

Axillary Reverse Mapping Using Indocyanine Green and Concurrent Sentinel Lymph Node Biopsy in Breast Cancer Patients with or without Neoadjuvant Systemic Treatment

Teodora-Mihaela Peleașă^{1,2}, Aniela Nodiți^{1,2}, Cristian Ioan Bordea^{1,2}, Răzvan Ioan Andrei^{1,2}, Octav Ginghină^{1,2}, Alexandru Blidaru^{1,2}

¹Carol Davila University of Medicine and Pharmacy, Bucharest, Romania

²Department of Surgical Oncology, Prof. Dr. Al. Trestioreanu Institute of Oncology, Bucharest, Romania

Abstract

Background: the axillary reverse mapping (ARM) procedure aims to preserve the lymphatic drainage structures of the upper extremity during axillary surgery for breast cancer, thereby reducing the risk of lymphedema in the upper limb.

Material and Methods: this prospective study included 57 patients with breast cancer who underwent SLNB and ARM. The sentinel lymph node (SLN) was identified using a radioactive tracer. The ARM nodes were identified using indocyanine green with a near-infrared imaging system. All SLNs were examined intraoperatively. If the SLN was metastatic, further surgery was considered. The identified ARM nodes were preserved unless they coincided with the SLN.

Results: ARM nodes were visualized in 53 patients (92.94%). Crossover between SLN and ARM nodes was observed in 19 patients, 5 untreated and 14 who received neoadjuvant systemic treatment (NST), resulting in an overall crossover rate of 33.33%. Patients who received NST were more likely to show SLN-ARM crossover ($p = 0.015$) compared to those who underwent upfront surgery. Of the 20 patients with positive SLNs, 13 had crossover, 5 untreated and 8 received NST. In patients with positive SLN-ARM nodes, additional invaded ARM nodes were identified 7 patients, all of whom received NST.

Conclusions: using ARM in patients undergoing SLNB allows a supraselective approach to axillary surgery, aiming to reduce morbidity. In cases where patients underwent upfront surgery all SLN-ARM nodes were found to be metastatic and none of the other fluorescent nodes that were removed showed signs of invasion. The crossover rates are higher in patients with neoadjuvant treatment.

Key words: axillary reverse mapping, indocyanine green, sentinel lymph node biopsy, neoadjuvant systemic treatment