Versatile Revolution EVO Delivers Added Value and Advanced Imaging Capabilities for Private Practices

The CIDIMU Institute of Turin (Italy), part of the Group CIDIMU, is a center of excellence for diagnostic imaging, electrophysiology and endoscopy. In addition to a clinical research agreement with the Radiology Institute of the University of Pavia, the CIDIMU Institute also collaborates with several Italian and international medical societies.

As part of its advanced diagnostic imaging services, the Institute implemented Revolution™ EVO. According to Giacomo Paolo Vaudano, MD, the decision to select this system was based on the wide-ranging imaging needs at the Institute.

"We were primarily looking for a system that provided a good balance between cost and quality. In the private practice, we are doing almost all exams that require speed and high temporal resolution imaging, such as angiography, oncology, cardiac and colonoscopy," Dr. Vaudano says. "So, we needed a CT system that could perform a wide array of exams with good quality."

Dr. Vaudano and his colleagues determined that Revolution EVO was the system that could fulfill their demanding imaging needs for oncology and colonoscopy but also enabled them to expand their CT services by adding angiography and cardiology. Today, 30% of the Institute's CT exams are angiography and cardiology. Plus, Revolution EVO delivered the economic value the group needed in a private practice along with enhancements in efficiency and productivity that deliver a return on investment.

Figure 1. Dr. Giacomo Paolo Vaudano and Revolution EVO at the CIDIMU Institute.

"The added value is what we can do with the image quality and advanced capabilities," Dr. Vaudano adds. "It is reliable and fast with good image quality—it is an excellent and versatile system for a private practice."

What makes Revolution EVO an ideal CT system for practices, clinics and hospitals is its rotation speed and temporal resolution. The system delivers up to 175 mm/sec acquisitions enabled by high-pitch helical IQE and up to 0.35-second rotation speed. Dr. Vaudano says both capabilities are equally important.

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Plus, with the fast rotation speed he can acquire longer anatomic views, including abdominal and run-off angiography studies, in a very short time frame. And, with IQ enhance pitch booster, he can scan a chest as fast as two seconds with 175-mm-per-second acquisition speed to help shorten patient breath-holds while maintaining image quality.

With 360-degrees of rotation on Revolution EVO, the Institute can perform all possible clinical applications as well as urgent neuro and cardiac exams.

A key feature enabling the growth in cardiac CT at the Institute is SnapShot™ Freeze, which allows Dr. Vaudano to freeze coronary motion in high heart rate patients with a 58 msec equivalent gantry speed using effective temporal resolution.[1]

"To get high image quality with the least artifact possible, we are always performing cardiac CT exams with SnapShot Freeze," says Dr. Vaudano. Plus, the system will perform automatic reconstruction of the coronary tree with very good image quality so that Dr. Vaudano can examine the vessels and perform additional reformats.

Figure 2. Volume rendering of abdominal aorta with bone transparency to help clinicians better evaluate the relationship of vessels versus bone structures.

Figure 3. Axial image at the level of abdominal aneurysm where thrombus is well depicted inside the aorta; note the calcification on the vessel wall is clearly visualized.

Revolution EVO features the latest in Smart Flow technologies designed to improve productivity by streamlining workflow and access to information. With more intelligence and automation from patient preparation through post processing, hospitals and practices can perform more studies in less time and manage patient flow. This enhancement in efficiency and productivity enables CIDIMU Institute of Turin to schedule patients within 24 hours for a CT exam and deliver completed reports within one hour after the exam.

Reconstruction of images in real time has also impacted workflow. Image Check reconstructs and makes available for review up to 55 images per second. The system provides automated reconstructions with different slice thicknesses, performed during the exam, so that all the data is ready for reading once the exam is completed.

