Notes on placement of cardiac lines

Contributed June 2014 by Rita Torng

How to place an introducer:

1. Time-out
2. Take dilator out and place into white port
3. Attach stopcock on end with two blue caps
4. Clamp blue thing, do not flush with anything
5. Change needle on syringe, test syringe plunger
6. Get wire ready
7. Place cover on ultrasound probe (make sure ultrasound had jelly)
8. Place rubber band on ultrasound probe
9. Find IJ, squish down to confirm that it's a vein
10. Visualize carotid artery and do not poke there
11. Place needle on skin and visualize tissue distortion above IJ
12. Poke skin with needle parallel to ultrasound, perpendicular to skin
13. Once you're through the skin, aspirate slowly as you advance as you visualize all structures on ultrasound
14. Once you feel a loss of resistance and see blood in the syringe, drop the ultrasound probe
15. Lower the angle of the needle and bring it to the external meatus as you continue to aspirate
16. Once you have demonstrated free flow, secure your left hand on the angle of the mandible then grab the needle firmly
17. Untwist the syringe
18. Without looking up, grab the wire and pass it to 22-23 cm - "Feel for resistance, listen for arrhythmias" - WCC
19. Remove the needle without pulling out the wire
20. Visualize the wire with the ultrasound probe in the short and long axis (it helps to go down to the clavicle)
21. Make a generous skin nick with the scalpel along the wire, away from the carotid, then hold pressure with gauze
22. Thread the introducer on the wire until the wire comes out from the other end
23. With your left hand, pull up on the angle of the mandible
24. With your right hand, hold the introducer near the tip and advance forcefully (there should not be resistance)
25. You should feel two pops (after the second one, advance about 1 cm) and by then, the introducer/dilator should be halfway in
26. With your left hand, advance the introducer in one swift move while holding the dilator and wire with your right hand without advancing them
27. Withdraw the dilator and wire completely while holding the introducer hubbed
28. Open the blue clamp and the most distal port of the stopcock to let the blood flow back, then close the stopcock and clamp
29. Place your biopatch at the hub and suture the line in place

With WEJ, you always transduce!

* Use the needle with the angiocath over it
* Once you are in the IJ, thread the angiocath and remove the needle
* Connect the IV tubing with a 3 mL syringe at the end
* Withdraw blood slowly to fill the tubing while holding the tubing below the heart
* Disconnect the syringe and hold the tubing straight up in the air
* Hopefully, the column of blood will fall and not be pulsatile
* Reconnect the syringe, disconnect from the angiocath
* Thread the wire through the angiocath, see step 10 above

How to float a Swan:

\*\* Always keep the natural curve of the Swan \*\*

1. Pull out the plunger until it stops, then attach it to the balloon port
2. Remove the blue protection on the tip
3. Place the tip of the Swan through the small hole of the swandom
4. Advance the swandom's distal end to about 70 cm and lock
5. Stretch the swandom very very slightly
6. Hand the distal end of the Swan with swandom in place to your attending who will flush all the ports on the Swan and test the balloon (WCC will make you say “balloon up please!”)
7. Occlude the distal end and watch your PA tracing go up
8. Insert the Swan to 20 cm and watch for the PA tracing to resemble the CVP tracing
9. Confidently say "balloon up please!"
10. While watching the monitor, float the Swan until you see an RV tracing (should be about 30 cm)
11. Always be mindful of how deep you are because your attending will ask and you don't want to float to the colon
12. Continue floating the Swan until to you see a PA tracing, usually around 40-43 cm
13. Advance an extra 2-3 cm per your attending
14. Make sure you still have a PA waveform
15. Confidently say “balloon down please!”
16. Double-lock the Swandom
17. Check again that you have a PA waveform
18. Pull on the introducer hub to make sure it is secure, then tug on the Swan (not the swandom) to make sure it is locked in place
19. Place your tegaderm on both the introducer and the Swan
20. Drapes down!

Congratulations, you did not rupture the pulmonary artery!