AbstractID: 10359 Title: Electron therapy with hanging lens block for orbital lymphoma: dosimetry measurements using diode arrays

Purpose: An effective technique to treat orbital lymphoma is to use an anterior electron beam with a hanging lens block. Traditionally the dose distributions under the lens block are measured with film, TLD or a stereotactic diode. The measurements are labor intensive and time consuming, considering that the dose distribution varies with several parameters, including distance between the block and the skin, electron energy used and the thickness of the beam scatterer. Multiple measurements are therefore required to optimize the dose distribution in each patient. We have developed an efficient technique to determine the optimal treatment parameters by utilizing commercially available diode arrays to instantly monitor the dose distributions of electron fields as physics parameters are varied; **Methods:** A cerrobend block of 1.8cm long, 1.0cm in diameter was made and placed at distances(gaps) of 0.5-2cm above patient's eye. Dose distributions for different physics parameters were measured interactively by using a two-dimensional diode array (Mapcheck) with solid water build-ups to observe the dose changes with varying electron energies and set-up parameters. Once the energy, SSD and beam scatterer are determined, films, ion-chambers and a one-dimensional diode array(Profiler) were used to measure the dose distributions and the results were compared with measurements using the Mapcheck; **Results:** It was found that the effective thickness of the internal buildup in the Mapcheck device is 4mm less than the specified 2cm water equivalence for the electron beam used. After this thickness-correction was applied, good agreement was achieved between different methods of measurement for both outside and under the block; **Conclusions:** The diode arrays have been proven to be the ideal devices in the initial stage of electron treatment planning to determine the optimal physics parameters that produce the desired dose distributions, with substantial savings in time and effort comparing with traditional dosimetry measurements.