

## عنوان مقاله:

Comparative Dosimetric Evaluation of Volumetric-Modulated Arc Therapy (VMAT) Versus Intensity-Modulated Radiotherapy (IMRT) in Thoracic Esophageal Cancer

## محل انتشار:

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## خلاصه مقاله:

**Introduction:** With the introduction of Intensity Modulated Radiotherapy (IMRT) approach, better dosimetry results and patient outcomes has been attained for various anatomical sites. In present study, a comparative dosimetric evaluation of Volumetric-Modulated Arc Therapy (VMAT) versus two techniques of IMRT i.e. Dynamic IMRT (d-IMRT) and step & shoot IMRT (ss-IMRT) was done for thoracic esophageal cancer. **Material and Methods:** VMAT, ss-IMRT, and d-IMRT plans were generated on the Computed Tomography Simulator data sets of ۱۳ Patients with thoracic esophageal carcinoma who had been treated earlier. The prescription dose for each patient was ۵۰.۴ Gy in ۲۸ fractions. All the plans were optimized to achieve greater or equal to ۹۵% of the prescribed dose to the Planning Target Volume (PTV). Dose to PTV and organ at risk (OAR) were compared with the help of Dose Volume Histogram (DVH). **Results:** VMAT and d-IMRT plans were nearly equivalent for PTV coverage, homogeneity index (HI), and uniformity index (UI) ( $p > ۰.۰۵$ ). However, VMAT and d-IMRT plans had superior PTV coverage, HI, and UI, ( $p < ۰.۰۱$ ) than ss-IMRT. For PTV, the Dmean, D۹۸, and D۹۵ values in ss-IMRT were significantly less than VMAT and d-IMRT ( $p < ۰.۰۵$ ). **Conclusion:** All three techniques are able to provide a homogeneous and conformal dose distribution. VMAT offers better homogeneous dose distribution and may be preferred for treating thoracic esophageal carcinoma. Thus, the multi-arc .VMAT technique may be a better option with equivalent or superior dose distribution, uniformity, and homogeneity

## کلمات کلیدی:

Radiotherapy, Dosimetry, Esophagus, Computed Tomography, Intensity Modulated, Radiotherapy planning,

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