

CLAIMS

1. An apparatus, for use with an anchor driver, the apparatus comprising:
a wire; and
a first anchor and a second anchor, each of the first and second anchors, comprising:
5 a tissue-engaging element defining a central longitudinal axis of the anchor,
having a sharpened distal tip, and configured to be driven into tissue of a subject; and
a head, coupled to a proximal end of the tissue-engaging element, the head
comprising:
a driver interface, configured to be reversibly engaged by the anchor
10 driver, and
an eyelet:
defining an aperture through which the wire is threaded,
disposed laterally from the central longitudinal axis,
shaped to facilitate smooth sliding of the eyelet over the wire
15 along a slide-axis of the eyelet while the wire is aligned with the slide-
axis, and
having an external shape that defines a tapered portion that
tapers away from the aperture along the slide-axis.
2. The apparatus according to claim 1, wherein the external shape of the eyelet defines:
20 the tapered portion as a first tapered portion that tapers away from the aperture in a
first taper-direction along the slide-axis, and
a second tapered portion that tapers away from the aperture in a second taper-
direction along the slide-axis, the second taper-direction being opposite to the first taper-
direction.
- 25 3. The apparatus according to claim 1, wherein, for the eyelet of each of the first and
second anchors:
the slide-axis is a second slide-axis,
the eyelet has a first slide-axis that is parallel with the central longitudinal axis, the
second slide-axis being orthogonal to the first slide-axis, and
30 the eyelet is shaped to facilitate smooth sliding of the eyelet over the wire both (i)
along the first slide-axis while the wire is aligned with the first slide-axis, and (ii) along the
second slide-axis while the wire is aligned with the second slide-axis.

4. The apparatus according to any one of claims 1-3, wherein the wire has a thickness that is more than 70 percent as great as the width of the aperture.
5. The apparatus according to claim 4, wherein the thickness of the wire is less than 90 percent as great as a length of the aperture.
- 5 6. The apparatus according to any one of claims 1-5, wherein:
the apparatus further comprises a spacer that:
is tubular,
has a first spacer-end, a second spacer-end, and a mid-portion therebetween,
and
10 defines a spacer-lumen between the first spacer-end and the second spacer-end,
the wire is threaded through the spacer-lumen, such that the spacer is threaded on the wire between the first anchor and the second anchor, with the first spacer-end facing the first anchor, and the second spacer-end facing the second anchor,
15 the spacer-lumen widens from the mid-portion toward the first spacer-end, thereby being shaped to snugly receive the tapered portion of the eyelet of the first anchor, and
the spacer-lumen widens from the mid-portion toward the second spacer-end, thereby being shaped to snugly receive the tapered portion of the eyelet of the second anchor.
7. The apparatus according to claim 6, wherein the spacer is configured to limit a
20 proximity between the first anchor and the second anchor.
8. The apparatus according to claim 6, wherein the spacer is elastically flexible in deflection.
9. The apparatus according to claim 6, wherein the spacer is generally not compressible axially.
- 25 10. The apparatus according to claim 6, wherein the spacer is defined by a helical wire shaped as closed coil that defines the spacer-lumen.
11. The apparatus according to claim 6, wherein the spacer has:
a first flared zone in which the spacer-lumen widens from the mid-portion toward the first spacer-end, and in which an outer diameter of the spacer increases from the mid-portion
30 toward the first spacer-end; and

a second flared zone in which the spacer-lumen widens from the mid-portion toward the second spacer-end, and in which an outer diameter of the spacer increases from the mid-portion toward the second spacer-end.

12. The apparatus according to any one of claims 1-11, wherein the tissue-engaging element is helical, defines the central longitudinal axis by extending in a helix around and
5 along the central longitudinal axis, and is configured to be screwed into the tissue of the subject.

13. The apparatus according to claim 12, wherein the tissue-engaging element has a knurled surface.

10 14. The apparatus according to any one of claims 1-13, wherein:
the eyelet defines the aperture on an aperture plane,
the aperture has a length along a long axis of the aperture and a width along a short axis of the aperture, the long axis and the short axis disposed on the aperture plane, and the length being orthogonal to the width and greater than the width, and
15 the eyelet is mounted such that the aperture plane is slanted at a fixed angle with respect to the central longitudinal axis.

15. The apparatus according to claim 14, wherein the tissue-engaging element is helical, defines the central longitudinal axis by extending in a helix around and along the central longitudinal axis, and is configured to be screwed into the tissue of the subject, and wherein
20 the helix slants in the same direction as the aperture plane with respect to the central longitudinal axis.

16. The apparatus according to claim 14, wherein the eyelet is shaped and oriented such that both (i) when viewed along a first view-line that is parallel with the central longitudinal axis, and (ii) when viewed along a second view-line that is orthogonal to the first view-line,
25 the aperture appears circular.

17. The apparatus according to claim 14, wherein the aperture is shaped as a stadium.

18. The apparatus according to claim 14, wherein the eyelet defines a rim around the aperture, the rim having greater beveling on the long axis than on the short axis.

19. The apparatus according to claim 14, wherein the short axis is orthogonal to, and
30 extends radially from, the central longitudinal axis.

20. The apparatus according to claim 14, wherein the driver interface is disposed on the central longitudinal axis of the anchor.
21. The apparatus according to claim 14, wherein the length of the aperture is at least 1.4 times as great as the width of the aperture.
- 5 22. The apparatus according to claim 21, wherein the length of the aperture is 1.4-5 times as great as the width of the aperture.
23. The apparatus according to claim 22, wherein the length of the aperture is 1.4-3 times as great as the width of the aperture.
24. The apparatus according to claim 23, wherein the length of the aperture is 1.5-2.5
10 times as great as the width of the aperture.
25. The apparatus according to claim 24, wherein the length of the aperture is 1.6-2.2 times as great as the width of the aperture.
26. The apparatus according to claim 25, wherein the length of the aperture is 1.6-2 times as great as the width of the aperture.
- 15 27. The apparatus according to claim 26, wherein the length of the aperture is 1.6-1.8 times as great as the width of the aperture.
28. The apparatus according to claim 14, wherein the eyelet is mounted such that the aperture plane is slanted at 30-60 degrees with respect to the central longitudinal axis.
29. The apparatus according to claim 28, wherein the eyelet is mounted such that the
20 aperture plane is slanted at 40-50 degrees with respect to the central longitudinal axis.
30. The apparatus according to claim 29, wherein the eyelet is mounted such that the aperture plane is slanted at 45 degrees with respect to the central longitudinal axis.
31. The apparatus according to any one of claims 1-30, further comprising the anchor driver.
- 25 32. The apparatus according to claim 31, wherein:
the apparatus comprises a delivery tool that comprises the anchor driver and a percutaneously-advanceable tube, and
for each of the first and second anchors, while the anchor driver is engaged with the anchor, the anchor driver and the anchor are slidable through the tube.
- 30 33. The apparatus according to claim 32, wherein:

the tube defines an internal channel that has an orthogonal cross-section that defines a major channel region and a minor channel region in communication with the major channel region,

the major channel-region has a larger cross-sectional area than does the minor
5 channel region, and

each of the first and second anchors is slidable through the channel with the tissue-engaging element and the driver interface sliding through the major channel region, and the eyelet sliding through the minor channel region.

34. The apparatus according to claim 33, wherein the tissue-engaging element fits snugly
10 within the major channel region, and the eyelet fits snugly within the minor channel region.

35. The apparatus according to claim 33, wherein the eyelet is shaped to facilitate smooth sliding of the eyelet simultaneously (i) snugly through the minor channel region, and (ii) over the wire, while the wire is disposed within the minor channel region and is parallel with the central longitudinal axis.

15 36. The apparatus according to claim 35, wherein:

each of the anchors is advanceable out of a distal opening of the tube,

the tube defines a lateral slit into the minor channel region,

the lateral slit is continuous with, and extends proximally from, the distal opening of the tube, and

20 the lateral slit is dimensioned to allow the wire, but not the first or second anchor, to exit the tube laterally via the slit.

37. The apparatus according to claim 36, further comprising a tubular spacer that is threaded on the wire between the first anchor and the second anchor, such that when the first anchor and the second anchor are disposed in the internal channel of the tube, the spacer is
25 disposed in the minor channel region.

38. The apparatus according to claim 37, wherein the lateral slit is dimensioned to allow the tubular spacer to exit the tube laterally via the slit.

39. The apparatus according to claim 33, wherein the orthogonal cross-section of the channel is keyhole-shaped.

30 40. The apparatus according to claim 33, wherein the orthogonal cross-section of the channel has a double-lobed shape.

41. The apparatus according to claim 33, wherein, in orthogonal cross-section, the channel has a narrowed neck between the major channel region and the minor channel region.
42. The apparatus according to claim 41, further comprising a tubular spacer that is threaded on the wire between the first anchor and the second anchor, such that when the first anchor and the second anchor are disposed in the internal channel of the tube, the spacer is disposed in the minor channel region.
43. The apparatus according to claim 42, wherein the narrowed neck is dimensioned to inhibit the spacer from entering the major channel region.
44. The apparatus according to claim 33, wherein the eyelet is mounted to be revolvable around the central longitudinal axis.
45. The apparatus according to claim 44, wherein each of the first and second anchors is configured such that, for each of the first and second anchors, while the anchor driver is engaged with the anchor inside the internal channel, the driver interface is rotatable by the anchor driver while the eyelet remains disposed in the minor channel region.
46. The apparatus according to claim 44, wherein the eyelet is mounted to be revolvable around the central longitudinal axis while the aperture remains at a fixed angle with respect to the central longitudinal axis.
47. The apparatus according to claim 44, wherein the head comprises a ring that circumscribes the central longitudinal axis, and is rotatably coupled to the tissue-engaging element, and wherein the eyelet is mounted on the ring, and is revolvable around the central longitudinal axis by rotation of the ring about the central longitudinal axis.
48. A system, comprising:
an anchor, comprising:
a helical tissue-engaging element defining a central longitudinal axis of the anchor by extending helically around the central longitudinal axis, having a sharpened distal tip, and configured to be driven into tissue of a subject; and
an anchor head, coupled to a proximal end of the tissue-engaging element, and comprising a driver interface;
an anchor driver, comprising:
a shaft; and

a driver head, coupled to a distal end of the shaft, and configured to reversibly engage the driver interface; and
a catheter:

shaped to define:

5 a channel from a proximal portion of the catheter to a distal portion of the catheter, and

a distal opening at the distal portion of the catheter, the channel ending at the distal opening, and the anchor driver configured to advance the anchor through the channel and out of the distal opening, and to drive the tissue-engaging element into the tissue by rotating the anchor, and
10

comprising a spur at the distal portion of the catheter, the spur protruding medially into the channel so as to (i) obstruct the tissue-engaging element from passing the spur distally in the absence of rotation of the tissue-engaging element, and (ii) allow the tissue-engaging element to screw past the spur distally.

