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

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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.

INVENTORS

» Kheradvar, Arash

CATEGORIZED AS

» Medical
» Devices
Country | Type | Number | Dated  | Case
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**Disease:**
Cardiovascular and Circulatory System

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