

## ***Comparison of Dosimetry of Mono Isocentric and Dual Isocentric Techniques for the Radiotherapy Treatment of Breast Cancer***

L. Thasanthan<sup>1\*</sup>, W.W.D.K.N. Dissanayaka<sup>1</sup>, S. Umagowry<sup>2</sup>

*<sup>1</sup>Department of Radiography/Radiotherapy, Faculty of Allied Health Sciences,*

*University of Peradeniya, Peradeniya, 20400, Sri Lanka*

*<sup>3</sup>National Cancer Institute, Maharagama, 10280, Sri Lanka*

*\*thasanth@pdn.ac.lk*

Radiotherapy is an important treatment in breast cancer management. Based on the main basic principle of radiotherapy, it is essential to spare Organ at Risk (OAR). After surgery, these three areas; the tumor bed, whole breast or chest wall, and the regional lymph nodes needed to be covered by radiotherapy for breast cancer patients with positive axillary lymph nodes. These areas are located at different depths with respect to the OARs. This study has focused on comparing the Dual Isocentric Technique (DIT) and Mono Isocentric Technique (MIT) in terms of dosimetry. This study compares the OAR doses between DIT and MIT for breast cancer treatment. This was a retrospective, correlational, quantitative study. The patients who had undergone adjuvant left breast radiotherapy as a curative intent at the department of radiotherapy and oncology in the National Cancer Institute, Maharagama (NCIM). By using the isocenter placement of breast field and SCF field and radiation dose in both fields, patients were divided into two groups, DIT and MIT. Then compared mean heart dose and mean left lung doses of two groups for V95% coverage of Planning Target Volume analyzed by using SPSS version 29.0. 200 patients were included, those who have undergone adjuvant left breast radiotherapy. There was no significant difference in mean heart dose in the breast field between DIT and MIT ( $p = 0.931$ ). And there was no significant difference in mean left lung dose in the breast field between two arms ( $p = 0.304$ ). But, in the SCF field, the mean heart dose was less in MIT (0.39 versus 0.174,  $p < 0.001$ ), and the mean lung dose was also slightly less in MIT (9.324 versus 4.345,  $p < 0.001$ ). This study compares DIT and MIT in terms of dosimetry. Finally, the MIT received low radiation doses to the OARs.

**Keywords:** Breast Cancer, Mono Isocentric, Dual Isocentric, Dosimetry, Organ at Risk