15 49. The system according to claim 48, wherein the anchor head is dimensioned such that, in at least one rotational position of the head with respect to the catheter, the spur obstructs the anchor head from passing the spur axially.

50. The system according to claim 49, wherein the anchor head is dimensioned such that, in at least another rotational position of the head with respect to the catheter, the anchor head
20 is slidable past the spur axially.

51. The system according to claim 50, wherein the anchor head defines a groove in an outer surface of the head, the groove being parallel with the central longitudinal axis of the anchor, and being dimensioned such that, in the other rotational position of the head with respect to the catheter, the spur can slide along the groove as the anchor head is slid past the
25 spur axially.

52. The system according to any one of claims 48-51, wherein:
the catheter comprises a lateral wall that defines the channel,
the spur is reversibly transitionable between (i) an extended state in which the spur protrudes medially from the lateral wall into the channel, and (ii) a retracted state in which
30 the spur is at least partly retracted into the lateral wall,

the spur, in the extended state, obstructs the anchor head from passing the spur distally, and

the spur, in the retracted state, allows the anchor head to pass the spur distally.

53. The system according to claim 52, wherein the catheter further comprises a pullwire that is coupled to the spur and extends proximally from the spur along the lateral wall, wherein the spur is retractable into the lateral wall by pulling on the pullwire.

5 54. A system, for use with an anchor driver, the system comprising an annuloplasty structure that comprises:

a wire;

a plurality of anchors, each of the anchors comprising

10 a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject;

a neck; and

a head, coupled to the tissue-engaging element via the neck, and comprising a driver interface configured to be reversibly engaged by the anchor driver; and

a plurality of connectors, each of the connectors:

15 slidably coupling, to the wire, a respective anchor of the plurality of anchors; comprising a flexible sheet, shaped to define:

20 a hole through which the neck of the respective anchor extends, such that (i) the head of the respective anchor is disposed on a first side of the sheet, (ii) the tissue-engaging element of the respective anchor is on a second, opposite, side of the sheet, and (iii) the respective anchor is rotatable, around the central longitudinal axis, with respect to the sheet by the neck of the respective anchor rotating within the hole; and

an eyelet through which the wire is threaded, thereby slidably coupling the connector to the wire.

25 55. The system according to claim 54, wherein the flexible sheet is a flexible sheet of a fabric.

56. The system according to claim 54, wherein the eyelet is defined by a hem stitched in the flexible sheet.

30 57. The system according to any one of claims 54-56, wherein the wire is a first wire, and the annuloplasty structure comprises a second wire, each of the connectors slidably coupling the respective one of the anchors to the first wire and to the second wire.

58. The system according to claim 57, wherein the first wire and the second wire are generally parallel with each other.

59. The system according to claim 57, wherein, for each connector:

the eyelet is a first eyelet,

5 the first wire is threaded through the first eyelet, thereby slidably coupling the connector to the first wire,

the sheet is shaped to define a second eyelet through which the second wire is threaded, thereby slidably coupling the connector to the second wire, and

10 the flexible sheet is shaped to define hole between the first eyelet and the second eyelet, such that the respective anchor is disposed between the first wire and the second wire.

60. An apparatus comprising a tissue anchor for use with an anchor driver, the anchor comprising:

a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject; and

15 a head, coupled to a proximal end of the tissue-engaging element, the head comprising:

a driver interface, configured to be reversibly engaged by the anchor driver,

and

an eyelet:

20 defining an aperture on an aperture plane, the aperture having a length along a long axis of the aperture and a width along a short axis of the aperture, the long axis and the short axis disposed on the aperture plane, and the length being orthogonal to the width and greater than the width,

disposed laterally from the central longitudinal axis, and

25 mounted such that the aperture plane is slanted at a fixed angle with respect to the central longitudinal axis.

61. The apparatus according to claim 60, wherein:

the apparatus comprises an implant that comprises the anchor, and a wire threaded through the aperture,

30 the eyelet defines the aperture such that the eyelet has a first slide-axis that is parallel with the central longitudinal axis, and a second slide-axis that is orthogonal to the first slide-axis, and

the eyelet is shaped to facilitate smooth sliding of the eyelet (i) over the wire along the first slide-axis while the wire is aligned with the first slide-axis, and (ii) over the wire along the second slide-axis while the wire is aligned with the second slide-axis.

62. The apparatus according to claim 61, wherein the eyelet has an external shape that defines a tapered portion that tapers away from the aperture along the second slide-axis.

63. The apparatus according to claim 62, wherein:

the implant further comprises a spacer that:

is tubular,

has a first spacer-end, a second spacer-end, and a mid-portion therebetween,

10 and

defines a spacer-lumen between the first spacer-end and the second spacer-end,

the wire is threaded through the spacer-lumen, and

the spacer-lumen widens from the mid-portion toward the first spacer-end, thereby being shaped to snugly receive the tapered portion of the eyelet.

64. The apparatus according to claim 63, wherein the spacer is elastically flexible in deflection.

65. The apparatus according to claim 63, wherein the spacer is generally not compressible axially.

20 66. The apparatus according to claim 63, wherein the spacer is defined by a helical wire shaped as closed coil that defines the spacer-lumen.

67. The apparatus according to claim 63, wherein the spacer has a flared zone in which the spacer-lumen widens from the mid-portion toward the first spacer-end, and in which an outer diameter of the spacer increases from the mid-portion toward the first spacer-end.

25 68. The apparatus according to claim 63, wherein:

the anchor is a first anchor of the implant,

the implant further comprises a second anchor that comprises an eyelet that defines an aperture and has an external shape that defines a tapered portion,

the wire is threaded through an aperture of an eyelet of the second anchor such that the spacer is disposed, on the wire, between the tapered portion of the eyelet of the first anchor and the tapered portion of the eyelet of the second anchor, with the first spacer-end facing the first anchor, and the second spacer-end facing the second anchor.

69. The apparatus according to claim 68, wherein the spacer-lumen widens from the mid-portion toward the second spacer-end, thereby being shaped to snugly receive the tapered portion of the eyelet of the second anchor.

70. The apparatus according to claim 68, wherein the spacer is configured to limit a
5 proximity between the first anchor and the second anchor.

71. The apparatus according to any one of claims 60-70, wherein the external shape of the eyelet defines:

the tapered portion as a first tapered portion that tapers away from the aperture in a first taper-direction along the second slide-axis, and

10 a second tapered portion that tapers away from the aperture in a second taper-direction along the second slide-axis, the second taper-direction being opposite to the first taper-direction.

72. The apparatus according to claim 71, wherein:

the spacer is a first spacer of the implant,

15 the implant further comprises a second spacer that:

is tubular,

has a first spacer-end, a second spacer-end, and a mid-portion therebetween,

and

defines a spacer-lumen between the first spacer-end and the second spacer-

20 end,

the wire is threaded through the spacer-lumen of the second spacer such that the eyelet is disposed, on the wire, between the first spacer-end of the first spacer and the second spacer-end of the second spacer, and

25 the spacer-lumen of the second spacer widens from the mid-portion of the second spacer toward the second spacer-end of the second spacer, thereby being shaped to snugly receive the second tapered portion of the eyelet.

73. The apparatus according to any one of claims 60-72, wherein the eyelet is shaped and oriented such that both (i) when viewed along a first view-line that is parallel with the central longitudinal axis, and (ii) when viewed along a second view-line that is orthogonal
30 to the first view-line, the aperture appears circular.

74. The apparatus according to any one of claims 60-73, wherein the aperture is shaped as a stadium.

75. The apparatus according to any one of claims 60-74, wherein the eyelet defines a rim around the aperture, the rim having greater beveling on the long axis than on the short axis.
76. The apparatus according to any one of claims 60-75, wherein the short axis is orthogonal to, and extends radially from, the central longitudinal axis.
- 5 77. The apparatus according to any one of claims 60-76, wherein the driver interface is disposed on the central longitudinal axis of the anchor.
78. The apparatus according to any one of claims 60-77, wherein the length of the aperture is at least 1.4 times as great as the width of the aperture.
79. The apparatus according to claim 78, wherein the length of the aperture is 1.4-5 times
10 as great as the width of the aperture.
80. The apparatus according to claim 79, wherein the length of the aperture is 1.4-3 times as great as the width of the aperture.
81. The apparatus according to claim 80, wherein the length of the aperture is 1.5-2.5 times as great as the width of the aperture.
- 15 82. The apparatus according to claim 81, wherein the length of the aperture is 1.6-2.2 times as great as the width of the aperture.
83. The apparatus according to claim 82, wherein the length of the aperture is 1.6-2 times as great as the width of the aperture.
84. The apparatus according to claim 83, wherein the length of the aperture is 1.6-1.8
20 times as great as the width of the aperture.
85. The apparatus according to any one of claims 60-84, wherein the eyelet is mounted such that the aperture plane is slanted at 30-60 degrees with respect to the central longitudinal axis.
86. The apparatus according to claim 85, wherein the eyelet is mounted such that the
25 aperture plane is slanted at 40-50 degrees with respect to the central longitudinal axis.
87. The apparatus according to claim 86, wherein the eyelet is mounted such that the aperture plane is slanted at 45 degrees with respect to the central longitudinal axis.
88. The apparatus according to any one of claims 60-87, wherein the eyelet is mounted to be revolvable around the central longitudinal axis while the aperture plane remains slanted
30 at the fixed angle with respect to the central longitudinal axis.

89. The apparatus according to claim 88, wherein the head comprises a ring that circumscribes the central longitudinal axis, and is rotatably coupled to the tissue-engaging element, and wherein the eyelet is mounted on the ring, and is revolvable around the central longitudinal axis by rotation of the ring about the central longitudinal axis.

5 90. The apparatus according to any one of claims 60-89, further comprising the anchor driver.

91. The apparatus according to claim 90, wherein:

the apparatus comprises a delivery tool that comprises the anchor driver and a percutaneously-advanceable tube, and

10 while the anchor driver is engaged with the anchor, the anchor driver and the anchor are slidable through the tube.

92. The apparatus according to claim 91, wherein:

the tube defines an internal channel that has a keyhole-shaped orthogonal cross-section that defines a major channel region and a minor channel region,

15 the major channel-region has a larger cross-sectional area than does the minor channel region, and

the anchor is slidable through the channel with the tissue-engaging element sliding snugly through the major channel region, and the eyelet sliding snugly through the minor channel region.

20 93. The apparatus according to claim 92, wherein:

the apparatus comprises an implant that comprises a wire and the tissue anchor,

the eyelet is shaped to facilitate smooth sliding of the eyelet simultaneously (i) snugly through the minor channel region, and (ii) over the wire, while the wire is disposed within the minor channel region and is parallel with the central longitudinal axis.

25 94. The apparatus according to claim 93, wherein the eyelet is shaped to facilitate smooth sliding of the eyelet over the wire while the wire is oriented orthogonal to the central longitudinal axis.

