

THE ADVANCEMENTS IN RADIOTHERAPY IMAGING

M Pillay

Icon Oncology

<https://doi.org/10.54450/saradio.2023.61.2.807>

Abstract

The predominant objective of radiotherapy is to conform the treatment dose to the tumour volume in order to optimally limit a high radiation dose outside the target. Imaging has played a pivotal role throughout the history of radiotherapy. Developments in 3D and 4D imaging by means of computed tomography (CT), magnetic resonance imaging (MRI), and positron emission tomography (PET) have significantly enhanced the precision of conformal radiotherapy. Pretreatment imaging for planning has reached a very high level that includes CT planning and options of fusion with a MRI or PET for enhanced image quality. Stereotactic treatment, intensity modulated radiotherapy, volumetric radiotherapy and adaptive radiotherapy are all largely based on appropriately using imaging information both before and during treatment delivery by using on-board imaging devices such as cone beam CT and image guidance radiation therapy. Hence, the accuracy of radiotherapy imaging allows accurate treatment, reduce toxicity and exceeding tolerance doses of the organs of risk in the treatment area.

Presentation at the SORSA 2023 Congress 18-19 August, Century City Conference Centre, Cape Town