WHAT IS CLAIMED IS:

1. A system for facilitating aspiration of a thrombus in a vessel, the system comprising:

aspiration tubing comprising:

a proximal end,

a distal end,

a lumen having an inner diameter that decreases from the proximal end of the aspiration tubing to the distal end of the aspiration tubing, thereby causing a change in suction pressure within the aspiration tubing sufficient to affect blood velocity and facilitate thrombus aspiration,

a hypotube within the lumen of the aspiration tubing, the hypotube configured to inhibit collapse of the lumen of the aspiration tubing during application of negative suction through the lumen of the aspiration tubing for thrombus aspiration,

an outer polymer coating radially outward of the hypotube, and

an inner polymer coating radially inward of the hypotube, and

an alternating current rotary piston pump comprising an external control panel, the pump configurable to generate crescendo suction patterns in the aspiration tubing, the crescendo suction patterns including at least two intensity levels, the pump comprising power electronics configured to control at least one of an intensity or a duration of negative suction pressure of the crescendo suction patterns.

2. The system of Claim 1, wherein at least one parameter of the inner polymer coating or outer polymer coating varies along a longitudinal axis of the hypotube, the at least one parameter selected from the group consisting of material, thickness, or durometer.

3. The system of Claim 1 or 2, wherein the lumen of the aspiration tubing comprises a plurality of segments having inner diameters decreasing from the proximal end of the aspiration tubing to the distal end of the aspiration tubing.

4. The system of any one of Claims 1 to 3, wherein the aspiration tubing comprises a microcatheter, a distal access microcatheter, a guide catheter, a balloon guide catheter, or a combination thereof.

5. The system of any one of Claims 1 to 4, wherein the aspiration tubing comprises a plurality of radiopaque markers positioned at regular intervals along its length to facilitate visualization and measurements, wherein the regular intervals are between 8 mm and 10 mm.

6. The system of any one of Claims 1 to 5, wherein the length of the aspiration tubing is between 15 cm and 150 cm, wherein the inner diameter of the aspiration tubing is between 4 Fr and 7 Fr, and wherein a wall thickness of the aspiration tubing is between 0.02 mm and 1 mm.

7. The system of any one of Claims 1 to 6, wherein the plurality of intensity levels comprises at least two of:

a first intensity level having a negative pressure between 100 mm Hg and 350 mm Hg;

a second intensity level having a negative pressure between 351 mm Hg and 550 mm Hg; or

a third intensity level having a negative pressure between 551 mm Hg and 769 mm Hg.

8. The system of any one of Claims 1 to 5 and 7, wherein the length of the aspiration tubing is between 15 cm and 150 cm.

9. The system of any one of Claims 1 to 5, 8, and 9, wherein a wall thickness of the aspiration tubing is between 0.02 mm and 1 mm.

10. The system of any one of Claims 1 to 9, wherein one intensity level of the at least two intensity levels comprises a pause.

11. A system for facilitating aspiration of a thrombus in a vessel, the system comprising:

aspiration tubing comprising:

a proximal end,

a distal end,

a lumen, and

a hypotube configured to inhibit collapse of the lumen of the aspiration tubing during application of negative suction applied through the lumen of the aspiration tubing for thrombus aspiration; and

a suction device configured to generate at least one crescendo suction pattern in the aspiration tubing, the at least one crescendo suction pattern comprising a plurality of intensity levels, the suction device comprising power electronics configured to control at least one of an intensity or a duration of negative suction pressure of the at least one crescendo suction pattern.

12. The system of Claim 11, wherein the aspiration tubing comprises an outer polymer coating, wherein at least one parameter of the outer polymer coating varies along a longitudinal axis of the aspiration tubing, the at least one parameter selected from the group consisting of material, thickness, or durometer.

13. The system of Claim 11 or 12, wherein the lumen of the aspiration tubing has an inner diameter that decreases from the proximal end of the aspiration tubing to the distal end of the aspiration tubing.

14. The system of any one of Claims 11 to 13, wherein the aspiration tubing comprises a plurality of radiopaque markers positioned at regular intervals along its length to facilitate visualization and measurements, wherein the regular intervals are between 8 mm and 10 mm.

15. The system of any one of Claims 11 to 14, wherein the aspiration tubing has a length between 15 cm and 150 cm, and wherein a wall thickness of the aspiration tubing is between 0.02 mm and 1 mm.

16. The system of any one of Claims 11 to 15, wherein the plurality of intensity levels comprises at least one of:

a first intensity level having a negative pressure between 100 mm Hg and 350 mm Hg;

a second intensity level having a negative pressure between 351 mm Hg and 550 mm Hg; or

a third intensity level having a negative pressure between 551 mm Hg and 769 mm Hg.

17. The system of any one of Claims 11 to 16, wherein one intensity level of the at least two intensity levels comprises a pause.

18. The system of any one of Claims 11 to 17, wherein the aspiration tubing comprises a microcatheter, a distal access microcatheter, a guide catheter, a balloon guide catheter, or a combination thereof.

19. The system of any one of Claims 11 to 14 and 16 to 18, wherein the aspiration tubing has a length between 15 cm and 150 cm.

20. The system of any one of Claims 11 to 14 and 16 to 18, wherein a wall thickness of the aspiration tubing is between 0.02 mm and 1 mm.