MRI—*The Diagnostic Edge*

Why Should I Refer My Patients To An AIRIS® Elite?

The patient-oriented Hitachi AIRIS® Elite Open MR system provides a comfortable environment during magnetic resonance imaging examinations. It has an award-winning open gantry design with an asymmetric two-post architecture that offers the patient a non-claustrophobic environment. The open design easily accommodates not only claustrophobic patients, but those who are non-ambulatory

or larger-than-average as well. The spacious gantry opening also provides the healthcare professional the opportunity to directly attend to patients with access on all four sides.

The Elite features a padded patient table, which is power-driven in three directions to aid in transferring patients from hospital beds and wheelchairs. The table, extra-wide and ultrathin, is strong enough to support large patients.

To further ensure comfort and convenience, a two-way intercom system and a technologist alert system provide communication between the technologist and the patient during the exam.

What Does The AIRIS® Elite Provide For Me Clinically?

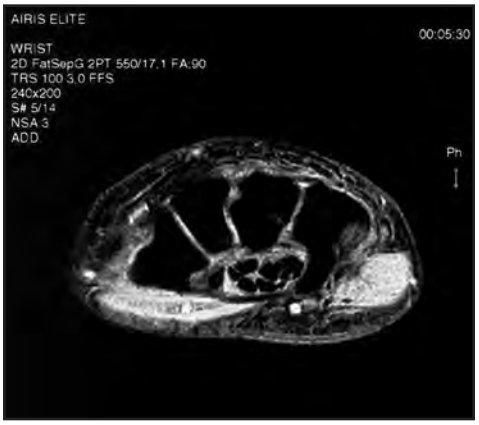
In a clinical practice, the quality of the images is extremely important to you and your patients. AIRIS Elite offers an ideal combination of image quality and patient comfort, satisfying physicians and patients. AIRIS® Elite Advanced Mid-field MR has an open design that combines a 0.3T field strength and advanced magnet technology for image quality, patient throughput and clinical capabilities previously not possible at mid-field. AIRIS Elite has a fast and powerful gradient system, with 21mT/m gradient amplitude and 55T/m/s slew rate, enabling it to perform clinical imaging capabilities including comprehensive MR angiography techniques with exceptional vascular detail, and RF-Fat Saturation for enhanced visualization of cartilage and ligaments. AIRIS Elite achieves sub-millimeter resolution imaging essential for distinguishing intricate anatomy such as cranial nerves and nerve roots. Additionally, AIRIS Elite provides short acquisition times, which reduce patient motion and increase the potential for excellent image quality.

Hitachi's actively decoupled linear and multiple array coils are designed for anatomically-specific regions of interest, and provide high signal-to-noise even with the most demanding sequences. AIRIS Elite RF receive coils can also accommodate the widest variety of patient body types.

AIRIS Elite's state-of-the-art workstation and efficient graphical user interface help maintain high patient throughput and patient satisfaction. Additionally, the workstation enables images to be easily saved on a CD for the patient and referring physicians.

Orthopedic Imaging Capabilities

MRI offers one of the best of all imaging modalities because of its excellent contrast differentiation between muscle, fat, vessels, tendons, ligaments, cartilage, cortical bone and marrow bone space. MRI displays fine delineation of soft tissue and bony tumors and is useful in detecting avascular necrosis of bone, particularly of the hip. High-resolution knee imaging techniques provide unparalleled detail of the menisci, ligaments and cruciates.



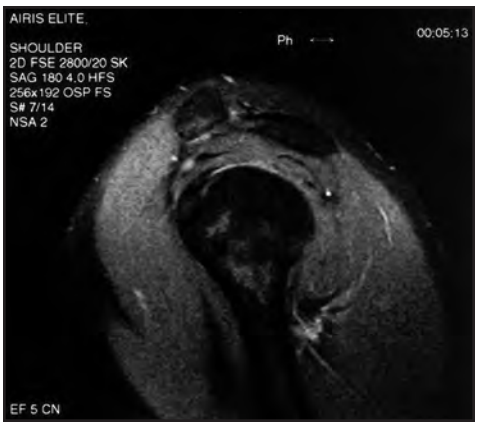
A fat separation sequence (FatSep™G) was used to acquire these thin-slice (3mm) small FOV (10cm) axial wrist images.

This 3D Phase Balanced SARGE sagittal image of the knee was acquired with 3mm slices.

MR imaging is well-suited for the evaluation of ligaments, muscle and bony abnormalities of the shoulder without the need for painful invasive procedures. MRI demonstrates similar advantages in imaging other complex anatomy such as the elbow, wrist, foot and ankle due to its multiplanar imaging capability, its sensitivity to soft tissue and bone disease processes and its ability to identify dislocations and fractures.

This Spin Echo coronal shoulder sequence was acquired with the MA Shoulder coil to achieve uniform signal over the entire 18cm FOV.

