

First MAGNETOM Vida up and running in Canada





Martin Sherriff
(second from
left) with MRI
technologists Joanne
Houghton, Michelle
Medina and Bonny
Hadweh

Increased diagnostic confidence at Alberta Children's Hospital

Courtesy of Martin Sherriff, MRI Supervisor, Alberta Children's Hospital, Calgary, Alberta, Canada

Our new MAGNETOM Vida scanner was recently installed at our facility, Alberta Children's Hospital. This new scanner has improved our diagnostic confidence, image quality and patient experience.

The following cases highlight the Compressed Sensing GRASP-VIBE (Golden-Angle RAdial Sparse Parallel) acquisition which has become a valuable technique to our practice in such a short time. This acquisition is performed in one continuous free-breathing run and provides robust and repeatable high resolution imaging with dynamic contrast enhancement. This technique has been especially beneficial for our pediatric patients who require sedation.

"GRASP-VIBE enables a completely free-breathing exam with a significant reduction in motion artifacts, resulting in a great patient experience with fewer repeat exams – an excellent benefit for both the patient and the radiologist."

– Dr. Harmeet Kaur, MBBS MD DNB
Pediatric Radiologist, Alberta Children's Hospital

Case #1: Focal Nodular Hyperplasia

History

14-year-old female with focal nodular hyperplasia (FNH). A large lesion in segment 8 of the right hepatic lobe. It is isointense to liver on pre-contrast images, enhances avidly in arterial phase imaging with washout in delayed imaging. This study was performed with liver-specific contrast agent gadoxetate disodium. This mass demonstrates retention of activity on delayed imaging, confirming the presence of hepatocytes within it, characteristic of the diagnosis of FNH. This patient was initially imaged on a MAGNETOM Avanto using the traditional 3D VIBE technique, requiring separate breath-holds for each phase of the dynamic exam.

One year later, the same patient was imaged using the new MAGNETOM Vida with the 3D GRASP-VIBE technique under completely free-breathing conditions with an injection gadobutrol contrast media. The MAGNETOM Vida with GRASP-VIBE provides superior image quality with more dynamic phases while providing a simplified workflow with no breath-holds.

Scan Parameters

MAGNETOM Avanto 1.5T System –

- FOV 320 mm, 64 slices at 2.7 mm, 192×256 matrix
- Pre-contrast, arterial, portal venous and delayed phase (11 sec breath-hold for each)

MAGNETOM Vida 3T System –

- FOV 320 mm, 96 slices at 2 mm slice thickness, 256×256 matrix, free-breathing; acquisition time 5 min 10 sec
- 1 pre-contrast phase (22.8 sec temporal resolution), 3 arterial phases (5.4 sec temporal resolution), 1 portal venous phase (22.8 sec temporal resolution) and 1 delayed phase (22.8 sec temporal resolution)

