

Influence of Linear Accelerator Gated Operations on Enhanced Dynamic Wedge and IMRT Dose Delivery

To achieve the golden rule of radiotherapy, where the maximum dose is delivered to the target while the normal tissue is maximally spared, 3-dimensional conformal radiotherapy (3D CRT) is gaining serious attention. In particular, as the means to enhance 3D CRT, intensity modulated radiotherapy (IMRT) is pursued by a dozen institutions. Interest in IMRT among the radiation oncology community is undeniably strong. One advantage of IMRT planning is the results of steep dose gradient between target and normal tissues to fulfill the golden rule. However, if the patient is positioned incorrectly or the target organs are not stationary, IMRT can adversely affect the outcomes. For organ motion caused by respiration, breathing synchronized radiotherapy (BSRT) is one means of avoiding such problems. Therefore, integration of BSRT with IMRT becomes critical for the treatment of lung and upper abdomen. Using a sequence file generated by inverse planning, we will present preliminary results of the influence of the 2100C linear accelerator gated operations on the IMRT dose delivery. In addition, we will present preliminary results of the influence of the 2100C linear accelerator gated operations on the enhanced dynamic wedge dose profiles.

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