2.5-year Follow-up Results of a Five-Fraction External Beam Radiotherapy Accelerated Partial Breast Irradiation for Early-Stage Breast Cancer after Breast-Conserving Surgery

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Introduction

- External beam accelerated partial breast irradiation (APBI) has emerged as a convenient alternative to the conventional 4–6 weeks of whole breast irradiation following breast-conserving surgery[1].
- This study presents 2.5-year follow-up data assessing the feasibility, safety, and efficacy of the 5-fraction APBI Florence trial regimen in select patients with early-stage breast cancer.

Methods and Materials

- A retrospective analysis was conducted on patients who received an ultra-hypofractionated external beam APBI regimen of 30 Gy delivered in 5-fractions. Figure 1.
- Eligible patients were women aged ≥40 years with early-stage breast cancer (pTis or pT1–2), no axillary lymph node involvement, tumor size ≤30 mm, and no distant metastases.
- Patients underwent breast-conserving surgery with lumpectomy with negative margin and negative sentinel lymph node biopsy, had histologically confirmed invasive carcinoma or pure ductal carcinoma in situ (DCIS).
- Clinical data collected included patient and tumor characteristics, treatment parameters, oncologic outcomes, and acute and late toxicities assessed using CTCAE v5.0.
- Adverse events occurring within 90 days post-APBI were categorized as acute; those occurring thereafter were considered late toxicities.

Results

- Between April 2021 and December 2022, 54 female patients most commonly with pTis tumors (29.6%) underwent external beam APBI.
- The median age was 68.0 years (range, 50.0-85.0) and 98.1% an ECOG performance status of 0-1.
- A body mass index ≥30.0 mg/kg2 was reported in 40.7% of patients.
- Tumor laterality was nearly evenly distributed, with 29 (53.7%) patients having left-sided and 25 (46.3%) right-sided breast cancer.
- The majority of tumors were localized in the upper outer quadrant (%).
- Median pathological tumor size was 6.5 mm (range, 1.0-29.0).
- Histological subtypes included invasive ductal carcinoma (55.6%), DCIS (33.3%), and invasive lobular carcinoma (11.1%).
- Estrogen receptor positivity was observed in 98.1%, progesterone receptor in 77.8%, and Her2Neu positivity in 1.9% of tumors.
- During the median follow-up of 37.7 months from diagnosis (range, 5.4-49.6) and 34.7 months from APBI (range, 0.6-46.8), majority of patients (87.0%) received adjuvant hormonal therapy post-APBI.
- Radiation-induced toxicities can be found in Table 1.
- Breast tissue fibrosis occurred in 1 patient, while 3 patients developed fat necrosis at a median 18.9 months post-APBI (range, 4.3-21.2); all of which were asymptomatic and required no intervention.
- At the most recent follow-up, no cases of local-regional recurrence or distant metastasis were observed. All patients remained alive, with excellent local control and overall survival.

Toxicity	Overall	Grade 1 Acute events	Grade 1 Late events	Grade 2 Acute events	Grade 2 Late events
			No. (%)		
Breast Pain	8 (14.8)	6 (11.1)	2 (3.7)	0 (0.0)	0 (0.0)
Fatigue	6 (11.1)	4 (7.4)	2 (3.7)	0 (0.0)	0 (0.0)
Radiation Dermatitis	4 (7.4)	4 (7.4)	0	0 (0.0)	0 (0.0)
Skin Induration	3 (5.6)	3 (5.6)	0	0 (0.0)	0 (0.0)
Fat Necrosis	3 (5.6)	0	3 (5.6)	0 (0.0)	0 (0.0)
Breast Tissue Fibrosis	1 (1.9)	0	1 (1.9)	0 (0.0)	0 (0.0)
Moist Desquamation	0	0	0	0 (0.0)	0 (0.0)
Telangiectasia	0	0	0	0 (0.0)	0 (0.0)
Total	25 (46.3)	17 (31.5)	8 (14.8)	0 (0.0)	0 (0.0)

Table 1. APBI Induced Toxicities

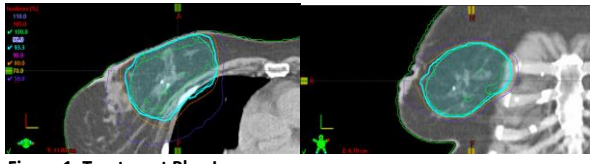


Figure 1. Treatment Plan Images

Conclusions

- External beam APBI after breast conservation surgery is a feasible treatment approach resulting in excellent tumor control and with minimal toxicities.
- The outcomes of this study are consistent with those of the external beam APBI Florence trial, further supporting its potential to become a standard treatment option for appropriately selected patients with early-stage breast cancer.

Contact

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