Surgical Considerations in Breast Cancer treated with Neoadjuvant Therapy

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No disclosures
Outline

• Who?

• Why?

• Breast
  • BCS v. Mastectomy +/- IBR

• Axilla
  • N0 v. N1
NAT: WHO?

- Inflammatory breast cancer - a must
- Inoperable breast cancer
  - skin involvement, fixed tumour, matted adenopathy
- Operable cancer…
  - triple negative, HER 2 pos
  - palpable - primary or nodes
- Research patients
NAT: WHY?

• Inoperable LABC to operable BC
• Convert mastectomy to BCS
• Cosmetics:
  • “large” lumpectomy to “small” lumpectomy
  • mastectomy to skin sparing mastectomy with IBR
• Convert ALND to SLNB in cN0 and cN1*
• Access to resources - OR time, IBR
• pCR - prognosis, guide adjuvant treatments
Diagnosis to Treatment (NAT or Surgery)

- Breast: Core biopsy - histology, biomarkers
  - if pCR - only tumour information
- Extent of disease - physical exam, mammography, US +/- MRI
- Tumour localization - Clip
- Axilla - non invasive and minimally invasive
  - Physical exam - error rate 41%, false pos 53%, 10mm
- Axillary US +/- FNA or core abnormal nodes, sensitive up to 76%, 5mm
- SLNB pre-NAT - controversial - to be continued…
NAT and SURGERY

- Guiding Principles:
  - NAT can increase surgical options
  - No change to OS or DFS
  - NSABP B-18 (1997)
    - Clinical Response
      - Partial - breast 80%, axilla 89%
      - Complete - breast 36% (1/4 pCR), axilla 73% (~1/2 pCR)
    - pCR more likely in Her 2 + and triple negative breast cancer
BREAST

- BCS after NAT
  - IBTR
  - Margins
  - Failure - Lobular histology, multicentric disease, diffuse calcs
- Mastectomy after NAT
  - immediate breast reconstruction - SSM and NSM
BREAST - BCS and NAT

• IBTR - increased rates of BCS with NAT (12%)

  • RCT - BCS gives acceptable local control

    • NSABP B-18, EORTC 10902

• Meta-analysis - NAT v adjuvant chemo - small but significant increase in LRR with NAT

  • No difference in all patients undergo surgical resection

• Cochrane Review 2007 (CD005002)
BREAST - BCS and NAT

• IBTR

• Predict LRR - MD Anderson prognostic tool

• N2/3 (clinical), residual tumour of 2cm (pathology), multifocal tumour pattern (pathology), LVI

<table>
<thead>
<tr>
<th>Risk Stratification</th>
<th>Score</th>
<th>5yr IBTR-free survival</th>
<th>5yr LRR-free survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0-1</td>
<td>97%</td>
<td>94%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>2-3</td>
<td>88%</td>
<td>83%</td>
</tr>
<tr>
<td>High</td>
<td>4</td>
<td>82%</td>
<td>58%</td>
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</tbody>
</table>
BREAST - MASTECTOMY and NAT

• Mastectomy - limited response to NAT, multicentric disease, failed BCS

• Immediate breast reconstruction: SSM, NSM

  • NAT

    • less likely to have IBR after mastectomy - 23% v. 44%

    • More likely to have delayed BR - 21% v. 14%

  • Hu Cancer 2012 Jul 1;117
BREAST - MASTECTOMY and NAT

• Wound complications - ACS-NSQIP
  • NAT does not increase risk of wound complications (3.4% vs 3.1%)
  • trend towards increased wound infection with NAT and IBR (OR, 1.58)

• Decker, Surgery 2012 Sep;152(3)
Invasive Breast Cancer at PHC BC

Jan 1, 2012 - Dec 31, 2015
n= 1666

Exclude recurrence and DCIS
Invasive Breast Cancer at PHC BC

SURG 1st
- 58%
- 22%
- 15%
- 2%
- 2%

NAT
- 39%
- 37%
- 22%
- 2%

BCS - Success
Mastectomy
Mastectomy and IBR
BCS/Mastectomy
BCS/Mastectomy/IBR
Invasive Breast Cancer at PHC BC

- NAT increases BCS by 12% and reduce IBR by 50%

BCS failure rate
- NAT - 7%
- SURG - 6%

pCR rate
- ALL - 33%
- BCS - 43%
- Mast - 30%
AXILLA - NAT

• Guiding principles:

  • large tumours considering NAT will often be node positive (60-80%)

  • Clinically negative - exam and imaging (US)

  • N1 - should be pathology not imaging

  • Decision on axilla management should be made by surgeon at consultation
AXILLA - N0

• SLNB

• post-NAT - early studies (2000-2005) had variable and unacceptable rates of
  • identification of SLNs - 70-100%
  • false negative rates - 0-39%

• REMINDER - NSABP B32 - ID 97.1% and FNR 9.8%
AXILLA - N0

  - T1-3, cN0 SLNB 1994-2007 n=3746
  - 15% NAT, 85% surgery
    - ID rate - 97.4% NAT v. 98.7% Surg
    - FNR - 5.9% NAT v. 4.1% Surg
    - Fewer SLN +ve patients in NAT (presenting T stage)
  - Conclusion: SLNB after NAT is as accurate as SLNB prior to chemotherapy. Fewer ALND and reduced morbidity

