LEO MAGUIRE: Hi. I'm Leo Maguire, one of the corneal specialists here at Mayo Clinic. And in this part three video, we're going to teach you how to pass a needle into the host, radial, deep on the margin, and parallel to the posterior corneal surface.

Welcome to part three of our series of short videos that discuss a curriculum for corneal suturing we've used to train our residents here at Mayo over the past 15 years. Let's look at the component parts of the final product we wish to achieve. The needle is radial to the host margin. The needle is deep in the host and parallel to the posterior host surface, and engaged 0.8 to 1.0 millimeters from the edge of the host wound.

The best way to ensure that the needle will end up parallel to the deep surface of the host is to start with the needle parallel to the anterior surface of the host. Also confirm that it is in the proper radial position and that 0.8 to 1.0 millimeters of needle is exiting the graft edge.

It takes some time for the residents to learn how to confirm the needle is actually parallel to the anterior surface, but once they acquire that skill, all they have to do is gradually walk the needle down the host wound margin until one is just superior to the deepest position of the host edge.

We identify depth with two visual cues. The first cue is the same cue we used with the forcep tip on the deep graft margin. Namely, we look through the cornea, watching the resolution of the view of the needle blur, until one knows one is deep. The second cue is one can see the front surface that the graft become flush with the front surface of the host.

As soon as you have that position, engage the needle into the host wound edge, but just a bit. Keep your gaze on the needle tip to make sure it remains stationary. Why don't we just drive through? Because the host has to be stabilized with the forceps before the drive to make sure the host doesn't wobble and lead to a non-deep and/or non-radial needle passage.

We stabilize the host with the two tips of the forceps. The maneuver is the same as we used earlier on the graft side. One tip engages deep down the wound edge, and the other engages at a 45-degree angle along the intended radius of passage.

Once you have that set up, the needle will drive accurately without any effort because there is nowhere else it can go. And once you have done that, you can look through the cornea and confirm that you are deep and radial and confirm that the needle is engaged at the proper length relative to the wound margin. If the drive is a little long, one can just slide the needle slightly back through its passage until it is the length that you wish.

So let's review the steps in word form.

In the following slides, we'll show you the same information, but at high speed, to make it into an animation.

[MUSIC PLAYING]

Stay tuned for part four, where we'll learn how to bring the needle to the surface in a controlled fashion. I'm Leo Maguire, and thank you for watching.