Claims

1. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut angle Θ ranging from about 140 degrees to about 175 degrees, and wherein the barbs have a configuration comprising an arcuate barb base.

2. The barbed suture according to claim 1, wherein the barb cut angle Θ ranges from about 145 degrees to about 173 degrees.

3. The barbed suture according to claim 2, wherein the barb cut angle Θ ranges from about 150 degrees to about 170 degrees.

4. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6, and wherein the barbs have a configuration comprising an arcuate barb base.

5. The barbed suture according to claim 4, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.1 to about 0.55.

6. The barbed suture according to claim 5, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.2 to about 0.5.

7. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut length with a ratio of the barb cut length to the suture diameter ranging from about 0.2 to about 2, and wherein the barbs have a configuration comprising an arcuate barb base.

8. The barbed suture according to claim 7, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

9. The barbed suture according to claim 8, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

10. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6, and wherein the barbs have a configuration comprising an arcuate barb base.

11. The barbed suture according to claim 10, wherein the ratio of the barb cut distance to the suture diameter ranges from about 0.5 to about 4.5.

12. The barbed suture according to claim 11, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.0 to about 3.5.

13. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs

projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut Θ angle ranging from about 140° to about 175°, (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and wherein the barbs have a configuration comprising an arcuate barb base.

14. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut angle Θ ranging from about 140 degrees to about 175 degrees, and wherein the barbs have a configuration comprising varying barb sizes.

15. The barbed suture according to claim 14, wherein the barb cut angle Θ ranges from about 145 degrees to about 173 degrees.

16. The barbed suture according to claim 15, wherein the barb cut angle Θ ranges from about 150 degrees to about 170 degrees.

17. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6, and wherein the barbs have a configuration comprising varying barb sizes.

18. The barbed suture according to claim 17, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.1 to about 0.55.

19. The barbed suture according to claim 18, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.2 to about 0.5.

20. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut length with a ratio of the barb cut length to the suture diameter ranging from about 0.2 to about 2, and wherein the barbs have a configuration comprising varying barb sizes.

21. The barbed suture according to claim 20, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

22. The barbed suture according to claim 21, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

23. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6, and wherein the barbs have a configuration comprising varying barb sizes.

24. The barbed suture according to claim 23, wherein the ratio of the barb cut distance to the suture diameter ranges from about 0.5 to about 4.5.

25. The barbed suture according to claim 24, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.0 to about 3.5.

26. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut Θ angle ranging from about 140° to about 175°, (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and wherein the barbs have a configuration comprising varying barb sizes.

27. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut angle Θ ranging from about 140 degrees to about 175 degrees, and wherein the elongated body has a circular cross section.

28. The barbed suture according to claim 27, wherein the barb cut angle Θ ranges from about 145 degrees to about 173 degrees.

29. The barbed suture according to claim 28, wherein the barb cut angle Θ ranges from about 150 degrees to about 170 degrees.

30. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6, and wherein the elongated body has a circular cross section.

31. The barbed suture according to claim 30, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.1 to about 0.55.

32. The barbed suture according to claim 31, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.2 to about 0.5.

33. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut length with a ratio of the barb cut length to the suture diameter ranging from about 0.2 to about 2, and wherein the elongated body has a circular cross section.

34. The barbed suture according to claim 33, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

35. The barbed suture according to claim 34, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

36. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the

direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6, and wherein the elongated body has a circular cross section.

37. The barbed suture according to claim 36, wherein the ratio of the barb cut distance to the suture diameter ranges from about 0.5 to about 4.5.

38. The barbed suture according to claim 37, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.0 to about 3.5.

39. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut Θ angle ranging from about 140° to about 175°, (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and wherein the elongated body has a circular cross section.

40. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut angle Θ ranging from about 140 degrees to about 175 degrees, and wherein the elongated body has a non-circular cross section.

41. The barbed suture according to claim 40, wherein the barb cut angle Θ ranges from about 145 degrees to about 173 degrees.

