AbstractID: 13595 Title: Dynamic IMRT split beam technique verification using EPID based dosimetry

Purpose: On dynamic IMRT plans with Millenium 80 (Varian) fields wider of 15 cm must be splitted. Since the EPID dosimetry software does not allow to sum splitted subfluences in the same dosimetric portal image they have to be measured separately and compared independently with the subfluences previously calculated by the TPS Eclipse.
The purpose of our work is the development of a tool to: 1) analyze the correct match between the two abutted ports for splitted fields. 2) study the effect of gravity and analyze repercussions of possible misalignments and 3) illustrate that the gamma evaluation should be made with the global summed fluence per field instead of with the individual subfluences.
Materials and Method: A Varian 2100 CD Clinac equipped with Millennium 80 MLC and EPID (aS500) with dosimetric capabilities is used. In this work, macros have been elaborated using Matlab to facilitate the import and normalization process of the splitted fluences in order to obtain the fluence composed by the sum of the two splitted ones. Comparison between calculated and measured summed fluences has been performed according to gamma criteria 3%/3mm.
Results: For the clinical plans analyzed, comparison between calculated and measured summed fluences agrees with gamma criteria 3%/3mm. No influence of gantry angles was observed. We have simulate 1 mm shift between the abutted ports; if checked individually, gamma comparison of splitted fluences would agree within 3%/3mm but if we consider the sum of the fluences over and infra-doses areas bigger than 5% were found.
Conclusion: A tool has been developed to compare measured/calculated complete fluences, it allows the proper application of gamma analysis. This tool is available by request to users with similar equipment/restrictions.