

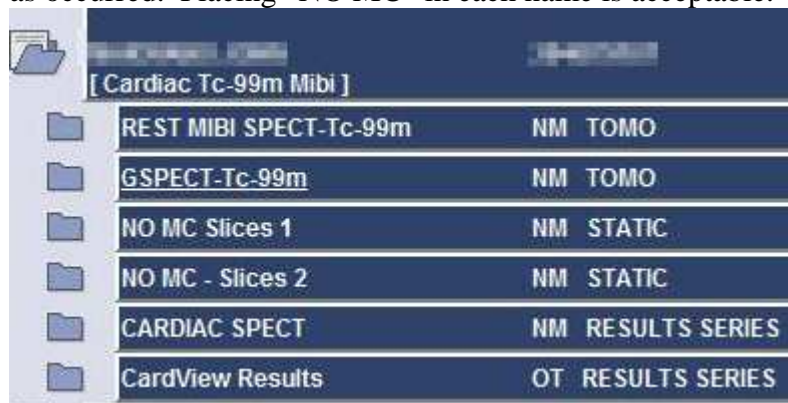
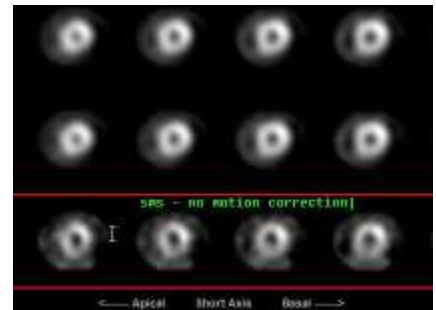
Performing Motion Correction On Cardiac Studies

An exercise in attention to detail

This informal guide is intended to be utilized in conjunction with the protocol “Myocardial Perfusion Study (Cardiolite-Cardiolite Same Day)” This guide is a supplement, not a replacement for a working knowledge of the basics of cardiac processing utilizing the Xeleris system.

Ideally, a repeat SPECT will be performed when there is motion during a cardiac SPECT study. Given the realities of the hospital environment, this is not always practical or possible. It is in these circumstances that motion correction should be utilized.

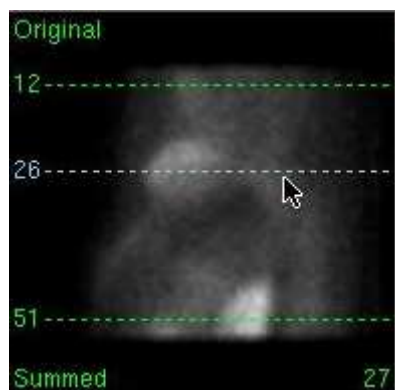
In these instances, *first* create the slices normally in QGS/QPS by clicking on the **Review** button. You will create an overlay annotation on the rest set of short axis slices. This position is where you will place *all* annotations regarding motion correction, and is also an ideal place to put your initials. Indicate that no motion correction has been done (“no mc” or “no motion correction” or equivalent). Screenshot the slices, modifying the names to indicate that no motion correction as occurred. Placing “NO MC” in each name is acceptable.



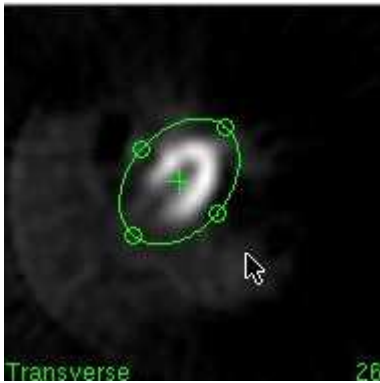
Exit QGS/QPS, *saving your results*. You should have a screen that is similar to the display at left – the raw SPECT images, two screen captures, and two Results Series. Send **ALL** this data to the Inbox using QGS/QPS.

Out of these files, you will only use the raw data again. It is imperative that you keep track of what image files are what from here on out.

