

# *syngo* REVEAL

Powered by Tim

[www.siemens.com/medical](http://www.siemens.com/medical)

**SIEMENS**  
medical

# syngo REVEAL Powered by Tim



Figure 1A: syngo REVEAL whole body imaging with Tim in a case of prostate cancer for whole body metastases evaluation showing multiple metastatic lesions. Courtesy of Dr. Ichiba, Jikei University, Japan (MAGNETOM Avanto).

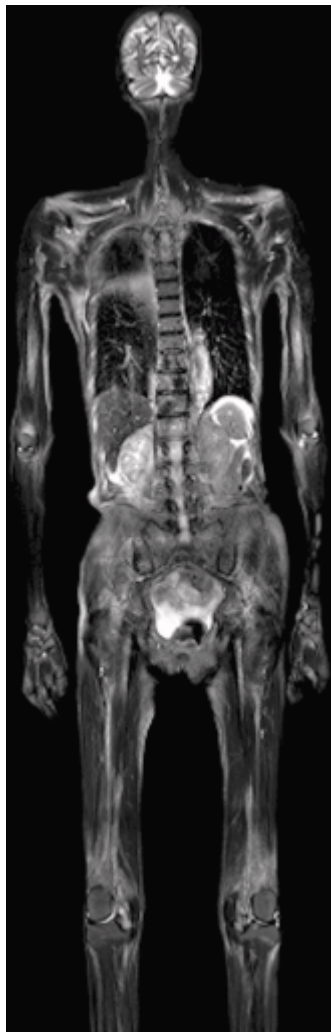


Figure 1B: T2W whole body imaging with Tim in a case of prostate cancer for whole body metastases evaluation. Courtesy of Dr. Ichiba, Jikei University, Japan (MAGNETOM Avanto).

syngo REVEAL is ideal for assessing cancer. Malignant cystic lesions show low ADC (apparent diffusion coefficient) as compared to benign cystic lesions, helping in differentiating benign from malignant cystic lesions of the pancreas. syngo REVEAL is recommended to be used as a complementary sequence to your standard protocols, only adding a couple of minutes to the entire examination but improving your diagnostic confidence. syngo REVEAL is useful in liver, pancreas, pelvis, breast, lymph Node assessment, whole body metastases evaluation, and in many more applications. Thanks to Tim technology, all of this can be done easily without repositioning the patient or the coils. This means you can better differentiate malignant from benign lesions. Get additional information about primary and metastatic tumors. Assess possible infiltration of the lymph nodes more reliably. With Tim's iPAT capabilities (SENSE and GRAPPA) you enjoy fast image acquisition and great image quality.

syngo REVEAL is an echo planar imaging (EPI) based diffusion weighted imaging technique for the body. Diffusion weighted imaging non-invasively looks at the restriction of random Brownian motion of tissue water. The cell structure of biological tissues restricts random water motion. The signal intensity of diffusion weighted images depends on the pulse sequence used, the T2 of the underlying tissue and the diffusion characteristics of that tissue. Because of this complexity, DWI can be difficult to interpret in conditions where the underlying T2 is altered. A set of images called ADC maps help in these situations. ADC maps are created by combining information from diffusion weighted images and information from images obtained from the same pulse sequence, but with low or no diffusion gradients "ON" (low b-value) to reduce the T2 contributions from tissue also called the "T2 shine thru effect." The signal intensities of diffusion weighted images and ADC maps are very different.

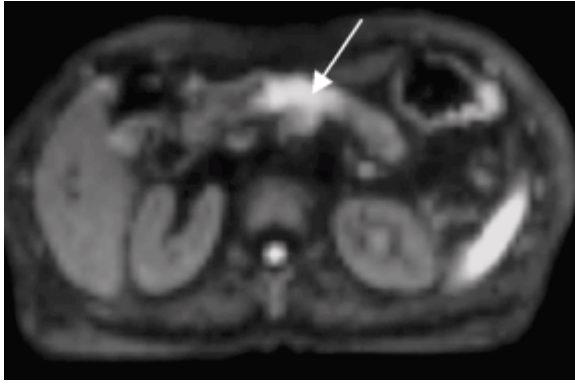


Figure 2: syngo REVEAL in a case of pancreatic tumor showing the tumor. Courtesy of Gunma Pref. Cancer Center, Japan.

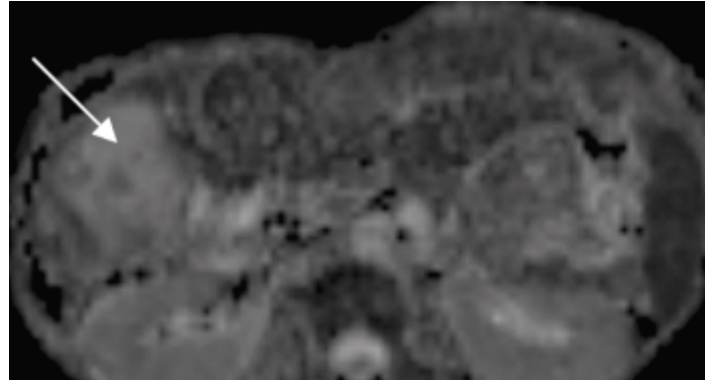


Figure 3: Higher ADC values in a case of necrotic tumor in the liver. Courtesy of Dr. Ihab R. Kamel, MD, PhD, Johns Hopkins University.

