

عنوان مقاله:

Assessment of flatness and Symmetry of intraoperative radiotherapy beam fields by radio chromic EBT-2 films

محل انتشار:

دهمین کنگره بین المللی سرطان پستان (سال: 1393)

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خلاصه مقاله:

Symmetry and flatness tests should be done by using suitable 3D motorized water phantom or appropriate radio chromic films and slab phantoms. The aim of this work is to check symmetry and flatness of Intraoperative Radiotherapy (IORT) fields by using EBT-2 films and beam profiles at 6,8,10 and 12 MeV. Methods and materials: Four pieces of EBT-2 films cut into 10×12.5 cm². Then films were scanned before and after irradiation. EBT-2 films put in reference condition (applicator 10 cm and 00 angel) and between vertical slab systems. Then, films irradiated in four energies 6, 8, 10, 12 MeV, separately. After irradiation, by using MATLAB software and selection of appropriate pixels can draw profiles Flatness aria is in 80% filed size. Flatness and symmetry were obtained by special formulas. For assessment of flatness, maximum and minimum dose must be achieved and for analyzing symmetry, dose in corresponding points in central axis in profile should be measured. Results: Flatness for 6, 8, 10,12MeV energies were measured 3.6, 3.2, 1.7 and 2.9, respectively. Also, symmetry measurement in order for above energies were obtained 1, 1, 0.9, and 0.9. Conclusion: absorbed dose variation inside the 80% of the field size (50% isodose) must be less than 3%. In our results, flatness was acceptable for all energies (just for 6, 8 MeV a little is bigger than 3%). Also, maximum absorbed dose between points equidistant from central beam axis, inside the 80% of field size must be less or equal 3% and our measurements of symmetries were equal or under 1%. Symmetry and flatness of IORT .beam fields seems acceptable and reliable for all energies and it is appropriate for treatment condition

کلمات کلیدی:

symmetry, flatness, intraoperative radiotherapy, radio chromic EBT-2 films

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