

The Comparison of Intensity Modulated Radiation Therapy Prostate Plans for Different Energies

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Abstract

The Radiotherapy of prostate cancer most commonly utilizes high-energy linear accelerator photons (15-21 MV) because of the deeper penetrability of these x-rays to deliver dose to the deep seated (10-20 cm) prostate. With the advent of Intensity Modulated Radiation Therapy (IMRT), the concern of increased neutron production due to the increased number of monitor units has lead to the majority of IMRT prostate treatments being planned with 6 to 10 MV photons. We report an investigation of the effect of beam energy selection on prostate treatments. Ten prostate cancer patients were studied. IMRT plans were created for 6 and 18 MV photons using coplanar non-opposed fields. The beam arrangement and optimization constraints were the same for all plans. The results include the comparison of total body integral dose, conformality index and total monitor units for both energies. Neutron dose for the 18 MV plans are also discussed.