was evaluated on a consecutive series of patients with left sided breast cancer. Breath hold training and the acquisition of an inspiratory (IN) and expiratory (EX) planning dataset were the basis for deciding which patients would be eligible for gated irradiation. After contouring of PTV, left lung, heart and LCV in the IN dataset, the structures were copied to the EX dataset and adapted nonrigidly. Treatment planning was performed in identical manner for both datasets (IMRT via mainly 2 tangential fields with up to 16 segments), allowing optimal comparison between IN- and EX plans. We also report the positioning deviations in the A-P direction derived from the weekly portal images.

**Results:** Of the initial 26 consecutive patients, 25 could be CT-planned with the system resulting in 2 datasets each (IN and EX). Of these, 14 (56%) were initially selected for treatment in inspiration due to a significant difference in one or more OAR. Lung gating had to be discontinued in two patients after 3 and 2 fractions respectively due to breath-hold difficulties which had not been apparent during the training session. In patients initially selected for lung gating, the maximum (D02) and median (D50) doses to the LCV were 9.5(range:2.5-48.4) Gy and 3.1(1.8-25.1) Gy, respectively, and were significantly lower than those derived from the EX plans (p<0.001). The corresponding doses for the patients not selected for lung gating were 35.5 (7.3-57.2) Gy and 7.0 (3.1-39.7) Gy for D02 and D50, respectively, which was not significantly different from their IN plan values. Better LCV sparing in lung gated patients was not due to compromising PTV coverage: The volume of the PTV covered with 95% of prescribed dose was 90(73-97)% and 89(83-97)% for lung gated and non-lung gated patients, respectively (p=0.90). Median treatment times were 478±63s seconds for the lung-gated patients vs. 278±37s seconds for the patients treated without. The average A-P deviation (n=121) was 2.1 mm.

**Conclusions:** These results represent the very first patients treated at our institution with this system. Lung-gating prolonged treatment time surprisingly little by approximately 3 minutes per fraction and offered significant benefits on OAR sparing to 50% of the patients. Thorax-excision reproducibility is highly accurate with this system. As a limitation, it is only suitable for patients who are able to understand both the spoken and visual commands and are fully compliant.

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**Comparison of automated cosmesis assessment and skin toxicity testing after hypofractionated breast irradiation**

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**Purpose/Objective:** To compare two automated systems of cosmesis and skin evaluation, based on a computer assisted photographic assessment and a multiprobe skin tester in patients with breast cancer after conservative surgery and hypofractionated irradiation.

**Materials and Methods:** 50 women with early stage breast carcinoma treated with conservative surgery and receiving whole breast irradiation and a boost were evaluated. Irradiation consisted in 15 whole breast fractions of 2.7 Gy followed by a boost to the tumor bed in 6 fractions. The minimal follow-up was 2 years. Patient cosmesis evaluation by means a validated scale was took as a reference for comparisons. Physician evaluation of cosmesis and skin toxicity was performed according Harvard scale an RTOG scoring criteria respectively. Patient and physician evaluations were compared with computerized photographic assessment employing a dedicated software (BCT.Care 2.0) and also the analysis of hydration, elasticity and skin pigmentation performed by means a multiprobe skin tester (Multi Skin Test Center® MC750).

**Results:** The most important correlation was obtained with computerized assisted photographic assessment and the self assessed patient cosmesis scoring. It has been detected that the best morphologic values for asymmetry in accordance to the patient perception of breast deformity were the BCE (Breast Compliance Evaluation) (p=0,018), pBRA (proportional Breast Retraction Assessment) (p=0,021) and pUNR (proportionalUpward Nipple Retraction) (p=0,023) obtained by the software analysys. Also a good association was demonstrated between the values of the chronic toxicity and the overall evaluation of cosmesis by means the photographic software (p=0,041). The multiprobe skin testing demonstrated differences both in pigmentation and elasticity in the boost area compared with the ipsilateral breast (p=0,011 and p=0,003 respectively) and of major magnitude when compared to the contralateral breast (p<0,001 and p=0,001 respectively). A correlation was found among the loss of elasticity of the boost with the patient cosmesis evaluation (p=0,055). Physician cosmesis evaluation was correlated with breast hydration loss measured by the skin tester probe (p=0,015).

**Conclusions:** The overall cosmesis seems to be better evaluated by software compared to the subjective clinical physician evaluations. Nevertheless, the multi-probe skin tester device is capable to detect minor changes in elasticity and hydration that also correlate with patient and physician cosmesis evaluations respectively.
Purpose/Objective: Whilst moderate hypofractionation radiation therapy (HFRT) is routinely used in many European centres data supporting its use in Indians is unavailable. Indian patients were likely to present with more advanced disease and there are questions on biological dissimilarity between Caucasians and Indians. This analyses reports the demographic data, toxicity profile and control outcomes of the breast cancer patients.

Materials and Methods: From May 2011 to January 2014, 496 patients with breast cancer underwent HFRT with 3DCRT (4005cGy in 15 fractions) to whole breast or chest wall and/or supraclavicular fossa following curative surgery. The demographic data with respect to age, sex, neoadjuvant chemotherapy, type of surgery (modified radical mastectomy (MRM) vs Breast conservation surgery (BCS), histopathology (grade, tumour size, nodal status, ER/PR/Her2Neu status, margins and LVI), Nottingham Prognostic Index score (NPI) and/or supraclavicular fossa following curative surgery. The distant failures were analyzed using Kaplan Meier curves, univariate and multivariate analyses was done using the Cox regression model to identify predictors of failure.

Results: The mean age at presentation was 52 years (23 – 88 years) and 206 patients (41.6 % ) had breast cancer surgery. Patients who are younger than 40 years had higher rates of breast conservation surgery (p=0.01) irrespective of the tumour size. The histopathological variables and prognostic indexes were not significantly different across various age groups. The hypofractionated radiation therapy was well tolerated with 1.2 % and 7.1% having grade 3 and 2 acute skin toxicity. At 6 months 13.5% had Gr 1 and 1.6% Gr 2 lymphoedema, 5% reported distortion with no reported long term pneumonitis or cardiac complications. The median follow up period was 18.5 months. 90.2 % of the patients were on regular follow up. The crude LRR and distant failure rates were comparable to the published data respectively.

Conclusions: HFRT was well tolerated and loco-regional and distant failure rates were comparable to the published data establishing its safety and effectiveness in Indian population. Node positivity, grade 3 and triple negative tumours are more aggressive and tend to have higher locoregional and distant failure.