surgery and standard radiotherapy to the whole breast, in order to evaluate the differences in terms of accuracy.

Materials and Methods: In our study we retrospectively analyzed a group of patients who received an advance boost on the tumor with LDFRT, for a total dose of 10 Gy by photon technique, and associated with neoadjuvant chemotherapy, to the simulated boost to the tumor bed of the same patients, after surgery and standard radiotherapy, for a total dose of 10 Gy by electron technique. The plans were analyzed for dosimetric coverage of the CT-delineated irradiated volume. The minimal dose received by 95% of the target volume (D95), the minimal dose received by 90% of the target volume (D90), and geografic miss were evaluated. A geografic miss was defined as any portion of the tumor bed receiving <50% of the prescribed dose.

Results: twelve patients, recruited from 2008 to 2011, were evaluated. We observed 3 patients with stage IIA, 8 patients with stage IIB and 1 patients with stage IIIA. Two patients had lobular cancer and 10 ductal cancer. The grading was G3 in 7 patients and G2 in 5 patients. Median age was 55 years (range 37−70). The standard sequential boost technique resulted in inferior target volume coverage compared with the advance boost technique, with a median D95 of 68.8%, a median D90 of 75.4% and a geografic miss in 25% of patients. The results of the advance boost technique were significantly better: 96% and 96.8% for median D90 and median D95 respectively, and no geografic miss was observed.

Results: the results of our study have shown that an advance boost using photon beam technique allows for optimal target volume coverage compared with sequential boost after whole breast irradiation using electron beam technique. A better localization of the target volume, represented by the tumor, could allow a smaller irradiation volume.

Friday, 23 March 2012 12:45–14:00

POSTER SESSION

Surgical Management (Including Reconstructive Surgery and Sentinel Node)

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Outcomes of Axillary Dissection Following a Positive Sentinel Node or Node Sample − Retrospective Study of Two Years Practise in a Large Breast Unit

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Background: The Edinburgh Breast Unit (EBU) initially stages the axilla in breast cancer patients by axillary ultrasound followed by fine needle aspiration (FNA) cytology of suspicious nodes. FNA negative patients are managed by sentinel node biopsy (SNB) usually supplemented by limited node sampling (ANS). If this group of patients are found to be positive on histology they are advised to go on to either axillary dissection (AND) or axillary radiotherapy. We examined the outcome in a two year cohort of patients who had undergone both SNB and ANS from EBU in 2009–2010 to guide future practice.

Materials and Methods: Case records of all patients undergoing SNB and simultaneous ANS were reviewed. Data included tumour grade and size, ER & Her-2 status, node status and results of axillary dissection. There were 529 patients in the cohort.

Results: 112 patients were SNB/ANS positive. 41 patients received axillary radiotherapy and 54 received AND of which 23 were positive. In the positive ANDs 19 cases showed replacement type (>2 mm) metastases, 1 showed a micrometastasis and 3 were not specified. 17 patients were not treated, the most common reason being comorbidity. Results are summarised in Table 1.

In the patients who were SNB positive there were no differences in tumour characteristics in those patients that were ANS positive and ANS negative. Furthermore there no differences in tumour characteristics or nodal (ANS and SNB) characteristics (number and size of nodal metastases) in those patients who did and did not have positive ANDs.

Conclusions: Additional positive nodes are identified in 36% of cases when SNB is supplemented by ANS. There are no indicators of subsequent AND status from the standard tumour or nodal dataset.

Table 1

Node status	Number	% of Total	% of Positives	AND + (Numbers)	AND − (Numbers)
SNB + ANS +	40	8	36	13	15
SNB + ANS −	61	12	54	8	14
SNB − ANS +	11	2	10	2	2
SNB − ANS −	417	79			
Total	529				

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Nipple-sparing Mastectomy for Breast Cancer at a Japanese Institution − Risk of Nipple-areola Recurrence in a Series of 806 Cases

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Background: Cosmetic outcome is one of the most important aspects of surgical treatment of breast cancer. Most patients undergo mastectomy when breast conservation is inapplicable. Recent reports have suggested that nipple-sparing mastectomy (NSM) is as oncologically safe as mastectomy and provides a better cosmetic outcome than does mastectomy. However, NSM is controversial in terms of the risk of local recurrence behind the nipple areola complex (NAC). We herein provide a review of safety in NSM surgical technique involving the NAC and a discussion of nipple-areola recurrence and prognosis of nipple-areola recurrent cases.

