Purpose: To develop open source software for post processing of susceptibility weighted (SWI) MR images using magnitude and phase data.

Methods: SWI data was acquired using Philips MRI 3T scanner with the following parameter: 3D T1 FFE axial with TR=40ms, TE=25ms, FOV=22 cm, acquisition matrix of 440x440 and 40 slices. Both magnitude and phase data was stored for SWI post processing. The SWI homodyne filtering is performed by converting the magnitude and phase image to complex real and imaginary images. The SWI software was implemented in C++ using ITK (Image registration and segmentation toolkit) toolkit. To generate SWI maps the user needs to provide the DICOM data directory, the series number of DICOM SWI series, low pass filter size and the weighting factor of phase mask. This outputted SWI series is saved as DICOM and appended to the patient series and can be viewed in any DICOM compatible viewer. The software also outputs SWI filtered phase maps which can be further used for iron quantification in organs like brain, liver etc.

Results: An open source implementation of SWI post-processing tool using ITK was provided. The SWI processed phase weighted data can be used for qualitative assessment of iron deposits. The filtered phase map outputted can be used for quantitative iron measurements.

Conclusions: SWI post processing software is implemented here to provide qualitative SWI maps of iron deposits in brain and other organs. The post processed images can also be useful for MR Venography with minimum intensity projection. This tool would be useful to study disease processes involved with accumulation of iron in different organs.