

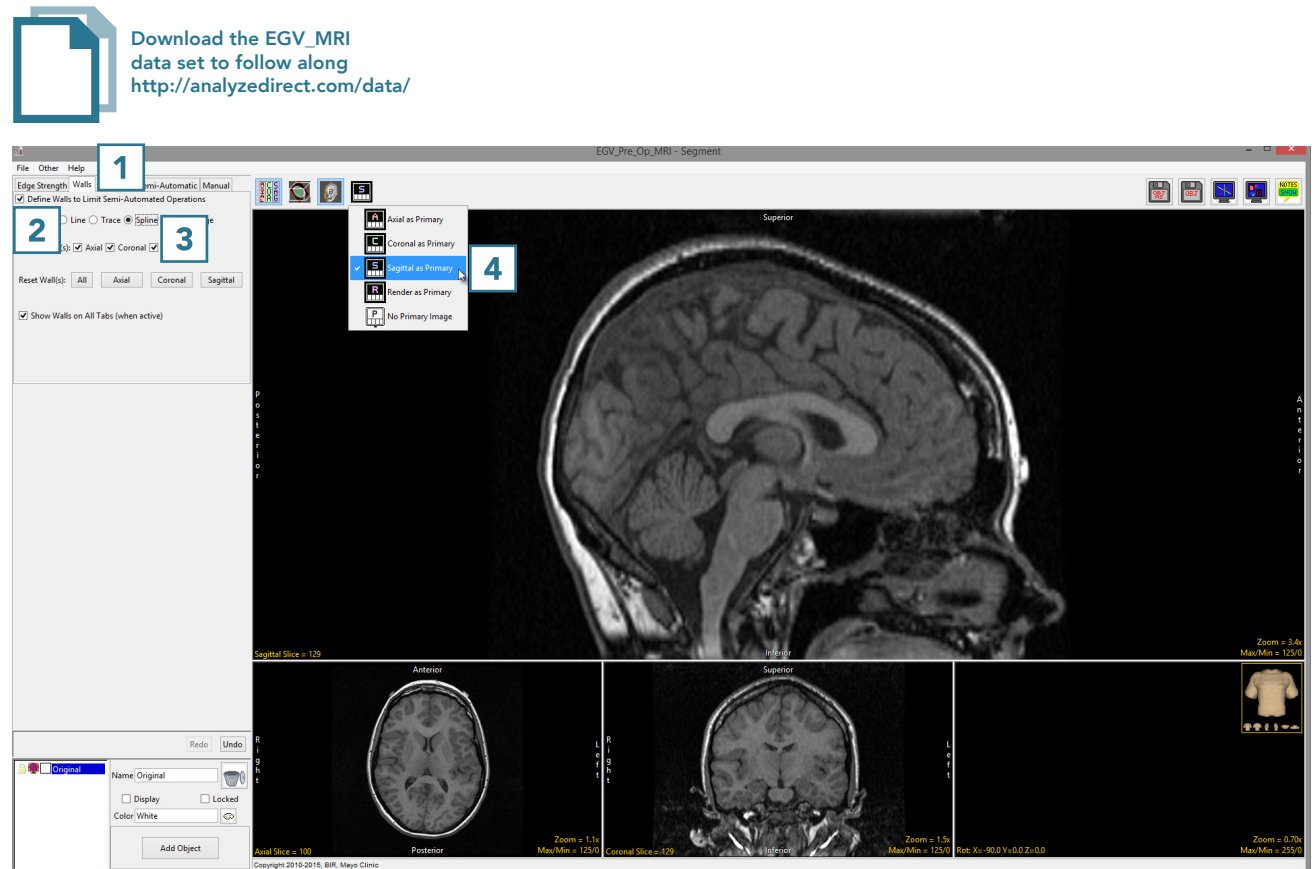


# Walls

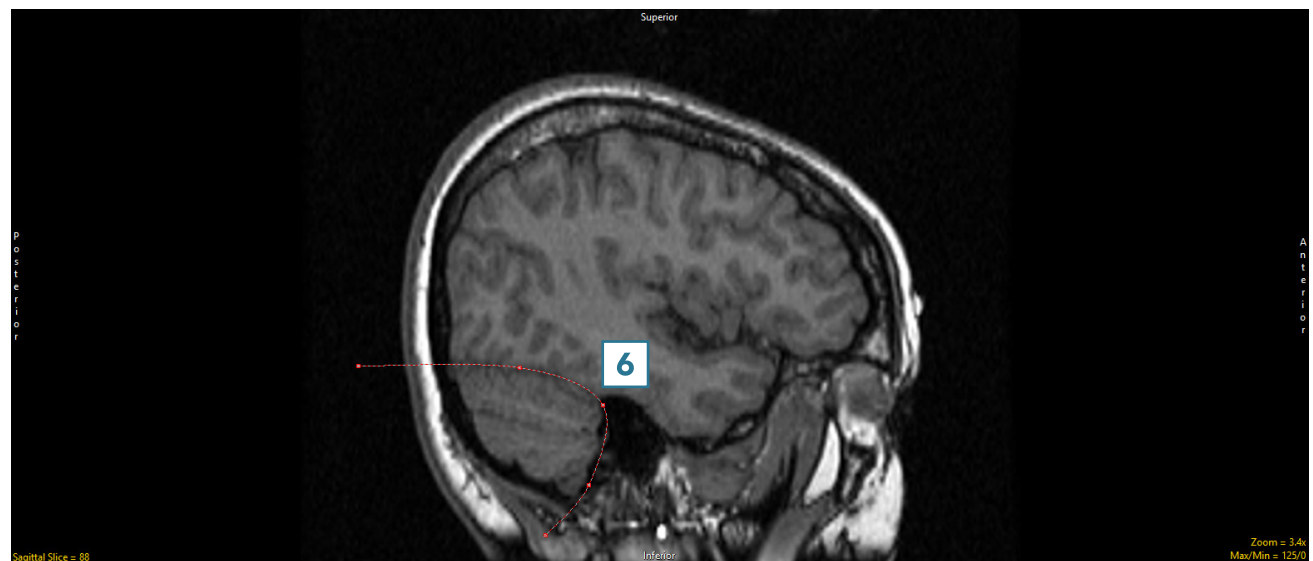
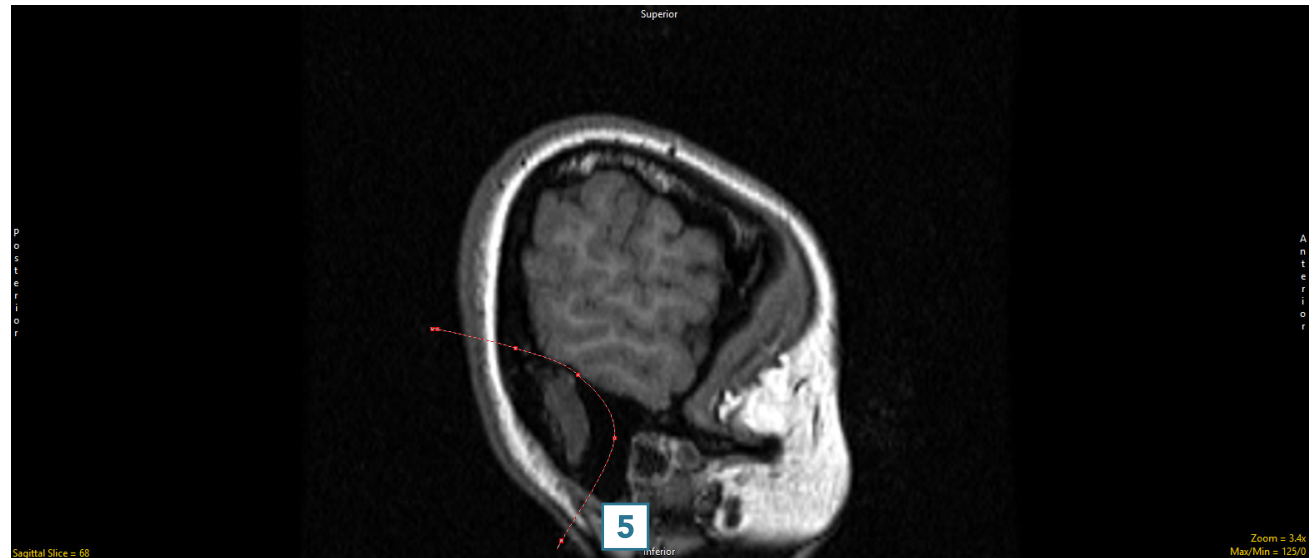
Segmenting structures of interest that are connected to surrounding anatomy with similar grayscale values can be challenging. The Walls option provides tools to create adaptable 3D limits to help make this process easier for the user. The Walls tool is useful for many segmentation applications, particularly [isolating the cerebellum](#) from the rest of the brain parenchyma or limiting the boundaries of a region grow operation to [isolate blood pools](#) from cardiac data.

## 2. Using Walls with Semi-Automatic Segmentation

- Select a data set and open Segment.
- Select Walls **1** and check Define Walls to Limit Semi-Automated Operations. **2**
- Set the Wall Type to Spline. **3**
- Set the primary display to Sagittal. **4**



- Navigate through the sagittal slices to find the first slice that includes tissue belonging to the cerebellum. Draw a wall separating the cerebellum from the cerebrum on this slice.
- To draw a wall using the spline tool, left-click to set spline points which will connect into a smooth line. Double-click when defining the last spline point to set the spline. **5**
- The spline points can be adjusted by left-clicking and dragging. Right-clicking on a spline point allows you to delete it or make other changes to the spline such as closing the spline or deleting the entire spline.
- Move forward through the sagittal slices and adjust the wall as required. **6**
- The Wall can also be redrawn if necessary.

