towards significant association with post-operative antibiotic use (p = 0.05 & 0.08). No other factors associated with sub-acute post-operative complications, including age, race, menstrual status, tumor stage, histology, grade, receptor status, laterality, quadrant, number of foci, number of nodes excised or positive, number of re-excisions, time to surgery after diagnosis, time to hormonal therapy after surgery, or IORT treatment time or applicator size.

Conclusion: Here we demonstrate in a single institution, retrospective study that women tolerate IORT well. The type and frequency of sub-acute post-operative complications compare well with those seen in surgery without IORT. Further review with a larger cohort and matched controls may help provide additional information about this relatively new therapeutic modality.

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2078

Updated Results of a Prospective Cohort Study on Intraoperative Radiation Therapy for Early Breast Cancer at a Single-Institution

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Purpose/Objective(s): Targeted Intraoperative Radiation Therapy (IORT) has been explored in clinical studies and used as an alternative to conventional whole breast irradiation (WBI) in early stage breast cancers. This study utilized the ASTRO 2009 consensus and the TARGIT-A and TARGIT-B criteria in selecting patients. We report the early radiation treatment related outcomes of our single institution prospective cohort study using the Intrabeam system.

Materials/Methods: All eligible patients since September 2011 were entered consecutively into the cohort. Patients meeting the criteria of the ASTRO consensus, aside from age $\geq$ 60, and the TARGIT-A trial received IORT as the sole and definitive radiation treatment. If surgical pathology revealed findings incompatible with IORT treatment alone, then whole breast external beam radiation (EBRT) was added without a boost. IORT related complications, cosmesis, and early oncologic outcomes were assessed. Locoregional recurrence and toxicities were compared to TARGIT-A with a chi-square goodness of fit test, using the TARGIT-A outcomes as expected values. Patient characteristics were also compared to TARGIT-A.

Results: A total of 80 patients have been followed prospectively after having received breast IORT treatment with a median follow-up of 2.77 years. 73% of patients received IORT as their only form of radiation treatment. The remainder (27%) received additional whole breast radiation, as the patients did not fit the TARGIT-A or ASTRO consensus guidelines for partial breast irradiation. There were three local recurrences (3.75%) noted in the treated breast. All three recurrences took place about 2 years post-IORT treatment. In TARGIT-A, the 5-year risk for local recurrence was 3.3% (95% CI 2.1−5.1). However, after a median follow up of 2.4 years, the incidence of locoregional recurrence was 31 out of 1679 patients (1.8%). When comparing the incidence of locoregional recurrence in our cohort with the TARGIT-A cohort, there was no statistical difference (p= 0.19). Patient toxicities were also evaluated. There was no statistical difference in the rates of hematoma, seroma, and skin breakdown or delayed wound healing (p= 0.82, 0.60, and 0.87 respectively). Infection requiring IV antibiotics or surgical intervention and RTOG toxicity of grade 3 or 4 were found to be statistically different (p= 0.003 and 0.011 respectively). To measure cosmesis, the Harvard Breast Cosmesis scoring system was used. In patients that had documented breast cosmesis scores, 76% of patients had excellent cosmesis, and 24% had good cosmesis.

Conclusion: Treatment outcomes in patients that received IORT are comparable to the results of the TARGIT-A trial with respect to locoregional control and patient toxicities. Excellent and good cosmetic outcomes were achievable in this early report of our study.

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2079

A Prospective Study of Prone Positioning in Whole-Breast Irradiation

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Purpose/Objective(s): An essential component in the management of early stage and locally advanced breast cancer is whole breast irradiation (WBI), which is typically delivered in the supine position. However, the supine setup may have the limitation of infra-mammary folds, more inclusion of lung and heart, and lateral displacement of breast. In this work, we present the dosimetric results of a prospective study of prone positioning WBI.

Materials/Methods: Twenty-six patients were treated with prone breast positioning in our clinic since 08/2014. CT simulation was conducted with 2.5mm slice thickness. Patients were positioned on the prone breast board with both arms above the head and hands holding the bar to reduce body rotation. The contralateral breast was tucked away and the head was turned away from the treated breast. The planning target volume (PTV) was contoured by the radiation oncologist. Two opposed tangential fields using 6MV photon beams with the field-in-field technique were applied to obtain target coverage and dose uniformity. Cone beam CT (CBCT) was acquired to ensure the prone setup accuracy. Heterogeneity correction was applied in treatment planning. DVH for PTV, ipsilateral lung, total lung, and heart were calculated.

