CLAIMS

1. A delivery system for an implantable device, the delivery system comprising:

a first catheter assembly having a handle and a sheath extending from the handle in an axial direction, the sheath comprising a steerable section;

a second catheter assembly having a handle and a sheath comprising a proximal end coupled to the handle and a distal end;

the sheath of the second catheter assembly extending coaxially through the sheath of the first catheter assembly;

wherein the sheath of the second catheter assembly has a first outer diameter along a first length and a second outer diameter along a second length;

wherein the second outer diameter is smaller than the first outer diameter;

wherein the sheath of the second catheter assembly is extendable from a distal end of the sheath of the first catheter assembly by a stroke distance; and

wherein the second length is greater than or equal to a sum of the stroke distance and a length of the steerable section of the first catheter assembly, such that the sheath of the second catheter assembly has the second outer diameter through the steerable section of the first catheter assembly.

2. The delivery system for an implantable device according to claim 1, wherein a difference between the first outer diameter and the second outer diameter is from about 0.25 to about 0.76 mm.

3. The delivery system for an implantable device according to any one of claims 1-2, wherein a transition from the first outer diameter to the second outer diameter forms a smooth taper over a distance of from about 25 mm to about 50 mm.

4. The delivery system for an implantable device according to any one of claims 1-3, further comprising a lubricated coating on an outer surface of the sheath along the second length of the sheath.

5. The delivery system for an implantable device according to claim 4, wherein the lubricated coating comprises a hydrophilic coating.

6. The delivery system for an implantable device according to any one of claims 1-5, wherein the first outer diameter and the second outer diameter are each less than an inner diameter of the sheath of the first catheter assembly.

7. The delivery system according to any one of claims 1-6, wherein the first catheter assembly is a steerable catheter assembly, and the second catheter assembly is an implant catheter assembly.

8. The delivery system of any one of claims 1-7, wherein the sheath of the second catheter assembly is a multi-layer sheath, wherein one or more layers of the multi-layer sheath comprise at least one laser-cut hypotube, wherein the at least one laser-cut hypotube has a stiffness that varies along a length of the at least one laser-cut hypotube, and wherein a proximal portion of the sheath is stiffer than a distal portion of the sheath.

9. A system comprising:

a delivery system comprising;

a first catheter assembly having a handle and a sheath extending from the handle in an axial direction, the sheath comprising a steerable section;

a second catheter assembly having a handle and a sheath comprising a proximal end coupled to the handle and a distal end;

the sheath of the second catheter assembly extending coaxially through the sheath of the first catheter assembly;

wherein the sheath of the second catheter assembly has a first outer diameter along a first length and a second outer diameter along a second length;

wherein the second outer diameter is smaller than the first outer diameter;

wherein the sheath of the second catheter assembly is extendable from a distal end of the sheath of the first catheter assembly by a stroke distance;

wherein the second length is greater than or equal to a sum of the stroke distance and a length of the steerable section of the first catheter assembly, such that the sheath of the second catheter assembly has the second outer diameter through the steerable section of the first catheter assembly; and

an implantable device coupled to the second catheter assembly.

10. The system of claim 9, wherein the implantable device comprises a heart valve replacement device.

11. The system of claim 9, wherein the implantable device comprises a heart valve repair device.

12. The system of claim 11, wherein the heart valve repair device comprises a pair of anchors configured to attach to two native leaflets of a native heart valve.

13. The system of claim 12, wherein the second catheter assembly is configured to open and close the pair of anchors.

14. The system according to claim 9, wherein a difference between the first outer diameter and the second outer diameter is from about 0.25 to about 0.76 mm.

15. The system according to any one of claims 9-14, wherein a transition from the first outer diameter to the second outer diameter forms a smooth taper over a distance of from about 25 mm to about 50 mm.

16. The system according to claim 9, further comprising a lubricated coating on an outer surface of the sheath along the second length of the sheath.

17. The system according to claim 16, wherein the lubricated coating comprises a hydrophilic coating.

18. The system according to any one of claims 9-17, wherein the first outer diameter and the second outer diameter are each less than an inner diameter of the sheath of the first catheter assembly.

19. The system of any one of claims 9-18 wherein the sheath of the second catheter assembly is a multi-layer sheath, wherein one or more layers of the multi-layer sheath comprise at least one laser-cut hypotube, wherein the at least one laser-cut hypotube has a stiffness that varies

along a length of the at least one laser-cut hypotube, and wherein the proximal portion of the sheath is stiffer than the distal portion of the sheath.