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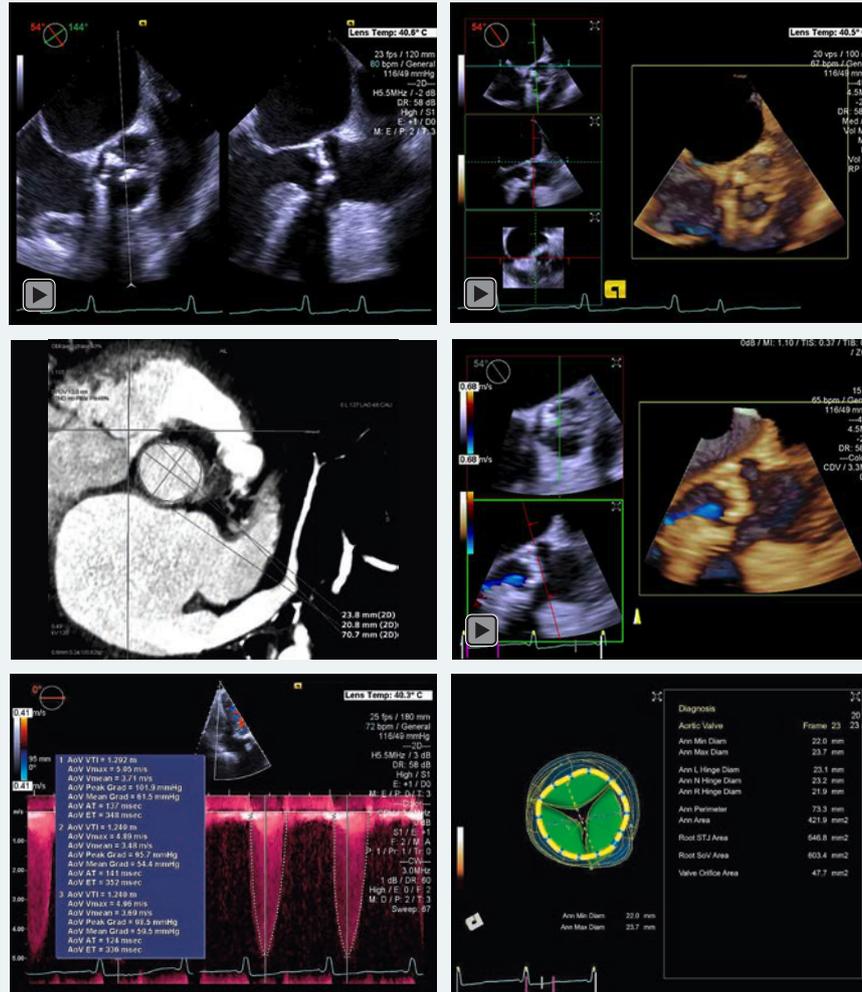
Clinical Case Study: Correlation between CT and eSie Valves for Transcatheter Aortic Valve Replacement

ACUSON SC2000 ultrasound system

Clinical Case

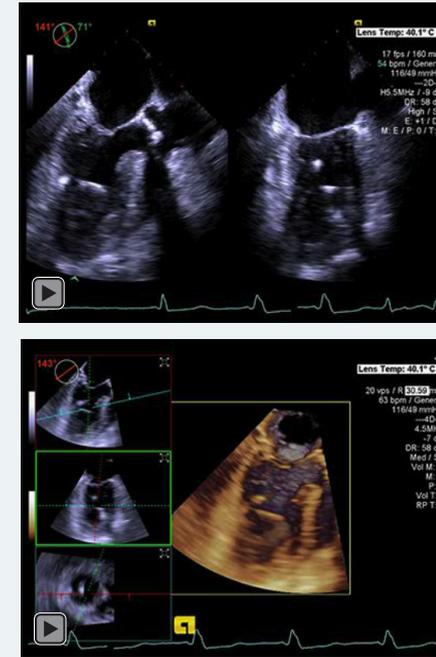
A 90-year-old female who was previously diagnosed with severe aortic stenosis was seen at Yale-New Haven Hospital, Connecticut, USA. The indication was Transcatheter Aortic Valve Replacement (TAVR) and the following procedure was performed in a hybrid OR utilizing both ultrasound and CT imaging.