Results: Twenty-six patients were divided into three categories based on the PTV volume: 7 in the small breast group (PTV<800cc), 14 in the medium breast group (PTV=800∼1600cc), and 5 in the large breast group (PTV>1600cc). All plans obtained adequate target coverage, i.e., $\geq$95% of PTV receiving 95% of the prescribed dose (Rx). The average homogeneity index (HI=Dmax/Rx) was 104.6±2.0%. For the large breast group, due to the relatively large separation between critical structures and the target volume, the ipsilateral lung's V20 ∼ 0, V5 < 2% and the mean dose to the total lung < 1 Gy. For the left-sided breast radiation therapy, the mean dose to the heart was 1.7±0.9 Gy and the heart's V5 was 3.3±5.2%. No infra-mammary skin folding was observed for all prone setups.

Conclusion: The prone setup for whole breast irradiation has demonstrated favorable ipsilateral lung and heart dose while achieving better dose uniformity. Patients with large or pendulous breasts in particular benefit from prone positioning with reduced toxicity in the heart and lung and skin folding.

Poster Viewing Abstracts 2079; Table 1 Dosimetric endpoints of prone breast radiation therapy

	# of pt	Breast PTV volume (cc)	HI (%)	Total Lung V20 (%)	Total Lung V5 (%)	Ipsilateral Lung V20 (%)	Ipsilateral Lung V5 (%)	D_{mean} Total Lung (Gy)	D_{mean} Heart* (Gy)	Heart V5* (%)
Small (<800 cc)	7	555±177	103.8±2.4	0.6±1.0	1.7±2.5	1.1±1.7	2.9±3.9	0.6±0.5	1.8±1.2	2.1±2.5
Medium (800-1600 cc)	14	1099±193	104.9±1.3	0.4±1.1	1.1±2.1	0.8±2.1	2.2±3.8	0.6±0.6	1.7±0.9	2.5±2.8
Large (>1600 cc)	5	2312±582	105.0±3.1	0	0.4±0.6	0	0.5±0.8	0.5±0.2	1.7±0.6	2.2±2.9
Total	26	1186±671	104.6±2.0	0.4±1.0	1.1±2.0	0.8±1.8	2.0±3.5	0.6±0.5	1.7±0.9	3.3±5.2

* Heart dose evaluation for left breast only.

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2080

Prognostic Factors Affecting Outcomes in Triple Negative Breast Cancer

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Purpose/Objective(s): Triple-negative breast cancer (TNBC) is an aggressive subtype of breast cancer negative for the estrogen, progesterone, and human epidermal growth factor 2 receptors, which is associated with a high risk of recurrence. The purpose of this study is to identify risk factors that predict for recurrence and survival in patients with TNBC.

Materials/Methods: We retrospectively reviewed a cohort of patients from a single institution (n = 141) in central Texas that received standardized, multi-disciplinary care for their breast cancer. Overall survival and recurrence free survival were estimated by the Kaplan-Meier method. Cox proportional hazard regression models were utilized to determine different covariates on the risk of death and recurrence for TNBC patients.

Results: Median follow-up for living and deceased patients was 5.43 and 2.82 years, respectively. Maximum follow up time was 12 years. Stage I/II patients were treated with either modified radical mastectomy (MRM) or breast conservation therapy (BCT). Two-thirds of patients that received MRM + radiation (RT) were stage III. Overall survival (OS) differed significantly based on treatment type, lymphovascular space invasion (LVSI), and extra-capsular extension (ECE) ($p < 0.0001$, $p = 0.0067$ and $p < 0.0001$, respectively). Ten year OS was 86.5% for BCT, 76.5% for MRM, and 43.5% for MRM+RT. Ten year OS with or without LVSI was 65.9% vs. 82.9%, respectively. The presence of ECE adversely impacted 10 year OS: 38.7% vs. 81.8% without. Of 24 total recurrences: 25% were local; 75% were distant. Hazard ratios were used to determine the risk of death. Patients with LVSI had a 3.72 times higher risk of death than those without LVSI (95% CI 1.13-12.35); those with ECE had a 9.71 times higher risk of death than without ECE (95% CI 2.27-45.45). In a multivariable analysis of time to death, treatment group, LVSI, and ECE were all found to be statistically significant predictors ($p = 0.0207$, 0.0298, 0.0026 respectively). Effects of age, stage, BMI, race, tumor margins, and grade were not found to be significant predictors of either survival or recurrence.

