

ABSTRACT

Dosimetry audit is a verification process performed to ensure the agreement between the planned dose and the measured dose. This study aimed to compare the measurement results obtained using the True Composite (TC) and Perpendicular Composite (PC) methods for cervical cancer treatment plans employing the 3D-BOX technique. The study was conducted using a Varian Unique 6 MV linear accelerator (Linac), an RW3 slab phantom, a PTW TM30013 Farmer ionization chamber, and a PTW Tandem T41013 electrometer. Three samples of four-field box 3DCRT treatment plans were verified using the four-field TC method and the single-field PC method in the Eclipse Treatment Planning System (TPS). Dose measurements were performed at a depth of 5.7 cm with 6.3 cm backscatter. The measured doses were compared with the TPS-calculated dose of 200 cGy and analyzed in terms of percentage deviation. The results showed that the TC method yielded measured doses of 204 cGy, 201.7 cGy, and 201.6 cGy, whereas the PC method yielded doses of 204.5 cGy, 204.98 cGy, and 204.79 cGy. All measurement results were within the clinical dosimetry audit tolerance limit of $< 3\%$. The differences between the two methods were influenced by the orientation of the ion chamber sensitive volume relative to the dose distribution, the volume averaging effect, and the presence of dose gradients generated by field configurations and multileaf collimators (MLCs). The TC method was found to represent actual clinical irradiation conditions more accurately than the PC method.

Keywords: *dosimetry audit, radiotherapy, 6 MV Linac, True Composite, Perpendicular Composite, Farmer ionization chamber, Eclipse TPS, 3DCRT.*