

Purpose: RapidArc radiotherapy technology uses a sophisticated treatment delivery system by which dose/dose rate and MLC positions are changed as the gantry rotates around the patient. Although patient specific QA is performed prior to treatment delivery, a method to verify that the daily treatment matches the pretreatment QA would provide additional confidence in RapidArc delivery. Our clinic implemented DAVID system (PTW, Inc) to ensure the dose length product of the MLC pairs during a patient's daily RapidArc treatment matches baseline QA measurements.

Methods and Materials:

- the attenuation factor of the DAVID system when installed in the head of the LINAC was measured.
- a RapidArc plan was generated with the DAVID attenuation factored into the dose calculation.
- a baseline reference measurement was made during the QA delivery. The QA plan was analyzed (linear array or EPID detector) to ensure agreement between measured versus predicted.
- the DAVID was placed in the head of the LINAC during each patient's daily treatment. The therapist ensured dose measured was within tolerance of baseline QA measurement.

Results

The DAVID was used to measure dose for over 500 RapidArc treatments in our Clinic. All measured doses were within 3% of baseline QA measurements.

Conclusion:

RapidArc is a sophisticated treatment delivery. The DAVID system demonstrated the constancy of the MLC and dose/dose rate versus gantry for the RapidArc treatments in our clinic.