Nexaris Angio-MR-CT

At the nexus of treatment innovation

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Innovation Partner
of Siemens Healthineers for Surgery

GETINGE

SIEMENS Healthineers


SOMATOM Edge Plus
ARTIS pheno

At the nexus of treatment innovation

Beyond early detection of diseases, innovative physicians are aspiring to provide more personalized patient care. Their goal: to develop procedures that make treatment more effective by combining advanced minimally invasive techniques and the latest medical imaging methods.

Nexaris Angio-MR-CT combines established ARTIS Angiography, MAGNETOM MRI, and SOMATOM CT solutions in one environment; helping you to obtain helpful image information about the patient during any stage of the procedure.

With the PILOT patient transfer system, developed together with Getinge, the patient remains stable in the intended treatment position while all imaging tasks are centered around him. In combination with Getinge's Transmobil TT-M - patient transporter, the patient can additionally be moved around in the OR and even beyond.

With Nexaris Angio-MR-CT, we are removing the physical barriers to using multi-modality imaging in the OR for preprocedural planning, intraoperative guidance, and immediate quality control.

Nexaris Angio-MR-CT
A Nexaris Therapy Suite

Highlights


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ARTIS pheno

Nexaris Angio-MR-CT at a glance

Nexaris Angio-MR-CT and the PILOT patient transfer system give you barrier-free access to multi-modality imaging.

- Experience seamless access to intraoperative imaging without the need for repositioning patients
- More possibilities during treatment with synergized Angio, MR, and CT image information
- Team up with an experienced partner to customize your Nexaris Therapy Suite

1. MRI

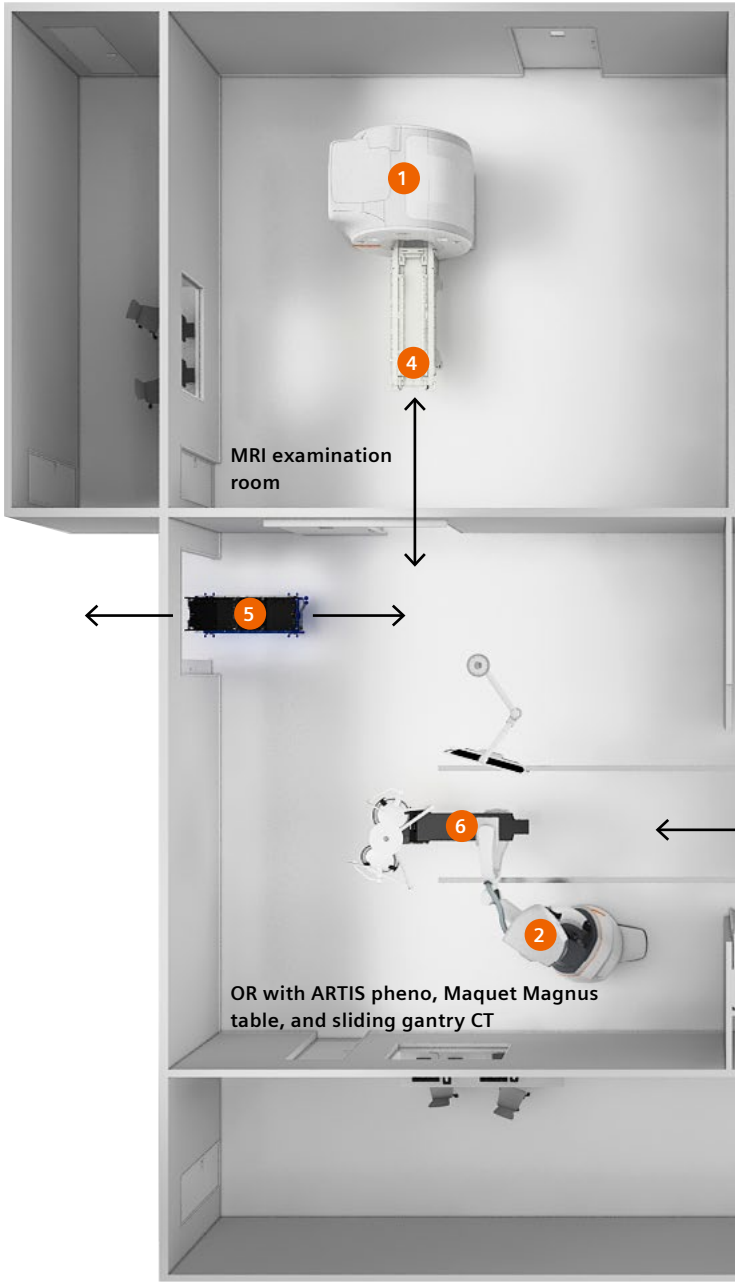
MAGNETOM Vida (3T) and MAGNETOM Sola (1.5T) offer state-of-the-art image quality, efficiency, and speed to allow consistently high-quality scan results.