Initial exam: Traditional multiple breath-hold 3D VIBE acquisition

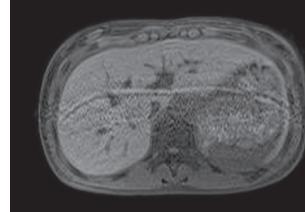


Figure 1A:
Pre-contrast
VIBE

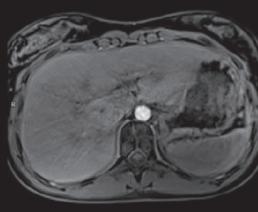


Figure 2A:
Pre-contrast
GRASP-VIBE,
22.8 sec
temporal
resolution



Figure 1B:
Arterial
phase VIBE

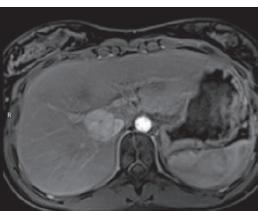


Figure 2B:
First arterial
phase GRASP-
VIBE, 5.4 sec
temporal
resolution

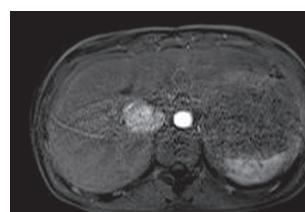


Figure 1C:
Portal venous
phase VIBE

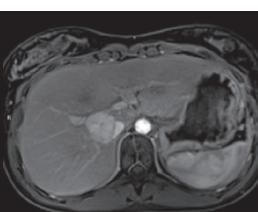


Figure 2C:
Second arterial
phase GRASP-
VIBE, 5.4 sec
temporal
resolution



Figure 1D:
3 min delayed
phase VIBE



Figure 2D:
Third arterial
phase GRASP-
VIBE, 5.4 sec
temporal
resolution

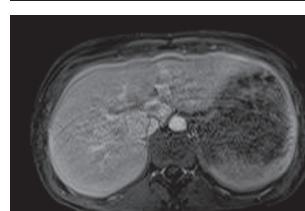


Figure 2E:
Portal venous
phase GRASP-
VIBE, 22.8
sec temporal
resolution

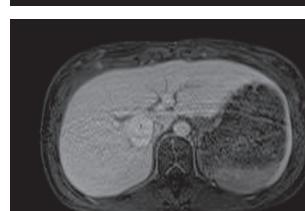


Figure 2F:
Delayed phase
GRASP-VIBE,
22.8 sec
temporal
resolution

Case 2: Retroperitoneal Rhabdomyosarcoma

History

16-year-old female, 168 cm tall, with a follow up for recurrence of retroperitoneal rhabdomyosarcoma (RMS). In this examination, the entire abdomen and pelvis are assessed with GRASP-VIBE and corresponding coronal/sagittal reformats demonstrate excellent image quality throughout the entire abdomen and pelvis with minimal peristaltic motion.

Scan Parameters

MAGNETOM Vida 3T System

- FOV 300 mm, 128 slices at 3 mm slice thickness (384 mm coverage in head-foot direction), 256 matrix, 100% slice resolution, free-breathing; acquisition time 5 min 10 sec
- 1 pre-contrast phase (28.2 sec temporal resolution), 3 arterial phases (10.8 sec temporal resolution), 1 portal venous phase (45.6 sec temporal resolution) and 1 delayed phase (45.6 sec temporal resolution)

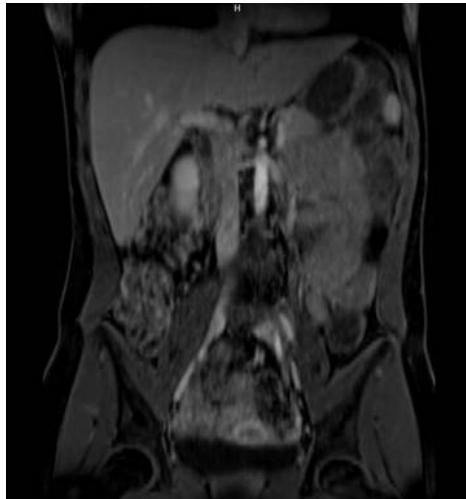


Figure 3A: GRASP-VIBE portal venous phase, 45.6 sec temporal resolution, 3 mm coronal reformat

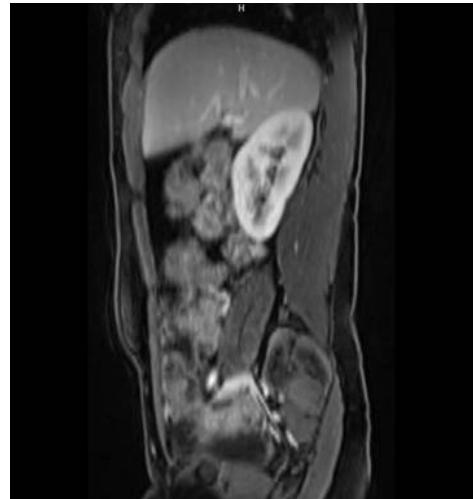


Figure 3B: GRASP-VIBE portal venous phase, 45.6 sec temporal resolution, 3 mm sagittal reformat

