AbstractID: 13008 Title: kV x-ray and kV CBCT image quality with RealEye gantry-mounted tracking system installed

Purpose: To assess the effect of the RealEye gantry-mounted tracking system (Navotek Medical, Yokneam, Israel) on kV x-ray and Cone Beam CT (CBCT) imaging and image quality on a Varian LINAC with On-Board Imager (Varian Medical Systems, Palo Alto, CA). Although routine x-ray or CBCT imaging should not be necessary for patients being positioned with the RealEye system, it is important to assess the image quality with the system installed for cases where anatomical imaging is necessary to verify accurate patient positioning and for situations where the system is installed but not being used for the current patient. **Method and Materials**: kV x-ray and CBCT images were made of a quality assurance phantom with and without the RealEye system installed. Image quality in terms of artifacts, contrast, and signal-to-noise ratio was compared. **Results**: No significant effects on signal-to-noise ratio or contrast were associated with the RealEye system, and no discernable image artifacts were induced with the RealEye system mounted on the gantry. At a distance of 18.5 cm from isocenter the RealEye system encroaches upon the imaging field of view and then interferes somewhat with image quality. Since a 35 cm field of view is generally sufficient for patient positioning and position verification, this should not limit the use of the On-Board Imager for patient positioning with the RealEye system installed. **Conclusion**: The RealEye gantry-mounted tracking system does not interfere with the use of the Varian On-Board Imager and does not produce any effects on images with a field of view below 35 cm. The RealEye system therefore has no impact on the usability of the On-Board Imager for patient positioning. **Conflict of Interest**: Tal Shchory, David Neustadter, and Ben Corn are employees and shareholders of Navotek Medical Ltd. Research sponsored by Navotek Medical Ltd.