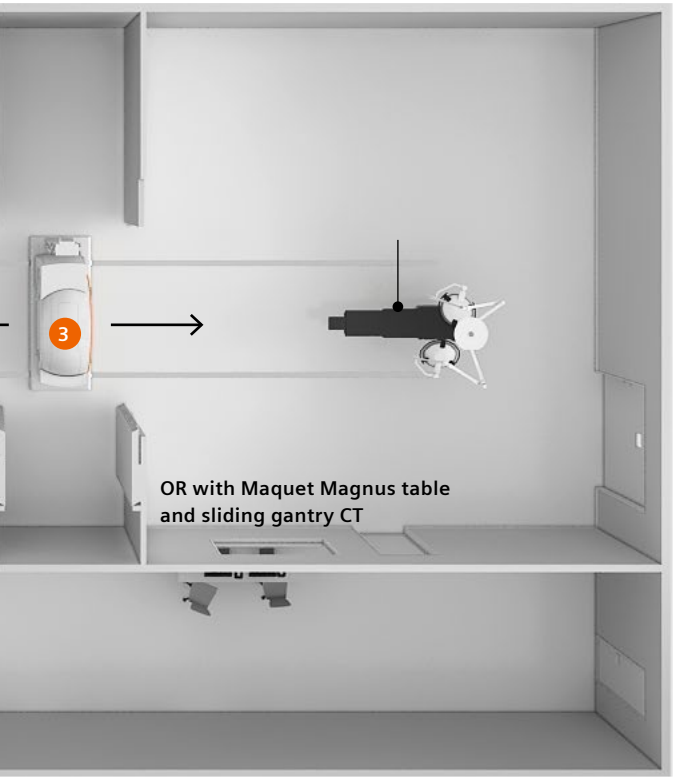
2. Robotic Angio system

ARTIS pheno is a wide-space C-arm system that facilitates robotic imaging for multiple surgical disciplines.

3. Sliding gantry CT

SOMATOM CT Sliding Gantry systems deliver fast and comprehensive 3D image information for pre-, intra- and postoperative assessments.





4. Dockable MR table

The Nexaris Dockable Table** allows seamless patient transfer from the surgical table to the MRI modality. Flex and body coils facilitate whole-body MRI during therapy and diagnostics.

5. Patient transporter by Getinge

The height-adjustable Maquet Transmobil TT-M* enables patient transfer throughout the hospital: from helicopter or ER to ICU, radiology, and OR for pre-, intra-, and postoperative care.

