical pathways, models of care and a multidisciplinary approach to help tackle a growing public health concern.

"Early-stage lung cancer often has no noticeable symptoms, making screening a key means of identifying the disease in its early stages. Early detection increases the likelihood of successful surgical intervention and reduced mortality rates among high-risk individuals."

A low-dose CT scan is currently the preferred screening method, as it's more sensitive than chest X-rays and can detect smaller lung nodules.

GPs will play a critical role in recruiting, counselling and managing patients eligible for screening. GPs also play a role in supporting smoking cessation and managing long-term cancer survivorship.

In the first year, it is predicted that there will be more than two million additional consultations with GPs in Australia – an average of an additional 1.73 cases per doctor. This number is expected to decrease to 0.17 by the second year of the screening program.

*Associate Professor Jonathan Williamson*

## Pulmonary Nodule Clinic

As an integral part of the MQ Health Respiratory and Sleep Clinic, the Pulmonary Nodule Clinic offers a comprehensive range of services, including specialist respiratory consultations, lung function testing, pleural services, and interventional procedures.

Established with a clear mission to identify early-stage cancer in patients and ensure prompt and effective treatment to enhance survival rates, the clinic operates as a dedicated multidisciplinary unit staffed by a team of highly skilled professionals and led by 12 experienced respiratory physicians, many of whom specialise in interventional pulmonology. The collaborative team also includes radiologists, cardiothoracic surgeons, radiation oncologists, medical oncologists, primary care practitioners and, crucially, the patient's GP.

Recognising the urgency in addressing pulmonary nodules and suspected lung cancer, the team at the clinic are committed to providing prompt and efficient care. GPs can refer their patients to the clinic with confidence, knowing that the aim is to see individuals within 10 working days. This swift turnaround time allows for the early assessment of patients and the initiation of a comprehensive diagnostic and treatment plan.

**MORE INFORMATION**
**T:** (02) 9812 3709

# **Pioneering study** gives a new lease on life

*Dr Lisa Simmons (front row, third from left), Professor Martin Ng (front row, fourth from left), Professor Michael Wilson (front row sitting) and the heart team at Macquarie University Hospital*

**Age was no barrier for 87-year-old Daphne, whose faulty mitral valve was repaired during groundbreaking treatment at Macquarie University Hospital.**

Interventional cardiologist Professor Martin Ng performed the procedure as part of a global pilot study on the use of the Half Moon device. She was the sixth recipient in the world and the first in Australia.

“She was the first patient treated to have mitral regurgitation essentially eliminated by this new approach, thereby serving as a proof of concept for a bold new treatment strategy for the world’s most common heart valve problem,” Professor Ng says.

Professor Ng believes age should not prevent patients from benefiting from new techniques if they are suitable candidates.

“Our patient is an independent and dynamic 87-year-old woman who was getting progressively shorter of breath on exertion due to severe mitral regurgitation,” he says.

“She was referred to us for MitraClip, currently the only available keyhole mitral valve procedure. It involves applying a clip to bring together the mitral valve leaflets at the site where they are not closing tight. However, we found that her mitral regurgitation was not suited to the MitraClip due to the extent to which her leaflets were spread apart, and also due to one leaflet being likely too short to grasp.”

She was instead enrolled in the Half Moon study. The transcatheter procedure was developed to address the condition in which blood leaks backwards within the heart. Untreated severe mitral regurgitation in patients may lead to chronic heart failure.

“By percutaneously replacing the posterior leaflet with the Half Moon device, we were able to fully restore the competency of her mitral valve and eliminate her mitral regurgitation,” Professor Ng says.

“As a patient with few other treatment options, her procedure was a great success because it has essentially eliminated her mitral valve leak without the need for surgery.

“The Half Moon device is new and the success of this procedure was highly significant because mitral regurgitation is the most common heart valve problem in adults. It is significant to be able to offer a new, minimally invasive treatment option.”

**MORE INFORMATION**
**T:** 0491 215 002

*Dr Henry Cheung*

# Robotic surgery innovation

## in the management of endometriosis

AN AUSTRALIAN-FIRST PROCEDURE AT MACQUARIE UNIVERSITY HOSPITAL HAS DEMONSTRATED A NEW APPROACH TO TREATING ENDOMETRIOSIS, A CONDITION THAT AFFECTS ONE IN 10 WOMEN.

The case involved two specialists – gynaecologist Dr Dan Krishnan and colorectal surgeon Dr Henry Cheung – using the Versius® Surgical Robotic System to remove extensive endometrial lesions in a young woman.

It was the first joint-discipline case using the Versius system at Macquarie, with the two surgeons already having another patient scheduled for treatment.

Dr Krishnan's patient had pain and infertility as a result of Stage 4 endometriosis, the most severe grade of the disease. Endometriosis occurs when tissue, similar to the lining of the uterus, grows outside other parts of the body.

After an earlier laparoscopy showed colorectal lesions in his patient, Dr Krishnan involved Dr Cheung.

"No one has done a combined colorectal-gynaecological case before using this robotic system. It was an extension of the benefits of the Versius system," Dr Cheung says.

Dr Krishnan says having more than one specialist present is known to improve surgical outcomes.

"Having two surgeons is always going to be better, and having the robot on top of that ensures the best possible outcomes. To have someone like Henry put his hand up to be involved was wonderful," he says.

