Claims

1. Safety device (40) for catheter and introducer needle assembly (10), said catheter and introducer needle assembly (10) comprising: a catheter assembly (20) including: a catheter (21) that has a proximal end, a distal end, and a catheter hub (24) affixed to the proximal end of catheter (21); an introducer needle assembly (30) including: an introducer needle (31) having a sharp distal tip (32), a proximal end, and an enlarged portion (38) between the sharp distal tip and the proximal end, and a needle hub (34) affixed to the proximal end; said safety device (40) slidably connected between the catheter assembly (20) and the introducer needle assembly (30);

Said safety device (40) including a needle shield (41) which defines a longitudinally extending passage with an elongate opening (60), at least one spring clip (50) fitted in the longitudinally extending passage through the elongate opening (60) and a stop means for blocking the enlarged portion (38) of the introducer needle (31), said longitudinally extending passage allowing the introducer needle (31) to extend longitudinally through needle shield (41), said at least one spring clip (50) being provided with first catch (55) to be engaged with the catheter hub (24), at least part of said at least one spring clip (50) is shaped so as to be compressed by the introducer needle before the introducer needle withdrawal from the catheter assembly (20) and to release and trap the sharp distal tip (32) after the introducer needle withdrawal from the catheter assembly (20) .

2. Safety device (40) for catheter and introducer needle assembly (10) according to claim 1, wherein said at least spring clip (50) comprising a proximal wall (51), a middle wall (54), and a distal wall (53), the proximal wall (51)being connected to one end of the middle wall (54), the distal wall (53) being connected to the other end of said middle wall (54), said first catch being a bend provided between the middle wall (54) and the distal wall (53) to be engaged

with the catheter hub (24), said distal wall (53) acting as said at least part of the spring clip (50).

3. Safety device (40) for catheter and introducer needle assembly (10) according to claim 2,wherein the distal wall (53) has a portion on its free end, the width of which portion is smaller than the other portion of the distal wall, and said width reduced portion acting as said at least part of the spring clip (50).

4. Safety device (40) for catheter and introducer needle assembly (10) according to claim 2,wherein, an U shaped feature being formed on the free end of the proximal wall (51), said U shaped feature being used to snap on an indent (47) on the needle shield.

5. Safety device (40) for catheter and introducer needle assembly (10) according to one of claims 2-4, wherein the proximal wall (51) define an opening (52) through which the introducer needle shaft could pass, the inner diameter of the opening (52) is smaller than the enlarged portion (38) of the introducer needle.

6. Safety device (40) for catheter and introducer needle assembly (10) according to one of claims 5, wherein the opening (52) has a reinforced lip on the circumference to catch the enlarged portion (38) on the introducer needle.

7. Safety device (40) for catheter and introducer needle assembly (10) according to one of claims 1-6, wherein the enlarged portion (38) could be one of crimped bump or 3D bump or rolled bump or ferrule on the introducer needle.

8. Safety device (40) for catheter and introducer needle assembly (10) according to claim 2, wherein a recess provided on the catheter hub (24), said bend being engaged with said recess.

9. Safety device (40) for catheter and introducer needle assembly (10) according to one of claims 1, wherein the first catch being a ball hole on top of the spring clip, said ball hole engaged with a ball bearing provided in the catheter hub.

10. Safety device (40) for catheter and introducer needle assembly (10) according to one of claims 1-9, wherein there are one or more rails (49) provided on the circumference of the needle shield.

11. A catheter and introducer needle assembly (10), comprising:

a catheter assembly (20) including: a catheter (21) that has a proximal end, a distal end, and a catheter hub (24) affixed to the proximal end of catheter (21);

an introducer needle assembly (30) including: an introducer needle (31) having a sharp distal tip (32), a proximal end, and an enlarged portion (38) between the sharp distal tip and the proximal end, and a needle hub (34) affixed to the proximal end; said safety device (40) slidably connected between the catheter assembly (20) and the introducer needle assembly (30);

an safety device (40) including a needle shield (41) which defines a longitudinally extending passage with an elongate opening (60) , at least one spring clip (50) fitted in the longitudinally extending passage through the elongate opening (60) and a stop means for blocking the enlarged portion (38) of the introducer needle (31), said longitudinally extending passage allowing the introducer needle (31) to extend longitudinally through needle shield (41), said at least one spring clip (50) being provided with first catch (55) to be engaged with the catheter hub (24), at least part of said at least one spring clip (50) is shaped so as to be compressed by the introducer needle before the introducer needle withdrawal from the catheter assembly

(20) and to release and trap the sharp distal tip (32) after the introducer needle withdrawal from the catheter assembly (20) .

12. A catheter and introducer needle assembly (10) according to claim 11, wherein said at least spring clip (50) comprising a proximal wall (51), a middle wall (54), and a distal wall (53), the proximal wall (51) being connected to one end of the middle wall (54), the distal wall (53) being connected to the other end of said middle wall (54), said first catch being a bend provided between the middle wall (54) and the distal wall (53) to be engaged with the catheter hub (24), said distal wall (53) acting as said at least part of said at least one spring clip (50).

13. A catheter and introducer needle assembly (10) according to claim 12,wherein the distal wall (53) has a portion on its free end, the width of which portion is smaller than the other portion of the distal wall, and said width reduced portion acting as said at least part of said at least one spring clip (50).

14. A catheter and introducer needle assembly (10) according to claim 12, wherein, an U shaped feature being formed on the free end of the proximal wall (51), said U feature being used to snap on an indent (47) on the needle shield.

