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System for Transcatheter Grabbing and Securing the Native Mitral Valve's Leaflet to a Prosthesis

Tech ID: 32960 / UC Case 2021-762-0

BRIEF DESCRIPTION

Researchers at UC Irvine have developed an assembly of components that work together as a system for first grabbing, and then securing the native mitral valve's leaflet to a prosthesis via transcatheter means.

SUGGESTED USES

·To avoid both static and dynamic transcatheter mitral valve replacement (TMVR)-induced left ventricular outflow tract obstruction (LVOT)

FEATURES/BENEFITS

·To avoid both static and dynamic transcatheter mitral valve replacement (TMVR)-induced left ventricular outflow tract obstruction (LVOT)

FULL DESCRIPTION

Left ventricular outflow tract (LVOT) obstruction is a leading cause of mortality and exclusion from transcatheter mitral valve replacement (TMVR). LVOT obstruction is a frightening TMVR complication, occurring in up to 40% of valves implanted in a native mitral annular calcification, 5% of valve-in-ring cases, and 2% of valve-in-valve cases. Potential for LVOT obstruction is the most important cause for patient exclusion for TMVR, with 49% of patients for valve implants in a native mitral annular calcification and 6% of patients for valve-in-ring excluded for TMVR due to predicted risk of LVOT obstruction.

There are two mechanisms that lead to TMVR-induced LVOT obstruction: (1) Static obstruction occurs when the native mitral valve's anterior leaflet is pushed toward the interventricular septum by the mitral valve prosthesis, creating a narrowed and elongated "neo-LVOT;" (2) Dynamic obstruction occurs when the narrowed neo-LVOT generates Bernoulli forces that pulls the anterior mitral leaflet toward the interventricular septum during systole. A long anterior mitral leaflet with redundant chordae could be a risk factor which may also prolapse back into the transcatheterly-implanted mitral valve, interfering with valve closure and causing acute valve failure.

As a solution to avoid both static and dynamic TMVR-induced LVOT obstruction, researchers at UC Irvine have developed an assembly of components that work together as a system for first grabbing, and then securing the native mitral valve's leaflet to a prosthesis via transcatheter means.

STATE OF DEVELOPMENT

Device design is currently underway.

OTHER INFORMATION

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Transcatheter mitral valve replacement (TMVR), Transcatheter tricuspid valve replacement (TTVR), Left ventricular outflow tract obstruction (LVOT obstruction), Right ventricular outflow tract obstruction (RVOT obstruction), Leaflet grabbing and securing

CATEGORIZED AS

» **Medical**

» Devices

Country	Type	Number	Dated	Case
United State of America	Published Application	20220273434A1	09/01/2022	2021-762

» Disease:
Cardiovascular and
Circulatory System

RELATED CASES

2021-762-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20220273434	09/01/2022	2021-762

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Percutaneous Heart Valve Delivery System Enabling Implanted Prosthetic Valve Fracture
- ▶ A distensible wire mesh for a cardiac sleeve
- ▶ Method to Improve the Accuracy of an Independently Acquired Flow Velocity Field Within a Chamber, Such as a Heart Chamber
- ▶ Percutaneous Heart Valve Delivery System
- ▶ Real-time 3D Image Processing Platform for Visualizing Blood Flow Dynamics
- ▶ Method for Synchronizing a Pulsatile Cardiac Assist Device with the Heart
- ▶ Fully Automated Multi-Organ Segmentation From Medical Imaging
- ▶ Simple, User-friendly Irrigator Device for Cleaning the Upper Aerodigestive Tract and Neighboring Areas
- ▶ Automated 3D Reconstruction of the Cardiac Chambers From MRI of Ultrasound
- ▶ Minimally Invasive Percutaneous Delivery System for a Whole-Heart Assist Device

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