

breaths, with their eyes closed. Fatigue was scaled in a summarized scale of 0–10. The control group did not received any treatment but their fatigue was measured daily. The results indicated that both groups experienced mild fatigue during the first week before the program with no significant difference between them. After treatment, the control group experienced sever fatigue and the experimental group experienced mild fatigue; the difference was significant. It was concluded that jogging/aerobic exercises can reduce fatigue.

326 POSTER Intraoperative Radiotherapy (IORT) for primary breast cancer treatment

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Purpose: Presenting the technique and evaluating first results with the intraoperative application of a tumor bed boost irradiation (IORT) in breast conserving therapy.

90% of all local recurrences occur near the primary tumour location. Several authors have demonstrated the benefit of a boost irradiation to this region additional to percutaneous radiotherapy of the whole breast for local tumor control in breast conserving therapy.

This boost can be applied by several means but the "geographic miss" of the primary tumor location is considerably high. The intraoperative application of this boost offers the unique possibility to visualise and control the irradiation to this region of interest and by that completely avoiding the problem of "geographic miss". Moreover percutaneous radiotherapy can be shortened by the anticipation of this boost and results demonstrate no significant concomitant increase in postoperative morbidity. This procedure has now been applied in over 500 cases at our special dedicated unit since 10/1998. So far 200 patients have been evaluated over a 30 months follow up, with no local recurrence after IORT.

Conclusion: Experience with intraoperative radiotherapy (IORT) in breast conserving therapy (BCT) for primary breast cancer demonstrates the efficiency and safety of this high quality boost in over 500 cases during a 5 year period.

327 POSTER Use of clipping to guide radiation boost planning for breast conservative therapy of the early breast cancer

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Purpose: Lumpectomy and quadrantectomy followed by radiation therapy are well established locoregional management of early breast cancer that has gained popularity in Japan. It is important to use boosting after whole breast irradiation for the finding of microscopic tumor in the margin, because most of mammary recurrences after breast conserving therapy develop from the tumor bed (or close to surgical margin).

Materials and Methods: One hundred and ten patients were treated with conservative surgery and irradiation for stage 0, 1, and 2 breast carcinoma between October 1996 and October 2003. Their ages ranged from 30 to 73 years old, and tumor sizes were from 0 to 35 mm. Indication of the boost is the finding of microscopic tumor in the margin, close margin, and unknown margin. We use the titanium clips, which length are 5.2 mm, because surgical clips around the resected area are helpful in planning the boost. The setting points of the surgical margins are three; close point of the nipple, bilateral half points of the distant of the nipple in the tumor bed.

Results: These distances between surgical scar and clips were 0–6.2 cm (mean 2.1 cm). It is easy to find these surgical clips at using the simulating film, ultrasound, chest X-ray, and CT. Twenty three patients were setting this technique, and three of them were boosting after finding at the simulating film. Usually the boost dose is 1000 cGy given at the rate of 200 cGy per fraction, and the electron energy should be one that reaches the deepest part of the tumor area with the 80 to 85% isodose line. The clinically marked boost area encompassed the surgical clips adequately in 20 patients, 8 by 8 cm and 10 by 10 cm fields were placed on the breasts. The function of a boost in radiotherapy is to give a higher dose to the primary tumor bed than to the surrounding tissue. We have no severe complication of these clips.

Conclusion: To accurate the localization of the boost irradiation field, the titanium surgical clips were placed at the margin of the tumor bed of the breast cancer, in 110 patients. The conserving surgical scar is often a poor indicator for the location of the underlying tumor bed. Our presented methods is useful for easy setting the boost irradiation field and to maximize target definition.

328 POSTER Intraoperative radiotherapy (IORT) as a boost in patients with early breast cancer

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Background: External beam radiotherapy (EBRT) of the whole-breast after breast-conserving surgery with a total dose of 45–50 Gy is the gold-standard in patients with limited stages of breast cancer. Most in-breast recurrences appear in close vicinity to the tumor-bed of the reference tumor. Therefore this area is often provided by a boost in routine practice, but no standard technique has been established. The boost dose is applied either by different EBRT-techniques, by brachytherapy or by intraoperative radiotherapy (IORT). Since february 2002 in our department IORT is delivered in breast cancer patients by a mobile miniature X-ray source (IntrabeamTM).

Materials/Methods: From February 2002 until October 2003 seventy patients with early stage breast cancer were treated by IORT after breast-conserving surgery. 45 of them had the IORT-treatment as a boost before consecutive EBRT. Median age was 63 years (43.1–86.5). The median tumour size was 14 mm (6–45). Definitive pathology results showed ductal-invasive histology in 18 patients, lobular-invasive histology in 13 patients, mixed histology in 10 patients, tubular-invasive histology in 2 patients, medullar histology in 1 patient and mucinous histology in 1 patient. IORT treatment time was 20 minutes (18.6–48.8). In most cases a spherical applicator with a diameter of 4.5 cm was chosen (3.0–5.0). IntrabeamTM is producing low energy X-rays, which can be applied in an isotropic dose distribution to the tumor-bed. Therefore a single high-dose (20 Gy) can be applied on the applicators surface reaching the wrapped breast tissue up to a tissue depth of 1.5 cm. After wound-healing all IORT-patients were treated by homogenous external-beam radiotherapy of the whole breast with a total dose of 46 Gy.

Results: Treatment was tolerated well by all patients without any skin necrosis. Three patients had wound healing problems, two showed skin erythemas 9II after IORT, which disappeared without any delay. After a maximum follow-up of 20 months patients had good cosmetic outcome without any significant late effects. One patient had to be treated by secondary mastectomy because of multifocality and one patient developed cervical lymph node metastases 2 months after breast conserving surgery. In both cases additional EBRT was omitted. One other patient presented with multifocally relapsed disease with several skin metastases 10 months after IORT plus EBRT and died 4 months later.

Conclusions: IORT with the Intrabeam system is a comfortable, effective method to deliver a single high-dose to the tumour-bed as a boost. After breast-conserving surgery, the resection cavity can be ideally irradiated intraoperatively by short-distance X-rays. A miss of the target, as it happens often during external beam course, can be avoided.

Thursday, 18 March 2004 16:00–17:30

PROFFERED PAPERS Hereditary cancer

329 ORAL Risk of breast recurrence in relation to BRCA1/2 mutation status following breast-conserving surgery and radiotherapy

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Background: BRCA1 and BRCA2 germline mutations are associated with a strong risk of breast cancer, which may preclude breast-conserving treatments in carriers. We investigated whether mutation status was influencing the rate of breast recurrence following breast-conserving treatment (BCT) with surgery and radiotherapy.

Patients and Methods: BRCA1 and BRCA2 genes were screened for germline mutation in 131 patients (with 136 breast cancers) with a family history of breast and/or ovarian cancer, treated with BCT. Tumor features, breast recurrences (BR) and contralateral breast cancer (CBC) rates of BRCA mutation carriers were compared to those of non-carriers with a family history. The 131 pts. with familial history were matched to 261 pts.