were taken (18 to 25 per patient). Initially, the patient Set-Up, we performed portal imaging with anatomy comparison to DRRs. We compared lung, heart and breast volumes. The treatment technique was 3D Conformal Radiotherapy. The breast fields were tangential. A Couch Vertical value was determined for each patient at the Set-Up process, and all treatment sessions were performed at that Couch Vertical value. Throughout the course of radiation treatment, daily readings were taken. This included readings of the actual Anterior SSD, as well as portal images taken , to compare anatomical matching to the DRRs. At the end of each patient's treatment course, we performed a comparison of all SSD readings,calculating the differences between planned and actual Anterior SSD readings .

Results: Average difference between the planned and actual Anterior SSD reading was 0.5cm for all treatments(with max 1.15cm and min 0 cm for single patient). For 10 patients (30% of all patients) the mean was above 0.7cm. An upward trend was seen in the average difference along the treatment course. 70% of the patients who had a mean of over 0.7 cm - were over the age of 60. There is also an upward trend of mean depending on age (average of 0.4 cm under the age of 60 and an average of 0.55 cm over 60(p=0.058). Mean grow with the elapsed time between surgery and treatment (50 to 347 days,average of 150 days) ≥100 days: average 0.32 cm, ≤ 100 days: average 0.64 cm (p<0.001)

Conclusion: In this study we showed that the difference between the planned and actual Anterior SSD is significant. To get the accuracy and reproducibility in breast cancer irradiation and the increasing use of IMRT(field in field), we recommend to consider re-planning for some patients, or to treating according to a fixed Couch-Vertical value, set during the initial patient Set-Up.Continue further work to examine the deviations in dosimetry based on the change in IsoCenter . A greater number of measurements will enable us to learn whether age and the elapsed time from surgery are significant factors

EP-2086

Advantages of deep inspiration breath-hold (DIBH) in left sided breast cancer using 3D-CRT

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Purpose or Objective: Irradiation of the left breast or chest wall was associated with an increased cardiac mortality and morbidity. The relative risk for ischaemic heart disease increased by 7.4 % with every 1 Gray (Gy) increase in mean heart dose. The dose to the heart and left lung can be reduced with deep inspiration breath hold (DIBH) techniques. The aim of this study was to investigate the reduction of organs at risk (OAR) doses with DIBH compared to free breathing (FB) in patients receiving left sided radiation therapy with three dimensional conformal techniques.

Material and Methods: Between September and October 2015, a total of 20 patients with left-sided breast cancer underwent two different computed tomography (CT) scans with 3 mm slice thickness, both FB and DIBH. The breast, lung, and OAR contours were done according to the RTOG breast cancer contouring atlas. The prescribed dose was 25 x 2 Gy, and the radiotherapy plans were made by using 2-4 opposing tangentional fields with 6 MV and 18 MV photons. For statistical analysis Wilcoxon matched pair test was used.

Results: Similar target coverage was achieved with both techniques. The mean MHD was reduced from 4.4 Gy (range: 1.3-8.3 Gy) with FB to 2.7 Gy (1.4-4.2 Gy) with DIBH (p<0.05), resulting a mean dose reduction of 1.7 Gy (39%) favouring DIBH. The average MLD was 6.7 Gy (3.3-11.7 Gy) at FB compared to 5.7 Gy (2.1-10.7 Gy) at DIBH (p<0.05), resulting mean 1 Gy (15%) dose reduction with DIBH. The V5heart and V20heart were also significantly lower, 49.3% (7-79%) and 5.8% (0.03-15.9%) with FB and 36% (12-70%) and 1.5% (0-5.9%) with DIBH (p<0.05). The V20lung for the group was reduced slightly at FB from 14.9% (5.2-27.8%) to 12.7% (3.5-24.6%), however this was not statistically significant (p=0.056). The V30lung was 12.5% (3.8-23.8%) with FB and 10.2% (2.4-21.8%) with DIBH (p<0.05).

Conclusion: A significantly lower dose to clinically important organs at risk (heart and lung). Using simple 3D radiotherapy techniques DIBH can reduce dose to the heart and lung without compromising target coverage be achieved using the DIBH technique compared to FB.

EP-2087

Simultaneous Integrated Boost Bilateral breast cancer RT with Helical IMRT: How to manage it?

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Purpose or Objective: The objective of the present case study was to investigate the potential role and the feasibility of Helical intensity modulated radiotherapy, (Tomotherapy, Accuray), for bilateral breast tumor patients, with a simultaneous integrated boost (SIB) strategy.

Material and Methods: Four target volumes were defined by the radiation oncologist: PTV breast (right and left) and PTV boost (right and left). Dose prescription in a SIB scheme was: 50.4 Gy (1.8 Gy/fraction) to PTV breast (right and left), 61.6 Gy (2.2 Gy/fraction) to PTV boost right side and 59.36 Gy (2.12 Gy/fraction) for PTV boost left side. Objectives were: for PTVs $V_{95\%}$>95%; Mean lung dose MLD<15 Gy, $V_{20\ Gy}$<20%, $V_{5\ Gy}$ as low as possible; for the heart a Mean dose < 7 Gy. The plan was generated with Tomotherapy planning station 5.0.5.18 (Volo, Accuray), with a field with of 2.5 cm, pitch of 0.287 and a modulation factor of 3.8. Specific optimization volumes were created by the dosimetrist to avoid high integral dose and to achieve a very conformal and homogeneous dose distribution. Treatment time will be measured.

Results: For PTV breast right and PTV breast left, $V_{95\%}$ was 95.05%. For PTV boost right and PTV boost left the $V_{95\%}$ was 97.9% and 96.8%, respectively. Mean lung dose was 8.6 Gy for each lung. $V_{20\ Gy}$ for both lungs combine was 13.8 %, and $V_{5\ Gy}$ was 35.6 %. Mean heart dose was 3.8 Gy with a maximum dose of 37 Gy. The irradiation treatment time is around 7 minutes.

Conclusion: This case show a very promising and feasible role of Helical IMRT, for bilateral breast tumor patients, with a simultaneous integrated boost (SIB) strategy. A good treatment planning strategy is fundamental to achieve the dose volume histogram (DVH) for the organs at risk (OAR) presented here

Electronic Poster: RTT track: Additional tools for contouring

EP-2088

CT and MRI fusion to minimize contouring uncertainties in Stereotactic Radiosurgery (SRS) planning

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Purpose or Objective: To improve image registration accuracy by using markers on patients for head SRS treatment planning. Contour shifts were compared after image matching based on anatomy correspondence and markers superposition.

Material and Methods: Ten patients with head localisations planned for radiosurgery were studied. Scanning procedures using skin markers were done on CT - GELightSpeed RT16, with 1.25mm slice thickness and MRI–GESigna 1,5T following