



# Advanced Technology. Excellent patient care.

Cardiac MR Imaging at Southern Ohio Medical Center



**Southern Ohio  
Medical Center**

*Very* Good things are happening here

# Cardiac MR Imaging at Southern Ohio Medical Center

 **Norman M. Jacobs, MD, MS**  
SOMC Medical Imaging



**RECENTLY OUR PHILLIPS ACHIEVA 1.5 TESLA MRI UNIT** underwent a major upgrade that permits state of the art cardiac MR imaging. The upgrade included stronger magnetic gradients (Nova Dual Gradient system), a 32 channel cardiac coil and a dedicated 3-D Cardiac Explorer Workstation. This upgrade permits faster imaging, allowing shorter breath hold sequences, higher temporal resolution and added imaging functionality.

MRI has much better soft tissue contrast discrimination than CT and much greater spatial resolution than nuclear medicine by a factor of 10 (1 mm vs. 1 cm). It also has high temporal resolution and a unique ability to visualize turbulence created by valvular disease or shunts. Because of these attributes, cardiac MRI is the most sensitive method to non-invasively evaluate cardiac structure and function (figure 1).

Small subendocardial infarcts can be detected that are not apparent on SPECT imaging. MRI can also evaluate the extent of infarction (myocardial viability imaging). This can aid in determining the potential for functional recovery after CABG or stenting procedures (figures 2 and 3).

MR cine series can image stenotic or regurgitant jets (figures 5 and 6). Phase contrast imaging can measure velocity yielding valvular regurgitation fraction.

Such turbulence can also be utilized to recognize the presence of cardiac shunts.

Evaluation of cardiac mass (figure 4), myocarditis, causes of cardiomyopathy, diagnoses of ARVD and pericardial evaluation including constriction are other entities approved by the American College of Cardiology Appropriateness statement on cardiac MRI.

In young patients cardiac MRI has the added benefit of no radiation exposure and is the method of choice to evaluate congenital heart disease.

When Echocardiography evaluation is suboptimal or further imaging warranted, cardiac MRI can be used for cardiac function and valvular evaluation.

All images are provided by the SOMC Medical Imaging MRI Department.

*Very truly yours,*

**Norman M. Jacobs, MD, MS**

Diplomat Certification Board of Cardiovascular CT

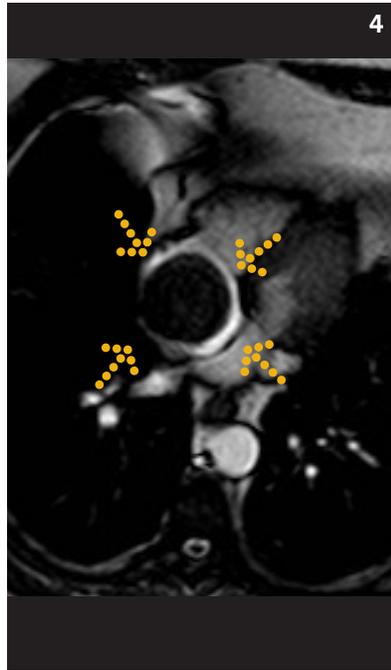
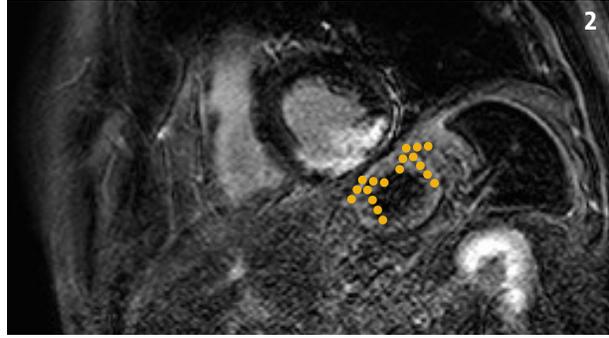
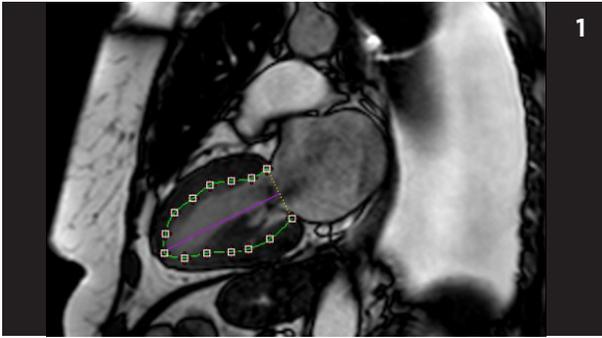
Member: Society of Cardiovascular MR

