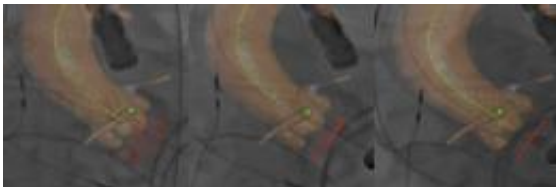


New aortic valve without open heart surgery

December 6 2010



Siemens Healthcare developed a new, smart visualization and guidance technology, which facilitates implantation of an aortic replacement valve by means of a catheter. The technology spares patients the trauma of surgery and cuts total per-patient costs. As the research magazine *Pictures of the Future* reports in its latest issue, the procedure has to date been performed on over 150 patients in Europe with an average age of 78.

For tens of thousands of people each year it is the end of the line. If they are too frail to survive [open heart surgery](#), many patients with aortic valve disease only have about two to three years to live. An ongoing stenosis of the valve resulting from [calcification](#) of the leaflets that allow oxygen-rich blood to flow from the left ventricle of the heart into the circulatory system, aortic valve disease affects about four percent of people 65 and older. Indeed, some 60,000 open heart aortic [valve replacement](#) operations are performed each year in Europe.

The new procedure is based on the use of [Siemens'](#) DynaCT 3D cardiac

angiographic imaging system. DynaCT provides exquisitely detailed images of the thorax. But during aortic valve implantation, what the surgeon wants to see in particular is the aortic root. With this in mind, Siemens researchers have developed a technology that automatically identifies the [aortic valve](#) area in a DynaCT data set and segments it—that is, eliminates everything that is not important, such as the rib cage, from the picture. As the replacement valve approaches the area of interest wrapped in the tip of a [catheter](#), unique software makes it possible to identify the optimum angulation of the new valve. This information is crucial in terms of correctly placing the device so that it covers the old valve without permitting leakage or covering the end points of the coronary arteries, which would cause an immediate heart attack. When the prosthesis is in precisely the right position, a balloon inside the catheter unfurls, thus opening the prosthesis and pressing it firmly against the aortic wall.

The technology results from a clinical cooperation between Siemens Healthcare, the Leipzig Heart Center, and the German Heart Center in Munich, as well as Siemens Corporate Research (SCR) in Princeton, New Jersey. It may also become available in the U.S. in the near future.

Provided by Siemens

Citation: New aortic valve without open heart surgery (2010, December 6) retrieved 11 May 2024 from <https://medicalxpress.com/news/2010-12-aortic-valve-heart-surgery.html>

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