Dr Krishnan says the case also shows the importance of correctly investigating pelvic pain in women.

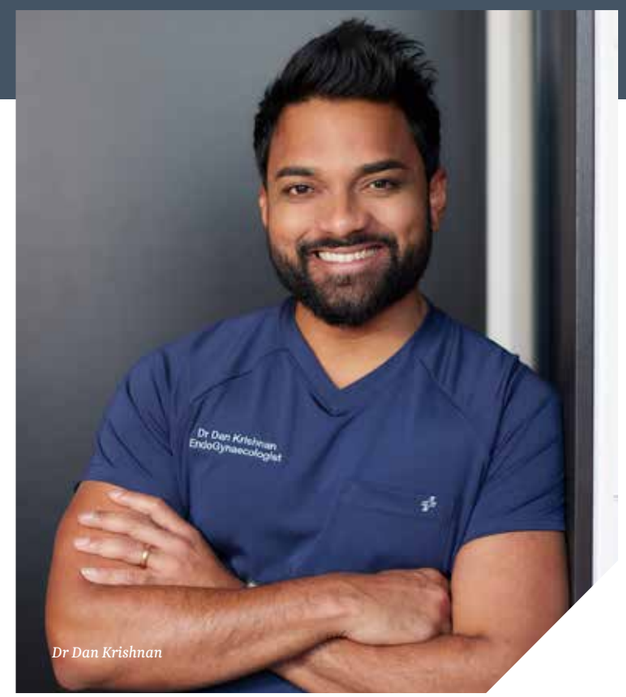
"If you want a good outcome, you need to refer patients to the right specialty, and sometimes that means more than one specialty. The longer we wait to treat the disease, the longer women with endometriosis rely on pain relief or live with pain and other symptoms," he says.

In late 2020, Macquarie University Hospital became the first facility in Australia to obtain access to the Versius system. Currently, we are the only facility in New South Wales equipped with this advanced technology. The Versius system enables our surgeons to conduct minimally invasive procedures that were traditionally performed through open surgery.

The Versius system also gives more patients access to robotic surgery for a variety of conditions.

The potential for more effective treatment for women with endometriosis is significant. On average, the disease takes more than six years to be diagnosed and can begin during the teenage years. Although the disease primarily affects reproductive organs, it can also be found around the bowel and bladder, and even in the lungs and joints.

Each year, endometriosis is estimated to cost more than $7.7 billion in healthcare, absenteeism and lost social and economic participation.




*Dr Dan Krishnan*

**MORE INFORMATION**

**T:** (02) 9812 3967 (Dr Henry Cheung)
**T:** 0403 089 915 (Dr Dan Krishnan)

# NEW THERAPY

## WILL REVOLUTIONISE THE TREATMENT OF UROTHELIAL AND BLADDER CANCERS

**An international clinical trial of a treatment for advanced urothelial cancer has found a new dual therapy can nearly double patients' life expectancy.**

The new immunotherapy is a combination of two drugs – enfortumab vedotin and pembrolizumab – delivered by infusion, and it is now being submitted to regulatory authorities for approval as a first-line, or primary, treatment for advanced urothelial cancer.

If approved, it would represent the first significant change in treatment for urothelial and bladder cancer in 30 years.

A total of 886 patients at 50 sites worldwide took part in EV-302, a randomised Phase Three trial to compare the effectiveness of the EV-pembrolizumab combination with that of chemotherapy in patients with locally advanced or metastatic urothelial carcinoma.

Urothelial carcinoma is the term for a group of aggressive cancers affecting the bladder and parts of the urothelial tract, including the cells lining the ureter and parts of kidneys.

Bladder cancer is the most common of these and every year more than 573,000 people globally and about 3100 Australians are diagnosed with the devastating disease. Most people diagnosed are over the age of 60, and about 75 per cent are male.

Macquarie University Hospital (MUH) was the only site in NSW and one of just six in Australia to take part in the EV-302 trial. Nine MUH patients participated in the trial.

Macquarie Medical Oncologist Dr Alison Zhang was the principal chief investigator, working with associate investigator and Macquarie University Director of Clinical Trials, Professor Howard Gurney, and a team of researchers and trials staff.

Dr Zhang says the findings, which were presented at the European Society for Medical Oncology (ESMO) Congress 2023, are ground-breaking.

"This represents a major milestone in treatment, with the potential to revolutionise patient care," she says.

"Until now, the most effective treatment available has been chemotherapy, with a combination of the drugs cisplatin and gemcitabine, but even with treatment, the survival rate is poor.

"There have been dozens of trials over the years trying to improve on that, without success.

"Compared to chemotherapy, the EV-pembrolizumab combination has doubled the median progression-free time from 6.3 months to 12.5 months, and nearly doubled the median overall survival time from 16.1 months to 31.5 months."

Sixty-eight per cent of patients in the trial had shrinkage of their cancer with the EV-pembrolizumab combination compared to 44 per cent of patients who received chemotherapy.

Of the patients who received the new therapy, 29.1 per cent experienced a complete response, compared to 12.5 per cent of chemotherapy patients.

