CLAIMS

1. A catheter, comprising:

a catheter body consisting of a single lumen having an inner diameter;

a tapered tip coupled to a distal end of the catheter body and having a single distal lumen opening, the single lumen of the catheter body extending through the catheter body and the tapered tip along a longitudinal axis of the catheter body;

a hole formed through at least a portion of the tapered tip and having a width that is less than the inner diameter of the single lumen, the hole including a proximal surface that extends from an outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen, the proximal surface being flat and inclined at a first acute angle with respect to the longitudinal axis of the catheter body, the first acute angle opening proximally with respect to the catheter body, the hole also including a distal surface that extends from the outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen, the distal surface being inclined at a second acute angle with respect to the longitudinal axis of the catheter body, the second acute angle opening distally with respect to the catheter body.

2. The catheter of claim 1, wherein the first and second acute angles are between 20° and 80°.

3. The catheter of claim 1, wherein an inner edge of the proximal surface is straight.

4. The catheter of claim 1, wherein an inner edge of the proximal surface is curved.

5. The catheter of claim 1, further comprising:

a second hole formed through the catheter body, the second hole including a proximal surface that extends from an outer surface of the catheter body to the inner diameter of the single lumen, the proximal surface being flat and inclined at an acute angle with respect to the longitudinal axis of the catheter body, the acute angle opening proximally with respect to the catheter body.

6. The peripheral catheter of claim 1, wherein the distal surface is curved.

7. The catheter of claim 1, wherein the proximal surface is triangular.

8. The catheter of claim 7, wherein an inner edge of the proximal surface is straight.

9. The catheter of claim 7, wherein an inner edge of the proximal surface is curved.

10. The peripheral catheter of claim 1, wherein an inner edge of the proximal surface is rounded.

11. The peripheral catheter of claim 1, wherein the distal surface is flat.

12. The catheter of claim 1, wherein the catheter is a peripheral catheter having a truncated length sufficient to access a peripheral vein of a patient and an outer diameter less than or equal to that of a twelve gauge catheter.

13. The catheter of claim 1, wherein the distal surface includes an inward projection.

14. A peripheral catheter, comprising:

a catheter body having a single lumen extending through the catheter body along a longitudinal axis of the catheter body and having an inner diameter, the catheter body having a constant outer diameter and further having a truncated length sufficient to access a peripheral vein of a patient;

a tapered tip coupled to a distal end of the catheter body and having a single distal lumen opening in communication with the single lumen;

two or more holes formed through a wall of the tapered tip, the two or more holes each having a width that is less than the inner diameter of the single lumen;

each hole including a proximal surface that extends from an outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen and that is flat and inclined at a

first acute angle with respect to the longitudinal axis of the catheter body, the first acute angle opening proximally with respect to the catheter body; and

each hole also including a distal surface that extends from the outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen and that is inclined at a second acute angle with respect to the longitudinal axis of the catheter body, the second acute angle opening distally with respect to the catheter body.

15. The catheter of claim 14, wherein at least one of the first and second acute angles is between about 20° and about 80°.

16. The peripheral catheter of claim 14, wherein an inner edge of one or both of the proximal surfaces is straight.

17. A peripheral intravenous catheter, comprising:

a catheter body having a single lumen extending through the catheter body along a longitudinal axis of the catheter body, the catheter body further having a truncated length sufficient to access a peripheral vein of a patient;

a tapered tip coupled to a distal end of the catheter body and having a single distal lumen opening in communication with the single lumen;

two or more holes formed through a wall of the tapered tip and a portion of at least one of the two or more holes being formed in the catheter body, and each of the two or more holes having a width that is less than a diameter of the single lumen;

each hole including a proximal surface that extends from an outer surface of the catheter body to the inner diameter of the single lumen and that is flat and inclined at a first acute angle between about 20° and about 80° with respect to the longitudinal axis of the catheter body, the first acute angle opening proximally with respect to the catheter body; and

each hole also including a distal surface that extends from an outer surface of the tapered tip to the inner diameter of the single lumen and that is inclined at a second acute angle with respect to the longitudinal axis of the catheter body, the second acute angle opening distally with respect to the catheter body.

18. The peripheral catheter of claim 14, wherein an inner edge of one or both of the proximal surfaces is curved.

19. The peripheral catheter of claim 14, wherein one or both of the distal surfaces are curved.

20. The peripheral catheter of claim 14, wherein an inner edge of one or both of the proximal surfaces are rounded.

CLAIMS

1. A catheter, comprising:

a catheter body consisting of a single lumen having an inner diameter;

a tapered tip coupled to a distal end of the catheter body and having a single distal lumen opening, the single lumen of the catheter body extending through the catheter body and the tapered tip along a longitudinal axis of the catheter body;

a hole formed through at least a portion of the tapered tip and having a width that is less than the inner diameter of the single lumen, the hole including a proximal surface that extends from an outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen, the proximal surface being flat, tear-drop shaped, and inclined at a first acute angle with respect to the longitudinal axis of the catheter body, the first acute angle opening proximally with respect to the catheter body, an apex of the tear-drop shaped proximal surface being positioned proximal to a base of the tear-drop shaped proximal surface, the base forming an edge of the hole, the hole also including a distal surface that extends from the outer surface of the catheter body or the tapered tip to the inner diameter of the single lumen, the distal surface being inclined at a second acute angle with respect to the longitudinal axis of the catheter body, the second acute angle opening distally with respect to the catheter body.

2. The catheter of claim 1, wherein the first and second acute angles are between 20° and 80°.

3. The catheter of claim 1, wherein the base of the tear-drop shaped proximal surface is straight.

4. The catheter of claim 1, wherein the base of the tear-drop shaped proximal surface is curved.

5. The catheter of claim 1, further comprising:

a second hole formed through the catheter body, the second hole including a proximal surface that extends from an outer surface of the catheter body to the inner diameter of the single lumen, the proximal surface being flat and inclined at an acute angle with respect to the longitudinal axis of the catheter body, the acute angle opening proximally with respect to the catheter body.

6. The peripheral catheter of claim 1, wherein the distal surface is curved.

7. The peripheral catheter of claim 1, wherein the base of the tear-drop shaped proximal surface is rounded.

8. The peripheral catheter of claim 1, wherein the distal surface is flat.

9. The catheter of claim 1, wherein the catheter is a peripheral catheter having a truncated length sufficient to access a peripheral vein of a patient and an outer diameter less than or equal to that of a twelve gauge catheter.

10. The catheter of claim 1, wherein the distal surface includes an inward projection.