

Myocardial Perfusion Imaging (2 Day)

Radiopharmaceutical: Tc^{99m}-Tetrofosmin (Myoview)

T1/2: 6 hours

Energy: 140 keV

Radiopharmaceutical dose:

- Resting Dose: 30 mCi Tc^{99m} -Tetrofosmin (Myoview).
- Stress Dose: 30 mCi Tc^{99m} -Tetrofosmin (Myoview).
- For patients under the age of 18, radiologist approval is needed.

CPT: 78452 (multiple SPECT); 78451 (rest OR stress SPECT – ONLY)

Indications:

Indications for myocardial perfusion imaging include, but are not limited to:

1. Detecting the presence, location, and extent of coronary artery disease.
2. Evaluating the physiologic significance or sequelae of coronary artery stenosis.
3. Monitoring the effects of treatment of coronary artery disease, including revascularization and medical therapy.
4. Detecting acute myocardial infarction.
5. Evaluating the viability of dysfunctional myocardium.
6. Stratifying risk of myocardial events.
7. Evaluating ventricular function (using gated images).
8. Determining prognosis after myocardial infarction.
9. Preoperative stratification of risk for adverse cardiovascular events during noncardiac surgery.

Contraindications:

Contraindications to the use of adenosine (Adenoscan) or regadenoson (Lexiscan) injection include:

1. Second- or third-degree AV block (except in patients with a functioning artificial pacemaker).
2. Sinus node disease, such as sick sinus syndrome or symptomatic bradycardia (except in patients with a functioning artificial pacemaker).
3. Known or suspected bronchoconstrictive or bronchospastic lung disease (e.g., asthma). (For **adenosine** only)
4. Known hypersensitivity to adenosine or regadenoson.
5. Methylxanthine use - Theophylline or caffeine preparations within 24 hours of the exam. These drugs are competitive inhibitors of adenosine receptors and may blunt the vasodilatory effect of adenosine.
6. Seizure disorder

Patient Instruction:

- No food or drink for 4 to 6 hours. Diabetics may need to skip their medications on the morning of the test.
- Nitroglycerin should be discontinued for 4 to 6 hours prior to test.
- No caffeine products for 24 hours prior to first appointment time. This includes decaffeinated products, since not all caffeine is removed. All medications and over the counter medicines should be checked, to be sure that no caffeine is in them. Common household products containing caffeine include:
 - Anacin

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- Excedrin
- Fioricet
- Cardioten
- Chocolate and all cocoa products
- Coffee, tea, and cola drinks
- Fiorinol
- Vivarin
- Energy drinks
- Repan
- Norgesic
- Patient will receive resting injection of Tc^{99m}-tetrofosmin and then a scan will be performed at no less than 30 minutes post injection. Have patient slowly sip water after rest injection.
- Patient will be stressed using Adenoscan or Lexiscan. During this procedure a second dose of Tc^{99m}-tetrofosmin will be administered.
- After completion of the stress portion the patient will be given a snack with a drink and will be instructed to return for final scan no less than 30 minutes after second tracer injection. Total time in department is approximately 2.5-3 hours.

Technique for Adenosine (Adenoscan) Infusion

- A baseline blood pressure and 2 ECG tracings (baseline and valsalva) are recorded prior to the start of the procedure. Blood pressure and ECG tracings are to be checked once every 60 seconds, at minimum, or to record a specific event during pharmacologic stress.
- The infusion rate for adenosine is typically 140 µg/kg/min for 4 minutes. This may be reduced to 75-100 µg/kg/min if side effects are severe and the response is almost instantaneous. The formula for calculating the amount to be administered is:

Patient's weight (in kilograms) x 0.19 (mL) x 3 (mg)

1. Add enough 0.9% normal saline so that the total volume to be administered is 40 mL in a 60 mL syringe.
2. One 250 mL bag of 0.9% normal saline is delivered in conjunction with adenosine infusion.
3. Tc^{99m}-tetrofosmin injection is given midway through the infusion (2 minutes), slowly, so as to avoid giving a bolus of adenosine when the tracer is administered.
4. Complete final 2 minutes of infusion, and turn off adenosine pump.
5. Aminophylline, or other antagonist, may be given in extreme cases where symptoms are severe, and are not resolving following cessation of Adenosine infusion.

Technique for Regadenoson (Lexiscan) Injection:

1. A baseline blood pressure and 2 ECG tracings (baseline and valsalva) are recorded prior to the start of the procedure.
2. Regadenoson is given as a standard dose of 0.4 mg/5 mL intravenously for any patient weight.
3. Administer Lexiscan as an IV injection over approximately 10 seconds into a peripheral vein using a 22-gauge or larger catheter.
4. Administer a 10-mL saline flush immediately after the injection of Lexiscan
5. Administer the radionuclide myocardial perfusion imaging agent 10-20 seconds after the saline flush. The radionuclide may be injected directly into the same catheter as Lexiscan. Follow with 10-mL saline flush
6. Monitor blood pressure and ECG tracings every 60 seconds, at minimum, or to record a specific event, until symptoms resolve. This will typically occur by 3 minutes post Lexiscan injection.

