

BroadcastMed | Corneal Suturing, Part 6-Integrating the Steps Into a Whole

LEO MAGUIRE: Welcome to Part 6 of our series of short videos that discuss the curriculum for cornea suturing we've used to train our residents over the past 15 years. Hello. I'm Leo Maguire, Cornell Specialist here at Mayo Clinic. And in the sixth video, we will have an overview that takes all the information we've learned on engineering our perfect suture, and putting it together in one flowing whole. Our goal is to finish with a suture that is radial, deep, and the same length on graft and host. Wound compression should be perfect-- neither too loose or too tight.

Everything we've learned in earlier videos deals with the setup positions that allow us to accomplish three simple movements-- first, a setup that allows us to drive the needle through the host in a straight line that begins just in front of the forceps tip on the top of the graft, and exit just below the forceps tip on the deep edge of the graft, second, a setup that allows us to drive the needle in a straight line parallel to the deep surface of the host, and finally, a setup that allows us to drive the needle to the surface at a right angle, and exit a proper distance from the wound edge. After that, we tie to give good wound deposition.

Previous videos showed the setup for each step. Now, let's put it all together in a fluid whole. Identify your landmarks for length, depth, and radiality. Position the flat of the needle on the host. Move the needle radially to the graft, and keep it stationary until the forceps are in position.

Orient the forceps tips so they are parallel to the intended suture passage, an oriented 45 degrees relative to the surface, with the deep forceps almost to the deep margin of the graft edge. Keep the deep tip still, and move the top forceps tip to engage the surface of the graft. Orient the needle on the same radius as the forceps tips, engaging very close to the top tip, and aiming just under the tip on the deep graft margin. Drive the needle on that straight line with a gross hand motion. No wrist action.

Bring the needle out of the graft edge for a distance equal to the intended host suture length. Move the needle so that it is parallel to the host's surface. Walk it down to the deep edge. Barely engage the edge, and keep your eye on the needle tip to keep it still until you bring the forceps into position. Stabilize the host with one of the forceps tips deep down on the host edge, and both tips on the intended radius, the needle passage.

Drive on the proper radial line that is parallel to the deep surface of the host. Rotate the plane of the needle tip so that it is pointing toward the host surface. Set up the Colibri in the T position at that point where the needle should reach the host surface. Drive the Colibri into the needle to bring the needle to the surface. Pull the suture through, keeping the suture parallel to the passage of the suture through the graft and host.

Once the far end of the suture has reached the opposite limbus, cut the suture 4 millimeters from where it exits the host. Pull the sutures through so that now, the short end is on the graft about 3 millimeters from where it enters the graft. Pull the suture through to make the T, and have the suture end point toward the non-dominant hand.

The straight tire and the non-dominant hand grabs the suture perpendicular to the straight tire. The curved tires is positioned parallel to the suture on the opposite side of the short-graft suture in a pick-up position. The straight tire moves toward the stationary curved tire, and places three loops in the first throw.

Then the lower tip of the curved tire presses on the cornea to move under the short suture, and once under, moves up the short suture and grabs it at the end. Equal tension is placed on the short and long end of the suture. And in a series of stop-start movements, the wound is slowly brought together until the wound apposition is perfect. Then keeping tension on both the long and the short suture ends, the short is toward the long. And when they are parallel, pull hard on both to lock the suture into position.

Lay the short suture on the corneal surface and keep the curved tire perpendicular to the short suture when you let go. Bring the straight tire into the T position, and loop once. Grab the end of the short suture. Pull the short suture to the host side. And pull gently on both the short and long ends, keeping the loop circular and positioned over the locked first throw. And slowly pull the knot tight.

Do another loop using the same T-position technique. And pull the short suture to the graft side. And your knot is complete.

Do it all right, and the suture should be radial, deep, well-apposed. And should have the same length on graft and host. And now, animation without any further description.

[MUSIC PLAYING]

I hope this video series has shown you how, with a little bit of thought and training, a surgical neophyte can learn how to engineer a corneal suture so that it has the proper length, depth, radiology, and suture compression. And in our futures videos in this series, we will begin to show you the skills that a neophyte needs to move this theory into surgical practice. I'm Leo Maguire. And thank you for watching.