

Comparison of Set-up Errors Between Breast and Thorax All-in-one Solution and Breast Board in Breast Cancer Patients

Aya Hassabelrasol, Agha Muhammad Hammad Khan, Jamsari Khalid, Zahid Al Mandhari
Sultan Qaboos Comprehensive Cancer Care and Research Centre (SQCCCRC), Muscat, Oman

Purpose:

The aim of this study is to compare the set-up errors between breast and thorax all-in-one solution and breast board in breast cancer patients using values acquired from CBCT images

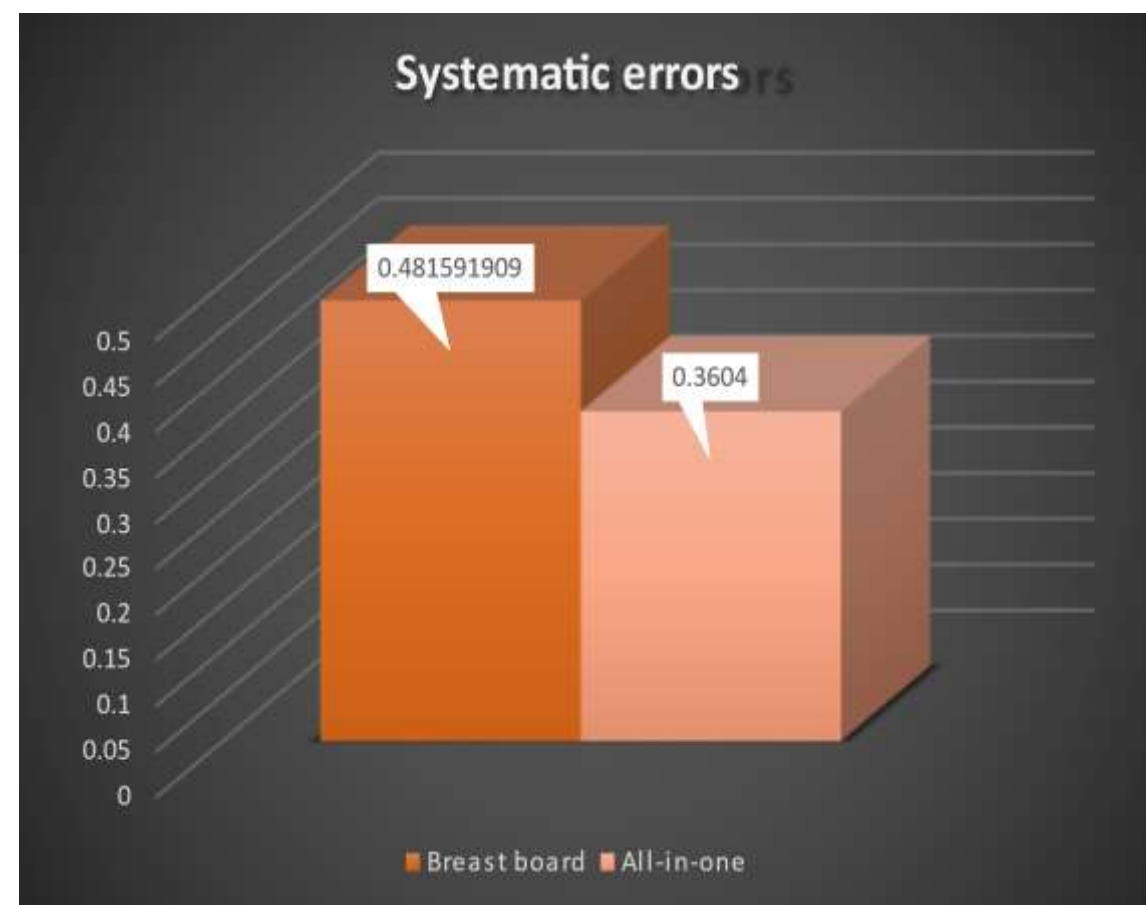
Materials and methods:

Data was collected retrospectively from ARIA system for 40 breast cancer patients from May 2022 to January 2023. For the first group, 20 patients were treated with breast and thorax all-in-one solution, while 20 patients in the second group were treated with breast board. Anterior MV and lateral KV pairs and Cone-beam CT-scan (CBCT) images were used for online set-up correction as per departmental protocol. For study purposes, 387 CBCT exposures have been analyzed. All data were filled in Excel sheet with translational and rotational shifts.

