

AbstractID: 6878 Title: The use of ModuMLC® in combination with IG-IMRT for treating a very small eye tumor

Introduction

IMRT employing a conventional MLC (1 cm leaf width at isocenter) for small eye tumors may be suboptimal because of its relatively large leaf width compared to the tumor size. The combination of moduleaf (MMLC, 0.25 cm leaf width at isocenter), head immobilization and IG-IMRT may offer a better alternative. In this study, two IMRT plans are generated for the treatment of a small eye tumor using a conventional MLC (MLC82, 1 cm leaf width), and MMLC with IGRT.

Method and materials

A young patient with choroidal hemangioma was treated with a Primatom-based IG-IMRT technique. The size of the tumor was delineated to be 4 cm³. A total of 12 Gy in 8 fractions was prescribed to the CTV, and the dose allowed to the right lens (0.12 cm³) was constraint to ≤ 5 Gy. Treatment planning was carried out on the KonRad inverse planning software. Two plans were generated for a five-field setup. One was optimized for dose delivery with the MLC82, while the other is optimized for the MMLC. The patient was setup in the treatment couch immobilized with the customized mask and a bite block. Image guidance was performed with a CT-on-rail system. Dosimetric measurements were carried out to verify the accuracy of dose delivery for the MMLC plan.

Results

The plan for the MLC82 achieves a minimum dose of 7.53 Gy to the PTV and the maximum dose to the right lens is 8.2 Gy. With MMLC, the minimum dose is 12.3 Gy to the PTV while the maximum dose to the right lens is 5.15 Gy. Dosimetric measurement for the MMLC plan yielded good agreement with calculation.

Conclusion

The use of IGRT, MMLC and customized mask improves the overall dose delivery accuracy and appears to be a superior choice for treatment of small tumors.