whole breast (WB) irradiation at the Institut Curie for early BC, a titanium clip was placed (during the surgery) at the zone where the first SLN was found. All pts were irradiated using previously published techniques: in dorsal decubitus (DD) position using 2 tangential fields and isocentric lateral decubitus (ILD). Prophylactic dose to SLN (PD) was defined as 95% of total dose prescribed to the breast (boost to tumor bed was not considered). The dose was evaluated to this "clip point". Prospective registration and dosimetric study was conducted in all cases. Statistical analysis used Student and chi 2 tests to find any correlation between anatomical, clinical and radiological pts' and tumors' characteristics and dose received to SLN bed.

Results: All 152 pts were enrolled in the study. The median age was 57 years (yrs) (34−81). The median weight was 60 kg (43−80). The median body mass index (BMI) was 23 kg/cm^2 (17−40). T1 98%, T2 2%, N0 93% and N1 7% of cases. All tumors were pN0. Sixty-eight percent were treated in DD and 32% in ILD position. The median total dose delivered to the WB was 50 Gy (32−54). For the population of all pts, PD was seen in 25% of cases, of them 17% of pts, treated in DD and 41% in ILD groups ($p = 0.018$). PD was found more often in young pts ($p = 0.04$), heavy pts ($p = 0.03$), pts with a higher BMI (0.03), and N2 ($p = 0.004$).

Conclusions: In our series we found that the dose received by the SLN clip is related to treatment position and pts morphology. These parameters could be systematically considered especially if an axillary node irradiation is proposed.

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The role of IMRT in the irradiation of breast cancer

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Background: Breast cancer is one of the most frequent indications in radiation therapy. With common techniques the recommended range of the prescribed dose between 95% and 107% can not be realized in either case. Complex target volumes e.g. including axillary, supraclavicular or internal mammary lymphnodes are in most cases not covered in accordance to international recommendations (ICRU 50 and 62). Therefore further irradiation techniques are eligible. Three different techniques are described and the dosimetric results are compared. Especially the option of the Intensity Modulated Radio Therapy (IMRT) is investigated.

Material and Methods: Three different techniques are compared in three different clinical situations. The irradiation of bilateral breast cancer, the irradiation of a thoracic wall including axillary and supraclavicular lymphnodes and the irradiation of the breast including an integrated boost. The techniques to be compared are the common tangential irradiation, the tangential irradiation with an additional field (forward planned field-in-field technique), and the IMRT. All treatment plans have been calculated with the Eclipse planning software (VARIAN), based on the AAA photon calculation algorithm. The definitions of target volumes and the evaluation of all plans were carried out in accordance with the German S3-Guidelines and the recommendations ICRU 50 and 62.

Results: Only in rare cases the common tangential irradiation can fulfill the ICRU criteria strictly. With the use of an additional field in the treatment of the breast and the thoracic wall, respectively, the ICRU criteria are more frequently applicable. A dose coverage of the supraclavicular lymphnodes can be realized by a radiation technique with opposing fields, however, comprising considerable normal tissue volumes outside the target volume. An appropriate dose conformity to the target volume can be realized with IMRT, preventing high doses outside the target volume.

Conclusions: In simple cases the traditional approach of tangential fields with or without an compensation field provides good results within the ICRU limits. For complex cases the use of IMRT techniques provides an improved conformal dose distribution to the target volumes. However, with IMRT the amount of normal tissue outside the target volume, that receives low doses, increases. With IMRT the delivery of an integrated conformal boost to the tumorbed and thereby a shortened overall treatment time can be realized.

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Anatomical, clinical and radiological delineation of target volumes in the radiotherapy planning of breast cancer: individual variability, questions and answers

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Purpose: To evaluate the variability of anatomical and radiological delineation for breast cancer radiotherapy, as part of preparing of new techniques as tomotherapie and simplified IMRT and propose the solutions to improve the delineation procedure.

Material and Methods: First phase: a patient with complete response after neoadjuvant chemotherapy, stage T3N3M0 breast cancer underwent CT scan in treatment position before radiation treatment was studied. Eleven radiation oncologists (5 breast cancer specialists and 6 residents in training program) independently delineated the breast and lymph node regions before the definition of target volumes. All regions [breast, axilla, supraclavicular lymph nodes (LN), infraclavicular LN, internal mammary chain (IMC)] were delineated and compared with regard to volume. The results were evaluated and the second phase consisted of training in contouring of treatment volumes for all physicians, then contouring of new patient: bilateral T1N0M0 breast cancer after conserving surgery and chemotherapy before radiation therapy.

Results: The clinical and radiological variations were observed between different radiation oncologists. After training in the volume delineation, the same physicians improved the contouring of different volumes. After the second phase there were still found differences some volumes. Simplified rules of volume delineation were established and atlas developed.

Conclusions: Major differences in anatomical and radiological delineation for breast cancer radiotherapy were observed between different physicians. This study conducted to development of written protocols of delineation. After training program, better results were observed. The study is still running with evaluation of dosimetric impact and definition of different target volumes.

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Results of a novel weekly fractionation regimen for brain metastasis in patients with carcinoma breast

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Background: Breast cancer commonly metastasizes to bone, liver, lung and brain. The usual treatment of brain metastasis is whole brain radiotherapy to a dose of 20 Gray in 5 fractions or 30 Gray in 10 fractions. We attempted to study a novel weekly fractionation regimen for brain metastasis in patients with carcinoma breast.

Material and Methods: 40 consecutive patients of breast cancer with brain metastasis were taken in this prospective study. In all patients baseline characteristic were recorded before radiotherapy. A dose of 12 Gray in 2 fractions (1 week apart, on Saturdays) was delivered to whole brain by German helmet technique using Cobalt 60 machine or a 6 MV linear accelerator. A parallel pair technique was used for this purpose. A clinical evaluation was done before radiotherapy and at RT conclusion. Patients who did not report for follow up were contacted on phone or by letters to accurately assess the status and overall survival.

Results: The mean age was 49 years (range 31−72). 23 (57.5%) cases underwent CT while the rest underwent MRI examinations for detection of brain metastasis. 9 (22.5%) patients had a single lesion and 30 (75%) had multiple lesions. One patient had diffuse leptomeningeal involvement. Only 2 patients (5%) were taken for surgery for the metastatic brain lesion while the rest underwent upfront radiotherapy. 28 patients (70%) felt better, 10 (25%) felt same as before while 2 (5%) felt worse at radiotherapy conclusion. At one month 32 patients (80%) had improved or stable KPS while 8 patients (20%) had decreased KPS. The median survival of the patients was 6.5 months.

Conclusion: Our novel fractionation regimen has shown equivalent survival rate compared to more fractionated regiments. This treatment is a useful resource sparing strategy for busy oncology centers and reduces patient visits to the hospital.

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Breast cancer patients treated with intra-operative radiotherapy alone when conventional external beam radiation therapy was not possible

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Background: Intra-operative radiotherapy (IORT) with Intrabeam system has been piloted since 1998 and used in the randomised TARGIT International trial since 2000. Some patients are suitable for off-trial therapy,