INTRODUCTION

- The ACOSOG Z11 and EORTC AMAROS studies investigated patients (pts) with clinical T1-2 N0 invasive breast cancer (IBC) undergoing breast conserving surgery (BCS) with positive sentinel lymph node (+SLN) biopsy and demonstrated the safety of omitting axillary lymph node dissection (ALND)
- Adjuvant radiation therapy (RT) fields employed differed between the two trials
  - Regional nodal irradiation (RNI) was mandated in AMAROS
  - RT fields were heterogeneous in Z11
- MA-20 and EORTC RNI trials demonstrated a DFS benefit with RNI in pts with +nodes
- Trials lead to wide variation in RT treatment volumes within the U.S.
- UPMC CancerCenter is a NCI-designated CCC that consists of 4 central academic and 18 community sites throughout Western Pennsylvania
- Clinical pathways (CP) standardize care when many therapeutic options exist and clinical practice varies unnecessarily
  - 2003: UPMC implemented a CP for management of IBC with adjuvant RT
  - 2009: Required entry of management decisions into an online support tool to track CP choices and subject off-pathway selections to peer-review
- The CP for treatment of patients with positive sentinel lymph nodes (LN) following BCS was modified in February 2015 to promote uniform treatment of regional LN irradiation (RNI)
- We sought to evaluate the impact of changes to the adjuvant IBC CP on practice patterns throughout a large, integrated comprehensive cancer center network

PATHWAY RECOMMENDATIONS

- Micrometastases (pN1mi):
  - Utilize modified tangents (MT) including level 1 and 2 axillary nodes
- Macrometastases p(N1a):
  - Utilize modified tangents (MT) including level 1 and 2 axillary nodes
- pN1a + adverse factors (T2 disease, LVSI, high grade, ER negative, ECE or age <50)
  - Utilize MT + additional 3rd field to include level 3 axilla, supraclavicular (SCV) LN, +/- internal mammary (IM) nodes

METHODS

- Retrospectively reviewed women with cT1-2 N0 IBC undergoing BCS with +SLN and adjuvant RT from July 2011 to August 2016
- Exclusion: clinical +nodes, mastectomy, completion ALND, neoadjuvant chemo
- RT plans of all treated patients were individually reviewed utilizing Eclipse™
- RT plans categorized based upon nodal contouring and beam arrangement
  - Whole breast irradiation (WBI) alone with standard tangents
  - Modified/high tangents (MT) for coverage of axillary level I and II
  - MT plus the addition of a 3rd field to include level III axilla and supraclavicular nodes (SCN) +/- IMN

RADIATION FIELD SELECTION

- RT fields of 233 women undergoing BCS with +SLN but not ALND were reviewed:
  - 25% pN1mi & 75% pN1a
- Of 127 women treated before CP changes, 35% with pN1mi and 22% with pN1a were treated with whole-breast irradiation (WBI) alone.
- Following CP changes, 106 women were treated:
  - 5% with WBI alone, 58% with MT, and 38% with MT + SCN field.
- Utilization of MT was associated with CP changes (p=0.001)
- Utilization of a 3rd SCN field was associated with CP changes (p<0.001), ECE (p<0.001), Nottingham grade 3 (p=0.018), pN-Stage (p=0.002), pT-Stage (p=0.02), and total number of adverse factors on univariate analysis

CONCLUSIONS

- Recognizing that adjuvant RT treatment volumes were likely heterogeneous following the publication of Z11 and AMAROS, we modified the CP in 2015 based upon the latest evidence regarding RNI
- Following the amendment, patients received RT fields guided by the CP leading to more standardized treatment based upon clinical risk factors and facilitating tracking of patient outcomes
- CP’s are useful tools for translating published research, national guidelines, and institutional experience into standardized patient management plans
- Promote evidence-based care and eliminate unnecessary variations in practice patterns that lead to inefficiency and inferior outcomes

Multivariable analysis of factors associated with utilization of 3rd SCN field

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Figure 1.

Positive Sentinel Lymph Node Biopsy

Micrometastases

Macrometastases

Adverse factors

No

No

Modified Tangents

Modified Tangents + 3rd Field

Reference

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