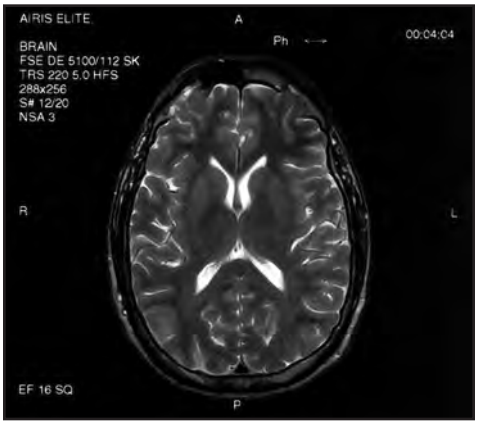
T1-weighted sagittal Gradient Echo of the ankle employing RF-Fat Saturation.



PD-weighted shoulder image with sub-millimeter resolution demonstrates uniform RF-Fat Saturation across an 18cm FOV.

Detailed axial knee images are created using SARGE sequence. The acquisition was obtained using a multiple array extremity coil. 15 slices were acquired in less than 4 minutes.

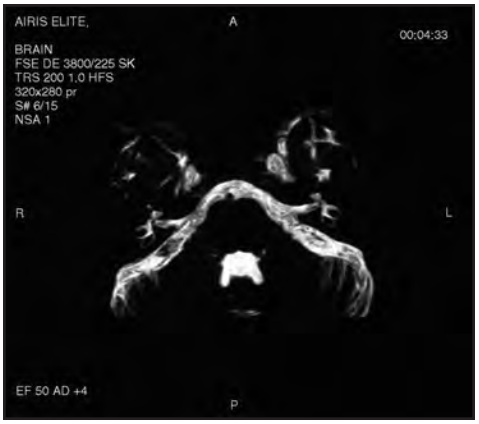
Neurological Imaging Capabilities



High-resolution T2-weighted Driven Equilibrium FSE axial images of the brain were acquired in just over 4 minutes.

Axial cervical spine images are acquired using a thin-slice 3D Balanced SARGE sequence. High resolution contributes to the nerve root detail.

MRI of the brain provides excellent presentation of contrast between various anatomical structures. MR studies of the posterior fossa are well-defined because MRI is not subject to bone artifacts that obscure lesions, particularly those in the cerebellar-pontine region. Complex imaging planes are possible which allow direct imaging of the optic nerve and its tracts through the orbital apex and beyond the optic chiasm.



Sub-millimeter high-resolution images of the IAC's were acquired using a Driven Equilibrium FSE sequence. The short scan time is a result of the high echo factor.

T2-weighted sagittal lumbar spine images were acquired in only 4 minutes with the use of Driven Equilibrium FSE.

MRI of the spine provides diagnostic information for evaluation of primary or metastatic tumors of the spinal cord. MR imaging of other important anatomical structures of the spinal cord such as the nerve and nerve roots, neural foramina, ligaments and disc spaces is further enhanced by exceptional resolution and contrast without bone artifacts.

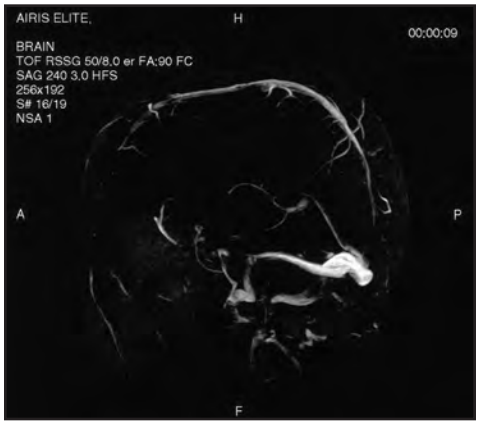
Using orthogonal and oblique slice planes, along with various selections of tissue contrast, MR provides an effective alternative to X-ray myelography and the risks associated with intrathecal contrast injections.

Driven Equilibrium FSE T2-weighted sagittal brain was acquired with high resolution in less than 4 minutes.

This sagittal T1-weighted cervical spine image provides extended anatomical coverage from brain stem to T-4.

Vascular Imaging Capabilities

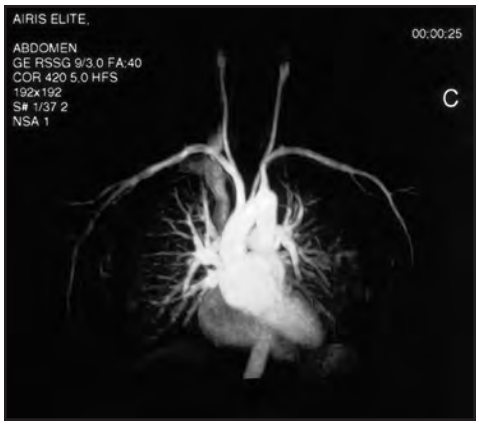
MR angiography (MRA), the noninvasive MR imaging method used to assess vascular conditions, has been proven effective in the evaluation of vascular disease with reduced discomfort and risk associated with conventional angiography. MR has been found to be instrumental in the evaluation of acute vascular processes and acute head trauma, when the earliest and most accurate diagnosis is crucial.



