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seeing science

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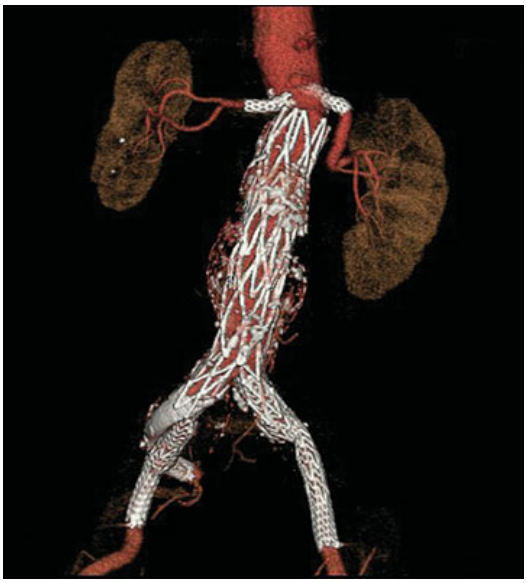
BY KATHARINE MILLER

3D Radiology—
Who Knew It Could Look So Good?

Images of realistic and colorful 3D human body parts line the hall outside the lab. Blood and muscle look like blood and muscle; bone looks like bone. You almost expect to find human cadavers being dissected within. Yet these 3D images were produced from MRI (magnetic resonance imaging) and CT (computed tomography) scans. "The colors are made up," says **Sandy Napel, MD**, professor of radiology at Stanford University School of Medicine and director of the Stanford Radiology 3D and Quantitative Imaging Lab.



These 3D images show a 67-year-old male's abdominal aortic aneurysms before (smaller image) and after (larger image) placement of stent grafts (white) on the aorta (center), the iliac arteries (at bottom) and the renal arteries where they branch off to the kidneys (top). The patient's aneurysms are shown as globular shapes on the aorta and the iliac artery at the lower left in the smaller image. The 3D Lab can track stent grafts over time to measure whether they change or migrate. Courtesy of Stanford 3D and Quantitative Imaging Laboratory.

Although MRI and CT scans produce a 3D volume of data, they are still commonly visualized as black and white 2D slices, says **Charles Stanley**, the lab manager. But some labs, including the Stanford Lab, created in 1996, now routinely produce these colorful 3D images to help physicians design appropriate interventions. For example, Napel says, orthopedic surgeons with complex fractures to repair, or cardiac surgeons who surgically replace valves or correct congenital defects rely on these images in planning the best course of action. These images can also be used by biocomputational scientists seeking to design and build prosthetic devices; build computer models of different surgical options in vascular bypass surgery; or predict functional changes following orthopedic surgery. □