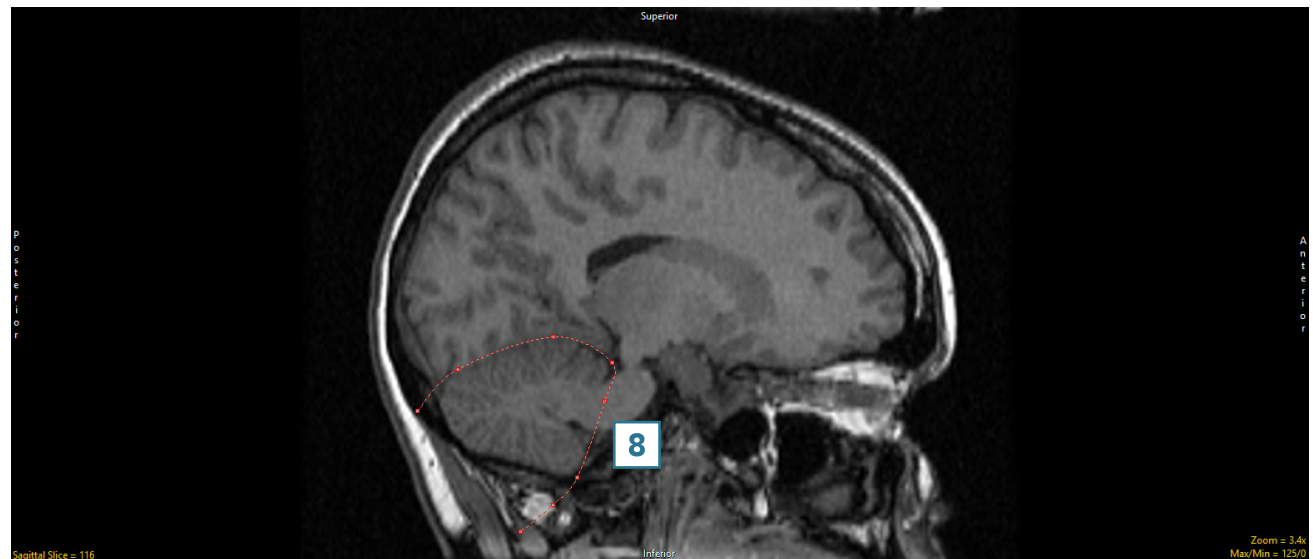
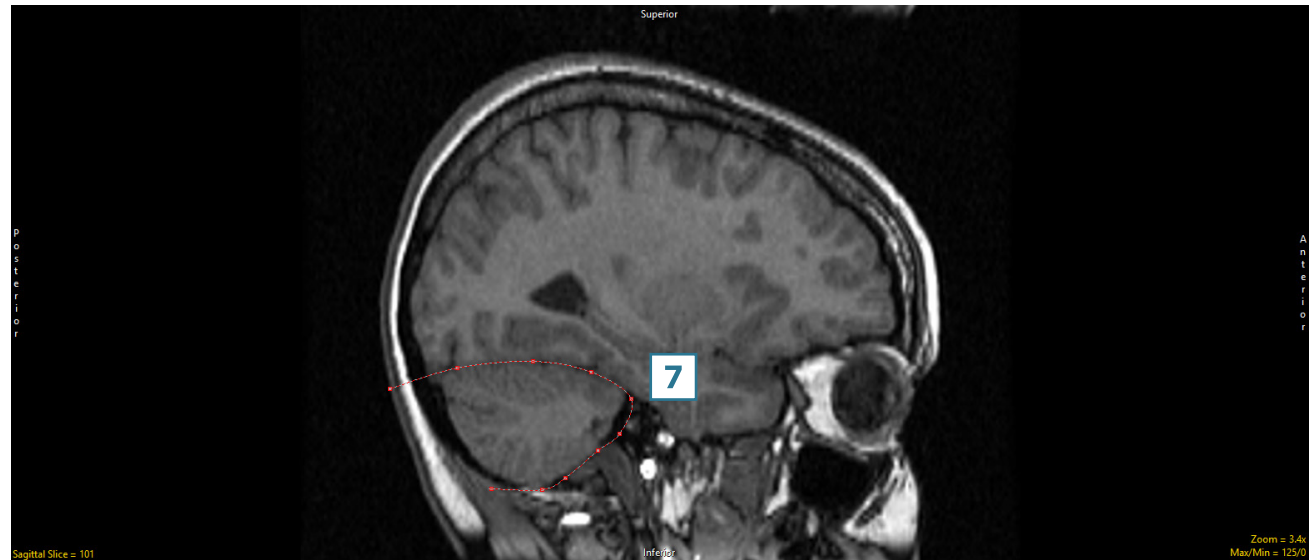




- Once the cerebellum is no longer well defined by the wall, redefine the wall on that slice. The wall will be interpolated between all slices on which it is defined. When finished, scroll through the slices to ensure that the cerebellum is well defined by the wall.

