Results: For patients treated with NAC, patients with advanced stages (T3-4 /N2-3) should receive RT after independent NAC response. In early stages, it would be reasonable to receive treatment if there were residual disease; if doubts exist in cases of pR0, such cases should be assessed individually. It seems clear that patients with clinical regional involvement who present affectations of the lymph nodes following NAC will benefit from locoregional RT, but it is less clear in those who are pN0 following the NAC, as their risk of LRR is low.

Conclusion: The benefit of locoregional RT is not clear in patients with pN0 following the NAC. The ongoing NSABPB-51 /RTOG1304 (NRG-9353) study has been designed to answer this question. We must wait for the results of this important trial. Until these results, we must follow the recommendations previously prescribed.

Purpose or Objective: To present the clinical results of ABPI using 3D-CRT and IG-IMRT following breast-conserving surgery (BCS) for early-stage breast cancer.

Material and Methods: Between 2006 and 2014, 104 low-risk breast cancer patients were treated with postoperative APBI by means of 3D-CRT (n=44) using 32-5 non-coplanar, isocentric wedged fields, or IG-IMRT (n=60) technique using KV/CBCT guidance for each fraction. The total dose of APBI was 36.9 Gy (9 x 4.1 Gy) using twice-a-day fractionation for 5 consecutive days. Survival results, side effects, and cosmetic results were assessed.

Results: At a median follow-up of 48 months (range: 25-112) one (0.9%) local recurrence was observed. Two patients (1.9%) died of internal disease. One (0.9%) contralateral local recurrence was observed. Two patients included G1 telangiectasia in 10 (9.6%) G1, G2, and G3 fibrosis in 26 (25%), 3 (2.8%) and 1 (0.9%) patients respectively. Asymptomatic (G1) fat necrosis occurred in 8 (7.7%) patients. The rate of excellent/good and fair/poor cosmetic results was 96 (92.3%), 8 (7.7%) respectively.

Conclusion: Both 3D-CRT and IG-IMRT for delivery the ABPI is feasible and the 4 years clinical results and toxicity profile is comparable to other results using multicatheter APBI brachytherapy.

Purpose or Objective: Radiation and anthracyclines are known to induce cardiac damage. Despite the use of 3D planning the heart is still irradiated with non-negligible doses, therefore this problem needs further investigation. We perform an analysis of cardiac function in the left sided breast cancer survivors. Patients were treated with surgery alone (S), additional radiation (RT), additional anthracycline based chemotherapy (A) or both (RA).

Material and Methods: A total of 140 patients were subjected to cardiological evaluation more than 8 years after primary treatment. We performed ECG and ECHO (in a part of patients we also had an ECG and ECHO performed before surgery), blood tests, chest X-ray. We also collected additional relevant information on patients (history, comorbidities, current treatment, etc.). Distribution of patients was as follows 50% RA arm, 18% S, 8% RT, 24% A. The mean time from the beginning of the treatment to examination was 12.2 years (8-15.9) in A, 10.7 (8-15.3) in RT, 10.1 (8-14.5) in RA. The majority of patients were treated with amputation (74%), the remaining with BCT. In chemotherapy arms 47% were treated with FAC, 31% withCAF, 19% with AC, and 3% with TE. Hormonal treatment was given to 64% of patients, in the majority of them it was Tamoxifen-based. Radiotherapy dose varied between 50 and 70 Gy.

Results: There was no significant difference in ejection fraction (EF) between the groups: median 56 (47-65) in S, 50 (25-65) in A, 55 (47-62) in RT and 54 (35-67) in RA. Other evaluated parameters like size of the right and left ventricle, left atrium, thickness of septum and posterior wall also did not differ between groups. In the whole group in 21% of patients we observed chronic cardiac insufficiency. In 58% of patients there were other cardiovascular disorders as hypertension, hypercholesterolemia, atherosclerosis, arrhythmias, and valvular disorders. Only in one patient treated with radiation and chemotherapy we found impaired heart function without other additional causes.