95. The apparatus according to claim 93, wherein:

the anchor is advanceable out of a distal end of the tube,

30 the tube defines a lateral slit extending proximally from the distal end of the tube, the slit is adjacent to the minor channel region, and

the slit allows the wire, but not the anchor, to exit the tube laterally, proximally from the distal end of the tube.

96. The apparatus according to any one of claims 60-95, wherein:

the apparatus comprises an implant comprising a wire and the tissue anchor, and
5 the eyelet is shaped to facilitate smooth sliding of the wire through the aperture both
(i) while the wire is parallel with the central longitudinal axis, and (ii) while the wire is oriented orthogonal to the central longitudinal axis.

97. The apparatus according to claim 96, wherein the wire has a thickness that is more than 70 percent as great as the width of the aperture.

10 98. The apparatus according to claim 97, wherein the thickness of the wire is less than 90 percent as great as the length of the aperture.

99. The apparatus according to any one of claims 60-98, wherein the tissue-engaging element is helical, defines the central longitudinal axis by extending in a helix around and along the central longitudinal axis, and is configured to be screwed into the tissue of the
15 subject.

100. The apparatus according to claim 99, wherein the helix slants in the same direction as the aperture plane with respect to the central longitudinal axis.

101. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue anchor comprising:

20 a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject; and

a head, coupled to a proximal end of the tissue-engaging element, the head comprising:

a driver interface, configured to be reversibly engaged by the anchor driver,
25 and

an eyelet:

defining an aperture,

disposed laterally from the central longitudinal axis, and

30 mounted such that the aperture is at a fixed angle with respect to the central longitudinal axis, and

shaped to define (i) a first clear straight pathway through the aperture along a first line that is parallel to the central longitudinal axis, and (ii) a second clear straight pathway through the aperture along a second line that is orthogonal to the first line.

5 102. The apparatus according to claim 101, wherein the eyelet is shaped such that both (i) when viewed along the first line, and (ii) when viewed along second line, the aperture appears circular.

103. The apparatus according to any one of claims 101-102, wherein the eyelet is mounted so as to be revolvable around the central longitudinal axis while remaining at the fixed angle
10 with respect to the central longitudinal axis.

104. The apparatus according to any one of claims 101-103, wherein:
the fixed angle is slanted with respect to the central longitudinal axis, and
the eyelet defines the aperture on an aperture plane that is slanted at the fixed angle with respect to the central longitudinal axis.

15 105. The apparatus according to claim 104, wherein the aperture has a length along a long axis of the aperture and a width along a short axis of the aperture, the long axis and the short axis disposed on the aperture plane, and wherein length is orthogonal to the width and greater than the width.

106. The apparatus according to claim 105, wherein the length of the aperture is at least
20 1.4 times as great as the width of the aperture.

107. The apparatus according to claim 106, wherein the length of the aperture is 1.4-5 times as great as the width of the aperture.

108. The apparatus according to claim 107, wherein the length of the aperture is 1.4-3 times as great as the width of the aperture.

25 109. The apparatus according to claim 108, wherein the length of the aperture is 1.5-2.5 times as great as the width of the aperture.

110. The apparatus according to claim 109, wherein the length of the aperture is 1.6-2.2 times as great as the width of the aperture.

30 111. The apparatus according to claim 110, wherein the length of the aperture is 1.6-2 times as great as the width of the aperture.

112. The apparatus according to claim 111, wherein the length of the aperture is 1.6-1.8 times as great as the width of the aperture.

113. The apparatus according to claim 104, wherein the eyelet is mounted such that the aperture plane is slanted at 30-60 degrees with respect to the central longitudinal axis.

5 114. The apparatus according to claim 113, wherein the eyelet is mounted such that the aperture plane is slanted at 40-50 degrees with respect to the central longitudinal axis.

115. The apparatus according to claim 114, wherein the eyelet is mounted such that the aperture plane is slanted at 45 degrees with respect to the central longitudinal axis.

116. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue
10 anchor comprising:

a tissue-engaging element having a sharpened distal tip, and configured to be driven into tissue of a subject;

a head:

coupled to a proximal end of the tissue-engaging element,

15 comprising a driver interface, configured to be reversibly engaged by the anchor driver; and

a protrusion:

protruding distally away from the head, such that driving the tissue-engaging element into the tissue presses the protrusion against the tissue, and

20 configured to move with respect to the head automatically in response to being pressed against the tissue.

117. The apparatus according to claim 116, wherein the driver interface is rigidly coupled to the tissue-engaging element.

118. The apparatus according to any one of claims 116-117, wherein the protrusion is
25 configured to move proximally with respect to the head automatically in response to being pressed against the tissue.

119. The apparatus according to any one of claims 116-118, wherein the protrusion is configured to move elastically with respect to the head automatically in response to being pressed against the tissue.

120. The apparatus according to any one of claims 116-119, wherein the protrusion extends distally past at least the proximal end of the tissue-engaging element and is disposed laterally outward from the tissue-engaging element.

121. The apparatus according to any one of claims 116-120, wherein the protrusion
5 extends distally past at least the proximal end of the tissue-engaging element and extends circumferentially at least partway around the tissue-engaging element.

122. The apparatus according to any one of claims 116-121, wherein the protrusion extends distally past at least the proximal end of the tissue-engaging element and is disposed medially from the tissue-engaging element.

10 123. The apparatus according to any one of claims 116-122, wherein the tissue-engaging element is helical, and extends helically around the protrusion.

124. The apparatus according to any one of claims 116-123, wherein the protrusion is radiopaque.

125. The apparatus according to any one of claims 116-124, wherein the protrusion is
15 configured to bend automatically in response to being pressed against the tissue.

126. The apparatus according to any one of claims 116-125, wherein the tissue-engaging element is helical, defines a central longitudinal axis by extending helically around and along the central longitudinal axis, and is configured to be screwed into the tissue of the subject.

127. The apparatus according to any one of claims 116-126, wherein the protrusion is
20 configured to move reversibly in response to being pressed against the tissue.

128. The apparatus according to claim 127, wherein the protrusion comprises a spring.

129. The apparatus according to claim 128, wherein the spring is a helical compression spring that extends helically around at least part of the tissue-engaging element.

130. The apparatus according to claim 129, wherein the helical compression spring
25 defines a plurality of turns around the part of the tissue-engaging element.

131. The apparatus according to claim 129, wherein:
the helical compression spring defines no more than one complete turn, and
in response to being pressed against the tissue, a first end of the helical compression spring becomes aligned, along a central longitudinal axis, with a second end of the helical
30 compression spring.

132. The apparatus according to claim 127, further comprising a spring coupled functionally between the protrusion and the head, and configuring the protrusion to move reversibly in response to the protrusion being pressed against the tissue.

133. The apparatus according to claim 132, wherein the tissue anchor comprises a cuff,
5 extending at least partway around the head and the central longitudinal axis, a distal portion of the cuff protruding distally away from the head to define the protrusion, and wherein the spring functionally couples the cuff to the head such that the cuff is configured to move proximally with respect to the head automatically in response to the distal portion of the cuff being pressed against the tissue.

10 134. The apparatus according to claim 133, wherein the spring comprises a plurality of chevron-shaped spring elements pointing circumferentially around the central longitudinal axis.

135. The apparatus according to claim 133, wherein the tissue anchor is configured to be used with a wire:

15 the tissue anchor further comprises a ring and an eyelet,
the ring circumscribes the central longitudinal axis, and is rotatably coupled to the tissue-engaging element,
the eyelet is configured to facilitate sliding of the wire therethrough, is mounted on the ring, and is revolvable around the central longitudinal axis by rotation of the ring about
20 the central longitudinal axis, and
the cuff is coupled to the ring.

136. The apparatus according to claim 133, wherein a proximal portion of the head protrudes proximally from the cuff, and wherein the cuff is dimensioned such that the moving of the cuff proximally with respect to the head obscures the proximal portion of the
25 head with a proximal portion of the cuff.

137. The apparatus according to claim 133, wherein the cuff is radiopaque.

138. The apparatus according to claim 133, further comprising one or more radiopaque indicators extending proximally from the cuff, and wherein the cuff is dimensioned such that the moving of the cuff proximally with respect to the head moves the one or more indicators
30 proximally past a proximal portion of the head.

139. The apparatus according to claim 132, wherein the protrusion comprises a post configured to axially slide proximally with respect to the head in response to being pressed against the tissue.

140. The apparatus according to claim 139, wherein the post comprises a first post, and the spring comprises a first spring, and wherein the apparatus further comprises a second post configured to axially slide proximally with respect to the head in response to being pressed against the tissue.

141. The apparatus according to claim 132, wherein:
the apparatus further comprises the anchor driver,
10 the anchor driver is configured, while reversibly engaged to the driver interface, to drive the tissue-engaging element into the tissue,
the anchor driver comprises a pressure sensor at a distal end of the anchor driver,
the protrusion comprises a post configured to, in response to being pressed against the tissue, move proximally with respect to the head and press the pressure sensor, and
15 the pressure sensor is configured to provide a signal in response to being pressed.

142. The apparatus according to claim 141, wherein the anchor driver comprises a wire extending from the pressure sensor to a proximal portion of the anchor driver, and the pressure sensor is configured to transmit the signal via the wire.

143. The apparatus according to claim 141, wherein the post is configured to axially slide proximally with respect to the head in response to being pressed against the tissue.

144. An apparatus, comprising a tissue anchor, the tissue anchor comprising:
a helical tissue-engaging element, having a proximal end and a distal end, and defining a central lumen along a central longitudinal axis of the tissue anchor; and
an eyelet, spanning laterally across the proximal end of the tissue-engaging element
25 and extending proximally away from the tissue-engaging element, thereby defining a bilaterally-facing aperture proximal from the tissue-engaging element.

145. The apparatus according to claim 144, wherein:
the tissue anchor is a first tissue anchor of a plurality of tissue anchors,
the apparatus comprises an annuloplasty implant comprising the plurality of tissue
30 anchors, and a wire threaded therethrough.

146. The apparatus according to any one of claims 144-145, wherein:

the apparatus comprises an implant comprising a wire and the tissue anchor,
the apparatus further comprises a delivery tool for percutaneous implantation of the
implant, the delivery tool comprising an anchor driver,

the apparatus has a delivery state in which:

- 5 the anchor driver is reversibly coupled to the eyelet,
 the wire extends longitudinally through the lumen such that the anchor is
 freely slidable along the wire, and
 the delivery tool and the implant are percutaneously advanceable into a
 subject,

- 10 the delivery tool is configured to transition the apparatus into an implanted state by
the anchor driver rotating the tissue anchor such that:

 the tissue-engaging element becomes driven into tissue of the subject, and
 the wire becomes drawn proximally along the helical element until the wire
 exits the lumen and extends laterally through the aperture.

