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Research Paper

Sentinel Lymph Node in Breast Cancer: Experience of the Gynecology-Obstetrics Department II (About 60 Cases)

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Abstract:
Objectives: *We report the results of the sentinel lymph node (SLN) technique in breast cancer at the GOII Department of CHU Hassan II in Fez.*
Materials and Methods: *This is a retrospective study conducted between June 2022 and December 2024, including 60 patients with breast cancer. All patients underwent SLN detection using a combined technique.*
Results: *The detection rate was 99% (n = 59). Intraoperative frozen section analysis was performed in 43 patients. The mean number of nodes harvested was three (ranging from one to five). The sensitivity of the frozen section was 95.7%. The SLN was positive in 6 patients and not detected in 1 patient (11%), who subsequently underwent axillary lymph node dissection. The SLN technique is reliable and feasible but requires training for surgeons, pathologists, and nuclear medicine specialists. It helps reduce morbidity in breast cancer treatment by avoiding unnecessary axillary dissections in node-negative patients.*

Keywords: *Sentinel lymph node – frozen section – axillary dissection*

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I. Introduction

Breast cancer screening has enabled the increasingly frequent discovery of small-sized cancers. These tumors have a low potential for lymph node metastasis, hence the introduction of the sentinel lymph node (SLN) technique to determine axillary lymph node involvement. Its excision, a technique with low morbidity, makes it possible to establish the lymph node status of breast cancer with reliability. It thus selects patients who, having occult lymph node metastases not detected by clinical and radiological evaluation, could benefit from regional or systemic adjuvant treatment. The development of more functional techniques of lymphatic mapping, both preoperative and intraoperative, in the 1990s, subsequently made it possible to validate the concept of the sentinel lymph node as an alternative to axillary dissection. This article reports the experience of the Department of Gynecology and Obstetrics II with the sentinel lymph node technique and compares it with results from the literature.

II. Materials and Methods

This is a retrospective, single-center study, carried out in the GO2 department between June 2022 and December 2024, in patients who underwent initial breast surgery, whether conservative or not, with the sentinel lymph node technique performed.

1. **Inclusion criteria:** Non-T4 tumors (T1, T2, T3) – Absence of palpable axillary lymph nodes cN0 – Absence of suspicious lymph nodes on axillary ultrasound – Uni- or multifocal tumors.
2. **Exclusion criteria:** Tumors with skin or pectoralis muscle involvement (T4) – Inflammatory breast cancers – Palpable or suspicious axillary lymph nodes on ultrasound – History of axillary surgery.
3. **Detection methods:** The two detection methods used in our series are the colorimetric method with methylene blue and the isotopic method.

All 60 patients included in our study underwent sentinel lymph node detection using the colorimetric method with methylene blue.

III. Results

Characteristics of the SLNs studied: number, size, metastases

The mean age of the 4 SLN+ patients was 50.18 years (range: 34 and 65 years), and 53.87 years (range: 31 and 81 years) for the SLN– patients. SLN+ patients were postmenopausal in 45.45% of cases, whereas the SLN– group was postmenopausal in 54.16% of cases. The total number of sentinel nodes removed in our study was 126, i.e., an average of 3 nodes per patient (range: 1 and 5). The mean tumor size in SLN+ patients was 2.75 cm, and 2.76 cm in SLN– patients. All SLN+ nodes showed invasive breast carcinoma of no special type (NST). Among our patients, 10 (16%) had SBR grade 3, 46 patients (76.66%) had grade 2, and only 4 patients had grade 1 (6.66%). Among the 6 SLN+ patients, 5 were SBR II and 1 was SBR III, corresponding to 80% and 20%, respectively. For SLN+ patients, all were HR+ (100%) and 37.5% were HER2 negative. For SLN– patients, 32 patients were HR+ (72.09%) and 2 patients HR– (4.65%).

The SLN was negative in 53 cases, positive in 7 cases, and undetectable in 1 case, i.e., 88.37%, 10%, and 1.6%, respectively. All 7 SLN+ nodes had macrometastases on intraoperative frozen section. No patients had micrometastases or isolated tumor cells. Axillary dissection was performed in 5 of our patients. All patients included in our study underwent breast surgery, with lumpectomy performed in 27 patients (45%), and the remaining patients undergoing mastectomy. Among SLN+ patients, 90.9% received chemotherapy, 72.72% radiotherapy, and 100% hormone therapy. Among SLN– patients, 70.83% received chemotherapy, 50% radiotherapy, and 76.06% hormone therapy.