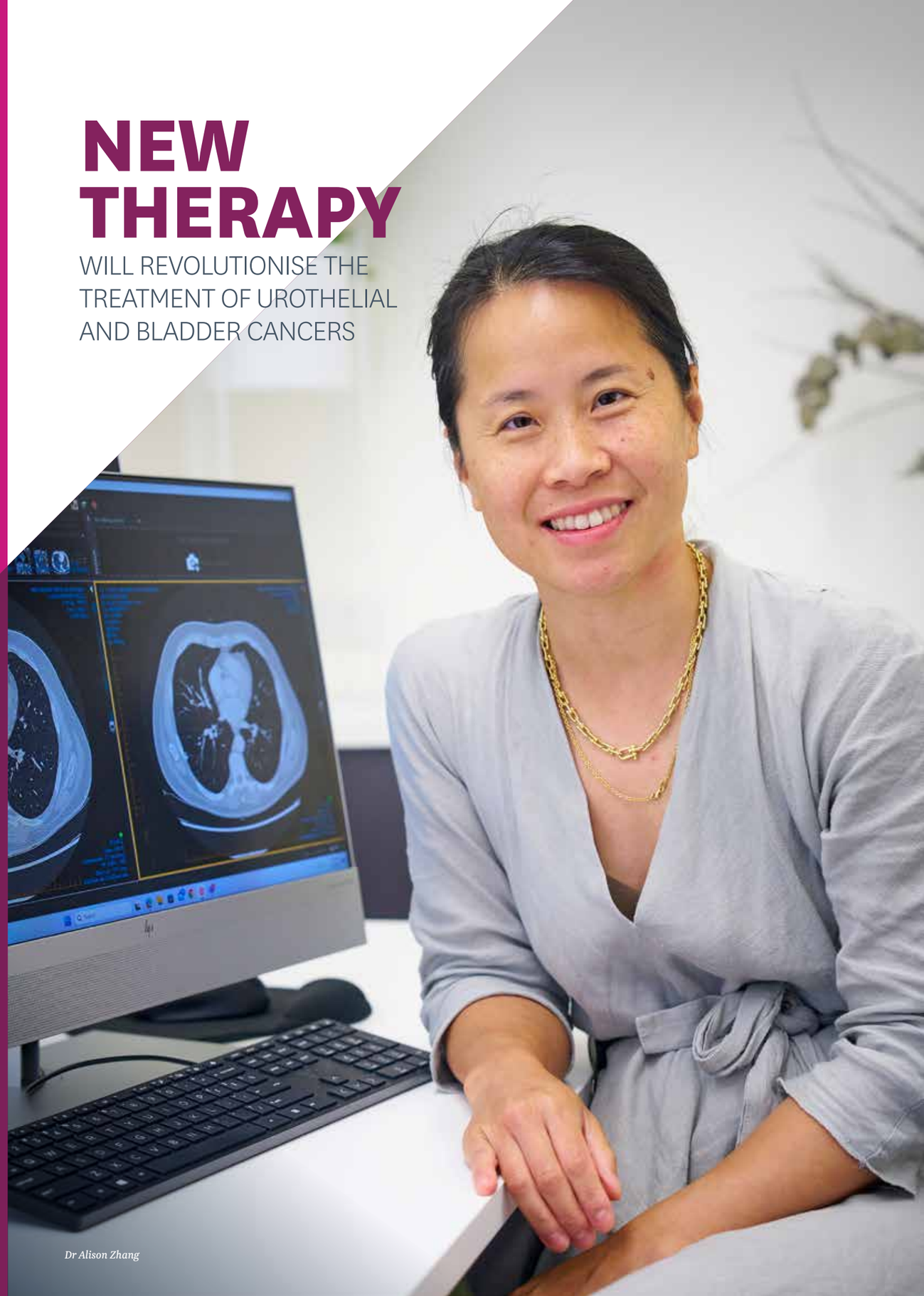
Dr Zhang, says complete response is not always synonymous with cure, as urothelial cancer is an aggressive disease.

"However, this therapy could still mean long-term remission for many patients, and the results support it becoming the new standard of care for urothelial cancer," she says.

The new therapy was developed by Seagen Inc., Astellas Pharma Global Development Inc., and Merck Sharp & Dohme LLC.

First published in *The Lighthouse.*

**MORE INFORMATION**
**T:** (02) 9812 3614



*Dr Alison Zhang*

# Second opinions

## OFFER PEACE OF MIND AND CAN SAVE LIVES

Two recent cases highlight the importance of patients trusting their instincts and seeking assurance that their breast lumps are not malignant.

"The triple test – clinical examination, imaging and biopsy – is really important in diagnosing breast conditions. The certainty of a diagnosis increases considerably when all three are completed," Dr Negin Sedaghat says.

She says GPs should not hesitate to refer a patient for a second opinion.

"It's never wrong to get a second opinion. It helps a patient understand their condition, as well as offering much reassurance or, in some situations, leads to early diagnosis of a breast cancer," she says.

"This is important even in younger patients. The triple test is the key for all breast concerns."

Roselin, 48, was referred to Dr Sedaghat after a lump that was seen on a mammogram was said to be benign.

"It was just a gut feeling she had. She wasn't happy and her GP didn't dismiss that and sent her for a second opinion," Dr Sedaghat says.

"After seeing her scans, I arranged for a biopsy. Her lump was a high-grade ductal carcinoma in situ. Fortunately, it was an early-stage tumour, so she didn't need extensive surgery."

Kylee Page was worried about a breast lump but was told that nothing of concern could be seen on a mammogram. She requested a biopsy, which showed that the lump was benign.