Conclusion: In the current series no unequivocal association between treatment regimen and long-term cardiac dysfunction could be found. Further studies in a well-balanced patient population are needed to elucidate the impact of contemporary anthracycline-based systemic treatment and modern irradiation techniques on cardiac outcome.

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heart reduction dose when comparing ABC to FB. Analysis was performed with BIOPLAN (BIOlogical evaluation of PLANNs) PC based user-friendly software (evaluation of Dmax, Dmin, Omean) and home-made Planning Reporting Orienting (PRO)-DVH software. PRODVH produced Bio-DVH (Equivalent Dose Volume histograms for 25 fractions) that allowed the comparison regardless of the treatment schedule and that were used to calculate the average DVH for each set up. Secondary endpoints included dose reduction to the lung and procedural success rate.

Results: Between May 2012 to February 2015, 50 patients with LBC are selected for receiving RT using ABC after both FB and ABC simulation. Procedural success was good, all patients have sufficient compliance and are been selected for this procedure. The primary endpoint was achieved: use of ABC reduced LAD/heart exposition (p < 0.01 T-student test). There was no significant difference between the free-breathing and moderate deep inspiration breath-holding in the target volume coverage. The volume of the ipsilateral lung in the free-breathing technique was smaller than the moderate deep inspiration breath-holding techniques. All these data were confirmed with both software.

Conclusion: ABC was well tolerated and significantly reduced heart/LAD dose without impairment in target volume coverage. No difference was find in lung dose reduction. Use of the ABC device during RT should be considered to reduce the risk of ischemic heart disease in populations at risk.

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Atlas-based segmentation for delineating the locoregional node levels during breast radiotherapy
C. Pirson 1, P.I. Nguyen 1, M. Bavir 1, P.A. Coucke 1, F. Lakosi 2, A. Gulyab 1, C.H.U. - Sart Tilman, Radiotherapy Department, Liège, Belgium

Purpose or Objective: Proper multi-atlas automated delineation can streamline clinical routine only when the proposed volume determination reasonably approximates the manual delineation. In this investigation we aimed to evaluate the automatic atlas-based segmentation of supraclavicular and level 3 lymph nodes for loco-regional irradiation of breast cancer. Further analyses were performed on the final plan’s dose coverage to the automated clinical target volume.

Material and Methods: Between June and September 2015 five consecutive breast cancer patients with clinical indication for loco-regional irradiation were selected. Pre-defined breast delineation atlas of Mirada RTx (version 1.6.2, Mirada Medical, Oxford, United Kingdom) software were used to generate automated clinical target volumes (CTVauto) including the supraclavicular and the axillary level 3 lymph nodes. Responsible radiation oncologist delineated the reference CTV (CTVref) for each individual patients as well. Comparison metrics of Dice Similarity (DI) and commonly used for locoregional progression-free survival (LPFS) and overall survival (OS) analysis. Type I error of 0.05.

Results: 63 patients were included, with a median age of 78 years (39-92 years), 61.9% with Karnofsky80 and median progression time of 13.5 months (2-180 months). Carcinoma not otherwise specified (NOS) was the most common histological type (84.1%), with estrogen receptor-positive in 71.4%. Most of the tumors were cT4b (50.8%) and cT4c (36.5%) with cN+ in 60.3% and cM1 in 44.4%. At the initial evaluation 46.0% had bleeding injuries. Two RT-FLASH were performed in 61.5% of the patients. During treatment there was no record of toxicity. There was reduction of bleeding (81.5%), size (69.8%) and ulceration (39.6%). Surgical conditions were acquired in 23.8% of the patients. Patients cM1 received chemotherapy more often than cM0 (57.7% vs. 17.6%; p=0.001). Of the 63.9% patients that received hormone therapy (HT), 77.5% had 2 RT-FLASH (p=0.002 vs. non-HT), with a greater dimensional reduction in patients undergoing HT (81.1% vs 43.8%, p = 0.010). LPFS at 2 and 5 years was 76.6% and 66.1%, respectively. The 2-year OS was 39.7% and 5-year OS was 19.5%, higher in cM0 patients (p=0.001), patients subjected to 2 RT-FLASH (p=0.003), or under HT (p=0.001). Multivariate analysis showed significant