CLAIMS

1. An introducer sheath assembly comprising:

a tubular sheath body having a longitudinal axis, a proximal end, a distal end, an outer surface and an inner surface, the inner surface defining a lumen between the proximal and distal ends for passage of a catheter device,

a balloon sleeve on which an inflatable balloon is attached, the balloon sleeve configured to surround and slide over a portion of the catheter device for insertion into the lumen of the sheath body such that a distal end of the inflatable balloon is aligned with the distal end of the sheath body and the inflatable balloon forms a fluidic seal between the distal end of the sheath body and the catheter device when the balloon is inflated, the fluidic seal being configured to prevent fluid from entering the distal end of the sheath body between the sheath body and the catheter device.

2. The introducer sheath assembly according to claim 1, wherein the balloon is configured to form an interference fit between the catheter device and the inner surface of the sheath body when inflated, thereby preventing any axial movement of the catheter device relative to the sheath body.

3. The introducer sheath assembly according to claim 1, wherein a length of the inflatable balloon is configured such that a proximal end of the inflatable balloon will be aligned with the proximal end of the sheath body when the balloon sleeve is inserted into the lumen of the sheath body such that the distal end of the inflatable balloon is aligned with the distal end of the sheath body.

4. The introducer sheath assembly according to claim 1, wherein a proximal end of the balloon sleeve is configured to remain proximal of the proximal end of the sheath body when the balloon sleeve is inserted into the lumen of the sheath body such that the distal end of the inflatable balloon is aligned with the distal end of the sheath body.

5. The introducer sheath assembly according to claim 1, wherein the balloon sleeve comprises an inflation lumen that extends linearly or curvilinearly from a proximal end of the balloon sleeve to an inflation opening located within the inflatable balloon, wherein the inflation lumen is in fluid communication with the inflation opening.

6. The introducer sheath assembly according to claim 1, wherein the balloon is radially symmetric with respect to a longitudinal axis of the balloon sleeve when inflated.

7. The introducer sheath assembly according to claim 1, wherein the balloon is ring-shaped when inflated.

8. The introducer sheath assembly according to claim 1, wherein the balloon is configured to apply a radial force on the catheter device when inflated, thereby locking the catheter device in a position relative to the sheath body.

9. The introducer sheath assembly according to claim 1, wherein the balloon is asymmetric with respect to a longitudinal axis of the balloon sleeve when inflated.

10. The introducer sheath assembly according to claim 9, wherein the balloon is configured to exert a force on the catheter device so as to push the catheter device towards a portion of the inner surface of the sheath body when inflated, thereby locking the catheter device in a position relative to the sheath body.

11. The introducer sheath assembly according to claim 1, wherein the distal end of the sheath body comprises an elastic material that is softer than a material of a rest of the sheath body.

12. The introducer sheath assembly according to claim 1, wherein the balloon sleeve comprises a hub at a proximal end of the balloon sleeve.

13. The introducer sheath assembly according to claim 12, wherein the hub comprises a hemostasis valve.

14. The introducer sheath assembly according to claim 12, wherein the hub comprises an irrigation port that is configured to be in fluid communication with a space between the catheter device and an inner surface of the balloon sleeve, thereby enabling the space to be flushed with fluid prior to inflation of the balloon.