

# Prospective Gating Technique Opens Window to CTA for More Patients

At the University of Washington Medical Center, William P. Shuman, M.D., is conducting several studies to evaluate the effect of prospective gating techniques on patients. Along with Dr. Shuman, Kelley R. Branch, M.D., has used SnapShot™ Pulse on GE Healthcare's LightSpeed® VCT since December 2006.

"We now use prospective gating for 75 percent of our cardiac exams," said Dr. Shuman. Several factors determine whether a patient is a candidate for this technique. "The break points are, can we get the heart rate to the desired level, do we need ventricular functional information and how much is dose an issue with that patient? For instance, if we have an 85-year old male, we're not as concerned about dose as with a 40-year-old female."

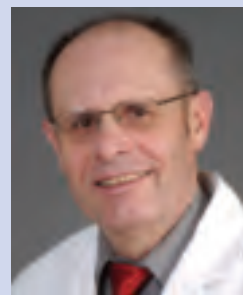
SnapShot Pulse is a prospective gating technique that images the heart and arteries in a step-and-shoot fashion using a series of three to four X-ray doses that are turned on only during the optimal heart phase. Dr. Shuman and Dr. Branch have extensive experience with this new technique, imaging two to three patients each day.

They are using SnapShot Pulse for three different diagnostic objectives; one of the heart, another of the heart plus the aorta and the third for the heart, aorta and pulmonary fields. These may be imaged at one for a "triple" or "multiple" evaluation of the separate thoracic structures.

"Our lowest dose was 1.2 mSv\* and our highest was 6.8 mSv\* when using SnapShot Pulse gating prospectively," stated Dr. Branch. "Our retrospective gating for an average cardiac scan was all over the map, from 4 to 18 mSv and higher."

SnapShot Pulse has been used for several studies of the aorta with great results in image quality. Dr. Branch believes they are getting superb image quality and a reliable study on patients with regular heart rates.

There is also the advantage of repeat studies. Dr. Shuman noted, "What happens if we miss the right coronary artery, have an inadequate bolus or other technical problem? A case in point; we retrospectively scanned a patient to determine cardiovascular vessel disease and functional status. After her exam, she presented with greater than 50 percent plaque levels in her LAD. She had a stent placed successfully. Two weeks post stent, she came into our ER with chest pain. Rather than using a helical scan, we used prospective gating on her and discovered her stent was patent."



William P. Shuman, M.D. is Director of Radiology at UWMC, Vice Chairman and Professor for the Department of Radiology.

Dr. Shuman received his undergraduate Bachelor of Science from Yale, his Medical degree from State University of New York Syracuse, and completed a residency in Radiology at the University of Vermont. Clinically, Dr. Shuman is a member of the Body Imaging section of Radiology and is one of the leaders in creating cardiac CT at UW. Outside of UW, Dr. Shuman has served as Associate Editor for the two leading academic peer-reviewed journals in Radiology, is currently on the Appropriateness Committee of the American College of Radiology, and is the incoming President of the Society of Body CT/MR.

## About The University of Washington Medical Center

UW Medical Center is a nationally recognized academic medical center for the UW School of Medicine offering world-class specialty and primary care. In 2007, the facility was ranked as the 11th best hospital in the country by U.S. News & World Report's 2007 ranking of "America's Best Hospitals." Other awards of distinction include receipt of the first Magnet Hospital award for nursing excellence, the 2007 Hospitals for a Healthy Environment leadership award and the 2006 Washington State Quality Award at the leadership level.

\*Obtained by EUR-16262 EN using chest factor of 0.017\*DLF



Kelley R. Branch, M.D., is Acting Associate Professor in Cardiology at the University of Washington Medical Center. Dr. Branch received his undergraduate Bachelor of Science in Psychobiology from UCLA, his medical degree from Jefferson Medical College and completed a residency in internal medicine at the University of Michigan Medical Center. Following a Fellowship in Cardiovascular Disease at UWMC, Dr. Branch assumed his current role within the Division of Cardiology.

