

# Mayo Clinic Q & A - Dr. Antonio Forte - Lymphovenous bypass ...

Mon, Nov 14, 2022 2:14PM 14:18

## SUMMARY KEYWORDS

lymphedema, patients, bypass surgery, bypass, lymphatics, lymph nodes, mayo clinic, lymphatic vessel, swelling, surgery, venous system, options, perform, vein, remove, microsurgery, forte, cancer treatment, called, fluid

## SPEAKERS

Dr. Antonio Forte, Narrator, Jason Howland, For

---

**N** Narrator 00:01  
Coming up on Mayo Clinic Q&A...

**D** Dr. Antonio Forte 00:03  
If a patient has upper or lower extremity lymphedema, we want to make sure first that they have a functioning venous system to make sure that we can then use the vein as a surrogate of the lymphatic system to remove the fluid from the arm or leg.

**N** Narrator 00:18  
When cancer treatments affect the lymph nodes, swelling, called lymphedema, can develop. Lymphovenous bypass surgery can help restore the flow of lymphatic fluid and reduce the pain and swelling.

**D** Dr. Antonio Forte 00:30  
The beauty about lymphovenous bypass is that it's minimally invasive. So, it's an outpatient procedure because we're just working with very superficial and small incisions. Then the patient can just go home a couple hours after the procedure.

**J** Jason Howland 00:45  
Welcome everyone to Mayo Clinic Q&A. I'm Jason Howland sitting in for Dr. Halena Gazelka. Lymphedema is tissue swelling caused by the buildup of fluid that's usually drained through the

body's lymphatic system. Because lymph nodes are an important part of the lymphatic system, lymphedema can be caused by cancer treatments that remove or damage the lymph nodes. Treatment for lymphedema focuses on reducing swelling and preventing complications. One new treatment option is a microsurgery technique to bypass the damaged lymph nodes. Joining us today to discuss is Dr. Antonio Forte, a Mayo Clinic plastic surgeon who specializes in lymphovenous bypass surgery. Dr. Forte, welcome to the program.

**D** Dr. Antonio Forte 01:30

Thank you. Thank you for the opportunity to be here.

**J** Jason Howland 01:33

Well, let's start out with the basics. What is lymphedema? And is cancer treatment the most common cause?

**D** Dr. Antonio Forte 01:41

Well, lymphedema in the United States is mostly secondary to cancer treatment. If you look in the whole world, there are other causes, especially infections, that can be the primary cause of lymphedema. However, since we're talking about specifically the population in the United States, then cancer treatment does play a major role in causing lymphedema. And the way it works is, during cancer treatment, sometimes lymph nodes need to be removed, and the lymphatic system that travels around and through these lymph nodes, they get damaged as well. It's impossible to remove the lymph nodes without damaging the system. Sometimes the system doesn't necessarily need to be surgically removed, even just a radiation treatment could potentially damage the system. So, you still have a functioning artery and a functioning vein. But the lymphatic vessel becomes dysfunctional in certain areas. Now if the area that is dysfunctional is your armpit, then the arm is going to get very swollen. And if it's on the groin, then the legs are going to get very swollen, and so forth.

**J** Jason Howland 02:46

So other than the swollen areas of the body, are there other symptoms of lymphedema?

**D** Dr. Antonio Forte 02:52

Well, once lymphedema progresses and more and more fluid accumulates, then there are tissue changes that happen and they can happen chronically. So, these tissue changes can cause the tissue to become much harder and the skin to have this thicker appearance. Wounds can take longer to heal. Patients can be more prone to developing cellulitis and so on and so forth.

J Jason Howland 03:23

So, what are the typical treatment options?

D Dr. Antonio Forte 03:27

Well, there are the nonsurgical options and the surgical options. Nonsurgical options are widely available. They include wrappings, compression garments. They're usually guided by, ideally, a certified lymphedema therapist, which is a physical therapist or occupational therapist that has additional training on lymphedema. And that person will then conduct all these treatments that allow for control of the swelling and make the limb size less dysfunctional. The surgical options include the resection, surgical modalities, and the ones that are more microsurgical in nature. Regarding the resection, you can just make an incision and remove surgically the tissue and then put the tissue back, the skin over the area that was resected. You can also just do liposuction and remove the excess tissue just using liposuction cannulas. And then microsurgical options would try to restore the drainage by reconnecting the lymphatics to the venous system, which then allows the fluid to be drained out of the extremity, leveraging the venous system as a surrogate of the lymphatic vessel.

J Jason Howland 05:05

So, what you're describing there, that's lymphovenous bypass surgery, correct?

D Dr. Antonio Forte 05:11

Correct. There are other options that include the transfer of lymph nodes from one area to the other, and those lymph nodes would then be connected to the venous system as well. They would work as pumps and remove some of the fluid on the adjacent tissue. Or you can identify the lymphatic and adjacent venous vessel and connect them both. So, this second option is the lymphovenous bypass.

J Jason Howland 05:42

Why is it called microsurgery?

D Dr. Antonio Forte 05:44

Well, all these connections that we perform, they are done using a microscope and very small instruments. The size of the needle is extremely small, especially just being seen with the naked eye, and the suture is thinner than hair. Especially when we're doing lymphovenous bypass, it's not unusual that we use 20 to 25 times magnification to be able to appropriately visualize the vessels. So, it is very labor intensive. It is minimally invasive, lymphovenous bypass; however, it requires very specific skill sets to be performed given this difficulty of working with structures that need to be augmented with a microscope 25 times.

