عنوان مقاله:

Effect of Dental Filling Materials on Electron Beam Radiotherapy Dose Distribution in Head Region: a Monte Carlo Study by FLUKA and MCNPX Codes

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خلاصه مقاله:

Introduction: Radiation therapy is regarded as the mainstay treatment for head or neck cancer patients. In this method, the backscattered radiation of dental composites can damage the surrounding tissue. Material and Methods: The current study compared the effects of electron beam radiation on healthy teeth with the tooth filled with materials used in dentistry with FLUKA and MCNPX2.6 codes. The simulation was performed for a 512 mm3 cubic tooth composed of Amalgam and Ceramco materials. Results: The simulation results indicated that patients with dental caries who inevitably filled their teeth with artificial restorationreceived a more effective dose, as compared to others. Moreover, it was revealed that Ceramco increases the radiation risk more than Amalgam does. Therefore, Amalgam is the right choice for dental filling. Conclusion: Based on the obtained results, ceramic material poses patients to increased radiation risk more than Amalgam does; therefore, it is recommended that Amalgam be used to fill dental cavities.

کلمات کلیدی:

Radiation Therapy, Electron, Monte Carlo Method, tooth, Restoration Material