- 15 147. The apparatus according to claim 146, wherein:
 the tissue anchor is a first tissue anchor of a plurality of tissue anchors,
 the implant comprises the plurality of tissue anchors, and
 the wire extends longitudinally through the lumen of each tissue anchor of the
plurality of tissue anchors, such that each of the tissue anchors is freely slidable along the
20 wire.

148. The apparatus according to any one of claims 144-147, wherein:

 the tissue anchor comprises a rod that has:

- a sharpened distal tip;
 a first portion extending from the distal tip to a transition site of the rod; and
25 a second portion, continuous with the first portion, and extending from the
 transition site to a second tip of the rod,
 the tissue-engaging element is defined by the first portion of the rod extending
helically around and along the central longitudinal axis of the anchor; and
 the eyelet is defined at least in part by the second portion of the rod defining an arch
30 that spans laterally across the proximal end of the tissue-engaging element and arches
 proximally away from the tissue-engaging element.

149. The apparatus according to claim 148, wherein:

 the apparatus comprises an implant comprising a wire and the tissue anchor,

the apparatus further comprises a delivery tool for percutaneous implantation of the implant, the delivery tool comprising a tube and an anchor driver,
the anchor driver is reversibly coupled to the eyelet,
the anchor is disposed in the tube,
5 the wire extends through the tube, and longitudinally through the lumen such that the anchor is freely slidable by the anchor driver along the wire, and
the delivery tool and the implant are percutaneously advanceable into a subject.

150. The apparatus according to claim 149, wherein the rod is shaped such that the eyelet and a proximal-most turn of the helical tissue-engaging element collectively define a closed
10 loop, and the wire extends distally through the closed loop and through the lumen such that the anchor is freely slidable by the anchor driver along the wire.

151. The apparatus according to claim 148, wherein the eyelet has a lateral thickness that is less than two thirds as great as a lateral diameter of the lumen.

152. The apparatus according to claim 148, wherein the eyelet is defined at least in part
15 by the second tip of the rod being attached to an attachment site of the rod, the attachment site being within the first portion of the rod.

153. The apparatus according to claim 148, wherein:
the tissue-engaging element comprises a plurality of helical turns of the rod,
including:

20 a distal-most helical turn distally delimited by the distal tip of the rod, and
a proximal-most helical turn proximally delimited by the transition site, and
the second tip of the rod is attached to an attachment site of the rod, the attachment site being partway around the proximal-most helical turn.

154. The apparatus according to claim 153, wherein the second tip of the rod is attached
25 to an attachment site of the rod, the attachment site being at least one third around the proximal-most helical turn.

155. A system, comprising:
an anchor-delivery tube having a distal tubular end portion;
a tissue-indicating device coupled to the distal tubular end portion of the anchor-
30 delivery tube, the tissue-indicating device comprising a radiopaque material shaped to define a tubular body having a central longitudinal axis and configured for placement in contact

with an annulus of a native heart valve of a subject, the tubular body comprising a compressible element, the tissue-indicating device being:

- compressible into a compressed state responsively to contact with tissue of the native heart valve, and
- 5 expandable from the compressed state in an absence of force applied to the tissue-indicating device; and
- at least one tissue anchor for implantation along the annulus of the valve of the subject,
- wherein the tissue-indicating device is:
- 10 configured to provide a guide for implantation of the tissue anchor along the annulus during implantation of the tissue anchor, and
- retrievable following the implantation of the tissue anchor.

156. The system according to claim 155, wherein the tissue-indicating device is shaped to define a tubular stent body.

157. The system according to claim 155, wherein the tissue-indicating device comprises a superelastic material.

158. The system according to claim 155, wherein the compressible element comprises a coiled element.

159. The system according to claim 155, wherein the compressible element comprises a spring.

160. The system according to claim 155, wherein the compressible element comprises a strut element compressible along a longitudinal axis of the anchor-delivery tube.

161. The system according to any one of claims 155-160, wherein:
the tissue-indicating device comprises:

- 25 a proximal tube element,
a distal tube element, and
a linking element coupling together the proximal and distal tube elements,
the distal tube element is spaced at a first distance from the proximal tube element during a resting state of the tissue-indicating device, and
- 30 the distal tube element is spaced at a second distance from the proximal tube element during the compressed state of the tissue-indicating device, the second distance being shorter than the first distance.

162. The system according to claim 161, wherein the proximal tube element is fixedly coupled to the distal tubular end portion of the anchor-delivery tube.

163. The system according to claim 161, wherein the linking element comprises a coiled element.

5 164. The system according to claim 161, wherein the linking element comprises a spring.

165. The system according to claim 161, wherein the linking element comprises a strut element.

166. The system according to claim 161, wherein the linking element comprises first and second scaffolding elements, wherein at least respective parts of the first and second scaffolding elements are spaced apart from each other during the resting state of the tissue-indicating device, and wherein the respective parts of the first and second scaffolding elements are moved closer together other during the compressed state of the tissue-indicating device.

15 167. The system according to any one of claims 155-166, wherein, during a resting state of the tissue-indicating device, the tissue-indicating device assumes a first height, and wherein during the compressed state, the tissue-indicating device assumes a second height that is shorter than the first height.

20 168. The system according to claim 161, wherein the proximal tube element and the linking element surround the distal tubular end portion of the anchor-delivery tube, and wherein the linking element is compressible longitudinally proximally along the distal tubular end portion of the anchor-delivery tube to draw the distal tube element toward the proximal tube element.

169. The system according to claim 168, wherein the proximal tube element is fixedly coupled to the distal tubular end portion of the anchor-delivery tube.

25 170. The system according to claim 161, wherein proximal tube element surrounds the distal tubular end portion of the anchor-delivery tube, and wherein the linking element is disposed distally to a distal end of the anchor-delivery tube and is compressible longitudinally proximally to draw the distal tube element toward the proximal tube element.

30 171. The system according to claim 170, wherein the proximal tube element is fixedly coupled to the tubular distal end portion of the anchor-delivery tube.

172. The system according to any one of claims 155-171, wherein the compressible element comprises a plurality of struts arranged in a braided arrangement in which, during a resting state of the tissue-indicating device, the tissue-indicating device assumes a first height, and wherein during the compressed state, the tissue-indicating device assumes a
5 second height that is shorter than the first height.

173. The system according to claim 172, wherein during the compressed state, the tissue-indicating device shortens longitudinally and expands radially.

174. The system according to claim 172, wherein the plurality of struts comprises a subset of rounded struts at a distal end of the tissue-indicating device.

10 175. The system according to any one of claims 155-174, wherein the at least one tissue anchor comprises a plurality of tissue anchors, and wherein the system further comprises a contracting member slidably coupled to the plurality of tissue anchors, and wherein each the plurality of tissue anchors and the contracting member are configured for delivery through the anchor-delivery tube.

15 176. The system according to claim 175, wherein the distal tubular end portion of the anchor-delivery tube is shaped so as to define a lateral slit extending proximally from a distal end of the anchor-delivery tube, and wherein the slit allows the contracting member, but not the tissue anchors, to exit the anchor-delivery tube laterally, proximally from the distal end of the tube.

20 177. The system according to claim 176, wherein the tissue-indicating device is shaped so as to define a slit which is disposed in alignment with the lateral slit of the anchor-delivery tube.

178. A system, comprising:

a plurality of tissue anchors;

25 a contracting member slidably coupled to the plurality of tissue anchors;

a fastener configured to be couplable to the contracting member in a vicinity of a terminal tissue anchor of the plurality of tissue anchors, the fastener, in a closed state thereof, being configured to restrict movement of the contracting member with respect to the plurality of tissue anchors; and

30 a contracting-member-covering device couplable to the contracting member in the vicinity of the terminal tissue anchor, the contracting-member-covering device being

configured to cover excess portions of the contracting member following (a) implantation of the terminal anchor, (b) transitioning the fastener into the closed state, and (c) cutting of the contracting member proximally to the terminal anchor.

179. The system according to claim 178, wherein the fastener is separate from the
5 contracting-member-covering device.

180. The system according to any one of claims 178-179, wherein the contracting member comprises a metal wire.

181. The system according to any one of claims 178-180, wherein the contracting-member-covering device is configured to cover a free end of the contracting member.

10 182. The system according to any one of claims 178-181, wherein:
the contracting-member-covering device comprises a housing,
the contracting member passes longitudinally through the housing; and
the housing comprises at least first and second deflectable wires passing transversely
through the housing and alongside a portion of the contracting member, the first and second
15 wires being (1) in a first position in which the first and second deflectable wires do not
engage the contracting member, and (2) transitionable into a second position in which the
first and second wires deflect to assume a configuration which changes a conformation of
the portion of the contracting member in a manner which draws additional portions of the
contracting member into the housing.

20 183. The system according to claim 182, further comprising a tube positionable between
the contracting member and the first and second deflectable wires in the first position, the
tube being (1) configured to restrict the first and second deflectable wires from transitioning
to the second position, and (2) removable from within the housing to allow for the first and
second deflectable wires to transition to the second position.

25 184. The system according to claim 182, wherein:
in the first position:
at least a majority of the first deflectable wire is disposed above the portion
of the contracting member, and
at least a majority of the second deflectable wire is disposed below the portion
30 of the contracting member, and
in the second position:

the at least the majority of the first deflectable wire pushes down on the portion of the contracting member, and

the at least the majority of the second deflectable wire pushes upwardly against the portion of the contracting member.

5 185. The system according to claim 182, wherein, in the first position, the first and second deflectable wires assume a loaded configuration in which each of the first and second deflectable wires assumes a curved configuration, and wherein, in the second position, the first and second deflectable wires assume a straight configuration.

10 186. The system according to claim 185, wherein, in the second position, the first and second deflectable wires each assume a length that is greater than a width of the housing, and wherein the first and second deflectable wires each define at least one crimping region configured to shorten the length of the first and second deflectable wires in the second position.

15 187. The system according to any one of claims 178-186, wherein:
the contracting-member-covering device comprises a housing, and
the contracting-member passes through the housing and through an opening in the housing.

20 188. The system according to claim 187, wherein the contracting-member-covering device comprises an expandable fabric that is coupled to the housing in a vicinity of the opening, and wherein the expandable fabric is configured to expand to cover the excess portions of the contracting member exiting the housing via the opening.

25 189. The system according to claim 187, wherein the contracting-member-covering device comprises a spring coupled to the housing in a vicinity of the opening, and wherein the spring is configured to expand to cover the excess portions of the contracting member exiting the housing via the opening.

190. The system according to claim 189, wherein the spring comprises a metal spring that is covered with fabric.

30 191. The system according to claim 189, wherein the spring comprises first and second scaffolding elements which are disposed opposite each other, and wherein the first and second scaffolding elements are configured to expand laterally away from a wall of the housing that defines the opening.

192. The system according to claim 189, further comprising a delivery tool configured to deliver the housing, and wherein, when the delivery tool is coupled to the housing, the delivery tool applies a force to the housing to compress the spring, and when the delivery tool is decoupled from the housing, the spring is allowed to expand.

