Node-positive patients treated with neoadjuvant chemotherapy can be spared axillary lymph node dissection with wireless non-radioactive localizers

MASSACHUSETTS GENERAL HOSPITAL CANCER CENTE

A Laws, L Lamb, K Dillon, B Kelly, O Kantor, K Hughes, M Gadd, B Smith, M Specht

HARVARD MEDICAL SCHOOL

ASBS #787231

BACKGROUND

- For node-positive (cN+) breast cancer (BC) treated with neoadjuvant therapy (NAT), NCCN recommends excising the biopsied lymph node in addition to sentinel node biopsy, termed targeted axillary dissection (TAD)
- Feasibility of wireless, non-radioactive markers such as SAVI SCOUT, Magseed and RFID Tag for marking clipped axillary lymph nodes post-NAT is not well-studied

OBJECTIVES

1. Evaluate feasibility of TAD using non-radioactive markers
2. Determine proportion of cN+ patients treated with NAT and TAD who are spared axillary lymph node dissection (ALND) using this approach

METHODS

- *Study design:* Retrospective single-institution review
- *Patient population:*
  - cN+ stage I-III BC treated with NAT (1/2016-3/2020)
  - Biopsy-proven nodal disease with a nodal clip placed
  - Attempted localization of clipped node and TAD
- *Outcome measures:*

Rate of successful localization	• Clip visualized by ultrasound (US) or mammogram (mammo) • Localizer placed <10mm from target
Rate of clipped node retrieval	• Documented by specimen radiograph or clip material on pathology
Rate of ALND	• Including indication

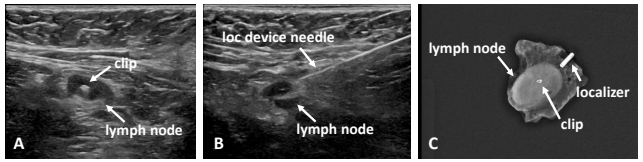
RESULTS

Table 1. Patient and procedural characteristics of 57 cN+ patients treated with NAT and TAD

Median age (range)	51 (30-73)
Body mass index	
Normal (<25 kg/m^2)	17 (31.6%)
Overweight (25-30 kg/m^2)	24 (42.1%)
Obese (>30 kg/m^2)	15 (26.3%)
Pre-operative cT stage	
T1	8 (14.0%)
T2	38 (66.7%)
T3-4	11 (19.3%)
Pre-operative cN stage	
N1	54 (94.7%)
N2	3 (5.3%)
Type of axillary biopsy clip	
HydroMARK	32 (55.2%)
Non-HydroMARK	26 (44.8%)
Receptor status	
ER+ HER2-	16 (28.1%)
ER- HER2-	15 (26.3%)
ER+ HER2+	17 (29.8%)
ER- HER2+	9 (15.8%)
Palpable axillary nodes post-NAT	
No	53 (93.0%)
Yes	4 (7.0%)
Median number of days from clip placement to loc (range)	138 (54-335)
Type of localizer used	
SAVI SCOUT	1 (1.8%)
Magseed	12 (21.1%)
RFID Tag	44 (77.1%)
Type of imaging-guidance for loc placement	
Ultrasound	52 (91.2%)
Mammographic	5 (8.8%)
Days from loc to surgery	
≤7	43 (75.5%)
>7	14 (24.5%)

Abbrev: BMI=body mass index, loc=localization, RFID=radiofrequency identification

Figure 1. A) Biopsy clip visualization, B) Localizer placement, C) Confirmation of a retrieved clipped node



TECHNICAL OUTCOMES

No Clip Visible on US or Mammo = 1.8% (1/57)

Upon review of nodal biopsy, no post-procedure imaging confirming successful deployment of clip, therefore excluded from analysis

Rate of Successful Localization = 95% (53/56)

Reasons for failure:
n=2: **Non-visualized clip by US → mammo-guided loc → malposition**
n=1: **Technical error under US-guidance → loc malposition**

Rate of Successful Clip Retrieval during TAD:
Overall = 91% (51/56)
Amongst Successful Locs = 93% (49/53)

Management of failed clip retrieval during TAD:
n=4: **Immediate ALND due to clipped node not retrieved**
n=1: **Frozen section on sentinel node → negative → no ALND**

RATES OF ALND

Figure 2. Rate of and indication for ALND in all patients

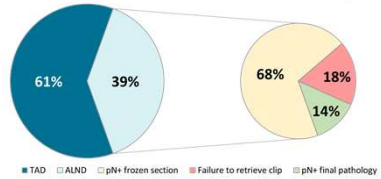
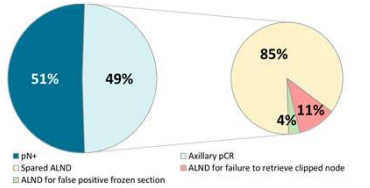


Figure 3. Rate of ALND in patients with axillary pCR



CONCLUSIONS

- Targeted axillary dissection using wireless, non-radioactive localizers is feasible after NAT, with >98% of biopsy clips visible for localization and >90% of clipped nodes retrieved
- Using this approach in cN+ patients at presentation, we demonstrate that at least 85% who achieve axillary pCR will be spared the morbidity of ALND

Contact: alaws@partners.org