

## BroadcastMed | Lessons From 500 Heart Transplants

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- CHET RIHAL:** Good morning. I'm Dr. Chet Rihal. Today my guests are Dr. Brooks Edwards, director of the von Liebig Transplantation Center of Mayo Clinic, and Dr. Sudhir Kushwaha, director of cardiac transplantation at the LVAD service here at Mayo.
- Brooks, Sudhir, welcome.
- BROOKS EDWARDS:** Thank you.
- SUDHIR KUSHWAHA:** Thank you.
- CHET RIHAL:** We're here to celebrate the 500th cardiac transplant that's been done here at Mayo. Brooks, you've been involved in this practice since pretty much the beginning. Tell me what it was like at the beginning of this incredible journey.
- BROOKS EDWARDS:** Well, it was a very well-organized experience really from the beginning. And the success of transplant was the development of an integrated, dedicated, multi-specialty team. And that team has met from day one through this morning at St. Mary's Hospital for the care of every patient.
- CHET RIHAL:** You really pioneered the heart team that the rest of us are now catching on to, didn't you.
- BROOKS EDWARDS:** You could think of it as this early service line. It's cardiac surgery, cardiology, infectious disease, pulmonary, nursing, social work. And meet together every day to discuss each individual patient.
- I think, in many ways, that's been the success of the program.
- CHET RIHAL:** What were the major challenges then? Were they technical, surgical, or were they medical?
- BROOKS EDWARDS:** I think the practices changed. In the early days, the cases were, in many ways, very straightforward. We didn't have good treatment for cardiomyopathy. And so many of the patients were young people with a dilated cardiomyopathy
- Now, we see much more complex cases, patients who have had multiple previous operations, maybe patients who've been bridged with one or more mechanical devices. There are technical issues. There are now different immunologic issues that have to be addressed.
- CHET RIHAL:** Sudhir, what are the recent advances in the field of cardiac transplantation?
- SUDHIR KUSHWAHA:** Well, thanks for that question. I think the advances really are partly medical, immunosuppressive type advances, which we've had a role in pioneering here at Mayo. And the field has changed, as well, as Brooks alluded to, in the sense that we now have assist device therapy, which has actually changed the way we practice end-stage heart failure to a large degree.
- As far as immunosuppression is concerned, we've started using a lot more sirolimus. And our program, we try and transition most of our patients by around six months to this particular immunosuppressive, because it's a powerful anti-proliferative.

And it has been shown in our studies to really attenuate the development of allograft vasculopathy, which is the major limitation to long-term survival and always has been since the early days of transplant.

If we look at the survival figures from the ISHLT database, which is a worldwide database of all transplants which have been done, we can see that historically, we have a survival of about 15 years or so. And some patients obviously live longer.

But I think now, with the change in immunosuppressive, strategies, which we've instituted here and now other centers are catching on, I think we can hope to extend that significantly, actually.

**CHET RIHAL:** Now, most cardiologists in the US aren't transplantation experts, and yet, touch patients who have had cardiac transplant occasionally. Are there other medications that all transplant patients ought to be on, other than immunosuppressive regimens, statins, aspirin, for example?

**SUDHIR KUSHWAHA:** Yes. And this is a very good point because some of the research we've done has demonstrated that many of the risk factors which apply to what are called non-transplant coronary disease also apply to vasculopathy.

So we're very aggressive in treating high lipids. And in fact, most patients are on statins unless there are major reasons for them not to be.

And also, we're increasingly realizing the role of anti-thrombotic therapy, because it seems that platelet activation has as much of a role in promoting vasculopathy as it does in traditional coronary disease.

**CHET RIHAL:** Now, when should practicing cardiologists begin to consider advanced therapies for heart failure, whether it's a VAD or transplant? What is the appropriate time for referral to a transplant center. And Brooks, perhaps I'll direct it to you.

**BROOKS EDWARDS:** Well, we think about the patient who has declining functional capacity, the patient who is requiring one or more hospitalizations for heart failure in a year. And often times, we think the patients who have been well-treated on standard therapy ACE inhibitor, beta blocker, so on, and are now not doing well on standard therapy.

They've had perhaps CRT, and they're having a functional decline. Because of the long waiting period and the many patients waiting for transplant, we'd rather see those patients earlier, rather than later. Some of the risk is seeing them too late and then it becomes a problem.

**CHET RIHAL:** I think this is a really important point. Brooks, what about the future? We're all aware of the shortage of organs. But what about the future? You're involved in regenerative medicine, for example. Are we actually going to be able to regenerate myocardium or potentially organs?

**BROOKS EDWARDS:** Well, I think it's very exciting. I think this field is going to blossom and change the way we take care of patients. And I don't know whether it's going to be in five years or ten years, but I think it's going to be in our practice era that we're going to be able to help some patients-- maybe not every patient-- but some patients, restore normal or improve cardiac function with cell-based therapy or even some medications that may stimulate their own regenerative systems.

**CHET RIHAL:** Well, this is really very exciting. So my guests today have been Dr. Brooks Edwards and Dr. Sudhir Kushwaha, who have given us an update on cardiac transplantation and VAD therapy.

To summarize what they've said, I think the cardiology community is well aware of the benefits of cardiac transplantation. Those of us that don't practice in this field ought to consider referrals for VAD or transplant therapy when patients are in optimal medical therapy faced with a declining functional status or recurrent hospitalizations.

Options include implantable LVADs, cardiac transplantation, and we hope, in the future, cardiac regenerative therapies. So Brooks and Sudhir, thank you very much for joining me this morning.

**SUDHIR** Thank you.

**KUSHWAHA:**

**BROOKS** Thank you.

**EDWARDS:**