"I still wanted to consult a surgeon but then COVID hit. After everything opened up, I wanted to get it checked again because it was hurting me when I exercised. It was getting bigger and more painful."

Kylee says a gut feeling made her pursue further investigation. She was ultimately referred to Dr Sedaghat, and an MRI showed the mass had grown since an ultrasound several years earlier.

During surgery Dr Sedaghat removed a 3.3 centimetre mass that was identified as a rare but benign pseudoangiomatous stromal hyperplasia lump.

While not malignant, the mass was painful and affecting Kylee's quality of life.

"Because of this experience, my GP has spoken to all the doctors in her practice," Kylee says.

**MORE INFORMATION**
**T:** (02) 9098 9179

*Dr Negin Sedaghat, Kylee Page*

# New MicroShunt

## EFFECTIVELY AND SAFELY EASING THE IMPACT OF GLAUCOMA SURGERY


*Dr Aparna Raniga*

**At 73, competitive cyclist Edward Younger faced worsening glaucoma that threatened his participation in the sport he loves. The new PRESERFLO® MicroShunt, implanted in a day procedure, offered a minimally invasive solution that got him back on his bicycle within just a few weeks.**

Glaucoma – a disease of the optic nerve caused by increasing intraocular pressure (IOP) – is often considered the silent thief of sight. If glaucoma is not treated, patients, can gradually go irreversibly blind. While eye drops and laser therapy can slow the process, they don't reverse or prevent the progression of the disease. Traditional glaucoma surgery, such as a trabeculectomy, is successful but invasive and can be challenging for patients, especially older people.

Avid cyclist Edward Younger had been using eye drops daily for glaucoma for many years. With their effectiveness diminishing over time and the glaucoma slowly progressing, Edward needed a more interventionist approach.

"I'm a very active 73-year-old, and a competitive cyclist, participating in arduous races of over 100 kilometres," says Edward. "Being able to continue cycling and returning to my bike as quickly as possible after surgery were priorities for me. Invasive eye surgery would have negatively impacted my cycling passion and quality of life."

Edward was referred to ophthalmic surgeon and glaucoma specialist Dr Aparna Raniga, who assessed him for a relatively new minimally invasive glaucoma procedure using the PRESERFLO® MicroShunt. Approved in 2022 by the Therapeutic Goods Administration, the technology is a tiny and flexible gel stent that drains intraocular fluid, lowers IOP and prevents further vision loss.

Eye stents are the world's smallest implantable medical devices, with PRESERFLO® one of several minimally invasive glaucoma surgery (MIGS) devices now available to patients.

"MIGS is a new paradigm shift that started about ten years ago and is increasingly being used," explains Dr Raniga. "For the small subset of patients who will end up needing glaucoma surgery, MIGS offers a shorter procedure and a recovery time of weeks, as opposed to months for traditional trabeculectomy. Several peer-reviewed studies now show PRESERFLO® to be very successful in patients appropriately selected."

A literature review published in the *Journal of Ophthalmology* in 2021 demonstrated PRESERFLO® to be effective at lowering eye pressure, with fewer significant side effects compared to traditional glaucoma surgery. Results from a two-year multicentre trial published in *Ophthalmology Glaucoma* in 2022 showed that the majority of PRESERFLO® patients were medication-free from glaucoma eye drops at 12 months following surgery. And in 2023, a meta-analysis published in the *Cochrane Database of Systematic Reviews* concluded that MIGS is associated with a lower risk of cataract surgery within five years compared to standard trabeculectomy.

Despite its promising results, like all personalised medical treatment, a MIGS procedure must be the right procedure for the patient.

"This is not a procedure for everyone. For one, its effects may not last as long as with traditional surgery, as it's more prone to scarring. But in appropriately selected cases, it is a good option," said Dr Raniga.

Post-surgery, Edward felt discomfort for about a week, after which his sight returned to normal. At the 12-month mark, his eyes maintained good pressure flow and his glaucoma progression has halted.

"It's been a great success for me. I don't need eye drops anymore and I continue to cycle. I can't believe how effective the procedure has been, and the surgery itself was so easy – I was admitted in the morning and was out by lunchtime," says Edward.

"Without this innovative solution, I would have been compelled to undergo a more invasive surgical option, a decision I likely would have postponed. This would have prolonged the recovery period, potentially disrupting my cycling career. The alternative procedure I chose has opened up exciting possibilities for individuals with similar needs."

**MORE INFORMATION**
**T:** (02) 9812 3933

# Getting the full picture with arthroscopy

*Dr Matthew White*

TREATMENT FOR A COMMON WRIST PROBLEM CAN BE ENHANCED WITH THE USE OF ARTHROSCOPY, AS A RECENT CASE SHOWED.

Orthopaedic hand and wrist surgeon Dr Matthew White says the minimally invasive procedure not only enabled the removal of a troublesome ganglion cyst but also provided a diagnosis of ligament instability. This diagnostic insight will prove beneficial in any future treatment.

Ganglion cysts account for a large number of the soft tissue masses found in the hand and wrist. While they are benign and might go away on their own, some can cause issues if they press on a nerve or impinge on soft tissue or bone, especially when they're near a joint. Symptoms can include pain and loss of function.

Management options for ganglion cysts include observation, bracing or splinting, aspiration or surgery.