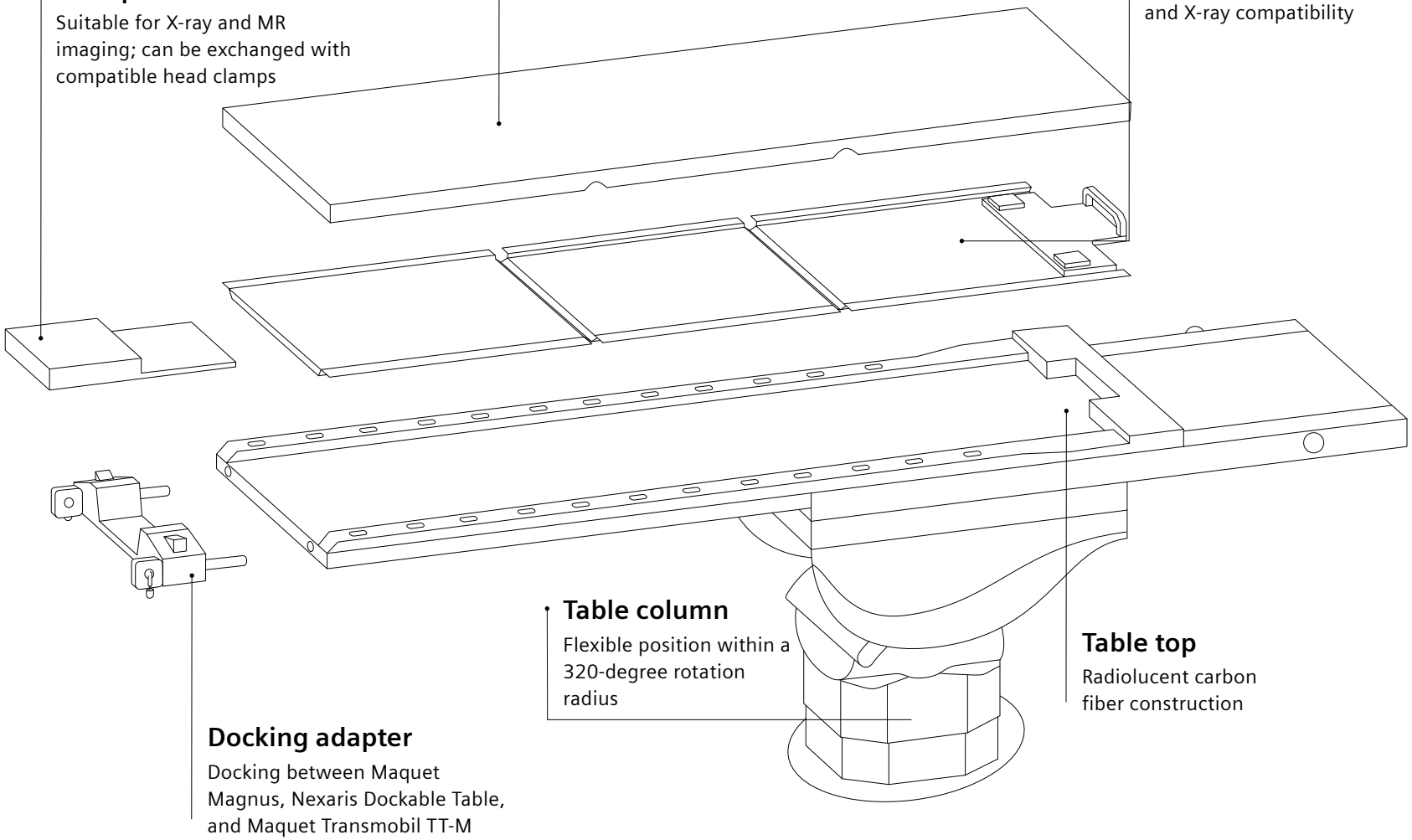
6. Surgical table system by Getinge

The Maquet Magnus* table system can be flexibly positioned within a 320° rotation radius. The patient remains in the chosen treatment position on this surgical table for imaging with the ARTIS pheno or a sliding gantry CT.

Transfer patients without repositioning

PILOT* is a patient-centered transfer system that eliminates the barriers to using intraoperative whole-body Angio, CT, and MR imaging during a surgical procedure. The patient can be transferred seamlessly throughout the hospital and between imaging modalities without repositioning.

The core of the PILOT transfer system is a transfer board*, jointly designed by Siemens Healthineers and Getinge. You can slide the transfer board from the Maquet Magnus* surgical table to the Nexaris Dockable Table** and back without patient repositioning. Both table top and transfer board are made from X-ray translucent material to permit intraoperative CT as well. Furthermore, the patient transporter Maquet Transmobil TT-M* allows for patient transfer through the hospital, into the OR and back.

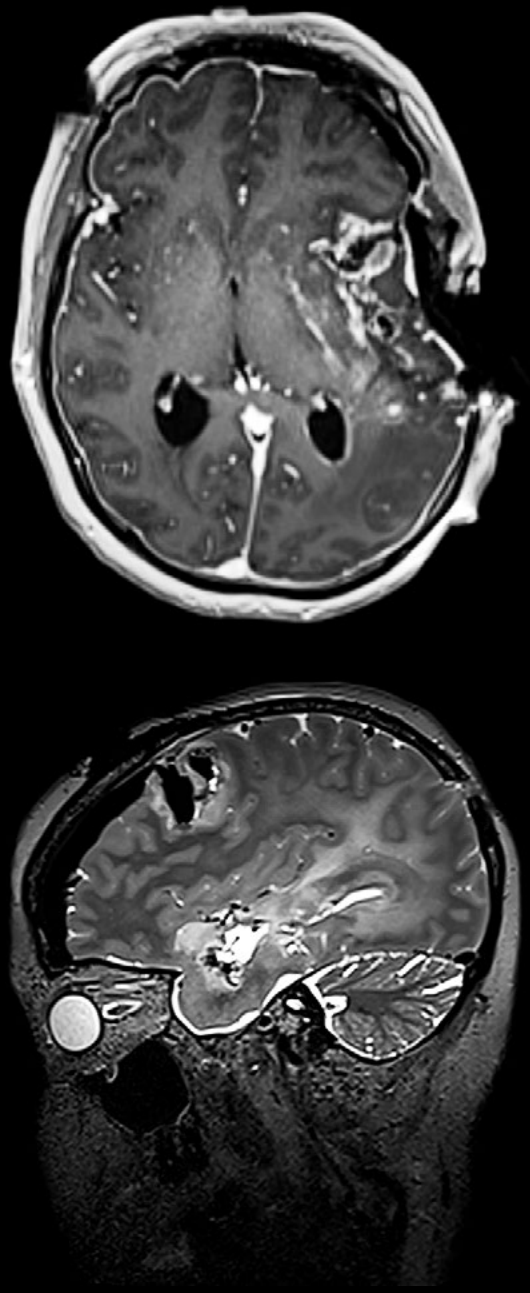

Pad
Visco-elastic cushion for more patient comfort
Transfer board
Made of Kevlar for MRI and X-ray compatibility
Headplate
Suitable for X-ray and MR imaging; can be exchanged with compatible head clamps
Table column
Flexible position within a 320-degree rotation radius
Table top
Radiolucent carbon fiber construction
Docking adapter
Docking between Maquet Magnus, Nexaris Dockable Table, and Maquet Transmobil TT-M