15. A catheter and introducer needle assembly (10) according to one of claims 12-14, wherein the proximal wall (51) define an opening (52) through which the introducer needle shaft could pass, the inner diameter of the opening (52) is smaller than the enlarged portion (38) of the introducer needle.

16. A catheter and introducer needle assembly (10) according to one of claims 15, wherein the opening (52) has a reinforced lip on the circumference to catch the enlarged portion (38) on the introducer

needle.

17. A catheter and introducer needle assembly (10) according to one of claims 11-16, wherein the enlarged portion (38) could be one of crimped bump or 3D bump or rolled bump or ferrule on the introducer needle.

18. A catheter and introducer needle assembly (10) according to one of claims 12, wherein a recess provided on the catheter hub (24), said V bend being engaged with said recess.

19. A catheter and introducer needle assembly (10) according to one of claims 11, wherein the first catch being a ball hole on top of the spring clip, said ball hole engaged with a ball bearing provided in the catheter hub.

20. A catheter and introducer needle assembly (10) according to one of claims 11-19, wherein there are one or more rails (49) provided on the circumference of the needle shield.

CLAIMS

1. A catheter assembly comprising:

a catheter having a distal end and a proximal end attached to a catheter hub;

an introducer needle having a sharp distal tip and a proximal end connected to a needle hub, the introducer needle extending into the catheter; and

a needle shield through which the introducer needle extends, the needle shield being positioned over the introducer needle between the needle hub and the catheter hub, the needle shield comprising:

a proximal portion and a distal portion that are connected by a middle chamfer portion thus forming a longitudinally extending passage through which the introducer needle extends;

a spring clip disposed in the middle chamfer portion, the spring clip having a proximal wall and a distal wall that are connected by a middle wall, the proximal wall having an opening through which the introducer needle extends, the spring clip also including a bend formed between the distal and middle walls that extends outwardly from the distal and middle walls, the bend causing the distal wall to apply a force against an exterior surface of the introducer needle when the introducer needle extends distally past the distal wall, and that causes the distal wall to be repositioned to block the introducer needle from moving distally out from the needle shield after the introducer needle has been slid proximally out of the catheter and past the distal wall.

2. The catheter assembly of claim 1, wherein the introducer needle includes a portion of extended outer diameter, and the opening in the proximal wall of the spring clip has a diameter that is less than the extended outer diameter thereby preventing the portion of extended outer diameter from passing through the opening.

3. The catheter assembly of claim 1, wherein the middle

chamfer portion includes an elongate opening through which at least a portion of the bend extends when the distal wall is positioned to apply a force against the exterior surface of the introducer needle.

4. The catheter assembly of claim 3, wherein the at least a portion of the bend retracts through the middle chamfer portion after the distal wall is repositioned to block the introducer needle.

5. The catheter assembly of claim 1, wherein the proximal wall of the spring clip is perpendicular to the middle wall of the spring clip.

6. The catheter assembly of claim 5, wherein the distal wall extends towards the proximal wall.

7. The catheter assembly of claim 1, wherein the width of the distal wall is wider where the distal wall meets the bend than at the end of the distal wall.

8. The catheter assembly of claim 1, wherein the bend is an inverted V bend.

9. The catheter assembly of claim 1, wherein the proximal wall includes a U-shaped catch by which the spring clip is attached to the needle shield.

10. A needle shield for securing an introducer needle after the introducer needle has been withdrawn from a catheter, the needle shield being positioned over the introducer needle between a needle hub and a catheter hub, the needle shield comprising:

a proximal portion and a distal portion that are connected by a middle chamfer portion thus forming a longitudinally extending passage through which the introducer needle extends;

a spring clip disposed in the middle chamfer portion, the spring clip having a proximal wall and a distal wall that are

connected by a middle wall, the proximal wall having an opening through which the introducer needle extends, the spring clip also including a bend formed between the distal and middle walls that extends outwardly from the distal and middle walls, the bend causing the distal wall to apply a force against an exterior surface of the introducer needle when the introducer needle extends distally past the distal wall, and that causes the distal wall to be repositioned to block the introducer needle from moving distally out from the needle shield after the introducer needle has been slid proximally out of the catheter and past the distal wall.

11. The needle shield of claim 10, wherein the opening in the proximal wall of the spring clip has a diameter that is less than the diameter of a portion of the introducer needle thereby preventing the portion of the introducer needle from passing through the opening.

12. The needle shield of claim 10, wherein the middle chamfer portion includes an elongate opening through which at least a portion of the bend extends when the distal wall is positioned to apply a force against the exterior surface of the introducer needle.

13. The needle shield of claim 12, wherein the at least a portion of the bend retracts through the middle chamfer portion after the distal wall is repositioned to block the introducer needle.

14. The needle shield of claim 10, wherein the proximal wall of the spring clip is perpendicular to the middle wall of the spring clip.

15. The needle shield of claim 14, wherein the distal wall extends towards the proximal wall.

16. The needle shield of claim 10, wherein the width of the distal wall is wider where the distal wall meets the bend than at the end of the distal wall.

17. The needle shield of claim 10, wherein the bend is an inverted V bend.

18. The needle shield of claim 10, wherein the proximal wall includes a U-shaped catch by which the spring clip is attached to the needle shield.

19. The catheter assembly of claim 1 or the needle shield of claim 10, wherein the bend is configured to attach to the catheter hub.

20. A catheter assembly or the needle shield, herein described with reference to the accompanying drawings.