7. Aminophylline, or other antagonist, may be given in extreme cases where symptoms are severe, and are not resolving after 3 to 5 minutes post Lexiscan injection.

Side Effects – Common benign effects:

- Side effects are very common and occur in about 80% of patients. Common side effects include, but are not limited to: decreased blood pressure, increased heart rate, chest pain, headache, flushing, and dyspnea (due to adenosine induced hyperventilation through stimulation of the carotid chemoreceptors). Chest pain is usually atypical and does not correlate with the presence of CAD. Ischemic ECG changes (ST depression) are seen in about 12% of patients and their presence is a strong indicator of coronary artery stenosis.

Equipment:

- GE 830 Discovery

Image Acquisition Parameters:

- Zoom: 1.3
- Matrix size: 64 x 64
- Patient position: Supine
- Number of angles: 64
- Time per angle for Rest SPECT: 12 sec/stop
- Time per angle for Stress SPECT: 8 sec/stop
- Detector relative angle: 90 degrees L mode
- Starting Angle: 0 degrees
- Rotation direction: Clockwise
- Orbit type: Automated set up
- SPECT Mode (for Rest and Stress SPECT): Step
- Acquire during motion: ON
- Gated SPECT Parameters:
- Frame/Cycle: 8
- PVC threshold 20% high/low

Processing/ PACS data

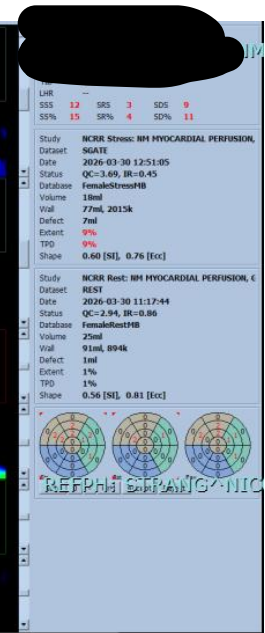
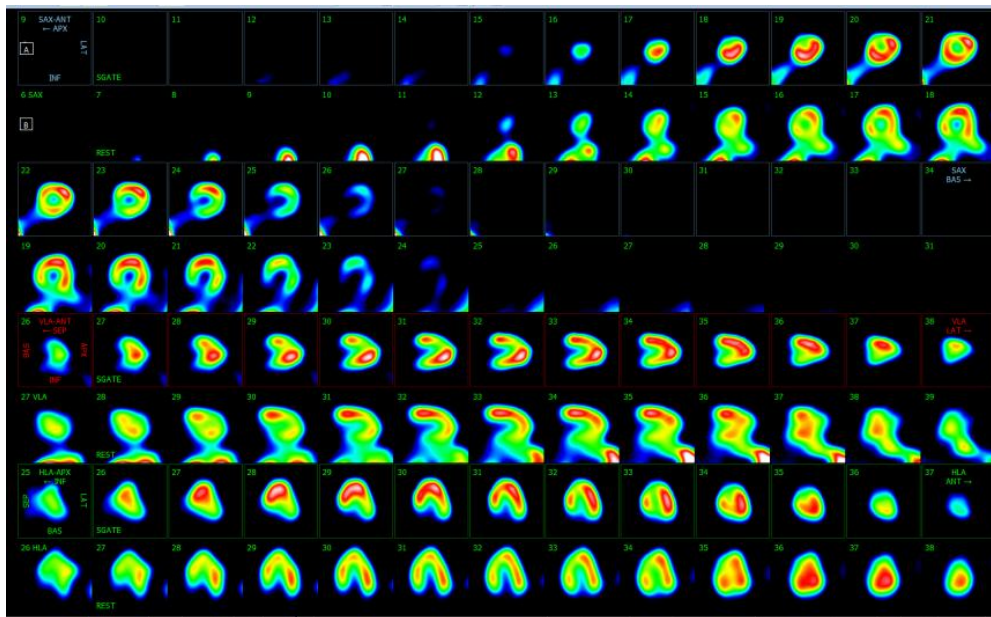
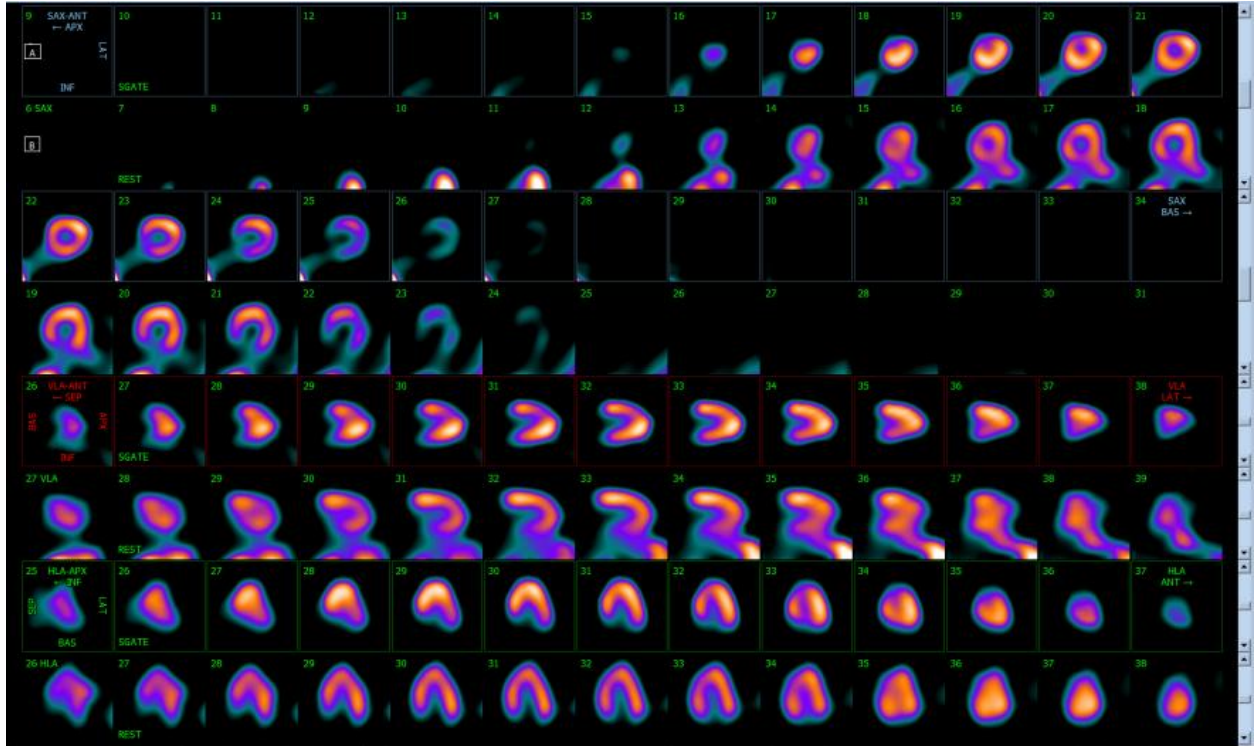
- Splash view of SA, HLA, VLA in color scales: 10 band (if available) 10 Step, Gray scale, Cool, (Smart, Prism, and Multi as requested).
- Dynamic left ventricle chamber beating cine
- Dynamic left ventricle perfusion beating cine
- QPS – “cool” color scale
- QGS – “Thermal” color scale
- Rest and stress raw dynamic