Member: Society of cardiovascular CT

Southern Ohio Medical Center » Medical Imaging

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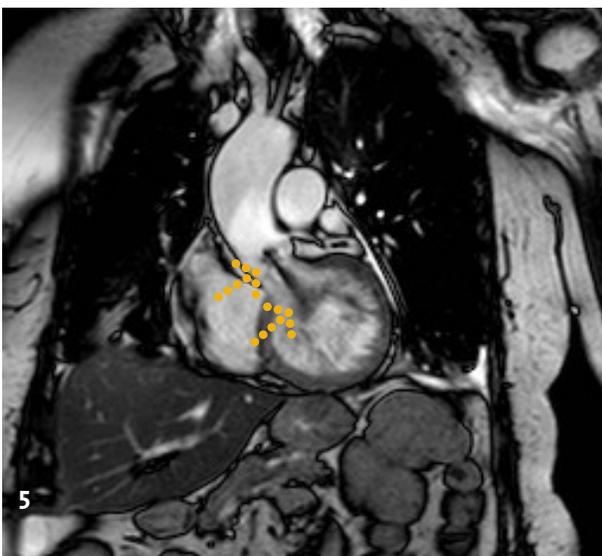


**Figure 1**  
Left ventricle diastolic contour

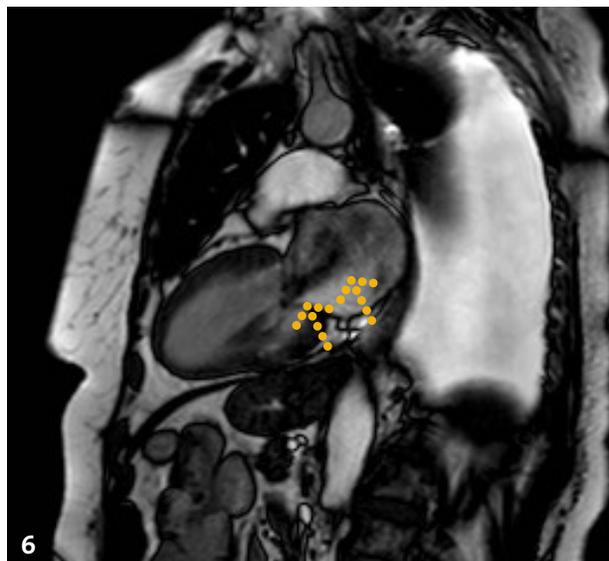
**Figure 2**  
Delayed contrast enhancement  
of inferior wall infarct

**Figure 3**  
Inferior wall thinning and  
akinesis due to Infarction

**Figure 4**  
Right atrial myxoma



**Figure 5**  
Turbulent regurgitant jet extends from  
the aortic valve into left ventricle.



**Figure 6**  
Mitral Valve Regurgitant Jet

# Common Indications for Cardiac MRI

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## Anatomy

- » **Myocardial infarct imaging**
  - Did the patient have an infarct?
  - Extent of infarct?
- » **Assess myocardial viability prior to PCI or CABG**
- » **Characterize mass or thrombus**
- » **Evaluate:**
  - Cause of cardiomyopathy
  - New onset of CHF
  - Myocarditis
  - Congenital Heart Disease
  - Constrictive Pericarditis
  - Pulmonary veins prior to RFA

## Function

- » **Left or right ventricular function**
  - » **Cardiac wall motion on cine loop**
  - » **Valvular evaluation (stenosis, regurgitation, regurgitant fraction)**
  - » **Cardiac shunts**
- If you have any questions call Medical Imaging at (740) 356-8117.
- If you would like to schedule a Cardiac MRI call (740) 356-8329.

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