5 193. The system according to claim 187, wherein the fastener is disposed within the housing.

194. The system according to claim 193, wherein the fastener comprises a clamping structure that (a) is biased toward assuming the closed state in which the clamping structure is configured to clamp onto the contracting member passed through the housing, and (b) can
10 be flexed to an open state in which the contracting member is movable with respect to the housing.

195. The system according to claim 194, further comprising a delivery tool configured to deliver the housing, and wherein the delivery tool further comprises a stop removably coupled to the fastener and configured to maintain the fastener in the open state.

15 196. The system according to claim 195, further comprising a contracting-member-cutting tool comprising a moveable cutting element having a sharp edge, wherein movement of the stop hammers the stop against the moveable cutting element such that movement of the moveable cutting element severs the contracting member.

197. The system according to claim 187, wherein the contracting-member-covering
20 device is configured to draw the excess portions of the contracting member within the housing.

198. The system according to claim 187, wherein:

the contracting-member-covering device comprises a spiral spring movable along a path,

25 the contracting member passes alongside an end of the spiral spring, and

the spiral spring is moveable in a spiral to push the contracting member with the end of the spiral spring along the path and away from the opening of the housing.

199. The system according to claim 198, wherein the end of the spiral spring comprises a cross-beam, and wherein the cross-beam is configured to push the contracting member along
30 the path.

200. The system according to claim 199, wherein:

the fastener is disposed within the housing,
the system further comprises a delivery tool configured to deliver the housing,
the delivery tool further comprises a stop removably coupled to the fastener, the stop
being configured to (a) maintain the fastener in the open state when the delivery tool is
5 coupled to the housing and (b) maintain the cross-beam in a position in which the cross-
beam does not engage the contracting member, and
the cross-beam is configured to push the contracting member along the path in an
absence of the stop.

201. The system according to claim 187, wherein the contracting-member-covering
10 device comprises a flap that is disposed external to the housing, and wherein the flap is
moveable from (1) an open state in which the flap is distanced from the housing, to (2) a
closed state in which the flap is disposed alongside the housing in a manner in which the
flap pushes the excess portions of the contracting member exiting the housing via the
opening and an end of the contracting member, against an external surface of the housing.

15 202. The system according to claim 201, wherein the flap comprises two metal scaffolding
beams disposed opposite each other.

203. The system according to claim 202, wherein a piece of fabric is coupled to and
extends between the two metal scaffolding beams in a manner in which, in the closed state
of the flap, the fabric covers the excess portions of the contracting member and the end of
20 the contracting member.

204. The system according to claim 202, wherein the flap further comprises a cross-beam
extending between the two metal scaffolding beams, and wherein, in the closed state of the
flap, the cross-beam pushes the excess portions of the contracting member exiting the
housing via the opening and the end of the contracting member, against the external surface
25 of the housing.

205. An apparatus, comprising:
a plurality of tissue anchors;
a contracting member slidably coupled to the plurality of tissue anchors;
a fastener configured to be couplable to the contracting member in a vicinity of a
30 terminal tissue anchor of the plurality of tissue anchors, the fastener, in a closed state thereof,
being configured to restrict movement of the contracting member with respect to the plurality
of tissue anchors, the fastener comprising:

a housing shaped so as to define (a) a first lumen for passage therethrough of the contracting member, the first lumen being along a longitudinal axis of the housing, and (b) a second lumen disposed at a nonzero angle with respect to the first lumen;

5 a locking ball moveable within the second lumen from a first position in which the locking ball does not apply pressure to the contracting member, to a second position in which the locking ball applies pressure to the contracting member so as to restrict movement of the contracting member; and

10 an advancement pin disposed within the second lumen proximally to the locking ball, the advancement pin being configured to advance the locking ball from the first position to the second position.

206. The apparatus according to claim 205, wherein, in the second position, the locking ball is configured to contact a portion of the contracting member.

15 207. The apparatus according to any one of claims 205-206, wherein the second lumen is in fluid communication with a portion of the first lumen.

208. The apparatus according to any one of claims 205-207, wherein:
the second lumen has a threaded surface,
the advancement pin has a threaded outer surface, and
the threaded surfaces facilitate locking of the locking ball in the second position.

20 209. The apparatus according to any one of claims 205-208, wherein the second lumen has a first sublumen sized to accommodate the advancement pin, and a second sublumen sized to accommodate the locking ball, wherein the first sublumen is disposed proximally to the second sublumen.

25 210. The apparatus according to any one of claims 205-209, further comprising a delivery tool configured to deliver the fastener along the contracting member and to apply torque to the advancement pin.

211. A system, comprising:
a plurality of tissue anchors;
a contracting member slidably coupled to the plurality of tissue anchors;
30 a fastener configured to be couplable to the contracting member in a vicinity of a terminal tissue anchor of the plurality of tissue anchors, the fastener, in a closed state thereof,

being configured to restrict movement of the contracting member with respect to the plurality of tissue anchors, the fastener comprising:

a housing shaped so as to define a lumen for passage therethrough of the contracting member,

5 a contracting-member-lock-and-cutter element slidable within the lumen of the housing the contracting-member-lock-and-cutter element comprising first and second arms coupled together at respective distal portions thereof at a distal portion of the contracting-member-lock-and-cutter element, the first and second arms being compressible toward each other when the contracting-member-lock-and-cutter
10 element is advanced within the lumen of the housing such that the contracting-member-lock-and-cutter element assumes a closed state, the first and second arms each being shaped to as to define:

respective cutting elements at respective proximal ends of the first and second arms; and

15 respective protrusions at respective middle portions of the first and second arms; and

a pusher shaped so as to push the contracting-member-lock-and-cutter element within the lumen of the housing,
wherein,

20 the contracting member passes through the lumen of the housing, through an opening defined by the distal portion of the contracting-member-lock-and-cutter element, and through an opening defined by the pusher,

a wall of the lumen of the housing pushes against the first and second arms of the contracting-member-lock-and-cutter element such that they compress toward each other when the contracting-member-lock-and-cutter element is pushed within
25 the lumen of the housing, and

in the closed state, (a) the respective cutting elements of the contracting-member-lock-and-cutter element come together in order to cut the contracting member, and, at the same time, (b) the respective protrusions of the contracting-
30 member-lock-and-cutter element come together in order to compress the contracting member therebetween and facilitate locking of the contracting member by restricting movement of the contracting member.

212. The system according to claim 211, wherein the housing is configured to cover a free end of the contracting member following cutting by the cutting elements.

213. A system, comprising:

a plurality of tissue anchors;

5 a contracting member slidably coupled to the plurality of tissue anchors;

a fastener configured to be couplable to the contracting member in a vicinity of a terminal tissue anchor of the plurality of tissue anchors, the fastener, in a closed state thereof, being configured to restrict movement of the contracting member with respect to the plurality of tissue anchors, the fastener comprising:

10 a housing comprising an inner wall shaped so as to define (a) a lumen for passage therethrough of the contracting member, (b) a distal conical surface, and (c) a proximal portion of the inner wall that is threaded;

a threaded screwing element having a threaded surface that is engageable with the threaded proximal portion of the inner wall of the housing and longitudinally
15 screwable within the lumen of the housing; and

a contracting-member lock coupled to the threaded screwing element and moveable within the lumen of the housing responsively to screwing of the threaded screwing element, the contracting-member lock comprising first and second gripping elements disposed on either side of the contracting member, each of the first and
20 second gripping elements defining a tapered surface configured to (1) fit within the distal conical surface of the housing responsively to pushing of the contracting-member lock distally by distal screwing of the threaded screwing element, and thereby (2) compress the contracting member passing through the first and second gripping elements.

25 214. The system according to claim 213, wherein the housing is configured to cover a free end of the contracting member following cutting of the contracting member.

215. An apparatus, comprising:

a plurality of tissue anchors;

a contracting member slidably coupled to the plurality of tissue anchors;

30 a fastener configured to be couplable to the contracting member in a vicinity of a terminal tissue anchor of the plurality of tissue anchors, the fastener, in a closed state thereof, being configured to restrict movement of the contracting member with respect to the plurality of tissue anchors, the fastener comprising:

a housing comprising an inner wall shaped so as to define a lumen for passage therethrough of the contracting member, the lumen being shaped in part so as to define a conical surface having a wide proximal portion and a narrow distal portion having a narrow surface at a distal end of the conical surface;

- 5 a distal spring-coupling element at a distal end of the lumen;
 a proximal spring-coupling element at a proximal end of the lumen and disposed proximally to the conical surface;
 a spring coupled to the distal and proximal spring-coupling elements; and
 at least one inwardly-compressible element coupled to the spring at a site
 10 along the spring that is disposed within a space defined by the conical surface, the at least one inwardly-compressible element being disposed alongside the contracting member;
 wherein,

- in an open state of the fastener, the proximal spring-coupling element is in a
 15 proximal position in which the spring is pulled into a stretched state between the proximal and distal spring-coupling elements in which the at least one inwardly-compressible element is disposed in a space defined by the wide portion of the conical surface and does not apply inward pressure to the contracting member, and
 in a closed state of the fastener, the proximal spring-coupling element is in a
 20 distal position in which the spring assumes a relaxed state in which the at least one inwardly-compressible element is disposed in the narrow portion of the conical surface and applies inward pressure to the contracting member responsively to pressure applied to the at least one inwardly-compressible element by the narrow surface of the conical surface.

- 25 216. The apparatus according to claim 215, wherein the proximal spring-coupling element is shaped so as to define a threaded coupling site for coupling thereto of a tool which maintains the fastener in the open state, and wherein upon decoupling of the tool from the proximal spring-coupling element by unscrewing, the spring returns to its resting state and the fastener assumes the closed state.

- 30 217. The apparatus according to any one of claims 215-216, wherein the spring is shaped so as to define at least one slit for inward movement of the at least one inwardly-compressible element.

218. The apparatus according to any one of claims 215-217, wherein the at least one inwardly-compressible element comprises a plurality of inwardly-compressible spheres surrounding the contracting member.

219. The apparatus according to any one of claims 215-218, wherein the housing is
5 configured to cover a free end of the contracting member following cutting of the contracting member.

220. A method, comprising:

positioning an anchor-delivery tube having a distal tubular end portion against tissue of a an annulus of a valve of a subject, the distal tubular end portion being coupled to a
10 tissue-indicating device including a radiopaque material shaped to define a tubular body having a central longitudinal axis and configured for placement in contact with an annulus of a native heart valve of the subject, the tubular body comprising a compressible element, the tissue-indicating device being:

compressible into a compressed state responsively to contact with tissue of
15 the native heart valve, and

expandable from the compressed state in an absence of force applied to the tissue-indicating device; and

determining a presence of tissue by pressing the compressible element against the tissue and imaging the compressed state of the compressible element;

20 responsively to the determining, implanting at least one tissue anchor along the annulus of the valve of the subject while using the tissue-indicating device as a guide for implantation of the tissue anchor along the annulus; and

retrieving the tissue-indicating device the implanting of the tissue anchor.

