

Purpose/Objective(s): The purpose of this study is to retrospectively evaluate the dosimetric coverage of I-125 plaque brachytherapy (IBT) in treating Juxtapapillary Choroidal Melanoma (JCM) using the Plaque Simulator treatment planning system.

Materials and Methods:

Thirty cases of JCM patients with a medium-sized tumor were treated by COMS IBT loaded non-uniformly but with circular symmetry from 1997-2005. Median follow-up was 48 months. The tumor was 0.75–2.5 mm from the optic disc. The median tumor thickness was 4.3 mm and the median longest tumor diameter was 9.9 mm. An in-house treatment planning system had been used for actual treatments. The proximity of the tumor to the optic nerve did not allow the plaque to be centered over the tumor, so the tumor edge closest to the optic nerve did not receive the dose specified in the COMS study. We used the Plaque Simulator treatment planning system (BEBIG, Germany) for replanning and assessing dose coverage of the tumor for these patients.

Results

When all corrections for dose calculation in the Plaque Simulator were taken into account, mean dose to tumor edge nearest the optic nerve were significantly lower than COMS recommendations (62Gy vs. 69Gy, $p < 0.02$). Meanwhile, 4-year tumor control and eye preservation rates were both 90%, respectively. Radiotherapy complications included cataract in 53%, neovascular glaucoma in 10%, retinopathy in 53%, and papillopathy in 33% of treated patients. These rates are comparable to COMS outcomes study for non-Juxtapapillary tumors.

Conclusion

Similar tumor control rates for juxtapapillary tumors and tumors where the plaque can be centred over the tumor might imply that tumor edges do not need as high a dose as the tumor apex.