

AbstractID: 3747 Title: Improved Phantom and Method for Measuring the Low Contrast Detectability Performance of Fluoroscopic and Radiographic systems

Purpose: To develop an easy and reliable method of determining the low contrast detectability (LCD) performance of fluoroscopic and radiographic imaging systems

Method and Materials: A phantom has been developed containing objects made of water equivalent material of varying contrast and diameters. Randomization of the positions of these objects is easily accomplished via the design of the phantom. To measure the LCD one would first decide what objects are visible in the fluoroscopic image. The phantom is then designed to allow one to easily see the actual positions of the objects in the phantom, once this visual judgment is made. Only correctly identified objects are scored. This method greatly reduces the subjectivity of present methods of performing this test, including the eventual memorization of a fixed "random" phantoms. The use of tissue equivalent materials for this test also gives a more true result of LCD for clinical studies and is much less biased by changes in kV and grid use. The use of this phantom can also be extended into evaluation of radiographic and digital imaging systems.

Results: The use of this phantom provides accurate, reproducible measurements of LCD for fluoroscopic imaging as long as certain viewing precautions are observed for the fluoroscopic image.

Conclusion: Current methods of evaluating fluoroscopic and radiographic image quality by means of LCD performance are relatively unreliable and quite variable between different observers. This new method allow for more accurate, reproducible LCD measurement