

Fixing holes and making patients whole again

Specialized implants and a minimally-invasive procedure gave two women back their lives

By Marjo Johne

Helen Papatheodorou and Amira Eapen may be decades and thousands of kilometres apart, but for years the two women shared a common life-threatening health condition: a hole in the heart they were born with, but didn't learn about until much later in their lives.

Ms. Papatheodorou's condition was the result of a hole – called the foramen ovale – which usually closes immediately after birth, but in her case remained open. Ms. Eapen had an atrial septal defect caused by septal tissue failing to form between the upper chambers of her heart.

There's something else that links Ms. Papatheodorou, an 84-year-old Toronto resident, and Ms. Eapen, a 26-year-old research consultant currently working at the Aga Khan University Hospital in Nairobi, Kenya. Last year, they both underwent a procedure to close the holes in their hearts at the Peter Munk Cardiac Centre (PMCC), located in the Toronto General Hospital, which is part of the University Health Network.

Dr. Mark Osten, a cardiologist at

the PMCC, used small implants to repair the defect in the hearts of Ms. Papatheodorou and Ms. Eapen. The medical devices are designed to be inserted through a tiny incision in the groin area, then pushed through a vein that goes straight to the heart.

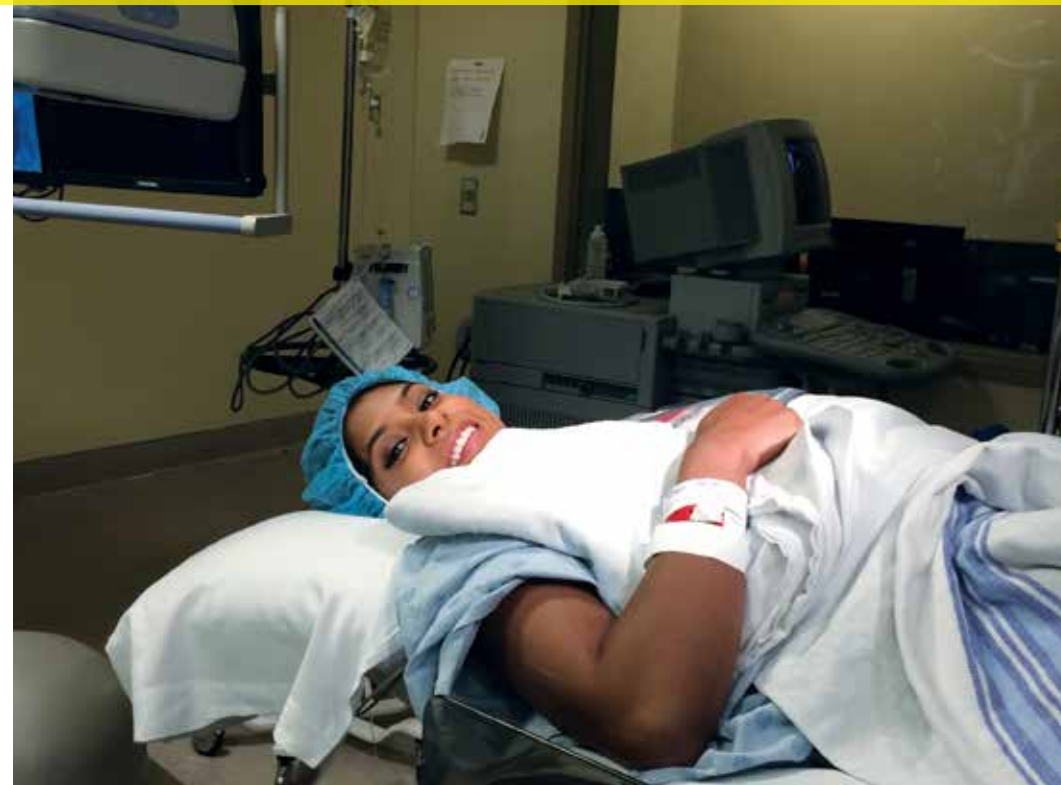
In Ms. Eapen's case, the procedure involved a novel device that had never before been implanted in humans.

"We essentially insert a device that looks like a double-sided umbrella through a catheter that is less than four millimetres in diameter and then open up the device which has a waist connecting the two discs so that it fills the hole," explains Dr. Osten. "Once the device is in place, we pull out the catheter and close up the incision with a single suture."