In Robert Aroney's case, arthroscopy was deemed to be the best approach to both diagnosis and treatment.

"Robert presented with a wrist ganglion, which are often found on scans carried out for other reasons, and the patient didn't know they had one," Dr White says.

"However, he had symptoms of wrist pain for a year or two, so his GP ordered an ultrasound scan and referred him to me.

"We decided to take it out because he was symptomatic, but he also had signs of carpal instability, so we did a wrist arthroscopy to examine the inside of the joint while removing the ganglion."

The procedure showed signs of early arthritis and ligamentous wear and tear, and provided vital information to guide any future treatment.

"It's been a window inside his wrist to see where it is now, and the camera helped diagnose some subtle instability and degenerative change," Dr White says.

Arthroscopy is minimally invasive and results in less post-operative pain. In many cases, other issues found during the procedure can be treated at the same time.

Robert, 49 and an IT consultant, thought his wrist pain was related to computer use.

"The ganglion would change size, and there were certain actions I couldn't do at all," he says.

"Push-ups were incredibly painful, as was pushing a lawnmower or putting shaving cream on my face."

He says he's glad he opted for surgery, which also included arthroscopy.

"As it turns out, Dr White found signs of wear. Now I'm in a bit of a waiting game, but it's nice to have the additional information, and I already know ahead of time that the wrist isn't perfect. There is an aspect of peace of mind," he says.

The removal of the ganglion cyst, followed by hand therapy, has significantly improved his life.

"I've already got less pain, and I can do push-ups without pain again," he says.

**MORE INFORMATION**
**T:** (02) 9650 4389

*Dr Cuneyt Ada*

A COMPLEX PROCEDURE HAS ALLOWED A PATIENT WITH A SEVERELY BLOCKED CORONARY ARTERY TO AVOID MAJOR HEART SURGERY.

# Drilling and shock waves spared a patient from a coronary bypass

Dale Hanrahan, 70, was first seen by cardiologists at the MQ Health Hunters Hill Clinic.

Following a stress test and scans, interventional cardiologist Dr Cuneyt Ada diagnosed him with heavily calcified blockages in the right coronary artery, requiring urgent treatment.

In many cases, blockages can be remediated through angioplasty and the insertion of a stent. This minimally invasive procedure involves inflating a tiny balloon in the artery to clear the blockages, then positioning an expanding mesh tube to keep the artery open.

"Stents cannot expand in calcified lesions, as the calcium is like the hard water in a kettle, or like teeth and bones," Dr Ada says.

"In cases like this, the only way forward has been to perform a coronary bypass – major surgery that carries risks for the patient and requires a lengthy recovery.

"Bypass surgery involves not only cutting through the breastbone to get to the heart, but also taking a vein from elsewhere in the patient's body to replace the damaged heart artery.

"Instead of this, we used cutting-edge technology to perform a minimally invasive procedure, and Mr Hanrahan was up and walking the same evening."

During the procedure, the team assessed the calcium deposits using intravascular ultrasound, allowing visualisation of the calcium and exact measurements of the artery dimensions, then cleared the artery using a combination of techniques dubbed 'rotashock'.

Rotashock involves the use of a tiny drill, or Rotablator™, and shock wave lithotripsy, which uses ultrasound pulses to break up hard masses, such as kidney stones.

This delicate procedure is performed via a tube inserted into the artery, usually at the wrist or leg, and guided into place using live X-ray imaging.

It takes about an hour to perform, compared to an average of four hours for a bypass and, unlike a bypass, does not require a general anaesthetic.

Dale says he sought a check-up after his brother had a bypass.

"I went to visit him in hospital after his surgery, and I thought, *I don't want to end up like that*," he says.

"I had my procedure on the Thursday, went home on the Friday and was a bit tired, but I was able to take my dog for a walk on the Saturday.

"I'm really pleased I didn't have to go down the path of open heart surgery – it's something you don't want to go through if you don't have to."

Dale's procedure was performed as part of Macquarie University Hospital's Complex Percutaneous Coronary Intervention Program, run by Dr Ada and his colleague Associate Professor Kal Asrress.

They specialise in treating patients with complex lesions and blockages – such as chronic total occlusions, bifurcation lesions and heavily calcified lesions – saving many people from having to undergo bypass surgery.

**MORE INFORMATION**
**T:** (02) 9030 0305

Macquarie University neuroscientists have developed a single-dose genetic medicine that has been proven to halt the progression of both motor neurone disease (MND) and frontotemporal dementia (FTD) in mice – and may even offer the potential to reverse some of the effects of the fatal diseases.

# New genetic therapy could be a gamechanger for MND and frontotemporal dementia

*Dr Annika van Hummel, Professor Yazi Ke and Professor Lars Ittner*

It may also hold opportunities for treating more common forms of dementia, such as Alzheimer's disease, which is the second most common cause of death in Australia after heart disease.

The new treatment, dubbed CTx1000, targets pathological build-ups of the protein TDP-43 in cells in the brain and spinal cord.

Cells like neurons produce TDP-43 naturally, and it is important for their healthy function. Under certain conditions, it accumulates in the wrong part of the cells, clogging them and preventing them from working properly.

For the past 15 years, a Macquarie University research team led by Professor Lars Ittner has been looking for the causes of this pathological build-up of TDP-43, along with ways to clear the blockages and prevent them from forming in the first place.