Synergized Angio, MR, and CT image information

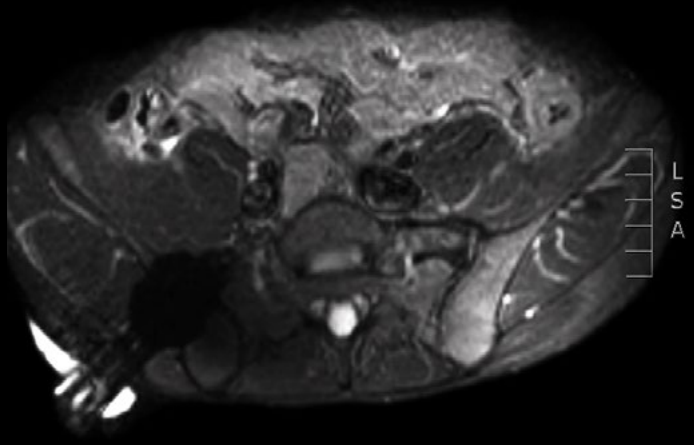
Nexaris Angio-MR-CT paves the way for exploring more possibilities during treatments by combining multiple imaging modalities in a single procedure.

Improved resection results

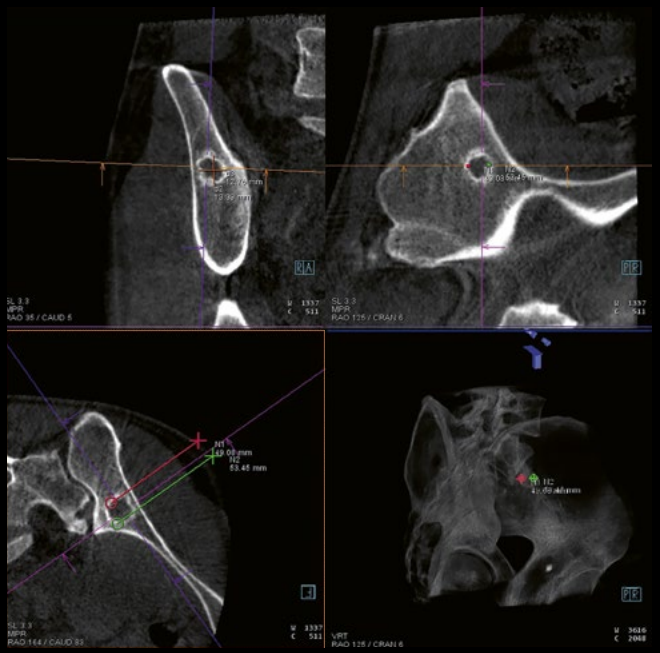
Nexaris Angio-MR-CT provides access to intraoperative imaging to help assess the completeness of tumor resection and to determine whether the procedure needs to be adapted and continued. Studies in the field of neurosurgery have shown that intraoperative MRI can be beneficial for physicians who wish to verify tumor resection completeness[1,2,3]. In one study, surgeons modified the procedure for almost 30% of patients in response to intraoperative MRI findings[3]. With Nexaris Angio-MR-CT, MRI of the whole body is possible as well, and this can increase the application potential of MRI for treating tumors using resection.



Intraoperative MR images of the head to check the results of a brain lesion resection
Courtesy of University Clinic of Navarre (CUN), Spain



Cryoablation of bone tumor: MRI to support verification of treatment success
Courtesy of Radboud University Nijmegen Medical Centre, Netherlands



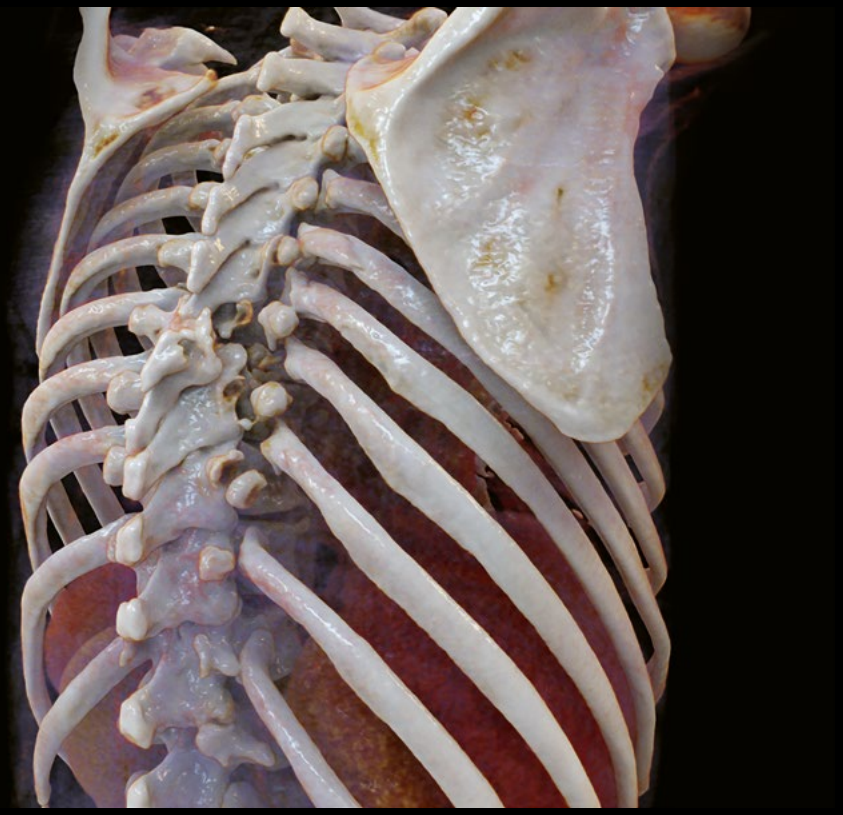
Cryoablation of a bone tumor: planning with robotic C-arm

