

CLAIMS:

1. A method of selecting a prosthetic heart valve comprising:

taking an image of the native heart valve annulus;

obtaining measurements of the native heart valve annulus from the image, and calculating the native annulus area and the native annulus diameter based on the obtained measurements;

determining from a set of expandable prosthetic heart valves a first prosthetic heart valve configured to cover the native annulus diameter and the native annulus area, the first prosthetic heart valve having a first deployed diameter range, wherein the native annulus diameter is within the first deployed diameter range;

determining from a set of expandable prosthetic heart valves a second prosthetic heart valve configured to cover the native annulus diameter and the native annulus area, the second prosthetic heart valve having a second deployed diameter range that is different from the first deployed diameter range, wherein the native annulus diameter is within the second deployed diameter range;

determining one or more first suggested expanded diameters for the first prosthetic heart valve based on the native annulus diameter;

determining a pressure gradient across the first prosthetic heart valve at each of the one or more first suggested expanded diameters based at least in part on pressure values from hemodynamic data of the first prosthetic heart valve;

determining one or more second suggested expanded diameters for the second prosthetic heart valve based on the native annulus diameter;

determining a pressure gradient across the second prosthetic heart valve at each of the one or more second suggested expanded diameters based at least in part on pressure values from hemodynamic data of the second prosthetic heart valve; and

selecting the prosthetic heart valve with the suggested expanded diameter resulting in the lowest pressure gradient from the first and second prosthetic heart valves.

~~determining which prosthetic heart valves of a plurality of prosthetic heart valves cover the determined native annulus area;~~

~~—analyzing hemodynamic data of each of those prosthetic heart valves of the plurality of prosthetic heart valves covering the determined native annulus area;~~

~~—selecting a prosthetic heart valve based on the analyzed hemodynamic data.~~

2. The method of claim 1, wherein taking the image of the native heart valve annulus is performed by obtaining the image using computed tomography.

3. The method of claim 1, wherein the suggested expanded diameter of the selected prosthetic heart valve is within a range of 0 to 40% greater than the native annulus diameter.

4. The method of claim 1, wherein the suggested expanded diameter of the selected prosthetic heart valve is within a range of 0 to 20% greater than the native annulus diameter.

~~3. The method of claim 1 or 2, wherein analyzing the hemodynamic data includes analyzing a pressure gradient across the prosthetic heart valve.~~

~~4. The method of claim 3, wherein selecting the prosthetic heart valve comprises selecting that prosthetic heart valve which has the lowest pressure gradient of the prosthetic heart valves covering the determined native annulus area.~~

~~5. The method of claim 1 or 2, wherein
the prosthetic heart valves are balloon expandable; and wherein
determining which prosthetic heart valves of the plurality of prosthetic heart valves cover the determined native annulus area comprises determining those prosthetic heart valves that have an expanded diameter that is greater than the determined native annulus diameter.~~

~~6. The method of claim 5, comprising
determining those prosthetic heart valves that have an expanded diameter within a range of 0 to 40% greater than the determined diameter of the native annulus.~~

~~7. The method of claim 5, comprising~~
~~determining those prosthetic heart valves that have an expanded diameter within a range of 0 to 20% greater than the determined diameter of the native annulus.~~

~~8. The method of one of the preceding claims, which is executed as an application on a computing device.~~

95. A computing device comprising a processing unit and a memory storing software implementing a method of one of the claims 1 to 84, the software being in the form of computer-executable instructions suitable for execution by the processing unit.

106. The computing device of claim 95, which is a mobile computing device.

117. A computer-readable storage medium comprising instructions that can be executed by a computer and instruct the computer to:

calculating native annulus area and native annulus diameter of a native heart valve annulus based on measurements obtained from an image of the native heart valve annulus;

determine from a set of expandable prosthetic heart valves a first prosthetic heart valve configured to cover the native annulus diameter and the native annulus area, the first prosthetic heart valve having a first deployed diameter range, wherein the native annulus diameter is within the first deployed diameter range;

determine from a set of expandable prosthetic heart valves a second prosthetic heart valve configured to cover the native annulus diameter and the native annulus area, the second prosthetic heart valve having a second deployed diameter range that is different from the first deployed diameter range, wherein the native annulus diameter is within the second deployed diameter range;

determine one or more first suggested expanded diameters for the first prosthetic heart valve based on the native annulus diameter;

determine a pressure gradient across the first prosthetic heart valve at each of the one or more first suggested expanded diameters based at least in part on pressure values from hemodynamic data of the first prosthetic heart valve;

determine one or more second suggested expanded diameters for the second prosthetic heart valve based on the native annulus diameter;

determine a pressure gradient across the second prosthetic heart valve at each of the one or more second suggested expanded diameters based at least in part on pressure values from hemodynamic data of the second prosthetic heart valve; and

select the prosthetic heart valve with the suggested expanded diameter resulting in the lowest pressure gradient from the first and second prosthetic heart valves.

~~receive a measurement of a native annulus area of a native heart valve inputted by a user;~~
~~calculate an area-derived native annulus diameter based on the received measurement of the native annulus area;~~

~~analyze hemodynamic data of a plurality of prosthetic heart valves;~~

~~determine a suggested prosthetic heart valve of the plurality of prosthetic heart valves based on the analyzed hemodynamic data.~~

~~12. The computer-readable storage medium of claim 11, further comprising instructions that instruct the computer to:~~

~~determine a suggested expanded diameter of the suggested prosthetic heart valve; and~~

~~determine an expected pressure gradient across the suggested prosthetic heart valve.~~