

## 論 文 要 旨

### 小児頭頸部領域を対象とした 異なる IMRT 技術による 照射野外線量の比較検討

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Intensity-modulated radiation therapy (IMRT) can deliver high and homogeneous doses to the target area while limiting doses to organs at risk. We used a pediatric phantom to simulate the treatment of a head and neck tumor in a child. The peripheral doses were examined for three different IMRT techniques [dynamic multileaf collimator (DMLC), segmental multileaf collimator (SMLC), and volumetric modulated arc therapy (VMAT)]. Peripheral doses were evaluated taking thyroid, breast, ovary, and testis as the points of interest. Doses were determined using a radio-photoluminescence glass dosimeter, and the COMPASS system was used for three-dimensional dose evaluation. VMAT achieved the lowest peripheral doses because it had the highest monitor unit efficiency. However, doses in the vicinity of the irradiated field, i.e., the thyroid, could be relatively high, depending on the VMAT collimator angle. DMLC and SMLC had a large area of relatively high peripheral doses in the breast region.