

AbstractID: 7377 Title: Comparison of Gafchromic EBT film with EDR2 film in TomoTherapy Delivery QA

Purpose:

To evaluate the Gafchromic EBT film for use with TomoTherapy delivery QA and compare it with EDR2 film.

Method and Materials:

TomoTherapy delivery QA procedures were produced for 12 patients' plan that actually treated with TomoTherapy HI-ART II at Yonsei Cancer Center. TomoTherapy's cheese phantom was used for delivery QA. A Gafchromic EBT film and an EDR2 film were inserted in the middle of the cheese phantom simultaneously so that both could receive almost same doses. An A1SL chamber was inserted to check absolute dose together with film relative dose distribution. Both films were scanned with a Vidar scanner that provided with TomoTherapy machine and analyzed using TomoTherapy planning station delivery QA tools. All the measured point doses were matched with calculated values within 2.1 %. Calibration tables were rescaled whenever necessary to match the scale between calculated and measured dose profiles. Line profiles were compared and Gamma values were calculated with 3% of prescribed dose and 3 mm of distance to agreement.

Results:

Both Gafchromic EBT and EDR2 film profiles matched quite accurately with calculated profiles. For the Gamma test, EDR2 film showed worse results but that was due to the large area of the film that was outside of the cheese phantom. TomoTherapy planning station's delivery QA analysis tool does not allow us to analyze gamma test within only area of interest, so we could not compare the gamma test results accurately.

Conclusion:

EBT and EDR2 film showed similar ability for tomotherapy delivery QA. Both had some uncertainty in calibration files, due to either the developing solution or development time, but showed sufficient accuracy for relative dosimetry.

Conflict of Interest (only if applicable):