Percutaneous Heart Valve Delivery System Enabling Implanted Prosthetic Valve Fracture

Tech ID: 32341 / UC Case 2020-314-0

BRIEF DESCRIPTION

UCI researchers developed a percutaneous heart valve delivery system to deliver and implant a prosthetic valve. This system incorporates the means to fracture a previously implanted prosthetic valve in situ without interfering with the transcatheter valve to be implanted.

SUGGESTED USES

·Transcatheter valve-in-valve (VIV) replacement

·Pre-VIV bioprosthetic valve fracture

FEATURES/BENEFITS

·Promotes optimal expansion of new transcatheter valve

·Addresses valvular insufficiency from pre-VIV bioprosthetic valve fracture

·Avoids damage to new transcatheter valve

FULL DESCRIPTION

The human heart has four valves which control the flow of blood throughout the heart. Heart valve disease occurs when one or more of these valves do not work properly.In the US, this disease affects more than 5 million Americans each year.

Surgical valve replacement can be completed using prosthetic valves.But these prosthetic valves can degrade and eventually fail over time. These prosthetic valves can subsequently be replaced by the minimally invasive valve-in-valve (VIV) procedure, in which the new transcatheter valve is tightly placed within the older failed surgical valve. Unfortunately, in some cases, especially over time, these transcatheter VIV replacement can lead to suboptimal clinical outcomes due to constriction of the new transcatheter heart valve by the old prosthetic surgical valve's sewing ring.

The researchers at UCI developed a new percutaneous heart valve delivery system to facilitate heart valve replacement with bioprosthetic valve fracture (BVF). The system involves a valve delivery catheter, a balloon configured to fracture a previously implanted heart valve, and a replacement transcatheter heart valve. The key step requires the fracture to be completed before deploying the replacement valve so as to prevent leaflet damage of the new valve. Compared to other pre-VIV BVF techniques, this approach overcomes valvular insufficiency by the immediate placement of the replacement valve. Overall, this technology aims to improve treatment success and optimal outcomes in transcatheter valve implantation.

PATENT STATUS

CONTACT

Alvin Viray
aviray@uci.edu
tel: 949-824-3104.

INVENTORS

» Kelley, Gregory S.
» Kheradvar, Arash

OTHER INFORMATION

CATEGORIZED AS

» **Medical**
  » Delivery Systems
  » Devices
  » Disease: Cardiovascular and Circulatory System
» **Sensors & Instrumentation**
  » Medical

RELATED CASES

2020-314-0

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,730,593	08/22/2023	2020-314

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- 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
- System for Transcatheter Grabbing and Securing the Native Mitral Valve's Leaflet to a Prosthesis
- 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
- 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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5270 California Avenue / Irvine,CA
92697-7700 / Tel: 949.824.2683