Breast-Conserving Therapy in Early Breast Cancer

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Breast Cancer

- **Incidence:** 1,050,346 new cases / year \(^1\)
- **Mortality:** 372,969 deaths / year
- **Frequency:** 1 / 8 woman \(^2\)

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Cancer Statistics, 2000
10 Leading Sites by Gender, US

- 30 % Breast
- 12 % Lung, bronchus
- 11 % Colon, rectum
- 6 % Uterine corpus
- 4 % Ovary
- 4 % NH-lymphoma
- 3 % Melanoma
- 2 % Urinary bladder
- 2 % Pancreas
- 2 % Thyroid
- 22 % All other sites

- 29 % Prostate
- 14 % Lung, bronchus
- 10 % Colon, rectum
- 6 % Urinary bladder
- 5 % NH-lymphoma
- 4 % Melanoma
- 3 % Head, neck
- 3 % Kidney
- 3 % Leukemia
- 2 % Pancreas
- 19 % All other sites

American Cancer Society, CA- Cancer J Clin, 2000
Breast Cancer: Incidence
Incidence rate (per 100,000 women)

Surgical Options for Early Breast Cancer

• 1907: Radical mastectomy (Halsted)

• 1960: Modified radical mastectomy (Patey)

• 1970: Breast- Conserving Therapy (BCT)
Objective

To review breast-conserving therapy as a treatment option for early breast cancer
Methodology

MEDLINE

Cochrane Library

WHO Reproductive Health Library

Randomized Trials
BCT: Definition

Breast-conserving surgery + Radiation therapy
Surgical Technique

- Local excision
- Wide excision
- Quadrantectomy
Lymph Node Status

- Axillary lymph nodes dissection
- Sentinel node biopsy
<table>
<thead>
<tr>
<th>Study</th>
<th>Year</th>
<th>#Pts</th>
<th>ID rate</th>
<th>Technique</th>
<th>Accuracy</th>
<th>SLN only met</th>
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<tbody>
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<td>Giuliano</td>
<td>1994</td>
<td>174</td>
<td>66%</td>
<td>Dye</td>
<td>96%</td>
<td>38%</td>
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<tr>
<td>Krag</td>
<td>1996</td>
<td>70</td>
<td>71%</td>
<td>Tc</td>
<td>100%</td>
<td>67%</td>
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<tr>
<td>Albertini</td>
<td>1996</td>
<td>62</td>
<td>92%</td>
<td>Tc + Dye</td>
<td>100%</td>
<td>67%</td>
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<tr>
<td>Giuliano</td>
<td>1997</td>
<td>107</td>
<td>93%</td>
<td>Dye</td>
<td>100%</td>
<td>67%</td>
</tr>
<tr>
<td>Borgstein</td>
<td>1997</td>
<td>25</td>
<td>100%</td>
<td>Tc* + Dye</td>
<td>100%</td>
<td>64%</td>
</tr>
<tr>
<td>Barnwell</td>
<td>1998</td>
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<td>90%</td>
<td>Tc + Dye</td>
<td>100%</td>
<td>33%</td>
</tr>
<tr>
<td>Vero nesi</td>
<td>1997</td>
<td>163</td>
<td>98%</td>
<td>Dye*</td>
<td>98%</td>
<td>40%</td>
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<tr>
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<td>1998</td>
<td>104</td>
<td>100%*</td>
<td>Tc</td>
<td>98%</td>
<td>59%</td>
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<td>Crossin</td>
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<td>Tc</td>
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<td>Guenther</td>
<td>1997</td>
<td>145</td>
<td>71%</td>
<td>Dye</td>
<td>97%</td>
<td>43%</td>
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<td>Krag</td>
<td>1998</td>
<td>443</td>
<td>91%</td>
<td>Tc</td>
<td>96%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Indication of BCT

• Stage I\(^1\) : T1 N0 M0 \(^2\)

• Stage II : T0 N1 M0
  T1 N0 M0
  T2 N0 M0
  T2 N1 M0

1. American Joint Commitee on Cancer (AJCC), 1997.
Limitations of BCT

- **Absolute**
  - Multicentric
  - Diffuse calcifications
  - Positive margins
  - Prior irradiation

