

effective seal. The coaption element can have a structure that is impervious to blood. The coaption element can be connected to leaflets of the native valve by the anchor.

[0009a] An aspect of the present disclosure provides a valve repair device for repairing a native valve of a patient, the valve repair device comprising:

- a strip of material;

- a coaption element formed from the strip of material; and

- a pair of paddles formed from the strip of material and connected to the coaption element, wherein the paddles are movable between an open position and a closed position;

- wherein the paddles are configured to attach to the native valve of the patient.

[0009b] Another aspect of the present disclosure provides a method of manufacturing a valve repair device for repairing a native valve of a patient, the method comprising:

- folding a strip of material to form a coaption element and a pair of paddles connected to the coaption element, wherein the paddles are movable between an open position and a closed position and are configured to attach to the native valve of the patient.

- attaching the portion of the strip of material forming the coaption element to a collar; and

- attaching the portion of the strip of material forming the paddles to a cap, wherein movement of the cap toward the collar causes the pair of paddles to move to the closed position, and movement of the cap away from the collar causes the pair of paddles to move to the open position.

[0010] In one example embodiment, a valve repair device for repairing a native valve of a patient includes a strip of material, and a pair of paddles. A coaption element is formed from or comprises the strip of material. The pair of paddles is formed from or comprises the strip of material and are connected to the coaption element. The pair of paddles are movable between an open position and a closed position.

[0011] The “strip of material” in the various embodiments described throughout this disclosure can be a single unitary strip or piece of a material. However, in some embodiments, the “strip of material” can be formed of multiple smaller discreet pieces of one or more materials combine into a larger composite strip of material.

[0012] In one example method of manufacturing a valve repair device, a strip of material is folded to form a coaption element and a pair of paddles connected to the coaption element. The paddles are movable between an open position and a closed position and are configured to attach to the native valve of the patient. A portion of the strip of material forming the coaption element is attached to a collar. A portion of the strip of material forming the paddles is attached to a cap. Movement of the cap toward the collar causes the pair of paddles to move to the closed position. Movement of the cap away from the collar causes the pair of paddles to move to the open position.

[0013] In one example embodiment, a valve repair device for repairing a native valve of a patient has a coaption element and a pair of paddles. The coaption element has four layers. The pair of paddles is connected to the coaption element. The paddles are movable between an open position and a closed position and are configured to attach to the native valve of the patient.

[0014] In one example embodiment, a valve repair device for repairing a native valve of a patient includes a strip of material and a collar. A coaption element is formed from the strip of material. A collar is connected to the coaption element. A pair of paddles is formed from the strip of material and connected to the coaption element. The paddles are movable between an open position and a closed position by moving the collar toward and away from the paddles.

[0015] In one example embodiment, a valve repair device for repairing a native valve of a patient includes a collar, a coaption element, and a pair of paddles. The collar has a plurality of engagement portions configured to releasably engage a delivery apparatus. The coaption element is attached to the collar. The pair of paddles are connected to the coaption element are movable between an open position and a closed position. The paddles are circumferentially disposed between the engagement portions. The paddles are configured to attach to the native valve of the patient.

Claims

1. A valve repair device for repairing a native valve of a patient, the valve repair device comprising:
 - a strip of material;
 - a coaption element formed from the strip of material; and
 - a pair of paddles formed from the strip of material and connected to the coaption element, wherein the paddles are movable between an open position and a closed position;wherein the paddles are configured to attach to the native valve of the patient.
2. The valve repair device of claim 1, wherein the strip of material comprises metal strands that are woven together.
3. The valve repair device of any of the preceding claims, wherein the strip of material comprises an electrospun material.
4. The valve repair device of any of the preceding claims, wherein the strip of material comprises electrospun metal fibers.
5. The valve repair device of any of the preceding claims, wherein the paddles comprise an inner paddle portion and an outer paddle portion.
6. The valve repair device of any of the preceding claims, wherein the strip of material is folded to form the coaption element and the pair of paddles.
7. The valve repair device of any of the preceding claims, wherein the strip of material is folded to form a plurality of layers.
8. The valve repair device of claim 7, wherein the coaption element is formed from four layers of the strip of material.
9. The valve repair device of claim 7, wherein the paddles comprise an inner paddle portion and an outer paddle portion, and the inner paddle portion is formed from two layers of the folded strip of material.

