

Hala Ahmed Zaghloul El Lathy, Y Rashed, A A Shaukat et al.: **Intensity modulated radiotherapy using multiple in fields compared to wedged fields in breast irradiation: clinical impact on early skin reaction and organs at risk doses.** PAJO 7(3): 14-20, Sep 2014

Objective

To measure the impact of multiple fields in filed (MFIF) technique on dose homogeneity, doses to organs at risk (oars) and acute skin toxicity in comparison to physical wedged (PW) tangential technique.

Methods

The study population consisted of 75 patients who had breast conserving surgery and whole-breast radiation using MFIF. These patients were matched one-to-one to a control group of 75 patients treated with PW tangents, following ethical board approval and signing informed consents. Acute skin reaction was graded by CTCAE 3.0 scoring and multiple regression analysis of covariates was performed.

Results

CTCAE grade 2 acute skin reaction occurred in 61.3% PW vs. 32% MFIF while grade 3 was encountered in 24% PW vs. 10.7% MFIF patients ($P < 0.01$). Multiple regression analysis confirmed the excessive skin reaction to the related radiation therapy technique ($P = 0.0002$) and whole breast PTV ($P < 0.001$). Homogeneity index within PTV was significantly improved in MFIF plans (0.84 ± 0.7) compared with PW (0.94 ± 0.15) with a ($P < 0.01$). There was also a significant reduction, in lung V20 from $14.3\% \pm 1.1$ to $10.6\% \pm 1.4$ ($P < 0.01$), heart V30 from $7\% \pm 5.8$ to $6\% \pm 4.9$ ($p < 0.001$). Contralateral breast volume receiving dose more than 2 Gy was also reduced $2.3\% \pm 0.5$ PW to $1.2\% \pm 0.2$ MFIF ($P < 0.01$).

Conclusion

The MFIF technique significantly improved PTV dose homogeneity index, while significantly reduced the incidence of grade 2/3 acute skin reaction and doses to oars when compared to PW tangential fields in whole breast radiotherapy.