

## GoodHealth

# Cufflink that closes holes in the heart

**A** COMMON heart defect that affects as many as one in four adults — although many will not have symptoms — can now be repaired in less than an hour with the help of two plastic ‘cufflinks’.

Sealing small or threatened holes in the heart, known as patent foramen ovale or PFO, used to involve major surgery, but the new implant and scanner means the procedure can be carried out in about half an hour — without the need for a general anaesthetic. The patient can often go home the same day.

The condition develops in the womb: in the developing foetus, the *foramen ovale* is a hole that allows blood to flow freely from the heart's upper right chamber directly to the upper left chamber, bypassing the unborn baby's developing lungs.

At birth, when the baby begins to breathe, a flap of tissue closes over the hole, preventing blood from flowing between the two chambers.

However, in as many as one in four babies, it fails to close properly and pressure on the chest — through a sneeze or cough, for example — can force it open at any point.

While most PFOs do not cause any symptoms, if the pressure is great enough, blood can travel from the right chamber of the heart to the left and bypass the filtering provided by the lungs.

A clot or other debris in the blood may then escape through the hole and travel out of the heart to the brain, causing a stroke, or into a coronary artery, triggering a heart attack.

Forty per cent of strokes and heart attacks which have no obvious other cause are blamed on PFOs. Some PFOs which show symptoms can be controlled with

blood-thinning and anti-clotting medication, such as aspirin or warfarin, but in other cases surgical closure of the PFO may be needed.

Repairing PFOs surgically was once a significant operation, involving cutting through the chest. But in the new technique — developed at John Radcliffe Hospital in Oxford — the double disc device is delivered to the site of the PFO in a catheter fed via an incision in the groin.

A second catheter containing an ultrasound device is used to

guide the disc implant, known as the Helex occluder, to the heart. Once in position, the disc device — made from a patch of material woven on two tiny circular metal frames, linked by a wire tightening mechanism — is unloaded.

A disc is placed on either side of the hole, like cufflinks through a buttonhole. Then the device is tightened so that the discs are clamped together over the tissue surrounding the hole, where it remains permanently.

Over the course of several weeks, cells begin to infiltrate and grow over the disc, providing a natural seal after the operation.

All but one of the 50 patients who had the procedure as part of a study at the John Radcliffe were

discharged the same day. In all cases, tests showed no signs of blood shunting between the two sides of the heart, indicating that the hole had been successfully closed.

‘The combination of using ultrasound, a local anaesthetic and the patch device makes it possible to do this as a day case now,’ says Dr Oliver Ormerod, consultant cardiologist at John Radcliffe Hospital.

‘Patients prefer day cases — they do not like staying in hospital overnight, and it is safer because they are less likely to be exposed to infections.’

It also saves the NHS resources. Dr Ormerod adds: ‘Our study demonstrates that routine day-case closure is both safe and feasible, with excellent results.’

## 3-D scan to spot early tumours

**A NEW** test that screens for breast cancer ‘in stereo’ could pick up tumours at an earlier stage.

The technique, called stereoscopic digital mammography, takes two digital X-ray images of the breast and uses them to produce a 3D image. It means radiologists studying the images get a much more in-depth view of the tissue, increasing their chances of spotting cancer. Every woman in Britain aged 50 to 70 gets called for screening every three years. The existing technique involves a standard X-ray, where an image is produced on a film and then studied by two experts to look for signs of tumour growth. But the latest technique, being developed by Massachusetts-based firm BBN Technologies, helps detect very subtle changes that might indicate very early cancer. Trials so far show the number of false-negatives (where women were wrongly diagnosed as cancer-free) dropped 40 per cent with the stereo system.