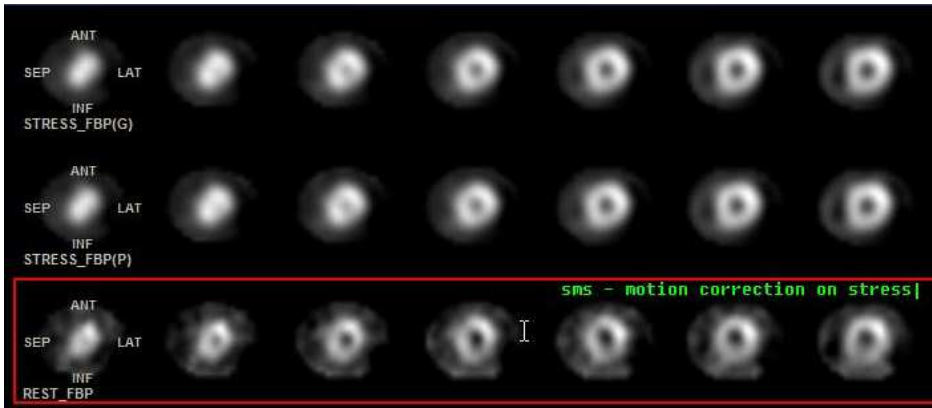
Select the raw SPECT data again, and re-enter QGS/QPS. Click on the **Motion Correction** button. A box will appear, stating “Please select the Planar Image that you would like to correct...”. Click on the spinning raw data where you saw the motion, which will then be highlighted in red. Click **Proceed**. The motion correction program will begin, and will attempt to automatically process the data. Once it has completed, check how well it’s done. You will often need to change the intensity of the image, using the slider in the upper-right hand corner. If the automatic processing has succeeded, click the **Save** button at the upper-left.



“Manual” (more accurately termed “semi-automatic”) motion correction requires more input from the technologist. Adjust the middle (blue) line in the upper-left “original” image until it is at the level of the heart. Adjust the outer green lines until they are just above and below the level of the heart. The green lines are limiters – so ensure that *at no point* during the SPECT rotation do they intersect the heart.



The bottom left picture provides another limiter; this one a circle with four points on the edge that you can adjust. The circle may be spun, moved (using the center crosshair), turned into an ellipse, and so on. (This is shown to the left). This is another limiter that helps ensure the best possible motion correction. Also ensure that the X-axis, Y-axis, and Mask buttons to the right of the transverse image. are all clicked (as demonstrated on the right). Then click the **Correct** button, and review the results.



Once satisfied with the motion correction, click **Save**, and it will return you to QGS/QPS. Continue processing as normal with the following changes:

- annotate which projections (stress, rest, all) have been motion corrected on the slice images
- add “MC” to all screen caps.
- Modify your selections for ECToolbox and for sending images to the Inbox as show in the images below.

[Cardiac Tc-99m Mibi]	
REST MIBI SPECT-Tc-99m	NM TOMO
GSPECT-Tc-99m	NM TOMO
NO MC Slices 1	NM STATIC
NO MC - Slices 2	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
MC - Slices	NM STATIC
MC - Slices 2	NM STATIC
QGS - MC	NM STATIC
QGS 2 - MC	NM STATIC
QPS - MC	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
QGSQPS_Results	OT RESULTS SERIES

The image to the left demonstrates images to be selected for the **ECToolbox** application.

[Cardiac Tc-99m Mibi]	
REST MIBI SPECT-Tc-99m	NM TOMO
GSPECT-Tc-99m	NM TOMO
NO MC Slices 1	NM STATIC
NO MC - Slices 2	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
MC - Slices	NM STATIC
MC - Slices 2	NM STATIC
QGS - MC	NM STATIC
QGS 2 - MC	NM STATIC
QPS - MC	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
QGSQPS_Results	OT RESULTS SERIES
CardView Results	OT RESULTS SERIES
ECTb_Results	OT RESULTS SERIES

The image to the left illustrates the *motion corrected* images to send to the Inbox using QGS/QPS.

[Cardiac Tc-99m Mibi]	
REST MIBI SPECT-Tc-99m	NM TOMO
GSPECT-Tc-99m	NM TOMO
NO MC Slices 1	NM STATIC
NO MC - Slices 2	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
MC - Slices	NM STATIC
MC - Slices 2	NM STATIC
QGS - MC	NM STATIC
QGS 2 - MC	NM STATIC
QPS - MC	NM STATIC
CARDIAC SPECT	NM RESULTS SERIES
CardView Results	OT RESULTS SERIES
QGSQPS_Results	OT RESULTS SERIES
CardView Results	OT RESULTS SERIES
ECTb_Results	OT RESULTS SERIES

The image to the left illustrates the *motion correction* images to send to the Inbox using ECToolbox.