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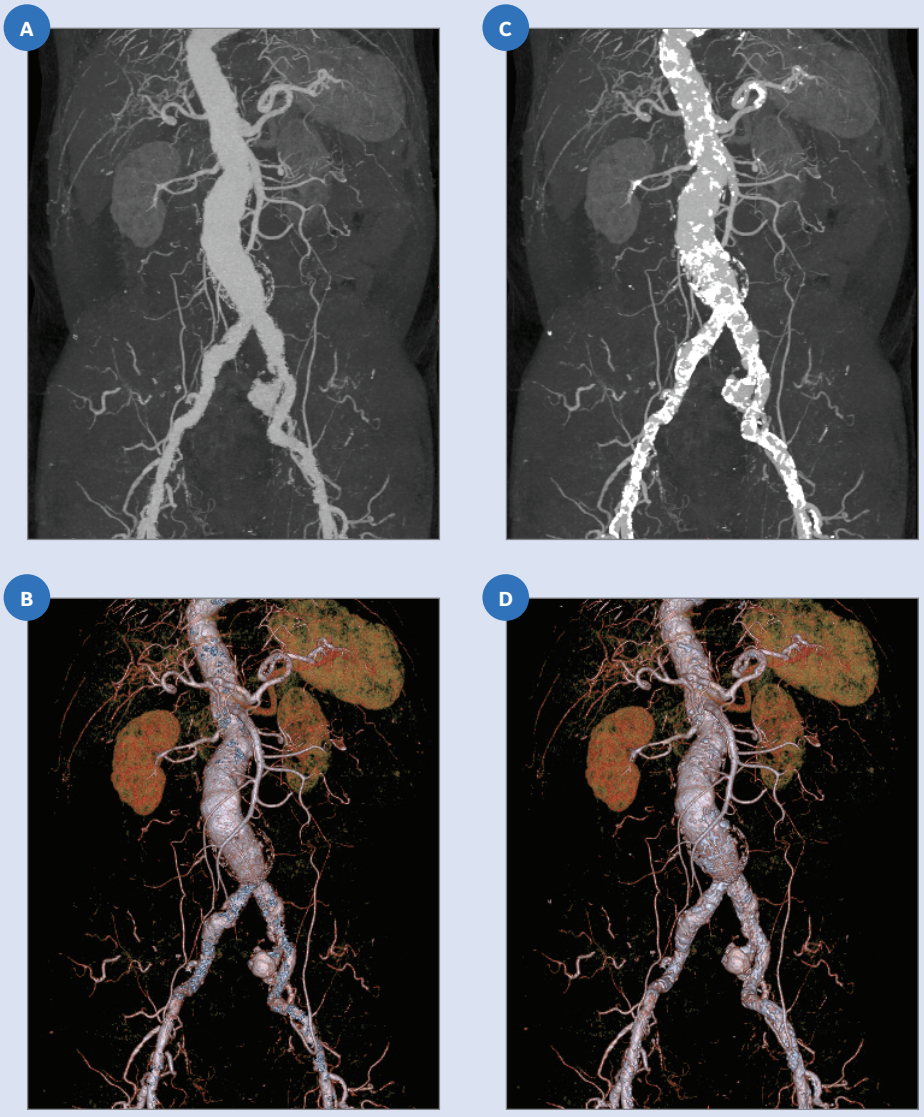

Figure 4. (A, C) 3D MIP and (B, D) Volume Rendering models, compared to better appreciate the vessel lumen, thanks to automatic calcification removal software.

"All these steps that were previously done manually are now implemented automatically so our workflow is much faster," he adds. Most important, however, is that with the system speed and more efficient workflow, Dr. Vaudano can now take the time to more intensively examine the CT imaging data for a more comprehensive review and report. And, he says, the enhanced reconstruction capabilities also improve his image analysis. Plus, with the implementation of the Advantage Workstation (AW) 7 software, Dr. Vaudano now has additional analytical tools at his disposal with Lung VCAR for efficient CT pulmonary nodule assessment and diagnosis and Advantage CTC Pro3D EC, an efficient reading workflow solution for colonic lesion detection. Both solutions available on the AW have increased his clinical confidence and quality of reports.

Technologists have commented to Dr. Vaudano that the system's automation and speed have simplified operation. Everything is faster for the technologists, from the auto sensing and protocol selection to the transferring of studies to the workstation. This simplified workflow increases productivity for both the technologists who can scan patients faster and the radiologists who can quickly report cases with no pathologies. As important, a faster exam translates to a better patient experience.

