investigate which parameters were related to the patients’ opinion about cosmetics. In addition, we analyzed whether firmness, presence of rib pain or quality of life (QoL) aspects (EORTC QLQ C-30 questionnaire) at 4 years were related to the patients’ opinion on cosmetic outcome.

Results: Of the 7 BCCT-core parameters, pBCE and pBTD were significantly related to patients’ score at 4 years. Patients with any difference in firmness rated their cosmetics worse than patients without the difference, even when the objective score (i.e. BCCT-core) was similar. This effect was larger by increasing difference. Worse perception of cosmetic outcome was also independently related to local versus global QoL, lower emotional functioning and higher scores in the depression scale. The presence of rib pain had no influence.

Conclusion: The patients’ opinion on cosmetic outcome was significantly related to objective parameters like distance from nipple to inframammary fold (pBCE) and length of breast contour (pBTD), but also to subjective factors, i.e. severity of firmness, depressive feelings, global QoL and emotional functioning.

PO-0675
Radical radiotherapy in oligometastatic breast cancer patients
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Purpose or Objective: The primary endpoint of this phase II study was to determine the progression-free survival (PFS) of oligometastatic breast cancer patients treated with radical radiotherapy to all metastatic sites.

Material and Methods: Patients affected by oligometastatic breast cancer were enrolled in this phase II trial. Inclusion criteria were the following: 1) histologically confirmed diagnosis of breast cancer, 2) 5 or fewer metastatic lesions, 3) no brain metastases, 4) primary tumor controlled. Radiotherapeutic treatment was SBRT (30-45 Gy in 3 fractions) or fractionated IMRT (40-60 Gy in 15-25 fractions). Primary endpoint was PFS; secondary endpoints were local control (LC), overall survival (OS), and toxicity, which was assessed using the CTCAE v4.0 scale.

Results: The analysis was conducted on 37 patients. The median age was 55 years. Twenty-five (68%) had oligometastatic disease at diagnosis, and 12 (32%) had the oligometastatic status induced by systemic treatment. Sixteen (43%) patients had a single metastasis, and 21 (47%) had 2 or more lesions. Thirty-one (84%) patients were treated with SBRT and 6 (16%) with fractionated IMRT. With a median follow-up of 18 months, 1-year and 2-year PFS was 74% and 44%, respectively. No differences was seen in PFS between patients with only 1 metastases vs. those with 2+ metastases, or between patients treated with SBRT vs. fractionated IMRT. Only two patients experienced local failure. One of these two patients had an isolated local failure for a spinal lesion that was treated with a minimum dose of 17 Gy in 3 fractions (being the spinal cord constraint prior on the PTV coverage). Two-year LC was 96%. Two patients died of disease, and 2-year OS was 96%. The proposed treatment was well tolerated; no Grade 3 toxicity was documented. Two patients experienced Grade 2 pain, 4 Grade 1 pain, and 2 developed Grade 2 fatigue.

Conclusion: Radical radiotherapy delivered to all the metastatic sites in oligometastatic breast cancer patients led to promising results in terms of local control and progression-free survival. Treatment was well tolerated. The results of this study may motivate for conducting phase III trials.

PO-0676
Impact of IMN irradiation on the right coronary artery and OAR in right-sided post-mastectomy patients
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Purpose or Objective: Previous studies have shown an increased risk of ischemic heart disease in breast cancer patients treated with radiotherapy (RT). It has recently been reported that the risk of major coronary events increases per gray of mean radiation dose delivered to the heart for patients undergoing either left- or right-sided breast RT. However, the anatomy of cardiovascular damage related to right-sided breast RT has not been well-described, specifically for radiation dose delivered to the right coronary artery (RCA). This may be of particular relevance for regional nodal irradiation that includes the internal mammary nodes (IMNs). In this prospective planning study, the impact of IMN irradiation on the RCA and organs at risk (OAR) in patients undergoing right-sided post-mastectomy RT (PMRT) was assessed.

Material and Methods: CT simulation scans of 60 right-sided post-mastectomy patients were identified from an institutional database. In 30 cases, the IMNs were contoured from the 1st to 3rd intercostal space with a PTV of 5 mm. The RCA, heart, lungs and contralateral breast were delineated as OARs. A four-field modified wide tangent photon plan was created encompassing the chestwall, IMNs, supraclavicular fossa and axilla. For the remaining 30 patients (control group), a four-field plan that excluded the IMNs was generated. All patients were planned to receive 50 Gy in 25 fractions over 5 weeks. Doses were compared between the two groups utilizing the Mann-Whitney test to determine whether there was a statistically significant difference in dose to OARs between these groups.

Results: In the group with IMN treatment, 95% of prescribed dose to the IMN PTV covered a median volume of 99% (range 90-100). There was a significant increase in dose to the RCA in the IMN treated group compared to the control group. The maximum dose to the RCA (3.3 Gy vs 2.35 Gy, p<0.0001) and mean RCA dose (2.41 Gy vs 1.69 Gy, p<0.0001) were both increased. Similarly, the mean heart dose (MHD) was increased (1.3 Gy vs 1.09 Gy, p<0.022). Inclusion of the IMNs increased lung V20 (18 Gy vs 15 Gy, p<0.00021) and mean lung dose (9.1 Gy vs 8.9 Gy, p<0.00051). There was a significant increase in the volume of contralateral breast receiving 3 Gy in the group requiring IMN treatment (3.75 Gy vs 0 Gy, p<0.0001).

Conclusion: Inclusion of the IMNs in patients undergoing PMRT significantly increases radiation dose to the RCA and MHD. An acceptable dose to the RCA has not been well-established but should be as low as is reasonably achievable. The dose and clinical implications of radiation to the RCA needs further evaluation in prospective studies utilizing techniques to minimize cardiac exposure.

PO-0677
Comparing detailed cardiac structure dose-volume metrics in supine versus prone breast irradiation
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Purpose or Objective: Previous studies have shown an increase in cardiac dose when supine versus prone breast irradiation is performed, however, the implications of these findings are not well understood. We compared detailed cardiac structure dose-volume parameters for both supine and prone plans to elucidate the differences between these two treatment positions.

Material and Methods: CT simulation scans of 60 right-sided breast cancer patients were identified from an institutional database. Patients were treated using a four-field technique with a midline block in the supine position and a four-field technique for the prone position. Cardiac structures were contoured for both supine and prone plans. Dose-volume histograms (DVHs) were generated for the heart, RCA, left circumflex, left anterior descending, and left main coronary artery. Incremental differences in mean doses to the RCA were assessed.

Results: The analysis was conducted on 37 patients. The RCA, heart, lungs and contralateral breast were delineated as OARs. A four-field modified wide tangent photon plan was created encompassing the chestwall, IMNs, supraclavicular fossa and axilla. For the remaining 30 patients (control group), a four-field plan that excluded the IMNs was generated. All patients were planned to receive 50 Gy in 25 fractions over 5 weeks. Doses were compared between the two groups utilizing the Mann-Whitney test to determine whether there was a statistically significant difference in dose to OARs between these groups.

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