221. The method according to claim 220, wherein implanting at least one tissue anchor
25 comprises implanting at least two tissue anchors coupled together by a contracting member, and wherein the method further comprises allowing the contracting member, but not the tissue anchors, to exit the anchor-delivery tube laterally, proximally from the distal end of the tube via a lateral slit extending proximally from a distal end of the anchor-delivery tube.

222. A method, comprising:

30 implanting at an annulus of a heart of a patient an implant including (1) a plurality of tissue anchors, and (2) a contracting member slidably coupled to the plurality of tissue anchors;

restricting movement of the contracting member with respect to the plurality of tissue anchors by coupling a fastener to the contracting member in a vicinity of a terminal tissue anchor of the plurality of tissue anchors; and

cutting the contracting member subsequently to the restricting of the movement; and

5 covering excess portions of the contracting member by coupling a contracting-member-covering device to the contracting member in the vicinity of the terminal tissue anchor.

223. The method according to claim 222, wherein covering excess portions of the contracting member comprises covering a free end of the contracting member.

10 224. The method according to any one of claims 222-223, wherein the contracting-member-covering device comprises the fastener, and wherein restricting movement of the contracting member comprises restricting movement by the coupling of the restricting movement of the contracting member to the contracting member.

225. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue anchor comprising:

15 a tissue-engaging element configured to be driven into tissue of a subject, the tissue-engaging element comprising a rod, the rod comprising a sharpened distal tip; and

a head, coupled to a proximal end of the tissue-engaging element, the head comprising:

20 a driver interface, configured to be reversibly engaged by the anchor driver, and

an eyelet defining an aperture through which a wire can be threaded;

wherein the rod has a height across a first sectional axis, and a width across a second sectional axis orthogonal to the first sectional axis, wherein the width of the rod is greater than its height.

25

226. The apparatus according to claim 225, wherein the rod has an elliptic cross-sectional profile.

227. The apparatus according to any one of claims 225-226, wherein the width of the rod is 1.3-5 times as great as the height of the rod.

30 228. The apparatus according to claim 227, wherein the width of the rod is 1.4-3 times as great as the height of the rod.

229. The apparatus according to claim 228, wherein the width of the rod is 1.5-2.5 times as great as the height of the rod.
230. The apparatus according to claim 229, wherein the width of the rod is 1.5-2.1 times as great as the height of the rod.
- 5 231. The apparatus according to claim 230, wherein the width of the rod is 1.6-2 times as great as the height of the rod.
232. The apparatus according to any one of claims 225-231, wherein the first sectional axis is parallel to a central longitudinal axis of the tissue anchor.
233. The apparatus according to any one of claims 225-231, wherein the first sectional
10 axis is angled with respect to a central longitudinal axis of the tissue anchor.
234. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue anchor comprising:
- a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject; and
 - 15 a head, coupled to a proximal end of the tissue-engaging element, the head comprising:
 - a driver interface, configured to be reversibly engaged by the anchor driver,
 - and
 - a ring comprising a channel, the channel defining a channel axis which is
20 orthogonal to an axis parallel to the central longitudinal axis;
wherein the ring circumscribes and is rotatable about the central longitudinal axis,
 - and
 - wherein the channel axis is offset from the central longitudinal axis, forming a gap between an innermost edge of the channel and the central longitudinal axis.
- 25 235. The apparatus according to claim 234, wherein the head further comprises a proximal head segment that comprises the driver interface and is positioned proximal to the ring, wherein the proximal head segment is immovable with respect to the tissue-engaging element.
236. The apparatus according to any one of claims 234-235, wherein the head further
30 comprises a distal head segment positioned distal to the ring, wherein the distal head segment is immovable with respect to the tissue-engaging element.

237. The apparatus according to any one of claims 234-236, wherein:
the tissue anchor is a first tissue anchor of a plurality of tissue anchors,
the apparatus comprises an annuloplasty implant comprising the plurality of tissue
anchors, and a wire extending through the channels of the plurality of tissue anchors.
- 5 238. The apparatus according to claim 237, wherein the diameter of the channel is not
greater than 5 percent of the thickness of the wire.
239. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue
anchor comprising:
a tissue-engaging element defining a central longitudinal axis of the anchor, having
10 a sharpened distal tip, and configured to be driven into tissue of a subject; and
a head, coupled to a proximal end of the tissue-engaging element, the head
comprising:
a driver interface, configured to be reversibly engaged by the anchor driver,
a stem having a stem outer diameter, wherein the stem is coaxial with the
15 central longitudinal axis; and
a ring defining a ring inner diameter;
wherein the ring is disposed around the stem, and is rotatable about the central
longitudinal axis, and is laterally movable with respect to the stem.
240. The apparatus according to claim 239, wherein the ring inner diameter is at least 1.3
20 times as great as the stem outer diameter.
241. The apparatus according to claim 240, wherein the ring inner diameter is 1.3-5 times
as great as the stem outer diameter.
242. The apparatus according to claim 241, wherein the ring inner diameter is 1.4-3 times
as great as the stem outer diameter.
- 25 243. The apparatus according to claim 242, wherein the ring inner diameter is 1.5-2.5
times as great as the stem outer diameter.
244. The apparatus according to claim 243, wherein the ring inner diameter is 1.5-2.1
times as great as the stem outer diameter.
245. The apparatus according to claim 244, wherein the ring inner diameter is 1.6-2 times
30 as great as the stem outer diameter.

246. The apparatus according to any one of claims 239-245, wherein the head further comprises a proximal head segment that comprises the driver interface and is positioned proximal to the ring, and a distal head segment positioned distal to the ring, wherein the proximal head segment and the distal head segment are immovable with respect to the tissue-engaging element.
247. The apparatus according to claim 246, wherein the proximal head segment comprises a proximal groove, wherein the distal head segment comprises a distal groove, and wherein the proximal groove and the distal groove are aligned with each other and are parallel to the central longitudinal axis.
248. The apparatus according to claim 247, wherein:
the tissue anchor is a first tissue anchor of a plurality of tissue anchors,
the apparatus comprises an annuloplasty implant comprising the plurality of tissue anchors, and a wire threaded through the rings of the plurality of tissue anchors.
249. The apparatus according to claim 248, wherein the proximal groove and the distal groove are configured to accommodate at least a portion of the wire.
250. The apparatus according to any one of claims 248-249, wherein the head has an outer diameter that is greater than an outer diameter of the tissue-engaging element.
251. The apparatus according to claim 250, wherein the difference between the outer diameter of the head and the outer diameter of the tissue-engaging element is at least as great as twice the thickness of the wire.
252. The apparatus according to any one of claims 239-251, further comprising a delivery tube comprising a flexible tube that defined a tube inner diameter, wherein the tube inner diameter is no more than 20 percent greater than an outer diameter of the ring.
253. The apparatus according to claim 252, wherein the tube inner diameter is no more than 10 percent greater than the outer diameter of the ring.
254. The apparatus according to claim 253, wherein the tube inner diameter is no more than 5 percent greater than the outer diameter of the ring.
255. An apparatus comprising a tissue anchor for use with an anchor driver, the tissue anchor comprising:
a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject; and

a head, coupled to a proximal end of the tissue-engaging element, the head comprising:

a wire tensioning mechanism for applying tension to a wire, the wire tensioning mechanism comprising:

5 a housing comprising:

a housing base portion;

a housing top portion defining a top opening, wherein the housing top portion comprises a complementary locking interface;

10 a sidewall extending between the housing base portion and the housing top portion, the sidewall comprising at least one side opening; and

an inner chamber defined between the housing base portion, the sidewall, and the housing top portion, the inner chamber having an inner chamber diameter;

15 a spool disposed within the inner chamber, the spool having a spool diameter and comprising:

a spool base facing the housing base portion;

20 a spool top portion facing the housing top portion, and comprising a spool locking interface configured to releasably engage with the complementary locking interface, and a spool driving interface facing the top opening;

a spool central lumen, coaxial with the central longitudinal axis; and

25 a channel defining a channel axis which is orthogonal to an axis parallel to the central longitudinal axis, wherein the channel axis is offset from the spool central lumen; and

a spring disposed between the housing and the spool;

a driver interface, configured to be reversibly engaged by the anchor driver; and

30 a stem extending through the spool central lumen between the tissue-engaging element and the driver interface;

wherein the wire tensioning mechanism is configured to transition between a locked configuration, in which the spool locking interface is engaged with the complementary locking interface, thereby preventing the spool from rotating relative

- to the housing, and an unlocked configuration, in which the spool locking interface is released from the complementary locking interface, thereby allowing the spool to be rotated relative to the housing; and
- wherein the spring is configured, in a free state thereof, to bias the spool to engage with the housing to form a locked configuration of the wire tensioning mechanism.
256. The apparatus according to claim 255, wherein the spring is disposed between the housing base portion and the spool base.
257. The apparatus according to claim 256, wherein the housing base portion comprises a base groove, and wherein the spring is positioned within the base groove.
258. The apparatus according to any one of claims 255-257, wherein the spring is a disc spring.
259. The apparatus according to any one of claims 255-258, wherein the housing top portion further comprises a housing top interface.
260. The apparatus according to any one of claims 255-259, further comprising a wire, wherein the wire extends through the at least one side opening and through the channel.
261. The apparatus according to claim 260, wherein the difference between the inner chamber diameter and the spool diameter is at least 200% greater than the diameter of wire.
262. The apparatus according to claim 261, wherein the difference between the inner chamber diameter and the spool diameter is at least 250% greater than the diameter of wire.
263. The apparatus according to claim 262, wherein the difference between the inner chamber diameter and the spool diameter is at least 300% greater than the diameter of wire.
264. The apparatus according to claim 263, wherein the difference between the inner chamber diameter and the spool diameter is at least 400% greater than the diameter of wire.
265. The apparatus according to any one of claims 260-264, wherein the diameter of the channel is no more than 5 percent greater than the outer diameter of the ring.
266. The apparatus according to any one of claims 260-265, further comprising a stopper attached to an end of the wire and disposed between the channel and the sidewall, wherein the stopper has a diameter greater than the diameter of the channel.
267. The apparatus according to any one of claims 260-265, wherein the wire is attached to the spool via a closed loop extending through the channel and around a portion of spool.

268. The apparatus according to any one of claims 255-267, wherein the spool further comprises a spool side recess, and the stem further comprises a protrusion configured to engage with the spool side recess in the locked configuration, thereby preventing rotational movement of the tissue-engaging element with respect to the spool, and to disengage therefrom in the unlocked configuration, thereby allowing the tissue-engaging element to rotate with respect to the spool.

269. The apparatus according to any one of claims 255-268, wherein the housing is rotatable about the central longitudinal axis with respect to the tissue-engaging element.

270. The apparatus according to any one of claims 255-269, wherein the anchor further comprises a flange disposed around the proximal end of the tissue engaging element and configured to support the housing.

