CLAIMS

1. A system for forming an anastomosis in a heart, comprising:

a first catheter comprising a cutting electrode; and

a second catheter slidably disposed within the first catheter, the second catheter comprising a barb and a dilator, the dilator comprising a mating surface configured to engage the electrode.

2. The system of claim 1, wherein the barb is disposed within a lumen of the electrode when the mating surface engages the electrode.

3. The system of claim 1, wherein an outer diameter of the dilator is less than an outer diameter of the electrode.

4. The system of claim 1, wherein the second catheter defines a longitudinal axis, wherein the barb comprises at least one projection comprising a first portion and a second portion, the first portion angled relative to the second portion.

5. The system of claim 4, wherein a length of the first portion to a length of the second portion is in a ratio between 2:3 and 1:5.

6. The system of claim 4, wherein the second portion comprises a length between 0.1 mm and 2 cm.

7. The system of claim 1, wherein a length of the barb is between 0.1 mm and 5 cm.

8. The system of claim 1, wherein the electrode and the mating surface are configured to compress tissue therebetween.

9. The system of claim 1, wherein the second catheter defines a longitudinal axis, and the mating surface is non-perpendicular and non-parallel to the longitudinal axis.

10. The system of claim 1, wherein the dilator comprises a fluid port configured to output a contrast agent comprising a fluid.

11. The system of claim 1, wherein the first catheter comprises a contrast agent lumen.

12. The system of claim 1, wherein the electrode comprises a fluid port configured to output a contrast agent comprising a fluid.

13. The system of claim 1, wherein the dilator comprises an echogenic region comprising one or more recesses or protrusions comprising a diameter of between 5 μm and 100 μm.

14. The system of claim 1, further comprising a first catheter actuator configured to deflect a distal portion of the first catheter, the first catheter actuator electrically coupled to the electrode.

15. The system of claim 1, wherein the mating surface defines a recess configured to receive a distal end of the electrode.

16. The system of claim 15, wherein the electrode is configured to electrically short when the electrode engages the recess of the mating surface.

17. The system of claim 1, wherein the mating surface comprises a conductive portion.

18. The system of claim 1, wherein a proximal portion of the dilator is arranged within a lumen of the electrode when the mating surface engages the electrode.

19. A system for forming an anastomosis in a heart, comprising:

a first catheter comprising an electrode; and

a second catheter slidably disposed within the first catheter, the second catheter comprising a barb and a dilator, wherein a proximal portion of the dilator comprises a first step portion comprising a first diameter and a second step portion comprising a second diameter greater than the first diameter, the first step portion proximal to the second step portion, wherein the first step portion is configured to engage the electrode.

20. A system for forming an anastomosis in a heart, comprising:

a first catheter comprising a cutting electrode; and

a second catheter slidably disposed within the first catheter, the second catheter comprising a barb and a dilator, wherein the barb is enclosed within a lumen of the electrode when the dilator engages the electrode, wherein the barb is spaced apart proximally from the dilator.

21. The system of claim 1, wherein a largest outer diameter of the barb is less than a largest outer diameter of the dilator.