Claims

What is claimed is:

1. A medical implant having a center axis, the medical implant comprising:

a first flexible waved strand, disposed around the center axis; and

a second flexible waved strand, disposed around the center axis, and being in spatial communication with the first flexible waved strand to form a plurality of first unit shapes and a plurality of second unit shapes;

wherein the first unit shapes and the second unit shapes are staggered around the center axis, and

wherein the first unit shapes are coupled to the second unit shapes to cause the first and second flexible waved strands to move substantially along the center axis, the first and second flexible waved strands together define a self-anchoring configuration in a radial direction perpendicular to the center axis so that a ratio of a von Mises stress to an axial displacement of the medical implant during an implant compression of the medical implant is greater than 0.1 and less than 30, the von Mises stress is expressed in megapascals, and the axial displacement is expressed in millimeter,

wherein the first unit shape and the second unit shape are mutually exclusive in shape, and the first unit shape comprises two peaks and one trough of the first flexible waved strand..

2. The medical implant according to claim 1, wherein a radius of curvature of an outer edge of any curvilinear arc of the first flexible waved strand is less than or equal to a radius of curvature of an outer edge of any curvilinear arc of the second flexible waved strand.

3. The medical implant according to claim 2, wherein the radius of curvature of the outer edge of the curvilinear arc of the first flexible waved strand is less than 15 mm and not less than 0.35 mm.

4. The medical implant according to claim 2, wherein the radius of curvature of the outer edge of the curvilinear arc of the second flexible waved strand is less than 15 mm and not less than 0.35 mm.

5. The medical implant according to claim 1, wherein the trough has an internal angle that is less than 87 degrees and not less than 3 degrees.

6. The medical implant according to claim 1, wherein the peak has an internal angle that is less than 87 degrees and not less than 4 degrees.

7. The medical implant according to claim 1, wherein the first unit shape is heart-shaped.

8. The medical implant according to claim 7, wherein the second unit shape is reverse heart-shaped.

9. The medical implant according to claim 8, wherein the first unit shape has a first length along the center axis, the second unit shape has a second length along the center axis, and the first length is greater than the second length.

10. The medical implant according to claim 1, wherein the second unit shape is diamond.

11. The medical implant according to claim 10, wherein the first unit shape has a first length along the center axis, the second unit shape has a second length along the center axis, and the first length is less than the second length.

12. The medical implant according to claim 1, wherein the first unit shape and the second unit shape have different lengths along the center axis.

13. The medical implant according to claim 1, wherein the first flexible waved strand or the second flexible waved strand is made of biodegradable polymer, ceramic or metal alloy.

14. The medical implant according to claim 1, wherein the first flexible waved strand or the second flexible waved strand comprises a plurality of filaments.

15. The medical implant according to claim 14, wherein the filament is biodegradable monofiber or multifiber.

16. The medical implant according to claim 14, wherein the plurality of filaments are twisted into a bundle with a predetermined section.

17. The medical implant according to claim 14, wherein the plurality of filaments are twisted into a bundle with a hexagon section.

18. The medical implant according to claim 14, wherein the filament is made of a polymeric material.

19. The medical implant according to claim 1, wherein the first flexible waved strand and the second flexible waved strand overlap and are connected through a plurality of joints, the joints are located between the first unit shapes and the second unit shapes, and a trough of the first flexible waved strand is aligned with a trough of the second flexible waved strand in a direction parallel to the center axis.

20. The medical implant according to claim 1, wherein the first flexible waved strand and the second flexible waved strand are connected through a plurality of joints at every two or more troughs of the first flexible waved strand and corresponding peaks of the second flexible waved strand.

21. The medical implant according to claim 1, wherein the axial displacement is 25% of a diameter of the implant.