Comprehensive ablation management

Intraoperative multi-modality imaging with Nexaris Angio-MR-CT enables visualization throughout the procedure. *syngo* DynaCT (cone-beam CT) offers high spatial resolution for visualizing small vascular structures. This supports diagnostic confidence and simplifies needle positioning[4]. MR or CT can potentially be of help to physicians for assessing ablation success[5,6].

Direct way to trauma care

With seamless access to multi-modality imaging right in the OR, Nexaris Angio-MR-CT offers new opportunities for treating trauma patients. PILOT* makes it possible to bring patients directly from the helicopter pad to the OR using the Getinge Transmobil TT-M* patient trolley and transferring them onto the surgical table – without any need for lifting. The sliding gantry CT allows you to perform CT imaging for evaluation right away. With the patient already in final position for treatment, the robotic C-arm supports necessary procedures such as screw placement or embolization to stop the bleeding.



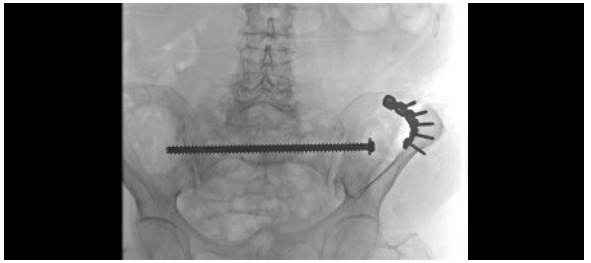
CT image of a trauma case with multiple spine fractures
Courtesy of UI Radiologie Salzburg, Austria

More possibilities during treatment

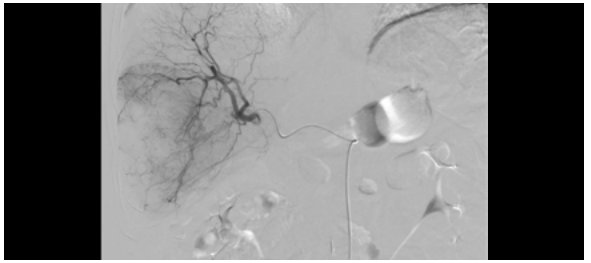
When you combine multiple imaging modalities during therapy, you get the advantages of each modality right away giving you the potential to explore new possibilities for your patient’s treatment.

Angiography

Visualization of small vascular structures and needle/catheter guidance



Pelvic screw placement
Courtesy of University Hospital Ulm, Germany



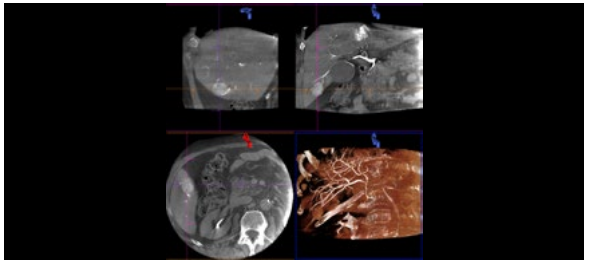
Vascular structures within the liver
Courtesy of Jikey University School of Medicine, Japan

Fluoroscopy

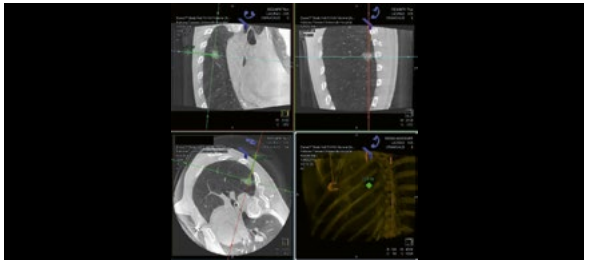
Live fluoroscopy provides real-time guidance during treatment.