The team's latest findings are published in the prestigious international neuroscience journal, *Neuron*.

Professor Ittner says their research has furthered their understanding of MND and FTD and their causes.

"We discovered for the first time that where there is pathological TDP-43, there is also an increase in a second protein, 14 3 3," he says.

"The two proteins interact, resulting in these build-ups in the cells.

"From this, we were able to isolate a short peptide that controls this interaction, and that's what we used to create CTx1000.

"When we administered it in the lab, it dissolved the build-ups, tagging TDP-43 proteins for recycling by the body, and prevented new ones from forming.

"Importantly, CTx1000 targets only pathological TDP-43, allowing the healthy version of the protein to be produced and go about its work unhindered."

This makes CTx1000 incredibly safe, and Professor Ittner says they have seen no adverse effects in their studies.

Professor Yazi Ke, lead author of the new paper, says the milestone is particularly exciting for her because the original discovery was made in her early postdoctoral days.

"This spans more than a decade of work, and goes from discovery all the way through to a potential treatment," she says.

"In lab conditions, we saw CTx1000 stop MND and FTD from progressing even at very advanced stages, and resolving the behavioural symptoms associated with FTD.

"We have great hopes that when this progresses to human trials, it will not only stop people from dying from both MND and FTD, but even allow patients to regain some of the lost function through rehabilitation."

Research Fellow Dr Annika van Hummel says they covered a variety of mutations in the TDP genes during lab testing.

"We wanted to prove beyond a doubt that this would work in different situations, and it resulted in clear improvements in both symptoms and brain pathology," she says.

"The fact that it was effective both before and after the onset of symptoms makes it particularly exciting.

"While we are initially concentrating on MND and FTD, but about 50 per cent of cases of Alzheimer's also show TDP pathology, so it's possible that in the future this treatment could be translatable to other neurodegenerative conditions."

## A desperate need for treatment options

Also known as amyotrophic lateral sclerosis (ALS), MND causes the progressive loss of the neurons that allow the brain and spine to communicate with the muscles.

In its early stages, patients experience muscle weakness, but as the disease progresses, they gradually lose the ability to walk, speak, swallow and breathe unaided.

Most people with MND die within two to five years of diagnosis.

FTD is one of the rarer forms of dementia, but it is the second-most common form in people younger than 65. Actor Bruce Willis was diagnosed with FTD in 2023.

It does not always have obvious physical symptoms, but it results in cognitive decline coupled with behavioural symptoms including anxiety, loss of inhibition, personality change and impaired judgement. Patients may live for more than 10 years after diagnosis, but it is ultimately fatal.

While there is a genetic therapy showing promise for one form of familial MND, there are few treatments available for the sporadic MND that makes up 90 per cent of all cases.

Of those, the most effective can only extend a patient's life by up to five months. All require frequent doses, and some come with side effects that are difficult to cope with.

There is currently no treatment for FTD.

Macquarie University Professor of Neurology, Professor Dominic Rowe, is one of Australia's leading MND clinicians and researchers.

"I am currently treating more than 200 people with MND, but only five of them with a specific type of familial MND are currently able to access genomic therapy," Professor Rowe says.

"Treatment like that doesn't exist for anyone else. For most patients, all we can do is provide good quality, multidisciplinary care.

"This new research is incredibly promising in slowing the progression of MND and FTD for the vast majority of our patients.

"I'm extremely hopeful that it will soon be available to our patients at the Macquarie University Hospital MND Clinic."

*Professor Dominic Rowe*

First published in *The Lighthouse*.

*Dr Justine O'Hara*

# Changing lives through breast surgery

MORE WOMEN ARE SEEKING BREAST REDUCTION SURGERY TO ESCAPE THE PHYSICAL AND EMOTIONAL PAIN CAUSED BY EXCESSIVELY LARGE BREASTS.

**MORE INFORMATION**
**T:** (02) 9812 3899

Plastic and reconstructive surgeon Dr Justine O'Hara says the procedure is life-changing.

"There has been a great deal of evidence over the past few years from Australian studies that has highlighted the benefits," Dr O'Hara says.

"Women can gain a 115 per cent increase in their quality of life. It has been compared to the benefits of a knee replacement."

From very young women to those in their 70s, Dr O'Hara has helped about 1000 women reclaim their lives through breast reduction surgery, both as public and private patients.

"Some women have been in tears telling me about how people judge them for the size of their breasts," she says.

They can suffer from constant shoulder, neck and back pain, poor posture and skin irritation from the breasts rubbing on the chest wall and abdomen.

"They can't exercise. They are in chronic pain. They are not able to go shopping and buy clothes off the rack," Dr O'Hara says.

"They are really often quite traumatised patients."

Breast reduction surgery involves the removal of excess breast fat, glandular tissue and skin to achieve a more proportionate breast size.

The physical relief and the boost to self-esteem are significant, says Dr O'Hara.

"It is a really powerful operation that makes exceptionally happy patients and wonderful to see the drastic change in women and the psychosocial impacts of the surgery."

Arbella says her surgery in August 2023 has significantly changed her life.

"The decision was profoundly influenced by the positive experiences shared by my close family members, who, like me, faced similar challenges due to genetic factors," Arbella says.

"The impact on my overall wellbeing has been profound. The removal of four kilos from my chest not only alleviated physical pain but also transformed my confidence.

