

MATTERS OF THE HEART

Experts at the Wellington Hospital talk to us about trans-catheter aortic valve implantation

TRANS-CATHETER AORTIC VALVE IMPLANTATION: TAVI IS A MINIMALLY INVASIVE 'KEYHOLE' PROCEDURE FOR TREATING NARROWED AORTIC VALVES

As many of you reading this may already know, the aorta is the main artery coming out of the heart, carrying blood to the whole of the body (see Figure 1). The aortic valve sits at the junction between the heart and the aorta – each time the heart beats, it contracts, pumping blood through the aortic valve which then opens to let blood through before closing to prevent blood flowing back into the heart.

In some people, the aortic valve can thicken and stiffen over time and this makes it more difficult for the heart to pump blood through the narrowed valve. This is what doctors refer to as 'aortic stenosis' and patients with this problem can also experience shortness of breath, chest pain on exertion, dizzy spells or collapses and sudden death.

Conventional aortic valve replacement surgery is a tried and tested treatment with excellent results in many patients – but it is a major heart operation which involves opening the chest (a procedure known as a 'sternotomy') and going onto a heart-lung bypass machine. In some patients, the risks of such an operation are prohibitively high.

In these patients trans-catheter aortic valve implantation is an excellent alternative. The procedure was first performed in 2003 and it is currently reserved for elderly patients and for those in whom the risks of conventional surgery are high. It is limited to these groups because we do not know the long term outcome (5+ years), but this is likely to change as the results of long term research studies become available.

THE ARTIFICIAL VALVES

There are two different types of valve, the Sapien Transcatheter Heart Valve made by Edwards Lifesciences (www.edwards.com) and the CoreValve made by Medtronic (www.medtronic.com) – both are made up of, or consist of, soft pliable valve leaflets attached to a rigid frame.

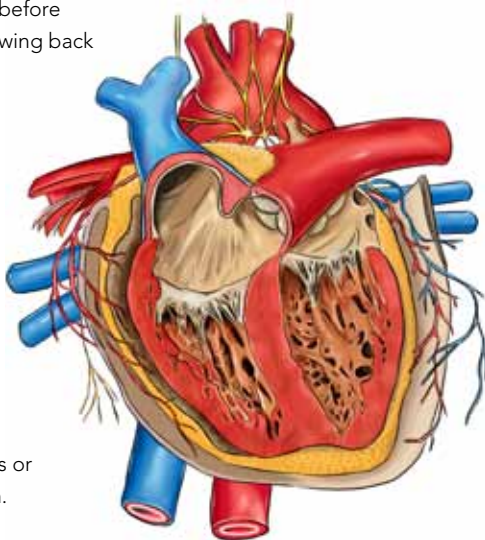
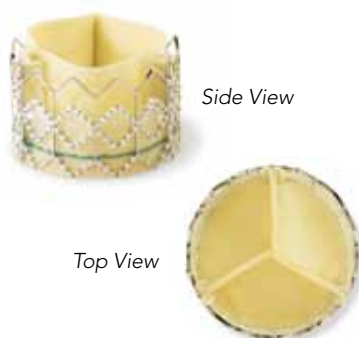


Figure 1: The human heart

Figure 2: Edwards SAPIEN XT™
Transcatheter Heart Valve



The leaflets are made from bovine or porcine pericardial tissue and the frames, from either stainless steel or nitinol. The valves are compacted down so that they can pass through smaller incisions.

THE PROCEDURE

There are two options; the trans-femoral and the trans-apical approach. Usually the procedure is performed under general anaesthetic, but sometimes patients can be awake, using a local anaesthetic.

The trans-femoral approach is where a wire is passed through a small cut in the skin and into the femoral artery at the top of the leg. The wire is then pushed up the artery to the heart, across the narrowed aortic valve and into the main pumping chamber of the heart (the left ventricle). The compacted replacement valve is tracked along this wire into position where it is expanded into shape, crushing the old valve to one side leaving the new valve in place.

In some people the femoral arteries are too narrowed for the artificial valve to be passed through and the trans-apical approach is used. A small cut is made in the left side of the chest, where a wire is passed through, straight through the wall of the heart into the left ventricle and then across the aortic valve. The compacted replacement valve is then tracked along the wire as per the trans-femoral approach. The hole in the heart is closed directly with stitches.

THE TEAM

TAVI procedures involve a team of experienced cardiologists, cardiac surgeons and anaesthetists who all have substantial experience in performing the procedure.

For further information and for details of the consultants carrying out this procedure at The Wellington Hospital, please contact the hospital enquiry line on 020 7483 5148

For more information, visit www.thewellingtonhospital.com