

AbstractID: 7259 Title: A Multi-Vendor Compatible Respiratory Motion Visualization Device for Use with Kilovoltage Imaging, the “Hubie”

Purpose: Creation of a simple robust tool to use in conjunction with onboard fluoroscopic imaging of the patient in treatment position that will allow daily review of target motion relative to the expected motion used to plan treatment. This tool is needed to circumvent software incompatibilities in a multi-vendor environment.

Method and Materials: The procedure creates a radio-opaque outline of the treatment aperture and physically attaches it the kV detector surface so as to project the aperture on subsequent fluoroscopic images. The patients need to have a treatment target that is visible on fluoroscopy or have an implanted radiopaque fiducial marker . A DRR is printed showing the planned tumor or fiducial range of motion as a projected structure outline. The outline will be used to evaluate the absolute position of the tumor or marker relative to the intended location. The motion range is outlined with a radiopaque wire, and 5 wire crosses are placed for alignment and scale verification. The wired DRR is attached to the kV detector and the patient is imaged with fluoroscopy; displaying the expected motion range (wire outline) against the projected tumor or fiducial marker motion. The wire outline position and scale are checked against a virtual reticule.

Results: Using the methods described above it is possible to visualize a moving target just prior to treatment as well as the treatment location. Care must be taken to ensure not only accurate placement of the outline but also that the correct structure is outlined for the current patient.

Conclusion: The procedure outlined here creates a flexible process that is non machine, software or manufacturer dependant. The procedure is sensitive to user error and is dependant on the manufacturing and placement accuracy of the device.

Conflict of Interest (only if applicable):