Contra-indications for Sentinel Lymph Node Biopsy

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Surgical Oncologist
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Learning Points

- What is the value of axillary assessment?
- What are the risks of SLNB over AND?
- What are the contra-indications to sentinel node biopsy?

Why assess nodes?

- Prognosis
- Guide adjuvant therapy
- Regional control
- Survival

Prognosis

**Guide adjuvant therapy**

- 50% of adjuvant systemic therapy decisions need an AND*
- Post-mastectomy radiotherapy for node positive disease

*Olivotto, Cancer 1998;83:948-55.

**Regional control**

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Follow-up (years)</th>
<th>Treatment</th>
<th>Axillary Recurrence</th>
<th>Uncontrolled Axillary Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSABP B-04</td>
<td>365</td>
<td>10</td>
<td>SM</td>
<td>17.8%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Fisher, JNCI 1980;32:674-81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRC</td>
<td>1424</td>
<td>20</td>
<td>SM</td>
<td>19.5%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Houghton, N Engl J Surg 1998;113:22</td>
<td>1376</td>
<td></td>
<td>SM + RT</td>
<td>5.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Mid-Kent Oncology Group</td>
<td>311</td>
<td>10</td>
<td>BCS+RT</td>
<td>10%</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

* *Presence of tumour*  *Presence of tumour, swelling, pain

**Survival**

Survival benefit from axillary dissection from six randomized trials.


**Why not assess nodes?**

- Lymphedema 2 - 27% *
- Chronic pain 4 - 6% *

*The Steering Committee on Clinical Practice Guidelines for the Care and Treatment of Breast Cancer.

Removal and pathological examination of axillary lymph nodes should be standard procedure for patients with early, invasive breast cancer.

Axillary dissection is the standard of care for the surgical staging of operable breast cancer.

If a patient requests or is offered SLN biopsy, the benefits and risks as well as what is and is not known about the procedure should be outlined.

**Risk of SLNB. What number is important?**

<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>Type</th>
<th>Number</th>
<th>+</th>
<th>-</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krag et al.</td>
<td>1998</td>
<td>NA</td>
<td>645</td>
<td>101</td>
<td>0</td>
<td>101</td>
</tr>
<tr>
<td>Delorme</td>
<td>1996</td>
<td>NA</td>
<td>555</td>
<td>89</td>
<td>0</td>
<td>89</td>
</tr>
<tr>
<td>Delorme</td>
<td>1993</td>
<td>NA</td>
<td>498</td>
<td>120</td>
<td>0</td>
<td>120</td>
</tr>
<tr>
<td>Chua et al (BC)</td>
<td>2003</td>
<td>NA</td>
<td>291</td>
<td>13</td>
<td>291</td>
<td></td>
</tr>
<tr>
<td>Krag et al.</td>
<td>1998</td>
<td>NA</td>
<td>118</td>
<td>23</td>
<td>118</td>
<td></td>
</tr>
</tbody>
</table>

Sensitivity = 89% Specificity = 100%

* modified from Kulley et al., Am J Surg 2004;188:49-61
Omission of AND

Low risk of nodal mets (<15%)*

No lymphovascular invasion

+ 

Non-palpable <2cm or Palpable <1cm


Why assess nodes?

- Prognosis
- Guide adjuvant therapy
- Regional control
- Survival
**Indications for SLNB**

- T1-2 adenocarcinoma with clinically negative axillary lymph nodes.

**Contra-indications for SLNB**

- Absence of experienced surgeon + team
- DCIS
- Prophylactic mastectomy
- Multifocal tumours
- Locally advanced cancer
  - T3
  - Inflammatory
- Clinically palpable nodes
- Previous breast surgery
- Previous axillary surgery
- Previous breast radiation
- Pre-op chemotherapy
- Pregnancy
- Breast feeding
- Allergies

**Absence of experienced surgeon + team**

Surgeon experience is the most important factor in sentinel node identification.

**DCIS**

As 20% of core biopsies with DCIS will have invasive disease, when proceeding to mastectomy consider SLNB.
DCIS

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Node Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klauber-DeMore et al</td>
<td>76</td>
<td>12%</td>
</tr>
<tr>
<td>Cox et al</td>
<td>224</td>
<td>10%</td>
</tr>
<tr>
<td>Am Surg 2001;67:513-9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A 10-20% rate of nodal metastasis does not match the clinical reality that more than 98% of these patients are cured with appropriate surgical treatment.


Prophylactic Mastectomy

- 0.1-4% incidental cancers

King, Cancer 2004;101:926-33.

Locally advanced breast cancer

<table>
<thead>
<tr>
<th>T Stage</th>
<th>N</th>
<th>SLN ID Rate</th>
<th>TP</th>
<th>FN</th>
<th>NPV</th>
<th>Sensitivity</th>
<th>DN Rate</th>
<th>Overall Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>100</td>
<td>0.92 (0.83-0.99)</td>
<td>100</td>
<td>0</td>
<td>0.92</td>
<td>0.94</td>
<td>0.92</td>
<td>0.93 (0.89-0.96)</td>
</tr>
<tr>
<td>T2</td>
<td>57</td>
<td>0.95 (0.88-1.0)</td>
<td>57</td>
<td>0</td>
<td>0.95</td>
<td>0.95</td>
<td>0.95</td>
<td>0.95 (0.92-0.98)</td>
</tr>
<tr>
<td>T3</td>
<td>44</td>
<td>0.97 (0.96-0.99)</td>
<td>30</td>
<td>14</td>
<td>0.80</td>
<td>0.97</td>
<td>0.97</td>
<td>0.97 (0.94-0.99)</td>
</tr>
</tbody>
</table>

Multiple tumours

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Node Positive</th>
<th>SLN ID Rate</th>
<th>FN Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layeeque et al, Am J Surg 2003;186:730-5.</td>
<td>40</td>
<td>63%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Tousimis et al, J Am Coll Surg. 2003;197:529-35.</td>
<td>70</td>
<td>54%</td>
<td>100%</td>
<td>8%</td>
</tr>
<tr>
<td>ALMANAC Trialists Group EJSO 2004;30:475-479.</td>
<td>75</td>
<td>45%</td>
<td>94.7%</td>
<td>8.8%</td>
</tr>
</tbody>
</table>

Clinically palpable nodes

- Common contra-indication
- Up to 30% false positive rate
- FNA node?

Previous breast surgery

- Breast Implants
  - N=11
  - Identification 100%
  - False negative rate 0%

- Other Breast Surgeries
  - Is AND appropriate?


Previous axillary surgery

<table>
<thead>
<tr>
<th></th>
<th>N=32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence SLNB/AND</td>
<td>69%</td>
</tr>
<tr>
<td>Recent failed SLNB/AND</td>
<td>22%</td>
</tr>
<tr>
<td>Unrelated axillary surgery</td>
<td>9%</td>
</tr>
</tbody>
</table>

- 75% identification
- 13% positivity

Axillary assessment in breast cancer at diagnosis is important for prognosis and adjuvant therapy decisions. It has little benefit in regional control and a possible small survival advantage.

SLNB has minimal risks relative to AND.

**Summary**

- Absence of experienced surgeon + team
- DCIS
- Prophylactic mastectomy
- Multifocal tumours
- Locally advanced cancer
  - T3
  - Inflammatory
- Clinically palpable nodes
- Previous breast surgery
- Previous axillary surgery
- Previous breast radiation
- Pre-op chemotherapy
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Thank you!