

MONTHLY NEWSLETTER

August 2004

MSR-BAYSIDE FOURTH ANNIVERSARY

On July 31, 2000, Main Street Radiology-Bayside opened our doors with 5 employees. Since then, we have opened a second office and currently employ more than 60 technologists, nurses, receptionists, and clerical staff. We are extremely thankful to our patients and referring physicians for our continued growth.

Following are highlights of events at MSR-Bayside.

7/31/00: First exam performed.

2/24/01: Started Saturday hours.

4/01: First monthly newsletter.

10/14/02: Second office opens at 44-01 Francis Lewis Boulevard.

10/02: 1st PET scan performed in Queens.

10/02: First Outpatient facility in Queens to perform interventional vascular procedure.

2/03: RIS (Radiology Information System) and Voice-recognition Dictation System integrated, allowing automatic E-mail of reports.

2/03: Activated our website, www.mainstreetradiology.com

3/03: Started valet parking services.

6/03: PACS (Picture Archiving and Communication System) installed, allowing referring physicians to view exams through the internet.

10/27/03: First 16-detector spiral CT installed in Queens

11/03: New 3D imaging workstation installed

11/03: First CT coronary angiogram performed in Queens.

12/03: Implemented CAD (Computer-aided detection) software for screening mammography

1/04: Full-time IT (information technology) specialist hired.

NEW HEAD CT SOFTWARE

Traditionally, CT imaging of the posterior fossa of the brain has been limited due to "beam-hardening" artifact from the skull base. At Main Street Radiology, we obtained new post-processing software for our 16-detector spiral CT, which significantly improves images of the posterior fossa, and is routinely utilized for all head CT's performed at MSR. Figure 1 shows artifacts (arrows) on the routine image. Artifacts are significantly reduced on the post-processed image (figure 2).

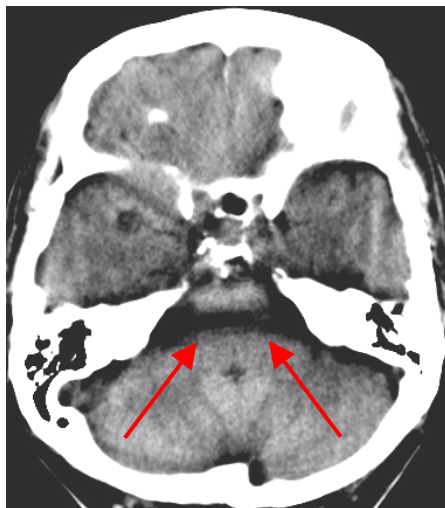


Figure 1



Figure 2

SATURDAY SERVICES EXPANDED

Starting July, Main Street Radiology-Bayside began performing PET (positron emission tomography) scans every Saturday. We will continue to perform PET scans on weekdays from

7:30 a.m. to 5:00 p.m. Both of our Bayside offices are open every Saturday performing most procedures, including MRI, CT, ultrasound, mammography, and X-ray. We will

continue to expand our services on weekends and weeknights to accommodate our patients and referring physicians.

CASE OF THE MONTH

SOLITARY PULMONARY NODULE

History: 60 year old male smoker. 4 mm right upper lobe pulmonary nodule on CT. The patient was referred to Main Street Radiology for 6-month follow-up CT.

Findings: Non-contrast Chest CT was performed on a 16-detector spiral CT. A small right upper lobe nodule is seen on the routine 5mm image (figure 1), which is better appreciated on the high-resolution 0.75 mm image (figure 2). 3D volumetric rendering of the nodule was also performed (figure 3). The nodule measured 36 mm³ in volume, corresponding to 4.1 mm average diameter. This is unchanged since the prior exam, compatible with a benign process.



Figure 1

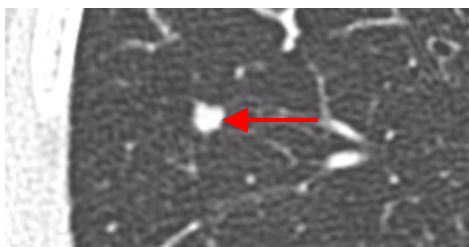


Figure 2

Discussion: Solitary pulmonary nodule (SPN) is a common finding in clinical practice. These lesions whether found on conventional X-ray or CT scan are usually benign, but a neoplastic process must be excluded, especially in patients with risk factors for bronchogenic carcinoma. Guidelines for evaluating

SPNs are not clearly outlined, and opinions vary greatly (*AJR* 2001; 176:1363-1369).

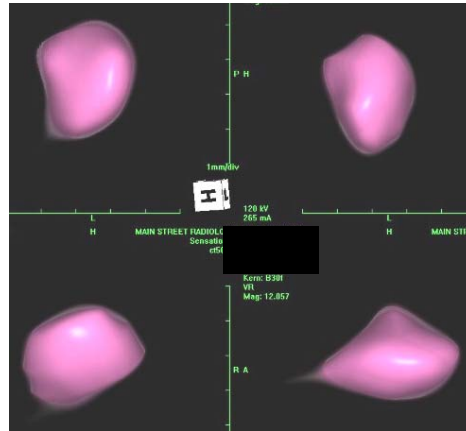


Figure 3

When a nodule is seen on X-ray, CT scan of the chest should be performed, to exclude an artifact and to better characterize the lesion. Lung nodules may appear calcified on conventional X-ray, suggesting a benign diagnosis, which may eliminate the need for a CT. However, it has been shown that determination of presence of calcification in nodules on plain films is not reliable (*AJR* 2001; 176:201-204).

When performing a CT for pulmonary nodules, high-resolution images should be performed, with slice thickness of 1 mm or less, which will enable the Radiologist to determine if the lesion is benign. If the lesion is non-specific in appearance, 3D volumetric analysis produces more accurate measurement of the lesion if follow-up studies are warranted. In a recently published study (*Radiology* 2004; 231: 453-458), routine 2-dimensional measurements were shown to be inaccurate for small nodules, with large inter-observer and intra-observer variability. In a different study, 3D volumetric measurement of nodule size has been shown to be significantly more accurate and

reproducible (*Radiology* 2004; 231:446-452).

Considering the reproducibility of volumetric measurement and growth rate of bronchogenic carcinoma, mathematical analysis was performed to determine the appropriate time interval for follow-up of pulmonary nodules (*Radiology* 2004; 231:446-452). 1-month follow-up was sufficient to detect change in 10 mm nodules, while 12 month follow-up was necessary for nodules less than 3 mm. Using 2-dimensional measurements only, 12-month follow-up was necessary for nodules less than 5 mm (*Radiology* 2004; 231:164-168).

Positron Emission Tomography (PET) has shown to be highly accurate for assessment of pulmonary nodules (*JAMA* 2001; 285:914-24), with sensitivity reported at 97%. PET scan should be considered for all SPN greater than 8 mm.

Combining the volumetric spiral-CT and PET data, the following table summarizes the general guidelines for follow-up of SPN based on size:

< 3mm	12 month f/u CT
3-5 mm	6 month f/u CT
5-8 mm	3 month f/u CT
>8 mm	PET

At Main Street Radiology-Bayside, we have acquired 3D-volumetric nodule-analysis software for our 16-detector spiral CT, and we are the first facility in Queens to perform PET scans. With these new technologies, we are best equipped to optimally evaluate pulmonary nodules, significantly reducing the number of negative biopsies and thoracotomies, while minimizing delay in diagnosis.