

**BREAST CANCER CONSERVING THERAPY:
STUDY OF DIFFERENT LOCAL FAILURE'S MODELS
IN CORRELATION WITH DIFFERENT BOOST'S DOSES.
A RETROSPECTIVE POPULATION-BASED STUDY**

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Purpose/objective. Multiple randomized trials have established the equivalence of mastectomy and breast conserving therapy (BCT) in the treatment of early stage breast cancer. Patients undergoing BCT are at risk for local and ipsilateral breast tumor recurrence (IBTR). A lot of factors are known as (score or potential) predictors of ipsilateral breast tumor recurrence in patients receiving BCT. The most established risk factor for predicting local recurrence after BCT is the final pathologic margin status of the excised specimen.

Aim of the study was to identify the importance of different boost's doses in correlation with different status of margin resection and with other known risk factors for ipsilateral local recurrences after BCT.

Methods and materials. The records of 986 patients, treated in Ticino (the part of Switzerland Italian speaking), with known margin status who underwent breast conserving surgery followed by radiation therapy between January 1995 and December 2004 were reviewed. Resection was made by tumorectomy in 810 and quadrantectomy in 176 patients and the specimen analyzed at the Regional Pathology Institute. Seven hundred and thirty-four patients underwent lymphadenectomy and 252 had a sentinel lymph node biopsy. For the majority of patients radiation therapy was administered by a linear accelerator with 6 MV x ray on the whole breast (48.6 Gy with 27 daily fraction of 1.8 Gy in 5 weeks) with opposed tangent fields. The choosing of boost's doses on the tumor bed was made in consequence of the excision margin status: for pathologic margin status <5mm was made a boost dose of 16 Gy (2 Gy in 8 daily fractions) and for pathologic margin status ≥5mm a boost dose of 12 Gy (2 Gy in 6 daily fractions). Various clinical and pathologic prognostic factors were examined (age at diagnosis, grading, tumor size, lymph node status,

estrogens receptor's status, progesterin receptor's status, excision margin status) and then a multivariate and univariate analysis were done to assess the impact of these adverse findings and of different boost's doses on ipsilateral local recurrence.

Results. The median follow-up for all patients was 50 months (range: 11-129 months). The median age at diagnosis was 57.4 years (range: 28-90 years). The overall survival, disease-specific survival and disease-free survival were respectively 92.3%; 94.6% and 97.4%. The statistical analysis showed a correlation between the ipsilateral local failures and four of the adverse factors analyzed: progesterin receptor's status, age at diagnosis, pathologic margin status and total dose of radiation therapy ($p = 0.021$; $p = 0.032$; $p = 0.035$; $p = 0.049$). In the patient's group with these adverse factors the percentage of local failures was doubled (percentage of local failures: negative progesterin receptor vs positive: 6.4% vs 3.2%; age ≤40 vs >40 years: 9% vs 3.9%; free pathologic margin ≤5 mm vs >5 mm: 5.2% vs 3.2%) except for the total dose groups in which the percentage of ipsilateral local failure was the same (4.3%).

Conclusions. Our experience confirms that the response to treatment and the local control are correlated with progesterin receptor's status, age at diagnosis, pathologic margin status and total dose of radiation therapy. The highest doses of radiation therapy probably improve the local control. At the moment, in our knowledge, we don't have randomized trials which may help us to draw final conclusions.