Conclusion: As seen in other retrospective reviews, we found that mastectomy without RT vs. BCT in early stage patients and the presence of LVSI both adversely impacted overall survival. We additionally found ECE to be an adverse risk factor for death and negative predictor for overall survival. Given the increased risk of death with LVSI and ECE, we recommend that these adverse pathological factors be utilized as prognostic determinants, and incorporated in the treatment decision making for TNBC.

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2081

Five Year Results With 3-D Conformal Radiation Therapy to Deliver Partial-Breast Irradiation Consisting of 40 Gy in 10 Daily Fractions

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Purpose/Objective(s): To report the 5-year results of a prospective phase II study of Partial Brest Irradiation (PBI) consisting of 40 Gy in 10 daily fractions.

Materials/Methods: Patients affected by early-stage breast cancer were enrolled in this phase II trial. Patients had to be 60 years old and treated with breast conservative surgery for early stage (pT1-T2 pN0-N1a) invasive ductal carcinoma. Patients affected by ductal carcinoma in-situ or invasive lobular carcinoma were not included in this study. Radiation therapy consisted of 40 Gy delivered in 10 daily fractions, 4 Gy/fraction. Treatment volumes and radiation therapy planning were based on NSABP B-39/RTOG 0413 guidelines. Kaplan-Meier analysis was used to calculate rates of local control (LC), loco-regional control (LRC), and overall survival (OS). Toxicity was scored using the CTCAV v3.0.

Results: Eighty patients were enrolled. Median age was 69 years. Eighty-five percent had stage I disease, and 86% were ER positive. Seventeen (21%) patients had lymphovascular space invasion. Median follow-up was 52 months (range, 17-79 months). Three patients experienced local relapse (1 in-field, 1 out-of-field, 1 diffuse DCIS), corresponding to 5-year LC of 96.2%. One patient experienced an axillary relapse, and the 5-year LRC was 95%. Two patients experienced contralateral breast cancer. One patient died of disease (distant failure 9 months after PBI), and 2 died for intercurrence illness; 5-year OS was 94%. The proposed schedule was well tolerated. One patient reported Grade 3 pain at the site of irradiation. Four (5%) patients experienced Grade 2 erythema. Late Grade 2 fibrosis was observed in 3 (4%) patients. Asymptomatic fat necrosis was documented in 3 (4%) cases.

Conclusion: Forty Gy in 10 daily fractions is a well-tolerated regimen to deliver PBI. Initial efficacy appears comparable to other experiences using the classical RTOG fractionation of 38.5 Gy in 10 BID fractions.

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2082

Cosmetic and Dosimetric Outcomes of African American Breast Cancer Patients Treated With Whole-Breast Hypofractionated Radiation Therapy (WB-HFRT)

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Purpose/Objective(s): WB-HFRT is an established treatment paradigm for early stage breast cancer patients (pts) with limited data on the cosmetic outcomes in African-American (AA) pts. We investigated the skin toxicity profile of AA pts treated with WB-HFRT and examined if prone-HFRT resulted in tolerable cosmetic and dosimetric outcomes in obese pts with large pendulous breasts who are traditionally not eligible for supine-HFRT due to higher chances of increased hot spots leading to increased skin toxicity.

Materials/Methods: In this single institution retrospective study, we assessed radiation dermatitis (RD) and hyperpigmentation in Stage 0-II AA breast cancer pts s/p lumpectomy and adjuvant WB-HFRT: 42.56 Gy (266 cGy/fx) + 10-12.5 Gy (250 cGy/fx) boost. Weekly skin changes were prospectively collected on a customized assessment form. Pts were selected for either supine or prone position based on the size and pendulous nature of the involved breast. The student t-test and chi-square were used to compare distributions of dosimetric and clinical outcomes, respectively, between supine vs prone.

Results: Sixty AA pts were treated with WB-HFRT between 07/2012 and 06/2014. Table 1 displays the patient characteristics, cosmetic outcomes and DVH characteristics between the supine and prone position. Prone pts had statistically significantly larger BMIs and treatment volumes than supine pts, yet statistically significantly lower lung and heart DVHs. Supine and prone pts had comparable levels of hot spots (V105%), grades 1-2 RD, hyperpigmentation, and breast pain with no