Small Commissioning of a Flattening Filter Free (FFF) using an Anisotropic Analytical Algorithm (AAA)

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Abstract

Aim: To compare the dosimetric parameters of the flattened and flattening filter free (FFF) beam and to validate the beam data using anisotropic analytical algorithm (AAA).

Materials and Methods: All the dosimetric data's (i.e. depth dose profiles, profile curves, output factors, penumbra etc.) required for the beam modeling of AAA were acquired using the Blue Phantom RFA for 6MV, 6FFF, 10MV & 10FFF. Progressive resolution Optimizer and Dose Volume Optimizer algorithm for VMAT and IMRT were are also configured in the beam model. Beam modeling of the AAA were compared with the measured datasets.

Results: Due to the higher and lover energy component in 6FFF and 10FFF the surface doses are 10 to 12% higher compared to flattened 6MV and 10MV beams. FFF beam has a lower mean energy compared to the flattened beam and the beam quality index were 6MV 0.667, 6FFF 0.629, 10MV 0.74 and 10FFF 0.695 respectively. Gamma evaluation with +2% dose and 2mm distance criteria for the Open Beam, IMRT and VMAT plans were also performed and found a good agreement between the modeled and measured data.

Conclusion: We have successfully modeled the AAA algorithm for the flattened and FFF beams and achieved a good agreement with the calculated and measured value

Biography:

Jenea Bintey Khan is a Bio-medical engineer and recently she is working on National Institute of Cancer Research & Hospital, Mohakhali, Dhaka, Bangladesh in the department of radiotherapy and have recently focus on the article on Commissioning of a Flattening Filter Free (FFF) using an anisotropic analytical algorithm.

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