CLAIMS

1. A microcatheter comprising:

an elongate tubular body having a body proximal end, a body distal end and a solution lumen extending axially through said elongate tubular body, said elongate tubular body comprising an outlet port in said solution lumen at said body distal end; and

a tip portion having a tip portion proximal end, a tip portion distal end and a tip portion lumen extending axially through said tip portion, wherein said tip portion has a smaller diameter than the elongate tubular body and is continuous with the elongate tubular body and wherein the tip portion lumen has a smaller inner diameter than the solution lumen and is continuous with the solution lumen~~said tip portion lumen sized for a substantially close fit for a guidewire to be held therein, wherein said tip portion has a smaller diameter than said elongate tubular body~~.

2. The microcatheter of claim 1, wherein said tip portion proximal end is positioned distal to said outlet port of said elongate tubular body.

3. The microcatheter of claim 1, wherein said elongate tubular body is continuous with said tip portion, and is configured to hold a proximal portion of ~~the~~ a movable guidewire therein.

~~4. The microcatheter of claim 1, wherein said tip portion is separate from said elongated tubular body.~~

~~5~~4. The microcatheter of claim 4~~1~~, wherein said tip portion is eccentric to said elongate tubular body.

~~6. The microcatheter of claim 4, wherein said tip portion has a proximal opening at said tip portion proximal end, and wherein said proximal opening is not co-linear with said outlet port.~~

~~7. The microcatheter of claim 1, wherein a diameter of said elongate tubular body is larger than a diameter of said tip portion.~~

~~8~~5. The microcatheter of claim 1, wherein said tip portion is at least partially radiopaque.

~~9~~6. The microcatheter of claim ~~8~~5, wherein said tip portion is comprised of a polymer compounded with radiopaque material.

~~10~~7. The microcatheter of claim 1, wherein said tip portion is in a range of 10 mm to 120 mm long.

~~11~~8. The microcatheter of claim 1, wherein an inner diameter of said tip portion is approximately 0.002" larger than a diameter of a guidewire to be placed therethrough.

~~12~~9. The microcatheter of claim 1, wherein said outlet port comprises multiple openings.

~~13~~10. The microcatheter of claim 1, wherein said outlet port comprises an opening at said body distal end, wherein said opening leads directly into ~~the~~ a blood vessel.

~~14~~11. The microcatheter of claim 1, further comprising a balloon positioned on said distal tip portion.

~~15~~12. The microcatheter of claim ~~14~~11, wherein said balloon is comprised of a compliant material.

~~16~~13. The microcatheter of claim ~~14~~11, wherein said balloon is comprised of a semi-compliant material.

~~17~~14. The microcatheter of claim 1, further comprising a spine wire extending along a length of said elongate tubular body and bonded thereto, said spine wire further at least partially connected to said tip portion.

~~18~~15. A microcatheter comprising:

an elongate tubular body having a body proximal end, a body distal end, and a solution lumen extending axially through said elongate tubular body, said elongate tubular body comprising an outlet port at said body distal end; and

a tip portion having a tip portion proximal end, a tip portion distal end, and a tip portion lumen extending axially through said tip portion, said tip portion lumen sized for a substantially close fit for a guidewire to be held therein wherein an inner diameter of said tip portion is approximately 0.002" larger than a diameter of a guidewire to be placed therethrough so as to provide a tight fit for the guidewire thus providing for minimization of the distal portion of the microcatheter and enhanced pushability and maneuverability of the guidewire, wherein said tip portion has a proximal opening at said tip portion proximal end and wherein said tip portion is eccentric to said elongate tubular body and wherein said proximal opening of said tip portion is not co-linear with said outlet port.

~~19~~16. The microcatheter of claim ~~18~~15, wherein said elongate tubular body and said tip portion have substantially the same diameter.

~~20~~17. The microcatheter of claim ~~18~~15, wherein said tip portion proximal end is positioned distal to said outlet port of said elongate tubular body.

~~21~~18. The microcatheter of claim ~~18~~15, wherein said tip portion is at least partially radiopaque.

~~22~~19. The microcatheter of claim ~~21~~18, wherein said tip portion is comprised of a polymer compounded with radiopaque material.

~~23~~20. The microcatheter of claim ~~18~~15, wherein said tip portion is in a range of 10 mm to 120 mm long.

~~24. The microcatheter of claim 18, wherein an inner diameter of said tip portion is approximately 0.002" larger than a diameter of a guidewire to be placed therethrough.~~

~~25. A method for providing solution to a portion of a vessel, the method comprising:~~

providing a microcatheter having an elongate tubular body with a lumen extending axially therethrough and an outlet port, and a tip portion distal to said elongate tubular body, said tip portion having a tip portion lumen extending axially therethrough;

placing a guidewire in the vessel;

advancing the microcatheter into the vessel by placing the guidewire through at least the tip portion of the microcatheter and advancing the microcatheter over the guidewire;

introducing solution into said elongate tubular body at said body proximal end; and

injecting said solution into the vessel through said outlet port.

26. The method of claim 25, wherein said solution is contrast solution.

27. The method of claim 25, wherein said solution is a therapeutic or diagnostic solution.

28. The method of claim 25, further comprising alternately injecting the solution and advancing the guidewire in the vessel.

29. The method of claim 25, wherein said injecting is done in short puffs.

30. The method of claim 25, wherein said guidewire is placed through said elongate tubular body and said tip portion, and wherein said solution is injected into said elongate tubular body with the guidewire therein.

31. The method of claim 25, wherein said tip portion is eccentric to said elongate tubular body, and wherein said guidewire is placed only through said tip portion.

32. The method of claim 25, further comprising exchanging the guidewire by using said tip portion as a rapid exchange distal rail.

~~33. A method for crossing an occlusion in a vessel, the method comprising:~~

~~advancing a retrograde guidewire into the artery from the retrograde direction;~~

~~advancing an antegrade guidewire into the vessel from the antegrade direction;~~

~~advancing a catheter over the antegrade guidewire, the catheter including a compliant balloon positioned at its distal end;~~

~~removing said antegrade guidewire from said catheter;~~

~~inflating said balloon;~~

~~pulling said catheter proximally, thereby forming a funnel shape in said balloon; and~~

~~advancing said retrograde guidewire through said balloon and into said catheter.~~

~~34. The method of claim 33, wherein said catheter is a microcatheter.~~

~~35. The method of claim 34, wherein said microcatheter includes an elongate tubular body having a body proximal end, a body distal end, and a solution lumen extending axially through said elongate tubular body, said elongate tubular body comprising an outlet port at said body distal end, a tip portion having a tip portion proximal end, a tip portion distal end and a tip portion lumen extending axially through said tip portion, said tip portion proximal end positioned distal to said outlet port of said elongate tubular body, and wherein said compliant balloon is positioned on said tip portion.~~