J Jason Howland 06:42

And so, who can perform lymphovenous bypass surgery?

D Dr. Antonio Forte 06:46

Usually these are microsurgeons that are trained specifically in this area that we call super microsurgery. They are plastic surgeons, mostly, and they use a microscope and these very refined instruments to be able to execute all these different procedures.

J Jason Howland 07:10

So, what sort of patient would be a candidate for this type of surgery?

D Dr. Antonio Forte 07:16

Well, with the lymphovenous bypass we have tried to help as many patients as we can. If a patient has an upper or lower extremity lymphedema, we want to make sure first that they have functioning venous system to make sure that we can then use the vein as a surrogate of the lymphatic system to remove the fluid from the arm or leg. It's always also good to, before we even talk about surgery, make sure that they do have a diagnosis of lymphedema, because some patients can have swelling that is unrelated to dysfunction of the lymphatics. And once we identify these different parameters, then we can talk to the patient about whether they would be a candidate or not. Usually, things that would preclude patients from having this surgery is an allergy to the special dye that we use to map the lymphatics or an extremely advanced lymphedema that would preclude us from even being able to find lymphatic vessels.

J Jason Howland 08:30

So, what are the risks of lymphovenous bypass surgery?

F For 08:34

Well, the lymphovenous bypass surgery has very little risk because the lymphatic vessels that we use, they are right under the dermis. They are located in where we call the subdermal plexus. And the veins that we use are extremely superficial. So, the idea is that we use these very superficial structures and we make various small incisions, around three centimeters each. We do plan where these incisions are going to be placed. And the way that we plan them is we use a special dye called indocyanine green, and a special camera. That dye is injected on the dermis, and it's drained by the lymphatics only. So, you can use that camera and map where the lymphatics are running on a patient's hand, arm or leg. And once you know where the lymphatics are, then you can plan where you're going to make these transverse incisions. So, you can more accurately identify the lymphatic vessel and adjacent vein, and then connect them both.

J

Jason Howland 09:38

And what is the success rate of this type of surgery?

D

Dr. Antonio Forte 09:43

There's a very good study that was published almost a decade ago that looked prospectively at patients that had lymphovenous bypass, and they average that 42% of the swelling is improved over one year. Now there are patients that will have much more improvement than that. And some other patients will have very little improvement. But on average, all the patients that have lymphovenous bypass surgery, they have an improvement of 42%, over a year, of their swelling.

J

Jason Howland 10:29

Well, that's fantastic. So, what if I'm a patient who comes in for lymphovenous bypass. What can I expect to experience during surgery, how long is the procedure, and then also, what sort of recovery is there when it comes to this surgery?

D

Dr. Antonio Forte 10:47

So, the beauty about lymphovenous bypass is that it's minimally invasive. So, it's an outpatient procedure. It's very labor intensive. So, it takes, you know, the good part of the day, sometimes six hours, sometimes four hours, because finding those tiny vessels and performing the connections is difficult. But because we're just working with very superficial and small incisions, then the patient can just go home a couple hours after the procedure. So, it's an outpatient procedure. And the patients have the extremity wrapped after the surgery, and they will unwrap it at home, shower, wrap it again, which is very similar to what the nonsurgical management is of lymphedema. And then we see them periodically, at two weeks, two months, six months, and one year. And make sure that every time we see them, including before surgery, we get measurements and photos so that we can objectively track how much they have improved.

J

Jason Howland 11:55

And because it is minimally invasive, I'm assuming that there's very little scarring as well.

D

Dr. Antonio Forte 12:01

The way people scar is very unique to them. But the majority of patients that we see, when we are looking at them a year later, it's even hard to know where the incision was placed to begin with, because they're very small.

**J** Jason Howland 12:15  
Super. Is lymphovenous bypass surgery, is it available at all cancer centers?

**D** Dr. Antonio Forte 12:21  
Not necessarily. I would say that some sort of lymphedema surgery is available at a lot of the plastic surgery academic centers. And then, I would say a subset of that would be able to offer lymph node transfers. And even smaller subset of that would offer lymphovenous bypass, given that lymphovenous bypass requires additional expertise and training to be performed.

**J** Jason Howland 12:54  
And an important question here for patients, and I'm sure you get asked this, is lymphovenous bypass surgery covered by insurance?

**D** Dr. Antonio Forte 13:02  
Yes, most insurances will cover it. However, it's always hard to determine, you know, each insurance will have their particular policy and that varies from year to year. But, in general, we have had good success with people's ability to get that covered by insurance.

**J** Jason Howland 13:26  
Fantastic. Unfortunately, we are all out of time. But I'd like to thank our guest today, Mayo Clinic plastic surgeon, Dr. Antonio Forte. Thank you for joining us today.

**D** Dr. Antonio Forte 13:37  
Thank you. Thank you for the opportunity to be here.

**J** Jason Howland 13:40  
And thank you for joining us on the Q&A podcast. Have a great day.

**N** Narrator 13:44  
Mayo Clinic Q&A is a production of the Mayo Clinic News Network and is available wherever you get and subscribe to your favorite podcasts. To see a list of all Mayo Clinic podcasts, visit [NewsNetwork.MayoClinic.org](https://www.mayoclinic.org/news-network). Then click on podcasts. Thanks for listening and be well. We hope you'll offer a review of this and other episodes when the option is available. Comments and questions can also be sent to [MayoClinicNewsNetwork@mayo.edu](mailto:MayoClinicNewsNetwork@mayo.edu).