DSA (Digital Subtraction Angiography)

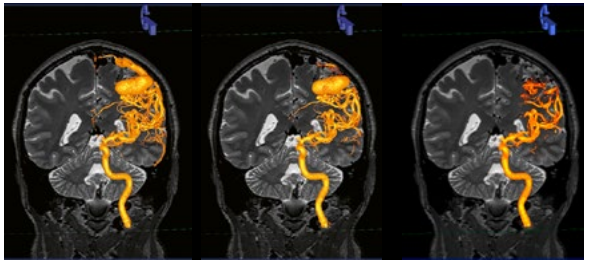
DSA is a digital technique that removes the static background and makes vessels with contrast more visible.



Hepatocellular carcinoma
Courtesy of Medizinische Hochschule Hannover, Hannover



Biopsy of a lung nodule
Courtesy of National Taiwan University Hospital, Taiwan



Biopsy of a lung nodule
Courtesy of National Taiwan University Hospital, Taiwan

3D imaging

syngo DynaCT enables rotational acquisition and 3D reconstruction for cross-sectional imaging or volume-rendered techniques

Needle guidance

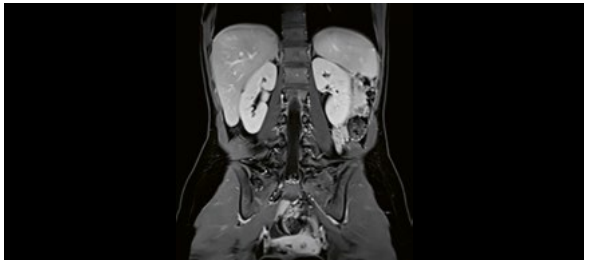
The robotic C-arm uses a laser to pinpoint the trajectory and entry point for instruments like biopsy needles.

Image fusion

Fuse detailed soft-tissue MR images with 4D DSA, or preoperative CT images with live interactive images from the angio system to get a fuller picture.

MRI

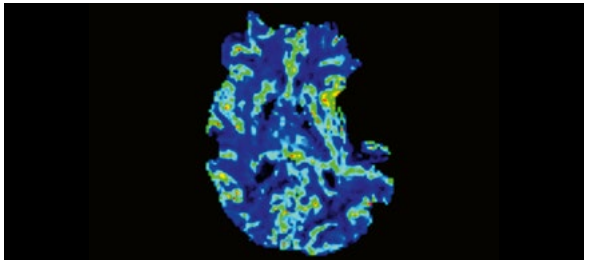
Soft-tissue information without ionizing radiation



Abdominal imaging
Courtesy of Virchow Klinikum, Germany

Soft-tissue imaging

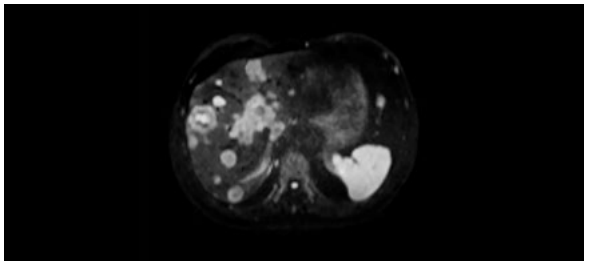
Optimal soft-tissue contrast to visualize areas such as the brain, spine, joints, and abdomen.



Intraoperative perfusion imaging of the brain
Courtesy of University Clinic of Navarre (CUN), Spain

Perfusion imaging

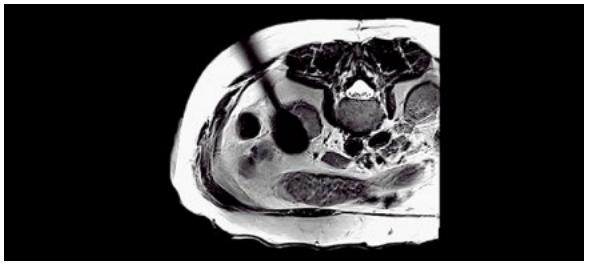
Perfusion information can help detect ischemia, distinguish between different tumor types, and demonstrate reperfusion after revascularization.



Diffusion imaging of the liver
Courtesy of SCM Imagerie Par Resonance la Roseraie, France

Diffusion-weighted imaging

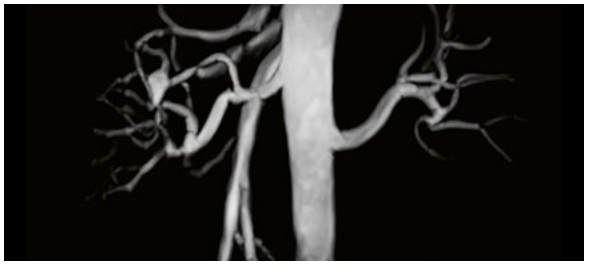
Diffusion weighted information helps identify ischemia or different tumor forms, and distinguish between abscess and necrosis



Imaging during MR-guided kidney cryoablation
Courtesy of Brigham and Women's Hospital, USA

Imaging to support ablation verification

MRI can potentially be of help to physicians who wish to use imaging for assessing ablation success.



