Sentinel lymph node biopsy may adequately stage the axilla in breast cancer with less morbidity compared with axillary clearance.

**Background**

→ Sentinel lymph node biopsy (SLNB) may adequately stage the axilla in breast cancer with less morbidity compared with axillary clearance.

**Objectives**

→ As part of the information needed for recommendations making, we aim to evaluate the cost of systematic axillary lymph node dissection (ALND) and sentinel lymph node biopsy-with axillary dissection only if the sentinel contains metastases, with or without intra-operative evaluation.

**Methods**

→ Unit costs collected in a French national study were included in a model simulating the cost of 3 strategies:

1. ALND.
2. SLNB and distant ALND for positive cases and
3. SLNB with intra-operative and distant evaluation and ALND for positive cases.

→ A multivariate probabilistic sensitivity analysis was conducted on identification rate, complication rates, sensitivity, specificity and length of hospital stay.

**Strategy 2. SLNB + distant analysis**

\[
\text{Cost of Strategy 2} = \text{Pop1} \times C1_+ + \text{Pop2} \times C1_-
\]

ALND: axillary lymph node dissection, C1+_ cost of non identified sentinel lymph node (ALND) without complications, C1_- cost of non identified sentinel lymph node (ALND) with complications, C2a+_ cost of non identified sentinel lymph node (ALND) with complications, C2a_- cost of non identified sentinel lymph node (ALND) with complications, C2b+_ cost of non identified sentinel lymph node (ALND) with complications, C2b_- cost of non identified sentinel lymph node (ALND) with complications, C3a+_ cost of non identified sentinel lymph node (ALND) with complications, C3a_- cost of non identified sentinel lymph node (ALND) with complications, C3b+_ cost of non identified sentinel lymph node (ALND) with complications, C3b_- cost of non identified sentinel lymph node (ALND) with complications, C3c-_ cost of non identified sentinel lymph node (ALND) with complications.

**Strategy 3. SLNB + intra-operative evaluation and distant analysis**

\[
\text{Cost of strategy 3} = \text{Pop1} \times C1_+ + \text{Pop2} \times C1_- + \text{Pop14} \times C3b_+ + \text{Pop15} \times C3b_- + \text{Pop16} \times C3c_- + \text{Pop17} \times C3c_-
\]

ALND: axillary lymph node dissection, C1+_ cost of SLNB with negative intra-operative and distant analysis, without complications, C1_- cost of SLNB with negative intra-operative and distant analysis, with complications, C3b+_ cost of SLNB with negative intra-operative and distant analysis, with complications, C3b_- cost of SLNB with negative intra-operative and distant analysis, without complications, C3c-_ cost of SLNB with negative intra-operative and distant analysis, without complications, C3c_- cost of SLNB with negative intra-operative and distant analysis, with complications, RCA probability of complications with ALND, RGS probability of complications with SLNB, SeAD sensitivity of distant analysis, SeEX sensitivity of intra-operative analysis, TID sentinel lymph node identification rate, VPP positive predictive value.

**Results**

→ The sentinel lymph node biopsy is less costly than axillary lymph node dissection in early stages of breast cancer. Intra-operative evaluation significantly reduces the cost of sentinel node biopsy.

<table>
<thead>
<tr>
<th>Pre-test probability</th>
<th>Cost of axillary lymph node dissection (Strategy 1) (€)</th>
<th>Cost of sentinel lymph node dissection with distant analysis (Strategy 2) (€)</th>
<th>Cost of sentinel lymph node dissection with intra-operative and distant analysis (Strategy 3) (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9%</td>
<td>4 280 IC05 [4 264 ; 4 306]</td>
<td>3 495 IC05 [3 485 ; 3 505]</td>
<td>3 567 IC05 [3 548 ; 3 567]</td>
</tr>
<tr>
<td>7.5% (95% CI)</td>
<td>4 287 IC05 [4 262 ; 4 315]</td>
<td>3 559 IC05 [3 549 ; 3 569]</td>
<td>3 597 IC05 [3 588 ; 3 607]</td>
</tr>
<tr>
<td>5% (95% CI)</td>
<td>4 309 IC05 [4 283 ; 4 335]</td>
<td>4 189 IC05 [4 179 ; 4 199]</td>
<td>4 005 IC05 [3 998 ; 4 019]</td>
</tr>
<tr>
<td>3.75% (95% CI)</td>
<td>4 275 IC05 [4 249 ; 4 302]</td>
<td>4 199 IC05 [4 188 ; 4 411]</td>
<td>4 125 IC05 [4 123 ; 4 147]</td>
</tr>
<tr>
<td>2.5% (95% CI)</td>
<td>4 285 IC05 [4 209 ; 4 311]</td>
<td>4 703 IC05 [4 692 ; 4 714]</td>
<td>4 332 IC05 [4 319 ; 4 344]</td>
</tr>
<tr>
<td>1% (95% CI)</td>
<td>4 290 IC05 [4 264 ; 4 316]</td>
<td>4 740 IC05 [4 729 ; 4 750]</td>
<td>4 357 IC05 [4 345 ; 4 369]</td>
</tr>
</tbody>
</table>

**Discussion**

→ In a systematic review, no survival difference could be demonstrated between interventions in early breast cancer stage I prevalence of metastases below 30% and quality of life was found to be better with sentinel lymph node biopsy than with axillary lymph node dissection.

→ More data are needed to integrate these results in a cost-effectiveness analysis.

**Implications for the health system/professionals/patients/society**

→ The study confirms the interest of sentinel lymph node biopsy in early stage of breast cancer.

→ The cost comparison helps to determine the choice of the intervention with other argument as women’s preference, efficacy and safety.

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**Background**


Axillary clearance.

RCA: probability of complications with ALND, RGS: probability of complications with SLNB, SeAD: Sensibility of distant analysis, SeEX: sensitivity of intra-operative analysis, TID: sentinel lymph node identification rate, VPP: positive predictive value.