SPECT Gated Blood Pool Processing – MI Processing Screen

OVERVIEW

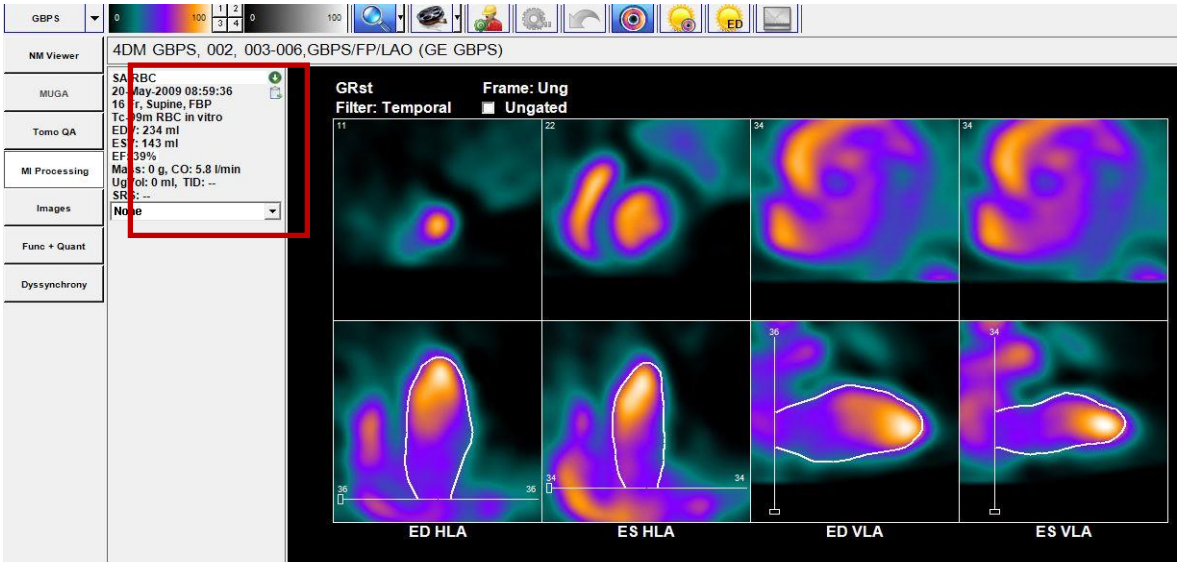
A MUGA study, also called a Gated Blood Pool Study (GBPS) quantifies the left ventricular ejection fraction (LVEF) and allows for the visual assessment of LV wall motion using nuclear medicine imaging techniques. A scintillation camera is used in conjunction with radiopharmaceutical products, to acquire gated SPECT images of the heart. While planar acquisitions are widely used for MUGA studies, the addition of a SPECT acquisition allows for a more in-depth evaluation of wall motion. These images are then processed in 4DM to obtain an accurate non-invasive estimation of the LVEF.

DATASETS NEEDED FOR SPECT MUGA

For the GBPS workflow to populate for a Gated SPECT MUGA study, a reconstructed gated TOMO dataset in either transverse or short axis will need to be populated into 4DM for the additional screens to become active within the GBPS workflow for SPECT MUGA processing, along with the radiopharmaceutical labeled as Tc-99m RBC.