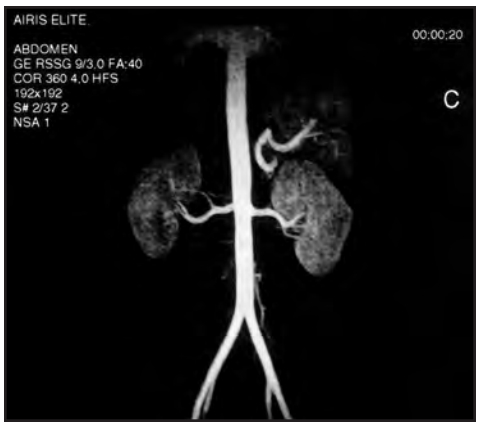
This 2D TOF MRV provides a three-dimensional view of the venous flow of the sagittal sinus.

This 2D TOF carotid MRA allows for evaluation of the carotid bifurcations and the vertebral arteries.

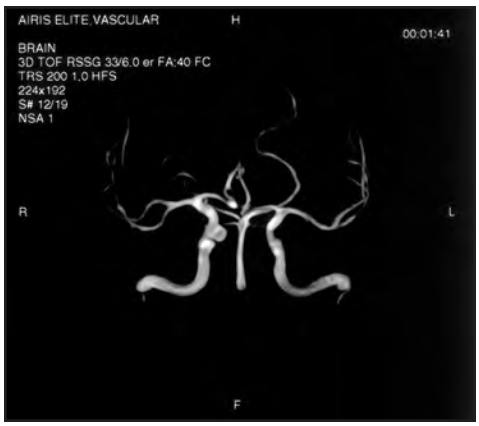
A 3D TOF multiple slab volume provides noninvasive visualization of the intercranial vasculature.



Timed Bolus MR Angiography demonstrating the aortic arch and subclavian arteries. Low TE contributes to enhanced vessel delineation.



Timed Bolus MRA of the renals was acquired using an RF-Spoiled SARGE sequence in only 20 seconds.



The Circle of Willis is visualized using a 3D TOF multiple slab volume acquisition demonstrating excellent vessel visualization.

Other Imaging Capabilities

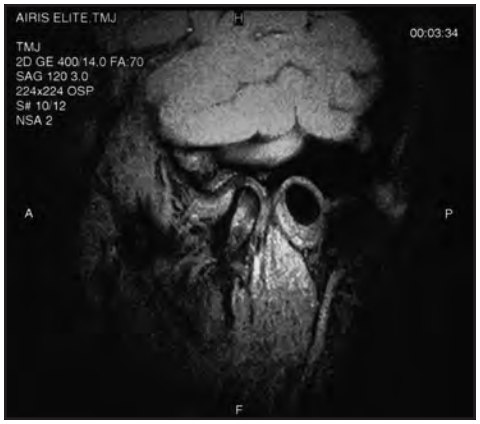
The elimination of breathing motion was achieved using respiratory gating in this T1-weighted coronal image of the abdomen. Clear visualization of the organs are demonstrated using a large field-of-view.

Uniform RF Fat saturation is obtained on this T2-weighted Driven Equilibrium FSE of the pelvis across a 24cm FOV.

Driven Equilibrium FSE T2-weighted axial breath-hold sequence acquires 15 slices in 21 seconds.

Short scan times were achieved using a high echo-factor on these T2-weighted FSE coronal images.

Soft tissue Neck 2D Driven Equilibrium Fast Spin Echo coronal Soft Tissue Neck demonstrating high uniform RF fat-saturation across the 22cm field-of-view.



This T1-weighted Gradient Echo sagittal of the Temporal Mandibular Joint using thin slices and a 12cm Field-of-view provides clear visualization of the joint space.

Facial/Neck

Superb soft tissue detail demonstrated by MR imaging allows for enhanced evaluation of facial and neck structures. Presurgical and preradiation treatment planning and follow-up are enhanced by MRI's ability to delineate anatomical boundaries.

Abdomen/Pelvis

Abdominal MR allows imaging within a single breathhold, and respiratory gating techniques provide motion-free imaging.

MRI of the pelvis and genitourinary system offers the advantages of improved soft tissue discrimination and absence of bone artifacts.

Chest/Cardiac

Chest anatomy inherently offers contrast well-suited for MR imaging from structures such as fat, muscle, lung and flowing blood. Cardiac gating techniques provide motion-free imaging for diagnosis of vascular and non-vascular pathology by capturing the images at the same point throughout the cardiac cycle.

HITACHI
HITACHI MEDICAL SYSTEMS AMERICA, INC.

The Hitachi AIRIS® Elite provides the versatility needed to meet a demanding range of clinical requirements. It provides patient comfort while delivering consistently high quality images needed for comprehensive diagnosis. And AIRIS Elite is backed by Hitachi Medical Corporation, a recognized leader in diagnostic imaging technology.

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