

ANDREW KOMAN, MD: This video represents a peripheral or a periarterial sympathectomy for a patient with vasospastic disease refractory to traditional oral medications. You can see the incision is fairly simple. It's in the distal palmar crease. We've also drawn two lines, one over the radial and ulnar artery more proximally.

You start off with the incision. Bleeding is controlled, generally, with bipolar cautery. And then it's important to elevate the skin proximally and distally off the palmar fascia. This allows much more exposure than you would think. Then here you can see the palmar fasci in incised. You can see towards the little finger, the digital nerve. So that's identified and protected.

And then these vertical septae are transected. And you can see how when this happens that that gives you much better mobilization so that you can get the entire neurovascular bundle out. The nerves are dissected, and then here the arteries are dissected grossly using loupe magnification, and vessel loops are placed.

We identify the superficial arch and the three common palmar digital arteries. And so you can see, with the one closest to the little finger, the common digital artery to the ring and little fingers. Now, this loop is being placed around the superficial arch just proximal to the take off of the common digital to the ring little finger.

Now, we make two incisions. One over the radial artery. The radial artery is then exposed with loupe magnification then mobilized for 1 to 2, 2 and 1/2 centimeters. This is done by taking the areolar tissue off. We leave the branches. And any venae comitantes that there can be either isolated or they can be dissected free and cauterized. Then a vessel loop is placed around the radial artery. And we use a hemoclips.

Again, here the ulnar artery, also through the longitudinal incision, is exposed. With this exposure, it's important to identify the ulnar nerve and make sure it's protected. And the nerve of Henle, which is a branch from the ulnar nerve that can run along the ulnar artery, if present, is identified and transected. We find this to be easily visible in about 30% of patients.

So here we see a vascular loop placed around the pedicle. And now, we're making an incision on the dorsum of the hand. So this is, if you look to your right lower, that's the thumb. And under the fascia is the deep branch of the radial artery as it goes down in between the thumb and index webspace.

Now, you can use sutures to retract or you can use regular retractors. Here, we're using sutures. And you can see that if necessary and something is found you can connect the ulnar incision with the distal palmar crease incision.

Now, the loops are removed and the operating microscope is brought in to position. Now, we can see under magnification-- this is about medium magnification-- the areolar tissue, which has partially been removed with the loops, but now you can see the areolar issue and the adventitia overlying the vessels. Here the areolar tissue is elevated and with the scissors right along the adventitia, this is removed. And then the plane with the superficial portion of the adventitia, which contains the sympathetic nerves is dissected free from the underlying artery.

Here we see the superficial arch being dissected. And you can see the origin just distal to where we're dissecting the origin of the common digital artery to the long and ring finger. So all of this tissue is peeled off. This is very important to get this. And that's a very crucial plane right there.

Here we're using the bipolar to get all the venae comitantes. And then there you can see the plane in which you're elevating it. So when this is done, the vessels look like this. They're very skeletonized, and you can inspect them.

Now, on the dorsum of the wrist, we're actually doing the radial artery, and you can see distally where the retractor is that it's diving down between the thumb and the index webspace. The superficial radial nerve has been identified and is dissected. And this artery is just beneath the fascia in the webspace.

You can actually dissect this down, take off a little bit of the muscle and you can see where the muscle fascia has been incised just below that small distal retractor, and that goes down and just below there is the origin of the princeps pollicis and the deep arch. So you're actually, effectively, doing a sympathectomy of the distoradial artery in the beginning of the deep arch. Again, that crucial plane between the areolar tissue and the artery itself.

And now, we're seeing that artery beneath. And there can see where it dives down into the webspace. After a little higher magnification and after the adventitia is removed, you can see the artery dilate.

And so here we're looking at the radial artery. And stripping this for 1 to 2 centimeters is usually sufficient. And you want to remove the superficial portions of the adventitia, and, of course, be careful to not cut any branches or to make a small hole in the vessel itself. If you do make a small hole, a single 10-0 suture will take care of that.

So here we can look back at the palm. You see all of the vessels have been stripped of adventitia and areolar tissue, and the entire vascular tree has been isolated. Tourniquet has been let down and you can see good refill of the palm.

So what you've seen demonstrated very proficiently by Dr. Li is a technique, which allows you to do a periarterial or peripheral sympathectomy for vasospastic disease. It also can be used for vaso-occlusive disease, but in this patient there was no occlusion present.