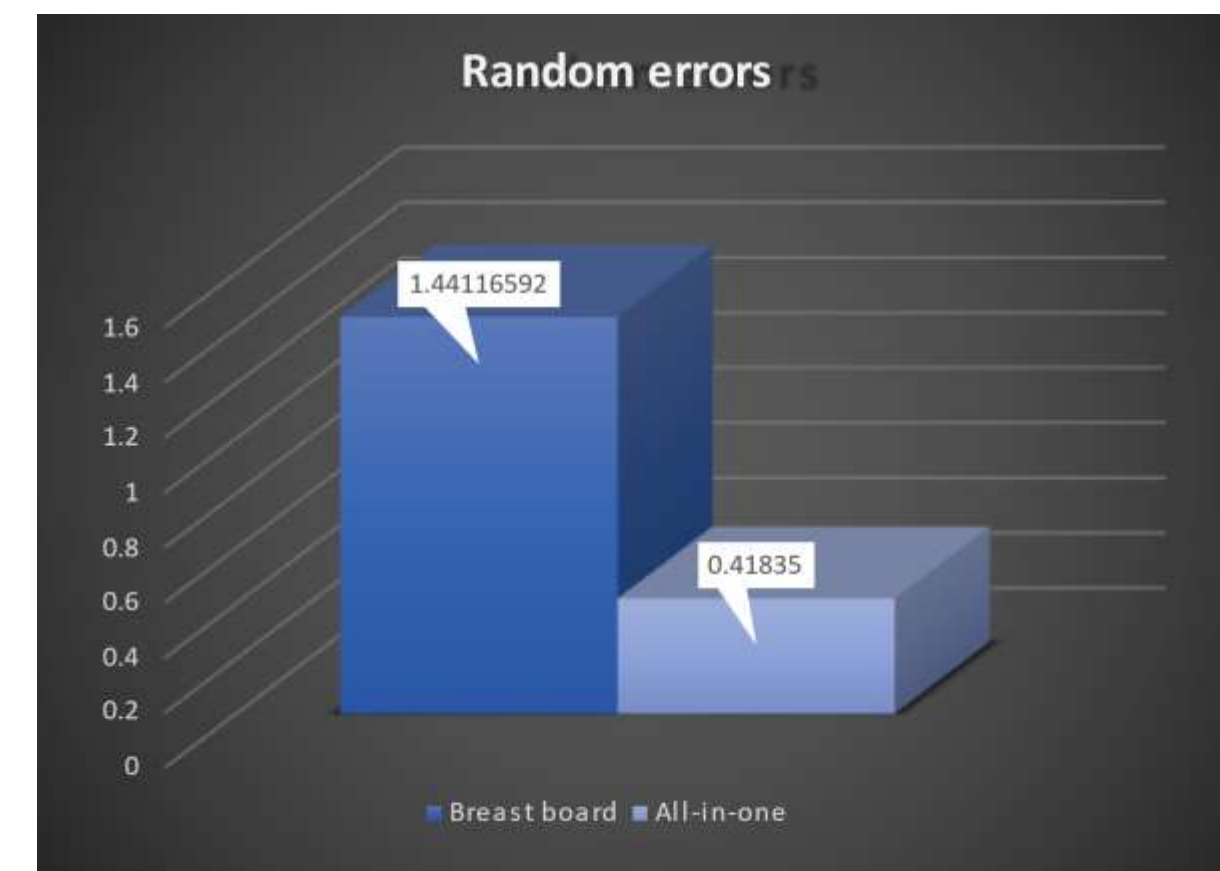
Systematic errors (Σ) represent the difference between the patient's position at the CT simulator and the treatment position which has been verified by images taken. Where, random errors (σ) are the inter-fractional variations in patient positioning.

Results:

The systematic (Σ) translational errors for AIO and breast board were 0.2006 and 0.4435, respectively, and rotational Σ errors were 0.5201 and 0.5197, respectively. Whereas the random (σ) translational errors for AIO and breast board were 0.218 and 1.963 respectively, and rotational σ errors were 0.5498 and 0.5498, respectively.



A chart shows the groups systemic errors for All-in-one solution and Breast board



A chart shows the groups random errors for All-in-one solution and Breast board

Conclusion:

The comparison of the set-up using AIO and breast board for breast cases showed that the systematic and random errors are less when using AIO.

A prospective randomized study required to confirm these findings and under consideration.