
3D TEE Technology Visualises Dynamic Blood Flow



A new cardiovascular imaging technology that uses a new true volume, three-dimensional (3D) transoesophageal echo (TEE) probe can visualise the heart and dynamic blood flow during interventional valve procedures.

Siemens Healthcare (Erlangen, Germany) presented the Acuson SC2000 Prime Edition ultrasound system at the 2014 European Society of Cardiology (ESC) Congress, held in late August at Barcelona, Spain. The ESC Congress is currently the world's largest international congress in cardiovascular medicine.

3D TEE Imaging

During 3D TEE imaging, physicians guide a flexible probe into the oesophagus to obtain close-range, detailed images of the heart to examine valve function. If a valve is found to leak blood back into the heart chambers (regurgitation) or if it does not open effectively to let through enough blood, a valve procedure may be needed to repair or replace the valve with a synthetic one.

The TEE technology enables clinicians to view a more anatomically accurate image of the heart and blood flow during cardiac interventions — even in patients with electrocardiogram (ECG) abnormalities — helping them to make more rapid and effective crucial decisions. The system includes new automated valve analysis software that provides precise valve measurements within seconds to support heart interventions.

Current methods of imaging with 3D TEE technology require stitching (i.e., the fusion of multiple heartbeats) to create a complete image of heart function and blood flow. This gated acquisition, according to experts, eliminates almost all patients with any ECG abnormalities and frequently results in image artefacts, which may skew results.

In contrast, the Acuson SC2000 Prime ultrasound system provides full 3D images of the heart, in every heartbeat without stitching, using the new Z6Ms true volume TEE probe - the first Siemens transducer to use true volume 3D TEE with 90° x 90° real-time acquisition and volume colour Doppler.

“Volume colour Doppler is extremely important,” explains Dr. Lissa Sugeng, associate professor of medicine at Yale University (New Haven, CT, USA). “With Siemens’ new volume acquisition, I can see the entire valve, locate the regurgitant jet, and assess the size of the orifice very quickly so that we can continue with the procedure.”

Valve Analysis Software

Siemens also introduced for the first time on the Acuson SC2000 Prime its new eSie Valves advanced analysis package, automated software to measure heart valves during cardiac procedures. Unlike standard quantification software that takes several minutes to provide measurements of heart valves, eSie Valves provides automated measurements for the aortic and mitral valves in seconds, according to Siemens. This quantitative information allows physicians to quickly and easily evaluate valvular anatomy and physiology, which aids in device sizing and surgical repair.

Dr. Jeffrey Bundy, CEO, Siemens Ultrasound, said that the company is proud of what the Acuson SC2000 Prime enables clinicians to do in the

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detection and treatment of valvular disease. The company's goal is to offer tools with standard-setting performance and workflow so that physicians can "focus on their patients and explore new and more efficacious procedures," Dr. Bundy added.

Siemens said the new PRIME technologies, including the Z6Ms true volume TEE transducer and the eSie Valves package, are also available as an upgrade for users of earlier versions of the Acuson SC2000 system.

Source: MedImaging.net

Image Credit: Siemens Healthcare

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