Material and Methods: We retrospectively analyzed 806 patients with primary breast cancer who underwent NSM from 1985 to 2004. No patient received radiotherapy. Our surgical notes for NSM included the following information: (1) Tissue thickness under the NAC was left at 5 mm, but the major ducts were removed from within its lumen. (2) A skin flap preparation was created based on a thick flap (>1-cm-thick subcutaneous adipose tissue) created >2 cm away from the tumor, but a thin flap was placed close to the tumor.

Results: During 106 months of follow-up in an average in 806 cases of NSM, no nipple necrosis was recorded. The nipple-areola recurrence rate was 3.6% (0.4% per year). The prognosis of nipple-areola recurrence was good with a 60-month overall survival of 93% and a 100-month survival of 84%. A total of 45% of nipple-areola recurrence cases were Paget's type recurrences. All cases of nipple-areola recurrence were able to undergo salvage surgery. The nipple-areola recurrence rate was significantly high when the smallest areola-tumor distance was <1 cm.

Conclusions: The nipple-areola recurrence rate after NSM was low, and its prognosis was good. Our long-term follow-up data show that NSM may be considered to be an alternative option for mastectomy in patients with breast cancer in whom breast-conserving surgery is inapplicable.

491 Poster discussion

Medical and Personal Reasons of No Breast Reconstruction After Mastectomy − Results in 1937 Breast Cancer Patients with 70% of No Reconstruction in a Single Cancer Institute

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Backgrounds: The aim of this study was to determinate clinico-biologic factors associated to no breast reconstruction and to evaluate personal reasons of no reconstruction and information quality.

Materiel and Methods: This study is divided into two parts. First part consisted in a retrospective study on 1937 mastectomies done in Institute Curie between January 2004 and February 2007. We compared clinico-biologic factors of patients who had a reconstruction to them who didn't have. Second part consisted in a questionnaire sent to a representative sample of patients with no reconstruction (10% of our population, n = 132).

Results: In situ cancer represented 17% of the 1937 mastectomies (n = 335) and invasive cancer 83% (n = 1602). The total rate of no reconstruction was 68% (n = 1315). No reconstruction rates were respectively 35% (n = 116/335) and 75% (n = 1200/1602) for in situ and invasive cancer.

After multivariate analysis, patients with professional activity are more reconstructed than patients without professional activity (OR = 4.05; IC = 2.05−8, $p < 0.005$) in the group with in situ cancer. For invasive

cancer, following factors are associated to no reconstruction: age over 50 (OR = 0.22; IC = 0.11–0.44; p < 0.05), ASA score over 1 (OR = 0.51; IC = 0.36–0.73; p < 0.05), radiotherapy treatment (OR = 0.57; IC = 0.38–0.86; p < 0.05), metastatic status (OR = 0.34, IC = 0.13–0.91; p < 0.05). For invasive cancer, following factors are associated to reconstruction: professional activity (OR = 2.07; IC = 1.37–3.13; p < 0.05), smoking (OR = 1.52; IC = 1.01–2.28; p < 0.05), overexpression of HER2 (OR = 1.75; IC = 1.13–2.70; p < 0.05).

Rate of answer to the questionnaire was 61% (n = 81). 80% (n = 49) of patients declared that no reconstruction was a personal choice, for the following reasons: refusal of new surgery (59%, n = 36), approval of asymmetry of the body (38%, n = 23), complications risk (29.5%, n = 18), advanced age (23%, n = 14), fright to hide recurrence (18%, n = 11), approval of body asymmetry by husband (18%, n = 11), financial cost (14.5%, n = 9), post-mastectomy pain (9.5%, n = 4). Information was considered as absent or deficient in 60% of the patients (n = 38).

Conclusion: Reasons of no reconstruction are linked to cancer prognostic, patient's characteristics and ways of live but also to personal choice. This study shows a lack of information. Personal care projects should comport optimal information about reconstruction and no reconstruction when we proposed a mastectomy for our patients.

492 Poster discussion

Tumour-related Lymphatic Mapping in Multicentric/multifocal Breast Cancer: Each Tumour Shows an Individual Drainage Pattern

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Background: The purpose of this study was to evaluate the feasibility of lymphoscintigraphy, SPECT/CT, and sentinel node biopsy in patients with multiple invasive tumours. To investigate whether intralesional injection of the radiopharmaceutical in each tumour yields additional sentinel nodes compared to intralesional injection in the largest tumour only.

Methods: Patients were included prospectively in four centers in the Netherlands. Lymphatic flow was studied using planar lymphoscintigraphy and single photon emission computed tomography with computed tomography (SPECT/CT) until four hours after administration of 99mTechnetium-nanocolloid in the largest tumour. Subsequently, intratumoural injection of the smaller tumour(s) was performed followed by the exact same imaging sequence. Sentinel nodes were intraoperatively localized using a gamma-ray detection probe, vital blue dye, and careful palpation of the axilla.

