

Evaluating the Use of Targeted Axillary Dissection and Comprehensive Physical Therapy to Reduce the Risk of Lymphedema in Node-Positive Breast Cancer Patients

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BACKGROUND

Patients with node-positive breast cancer who have completed neoadjuvant therapy (NT) undergo Axillary Dissection (AD) and adjuvant radiation therapy (AR). Reported lymphedema rates of AD with AR are high at 20-30%. After NT, resolution of nodal metastasis occurs in approximately 20-40% patients. Targeted axillary dissection (TAD) involves removal of previously biopsy-positive clipped node and sentinel nodes after completion of NT. TAD helps to identify patients who now have negative nodes and can possibly avoid AD. Reported lymphedema rates of TAD with AR are 10-12%. There is considerable variability on recommended protocols for lymphedema prevention in these patients. This study investigated whether TAD in conjunction with comprehensive physical therapy can further reduce the risk of lymphedema in node-positive breast cancer patients receiving NT.

Goal: To investigate whether TAD in combination with comprehensive physical therapy can further reduce the risk of lymphedema in node-positive breast cancer patients receiving NC.

METHODS

- An IRB-approved retrospective review was conducted of 35 consecutive patients who were axillary node positive and underwent NT between Aug 2016 and Aug 2019.
- Axillary node localization was performed with infrared reflector device Savi Scout (Cianna Medical, Aliso Viejo, CA).
- Patients with negative nodes intra-operatively underwent TAD only, while those with positive nodes had AD.
- Comprehensive physical therapy included deep myofascial release, range of motion exercises, and stretching.
- The outcome measures were Lymphedema Index (L-DEX) scores (normal range -10 to +10), range of motion evaluation and clinical evaluation..

Table 1: Comparison of patient characteristics and outcomes between TAD and ALND (N=35)

Characteristic	TAD (n=20)	ALND (n=15)	P-value
Median age in years	51	55	0.22
Median BMI in kg/m ²	27.6	29.4	0.56
NT			
Neoadjuvant chemotherapy	19 (95)	14 (93.3)	
Neoadjuvant hormone therapy	1 (5)	0 (0)	0.35
Neoadjuvant hormone and targeted therapy	0 (0)	1 (6.7)	
Response to NT			
Complete response	13 (65)	1 (6.7)	
Partial response	5 (25)	11 (73.3)	0.002*
No response	2 (10)	3 (20)	
Median sentinel nodes removed	3.5	3	0.01*
Median size of clipped node (mm)	15	20	0.03*
Median follow-up duration in months	6.7	5	0.64
Median number of PT visits	3	4	0.08
Median L-DEX score pre-op	-1.65	-1.4	0.67
Median L-DEX score 1 month post-op	-2.65	1.1	0.65
Median L-DEX score difference (post-op minus pre-op)	0.45	0	0.89
Range of motion 1 month post-op			
Full	18 (90)	10 (66.7)	0.09
Limited	2 (10)	5 (33.3)	
Deep myofascial release to axilla and breast 1 month post-op			
Yes	13 (65)	13 (86.7)	0.12
No	7 (35)	2 (13.3)	
Lymphedema during long-term follow-up			
Yes	0 (0)	2 (13.3)	0.09
No	20 (100)	13 (86.7)	

Values in parentheses are column percentages

*P < 0.05

REFERENCES

- Ribeiro Pereira ACP, Koifman RJ, Bergmann A. Incidence and risk factors of lymphedema after breast cancer treatment: 10 years of follow-up. *Breast*. 2017;36:67-73
- Barron AU, Hoskin TL, Boughey JC. Predicting Non-sentinel Lymph Node Metastases in Patients with a Positive Sentinel Lymph Node After Neoadjuvant Chemotherapy. *Ann Surg Oncol*. 2018;25(10):2867-2874.
- Boughey JC, Ballman KV, Le-Petross HT, et al. Identification and Resection of Clipped Node Decreases the False-negative Rate of Sentinel Lymph Node Surgery in Patients Presenting With Node-positive Breast Cancer (T0-T4, N1-N2) Who Receive Neoadjuvant Chemotherapy: Results From ACOSOG Z1071 (Alliance). *Ann Surg*. 2016;263(4):802-807.
- Nguyen, T., Hoskin, T., Habermann, E., Chevillat, A., & Boughey, J. (2017). Breast Cancer-Related Lymphedema Risk is Related to Multidisciplinary Treatment and Not Surgery Alone: Results from a Large Cohort Study. *Annals of Surgical Oncology*, 24(10), 2972–2980. <https://doi.org/10.1245/s10434-017-5960-x>
- McLaughlin SA, DeSnyder SM, Klimberg S, et al. Considerations for Clinicians in the Diagnosis, Prevention, and Treatment of Breast Cancer-Related Lymphedema, Recommendations from an Expert Panel: Part 2: Preventive and Therapeutic Options. *Ann Surg Oncol*. 2017;24(10):2827-2835.
- Whitworth PW, Shah C, Vicini F, Cooper A. Preventing Breast Cancer-Related Lymphedema in High-Risk Patients: The Impact of a Structured Surveillance Protocol Using Bioimpedance Spectroscopy. *Front Oncol*. 2018;8:197.

RESULTS

20 patients had TAD whereas 15 had AD (Table 1). Post-NT stages were 14 Stage 0, 4 Stage I, 1 Stage IIA, 10 Stage IIB, 5 Stage III A, and 1 Stage IIIC. 12 patients had breast conservation surgery, 15 had mastectomy with implant-based reconstruction, and 8 had mastectomy without immediate reconstruction. The clipped node was localized at a median of 1 day (range 1-35) before surgery and 100% clipped nodes were retrieved. 34/35 patients underwent AR. There were no statistically significant differences in pre-op and post-op L-DEX between TAD and AD. At 1-month post-op, 28 patients had full and 7 had limited range of motion. Two AD patients with BMI 25.8 and 32.2 kg/m² developed lymphedema at 9.2 and 16 months after surgery. No patient experienced tumor recurrence after a median follow-up of 6 months.

CONCLUSIONS

- This preliminary study found no evidence of lymphedema in TAD and AD patients at one month following surgery.
- After a median follow-up of 6 months, 13% of AD patients but no TAD patients experienced lymphedema.
- Prospective studies with large sample sizes are needed to further investigate the role of TAD combined with physical therapy in reducing the risk of lymphedema.