Note that walls can be set in multiple orientations. This is helpful when trying to isolate structures connected to several surrounding structures in all orientations. For example, it can be used when isolating the heart from the lungs, spine, sternum, etc. It can also be useful to define walls in the sagittal and coronal orientations to better segment the cerebellum.

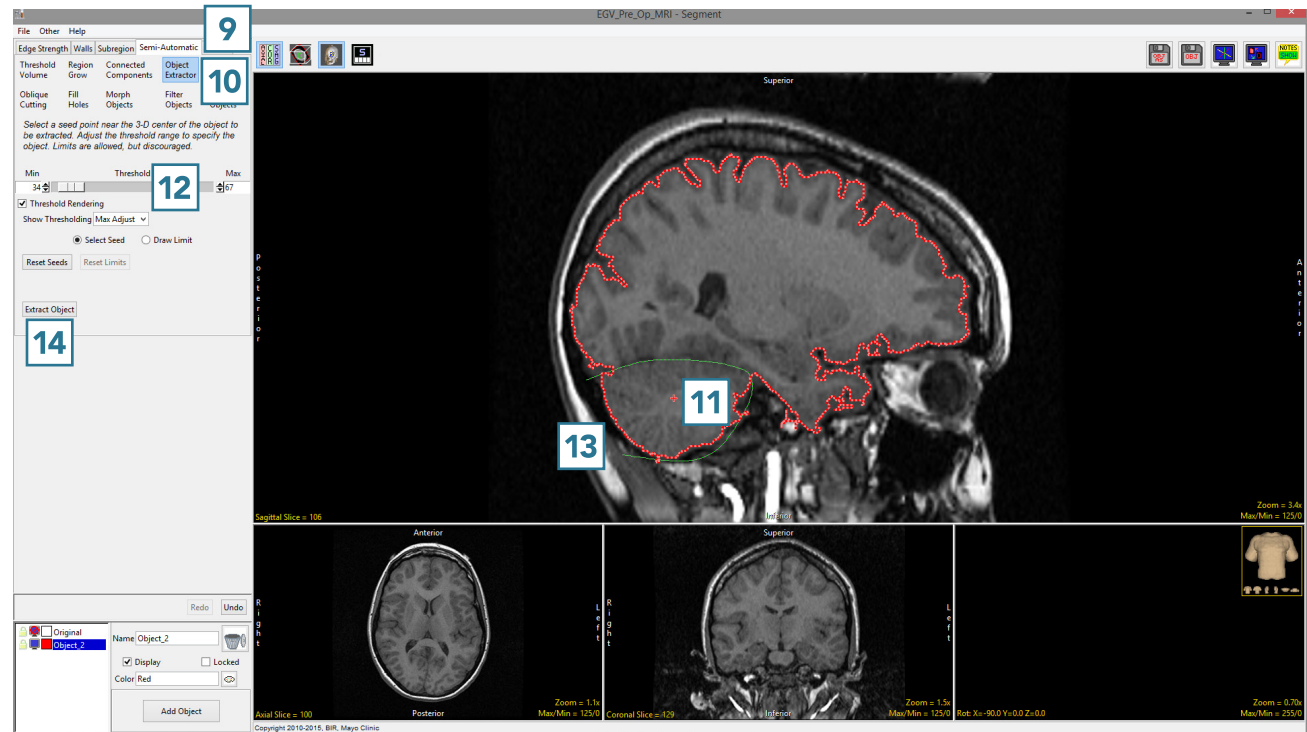
- Continue to define walls around the cerebellum in the sagittal orientation. **7** **8**



- Once the cerebellum boundary is defined in three dimensions by the wall, select the Semi-Automatic tab **9** and choose Object Extractor. **10**
- Click in the cerebellum on a sagittal slice to set a seed point. **11**
- Adjust the maximum and minimum threshold values **12** until the auto trace defines the object. **13**

Note that while the entire brain will be defined, the walls will prevent the whole brain from being segmented and will confine the segmentation to the cerebellum.

- Click Extract Object. **14**



- The cerebellum will be isolated and displayed in 3D.
- Once segmentation is complete, the structure will be rendered **15** and overlaid on the slice data. **16**
- Save your work by selecting File > Save Object Map.

