

ABSTRACT

Cervical cancer requires precise radiotherapy treatment for optimal local control. This study aims to evaluate the Dose Volume Histogram (DVH) for Planning Target Volume (PTV) and Organs at Risk (OAR), alongside the dose distribution quality of the Field-in-Field (FiF) 3D-CRT technique using the Simultaneous Integrated Boost (SIB) method. Simulations using the Monaco Treatment Planning System were performed on 5 stage III cervical cancer patients with prescribed doses of 55 Gy (Boost PTV) and 45 Gy (Elective PTV) over 25 fractions using 6 MV photon energy. Results showed that target coverage met clinical criteria, specifically PTV 45 Gy ($V_{42.75} > 95\%$) and PTV 55 Gy ($V_{52.25} > 95\%$). Doses received by OARs (rectum, bladder, femoral head, and intestine) remained safely below tolerance limits. The dose distribution was highly homogeneous, with a Homogeneity Index (HI) of 0.0491–0.0819 (ideal ≤ 0.12), and a Conformity Index (CI) of 1.346–1.687, which falls into a clinically acceptable minor deviation. In conclusion, the FiF 3D-CRT SIB technique effectively delivers maximum doses to the target tumor while minimizing radiation exposure to surrounding healthy organs.

Keywords : *Cervical Cancer, Radiotherapy, 3D-CRT, SIB, DVH.*