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<https://reachmd.com/programs/cme/new-hope-for-tavr-overcoming-challenges-for-women-patients-with-small-annuli/26420/>

Released: 01/31/2024

Valid until: 07/24/2025

Time needed to complete: 53m

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## New Hope for TAVR: Overcoming Challenges for Women & Patients With Small Annuli

### Announcer:

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

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### Dr. Aneja:

Hello, this is CME ReachMD and I'm Dr. Ashish Aneja. For years, diagnosing and treating aortic stenosis in women and patients with small aortic annuli has presented significant challenges. Today, we'll delve into these complexities, so let's get to it.

So, I'm here to talk a little bit about the role of echocardiography in women, especially, who have small annuli, and diagnosis and management of aortic stenosis with a small annulus. And, particularly relevant to this was the recently published SMART trial.

The trial randomized 716 individuals with severe symptomatic aortic stenosis, of which 87% were women with a small annulus defined with an annular diameter of less than 430 millimeters. Individuals, or patients, were randomized in a one-to-one manner to a self-expanding supra-annular power platform versus a balloon-expanding valve. There were two co-primary endpoints that were measured to 12 months, the first being a composite of death, disabling stroke or heart failure readmission, and the second being a composite endpoint of bioprosthetic valve dysfunction. The first co-primary endpoint saw no difference in rate of death disabling stroke or rehospitalization for heart failure, but the percentage of patients with bioprosthetic valve dysfunction through 12 months was approximately 9% in the self-expanding valve and 41% with the balloon-expandable valve, which was highly statistically significant and superior in favor of the self-expanding valve. Therefore, these robust and updated data offer an alternative treatment for female patients, especially those with a small aortic annulus with the most modern and widely available TAVR platforms.

We all recognize that women are at least 49 to 55% of all TAVR patients, but they don't get as much TAVR as men do. So, what are some of the challenges and strategies with echocardiography that can be utilized in women? First of all, we can mention some of the diagnostic challenges with echocardiography in women.

Apart from the smaller annuli, women are older. They tend to be diagnosed later on in life and have less calcified valves for the same degree of aortic stenosis severity. In addition, they have higher pulmonary pressures, they have higher hypertension, higher LV filling pressures and lower arterial compliance at diagnosis. They also have lower mean gradients and a lower stroke volume than men, with a higher prevalence of a low-flow/low-gradient state. They also have a higher rate of pressure recovery phenomenon because of a smaller ascending aorta dimension than men.

LV remodeling in women with aortic stenosis tends to lead to more wall thickening, with the decrease in the size of the LV cavity, which is also known as concentric remodeling, which leads to a lower stroke volume.

Therefore, these patients, including the women with the small annuli, are more likely to be turned down for surgery because of the higher surgical risk, which may be related to the older age or smaller annular size and the higher prevalence of comorbidities

So, are there going to be new referral considerations based upon these data? I think so. And I think, there is going to be more use of the

self-expanding platform in these populations.

Some of the cautions while using echocardiography in women and in patients with small annuli: do not dismiss aortic stenosis as not being severe because the valve is not as calcified; be sure to use multiple imaging windows, especially the right parasternal window, with a dedicated non-imaging or Pedoff probe to find the highest gradient since the LV cavity to the aortic angle is more acute and you may not find the highest gradient with just the apical view.

It is also important to mention the stroke volume index since women have a smaller LV cavity and more likely to have a paradoxical low-flow state. I would also like to mention that there's a higher risk of patient-prosthesis mismatch, which I've previously mentioned, but it is defined as an aortic valve area of less than 0.65 centimeters per meter squared in normal BMI individuals, with a BMI of less than 30, and this patient-prosthesis mismatch issue leads to the increased risk of perioperative and overall mortality which is proportional to its severity, in turn leading to suboptimal valve hemodynamics and left ventricular mass regression after aortic valve replacement.

So, my key take-away from these observations is that a viable alternative now exists for women and other patients with a small aortic annulus whose options were limited mainly to SAVR and the balloon-expandable platforms. The self-expanding valve platform allows for a larger post-implant effective orifice area, lower gradients, and most importantly, a lower rate of patient-prosthesis mismatch, all of which could play an important role in valve longevity. The benefit appears to accrue without any sacrifices related to higher pacemaker implantation or stroke rates.

Well, this was brief, but I'm glad I had the opportunity to share this data with you. Unfortunately, our time is up and thanks for listening.

**Announcer:**

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