

## DR. SCHEINER NAMED VISITING PROFESSOR

Jac D. Scheiner, M.D. has been invited to serve as a visiting professor at the University of Connecticut on January 14, 2004. He will present two lectures to the department of radiology: "PET Imaging of Lung Cancer" and "PET Imaging of Colorectal Cancer". Prior to this current honor, Dr. Scheiner has given 29 other invited presentations and lectures at various institutions.

Dr. Scheiner is board certified in Diagnostic Radiology and Nuclear Medicine, with fellowship training at the Harvard Medical School. He is an active member in numerous medical societies and is a journal reviewer for three major

radiological publications. He is credited with 13 publications in peer-reviewed journals, as well as a book chapter and a scientific research grant.

All PET scans at MSR-Bayside are interpreted by Dr. Scheiner or Dr. Lawrence Schechter, who is also board certified in both Diagnostic Radiology and Nuclear Medicine.

In addition to Dr. Scheiner, many of the radiologists at Main Street Radiology routinely lecture at academic hospitals, including New York Hospital-Cornell, Columbia-Presbyterian, Memorial Sloan-Kettering, and Albert Einstein.

## COMPUTER-AIDED DETECTION FOR SCREENING MAMMOGRAPHY

MSR-Bayside has recently started utilizing computer-aided detection (CAD) software for interpretation of screening mammograms. CAD has been widely accepted as a powerful tool in increasing the sensitivity of mammography. In a multi-center study (*AJR* 2003; 181:687-693), CAD was shown to increase radiologist sensitivity by 21.2%.

CAD systems are not intended to replace radiologists, but to offer a "second opinion", as the software highlights suspicious regions on the mammogram. Since the CAD may miss obvious cancers easily detected by an experienced

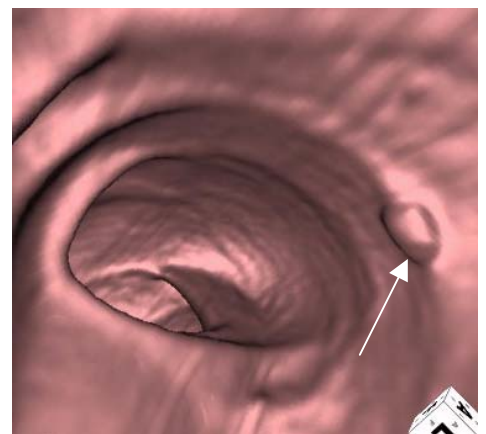
radiologist, mammograms must be viewed independent of the CAD information as well. CAD may also highlight potential lesions that are clearly benign to a trained eye.

Reading mammograms is a tedious task requiring interpretation of complex combination of multiple imaging features. Even the most experienced and careful radiologist can miss cancers on mammograms. As with many of the large academic centers throughout the country, MSR-Bayside hopes to reduce false-negative mammograms with the addition of CAD.

## NEW VIRTUAL CT COLONOSCOPY PROTOCOL

On a recently published study (*N Engl J Med* 2003; 349: 2191-2200), new techniques for CT colonography ("virtual colonoscopy") were discussed, with accuracy comparable to optical (conventional) colonoscopy. Sensitivity of virtual colonoscopy for adenomatous polyps was 93.8 % for polyps greater than 10 mm, compared to 87.5% with conventional colonoscopy. Techniques used by the authors included, thin (1.25-2.5 mm) slices with a multidetector (4 or 8 slice) CT, 3D "fly-through" software, and "stool-tagging".

With our new 16-detector CT, MSR-Bayside is now performing virtual colonoscopy with 0.75 mm slices, with resolution higher than obtained by the NEJM authors. We are one of few centers in New York with 3D "fly-through" software. As part of the preparation, we have also included "stool tagging". With these new techniques, virtual colonoscopy may become a viable alternative to conventional colonoscopy, at lower cost and morbidity.



Virtual colonoscopy (arrow = polyp)

# CASE OF THE MONTH

## CT CORONARY ANGIOGRAPHY

**History:** 52 year old asymptomatic male smoker with mildly elevated cholesterol and family history of coronary artery disease, volunteered for CT coronary angiography at Main Street Radiology-Bayside.

**Technique:** Oral beta-blocker was administered the night prior to the exam to reduce the heart rate below 70 bpm. 100 cc of intravenous contrast was administered during a 20 second breath-hold. EKG-gated images were obtained on a 16-detector spiral CT.

