AbstractID: 7902 Title: Cone Beam C-arm CT

Conebeam CT using C-arm mounted large area flat panels (FPs) is becoming more commonly used in neuro- and body-interventional suites. The ability to visualize vascular geometry in 3D along with soft tissue *during* an intervention is providing information that may increase accuracy, shorten procedure time and may even change the course of treatment. However, acquisition of the projection data required for volume imaging requires dose to the patient, and understanding the trade-offs between acquisition parameters, dose and image quality is critical to the appropriate adoption of this imaging technique.

Unlike conventional CT, the beam length in conebeam CT can cover the entire length of the object to be imaged or can be varied with the use of collimation, and the concept of CTDI is not, therefore, the metric of choice for measurement of dose. In addition, most C-arm conebeam CT systems use a short-scan (pi plus fan-angle) acquisition, and the dose distribution within the object is not cylindrically symmetric. Finally, since FP design has been optimized for fluoroscopy, image quality when used for CT must be carefully evaluated.

This lecture will describe a dose metric that is appropriate for conebeam CT and allows direct comparison with the CTDIw of conventional CT. A perception study using the CATPHAN 600 phantom for a range of acquisition parameters will be described, and the relationships between kVp, image noise, dose and contrast perception will be discussed.

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Educational Objectives:

1. Understand how differences in acquisition geometry between conebeam and conventional CT affect dose distribution and dose measurement.
2. Understand how contrast perception in conebeam CT images depends on acquisition parameters