Imaging right at the angio table can be a life-saving feature

Interview with Saruhan Cekirge, MD

Since its introduction in 2004, *syngo* DynaCT has become an integral part of neuro-interventional procedures by enabling soft tissue visualization in the angio lab. Saruhan Cekirge, a world-renowned interventional radiologist at Hacettepe University in Ankara, Turkey, speaks with AXIOM Innovation in Intervention about his experiences with *syngo* DynaCT and the impact it has had on his everyday practice.

AXIOM: Dr. Cekirge, would you please tell us about your practice here in Ankara at the Hacettepe University Hospital?

Dr. Cekirge: "The neuro-endovascular unit of the Hacettepe University Hospital has become one of the few internationally recognized interventional neuroradiology departments. Our center is considered a center of excellence by endovascular companies and by physicians worldwide. Practitioners from all over the world, more than 400 physicians in total during the last four years, visit our

center for training and to witness advanced neuro-endovascular treatment techniques for cerebral aneurysms and AVMs.

Regarding a variety of new endovascular devices, materials and advanced techniques, workshops are being held for physicians who are preparing to use these new approaches. The everyday practice of many physicians around the world is affected by the methods we develop and apply, thus we always have to be aware of our particular responsibility. The neuro-endovascular team also travels all around the globe to treat selected patients in order to proctor physicians in major university hospitals and medical centers. During the last five years, our team members treated more than 300 patients in foreign clinics.

In 2005, the Hacettepe neuro-endovascular center treated more than 400 cerebral aneurysms during a total of 1,200 neuro-interventional procedures. Aside from this busy everyday practice, we organized 13 international workshops. Ninety-four interventional neuroradiologists from every continent attended to acquire cutting-edge techniques in cerebral aneurysm and AVM treatment. Our neuro-endovascular center is currently working with three biplane neuro-dedicated Siemens angiography units. The newest one is our AXIOM Artis *d*BA, which was installed in May 2006. In 2007, two additional biplane flat detector angiography systems will be purchased to replace our old Neurostar Plus systems."

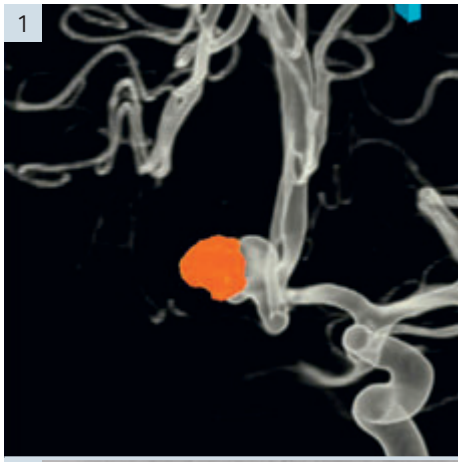
AXIOM: You have just recently started working with the AXIOM Artis *d*BA system and *syngo* DynaCT. What are your experiences with this technology so far?
Dr. Cekirge: "Our experience with *syngo* DynaCT is extremely positive. We believe this technology to be a milestone innovation in its field. It has an incredibly high impact on our daily practice. Formerly, we had to carry intubated patients to the CT scanners. But with our new *syngo* DynaCT system, we are capable of deciding whether interventions are necessary right at the operating table. As a matter of fact, this advantage can be life-saving. We are able to view real-time cranial CT-like images during our intervention and afterwards. So we can detect adverse events in the brain parenchyma straight away, while the patient remains on the angio table.

The other important feature of *syngo* DynaCT is the option to create cross-sectional images in the angio lab with intra-arterial contrast injection. These images are certainly high quality CT-like angio images, because they deliver extremely important supplementary information about the angio-architecture of atherosclerotic intracranial stenoses, especially in the bone, and the neck of complex cerebral aneurysms. Such images are acquired with IA contrast injections and their diagnostic quality reaches far beyond standard 3D images. We use 25% contrast and just give an additional 5 cc contrast to create those images."

