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THE ANGEL VALVE CONCEPT

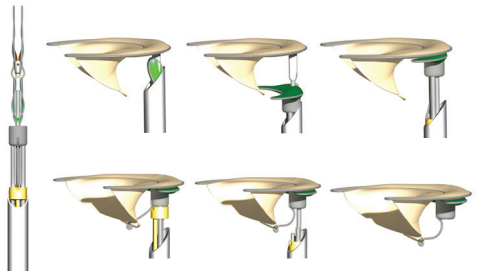
Researchers of the Vienna University of Technology and the Medical University of Vienna have designed a percutaneous applicable hemi valve for improving coaptation of an atrioventricular valve. The device -called "Angel valve" because its analogy with angel wings - comprises a support structure and a flexible artificial leaflet structure. With this device allow disease correction based on individual parameters of the patient monitored in the preimplantation period.

BACKGROUND

Present concepts of "Percutaneous mitral valve designs" are based on the principles of the "Carpentier technique" of mitral repair or conventional mitral valve replacements. The Alfieri mitral coaption technique is currently explored in clinical reality as are several concurring devices.
We based our concept on the notion to supply an alternative to current available treatment entities. Since most of the pathologies of the mitral valve have their origin in the dilatation of the mitral annulus, changes in the posterior leaflet and its chordal structures as well as changes within the posterior myocardial wall, we designed our concept to re-establish a sufficient closing plane of both coapting leaflets. In addition any stable device position re-establishing normal mitral flow has to take into account the special anatomy of the anterior leaflet.

TECHNOLOGY

The newly developed device comprises a wing like structure squeezing the diseased posterior leaflet between two artificial covers still allowing some limited leaflet motion. Extensions of the atrial aspect of the cover filled with a semiflexible substance create a coaptation plane with the unaffected anterior leaflet, allowing normal leaflet motion and unrestricted opening. In analogy with the surgical gold standard this is comparable with the pericardial leaflet extension in restricted posterior leaflets. The cover of the posterior leaflet is anchored by the expansion of the wings and the opposite cover part which is positioned on the ventricular aspect of the leaflet. In addition artificial chords fixed at the thru leaflet telescope part are preventing prolapse of the three posterior cover parts resembling the natural partitions of the mitral valve known as P1,P2,P3 .



ADVANTAGES

- The anterior leaflet remains in place
- Based on individual patient parameters a special cover slides over the diseased posterior leaflet, is anchored by device parts pressing against the mitral annulus and interacting with a standoff pressing from the ventricular aspect of the leaflet. The extensions of the "leaflet cover", individually corrects the coaptation plane.
- The implanted device allows a sufficient coaptation plane between the artificial posterior leaflet and the patient's own anterior leaflet

IMPLANTATION TECHNIQUE:

- Transapical as a TAVI procedure
- Transaortal where some features of the device have to be rearranged
- Transseptal approach similar to transaortal

KEYWORDS:

implant I mitral valve I endovascular I minimal invasive

IPR :

Patent filed;
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OPTIONS:

License agreement, development partnership

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