Case 3: Complex Right Paraspinal Mass with Multiple Internal Cystic Regions

History

Six-year-old male with complex right paraspinal mass with multiple internal cystic regions demonstrating fluid-fluid levels with associated cord compression and biopsy proven to be benign teratoma. GRASP-VIBE shows significantly less flow artifacts from the heart compared to the T1 fat-saturated turbo spin-echo sequence that is typically used.

Scan Parameters

MAGNETOM Vida 3T System

- 4A: 2D T1 fat-saturated Turbo Spin-Echo: FOV 180 mm, 24 slices at 4 mm slice thickness, 205×256 matrix
- 4B: 3D GRASP-VIBE: FOV 180 mm, 60 slices at 2 mm slice thickness, 224×224 matrix, 2 phases, temporal resolution 35.4 sec; free-breathing; acquisition time 3 min

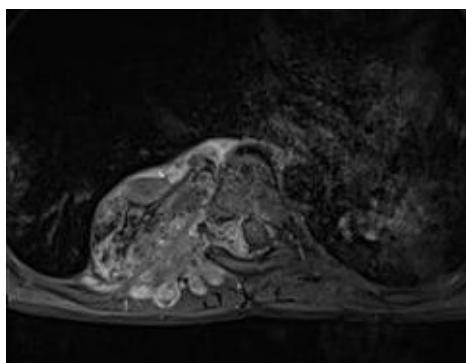


Figure 4A: Axial 2D T1 fat-saturated turbo spin-echo

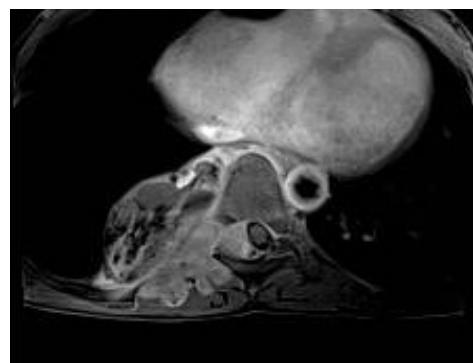


Figure 4B: Axial 3D GRASP-VIBE



About Alberta Children's Hospital

At Alberta Children's Hospital, children, youth, families, staff, and physicians partner together to provide the utmost in patient and family-centred care to pediatric patients in Calgary, and southern Alberta. Services include acute, outpatient, surgical, medical, and Neonatal Intensive Care, as well as mental health, and emergency health services.

Read more at
albertahealthservices.ca

Overcoming Clinical Challenges with Innovative Technology

The GRASP-VIBE sequence on our new MAGNETOM Vida system has significantly enhanced the temporal resolution of dynamic contrast enhanced imaging and can be performed without breath-holds, resulting in a tremendous increase in our diagnostic confidence, while

increasing patient compliance at Alberta Children's Hospital. The increased homogeneity of the MAGNETOM Vida enables wider coverage of anatomical areas resulting in reduced exam times.

Learn more about the MAGNETOM Vida at siemens.ca/healthineers/vida

For more information, contact: timothy.devito@siemens-healthineers.com

Siemens Healthineers Innovations Symposium 2018

The more you know, the better their care.

Siemens Healthineers Innovations Symposium is an annual knowledge-sharing event designed exclusively for imaging professionals. Over the course of two-and-a-half days, you will have access to timely and relevant education to help you acquire the tools and knowledge you need to maximize the use of your Siemens Healthineers equipment and help you improve the level of care you deliver to your patients. You will also have ample time to learn from and share best practices with your peers.

Registration opens June 6.

We look forward to seeing you there!

For event details, contact: monica.ramsuran@siemens-healthineers.com



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