

Abstract

Combination of permanent low dose-rate interstitial implantation (LDR-BRT) and external beam radiotherapy (EBRT) has been used in the treatment of clinically localized prostate cancer. Patients treated with this regimen initially receive an I-125 implant prescribed to 110 Gy followed, two months later, by 50.4 Gy in 28 fractions using intensity modulated external beam radiotherapy. While a high radiation dose is delivered to the prostate in this setting, the actual biologic dose equivalence compared to monotherapy is not commonly invoked. I shall describe *methodology* for obtaining the fused dosimetry of this combined treatment and assigning a dose equivalence which in turn can be used to develop desired normal tissue and target constraints for biologic-based treatment planning. Furthermore, I shall argue that LDR-EBRT treatments, when properly designed, may confer significant advantages in terms of: a) escalating the dose without normal tissue penalties, b) avoid the question of organ motion, and c) decrease significantly the size of the PTV.