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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

#### CONTACT

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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	Туре	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	Туре	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
- Growth-Accomodating Transcatheter Pulmonary Valve System
- Real-time 3D Image Processing Platform for Visualizing Blood Flow Dynamics
- Method for Synchronizing a Pulsatile Cardiac Assist Device with the Heart
- Automated Histological Image Processing tool for Identifying and Quantifying Tissue Calcification
- 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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