In Vein

Benjamin Drum, MD, PhD

"He's blown his IV, and we can't get access." The nurse raises an eyebrow at Matthew, our senior resident. The scripted exchange that follows—yes, they tried 3 times, yes, with the best nurse, no, the ultrasound tech is no longer in house—forces Matthew into stating that he will place an ultrasound-guided IV. As an eager medical student on my second ever overnight call shift, I ask if I can watch or help, and Matthew obliges as I run off to get the ultrasound.

It's past midnight, and the supply closet is deserted. Shelves are compressed together and must be moved to access their contents, like a library of archives few bother to read. Matthew meets me there to help gather the other supplies. We talk in hushed tones, sliding shelf to shelf. Matthew tells me that he's only done about 4 previous ultrasound-guided IV placements, and that it has been at least 6 months since he last placed one. A common colloquialism on the hospital wards is the adage "see one, do one, teach one," and by these metrics Matthew was more than qualified. However, as we find the IVs and Matthew shows me the different types, he questions placing the line. He believes the patient doesn't have pneumonia and shouldn't even be admitted.

The patient is a 28-year-old man with history of a near-drowning accident 10 years ago resulting in severe brain damage. Wheelchair bound and essentially nonverbal at baseline, he was admitted for possible pneumonia with an abnormal chest x-ray despite normal vital signs and no other markers of infection on lab work. Matthew points out that his care facility representative left during the emergency department evaluation, so the physician on duty was unable to send the patient back to the facility.

"So, the ED called it pneumonia," Matthew tells me. "And he's gonna get his antibiotics."

When we arrive at bedside it's 2:00 AM, and the patient is fast asleep, needing a firm shake on his shoulder to awaken. Even when alert, the patient merely groans and looks away, flailing his arms in uncontrollable, seizure-like movements. I stand a few feet away as Matthew tries to explain the procedure, telling him that we are using a machine to look at his veins and then will try to place another IV. There is no sign that he understands. We want to keep the patient as calm as possible, so we keep the lighting dim, hoping the ultrasound images will guide us.

Matthew places the tourniquet and looks for veins on the patient's upper arm using the ultrasound probe. I move closer to see the screen as he does a little bit of bedside teaching, picks out his target, and takes down the tourniquet while prepping the arm. He injects subcutaneous lidocaine around his target area. The patient's arm jerks, and I take half a step back. Once the lidocaine wheal absorbs, he finds the vein again with the ultrasound and then tries to guide the needle in. It's hard to track the tip of the needle on the screen as it advances, but it looks to me that the vein rolls upon contact with the needle. Matthew tries for a couple of minutes with different angles until the needle accidently comes out of the skin with another arm jerk from the patient.

Matthew refocuses and tries another approach, using the long axis of the ultrasound probe to visualize the needle as it goes through the skin layers. The patient groans and moves his arm a couple of times despite our warnings to be still. Again, Matthew is unsuccessful. He pauses, retraces his steps, and realizes he never placed the tourniquet back on the arm.

Matthew tries a third time, now with the tourniquet. Even in the dim light, I can see blood tinging the gel. The patient's hand is now at a steady drumroll. I offer to hold the arm, which helps a little, but Matthew's hand and confidence are now both a bit shaky. He can't line up the needle, even though the vein is now much larger, resulting in another failure. Matthew takes a deep breath.

"You're doing a great job," I tell him.

Matthew half smiles. He picks out a brand-new area for his next attempt, starting from scratch. He places the rest of the lidocaine hastily, although only a third of the vial remains, and I hold the arm as he tries again. Time has gotten away from us, and it's past 3:30 AM now. The patient is groaning, volume increasing with every twinge of the needle. I am no longer watching the screen, completely focused on the patient's arm as it's trying to escape like a trapped bird. *I wonder what's going on in his brain,* I think, then regain my composure. *This is real medicine. I am learning*. I look down and see blood coating my gloves as I overpower him. Failure is certainly not an

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Editor's Note: The name of the senior resident in the story has been changed.

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option. Matthew's whole attention is focused on the bright signal of the needle on the ultrasound screen. The patient briefly locks eyes with me, terrified and hollow. I press in even harder and absorb all the force he is pushing, and take all the pain that he is feeling, until I see a red flash at the end of the needle.

Four years later, when I perform chest compressions in codes, my mind goes back to that dim room as I feel the force of medicine on the body. I can still see blood flashing in that IV when I perform an ABG. In the scope of medicine, this story is inconsequential. The patient was discharged the next day, the IV taken out 5 hours after it was placed. The attending physician never even learned of the procedure. And yet, while I expected this story to dissipate with time, what-ifs continue to run through my mind: *What if our attending had been readily available and experienced in this procedure? What if hospital policy hadn't designated someone with limited experience to do the procedure? What if the patient had had a voice? What if antibiotics weren't continued?* I wish the patient had not suffered; I wish I had recognized the patient was suffering.

And yet, now a senior resident myself, I would do the same. I don't blame Matthew. I think about his grittiness to provide care, his vulnerability in allowing me to take part in such a visceral experience, and I try to emulate it in my practice. But I also see the cost to the patient. I don't know how to avoid it. I praise interns for fitting into the hospital system, even when that system does not benefit the patient. I justify it in the name of gaining autonomy, of "see one, do one, teach one." I remember the force it took to be still. I was unaware of the force it would take to act.

After rounds, Matthew thanked me for my help, and even thanked me for telling him he was doing a great job. He said that even though he knew it wasn't true, it helped.

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