

Video: Ultrasound orientation presentation—Nerve Blocks: Part I. Upper Extremity.mp4

Speaker 1: [00:00:00] In this video, we'll be discussing the basics of using ultrasound for nerve blocks. We'll start with talking about common language used when describing probe orientation and needle orientation. There are two parts we refer to when describing our orientation: the position of the ultrasound probe and the position of the needle. The position of the ultrasound is described as either short axis or long axis based on where the scanning beam of the ultrasound probe is relative to the anatomic axis. The short axis view is perpendicular to the anatomic long axis vs. a long axis view, which is parallel with the anatomic long axis. The position of the needle is described as either in-plane or out-of-plane based on the position of the needle relative to the scanning beam of the ultrasound. A needle in-plane is parallel with the scanning beam, and therefore the shaft should be seen throughout the entire injection. A needle out-of-plane is perpendicular with the scanning beam, and therefore only the tip of the needle will be in view on the screen.

[00:01:12] We will now go through each one of these orientations individually. In this picture on the left, the ultrasound probe is in its short access view with the needle in-plane. In the video on the right, we can see a simulated anatomical structure on ultrasound in the short axis view, in this case, a vessel, although the principles discussed throughout these demonstrations apply to nerves as well. We can start to see the needle come to view from the left side of the video. Notice how the entire shaft of the needle is visible. This is what the provider is trying to achieve using in-plane technique. Notice how the needle is going in and out of the vessel, taking careful note about how this appears on ultrasound. As opposed to using ultrasound to place an IV, when trying to do nerve blocks, it is important to not puncture the nerve but instead approach its border and inject analgesia around the edges of the nerves. You may also notice some acoustic shadowing from the needle in the in-plane technique. Just note that this is artifact from the ultrasound machine and not a part of the needle.

[00:02:29] In the picture on the left, the ultrasound probe is in a short axis view, with the needle out-of-plane. In the video on the right, we can again see a simulated anatomical structure on ultrasound and the short axis view. We can see the tip of the needle come into view in the center of the video. Notice how just the tip is visible in the out-of-plane technique and not the entire shaft of the needle. Again, notice the needle going in and out of the vessel, taking careful note about how this appears on ultrasound.

[00:03:05] In this picture on the left, the ultrasound probe is in the long axis view with the needle in-plane. In the video on the right, we can see our simulated anatomical structure in the long axis view. We can start to see the needle come into view from the right side of the video. Again, notice how the entire shaft of the needle is visible on in-plane technique. Notice the needle going in and out of the vessel, taking careful note about how this appears on ultrasound.

[00:03:37] Finally, in this picture on the left, the ultrasound probe is in a long axis view with the needle out-of-plane. In the video on the right, we can again see our simulated anatomical structure in the long axis view. We can see the tip of the needle in the left center of the video. Again, notice how just the tip of the needle is visible on the screen. The needle is again shown going in and out of the vessel.