Ms. Eapen spent one night in hospital after the procedure, and three weeks later she was on a plane bound for Nairobi. Ms. Papatheodorou, who had been dependent on an oxygen machine for two years, recovered just as quickly.

"For a long time I was suffering and always feeling so weak," she says. "But now I'm better, thanks to Dr. Osten and the nurses, who were very nice."

Her son, Ted Papatheodorou, a Toronto electrician, says his mother has resumed her usual activities, which include walking to the park and grocery store and socializing with neighbours.



A hole in the heart and life-saving minimally-invasive surgery at the PMCC will forever link Amira Eapen, above, and Helen Papatheodorou, opposite page.

"Before the procedure, she was always dizzy and vomiting a lot, and her skin had turned a horrible colour," says Mr. Papatheodorou. "But she goes in for the procedure at the Toronto General [Hospital] and an hour later she's fine, and she's never gone near the oxygen machine again."

Dr. Osten's expertise with this type of closure procedure spared both Ms. Eapen and Ms. Papatheodorou from open heart surgery, which comes with a number of risks – such as the chance of a heart attack, stroke, arrhythmia or even death – and keeps patients in hospital for about a week.

Recovery from open heart surgery can take months, depending on the age of the patient, says Dr. Osten.

"With our minimally-invasive procedure, patients leave the hospital either the same day or the next morning," he says. "And they can usually go back to their usual lifestyle within 24 hours."

The procedure is a great option for patients across the age spectrum – as proven by the examples of Ms. Eapen and Ms. Papatheodorou – and can be a true lifesaver for much older patients, who would have a much-reduced chance

of recovering from open heart surgery.

But it almost didn't happen for Ms. Eapen. Her condition, an atrial septal defect – which Dr. Osten says is the most common type of heart defect in adults – can usually be closed through the femoral vein in the groin with the standard device implant that has been used for years. In most cases of atrial septal defect, patients can now avoid being treated with open heart surgery.

Ms. Eapen had another problem to contend with: she's allergic to nickel, which is a key component of today's most commonly used devices to close holes in the heart. She was not eligible for the minimally-invasive device closure. Dr. Eric Horlick, another PMCC Interventional Cardiologist who performed the procedure along with Dr. Osten and whom Ms. Eapen had met when she first came to the PMCC, told her about a new device that was nickel-free and came in sizes large enough to cover atrial septal defect holes.

"But the problem was this new device was still in trial – it wasn't available yet to be used for everyone," recalls Ms. Eapen. "So he had to get permission from the company to use the device on me because I wasn't part of the

trial, and I know he worked really hard to obtain that permission."

Dr. Horlick's hard work paid off; the device manufacturer gave the PMCC a 24-hour window to use the new implant. In July 2015, Ms. Eapen cut short a vacation in Estonia and came to the PMCC, where Drs. Osten and Horlick fitted her with the trial device.

"If that hadn't happened, it would have been open heart surgery for me," says Ms. Eapen. "I'm very grateful for everything they've done for me at the PMCC." ▽



Clinical Nurse Co-ordinator Sue Jimeno, along with colleagues Erwa Binkowski, Kathy Svitak and Oksana Basovich are integral in supporting a patient's journey from preparation to procedure and recovery.

SPOTLIGHT ON CLINICAL NURSE CO-ORDINATORS

It takes a multidisciplinary team of health professionals to look after every patient at the Peter Munk Cardiac Centre (PMCC). A key member of every team is the nurse co-ordinator, who works closely with doctors and guides patients through every step of their journey at the PMCC.

"As nurses, our role is to make sure that patients understand and are well prepared for the treatment that's being prescribed for them," says Socorro (Sue) Jimeno, Clinical Nurse Co-ordinator of the Adult Structural Heart Disease Program at the PMCC. "We help to ensure they have an overall positive experience."

The PMCC nurses have specialized expertise in cardiac care. Ms. Jimeno, for instance, worked for many years in the heart catheterization laboratory at the Toronto General Hospital. The experience gave her a comprehensive understanding of the heart's anatomy.

But the value of the PMCC nurses goes well beyond their medical knowledge. Ms. Jimeno says a big part of the role is to just hold the patient's hand.

"Most of the time, patients are nervous, so we spend a lot of time talking and listening to them, answering their questions and explaining what to expect from a procedure," she says. "It really helps them to know that they can call a nurse who is dedicated to this area of medicine – this is what we do, day in and day out." •