SPECT MUGA PROCESSING

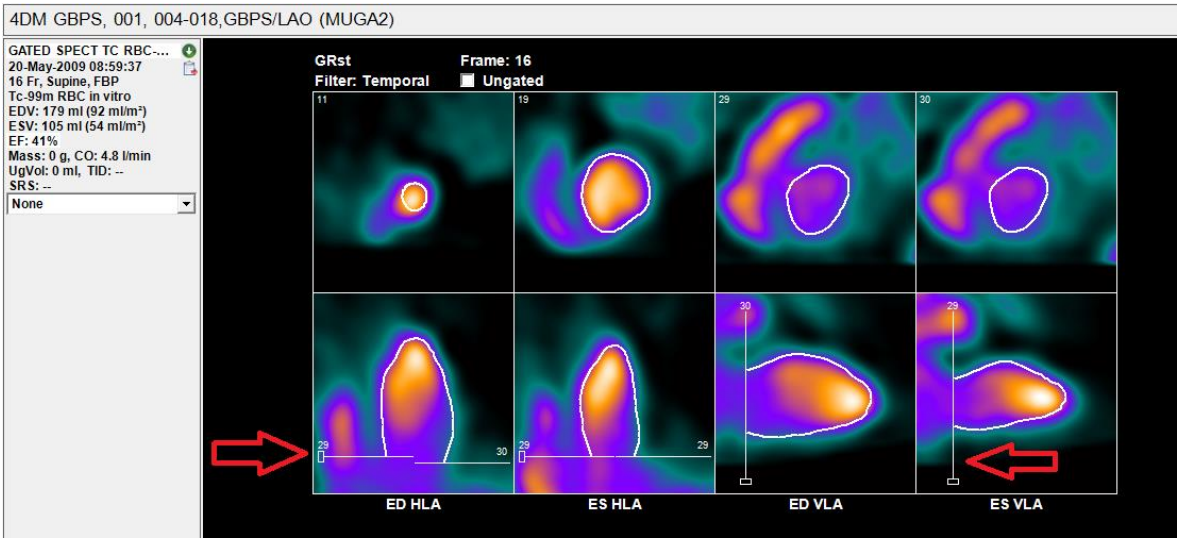
Load the SPECT MUGA study into 4DM to load the GBPS workflow with additional screens used to quantify and review SPECT datasets. Begin by reviewing the projection data on the NM Viewer screen to evaluate LV wall motion and the overall quality of the study. Proceed to the MI Processing screen where the 4DM automatic post-processing is displayed. The calculated EF, EDV, and ESV are displayed in the middle information panel (Fig. 7). For further information on post-processing a SPECT MUGA study, please see below.



(Fig. 7)

MI PROCESSING SCREEN

To be sure, the volumetric estimates are accurate, the basal limits are typically placed at the end of the LV (*Fig.8*) as seen on the anterior, lateral, and inferior walls. For GBPS it is recommended to use the lateral wall as a guide for setting the limit.