AXIOM: What were the decisive factors for purchasing an AXIOM Artis *d*BA system in your specific case?
Dr. Cekirge: "The main reason for our decision was Siemens' leadership in flat detector technology. We already have two Siemens biplane angio systems we are completely satisfied with, and we are also highly pleased with the maintenance service. So, to us, buying a Siemens suite again was a rather logical decision."

[1] Dual-volume (syngo iDentify) reconstruction image allowing us to understand the neck of the recurrant A-com. aneurysm

1



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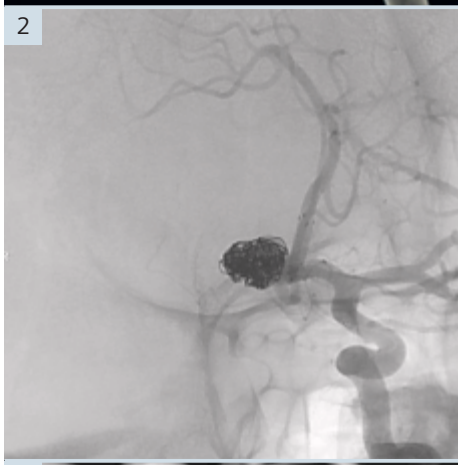

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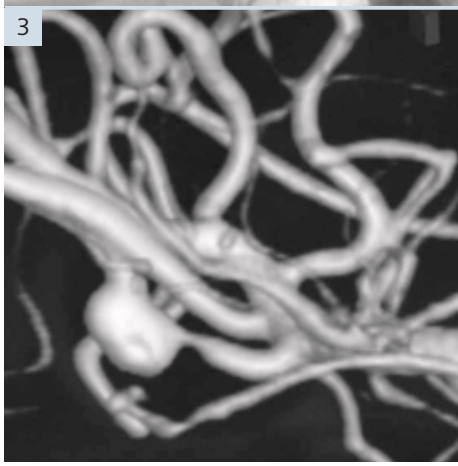
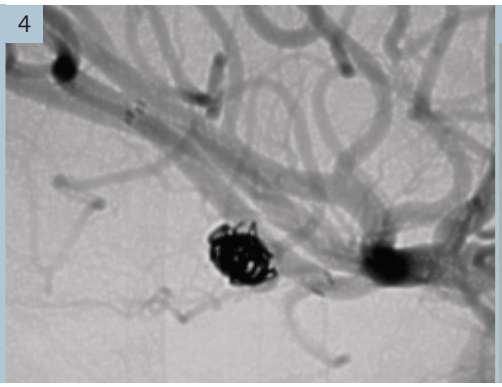


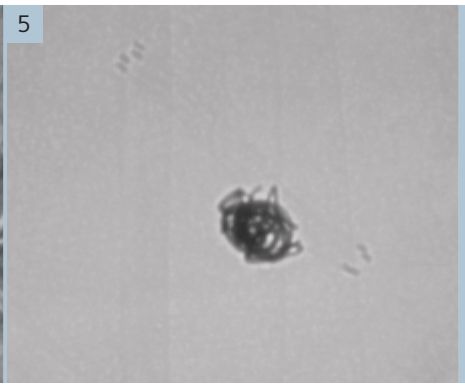
[2] A stent was positioned across the aneurysm neck for further coiling with the guidance of dual reconstruction image

[3] A distal dissecting middle cerebral artery aneurysm originating from the inferior trunk of left MCA

[4] A self-expandable stent was used to perform stent-coil reconstruction of the vessel

[5] DSA image clearly showing the struts of nitinol self-expandable stent





AXIOM: Are there any specific challenges in your particular case mix and, if so, how does the new AXIOM Artis *d*BA support you in your operations?