- REMINDER - NSABP B32 - ID 97.1% and FNR 9.8%
AXILLA - N0

- SLNB after NAT - multi-centre data, T1-3,N0-1
  - NSABP B-27 - 2005, n=428 (no defined protocol)
    - ID 85% (BD+RD 88%)
    - FNR 11% (BD+RD 9%)
  - GANEA - 2009, n= 195 (BD+RD)
    - ID cN0 94.6% v. cN1 81.5%
    - FNR cN0 9.4% v. cN1 15%
- REMINDER - NSABP B32 - ID 97.1% and FNR 9.8%
AXILLA - N1

- Most surgeons comfortable with SLNB after NAT in N0
- N1 - 1990s - MDACC T1-4, N1-3 (FNA or core LN) n=69
  - SLNB after NAT - ID 92.8% but FNR 25%
  - deemed feasible but FNR too high
- Issues: small, advanced disease (T4N3)
- Added post-NAT axillary US - ID 93% and FNR 20%

NSABP B32 - ID 97.1% and FNR 9.8%
MDACC (N0/NAT) - ID 98.7% and FNR 4.1%
AXILLA - N1

• Prospective Studies - Tany, N1-2 - NAT - SLNB+ALND
  • Alliance/Z1071 - n=756, single arm
    • FNR - 2+nodes removed
  • SENTINA - n=592, 1 of 4 arms
    • ID and FNR, not all path N1, repeat SLNB (not recommended)
  • SN FNAC - n=153, single arm
    • accuracy/feasibility

NSABP B32 - ID 97.1% and FNR 9.8%
MDACC (N0/NAT) - ID 98.7% and FNR 4.4%
**AXILLA - N1**

**TABLE 2** FNR according to number of SLNs removed and type of lymphatic mapping in three prospective trials of SLNB after NC in patients with documented axillary nodal involvement at presentation

<table>
<thead>
<tr>
<th></th>
<th>ACOSOG Z1071(^{86}) (n = 756)</th>
<th>SENTINA(^{87}) (n = 592)</th>
<th>FN SNAC(^{88}) (n = 153)</th>
<th>Across studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNR with single SLN</td>
<td>31.5 %</td>
<td>24.3 %</td>
<td>18.2 %</td>
<td>26.0 %</td>
</tr>
<tr>
<td>17/54</td>
<td>17/70</td>
<td>4/22</td>
<td>38/146</td>
<td></td>
</tr>
<tr>
<td>FNR with ≥2 SLNs</td>
<td>12.6 %</td>
<td>9.6 %</td>
<td>4.9 %</td>
<td>10.8 %</td>
</tr>
<tr>
<td>39/310</td>
<td>15/156</td>
<td>3/61</td>
<td>57/527</td>
<td></td>
</tr>
<tr>
<td>FNR with &gt;2 SLNs</td>
<td>9.1 %</td>
<td>4.9 %</td>
<td>N/A</td>
<td>7.8 %</td>
</tr>
<tr>
<td>20/220</td>
<td>5/102</td>
<td>25/322</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FNR with dual tracer</td>
<td>10.8 %</td>
<td>8.6 %</td>
<td>5.2 %</td>
<td>10.3 %</td>
</tr>
<tr>
<td>27/251</td>
<td>6/70</td>
<td>3/58</td>
<td>33/321</td>
<td></td>
</tr>
</tbody>
</table>

*FNR false-negative rate, N/A not available*

- FNR decrease with dual tracer and 2+ nodes removed

- Mamounas, Ann Surg Oncol 2015
AXILLA - N1 - Novel ways to reduce FNR with TAD

• Feasibility studies

• MDACC - clips in nodal metastasis, SLNB with no clip - 25%, ALND in all patients (SSO, 2015)
  • TAD - targeted axillary dissection + SLNB
    • removed clipped node (wire)
    • Radioactive seed localization - clip node, 5d prior to surgery seed inserted (iodine), RD+BD
  • Netherlands - radioactive seed at diagnosis, only removed seed with gamma probe and ALND (no SLNB)
    • ID 97%, FNR 7%
AXILLA - N0 and N1

- N0 after NAT is a predictor of good prognosis (NSABP B-17, 18)
  - did NAT render them N0 or were they always N0
- up to 42% ALND after NAT in N1 will be N0 (Alvarado, Ann Surg Oncol 2012)
  - SLNB can accurately remove those nodes and avoid ALND?
- ID rate - ALND as default
- SN FNAC - accuracy of axillary status after NAT
  - Clinical exam 45%, US 62%, SLNB 95%
- Any SLN pos after NAT requires ALND….. currently
AXILLA - N1 The FUTURE

• NSABP 51/RTOG 1304 -
  • cN1 - NAT - SLNB/ALND N0- RTx v. no RTx
• Alliance A11202
  • cN1 - NAT - SLNB positive - RTx v. RTx and ALND
• MDACC
  • cN1 - NAT - FNA v. surgery
Summary

• NAT for inflammatory BC and inoperable LABC

• Patient selection for NAT in operable BC - think pCR
  • Her 2 + and triple negative

• Surgical plan - set at consultation and adjusted based on clinical response

• BCS after NAT - LRR is equal, beware of multifocal response and + margin
  • Consider pre-chemo and pre-surgery imaging (MRI)

• Mastectomy and IBR after NAT - safe
Summary

• Axilla responds better then breast

• cN0 - SLNB after NAT is accurate, reduces over treatment of chemosensitive disease and morbidity

• cN1 - ? standard ALND
  • SLNB is feasible and accurate - to start be selective
    • 2 or more nodes, dual tracer
    • clipping nodes and TAD - ugh
      • fixing a problem that we may not have?
Thank You

Just a reminder that mammogramming your boobs is more important than Instagramming them.