Results: The average differences in the anterior-posterior (AP), superior-inferior (SI) and lateral (LL) directions from CBCT were 0.25±0.53 cm, -0.08±0.52 cm, -0.16±0.57 cm for (AP), superior-inferior (SI) and lateral (LL) directions from CBCT. Student’s t-test was used to test the difference between this US modality against CBCT and the distribution of the differences is reported in Figure 1.

Conclusion: Based on the obtained results, significant differences with CBCT were found in all directions. However the average values of the differences is always less than 1 cm in all directions. Differences greater than 1 cm were observed in the AP direction (5%) showing that CBCT imaging modality is not safely interchangeable with 3DUS.

EP-2115 Breast radiotherapy: comparation of set up error using All In One system and dedicated breast board V. Manestar1, V. Karadža1
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Purpose or Objective: The aim of this study was to determine whether proper selection of fixation equipment has positive effect on the reduction of setup error for breast radiotherapy.

Material and Methods: The study has been performed on 10 breast cancer patients positioned on All In One system, and 10 patients treated using dedicated breast board. Selected patients represent average breast cancer patients. Patients with special setup needed, were excluded. (eg. patients with reduced arm mobility, patients with large contra lateral breast etc.). On both fixation systems the same setup protocol was used. Imaging and setup correction were performed on fractions 1, 2, 3, 8, 13, and every 5th further fraction. All the correction data were written in specially prepared forms. All the data collected were entered in excel worksheet, and further analyzed.

Results: The results showed that All In One system had standard deviation of set up error 0.31 cm in sagittal axis, 0.3 cm in longitudinal axis, and 0.36 cm in coronal axis. Compare to that, standard deviations of setup error for dedicated breast board were: 0.28 cm in sagittal axis, 0.24 cm in longitudinal axis, and 0.24 cm in coronal axis.

Conclusion: The result showed that usage of dedicated breast board offers better setup precision, especially in coronal axis. This can be due to more rigid construction of dedicated breast board, compare to foamy structure of All In One system. However, this difference is not so big to completely exclude usage of All In One system, especially in situations where his comparative advantages makes him a fixation of choice. Also, this was relatively small sample of patients, so further study should be performed.

EP-2116 Optimization of whole breast irradiation setup: comparison between two different positioning systems E. Sanfilippo1, C. Galeotti1, P. Cornacchione2, Y. Wandaël1, A. Naccà1, M. Morroni1, B. Onorati2, D. Greto1, P. Bonomo1, N. Groccia1, R. D'Angelillo3, S. Ramella1, I. Meattini1, L. Livi1
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Purpose or Objective: A precise and reproducible patients’ setup, within established thresholds, may lead to a reduction of time spending in breast radiotherapy treatment positioning, and highly precision in targets irradiation, sparing organs at risk (OAR). The aim of this study is to compare two different breast positioning systems.

Material and Methods: Overall 278 portal images film were analyzed with EPID system, for a total of 40 female patients treated with tangential fields breast RT. EPID acquisitions were made in two different Italian University Centers. Twenty patients were treated with a supine positioning on a 12.5 degrees inclined breast board, while 20 patients were treated with supine positioning using a wing board. Each EPID imaging couple were acquired weekly using medial and lateral tangential fields. Images were newly acquired in case of 5 mm error shift. The EPID images were subsequently compared to the referring DRR, using the three spatial axes: X (lateral), Y (longitudinal), and Z (vertical). The systematic and random errors of the two different studied groups were then calculated.

Results: Breast board system showed a systematic error of ±1.41 mm on the X, 2.23 mm on the Y, and 1.69 mm on the Z axis; the median random error was 0.3 mm, 0.46 mm and 0.36 mm, respectively. Concerning the wing board system, the systematic errors were ±3.34 mm on the X, 3.12 mm on the Y, and 2.68 mm on the Z axis; with random errors of 0.63 mm, 0.6 mm, and 0.53 mm, respectively. Assuming as acceptable the shift with a maximum threshold of 5 mm, it was possible to calculate the probability of setup accuracy. It was 99% on the X, 94% on the Y, and 97% on the Z axis, using the breast board setup; while it was 91%, 86%, and 88% using the wing board system.

Conclusion: Since the small sample series, these data should be interpret with caution. Preliminary results of our analyses showed an high accuracy sensitivity for both setup approach. However a better accuracy in favor of the breast board positioning system was shown.

EP-2117 Is Rotational shifts necessary in SBRT? A geometric analysis using a 6-degree of freedom(6-DoF)couch A.R. Allitto1, S. Chiesa1, S. Mennà1, L. Azario2, M. Massacciè1, F. Greco3, M. Ferro1, V. Frascino1, M. Balducci1, V. Valentini1
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Purpose or Objective: To study the relevance of rotational shifts using 6DoF robotic couch in patients treated with stereotactic body radiation therapy(SBRT)to improve setup accuracy.

Material and Methods: Patients affected by primary or metastatic lung tumours with a diameter until 5 cm were enrolled to SBRT. Breast board(CIVCO support system) was used for set-up of supine patient in all phases of treatment. Gross target volume was defined by a radiation oncologist on 4D TC scan. Treatment planning was carried out with Eclipse™ Treatment Planning Systems (Varian Medical System®, Palo Alto, CA) and Volumetric arc therapy was used. Total dose was prescribed on the basis of tumours position and dimensions: 42 Gy in three fractions, for lesions with diameter smaller than 3 cm, or 50 Gy in five fractions, for lesions between 3 and 5 cm. Daily Cone Beam Computed Tomography(CBCT) was performed before dose delivery. Then images were compared with CT scan for radiotherapy planning(automatic and manual 3D-3D match) in order to determine the magnitude of set up error and organ motion: translational(Lateral, Vertical and Longitudinal) and rotational(Pitch, Yaw and Roll) shifts were identified(Varian 6D Online Review System). The collected shifts were applied...