Dr. Cekirge: "In brief, our everyday challenges are being able to understand the neck of complex aneurysms, the angio-architecture of cerebral AVMs, and the nature and extent of atherosclerotic plaque in extra- and intracranial stent lesions. In solving these problems, *syngo* DynaCT cross-sectional angio images with high-quality 3D reconstruction were a great improvement, so they have become an indispensable part of our routines."

AXIOM: At a glance, which features of your imaging system do you consider most important?

Dr. Cekirge: "In first place, I have to mention the high-quality 2D DSA images with 2K imaging. They enable us to see even the finest distal vessels. One may think that such small vessels are negligible, but especially in treating AVMs, it is of great importance to visualize them. You have to make sure that while occluding an AVM you do not unintentionally occlude fine vessels feeding other areas of the brain. Second, there are the superb 3D reconstruction images. Especially the dual-volume reconstruction images have a major impact on our daily work [1+3].

Third, the system provides cross-sectional angio images directly at the operating table. As I have already explained, this can be a life-saving feature.

Furthermore, the ability to fuse 2D–3D and 3D–3D images is an important feature. It can be performed on a *syngo* X workstation for postprocessing using a patient's MR and standard CT images. Such image fusion is highly beneficial, especially in our field of clinical research.

Finally, I should mention the digital acquisition zoom fluoroscopy and roadmapping features. To my knowledge, these are unique to Siemens systems. They allow us to zoom in on the lesion and to see everything in the smallest detail. We can even see the struts of self-expandable micro nitinol stents [4+5]."

AXIOM: So, how would you rate the system altogether?

Dr. Cekirge: "Naturally, no system can be perfect. There are always opportunities for further innovation to get as close to perfection as possible. I would rate the system nine out of ten."

AXIOM: You have experienced numerous major innovations in interventional neuroradiology – stents, remodeling microballoons, Onyx, catheters and last but not least, imaging systems. How would you rate the effect of *syngo* DynaCT on the patient management level you can currently deliver?

Dr. Cekirge: "As I stated before, *syngo* DynaCT certainly increased the level of patient care by delivering indispensable information about aneurysm morphology and anatomic details for exact stent or microballoon placement and assisted treatments as well as about atherosclerotic plaque extent and morphology for intracranial stenting."

AXIOM: Do you see any future challenge for *syngo* DynaCT in interventional neuroradiology?

Dr. Cekirge: "One of the most important points in my opinion is the development of reliable perfusion imaging software. This would notably increase the level of patient care. Beyond that, additional dedicated angio software would also be very beneficial for intracranial stenting."

AXIOM: If you had to weight the clinical benefits of cross-sectional imaging and soft tissue imaging during neuro-interventional procedures, how would you prioritize them?

Dr. Cekirge: "In my estimation, standard cranial *syngo* DynaCT images to evaluate the brain parenchyma during and after an intervention are most important. As a close second come the CT angio images we get directly at the angio table to obtain valuable information about the vessel walls."

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Protocol book for 3D applications with AXIOM Artis

Providing unforeseen image quality for both 2D and high-contrast 3D imaging, the AXIOM Artis family revolutionized the world of vascular diagnostics and gained an outstanding reputation immediately after its introduction in 2001. And there was even more to come: *syngo* DynaCT, the peerless tool for acquisition, reconstruction, and display of cross-sectional soft tissue images, has taken interventional imaging in the angio lab to a previously unimagined level.

To support you in your clinical routine and to help you make the best use of your AXIOM Artis system, we have now compiled an "application protocol book," which illustrates the high versatility of our advanced applications for high and low-contrast imaging. In cooperation with eight hospitals, 31 example cases have been collected. Thus, the book, illustrates substantial experience with Siemens 3D applications and provides practical information on images, contrast injections, system settings, post-processing as well as users' recommendations.

To receive your copy of the book or to obtain further information on the Siemens AXIOM Artis family, please contact your regional Siemens representative or order it at www.siemens.com/DynaCT or contact the authors esther.rohm@siemens.com or teri.moore@siemens.com.