

Lifesaving: Vascular surgeon Brendan Stanley using keyhole surgery to insert an arterial endograft.

Picture: Michael O'Brien

## Grafts offer new hope

lbert Einstein died from one and 5 per cent of men over the age of 60 have one, but until fairly recently, abdominal aortic aneurysms (AAA) could only be repaired with open abdominal surgery.

The surgery came with its own risks — a 4-5 per cent chance of death. But the Perth-led development of new endoluminal grafts synthetic inner linings used to patch arteries, which can be inserted through keyhole surgery — has dramatically improved the survival rate of this silent killer.

Aortic aneurysms, weakenings of the artery walls which cause blood to bulge into the damaged tissue like a balloon, have a 90 per cent fatality rate if they rupture and are responsible for one per cent of all deaths. High blood pressure, high cholesterol and smoking are known risk factors for the disease and men are eight times more likely to develop an aneurysm than women.

Vascular surgeon Brendan Stanley says the disease has a strong familial tendency. "First-degree male relatives — brothers or sons — have a 25 per cent chance of having an aneurysm," he explains. "As we get older the risks of aneurysms are higher."

Before they rupture, aneurysms cause few symptoms. Most are picked up incidentally by GPs through X-ray, ultrasound or other routine scans. Infrarenal aneurysms, occurring below the kidneys, are the most common form of AAA, responsible for 90 per cent of all cases.

"The aneurysms can be fixed with either open surgery or now more commonly with minimally invasive



The endograft that is to be inserted during the surgery.

surgery with endoluminal grafting," Dr Stanley says.

The technique was first suggested in 1990, and the graft, which is suitable for up to 80 per cent of aneurysms, was developed in Perth by vascular surgeons. The first cases were done here in Perth in 1993.

"The Perth-developed graft is the most common graft used in Australia. It is now also used in America and worldwide," Dr Stanley says.

"But not all aneurysms are suitable for a standard endoluminal graft and that is where the real advances have been made in Australia, and especially here in Perth.

"We can now repair the aorta from the arch of the artery down to where it branches in the legs using fenestrated and branching endoluminal grafts."

The more complex grafts, with holes and branches to the major blood vessels which

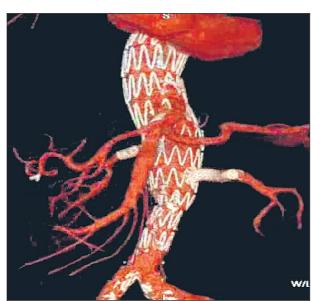
branch off the aorta, must be individually crafted. "The new technique that we have developed allows us to treat these aneurysms but still perfuse the major visceral vessels to the bowel, kidneys and spleen," Dr Stanley says.

Covered stents can also be inserted through the fenestrated grafts, enabling surgeons to repair aneurysms which extend into the visceral vessels. Encased in narrow rubber tubing, the collapsed grafts are inserted through a small incision in the groin. Surgeons feed the graft through the femoral artery and up the aorta to the aneurysm where x-ray guidance helps orient the graft's gold-plated markers within the aorta.

Once inserted, the graft forms a new artery wall, removing the pressure of the aneurysm and allowing the tissue to slowly shrink down over time.

"It has evolved from 1993, when we were doing simple, small-scale grafts here, to now being able to operate on major thoracic abdominal aneurysms with fenestrated and branched endoluminal grafts," Dr Stanley says.

The branched grafts have less room for error than the original fenestrated grafts, allowing surgeons greater ease with their placement. The mortality rate for open surgery has dropped from 10-15 per cent for thoraco-abdominal aneurysms and 4 per cent for infra-renal aneurysms to just one per cent with new surgical techniques. "It is a dramatic improvement in morbidity, mortality and recovery," Dr Stanley says.



CT scan of a branch endograft of an aneurysm.

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