10. The valve repair device of any of the preceding claims, wherein the paddles are disposed over an extension member.
11. The valve repair device of claim 10, wherein the extension member comprises a hoop and the strip of material is folded around the hoop.
12. The valve repair device of claim 11, wherein the paddles comprise an inner paddle portion and an outer paddle portion and the fold of the strip of material around the hoop is arranged between the inner and outer paddle portions.
13. The valve repair device of any of the preceding claims, wherein the strip of material extends from a beginning in the paddle portion to an end in the paddle portion.
14. The valve repair device of claim 13, wherein the paddles comprise an inner paddle portion and an outer paddle portion, and wherein the beginning and end of the strip of material are located in the paddle portions.
15. The valve repair device of any of the preceding claims, further comprising a base assembly that comprises:
 - a shaft;
 - a collar that the shaft extends through; and
 - a cap attached to the shaft such that the cap can be moved by the shaft away from the collar;
 - wherein the pair of paddles are attached to the cap; and
 - wherein movement of the cap toward the collar causes the pair of paddles to move to the closed position, and movement of the cap away from the collar causes the pair of paddles to move to the open position.
16. The valve repair device of any of the preceding claims, wherein the coaption element is configured to close a gap in the native valve of the patient when the valve repair device is attached to the native valve.

17. A method of manufacturing a valve repair device for repairing a native valve of a patient, the method comprising:
 - folding a strip of material to form a coaption element and a pair of paddles connected to the coaption element, wherein the paddles are movable between an open position and a closed position and are configured to attach to the native valve of the patient.
 - attaching the portion of the strip of material forming the coaption element to a collar; and
 - attaching the portion of the strip of material forming the paddles to a cap, wherein movement of the cap toward the collar causes the pair of paddles to move to the closed position, and movement of the cap away from the collar causes the pair of paddles to move to the open position.
18. The method of claim 17, wherein the strip of material comprises metal strands that are woven together.
19. The method of any of claims 17 and 18, wherein the strip of material comprises an electrospun material.
20. The method of any of claims 17–19, wherein the strip of material comprises electrospun metal fibers.
21. The method of any of claims 17–20, wherein the paddles comprise an inner paddle portion and an outer paddle portion.
22. The method of any of claims 17–21, wherein the strip of material is folded to form the coaption element and the pair of paddles.
23. The method of any of claims 17–22, wherein the strip of material is folded to form a plurality of layers.
24. The method of claim 23, wherein the coaption element is formed from four layers of the strip of material.
25. The method of claim 23, wherein the paddles comprise an inner paddle portion and an outer paddle portion, and the inner paddle portion is formed from two layers of the folded strip of material.

26. The method of any of claims 17–25, wherein the paddles are disposed over an extension member.
27. The method of claim 26, wherein the extension member comprises a hoop and the strip of material is folded around the hoop.
28. The method of claim 27, wherein the paddles comprise an inner paddle portion and an outer paddle portion and the fold of the strip of material around the hoop is arranged between the inner and outer paddle portions.
29. The method of any of claims 17–28, wherein the strip of material extends from a beginning in the paddle portion to an end in the paddle portion.
30. The method of claim 29, wherein the paddles comprise an inner paddle portion and an outer paddle portion, and wherein the beginning and end of the strip of material are located in the inner paddle portions.
31. The method of any of claims 17–30, further comprising a base assembly that comprises:
 - a shaft;
 - a collar that the shaft extends through; and
 - a cap attached to the shaft such that the cap can be moved by the shaft away from the collar;
 - wherein the pair of paddles are attached to the cap; and
 - wherein movement of the cap toward the collar causes the pair of paddles to move to the closed position, and movement of the cap away from the collar causes the pair of paddles to move to the open position.
32. The method of any of claims 17–31, wherein the coaption element is configured to close a gap in the native valve of the patient when the valve repair device is attached to the native valve.