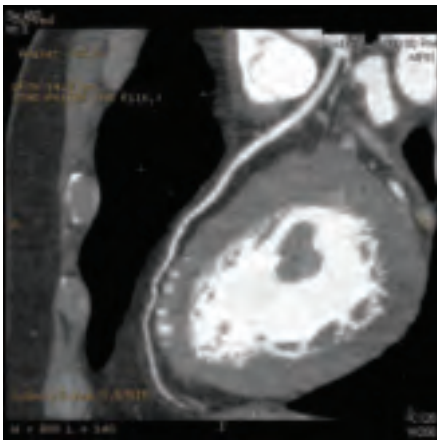
In 2003, Dr. Branch received the American College of Cardiology Merck Fellowship Award and in 2007, a Cardiology Teaching Excellence Award from UWMC. He is also a founding member of the Society of Cardiovascular Computed Tomography (SCCT) and is actively engaged in several clinical studies.

As a result of their initial experience, SnapShot Pulse is part of the normal workflow. “We use it preferentially in patients whose heart rate we can decrease, as well as aorta and pulmonary embolism studies,” added Dr. Branch.

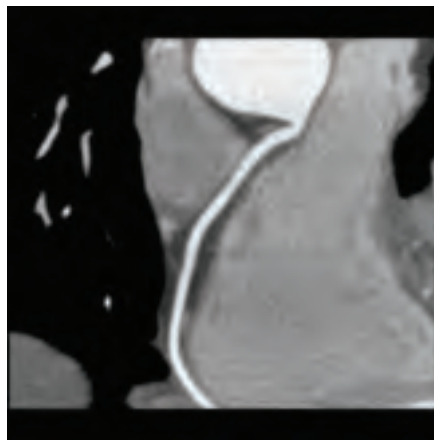
Dr. Branch can visualize the definition of the aortic wall and subsegmental vessels in the lungs. “The high image quality with gated exams makes sense because there is no significant vessel pulsatility.” Typically, aortic studies are done in support of the University of Washington Medical Center’s aorta clinic and stent grafting program.

Both doctors also believe that lower CTA dose is an important consideration for women under 45 and pediatrics. “With any female under 45, the breast is the most biosensitive, so you really need to pay close attention,” explained Dr. Shuman. With congenital heart disease, children receive multiple diagnostic evaluation. “CT with SnapShot Pulse can show you both right and left heart and pulmonary vasculature in a single low-dose study. With CT, the patient is in the scanner for four or five heartbeats. So we now have a lower dose alternative.”

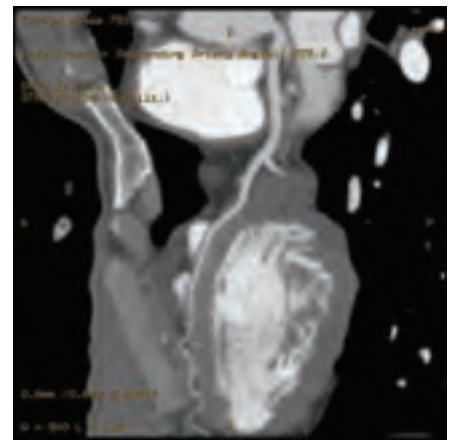
Looking to the future, Drs. Branch and Shuman see new possibilities for evaluating coronary disease in low to intermediate risk patients, primarily because the power of CT lies in its ability to clearly visualize patent vessels. Said Dr. Branch, “What is so nice about SnapShot Pulse is now I have a low dose method to perform coronary artery assessment in addition to nuclear exams.” ■



65-year-old male post aortic graft for aortic aneurysm with chest pain.



33-year-old female with a bicuspid aortic valve and dilated aortic root.



28-year-old male with persistent atypical CP and a normal stress test.