

Purpose: Ascertain effects of mammographic compression on microvascular blood flow and thus understand potential confounding factors due to compression on contrast agent distribution.

Method and Materials:

An X-ray mammogram simulator was constructed to hold optical fibers for diffuse correlation spectroscopy measurements of blood flow and diffuse optical spectroscopy measurements of hemoglobin concentration and oxygenation. 15 healthy subjects were recruited for experiments consisting of 3 serial compression-release cycles.

Results:

Small (~15% or ~1cm) changes in plate separation resulted in dramatic changes in blood volume (~47%) and flow (~65%) in measurements of 15 subjects. However, there was significant inter- and intra- subject variation in response within the population.

Conclusion:

The distribution of contrast agents injected during mammographic compression will be affected by the average and inhomogeneous changes in blood flow measured in this study. This study is currently being expanded and instrumentation improved to identify the cause of inter-subject variation in blood flow changes.

Conflict of Interest (only if applicable):

Not Applicable.