271. The apparatus according to any one of claims 255-270, wherein the at least one side opening comprises two side openings, opposite to each other.

272. The apparatus according to any one of claims 255-271, wherein the tissue anchor is one of a plurality of tissue anchors.

273. The apparatus according to any one of claims 255-271, wherein the tissue anchor is a primary tissue anchor, and wherein the apparatus further comprises at least one secondary tissue anchor for use with the anchor driver, wherein the other tissue anchor comprises:

a secondary tissue-engaging element having a secondary sharpened distal tip, and configured to be driven into tissue of a subject; and

a secondary head, coupled to a proximal end of the secondary tissue-engaging element, the secondary head comprising a driver interface configured to be reversibly engaged by the anchor drive;

wherein the at least one secondary tissue anchor is devoid of a wire tensioning mechanism with a spool.

274. A system comprising the apparatus according to any one of claims 255-273, and further comprising an adjustment tool that comprises an adjustment interface configured to engage with the spool driving interface, wherein the adjustment tool is configured to push the spool against the spring to transition the wire tensioning mechanism to the unlocked configuration, and configured to rotate the spool about the central longitudinal axis in the unlocked configuration.

275. The system according to claim 274, further comprising a retainment tool that comprises a retainment interface configured to engage with the housing top interface.
276. An apparatus comprising:
an uptake assembly, comprising:
5 a sleeve defining a central longitudinal axis, and comprising a sleeve lumen having a lumen diameter; and
a gripper at least partially disposed within the sleeve, and comprising:
a gripper distal portion having a gripper distal diameter; and
a gripper narrow portion having a narrow diameter;
10 wherein the gripper is axially movable with respect to the sleeve;
wherein the gripper distal diameter is smaller than the lumen diameter; and
wherein the narrow diameter is smaller than the gripper distal diameter.
277. The apparatus according to claim 276, wherein the gripper distal portion comprises a rounded gripper distal end.
- 15 278. The apparatus according to claim 276, wherein the gripper distal portion comprises a tapering gripper distal end.
279. The apparatus according to any one of claims 276-278, wherein the gripper distal portion and the gripper narrow portion are symmetrically disposed around the central longitudinal axis.
- 20 280. The apparatus according to any one of claims 276-278, wherein the gripper distal portion and the gripper neck portion are asymmetrically disposed around the central longitudinal axis.
281. The apparatus according to any one of claims 276-280, further comprising a wire having a free state wire diameter.
- 25 282. The apparatus according to claim 281, wherein the wire is compressible to at least 95% of its free state wire diameter.
283. The apparatus according to claim 282, wherein the wire is compressible to at least 90% of its free state wire diameter.
284. The apparatus according to claim 283, wherein the wire is compressible to at least
30 80% of its free state wire diameter.

285. The apparatus according to claim 284, wherein the wire is compressible to at least 60% of its free state wire diameter.
286. The apparatus according to any one of claims 281-285, wherein the difference between the lumen diameter and the gripper distal diameter is smaller than the wire diameter.
- 5 287. The apparatus according to claim 286, wherein the difference between the lumen diameter and the gripper distal diameter is smaller than 90% of the wire diameter.
288. The apparatus according to claim 287, wherein the difference between the lumen diameter and the gripper distal diameter is smaller than 70% of the wire diameter.
289. The apparatus according to claim 288, wherein the difference between the lumen
10 diameter and the gripper distal diameter is smaller than 30% of the wire diameter.
290. The apparatus according to claim 289, wherein the difference between the lumen diameter and the gripper distal diameter is smaller than 10% of the wire diameter.
291. The apparatus according to any one of claims 281-290, wherein the difference between the lumen diameter and the narrow diameter is at least as great as the wire diameter.
- 15 292. The apparatus according to claim 291, wherein the difference between the lumen diameter and the narrow diameter is greater than 110% of the wire diameter.
293. The apparatus according to claim 293, wherein the difference between the lumen diameter and the narrow diameter is greater than 120% of the wire diameter.
294. The apparatus according to claim 293, wherein the difference between the lumen
20 diameter and the narrow diameter is greater than 130% of the wire diameter.
295. The apparatus according to claim 294, wherein the difference between the lumen diameter and the narrow diameter is greater than 150% of the wire diameter.
296. The apparatus according to claim 295, wherein the difference between the lumen diameter and the narrow diameter is greater than 200% of the wire diameter.
- 25 297. The apparatus according to any one of claims 276-280, wherein the gripper further comprises a gripper proximal portion having a gripper proximal diameter, wherein the lumen diameter is at least as great as the gripper proximal diameter, and wherein the gripper distal diameter is smaller than the gripper proximal diameter.

298. The apparatus according to claim 297, further comprising a wire having a free state wire diameter, wherein the difference between the lumen diameter and the gripper proximal diameter is smaller than the wire diameter.

299. The apparatus according to claim 298, wherein the difference between the lumen diameter and the gripper proximal diameter is not greater than 95% of the wire diameter.

300. The apparatus according to claim 299, wherein the difference between the lumen diameter and the gripper proximal diameter is not greater than 90% of the wire diameter.

301. The apparatus according to claim 300, wherein the difference between the lumen diameter and the gripper proximal diameter is not greater than 85% of the wire diameter.

302. The apparatus according to claim 301, wherein the difference between the lumen diameter and the gripper proximal diameter is not greater than 80% of the wire diameter.

303. The apparatus according to any one of claims 276-302, further comprising a catheter defining a catheter lumen, wherein the uptake assembly is at least partially disposed within the catheter lumen, and wherein at least one component of the uptake assembly is axially movable with respect to the catheter.

304. A method, comprising:

inserting a wire or line into a sleeve lumen of a sleeve of an uptake assembly, wherein the uptake assembly comprises the sleeve having a sleeve distal end and a gripper, wherein the gripper comprises a gripper distal portion disposed distal to a sleeve distal end, and a gripper narrow portion that is partially disposed within the sleeve lumen, and is partially exposed out of the sleeve;

pulling the gripper until the gripper distal portion at least partially extends into the sleeve lumen, and is pressing the wire or line between the gripper distal portion and the sleeve so as to restrict axial movement of the wire or line with respect to the sleeve; and

pulling the uptake assembly, thereby pulling the wire or line attached thereto.

305. The method of claim 304, wherein inserting the wire or line into the sleeve lumen is performed such that the wire or line is inserted until it is blocked from further advancement by a gripper proximal portions of the gripper, which is disposed within the sleeve lumen, and has a gripper proximal diameter such that the difference between the diameter of the sleeve lumen and the gripper proximal diameter, is smaller than the diameter of the wire.

306. The method of any one of claims 304-305, further comprising pushing the gripper distally, until the wire or line is released from the uptake assembly.

307. A method, comprising:

5 implanting, at an annulus of a heart of a patient, a docking apparatus comprising an implant that includes (1) a plurality of tissue anchors, and (2) a contracting member slidably coupled to the plurality of tissue anchors;

contracting the implant so as to reduce the size of the annulus of the heart valve;

delivering a prosthetic valve of the heart valve in a crimped state thereof; and

10 expanding the prosthetic valve against the annulus, so as to anchor it to the annulus against the docking apparatus under pressure.

308. The method of claim 307, wherein each one of the plurality of anchors comprises a tissue-engaging element having a sharpened distal tip, and wherein implanting the plurality of anchors comprises sequentially driving the anchors into the tissue of the annulus.

309. The method of claim 308, wherein each one of the plurality of anchors comprises a 15 head comprising a driving interface, and wherein driving each anchor into the tissue of the annulus comprises engaging an anchor driver with the driving interface, and rotating the anchor driver so as to rotate the anchor about a central longitudinal axis defined by its tissue-engaging element.

310. The method of claim 308, wherein the head of at least two anchors comprises an 20 eyelet, and wherein the contracting member is threaded through the eyelets.

311. The method of any one of claims 307-310, wherein the heart valve is the mitral valve.

312. The method of any one of claims 307-310, wherein the heart valve is the tricuspid valve.

313. An apparatus comprising:

25 a plurality of tissue anchors for use with an anchor driver, each anchor comprising:

a tissue-engaging element having a sharpened distal tip and configured to be driven into tissue of a subject; and

30 a head, coupled to a proximal end of the tissue-engaging element, the head comprising a driver interface, configured to be reversibly engaged by the anchor driver; and

a wire assembly extending through openings formed in the heads of the plurality of anchors, the wire assembly comprising a main wire comprising a plurality of alternating portions coated by radiopaque coating, and a plurality of alternating radiolucent portions.

5 314. The apparatus according to claim 313, wherein the opening of the head of an anchor is an eyelet.

315. The apparatus according to claim 313, wherein the opening of the head of an anchor is a channel.

316. The apparatus according to any one of claims 313-315, wherein the main wire is
10 formed of a metal material, selected from titanium, nitinol, platinum, stainless steel, and/or alloys and/or combinations thereof.

317. The apparatus according to any one of claims 313-316, wherein the radiopaque coating comprises at least one biocompatible metal material, selected from: gold, platinum, titanium, silver, tantalum, barium, bismuth, iridium, tungsten, rhenium, osmium, iridium,
15 palladium, and/or biocompatible oxides and combinations thereof.

318. An apparatus comprising:

a plurality of tissue anchors for use with an anchor driver, each anchor comprising:

20 a tissue-engaging element having a sharpened distal tip, and configured to be driven into tissue of a subject; and

a head, coupled to a proximal end of the tissue-engaging element, the head comprising a driver interface, configured to be reversibly engaged by the anchor driver; and

25 a wire assembly extending through opening formed in the heads of the plurality of anchors, the wire assembly comprising a main wire, and a plurality of additional wires woven around the main wire;

wherein at least one portion of the main wire is coated by a radiopaque coating.

319. The apparatus according to claim 318, wherein the opening of the head of an anchor is an eyelet.

30 320. The apparatus according to claim 318, wherein the opening of the head of an anchor is a channel.