- **Relative**
  - Tumor / breast ratio
  - Collagen diseases
  - Advanced disease
  - Central tumor
BCT: Outcome

- Local recurrence
- Survival
- Cosmetic
- Prognostic factors
### BCT: Local Recurrence

<table>
<thead>
<tr>
<th>Trial</th>
<th>Period</th>
<th>Follow-up (Years)</th>
<th>Number of patients</th>
<th>Local recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mast</td>
<td>CS/RT</td>
</tr>
<tr>
<td>NCI- Milan</td>
<td>1973-80</td>
<td>18</td>
<td>349</td>
<td>352</td>
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<tr>
<td>IGR</td>
<td>1972-84</td>
<td>15</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td>NSABP B-06</td>
<td>1976-84</td>
<td>12</td>
<td>590</td>
<td>629</td>
</tr>
<tr>
<td>NCI - Bethesda</td>
<td>1979-87</td>
<td>10</td>
<td>116</td>
<td>121</td>
</tr>
<tr>
<td>EORTC</td>
<td>1980-86</td>
<td>8</td>
<td>422</td>
<td>452</td>
</tr>
<tr>
<td>DBCG</td>
<td>1983-89</td>
<td>6</td>
<td>429</td>
<td>430</td>
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</tbody>
</table>

*CS/RT, Conservative Surgery and X-ray therapy; DBCG, Danish Breast Cancer Group; eortc, European organization for Research and Treatment of Cancer; IGR, Institut Gustave-Roussy; Mast, Mastectomy; NCI, National Cancer Institute; NSABP, National Surgical Adjuvant Breast and Bowel Project.*
<table>
<thead>
<tr>
<th>Trial</th>
<th>Period</th>
<th>Follow-up (Years)</th>
<th>Number of patients</th>
<th>Overall Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mast</td>
<td>CS/RT</td>
<td>Mast (%)</td>
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Cosmetic: Prognostic Factors

- Type of surgery
- Radiation therapy
BCT : Prognostic Factors

- Age
- Tumor size
- Histology
- Margins
- Lymph nodes
- Radiation therapy
- Systemic treatment
Prognostic Factors: Age

- Tumor characteristics
- Loco-regional recurrence
- Survival
Prognostic Factors: Tumor Size

<table>
<thead>
<tr>
<th>Trial</th>
<th>Follow-Up (Years)</th>
<th>Tumor Size (cm)</th>
<th>Mast (%)</th>
<th>CS/RT (%)</th>
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</thead>
<tbody>
<tr>
<td>NCI - Milan</td>
<td>18</td>
<td>2</td>
<td>4</td>
<td>7</td>
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<tr>
<td>IGR</td>
<td>15</td>
<td>2</td>
<td>14</td>
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Prognostic Factors:

Histology

- Extensive Intraductal Component (EIC)
- Lobular carcinoma
- Grade
- Margins
Prognostic Factors: Type of Surgery

Local recurrence

Mastectomy < Quadrantectomy < Lumpectomy

3 - 4%  5%  10%

Prognostic Factors: Lymph Nodes

Lymph nodes

Local recurrence
## Prognostic Factors: Radiation Therapy

<table>
<thead>
<tr>
<th>Trial</th>
<th>Median follow-up (Months)</th>
<th>Local recurrence</th>
<th>Survival</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>CS (%)</td>
<td>CS + RT (%)</td>
</tr>
<tr>
<td>NSABP B-06</td>
<td>144</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>NCI-Milan III</td>
<td>52</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Swedish</td>
<td>64</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Antorio</td>
<td>91</td>
<td>35</td>
<td>11</td>
</tr>
</tbody>
</table>

CS, Conservative Surgery; CS/RT, Conservative Surgery and Radiation therapy; NCI, National Cancer Institute; NSABP, National Surgical Adjuvant Breast and Bowel Project.
Prognostic Factors: Systemic Treatment

- Chemotherapy
- Hormonal Treatment

Survival Benefit
Conclusion

• Breast-Conserving Therapy is a safe procedure
Conclusion

Breast-Conserving Therapy provides

• Good Locoregional Control
• Distant Survival = Mastectomy
• Good Cosmetic Results
• Better Quality of Life
Recommendations

• Screening

• Follow-up