

Method for preparing single isocenter multi target radiosurgery treatment plans

Value Proposition

Cancerous metastases in the brain are often treated using linear accelerator-based radiotherapy/radiosurgery. Traditional radiosurgery techniques such as dynamic conformal arcs (DCA) or volumetric modulated arc therapy (VMAT) were designed to treat individual metastatic targets; thus, treatment of multifocal disease using these methods can lead to extended treatment times or compromises such as increased radiation exposure to healthy brain tissue and decreases target conformity. The proposed technology provides a means to develop improved radiosurgery treatment plans for multifocal disease while bypassing some technical trade-offs.

Technology

The proposed technology combines the benefits of DCA and VMAT by dividing multiple targets into sub-groups. Weights for conformal arcs assigned to individual target groups are then computed prior to the VMAT inverse optimization process. Thus, the proposed technology is a software-based method to improve the quality of treatment plans.

Advantages

The proposed method combines the target conformity of the DCA technique with the faster treatment times of the VMAT technique. Functionally, it leads to a decrease in the low-dose radiation exposure to healthy tissue.

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