Pre-Procedure



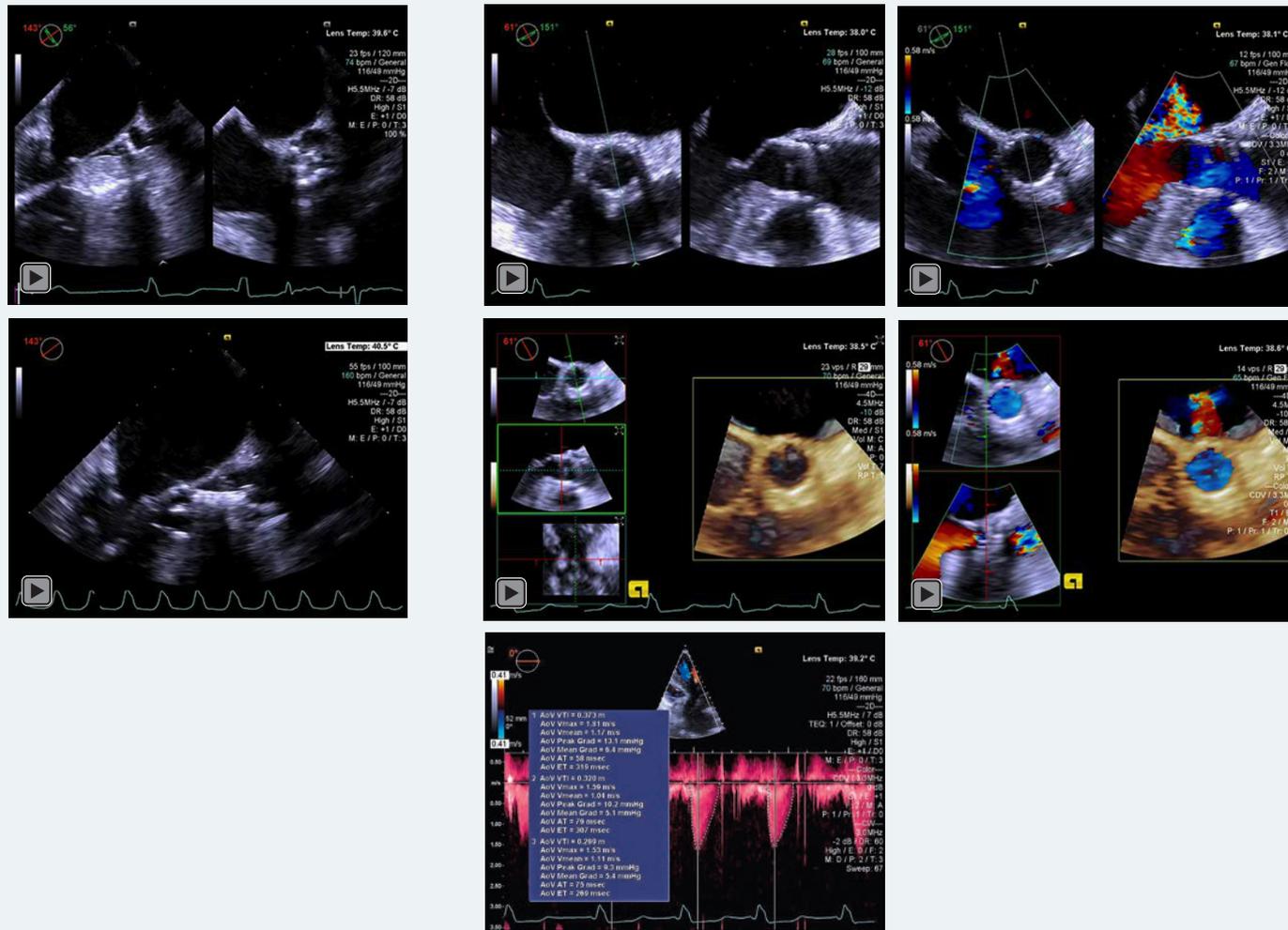
The baseline transesophageal echocardiography (TEE) exam shows the velocity through the aortic valve at 5 m/s and a mean gradient of 54 mmHg with aortic regurgitation. The aortic annulus' minimum and maximum diameter is 22 x 24 mm (mean diameter is 23 mm). The aortic annulus area is 422 mm² and the perimeter is 73 mm. Predicted aortic valve prosthesis size is 26 mm. Both CT and eSie Valves™ advanced analysis package with its automated modeling of aortic valve and root had strong correlation in measurements enabling greater confidence in the selection of correct prosthesis.

Intra-Procedure



A balloon aortic valvuloplasty (BAV) is performed with a 10/5 nucleus balloon. The prosthesis was deployed under rapid pacing.

Post-Procedure



In the post-deployment TEE exam, the bioprosthetic aortic valve appears to be well seated. There is no significant paravalvular leak and no valvular regurgitation. The aortic peak velocity is 1.5 m/s, the mean gradient is 4.2 mmHg. The estimated aortic valve area is 3.1 cm².

Results

The true volume TEE transducer (Z6Ms) on the ACUSON SC2000™ ultrasound system defines 4D imaging with real-time continuous imaging, high volume rates, and the eSie Valves package. Whether pre-procedure or during this TAVR procedure, performed in a hybrid OR, the physicians were able to use the eSie Valves package to quantify the stenotic aortic valve within seconds. The CT aortic valve minimum, maximum and perimeter measurements were nearly identical to the automated measurements obtained using echo with the eSie Valves package. This provided confirmation of the correct prosthesis size right before the deployment. The real-time visualization with true volume TEE and the accuracy of eSie Valves measurements both on the ACUSON SC2000 opens new possibilities for using echocardiography for both pre-procedure planning and procedural guidance during transcatheter procedures.

The products/features mentioned in this document may not be commercially available in all countries. Due to regulatory reasons their future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

Standalone clinical images may have been cropped to better visualize pathology.

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