Results: Fifty patients were studied. Additional lymphatic drainage was depicted after the second and/or third injection in thirty-two patients (64%). Comparison of planar images and SPECT/CT after consecutive injections enabled visualization of the number and location of additional sentinel nodes (thirty-two axillary, eleven internal mammary chain, two intramammary and one interpectoral), of which all but two internal mammary ones could be harvested intraoperatively. The sentinel node contained metastases in seventeen patients (34%). In five patients with a tumour positive node in the axilla that was visualized after the first injection, an additional axillary involved node was found after the second injection. In one patient, isolated tumour cells were found in both an axillary sentinel node and an additional internal mammary sentinel node. In two patients, isolated tumour cells were found in sentinel nodes that were only visualised after the second injection, whilst the sentinel nodes identified after the first injection were tumour negative.

Conclusions: Lymphatic mapping of multiple malignancies within one breast using separate consecutive intratumoural tracer injections assessed by lymphoscintigraphy and SPECT/CT appears to be feasible and reliably depicts the lymphatic drainage of each tumour. The high incidence of additional sentinel nodes draining from tumours other than the largest one emphasizes that separate tumour related tracer injections in patients with multicentric or multifocal breast cancer may result in more reliable staging.

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Sentinel Node Identification Rate and Further Nodal Involvement in Patients with Multifocal Breast Cancer in the EORTC 10981–22023 AMAROS Trial

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Introduction: The sentinel node biopsy (SNB) is a staging method for the lymph node status in the axilla in patients with primary, unifocal breast cancer. Multifocal breast cancer is associated with a higher risk of nodal involvement and the drainage pattern of multifocal sides may be different. For this reason, the value of the SNB for this indication is debated.

In the EORTC 10981–22023 AMAROS trial, breast cancer patients with a tumour-positive SN were randomised between axillary lymph node dissection (ALND) and axillary radiotherapy. The aim of the current side study was to evaluate the identification rate of the SN and the (non-)SN involvement in patients with a multifocal tumour as compared to a unifocal tumour. Multifocal breast cancer was defined as multiple tumours in one quadrant, sharing the same histological characteristics.

Patients and Methods: The first 4,000 patients participating in the AMAROS trial were evaluated. A group of 342 patients with a multifocal tumour was compared to an unmatched, randomly selected control group of 684 patients with an unifocal tumour.

Results: From the 1026 patients, 1016 underwent SNB. The SN was identified in 97.9% (664/678) of the unifocal patients and 95.8% (324/338) of the multifocal patients. When analysing the location of the identified SN, in 2.7% of the unifocal patients and 3.4% of the multifocal patients, the SN was *not* located in the ipsilateral axilla. The majority of these sentinel nodes that were found outside of the axilla were located in the internal mammary chain. From the unifocal patients undergoing SNB, 27.9% turned out to have a positive axillary SN compared to 49.7% of the patients in the multifocal group. The distribution of macrometastases, micrometastases and ITC's in the SN was similar in both groups. Further nodal involvement in patients with a positive axillary SN that underwent ALND was found in 38.6% (39/101) in the unifocal group and 40.4% (38/94) the multifocal group.

Conclusion: With a 95.8% detection rate in this prospective international multicenter study, the SNB procedure is highly effective in patients with a multifocal tumour. The distribution and identification rate of the sentinel node appears to be similar to patients with a unifocal tumour. The sentinel node was more often positive in patients with a multifocal tumour, however, further nodal involvement after a positive axillary SN was similar in both groups. Therefore, the sentinel node procedure seems to be adequate for patients with multifocal breast cancer.

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Sentinel Node Biopsy in Extensive Ductal Carcinoma in Situ (DCIS) Results of the French Prospective Trial CINNAMOME

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Background: DCIS has no metastatic potential. However, the risk of occult invasive disease (ID) exists when the initial diagnosis is performed by vacuum-assisted macrobiopsy (VAMB). ID is usually discovered during the histological analyses following mastectomy, and the only option for patients is complete axillary lymph node dissection (ALND). The aim of this study was to evaluate the number of ALND that can be avoided by using the sentinel lymph node (SLN) procedure to identify patients with ID but negative SLN.

Material and Methods: Patients with extensive microcalcifications on mammography and DCIS diagnosed by VAMB treated by mastectomy were included in the study. The SLN procedure was performed and intraoperative evaluation on frozen sections was carried out. If the SLN was positive an