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Translation of technical and dosimetric verifications during breast cancer intra-operative electron beam radiotherapy (IOERT)

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Quality assurance (QA) in radiotherapy is one of the most important issues that must be considered for non-image based treatment planning such as Intraoperative Radiotherapy (IORT). During IORT a very high radiation dose is precisely delivered to the tumor bed in only one fraction. Very large irradiation dose needs more precise target tracking and normal tissue sparing during IORT. A few modalities have potentially found to be used for irradiation field set up and dose verification in which radiochromic film can be a convenient dosimetric tool. Film dosimetry has an advantage to be used for both absorbed dose measurement within the target volume and applicator set up over the protection disk during breast tumor bed IOERT. In addition to film, C-arm radiographic facility can be also used for concordance between electron applicator and protection disk. After commissioning LIAC machine and treating more than 100 breast cancer cases with different electron beams during 1.5 years we obtained applicator positioning and dosimetric results which qualitatively and quantitatively were reported, respectively. Results show there is no significance difference between measured and calculated doses on the surface of the irradiation volume (p -value=0.92) and Intraoperative room imaging was also showed can effectively (=60%) correct the applicator set up error. In vivo dosimetry can be a method of choice for breast cancer management during IORT procedure.

Biography

Seied Rabi Mehdi Mahdavi has completed his PhD at the age of 40 years from Tehran University of Medical Sciences and Doctoral complementary sabbatical from London University-Gray Lab. He is Associate Professor of Medical Physics at Iran University of Medical Sciences, Radiotherapy (consultant) Physicists and the Director of Iranian Association of Medical Physicists as a scientific NGO organization. He has published more than 60 papers in international and national reputed journals and has been serving as an Editorial Board Member of different journals he also published one practical book in radiotherapy techniques and also teaching in related subjects.

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