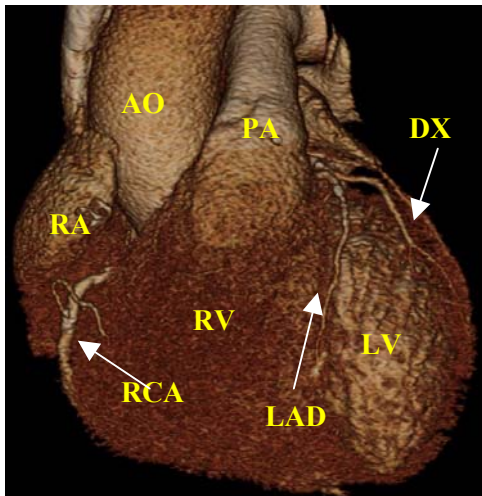


Figure 1

**Findings:** 3D anterior image of heart (figure 1) outlines normal anatomy (AO = aorta; PA = pulmonary artery; RA = right atrium; RCA = right coronary artery; LAD = left anterior descending artery; RV = right ventricle; LV = left ventricle; DX = diagonal branch). 3D oblique image of the left coronary arteries (figure 2) demonstrates no significant stenosis (LCX = left circumflex artery; RI = ramus intermedius). 3D oblique image of the RCA demonstrates focal stenosis proximally (arrow). A non-calcified (soft) plaque (arrow) is seen on the 2D axial-oblique image of the right coronary artery (figure 4), with approximately 40% stenosis.

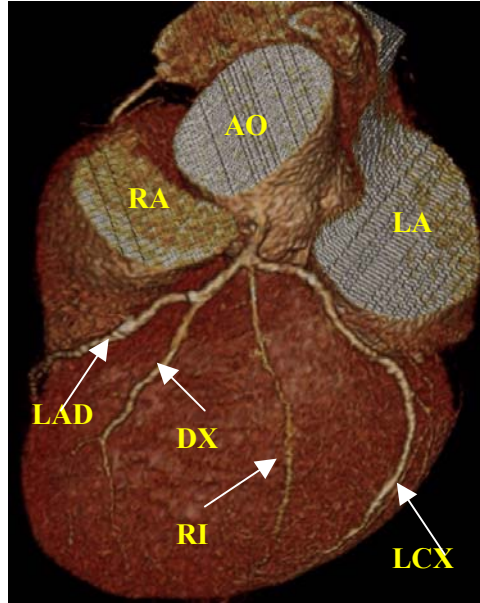


Figure 2



Figure 3

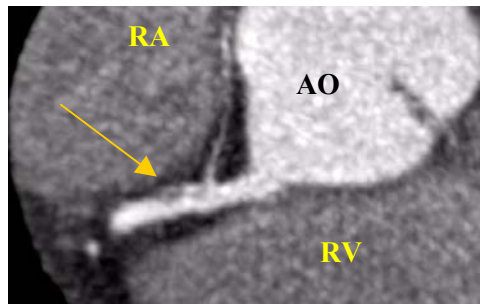


Figure 4

**Recommendation:** Aggressive intervention to reduce risk factors

**Discussion:** In October, MSR-Bayside installed the first 16-detector spiral CT in Queens. With this new technology,

we are one of the first facilities in the New York area to perform many sophisticated studies including CT coronary angiography.

The 16-detector CT enables “isotropic” volume acquisition, where true 3D images can be obtained in every projection. Previously available CT technology suffered from loss in resolution when images were viewed at different angles. Coronary arteries can now be viewed at the highest resolution, not dependent on its orientation. In addition, due to its unprecedented speed, the 16 detector CT can effectively “freeze” cardiac motion for heart rates less than 70 bpm.

Early reports indicate that CT coronary angiography may ultimately replace diagnostic cardiac catheterization, with reported sensitivity of 95% (Nieman, *Circulation* 2002; 106 (16): 2051-4).

Advantages of CT coronary angiography include:

- 1) CT angiography is non-invasive, only requiring IV injection of iodinated contrast.
- 2) Less expensive.
- 3) Aside from the lumen, the vessel wall and plaque can be imaged and characterized (“soft” vs. “hard” plaque).
- 4) 2D and 3D images can be viewed at every angle and in cross section, increasing accuracy of grading of stenosis.

As up to 50% of diagnostic cardiac catheterizations fail to show significant disease, CT coronary angiography may take on an important role in screening patients with indications for cardiac catheterization. As more studies are published in the medical literature, indications for CT coronary angiography should be better defined.