IV. Discussion

The sentinel lymph node technique is feasible and reliable but requires training of the different specialists involved: surgeon, pathologist, and nuclear medicine physician. Its sampling using a minimally invasive technique and targeted histological analysis have paved the way for minimally invasive axillary staging surgery while reducing the morbidity associated with axillary dissection for well-selected patients. Axillary dissection should be performed systematically in the following cases: T4 tumors – Clinically palpable or ultrasound-suspicious lymph nodes – Failure to detect the sentinel lymph node – History of ipsilateral sentinel lymph node procedure.

Two studies, **ACOSOG Z0011** conducted in 2011 and **IBCSG 23-01** in 2013, concluded that axillary dissection does not improve survival in patients with negative SLNs or positive SLNs in the context of micrometastatic or macrometastatic disease. Indeed, Giuliano et al. demonstrated in the ACOSOG Z0011 study that SLN biopsy without axillary dissection in SLN+ patients can provide excellent regional control for some early-stage breast cancer patients treated with breast-conserving therapy and adjuvant systemic therapy. After a mean follow-up of 6.3 years, there was no statistically significant difference in local or regional recurrence between positive-node patients who underwent axillary dissection and those who did not. These results suggest that no additional axillary surgery is necessary in patients without clinically detectable lymphadenopathy with a positive SLN biopsy showing isolated tumor cells or micrometastases.

Moreover, axillary dissection could be spared even in patients with macrometastatic SLN if they meet eligibility criteria, namely: ≤2 macrometastatic sentinel lymph nodes without capsular rupture and indication for breast radiotherapy, regardless of surgical approach (conservative or radical) and systemic adjuvant treatment (chemotherapy and/or hormone therapy). In cases of ≥3 positive nodes or capsular rupture, completion axillary dissection is required.

The **IBCSG 23-01 trial**, conducted from 2001 to 2010 at the European Institute of Oncology (IEO), included patients with tumors <5 cm and clinically negative axillary nodes. Patients with SLN micrometastases or isolated tumor cells were randomized into two groups: one with axillary dissection and one without. After a follow-up of 5 years, the local recurrence rate in the no-dissection group was low, and no statistically significant survival difference between groups was observed. (The Saint Gallen consensus conference subsequently modified recommendations, advising surgeons to avoid axillary dissection in patients with micrometastatic or paucimetastatic SLNs.) The **NSABP B-32 trial** also showed that omission of axillary dissection in SLN-negative cases was validated despite an 8–10% false-negative rate. Indeed, the observed axillary recurrence rate was low (<1%), equivalent in both groups, as were recurrence-free survival and overall survival (refs 145–146).

Other studies support this approach, also demonstrating that axillary dissection is not indicated in cases of SLN micrometastasis. Examples include studies by Krag et al., Mansel et al., Solà et al., and Gatzemeier et al. (refs 78,145,147,148). For SLN+ macrometastatic cases, several multicenter studies, including **AMAROS**, randomized patients to axillary radiotherapy versus axillary dissection.

In our study, 7 patients out of 60 had positive SLNs, of whom 4 underwent axillary dissection, and another underwent dissection because of failed SLN detection (5 dissections total). Three of the 7 patients with macrometastatic SLN met all ACOSOG Z0011 eligibility criteria: early-stage breast cancer T1/T2, N0, M0, treated by either conservative or radical breast surgery with ≤2 positive SLNs without capsular rupture, and eligible for adjuvant chemotherapy and radiotherapy. These patients did not undergo completion axillary

dissection. One patient underwent dissection due to 3 positive nodes out of 4, while the others (3 cases) had no real indication for axillary dissection: (2 SLN+/5 nodes in a patient eligible for chemotherapy: T2, Ki-50%, grade II – 1 SLN+/3 nodes, T1N0, grade III, Ki-40% – 2 SLN+/2 nodes, T1, Ki-20%, grade II).

V. Conclusion

The sentinel node procedure remains a significant advancement for all women with early-stage breast cancer. It improves their quality of life compared with axillary dissection. However, ongoing multidisciplinary collaboration among specialists is essential to continually refine and optimize this technique.

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