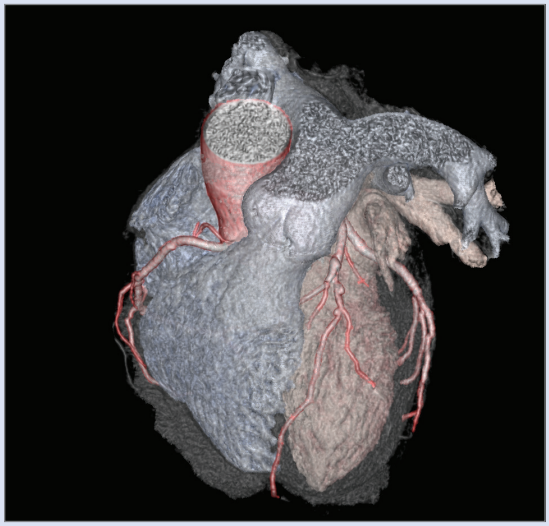

Figure 5. 3D Volume rendering of the heart and coronary tree with mixed visualization of right and left chambers with different transparencies to help clinicians better evaluate the relationship among heart structures.

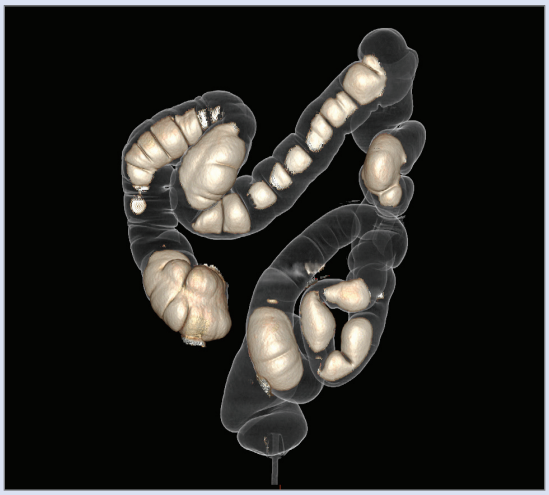

Figure 6. 3D Volume rendering of the colon with fecal tagging obtained by use of oral contrast media. Colon VCAR software automatically identifies the centerline and builds a 3D model of the colon, identifying suspected lesions for the clinician.

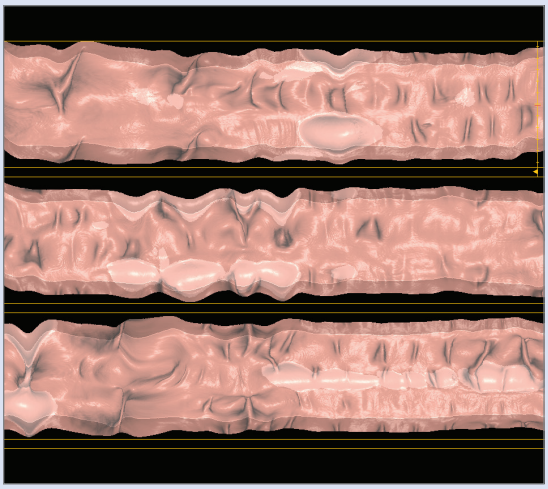

Figure 7. Virtual dissection rendering of colon with complete wall visualization and identification of suspected polypoid lesions: note the fecal tagging visualized in different color.

"Thanks to the automated patient positioning and auto selection of protocols, workflow has dramatically improved compared to our prior CT system," Dr. Vaudano explains.

Patients also win with the implementation of ASiR-V, which has further reduced dose. On average, ASiR-V delivers an 82% dose reduction compared to FBP at the same image quality.[2]

"If a practice wants to perform nearly any type of exam with very good quality at a reasonable price, then Revolution EVO is the right system for them," Dr. Vaudano says. "It's a typical workhorse, able to perform a very high number of exams each day without any delay in image reconstruction or the need for tube cooling. It is a stable, reliable system that delivers faster imaging and reconstruction with good performance and high image quality. For facilities or departments where it is critical for a CT system to never stop, Revolution EVO is always ready to perform the next exam." ■

1. As demonstrated in cardiac phantom testing.
2. Image quality as defined by low contrast detectability. In clinical practice, the use of ASiR-V may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. Low Contrast Detectability (LCD), Image Noise, Spatial Resolution and Artifact were assessed using reference factory protocols comparing ASiR-V and FBP. The LCD measured in 0.625 mm slices and tested for both head and body modes using the MITA CT IQ Phantom (CCT183, The Phantom Laboratory), using model observer method.