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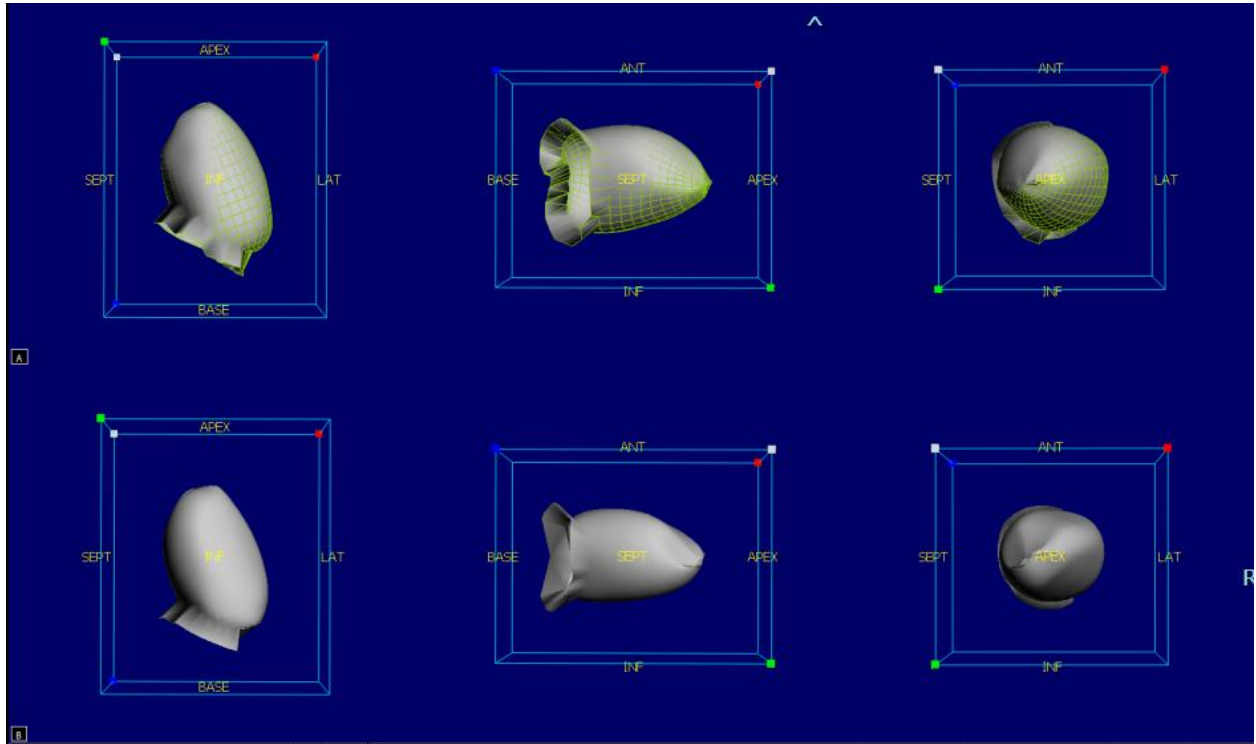