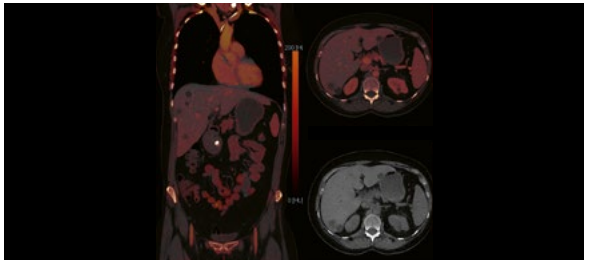
Renal angiography
Courtesy of Kosei Hospital, Japan

Vascular assessment

MRI enables 3D angiography without additional contrast. This is particularly valuable for treating patients with renal insufficiency.

CT

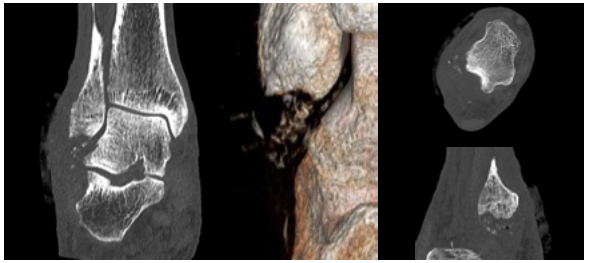
Fast and comprehensive image information in time-critical situations



Multiple hepatic lesions
Courtesy of University Hospital Basel, Switzerland

High- and low-contrast imaging

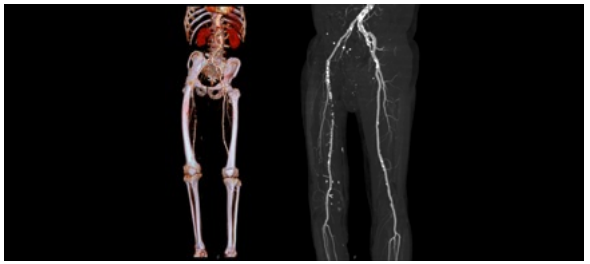
The good high-and low-contrast resolution of the CT scanner helps to differentiate air-to-soft tissue contrast, tumors, or plaque in vascular assessments.



Lateral ankle joint fracture
Courtesy of CIMOP Bizet, France

Skeletal imaging

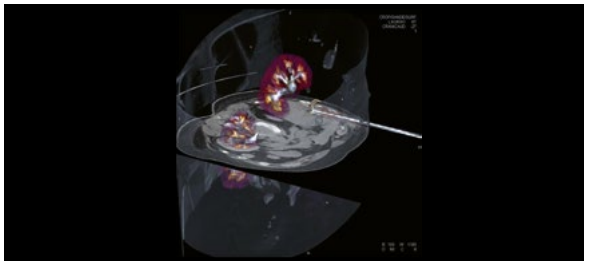
The high spatial resolution and 3D capabilities of CT imaging are ideal for diagnosing bone fractures and anatomical deformations, e.g. in the spine.



Long-range acquisition with great vascular details
Courtesy of CIMOP Bizet, France

CT angiography

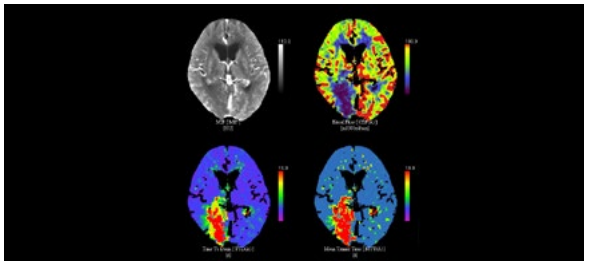
CT imaging to visualize vessels by using contrast media and masking out bones.



