Ultrasound-Guided Delivery System For Accurate Positioning - Repositioning Of Transcatheter Heart Valves

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OTHER INFORMATION

CATEGORIZED AS

- **Imaging**
  - 3D/Immersive
  - Medical
- **Medical**
  - Diagnostics
  - Disease: Cardiovascular and Circulatory System
  - Imaging

RELATED CASES

2017-414-0

BRIEF DESCRIPTION

Utilizing intravascular ultrasound for accurate placement of transcatheter heart valves to improve surgical outcomes.

FULL DESCRIPTION

Minimally invasive transcatheter heart valve replacement has gained acceptance as a procedure well suited for high-risk patients in need of a heart valve replacement. Pre-operatively patients can be scanned with x-ray computed tomography, magnetic resonance imaging, or ultrasound to visualize the patient's heart valve anatomy. During the heart valve deployment procedure, physicians are only able to utilize x-ray computed tomography to obtain real-time imaging feedback while precisely deploying the transcatheter heart valve. Unfortunately, x-ray computed tomography utilizes high doses of harmful ionizing radiation, and provides limited information in the form of a two-dimensional projection of a three-dimensional anatomy. Pre-and post-operatively physicians can utilize minimally invasive imaging modalities to compare the operative computed tomography information to the minimally invasive images. There are once again limitations in this comparison due to a difference in contrast and resolution between imaging techniques.

To address the shortcomings of x-ray computed tomography, the presented technology incorporates minimally invasive intravascular ultrasound to guide transcatheter heart valve replacement. Prior to heart valve deployment intravascular ultrasound can render the three-dimensional native anatomy of a patient's heart valve intravascularly to better plan the deployment. During deployment, intravascular ultrasound can provide real time imaging feedback for proper placement over the identified anatomical features previously obtained. Lastly, the physician can then obtain real time three-dimensional imaging feedback regarding the placement of deployed heart valve assessing whether it needs to be re-deployed. By integrating intravascular ultrasound with transcatheter heart valve replacement an improve patient outcomes regarding minimally invasive heart valve replacement can be realized.

SUGGESTED USES

- Used to deploy a TAVR/TMVR device into a patient with greater accuracy and precision than with current procedural imaging modalities
- Assess the performance state of the TAVR/TMVR valve post deployment

ADVANTAGES

· Accurate three-dimensional position and deployment of transcatheter heart valves

· Reduced operation complications by having real time and post deployment feedback of valve placement

· Non-ionizing safe for patients

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11364118	06/21/2022	2017-414

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