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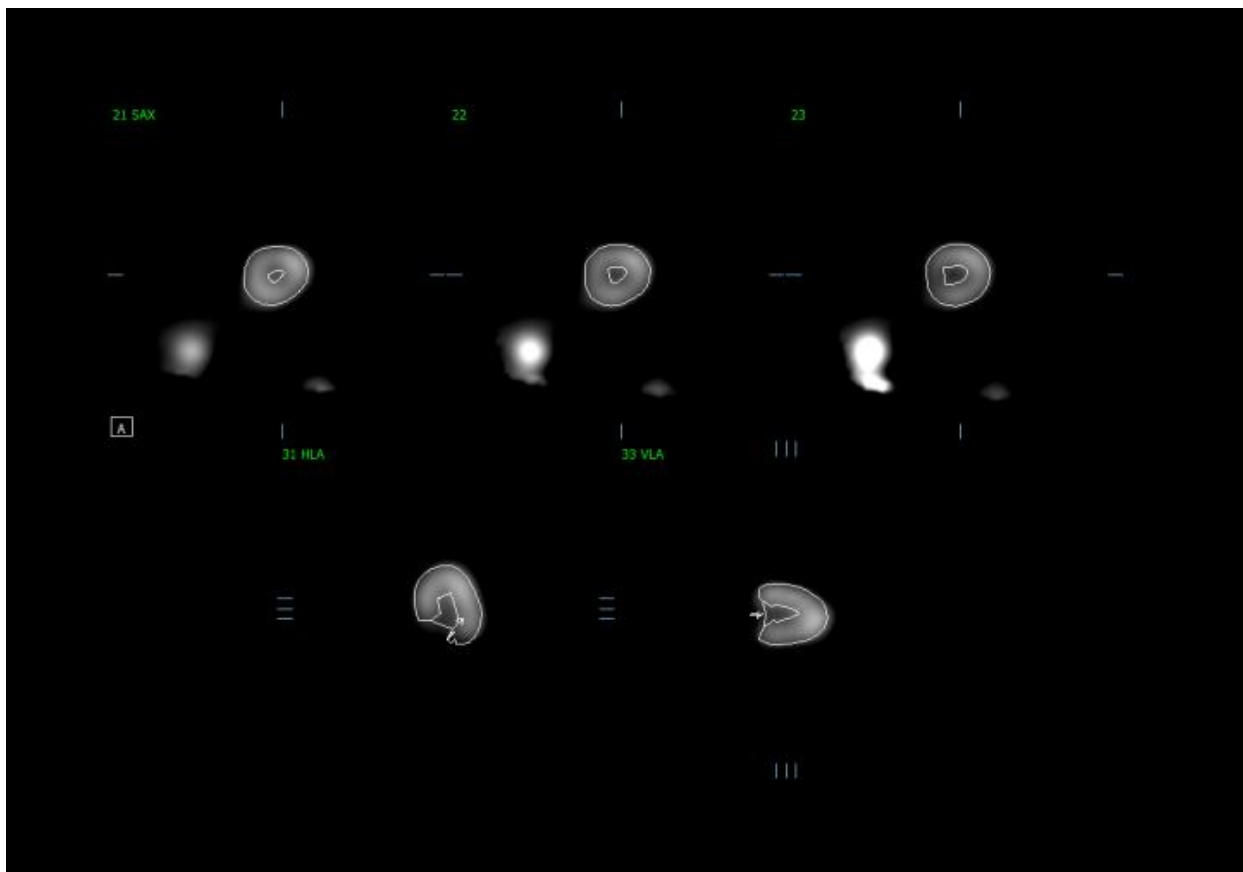


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