Pioneering mini pacemaker technology comes to Africa

In an African first, a series of four procedures to implant the world's smallest pacemaker was performed at Mediclinic Panorama in Cape Town over a two-day period this week.

The Medtronic Micra® Transcatheter Pacing System (TPS) is also the first product with miniaturised pacing technology to get Food and Drug Administration approval .

“It is cosmetically invisible and is small enough to be delivered through a catheter via the femoral vein in the groin and implanted directly into the right ventricle of the heart, providing a safe alternative to conventional pacemakers without the complications associated with cardiac wires,” explains cardiac electrophysiologist, Dr Razeen Gopal.

The minute pacemaker is entirely leadless, and at 6,7mm in diameter and 25,9mm in length is only one-tenth the size of an ordinary pacemaker.

Comparable to the size of a large vitamin, the device is attached to the heart with small tines, which allows it to deliver electrical pulses that pace the heart through an electrode. It is passed through the right atrium and the tricuspid valve, and precisely placed at the bottom part of the right ventricle, where it is attached to the thick part of the septum between the two ventricles.

Unlike traditional pacemakers, it does not require leads or a surgical “pocket” under the skin, eliminating potential sources of complications, the most worrisome being infection. The device responds to patients’ activity levels by automatically adjusting therapy. In fact, it is a rate-responsive device with a very sophisticated built-in accelerometer that can distinguish between the heart’s own natural beating rhythm and the movements of the patient.

“It is the first and only transcatheter system to be approved for both 1,5 and 3 Tesla full-body magnetic resonance imaging (MRI) scans, providing patients with access to the most advanced imaging diagnostic procedures available,” says Gopal.

While the device is designed to be left in the body, it can be retrieved if necessary. The average battery life of the device is about 10 years, and a second or even a third device can be placed in the right ventricle if necessary in future.

Source: Mediclinic Southern Africa