

CLAIMS

In the Claims:

1. A minimally invasively implanted anchor support for securing a medical device to a heart wall comprising:
 - 5 an anchoring member having a proximal end and distal end wherein said distal end includes an anchoring restraint configured for securing to a heart wall, said anchoring member defining a lumen and have a proximal portion; and
 - a distal flange comprising an expandable anchor restraint on its distal end and a proximally extending flex connector wherein said distal flange is positioned within said anchoring member lumen when said anchoring member is secured to the heart wall and wherein
 - 10 said anchor support extends beyond a distal end of said anchoring member and expands upon exiting the heart wall.
2. The minimally invasively implanted anchor support according to Claim 1 wherein said
- 15 distal flange further comprises a rod extending proximally from said distal disk and connecting to said flex connector.
3. The minimally invasively implanted anchor support according to Claim 1 wherein said anchor support further comprises a flex connector base on a proximal end of said flex connector.
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4. The minimally invasively implanted anchor support according to Claim 1 wherein said anchoring member is an anchor coil.
- 25 5. The minimally invasively implanted anchor support according to Claim 4 wherein said anchor coil is a helical coil having a sharp distal tip for penetrating the heart wall.
6. The minimally invasively implanted anchor support according to Claim 1 wherein said
- 30 flex connector is a wire.

7. The minimally invasively implanted anchor support according to Claim 1 wherein said flex connector is an expandable coil.
8. The minimally invasively implanted anchor support according to Claim 1 wherein said
5 medical assembly further comprises a proximal flange, said proximal flange comprising an expandable proximal disk on its distal end and a flexible compression element extending proximally from said proximal disk.
- 10 9. The minimally invasively implanted anchor support according to 8 wherein said proximal flange further comprises a docking element on a proximal end of said flexible compression element.
- 15 10. The minimally invasively implanted anchor support according to Claim 9 wherein said docking element comprises at least one outwardly biased docking arm.
11. The minimally invasively implanted anchor support according to Claim 9 wherein said docking element comprises at least one inwardly biased docking arm.
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12. The minimally invasively implanted anchor support according to Claim 8 wherein said proximal flange, said flexible compression element and said docking element each define a hollow lumen wherein a continuous lumen extends through said proximal flange, said proximal connector, and said flexible compression element and wherein said proximal flange extends over
25 said flex connector, and said anchoring member to contact the heart wall.
13. A medical assembly for minimally invasively implanting a medical device into the heart comprising:
- 30 an anchor support comprising an anchoring member having a proximal end and distal end wherein said distal end is configured for penetration into a heart wall, said anchoring member defining a lumen and a proximal portion; an anchor cap positioned on said anchoring member

proximal, and a distal flange comprising an expandable distal disk on its distal end and a proximally extending flex connector wherein said distal flange is positioned within said anchoring member lumen when said anchoring member is implanted into the heart wall and wherein said distal disk extends beyond a distal end of said anchoring member and expands upon exiting the heart wall; and

an anchor support delivery system for delivering said anchoring member, said anchor support comprising a delivery cable having a distal end configured to cooperate with said distal flange, and an anchor driver having a distal end configured to cooperate with said anchor cap wherein forces applied to said anchor driver anchors said anchoring member into the heart wall, said anchor support delivery system further comprising a microcatheter having a proximal portion positioned within an inner lumen of said anchor driver and said microcatheter includes a removable dilator on its distal end and positioned within said anchoring member lumen for heart wall penetration, and said delivery cable being moveable within said microcatheter lumen to distally move said distal flange through said microcatheter to advance distal flange through the heart wall wherein said distal disk expands.

14. The medical assembly according to Claim 13 wherein said anchor support delivery system further comprises an access valve on a proximal end of said microcatheter.

15. The medical assembly according to Claim 13 wherein said anchor cap defines at least one coupling recess and said anchor driver includes a distal end defining at least one coupling configured to be received within said anchor cap at least one coupling recess.

16. The medical assembly according to Claim 13 further comprising a distal flange loader configured to guide said distal flange to an inner lumen of said microcatheter wherein said distal flange loader houses said distal flange for introduction.

17. The medical assembly according to Claim 13 wherein said anchoring member is an anchor coil.

18. The medical assembly according to Claim 17 wherein said anchor coil is a helical coil have a sharp distal tip for penetrating the hear wall for implantation.

19. The medical assembly according to Claim 13 wherein said flex connector is a wire.
20. The medical assembly according to Claim 13 wherein said flex connector is a flexible
5 coil.
21. The medical assembly according to Claim 1 wherein said medical assembly further
comprises a proximal flange, said proximal flange comprising an expandable proximal restraint
on its distal end and a flexible compression element extending proximally from said proximal
10 restraint.
22. The medical assembly according to Claim 21 further comprising a proximal flange
delivery catheter operatively connected to a proximal end of said flexible compression element
wherein said proximal flange delivery catheter delivers said proximal flange over said anchor
15 delivery cable.
23. The medical assembly according to Claim 22 wherein said medical assembly further
comprising a proximal flange delivery catheter having a distal end and said flexible compression
element proximal end includes a docking element and said docking element is configured to
20 mate with said proximal flange delivery catheter distal end.
24. The medical assembly according to 23 wherein said docking element having at least one
outwardly biased docking arm.
25. 25. The medical assembly according to Claim 23 wherein said docking element comprises at
least one inwardly biased docking arm.
26. The medical assembly according to Claim 23 wherein said proximal flange, said
proximal connector, said flexible compression element and said docking element each define a
30 hollow lumen wherein a continuous lumen extends through said proximal flange, said docking
element, and said flexible compression element.

27. The medical assembly according to Claim 23 wherein said flexible compression element is a coil.

28. The medical assembly according to Claim 23 wherein said proximal end of said flex
5 connector includes a flex connector base and said medical assembly further comprises a tether swivel configured to cooperate with said flex connector base and to rotate freely on said anchor cap.

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