

of interest. The editors and reviewers of this article have no conflicts of interest.

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Key Words: left ventricular assist device, aortic valve insufficiency, functional status, heart failure

Discussion

Presenter: Dr Yuki Tanaka



Dr Pavan Atluri (Philadelphia, Pa.)

As a comment, as a field, I think we greatly underestimate the value of valvular regurgitation on physiology, and in particular in this study you clearly demonstrate a negative physiologic impact of uncorrected mild AI at the time of LVAD implant. Your study nicely highlights the importance of a further focus on the management of AI, and as we continue to see improvements in survival that currently are on par with heart transplant, or are approaching heart transplant, we will need to as a field continue to focus on adverse events if we are to continue to push the therapy forward. A few additional points that I noted from your data. First, the mild AI cohort, I was interested to see had significantly elevated right atrial pressures, pulmonary arterial pressures, as well as wedge pressures, which demonstrates a clear additive stress that may impact RV performance. Second, I was interested to see that preoperative aortic root dimension was not a correlative factor with the development of AI.

Third, another observation was that I was interested in was the low rate of progression of AI in the no AI cohort, whereas traditional teaching has indicated a 30% rate of formation of de novo AI. So this really raises the question that maybe the indicators for AI and de novo AI actually exist at the time of implant. Suggesting that potentially a more aggressive surgical addressing of AI at 1+ or more, rather than the current guidelines of 2+ may be indicated. Did you find a correlation with delayed RV failure in the cohort that had moderate AI? Would you then suggest that surgeons intervene earlier upon the recognition of moderate AI? Second, do you think we are underestimating AI by

traditional metrics, most notably effect of regurgitant orifice with a regurgitant jet? And the least scientific of which is qualitative visual assessment. When do you recommend that we intervene on de novo AI post-LVAD, because I frankly think we are intervening too late.



Dr Yuki Tanaka (*St Louis, Mo*). We didn't include the late RV failure analyses in this presentation, but those are in the paper we submitted. In the follow-up cardiogram, we observed significantly worse TAPSE, more MR and TR in the moderate AI group compared with no AI group in 2.5 years

of follow-up. In other words, our study demonstrated that pre-LVAD mild AI was associated with progression of MR, TR, and RV dysfunction after the implant. In suggestions about evaluation of AI severity, I absolutely agree with you. The assessment about AI has been difficult in patients with LVAD, and there is no specific criteria for LVAD recipients who show AI for the entire cardiac cycle. We are going to find some answers soon. We are working on mock loop LVAD model with the mild AI before and after LVAD by measuring the systemic flow, LVAD flow, and transaortic valve flow. We should consider AI treatment in patients who have become class III or IV with no exercise tolerance even

though patients are treated with all the afterload reduction medication. Surgical repair and transcatheter AVR are options, but earlier treatment is better, especially if you won't get them ready for transplant. So far, we treated only 1 patient with TAVR (a 46-year-old woman and 4 surgical repairs with Park stitch). All went well, and NYHA class was improved from IV to I or II.

Dr Atluri. Great, thank you, and I look forward to seeing your paper in press.

Unidentified Speaker. My question for you is how should we address AI and post-LVAD? Are you doing TAVRs, are you taking them back for valve replacement, or are you doing a Park stitch?

Dr Tanaka. In our institution, moderate or greater AI is usually repaired at the time of the LVAD implant. Aortic valve central suture is performed in almost patients with moderate to great AI. However, AVR using tissue valve is selected in patients with mechanical valve. In mild AI, making a decision of concomitant aortic valve procedure was done based on tolerance to surgery. Post-LVAD de novo AI may need to be treated when NYHA functional class progresses to class IIIb or IV. We usually select Park stitch or TAVR for post-LVAD significant AI with deterioration of functional status at this point.