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Mitigating the long term side effects of radiotherapy in breast cancer by using active breath coordinator for deep inspiratory breath hold

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Aim: The aim of the study is to share the experience of using deep inspiration breath hold using active breath coordinator for left sided breast cancers; to monitor the dose reduction mainly to the heart and also to the lung during radiotherapy for them and to emphasize the importance of practicing deep inspiratory breath hold for left sided breast cancers, considering the long overall survival of the patients.

Materials & Methods: All patients of left sided breast cancer presenting to us from November 2017 to March 2018 were considered for deep inspiration breath hold technique (DIBH) using active breathing coordinator (ABC). All patients were taken up except for patients not satisfying the inclusion criteria or other factors. Both free breathing and deep inspiratory breath hold scans were acquired and radiotherapy plans were created for both. The plan with better doses to the target and the normal organs were used to treat the patients. All parameters of both the plans were recorded.

Observations: Most patients showed an improvement in the heart and the lung doses with the use of DIBH [ABC]. We treated 10 patients with the same technique and corroborated the findings of reduction of the cardiac dose [by upto 4-5Gy – 8-9 Gy reduced to 4-5 Gy] and left anterior descending artery dose – [reduction of dose by 3-4 Gy], with the additional advantage of the lung dose reduction [V20 reduced from 17-20% to 12-15%].

Conclusion: DIBH is a very promising technique of radiotherapy for left sided breast cancers to reduce dose to the heart and hence reduce long term cardiac toxicity in patients with a long overall survival after treatment of the breast cancer. The equipment has multiple parts and proper training of personnel and education of the patient is a must. And finally selection of patients who benefit from the technique by evaluating both plans is quintessential before executing the same.