42. The barbed suture according to claim 41, wherein the barb cut angle Θ ranges from about 150 degrees to about 170 degrees.

43. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6, and wherein the elongated body has a non-circular cross section.

44. The barbed suture according to claim 43, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.1 to about 0.55.

45. The barbed suture according to claim 44, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.2 to about 0.5.

46. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut length with a ratio of the barb cut length to the suture diameter ranging from about 0.2 to about 2, and wherein the elongated body has a non-circular cross section.

47. The barbed suture according to claim 46, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

48. The barbed suture according to claim 47, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

49. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6, and wherein the elongated body has a non-circular cross section.

50. The barbed suture according to claim 49, wherein the ratio of the barb cut distance to the suture diameter ranges from about 0.5 to about 4.5.

51. The barbed suture according to claim 50, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.0 to about 3.5.

52. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut Θ angle ranging from about 140° to about 175°, (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and wherein the elongated body has a non-circular cross section.

53. The barbed suture according to any one of claims 40 to 42, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallelepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

54. The barbed suture according to any one of claims 43 to 45, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square,

parallelepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

55. The barbed suture according to any one of claims 46 to 48, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallelepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

56. The barbed suture according to any one of claims 49 to 51, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallelepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

57. The barbed suture according to claim 52, wherein the non-circular cross section has a shape selected from the group consisting of oval, triangle, square, parallelepiped, trapezoid, rhomboid, pentagon, hexagon, cruciform, and combinations thereof.

Claims

1. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut angle Θ ranging from about 140 degrees to about 175 degrees, and wherein the barbs have a configuration comprising an arcuate barb base.

2. The barbed suture according to claim 1, wherein the barb cut angle Θ ranges from about 145 degrees to about 173 degrees.

3. The barbed suture according to claim 2, wherein the barb cut angle Θ ranges from about 150 degrees to about 170 degrees.

4. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut depth with a ratio of the barb cut depth to the suture diameter ranging from about 0.05 to about 0.6, and wherein the barbs have a configuration comprising an arcuate barb base.

5. The barbed suture according to claim 4, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.1 to about 0.55.

6. The barbed suture according to claim 5, wherein the ratio of the barb cut depth to the suture diameter ranges from about 0.2 to about 0.5.

7. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut length with a ratio of the barb cut length to the suture diameter ranging from about 0.2 to about 2, and wherein the barbs have a configuration comprising an arcuate barb base.

8. The barbed suture according to claim 7, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.4 to about 1.7.

9. The barbed suture according to claim 8, wherein the ratio of the barb cut length to the suture diameter ranges from about 0.8 to about 1.5.

10. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end and a second end and a diameter and (b) a plurality of barbs projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have a configuration comprising a barb cut distance with a ratio of the barb cut distance to the suture diameter ranging from about 0.1 to about 6, and wherein the barbs have a configuration comprising an arcuate barb base.

11. The barbed suture according to claim 10, wherein the ratio of the barb cut distance to the suture diameter ranges from about 0.5 to about 4.5.

12. The barbed suture according to claim 11, wherein the ratio of the barb cut distance to the suture diameter ranges from about 1.0 to about 3.5.

13. A barbed suture for connecting human or animal tissue, said suture comprising (a) an elongated body having a first end, a second end and a diameter and (b) a plurality of barbs

projecting from the body, each barb facing in a direction and being adapted for resisting movement of the suture, when in tissue, in an opposite direction from the direction in which the barb faces, wherein the barbs have (i) a barb cut Θ angle ranging from about 140° to about 175°, (ii) a barb cut depth where the ratio of the barb cut depth to the suture diameter ranges from about 0.05 to about 0.6, (iii) a barb cut length where the ratio of the barb cut length to the suture diameter ranges from about 0.2 to about 2, and (iv) a barb cut distance where the ratio of the barb cut distance to the suture diameter ranges from about 0.1 to about 6, and wherein the barbs have a configuration comprising an arcuate barb base.