

[MUSIC PLAYING]

GRACE LIN: So I think the future is very bright for patients with heart failure. There are a lot of exciting advances coming down the line.

JOHN M STULAK: It's very important for the medical community to understand the landscape of mechanical circulatory support or left ventricular assist device therapy, because this therapy has evolved significantly through time. Adverse event rates as well as survival is basically approaching that of heart transplantation. It's very important to note this because more and more patients should be considered for this therapy.

GRACE LIN: Used to be just transplants. And we thought if you weren't a candidate for transplant, there was nothing else. But now LVADs have opened a whole new avenue for these patients.

JOHN M STULAK: A couple hundred thousand patients in this country suffer from heart failure each year. The number of heart transplants has remained constant over the last 20 years due to donor shortage and donor limitations. LVAD therapy, we believe, is a very underutilized therapy-- only a couple thousand patients are implanted each year. So we believe only a fraction of patients are actually receiving the therapy they could.

GRACE LIN: One of the issues with the transplant is that the heart isn't always going to be available when the patient wants it. So we always encourage people who are referring patients who or patients who have heart failure to start thinking about this sort of thing earlier. And what happens is that if you wait until a patient is quite sick and they're needing a transplant, there's going to be a wait period. And for many of those patients, that wait period is just too long.

The advantage of an LVAD is it's something artificial that we can construct. And we can get it off the shelf for the patient and that can temporize things for them and bridge them until the time that a heart becomes available.

JOHN M STULAK: Left ventricular assist device therapy can be implanted for two different pathways. Basically in the younger patient who's considered a transplant recipient, it would be what we call bridge to transplant. So the LVAD would be inserted as a bridge to get

them to a heart transplantation. Then when a donor heart became available, we would explant the LVAD and then implant the new heart.

In older patients or patients who are not thought to be transplant candidates, we implant as what's called destination therapy, where the patient will live with the LVAD for the rest of their life.

GRACE LIN: Destination therapy differs from bridge to transplant in that it's being offered as a permanent therapy to patients who aren't really transplant candidates, in some cases because the patient's too elderly. And it's another therapy that we can offer, because usually the cut-off that we think about for transplant is usually around age 65 or mid-60s. There is going to be an age past which we say it's probably going to be too late. But those patients between 65 and 80, could be a very good option for them.

JOHN M STULAK: However, we have implanted patients with LVAD at the age of 65 and successfully transplanted them near the age of 70. So it really goes toward the individualization of the patient and what kind of condition they're in at the time of LVAD implant or of transplant.

GRACE LIN: One of the issues we really struggle with in advanced heart failure is kidney failure. The two things go together, heart failure and kidney failure. And as one gets worse, the other one often gets worse too.

JOHN M STULAK: Heart failure can affect all organs in the body. Sometimes the kidneys are involved, the liver, the lung, blood pressure. And so when these organs are affected to the point that they are in failure, the patient may not be a heart transplant candidate.

What LVAD therapy can do is provide the necessary blood flow to those organs to turn them around, so to speak, so that they are normally functioning. And then the patient can become a transplant candidate.

GRACE LIN: People Are living longer with LVADs. The devices are smaller, they're more durable, they're more portable. And many patients can live very productive lives and with really good quality of life.

JOHN M STULAK: In every major study that has been performed, LVAD therapy has been shown to improve survival compared to medical therapy. In addition, we're not just keeping

patients alive-- in every major trial, improved quality of life has been shown as well.

This is not a cure for heart failure, but rather to help patients live longer and feel better. Some patients may live a year or two on the device, but we have some patients approaching 10 years on the same device.

GRACE LIN: We've had patients that have really been homebound that have been able to start getting out, visiting their grandchildren, visiting family, traveling a little bit more. So I think there can be some very positive changes.

JOHN M STULAK: Technology has evolved. These devices are more biocompatible, less trauma to the blood. They're very easy to use for the patients.

At the Mayo Clinic, we have the opportunity to be involved in all of the current clinical trials. What that enables us to do is to really look at all of the different commercially available devices, both FDA-approved and on study. And that way, when a patient comes up as a candidate for implant, we really can tailor the implant to the patient-- which device is right, which size is right, and which device is really going to impart the longest, most durable effect for that patient.

Newer technology is now enabling us to implant a pulmonary arterial pressure monitor at the time of LVAD implantation. This is very important to monitor the blood pressure in the lung arteries, because this sometimes can preclude a patient from becoming a heart transplant candidate. We can remotely monitor the blood pressure in the pulmonary arteries, we can get the data, we can manage the patient from home-- whether it's a medication change-- or bring the patient in if we think an intervention is needed. And so we believe that this can really impact quality of life for patients.

GRACE LIN: A lot of times people get this diagnosis of heart failure and they think it's a death sentence. But I think that for many patients there are lots of opportunities. They make it better, the heart failure may improve. If it doesn't improve, they have options for advanced therapy, and it doesn't always have to be a transplant.

I think LVADs really opened a whole new avenue for some of these patients that can't be transplant candidates. And it's only going to get better as the technology improves.

