

Arterial Line Placement The Battle of the Blood Vessel

Here's the situation. You're on duty, assigned to cover the surgery suites. You're called to the pre-op area and asked to place an A-Line in a patient, who is a known vasculopath, going in for something like a carotid endarterectomy, or a femoral bypass. You put a pressure line together, you break out a sterile field with precision that would make the "Surgeon General" Bow to your presence, and you inject your patient with a small amount of local anesthesia because you're a really nice clinical specialist. So far so good, right?

You scrub your patient with iodine solution or chlorhexadine / isopropyl alcohol scrub, complete the sterile field around the intended insertion site and start palpating for the radial arterial pulse. You have a lot of experience, and you're very confident that you're doing your absolute very best. Unfortunately your absolute very best isn't good enough this time. Even though you were able to feel the pulse, and perhaps you even stuck the artery and got a good return flash, you can't seem to get a guide-wire inside the arterial lumen. How frustrating is that? You try several different "tricks" of the trade, and even try to bleed the catheter in. You fail miserably, and have to admit to the anesthesiologist that you failed miserably. Talk about adding insult to injury.

In the operating room the anesthesiologist puts the patient to sleep and pops in the A-Line with such ease that it was embarrassing. Then he/she looks down at you and all you can do is hang your head in shame as you walk away from one of the most egotistical specialties in medicine, and you try to figure out why it was so easy for the anesthesiologist when it was so difficult for you in pre-op. Well, as luck would have it, I might have some insight about that.

In the operating room the luck of the anesthesiologist is, to their advantage, a little drug induced. No, I don't mean that the anesthesiologist is doing drugs. What I do mean is the drugs they are using to put the patient to sleep might have a little to do with the performance of the A-Line placement in the operating room.

When you attempt to place an A-Line into the artery of an awake patient you have some obvious obstacles. For starters your patient is awake, and quite reactive to painful stimuli. In the operating room the patient is nice and asleep. Another obstacle is the reactivity of the arterial wall muscle. Remember arteries are far more active than veins. When you stick a needle through the wall of an artery they tend to spasm. Arterial spasm happens more often that you realize, especially with a vasculopath. When it does it makes a very small arterial inner lumen even smaller. That makes getting even a guide wire inside of it a very difficult task. The

secondary effect of arterial spasm is the loss of a palpable pulse. Haven't you ever wondered why the longer you try to get an A-Line in the harder it is to feel the pulse? It's not because your fingers are getting tired. Okay, so what does all that have to do with how easy it is for an anesthesiologist in the operating room? Read on...

General anesthesia is a combination of several different medications. Propofol and fentanyl are two of the possibilities, and are given by IV. Then there's anesthesia gas, which is one of several different inhaled medications. Two of the more common are isoflurane and sevoflurane. These drugs do more than make your patient unaware. They relax muscles (to include arterial wall muscle) and they are powerful vasodilators. Yes indeed they make those little radial arteries swell up like little sausage links in a frying pan, which makes for a much easier target to get a catheter in.

So the next time you're anesthesiologist is boasting about his/her skill at placing an A-Line, remember this. Their egotistical skills are merely drug induced. Your skills are purely natural. Keep up the good work, smile, and be safe...

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