
Siemens Introduces Innovations to Increase Efficiency & Quality of Care in Endovascular Procedures



The robot-supported angiography system was developed for use in minimally invasive surgery, interventional radiology and interventional cardiology.

- Artis Freestyle Access simplifies use of ultrasound guidance in the interventional suite
- Automatic feeder-detection of the syngo Embolization Guidance software standardizes a safer treatment of liver tumors by simplifying procedure planning and catheter navigation

The new Acuson Freestyle Elite ultrasound system can now be combined with the Artis angiography systems to enable fast and easy-to-use ultrasound guidance during interventional procedures. With this combined solution, referred to as Artis Freestyle Access(1), Siemens Healthineers supports a more convenient, less time-consuming, and safer workflow. Acuson Freestyle Elite is a member of the Acuson Freestyle Series of ultrasound systems, the new generation of wireless ultrasound systems from Siemens Healthineers. Its cable-free transducers utilize an ultra-wide band frequency to wirelessly transmit imaging data from the probe to the system, freeing the ultrasound user from distracting cables. With the Artis Freestyle Access solution, the antenna receiver is positioned on top of the Artis Display, and the Acuson Freestyle ultrasound unit is mounted at the rear of the display, which results in a completely cable-free solution in the room. This not only saves space and increases workflow flexibility, it also promotes a hazard-free work environment in the interventional suite.

In many labs, the ultrasound system often has to be brought into the angio suite when ultrasound guidance is required. The patient's name then has to be registered on the system and the transducers have to be draped. In order to make any changes in the ultrasound parameters during the examination, a second non-sterile staff member is required to intervene and operate the buttons on the ultrasound system. Artis Freestyle Access helps to eliminate the extra time needed for these steps.

The combined solution is available for immediate use and only requires patient registration once on the angiography system, because when prompted, the ultrasound unit automatically receives the patient information registered on the Artis angiography system. This provides seamless registration on the ultrasound system and shortens the time needed to begin the ultrasound exam. With its custom-fitted sheaths, the cable-free probes can be more quickly and easily draped compared with cabled probes on conventional ultrasound systems, and on-probe controls give the user direct control of the ultrasound features and eliminate dependency on other staff members. During the procedure, the ultrasound images are shown directly on the Large Display. At the end of the procedure, the ultrasound images are automatically sent to PACS, with no need for further user interaction. That's how Artis Freestyle Access in tandem with the Acuson Freestyle Elite ultrasound system facilitates the use of ultrasound in interventional suites during interventional procedures.

The use of ultrasound guidance plays an important role in vessel punctures, for example, of the femoral artery. It helps decrease the likelihood of complications while increasing the likelihood of first-attempt success, as shown by a meta-analysis study published in the *Journal of Invasive Cardiology**. Therefore, the ability to quickly and easily use ultrasound in the angiography suite, as enabled by Artis Freestyle Access, can help reduce puncture-related complications during endovascular procedures.

Simplified procedure planning and catheter navigation for liver embolization

With the new version of the syngo Embolization Guidance software, automatic feeder-detection and color-coded visualization of tumor-feeding vessels facilitates the location of the optimal treatment position for each tumor nodule. This means that syngo Embolization Guidance can support a complete embolization of the entire tumor in Transarterial Chemoembolization (TACE) procedures, for example. The interventionalist simply needs to mark the treatment area(s) by drawing a line describing the diameter of each lesion with just one click. Then the software fully automatically detects the catheter and identifies the vessels between the treatment area(s) and the catheter. By automatically calculating a safety margin of a few millimeters around the lesion, the algorithm is also able to identify vessels that feed the surrounding environment of the tumor where non-visible singular tumor cells are suspected. This feature helps support targeted embolization where the malignant tissue is completely covered by treatment while as much healthy tissue as possible is preserved. "The principle of selective microcatheter placement in chemoembolization aims for accomplishing complete tumor coverage while at the same time preserving healthy liver tissue from unnecessary treatment. Syngo Embolization Guidance automatically extracts essential tumor feeder information from DynaCT datasets during the intervention, resulting in a simplified process for the interventionalist when choosing optimized treatment positions", explains Bernhard Meyer, MD, from Hannover Medical School Germany.

The interventional radiologist can easily adjust the vessel tree by pruning, removing, or adding vessels manually. As in the previous version, the software also allows for segmentation and determination of tumor nodule volume based on syngo DynaCT, CT, or MRI datasets. The new features support an efficient, standardized and safe treatment of liver tumors, either from the control room or right at bedside. The interventionalist may no longer need to stop and leave the interventional room during the procedure. This innovation from Siemens Healthineers aims to enable customers to increase their treatment efficacy and workflow efficiency while also reducing costs.

¹ Artis Freestyle Access will be available for new installations of Artis Q, Artis Q.zen, Artis zee and Artis pheno, in combination with the dedicated Acuson Freestyle Elite Ultrasound system with Artis Access.

Prerequisites on the Artis side: 55" Large Display

Prerequisites for ultrasound: Acuson Freestyle Elite with Artis Access

Artis pheno is pending 510(k) clearance, and is not yet commercially available in the United States or in other countries. Due to regulatory reasons, its future availability cannot be guaranteed.

Source

*Maria Sobolev, MD; David P. Slovut, MD, PhD; Alfredo Lee Chang, MD; Ariel L. Shiloh, MD; Lewis A. Eisen, MD. Journal of Invasive Cardiology 2015;27(7):318-323. "Ultrasound-Guided Catheterization of the Femoral Artery. A systematic review and meta-analysis of randomized controlled trials". <https://einstein.pure.elsevier.com/en/publications/ultrasound-guided-catheterization-of-the-femoral-artery-a-systema>

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