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## Contemporary TAVR Outcomes in Patients with Small Aortic Annulus: A Review of Recent Trial Data

### Announcer:

Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

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### Dr. Talreja:

This is CME on ReachMD and I'm Dr. Deepak Talreja. Here with me today is Dr. Roxana Mehran. Today, we'll explore the latest clinical data on how different valve designs, specifically self-expanding and balloon-expanding valves, can impact the outcome on these patients.

Roxanna, I'd like to get your viewpoint on this.

### Dr. Mehran:

Well, thank you for that really important question. As most of our listeners hopefully know, severe aortic stenosis is a very, very important and, of course, disease of elderly patient population, but also the young. And very, very important to make that diagnosis early on and to treat the patients accordingly, especially if they're symptomatic.

And what we do know is that there is a subgroup of these patients, most commonly women, with a small annulus, and we believe wholeheartedly that over the years we have continued to see the under-recognition, undertreatment, and under-diagnosis of women with aortic stenosis, especially those women who will often have a small annulus. And so, it is really important to get our arms around that very, very important issue in terms of getting the patients evaluated promptly, as well as getting them the treatment that they deserve to have. And very importantly, there are different valve types that are currently available and most recently, we did have a prospective and the first of a kind prospective randomized clinical trial in patients with severe aortic stenosis who were referred for a transcatheter aortic valve replacement with a small aortic annulus. And in that randomized trial, a self-expanding valve was compared to a balloon-expandable valve in over 700 patients. And we looked at both clinical and functional assessment of these patients over a one-year period. And through 12 months, while there was no difference in the clinical outcomes, there was a very, very important, difference – significant difference in the function of the valve as assessed by echocardiogram. So, bioprosthetic valve dysfunction was much, much more common in those patients who received the balloon-expandable valve, compared to a self-expanding valve.

So, the evidence now that tells us that, for patients with a small annulus, most likely better to have a better functioning valve with a self-expanding valve replacement is a very, very important one. And the SMART trial is the trial that was just published in the New England Journal of Medicine with these very important and significant findings. And if you could imagine that, you will say, well, if there's no difference in the clinical outcomes, why do hemodynamics matter? Well, over time when you have bioprosthetic valve dysfunction, there should be some impact on the heart clinical outcomes. We're following these patients down for another 5 years.

But much more importantly is the quality of life measures that were much better improved in those patients who received a self-

expanding valve. So, if the gradients are lower, the effective orifice area is bigger, and that after a self-expanding valve compared to a balloon-expandable valve, that really is very, very important impact for patients with a small annulus who happen to be mostly women.

**Dr. Talreja:**

Dr. Mehran, thank you for that excellent summary of the SMART trial and the great points that you raised. I'd like to take the opportunity to highlight a few of the comments you made, and as you point out, it's an exciting trial because it's our first head-to-head comparison. As you note, aortic stenosis is a hemodynamic disease, and we see relative equivalence with a trend favoring the self-expanding valve. And we see what you alluded to with a four-fold increase in bioprosthetic valve dysfunction with the balloon-expandable valve compared to the self-expanding valve. I love the point you make that even seeing this at one-year suggests that quality of life measures and potentially, 3- and 5-year data will show us ultimate impacts on the survival, heart failure readmissions and long-term outcomes in these patients.

Thank you so much for this conversation together today, Dr. Mehran.

This has been a great bite-sized discussion. Unfortunately, our time is up. Thank you to the audience for listening.

**Announcer:**

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