Radiofrequency ablation of liver metastasis
Courtesy of LMU Großhadern, Germany

CT needle guidance

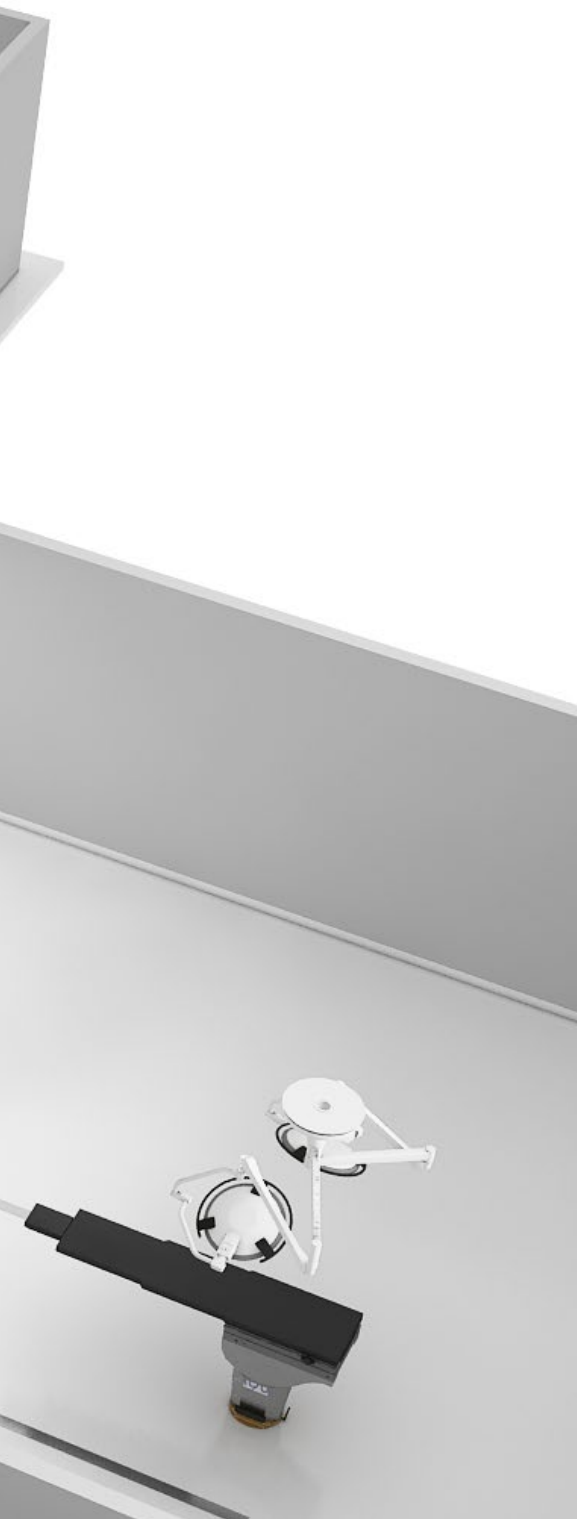
With near real-time 3D guidance featuring axial, coronal, sagittal, and oblique planes, you can achieve accurate needle positioning quickly.



Comprehensive stroke assessment
Courtesy of LMU Großhadern, Germany

Perfusion imaging

Helps assess tissue-level perfusion by tracking the flow of contrast media within vessels. e.g. to visualize organ perfusion for surgical and embolization procedures.



Team up with an experienced partner

Siemens Healthineers and Getinge will accompany you along the journey of customizing your multi-modality OR according to your specific needs by combining our shared technical and clinical experience with multi-modality setups.

We believe in partnering with our customers as we design and implement our solutions, so we are excited to hear your ideas and help you translate them into practice. Our goal is to deliver a tailor-made solution that meets your needs and exceeds your expectations.

Explore with AR

Do you want to experience Nexaris Therapy Suites virtually?

Explore our solutions and the idealized surgical room set-up with our augmented reality (AR) app “AR Surgery Explorer”. Only three steps are necessary for your augmented experience:

Download the “AR Siemens Healthineers” app on your mobile device (best choice: iPad Pro) from your Apple app store. Open the app and chose “AR Surgery Explorer”. Direct your mobile device to a structured surface and experience our solutions in an interactive way.

Download on the App Store

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[1] Daniela Kuhnt et al., "Correlation of the Extent of Tumor Volume Resection and Patient Survival in Surgery of Glioblastoma Multiforme with High-Field Intraoperative MRI Guidance." Neuro-Oncology 13, no. 12 (2011): 1339–48, http://doi.org/10.1093/neuonc/nor133.

[2] Tian Ming Qiu et al., "Clinical Experience of 3T Intraoperative Magnetic Resonance Imaging Integrated Neurosurgical Suite in Shanghai Huashan Hospital," Chinese Medical Journal 125, no. 24 (2012): 4328–33, http://doi.org/ 10.3760/cma.j.issn.0366-6999.2012.24.002.

[3] Christopher Nimsky et al., "Intraoperative High-Field-Strength MR Imaging: Implementation and Experience in 200 Patients," Radiology 233, no. 1 (2004): 67–78, https://doi.org/10.1148/radiol.2331031352.

[4] Roberto Luigi Cazzato et al., "Flat-Panel Cone-Beam Ct-Guided Radiofrequency Ablation of Very Small (<=1.5 cm) Liver Tumors: Technical Note on a Preliminary Experience," Cardiovascular and Interventional Radiology 38, no. 1 (Feb 2015): 206–12, https://doi.org/10.1007/s00270-014-1019-6.

[5] Mingming Zhu, Ziqi Sun, and Chin K. Ng, "Image-Guided Thermal Ablation with MR-Based Thermometry," Quantitative Imaging in Medicine and Surgery 7, no. 3 (2017): 356–68, http://doi.org/10.21037/qims.2017.06.06.

[6] Shin et al., "Postablation Assessment Using Follow-Up Registration of CT Images Before and After Radiofrequency Ablation (RFA): Prospective Evaluation of Midterm Therapeutic Results of RFA for Hepatocellular Carcinoma", American Journal of Roentgenology. 2014;203: 70-77. 10.2214/AJR.13.11709

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*** 64-slice configuration

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