"I now feel comfortable in my own skin, liberated to participate in activities that were previously hindered by the challenges associated with larger breasts."

# Success in removing an unusual skull-base tumour

**A brain tumour that had silently reached a critical size was removed during an 11-hour surgery at Macquarie University Hospital.**

*Dr Santhosh George Thomas*

The meningioma was growing around major blood vessels in her brain when Antonette Sergi was referred to neurosurgeon Dr Santhosh George Thomas.

Meningiomas arise from the dura and are among the most common primary brain tumours in adults. Depending on their location, they can cause headaches, seizures, problems with vision or weakness in the limbs.

Although these tumours are typically small, slow-growing and benign, there is a potential for them to increase in size and affect major blood vessels. Detecting these tumours sometimes occurs incidentally during scans for unrelated reasons.

Antonette's tumour was Grade 1, but its location behind her right eye and encasement of the major blood vessels supplying the brain made it more challenging.

"Meningiomas are common tumours, but they generally don't encase blood vessels. This variety starts at the base of the skull and grows inward into the brain," Dr George Thomas says.

"We can safely remove most meningiomas, but this situation completely changed the equation for us.

"The tumour was so large it was pressing on the nerves of her eye; however, her vision was still preserved at this stage. She had no other neurological symptoms. At 5cm it was too big to leave alone or to do radiation. It had already reached critical dimensions."

If left untreated, the tumour would likely have continued to grow and could have compressed brain tissue and blood vessels.

However, the surgery was not without risk. Damage to the blood vessels while extricating the tumour could cause a stroke, leading to anything from mild weakness to an inability to speak or even paralysis.

"The risk of stroke was very high. It is scary for the patient and the doctor, but she wanted us to be honest with her," Dr George Thomas says.

During an 11-hour surgery in August, the team was able to remove almost all the tumour and preserve the blood vessels. Dr George Thomas expects the remaining cells to remain stable, but they will be monitored.

**MORE INFORMATION**
**T:** (02) 9812 3900

## Antonette's story

After going to a medical centre with flu-like symptoms, Antonette Sergi, 41, was shocked to be told she might have meningitis.

A scan had revealed there was a large growth behind her right eye and she needed further tests.

"I got a referral because I was vomiting and had a headache, but then got the diagnosis. Initially we were in shock and reality set in."

Antonette was sent to Macquarie University Hospital because of the complicated nature of the tumour.

"The doctors said that if it wasn't for those symptoms, we wouldn't have known until it was too late. No one could believe that I didn't have blurred vision because it was in my optical nerve as well," she says.

Antonette says she was told that the risk of stroke during her surgery could be two or three times higher than normal because of the location of the tumour, which was on blood vessels that control the left side of the body.

While she was understandably concerned about having surgery, not going ahead also presented significant risks.

"We've got three young children, so I chose to have the surgery."

Antonette says a small post-surgery stroke caused numbness in her left arm that might not be resolved.

She used to go to the gym every day and ran a food coaching business. While yet to return to that regime, she believes her physical health and positive approach helped her face her diagnosis and treatment.

Now tackling her recovery with determination and support from her family, she plans to gradually return to work.

*Antonette Sergi*

# First brain surgery performed in the Solomon Islands

FOUR DOCTORS AND A NURSE FROM MACQUARIE UNIVERSITY HOSPITAL HAVE TAKEN PART IN A GROUNDBREAKING MEDICAL MISSION TO THE SOLOMON ISLANDS TO PERFORM THE COUNTRY'S FIRST-EVER BRAIN SURGERY.

*Dr Matt Tait (fifth from left), Professor Antonio Di Ieva (seventh from left) and the neurosurgery team*

The National Referral Hospital (NRH) in Honiara, Solomon Islands, acquired its first CT scanner last year. This technology enabled the hospital to swiftly identify patients requiring neurosurgical interventions, marking a pivotal advancement in their diagnostic capability.

However, the Pacific nation had no neurosurgeons.

Nepean Hospital senior anaesthetist, Dr Narko Tutuo, originally from the Solomon Islands, has organised a number of medical missions to his home country. Learning of the situation, he and Dr Matthew Tait, Nepean's Head of Neurosurgery and a senior lecturer at Macquarie Medical School, contacted the NRH to offer their help.

Soon after, the pair formed the Aelan Neurosurgery Team comprising of 18 specialist doctors, anaesthetists and nurses, including an expert team from Macquarie University Hospital: Dr Antonio Di Ieva, Professor of Neurosurgery, fellows Dr Eric Suero Molina and Dr Kevin Agyemang, and nurse Soo Jin Min.

The team's arrival made front page news in Honiara. They spent a week assessing patients and performing 13 complex procedures in a challenging surgical environment on nine people.

Dr Tait says seeing the referrals in the clinic on the first day was deeply moving.

"We could not offer surgery for everyone, because in some cases, the patient's condition had already caused irreversible damage," Dr Tait says.

"I was torn between being excited at doing my best to help the patients that we could treat, and sadness at seeing the people with benign, treatable diseases whose lives have been ruined through lack of treatment.

"One example was a six-year-old girl with untreated hydrocephalus. She was profoundly disabled but possibly would have been able to develop normally if she had received a ventriculoperitoneal shunt earlier in life – as she surely would have in Australia.

