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An Intraosseous Inspection: Using IO Devices for Vascular Access

Announcer:

Welcome to *Vascular Viewpoints* on ReachMD, brought to you by Becton Dickinson. Here's your host, Dr. Hector Chapa.

Dr. Chapa:

In an emergency, when vascular access is compromised, intraosseous access, or IO access for short, can prevent some life-threatening consequences. Many questions still surround this procedure, like should an IO device be used? And, what do we need to keep in mind when managing an IO device? Stay tuned as we explore these questions and other key questions on today's program. This is *Vascular Viewpoints* on ReachMD. I'm Dr. Hector Chapa, and joining me to share his perspective is emergency physician, Dr. Andy Little, who's the Associate Program Director for AdventHealth Orlando Emergency Medicine Residency. Dr. Little, welcome to the program.

Dr. Little:

Thanks for having me.

Dr. Chapa:

Well, Dr. Little, let's dive right into this topic of IO vascular access. In what situation is IO access considered necessary?

Dr. Little:

Well, I think from an umbrella standpoint, we can say anybody who needs immediate reliable vascular access fits into the pool of people who should get IO access, or at least have it considered. When I break it down from there, I think of critical patients – so these are patients who are actively undergoing cardiac arrest, or you may not have vascular access, or you may have lost vascular access. I think of trauma patients – people who present with blunt or penetrating injuries. We think of our septic patients who might be in the emergency department or up on the floor. Then a subset for me is pediatric patients, again, specifically pediatric patients who are trauma, septic, or cardiac arrest. And then, an avenue that I use it for is aggressive patients presenting with psychosis as a great way to get vascular access on them. And all these caveats and instances are important to realize that the IO is a great initial tool that can be used as a bridge device to get to more definitive vascular access, like central lines or large peripheral IVs.

Dr. Chapa:

And with the availability of quite a few IO devices out there, how do you go about selecting the right device?

Dr. Little:

Well, to me there's really three factors to consider when choosing a device. One – is it easy to use? Two – is it reliable and consistent? And three – how does it fasten to your IV pump lines or easy to place on the patient once it's in place? So for me, there's really two types when you break it down. There's ones that are placed by hand power, whether twisted or cranked. There are multiple devices that are found this way and that are available on the market. And then there's the ones that are automatic, or battery powered guns, which to me are kind of the ones of choice in the emergency department and I think in the inpatient setting. And there's one that's done by Teleflex and then a new one that's done by BD Medical. Both have pros and cons but are both available for use in the emergency department.

Dr. Chapa:

Now, once you've selected that device, Dr. Little, what are some practical do's and don'ts regarding the IO device management, from the beginning, and then take us all the way to the end.

Dr. Little:

So I think it's really important to start with things that are basic, so, it is sharp. I have been stabbed by an IO device, and this is very painful. It has some teeth at the end of it, regardless of which device you choose, so pay attention to the sharp end. You want to have

the setup ready to go at time of placement. This is typically IV lidocaine to push after you initially place the device. Know that if you're gonna give large volumes of fluid, that should be done under a pressure bag. Remember how long it's been in place, that there has been some literature showing that over 24 hours of use can lead to the risk of osteomyelitis. And again, as this being a bridge device, hopefully it's not in that long, but you could use it for that long. And then, of course, look for signs of displacement, which means the needle is loose or behind the leg, especially in pediatric patients, you'll feel a hard, firm cath if it's been displaced and has pushed all the way through the bone trabeculum.

Dr. Chapa:

For those of you just tuning in, you're listening to *Vascular Viewpoints* on ReachMD. I'm Dr. Hector Chapa, and here to provide an emergency physician's perspective on intraosseous access, or IO, is Dr. Andy Little. Now Dr. Little, we spoke a little bit earlier about some practical things to keep in mind when managing IO devices. So now I'd like to ask you about any contraindications that are associated with the use of an IO device. So what can you tell us about that? Who shouldn't we use these on?

Dr. Little:

So I think luckily, all of these can be seen with a good, thorough physical exam, and time deciding where to place the IO. So you never want to do it over the site of an active skin infection or wounds. You never want to place it in a patient where there has been trauma proximal to the site of insertion. A good example is, you don't want to place a tibial plateau IO on a patient that has concern for a hip, pelvis, or femur fracture. If there's multiple failed attempts at the IO placement site, you should move to a different site. And then, a small but not absolute contraindication is in elderly patients if they have known severe osteoporosis.

Dr. Chapa:

Very helpful. Now, in addition to emergency room physicians or others, trained nurses are also able to place IO devices. They're not always comfortable doing so. So what can you tell us about that, and why that may be the case?

Dr. Little:

Yeah, having worked in multiple different emergency rooms, I think it really comes down to training and expectations. Some EDs and units require these be placed by a physician, and to be honest, this is really due to stigma of the IO and failure to obtain vascular access via an IV as a sign of failure. I think really the solution is training and education because these can be safely placed by nursing, hospital paramedics, in addition to physicians and other practitioners.

Dr. Chapa:

Extremely well stated. Now lastly Dr. Little, let me open up the floor to you for any final word. Any takeaways or lessons that you've learned regarding IO devices, that you'd like to pass along to our listeners?

Dr. Little:

So I think it's really important to focus on the placing an IO as a win, and not a failure – that this is a great bridge device until you can get definitive, long-term vascular access. And really add clarity to the placement of IOs in your ED, by creating a robust training program. This will empower your team to know when, where and how to place them.

Dr. Chapa:

Very helpful, very practical and insightful. Well, those takeaways bring us to the end of today's program. So I want to thank my guest, Dr. Andy Little, for joining me to share his insights on intraosseous access, or IO access for short. Dr. Little, it really was great having you on the program.

Dr. Little:

Thanks so much for having me.

Announcer:

This was *Vascular Viewpoints*, sponsored by Becton Dickinson. To access other episodes of this series, visit ReachMD.com/programs/vascular-viewpoints, where you can be part of the knowledge.