A method for end-to-end spatial accuracy quality assurance for radiosurgery

Unmet Need

Radiation therapy is an essential element of cancer treatment that benefits 4 million diagnosed patients every year. The ability to deliver complex three-dimensional distributions of dose that conform to even irregularly shaped lesions in the patient can help to spare nearby critical tissues. However, it also requires increased scrutiny of the accuracy of the treatment. 3D dosimetry holds promise to verify a full volumetric dose in a single measurement. However, these systems often rely on additional specialized equipment to ensure accuracy and quality. In order for 3D dosimetry to be more routinely adapted, there is a need for end-to-end quality assurance technologies that reduce that maintain certainty for the radiotherapy dose analysis and spatial accuracy.

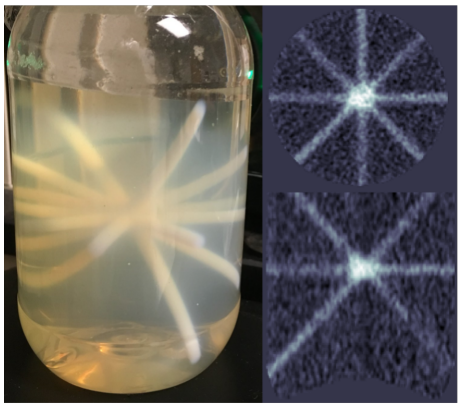
Technology

Collaborators at Duke and the University of British Columbia have developed a method and dosimeter to quantify radiotherapy dosages. This is intended to be used as a quality assurance test in radiosurgery that overcomes challenges in spatial accuracy and analysis posed by current solutions. Specifically, this 3D dosimeter consists of a N-isopropylacrylamide gel that changes in density to represent radiotherapy dose. This can then be measured as a change in contrast using an imaging system such as an onboard-kV imaging system. This quality assurance test can be applied to measure the dose directly or verify the spatial accuracy of the radiotherapy delivery, such as by validating multi-target spatial alignment for multi-target radiosurgery.

Advantages

- Provides High spatial resolution and

Post Delivery Photo On Board CBCT



comprehensive dosimetric volume to measure spatial accuracy
- Accommodates remote dosimetry
- Provides method to directly and immediately read 3D dose distribution
- Can be configured as a kit

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Meet the Inventors

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Publication(s)

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External Link(s)

• From the lab of Dr. Mark Oldham
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