A decrease in ADC causes increased signal intensity on DWI but decreased signal intensity on ADC maps. ADC maps give an indication of the mobility of water in the tissue. Large values of ADC are indicative of free water while smaller values imply that water mobility is constrained by the local tissue environment.

#### Clinical role:

##### 1. Better differential diagnosis by providing more information:

- 1a. To differentiate benign and malignant cystic lesions in the pancreas. Malignant cystic lesions show low ADC as compared to benign cystic lesions (see Figure 2).
- 1b. Liver abscesses have lower ADC than cystic and necrotic tumor (see Figure 3).
- 1c. ADC maps in prostate can guide biopsy in difficult cases.

##### 2. Better treatment planning by grading tumors accurately:

- 2a. In the body very small suspected HCC lesions less than 5 mm can be followed-up on MR before liver transplant (see Figure 4).
- 2b. Diffusion images in the breast may identify more lesions so that treatment can be planned better (see Figure 5).

##### 3. Better patient care by quality follow-up:

- 3a. Diffusion MR is used in treatment planning and following therapy (see Figure 6).
- 3b. Post-treatment follow-up for residual tumor
- 3c. Detecting recurrence and
- 3d. Early detection of complications (acute infarcts along surgical margins or post-radiation vasculopathy, from chemotherapy or radiation therapy). All this may help in quality follow-up and guide prompt intervention, improving patient care and speed recovery.



Figure 4: syngo REVEAL with a b value of 50 and iPAT (GRAPPA) factor 2 is excellent for suspected HCC lesions.

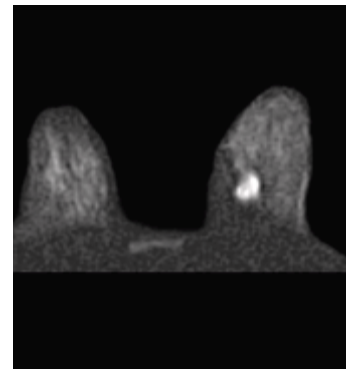


Figure 5: syngo REVEAL on breast showing hyperintense lesion. Courtesy of Dr. Janka, University of Erlangen (MAGNETOM Avanto).

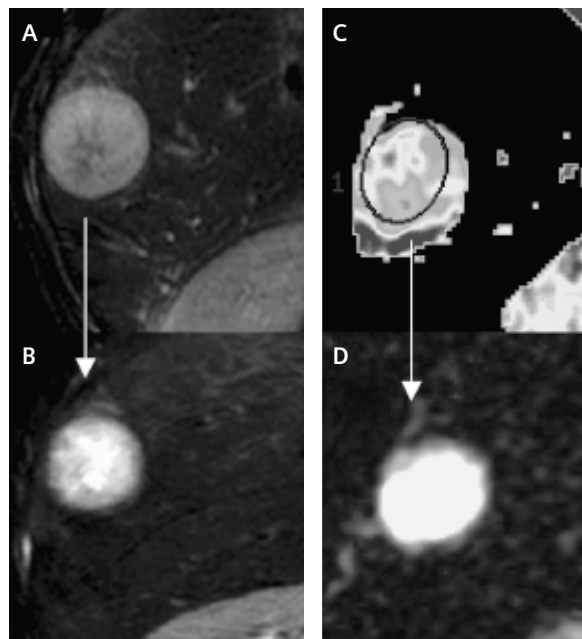


Figure 6: 6A: pre-treatment REVEAL image showing low ADC values (6C). 6B: post-treatment REVEAL image showing high ADC values (necrotic changes) in 6D. Courtesy of Dr. Ihab R. Kamel, MD, PhD, Johns Hopkins University.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this brochure are available through the Siemens sales organization worldwide. Availability and packaging may vary by country and is subject to change without prior notice. Some/all of the features and products described herein may not be available in the United States.

The information in this document contains general technical descriptions of specifications and options as well as standard and optional features which do not always have to be present in individual cases.

Siemens reserves the right to modify the design, packaging, specifications and options described herein without prior notice. Please contact your local Siemens sales representative for the most current information.

Note: Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.

© 02.2007, Siemens AG  
Order No. A91MR-1100-10C-7600  
Printed in Germany  
CC MR 01100 WS 02073.

**Contact Address USA**

Siemens Medical Solutions USA, Inc.  
Magnetic Resonance Division  
51 Valley Stream Parkway  
Malvern, PA 19355-1406 USA  
Telephone: 1-888-826-9702

**Headquarters**

Siemens AG, Medical Solutions  
Henkestr. 127, D-91052 Erlangen  
Germany  
Telephone: +49 9131 84-0  
[www.siemens.com/medical](http://www.siemens.com/medical)