"The dedication, compassion and effectiveness of the local healthcare team despite the lack of healthcare facilities, funding and resources is incredible."

For Professor Antonio Di Ieva, this was his first overseas surgical mission and his first trip to the Solomon Islands, and he says it was an unforgettable experience.

"We came to the realisation that people there are suffering and dying from conditions that are curable in Australia, like non-malignant brain tumours, and even infections," Di Ieva says.

"One of the patients we treated was a 47-year-old man who had a very large skull-base tumour. While histologically benign, the tumour would have eventually killed him due to hydrocephalus.

"He had reached the stage where he could no longer walk, had gone deaf, and had double vision.

"We removed the tumour using multiple advanced techniques, including endoscopic-assisted microneurosurgery, and were very pleased to see him make a remarkably prompt functional recovery.

"Our mission has been and will continue to be making conditions like this curable in the Solomons. I am very much looking forward to returning for future visits."

The Aelan Neurosurgery Team plans to return to the Solomon Islands in March 2024, but their goal is even more ambitious than sending medical staff to Honiara to conduct regular clinics.

Dr Tait and Dr Tutuo are in the process of setting the team up as an non-government organisation and working towards becoming a registered charity.

They are currently developing a memorandum of understanding with the NRH to establish a regular neurosurgery service at the hospital. They also intend to set up a training program for local surgeons, with the hope of seeing a self-sufficient neurosurgery team established in Honiara within the next five years.

The Solomons mission was supported by the Australian Government and medical companies, including BK Medical, Brainlab, Medtronic, Baxter, B Braun, Zeiss, and Stryker.

If you would like to be involved in the Aelan Neurosurgery Team's work, please email Dr Matthew Tait at **matthew.tait@aelanneuroteam.com**.

# CELEBRATING
## our volunteers

MQ Health hosted an International Volunteer Day event at the end of last year to celebrate the efforts of its volunteers and mark the fifth anniversary of the Macquarie University Hospital and Clinics Volunteer Program.

About 60 people generously donate their time every week, performing functions such as wayfinding for patients and visitors, assisting in the Day Surgery Unit and providing a consumer perspective on the Consumer Advisory Committee.

Professor Patrick McNeil, Deputy Vice-Chancellor (Medicine and Health) and Walter Kmet, MQ Health Chief Executive, spoke at the morning tea, which was followed by a tour of the hospital's new orthopaedic surgical facilities.

*MQ Health volunteers and consumer representatives with Volunteer and Consumer Engagement Manager Jane Goodwin-Moore (front, fourth from left) and Administration Support Officer, Yang Yao (third from right).*

**MORE INFORMATION**
**T:** (02) 9850 2864

# Is there a doctor on the field?

*Associate Professor Tajalli Saghaie*

**A team of doctors playing in a summer soccer league to prepare for a global competition have saved the life of a man on a nearby field.**

MQ Health's Associate Professor Tajalli Saghaie was with his Docceroos FC teammates at Strathfield Park in November when the referee from another match ran onto the field seeking help.

A 52-year-old man had collapsed and had no pulse. On the worst day of his life, Da Li was fortunate to be surrounded by doctors, plus a paramedic from another team.

Associate Professor Saghaie, a respiratory physician, says he was the first to reach the man.

"They said he had asked to come off the field because he felt odd. Then he just collapsed, went face down and lost consciousness," Associate Professor Saghaie says.

"He was cold to touch and didn't have a pulse. He was clinically dead."

Associate Professor Saghaie and another Docceroo, an ophthalmologist, began CPR and tried to maintain the man's airway. They were soon joined by the rest of the team.

Some went looking for a defibrillator, breaking into a shed to retrieve it.

"It felt like a long time, but it was probably only about five minutes. Due to the CPR, we could see he was gaining colour, but he still had no pulse," Associate Professor Saghaie says.

It took two shocks from the defibrillator to revive his heart. An ECG didn't indicate he'd had a heart attack, but an angiogram later revealed he had four blocked coronary arteries and had suffered a cardiac arrest.

While Da Li has made a full recovery, Associate Professor Saghaie says he had a number of risk factors, including high blood pressure, high cholesterol and diabetes. If these factors had been checked, they likely would have led to tests that could have picked up the blockages.

"I think it's important that we raise awareness about the need for education on CPR, but also having defibrillators around and easily available, especially on sports fields," he says.

"It's also important that, as people get older, they talk to their GP about cardiac risk factors.

"There are two types of events like this. One is linked to congenital disease, often happening to young athletes, but what happened to Da Li is more common as people get older and are pushing themselves to stay fit."

The Docceroos is the Australian medical football team and competes in the World Medical Football Championships each year. Associate Professor Saghaie is part of the Masters Tournament side for over 45s, set to compete in 2024 on the Sunshine Coast as Australia hosts the world championships.

With around half the players based in Sydney, the Masters team had joined an off-season league to prepare and keep fit.


*CovaU Energy, Kemps Creek Tigers and Sydney Docceroos FC.*

# Macquarie University Hospital No-Gap Joint Replacement Program

Working together to provide peace of mind when it matters most

Find out more at **mqhealth.org.au/no-gap-partnerships**

*Terms and conditions and patient eligibility criteria apply. The Macquarie University Hospital No-Gap Joint Replacement Program for HCF members will end on 30 September 2024.*

In partnership with

HCF | medibank For Better Health