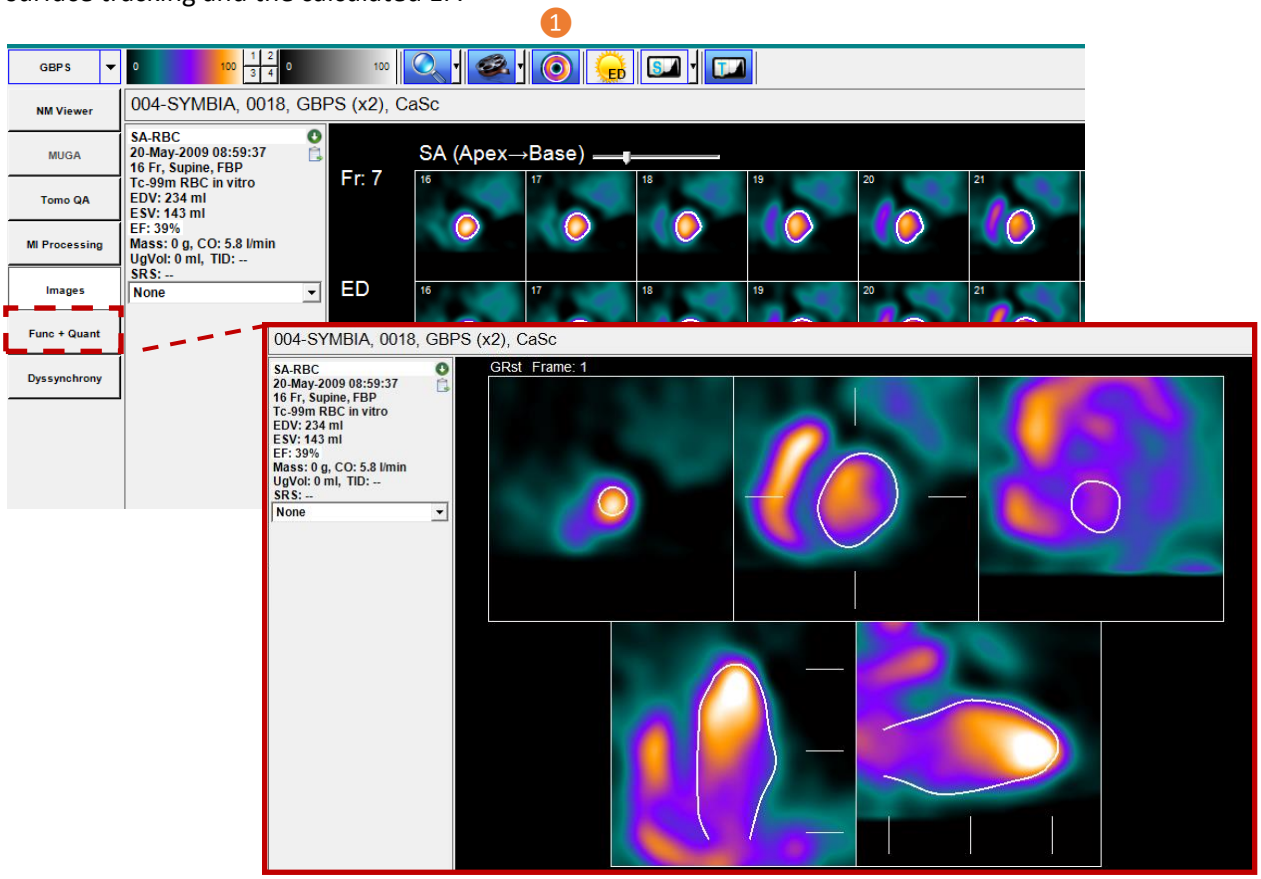


(Fig. 8)

Note: Corridor4DM allows the valve plane definition to differ for volumetric estimates and the generation of polar maps. Adjustments to the basal sliders on the VLA images affect volumetric estimates (systolic, diastolic).

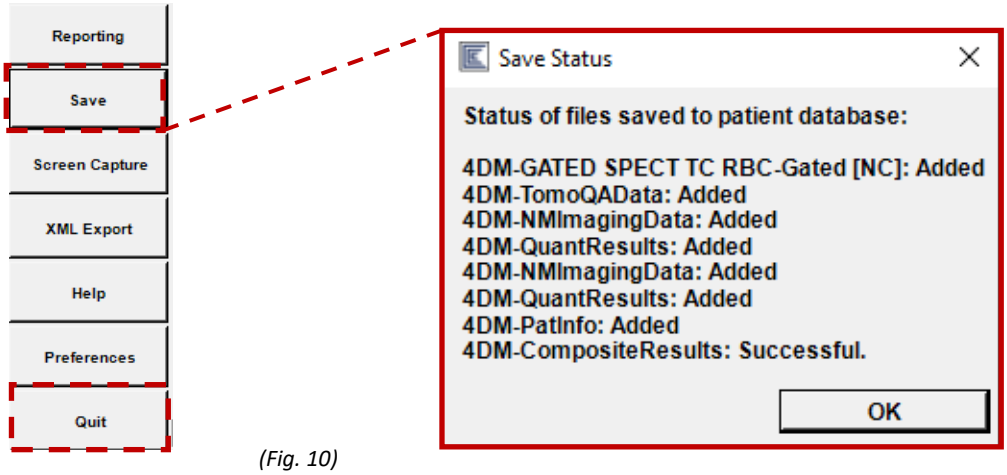
FUNCTIONAL PARAMETERS

Review the individual slices on the Images screen to generate a qualitative assessment of the LV wall motion. Likewise, the Func+Quant screen can be used to evaluate wall motion with the addition of a volume curve for comparison *(Fig 9)*. The contours tool 1 can be used on these screens to turn on the contours to evaluate 4DM surface tracking and the calculated EF.



(Fig. 9)

When you are finished with the interpretation of the SPECT MUGA study click **SAVE** in the bottom left corner of 4DM, then **QUIT** to exit the study *(Fig 10)*.



(Fig. 10)