321. The apparatus according to any one of claims 318-320, wherein the main wire comprises a plurality of alternating portions coated by radiopaque coating and a plurality of alternating portions which are radiolucent portions.
322. The apparatus according to any one of claims 318-320, wherein the plurality of
5 additional wires is radiolucent.
323. The apparatus according to any one of claims 318-322, wherein the main wire and each one of the plurality of additional wires is formed of a metal material, selected from titanium, nitinol, platinum, stainless steel, and/or alloys and/or combinations thereof.
324. The apparatus according to any one of claims 318-323, wherein the plurality of
10 additional wires comprises at least six additional wires, woven around the main wire.
325. The apparatus according to any one of claims 316-324, wherein each one of the plurality of additional wires comprises an inner wire assembly, wherein each inner wire assembly comprise a plurality of inner wires.
326. The apparatus according to claim 325, wherein each plurality of inner wires
15 comprises at least seven inner wires.
327. The apparatus according to any one of claims 325-326, wherein each inner wire is formed of a metal material, selected from titanium, nitinol, stainless steel, and/or combinations thereof.
328. The apparatus according to any one of claims 318-327, wherein the main wire
20 comprises a central inner wire assembly comprising a plurality of central inner wires.
329. The apparatus according to claim 328, wherein at least one portion of the central inner wire assembly is coated by the radiopaque coating along an outer diameter thereof.
330. The apparatus according to any one of claims 328-329, wherein the plurality of central inner wires comprises at least seven central inner wires.
- 25 331. An apparatus comprising:
a plurality of tissue anchors for use with an anchor driver, each anchor comprising:
a tissue-engaging element having a sharpened distal tip and configured to be driven into tissue of a subject; and

- a head, coupled to a proximal end of the tissue-engaging element, the head comprising a driver interface, configured to be reversibly engaged by the anchor driver; and
- a wire assembly extending through opening formed in the heads of the plurality of anchors, the wire assembly comprising a main wire, at least one additional wire, and at least one composite tube comprising at least one radiopaque material;
- wherein the at least one additional wire and the at least one composite tube are woven around the main wire.
- 10 332. The apparatus according to claim 331, wherein the opening of the head of an anchor is an eyelet.
333. The apparatus according to claim 331, wherein the opening of the head of an anchor is a channel.
334. The apparatus according to any one of claims 331-333, wherein the at least one composite tube comprises:
- 15 an inner core comprising at least one first material; and
- an outer sheath comprising at least one layer comprising at least one second material;
- wherein the inner core is disposed within a lumen of the outer sheath.
- 20 335. The apparatus according to claim 334, wherein the first material is selected from: gold, platinum, titanium, silver, tantalum, palladium, nitinol, and/or combinations and/or alloys thereof.
336. The apparatus according to any one of claims 334-335, wherein the first material is radiopaque, and the second material is radiolucent.
- 25 337. The apparatus according to any one of claims 331-336, wherein each one of the main wire and the at least one additional wire are radiolucent and are formed of a metal material, selected from titanium, nitinol, platinum, stainless steel, and/or alloys and/or combinations thereof.
338. The apparatus according to any one of claims 331-339, wherein the at least one additional wire comprises at least five additional wires, and wherein the at least five additional wires and the at least one composite tube are woven around the main wire.
- 30

339. The apparatus according to any one of claims 331-337, wherein the at least one additional wire comprises at least four additional wires, the at least one composite tube comprises at least two composite tubes, and wherein the at least four additional wires and the at least two composite tubes are woven around the main wire.

5 340. An apparatus comprising:

a plurality of tissue anchors for use with an anchor driver, each anchor comprising:

a tissue-engaging element having a sharpened distal tip and configured to be driven into tissue of a subject; and

10 a head, coupled to a proximal end of the tissue-engaging element, the head comprising a driver interface, configured to be reversibly engaged by the anchor driver; and

a wire assembly extending through opening formed in the heads of the plurality of anchors, the wire assembly comprising a main wire, at least one
15 additional wire, and at least one composite tube comprising at least one radiopaque material;

wherein the at least one additional wire, the at least one composite tube, and the main wire are woven or interlaced around each other.

20 341. The apparatus according to claim 340, wherein the opening of the head of an anchor is an eyelet.

342. The apparatus according to claim 340, wherein the opening of the head of an anchor is a channel.

343. The apparatus according to any one of claims 340-342, wherein the at least one composite tube comprises:

25 an inner core comprising at least one first material; and

an outer sheath comprising at least one layer comprising at least one second material;

wherein the inner core is disposed within a lumen of the outer sheath.

344. The apparatus according to claim 343, wherein the first material is selected from:
30 gold, platinum, titanium, silver, tantalum, palladium, nitinol, and/or combinations and/or alloys thereof.

345. The apparatus according to any one of claims 343-344, wherein the first material is radiopaque, and the second material is radiolucent.

346. The apparatus according to any one of claims 340-345, wherein each one of the main wire and the at least one additional wire are radiolucent and are formed of a metal material,
5 selected from titanium, nitinol, platinum, stainless steel, and/or alloys and combinations thereof.

347. The apparatus according to any one of claims 340-346, wherein the at least one additional wire comprises at least five additional wires.

348. The apparatus according to any one of claims 340-346, wherein the at least one
10 additional wire comprises at least four additional wires, and the at least one composite tube comprises at least two composite tubes.

349. A system, for use with an anchor driver, the system comprising an annuloplasty structure that comprises:

a wire;

15 a plurality of anchors, each of the anchors comprising:

a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject;

a neck; and

20 a head, coupled to the tissue-engaging element via the neck, and comprising a driver interface configured to be reversibly engaged by the anchor driver, and a head circumferential surface defined around the longitudinal central axis; and

a plurality of flexible sleeves, each of the sleeves:

slidably coupling, to the wire, a respective anchor of the plurality of anchors; and comprising:

25 a sleeve circumferential portion, snugly disposed around the head circumferential surface;

a proximal opening dimensioned to expose the driver interface;

30 a distal opening through which the neck extends, wherein the anchor is rotatable, around the central longitudinal axis, with respect to the sleeve; and

an eyelet through which the wire is threaded, thereby slidably coupling the connector to the wire.

350. The system according to claim 349, wherein the flexible sleeve comprises a fabric.

351. The system according to any one of claims 349-350, wherein the eyelet is defined by a patch coupled to the sleeve at upper and lower portions of the patch.

352. The system according to any one of claims 349-351, wherein the wire is a first wire,
5 and the annuloplasty structure comprises a second wire, each of the sleeves slidably coupling the respective one of the anchors to the first wire and to the second wire.

353. The system according to claim 352, wherein the first wire and the second wire are generally parallel with each other.

354. The system according to claim 352, wherein, for each sleeve:
10 the eyelet is a first eyelet,
the first wire is threaded through the first eyelet, thereby slidably coupling the sleeve to the first wire, and
the sleeve comprises a second eyelet through which the second wire is threaded, thereby slidably coupling the sleeve to the second wire.

15 355. A system comprising a tissue anchor for use with an anchor driver, the tissue anchor comprising:

a tissue-engaging element defining a central longitudinal axis of the anchor, having a sharpened distal tip, and configured to be driven into tissue of a subject; and
a head, coupled to a proximal end of the tissue-engaging element, the head
20 comprising:

a contracting-member tensioning mechanism for applying tension to a contracting member, the contracting-member tensioning mechanism comprising:

a housing comprising:

25 an inner chamber having an inner chamber diameter;

a spool disposed within the inner chamber, the spool having a spool diameter and comprising:

a spool locking interface configured to releasably engage with a complementary locking interface of the housing, and

30 a spool driving interface;

a spool central lumen; and

a biasing member disposed between the housing and the spool;

a driver interface, configured to be reversibly engaged by the anchor driver;
and

wherein the contracting-member tensioning mechanism is configured to transition between a locked configuration, in which the spool locking interface is engaged with the complementary locking interface, thereby preventing the spool from rotating relative to the housing, and an unlocked configuration, in which the spool locking interface is released from the complementary locking interface, thereby allowing the spool to be rotated relative to the housing; and

wherein the biasing member is configured, in a default state thereof, to bias the spool to engage with the housing into the locked configuration.

356. The system according to claim 355, wherein the biasing member is a disc spring.

357. The system according to any one of claims 355-356, wherein the housing further comprises a housing top interface.

358. The system according to any one of claims 355-357, wherein the spool further comprises a channel defining a channel axis which is orthogonal to an axis parallel to the central longitudinal axis, wherein the channel axis is offset from the spool central lumen.

359. The system according to claim 358, further comprising the contracting member, wherein the contracting member extends through the at least one side opening and through the channel.

360. The system according to claim 359, wherein the difference between the inner chamber diameter and the spool diameter is at least 200% greater than the diameter of the contracting member.

361. The system according to claim 360, wherein the difference between the inner chamber diameter and the spool diameter is at least 250% greater than the diameter of the contracting member.

362. The system according to claim 361, wherein the difference between the inner chamber diameter and the spool diameter is at least 300% greater than the diameter of the contracting member.

363. The system according to claim 362, wherein the difference between the inner chamber diameter and the spool diameter is at least 400% greater than the diameter of the contracting member.

364. The system according to any one of claims 359-363, wherein the diameter of the channel is no more than 5 percent greater than the outer diameter of the ring.

365. The system according to any one of claims 359-364, further comprising a stopper attached to an end of the contracting member and disposed between the channel and the sidewall, wherein the stopper has a diameter greater than the diameter of the channel.

366. The system according to any one of claims 359-364, wherein the contracting member is attached to the spool via a closed loop extending through the channel and around a portion of spool.

367. The system according to any one of claims 355-366, wherein the spool further comprises a spool side recess, and the stem further comprises a protrusion configured to engage with the spool side recess in the locked configuration, thereby preventing rotational movement of the spool with respect to the tissue-engaging element, and to disengage therefrom in the unlocked configuration, thereby allowing the spool to rotate with respect to the tissue-engaging element.

368. The system according to any one of claims 355-367, wherein the housing is rotatable about the central longitudinal axis with respect to the tissue-engaging element.

369. The system according to any one of claims 355-368, wherein the anchor further comprises a flange disposed around the proximal end of the tissue engaging element and configured to support the housing.

370. The system according to any one of claims 355-369, wherein the at least one side opening comprises two side openings, opposite to each other.

371. The system according to any one of claims 355-370, wherein the tissue anchor is one of a plurality of tissue anchors.

372. The system according to any one of claims 355-370, wherein the tissue anchor is a primary tissue anchor, and wherein the system further comprises at least one secondary tissue anchor for use with the anchor driver, wherein the other tissue anchor comprises:

a secondary tissue-engaging element having a secondary sharpened distal tip, and configured to be driven into tissue of a subject; and

a secondary head, coupled to a proximal end of the secondary tissue-engaging element, the secondary head comprising a driver interface configured to be reversibly engaged by the anchor drive;

wherein the at least one secondary tissue anchor is devoid of any tensioning mechanism with a spool.

373. A method, comprising:

- 5 delivering a prosthetic valve to a native heart valve in a crimped state of the prosthetic valve, wherein the native valve previously had an implant implanted that includes (1) a plurality of tissue anchors, and (2) a contracting member coupled to the plurality of tissue anchors, and wherein tissue of the native valve had been previously reshaped by contracting the implant; and
- 10 expanding the prosthetic valve against the annulus, so as to anchor it to the annulus against the implant under pressure.

374. The method of claim 373, wherein each one of the plurality of anchors comprises a tissue-engaging element having a sharpened distal tip.

375. The method of claim 374, wherein each one of the plurality of anchors comprises a head comprising a driving interface.

- 15 376. The method of claim 375, wherein the head of a first anchor of the plurality of anchors comprises a first eyelet and a second anchor of the plurality of anchors comprises a second eyelet, and wherein the contracting member is threaded through the first eyelet and the second eyelet.