

for all higher grade toxicities (fibrosis, telangiectases, edema, retraction, ulceration, lymphedema arm, hyperpigmentation, pain) was 0.36 for Arm A IORT in comparison to Arm B. No recurrences were seen in both Arm A and Arm B after a median follow-up of 40 months.

Conclusions: TARGIT IORT (followed by WBRT in patients with risk factors only) yields low toxicity rates and excellent local control.

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Poster

Is Pre-treatment CT Scan Helpful in the Boost Delineation for Patients Treated with Neoadjuvant Treatment in Breast Carcinomas ?

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Purpose: The benefit of boost to the tumor bed in conservative breast cancer treatment has been supported by two randomized studies. But, if the boost is recommended, the definition of the tumor bed volume could be difficult.

The aim of this pilot study is to evaluate the benefit of a CT scan before neoadjuvant treatment to improve tumor bed localization at the time of the radiation therapy.

Patient and Methods: This study concerns patients who underwent conservative surgery after neoadjuvant chemotherapy or hormonotherapy for the treatment of breast carcinomas. It was palpable breast tumor with histological proved invasive carcinomas.

A CT scan without contrast was performed using 3 mm slices, in the radiotherapy treatment position, before neoadjuvant treatment. The radiation oncologist circled the breast and the tumor with radio-opaque fiducial marker. A second CT scan was realized at the time of the radiation therapy, in the same conditions of the first one. The tumor bed were delineated on each CT scan separately, in a blind procedure, by at least 2 radiation oncologists. A matching of both exam was performed to analyze the intraobserver concordance of the delineation and the interobserver variation. The evaluation criteria was first, the boost volume concordance between pre and post-CT scan. Several others criteria will be analyzed, such as the tumor topography, the tumor size or the histological subtype, that may play a role on the boost delineation.

Results: Between June 2009 to July 2011, 25 patients underwent CT scan before neoadjuvant treatment, 22 receiving chemotherapy and 3 hormonotherapy. The median age was 45 years' old (25 to 71). It was almost stage T2 for 13 pts, 8 T3 and 4 T4. All patients underwent lumpectomy with the placement of surgical clips in the tumor bed region. The post-operative CT scan was realized at least 4 weeks after surgery. At that time the procedure is on going for a few patients. All the statistical results will be available in the beginning of 2012.

Conclusions: It's sometimes very difficult to delineate tumor bed even for experimented radiation oncologists. This study may help us to improve our technique and our multidisciplinary approach. A similar study may be done for patient eligible for partial breast irradiation.

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Poster

Overcoming Resource Restrictions: 10 Years of Intra-operative Radiotherapy in a Resource Restricted Country

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Introduction: Radiation services are at a premium in developing countries and prolonged courses of radiation tax the compliance of a largely poor and rural population. Single fraction, definitive intra-operative radiation (IORT) for breast cancer is ideal for these circumstances but currently is reserved for resource-rich environments. From 2002 to 2005 a pilot series of IORT was conducted in an extremely resource-restricted environment with adaptation of existing infrastructure. We here present long-term follow-up data.

Methods: After clinically complete tumor excision a specially developed applicator was introduced into the tumor bed. An existing after loader with an Ir192 afterloader was used to deliver 21 Gy in a single fraction to the tumor bed. Then the applicator was removed and the wound closed. Further regional and systemic oncologic management followed established protocols. Data recorded were age, menstrual status, stage, complications, recurrence and survival.

Results: Thirty nine patients were treated; the average age was 55 years (range: 35-68 years); fourteen patients had TNM stage 1, 22 stage IIA and 2 stage IIB cancers; the majority were infiltrating ductal carcinomas; the mean tumor diameter was 19 mm, 4 patients were node-positive. Early in the series, 2 patients suffered delayed wound healing; after change of the suturing technique no further problems were encountered. After a mean follow-up of 90 months, one patient suffered a local recurrence, four regional recurrences and four have systemic metastases. One patient has died of disease; 2 of unrelated causes for an overall local control rate of 95%, an overall survival of 92% and a disease-specific survival of 95%.

Conclusion: In this limited study, IORT using existing after loaders and a low cost, self-developed applicator has similar local control rates as external beam radiation (EBRT). Utilization of scarce health care resource in resource-restricted environments is greatly reduced. Consequently, the series was continued after a hiatus of 5 years due to political problems; since 2010 a further 18 patients have been treated.

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Poster

Is Post-mastectomy Irradiation Delayed by Immediate Breast Reconstruction?

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Purpose: Immediate breast reconstruction (IBR) is an option for the treatment of breast carcinomas. The consequence on post-mastectomy irradiation is not very well known.

The aim of the study was to analyze if post-mastectomy irradiation could be delayed by IBR.

Material and Methods: It's a retrospective study among 46 patients (pts) from the database of Bergonié Institute. All pts had IBR and radiotherapy(RT). Concerning IBR, three different technics were used, permanent implants, temporary skin expander or latissimus dorsi flap (LDF). Until december 2005, the technic used for post-mastectomy radiotherapy was 2D-RT. Since January 2006, a CT scan was performed for each pts allowed 3D conformal RT treatment. Some pts received neoadjuvant or adjuvant chemotherapy.

Results: Between 1998 to 2009, quarante-six pts were treated by mastectomy with IBR, latissimus dorsi flap for 20 pts, permanent implants for 7 pts and skin expander for 19. The mean age of the patient was 39 y (26 to 71) for the LDF, 50y (32 to 60) for permanent implant and 48y (33 to 71) for the skin expander.

The mean time between surgery and radiotherapy was 7.7 weeks for the pts without adjuvant chemotherapy or with neoadjuvant chemotherapy. When adjuvant chemotherapy was performed, the mean time between surgery and radiotherapy was 25.4 weeks. After 2005, in the radiation department, the data about the time between conservative surgery or radical mastectomy without reconstruction, and radiotherapy were collected. The radiation treatment was not delayed by using IBR.

All the results about the time between surgery and radiotherapy are summarized in the table.

	Pts receiving adjuvant chemotherapy		Pts receiving neoadjuvant chemotherapy or without chemotherapy	
	No. of pts	Time (wks)	No. of pts	Time (wks)
Latissimus dorsi flap	6	24.2	1	7
Permanent implant	6	25.8	14	7.6
Skin expander	16	26.1	1	7
Total	28	25.4	18	7.8

In the same time, the satisfaction of the patients was collected by subjective data, regarding the irradiation technic used, 2D vs 3D R. For 86% pts the cosmetic result was good in the 3D RT group and 82% for the 2D RT group. Nevertheless it's admitted that radiotherapy following breast reconstruction could decrease the cosmetic result.

Conclusion: This study shown that mastectomy with IBR does not delay post-mastectomy irradiation. Nevertheless, that pattern of care should be discussed in a multidisciplinary approach. A study using tomotherapy is on going to improve cosmetic result, after breast reconstruction.

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Poster

Comparison Between Two Radiation Planning Techniques for the Breast Boost in Patients Who Underwent Neoadjuvant Chemotherapy for Breast Cancer

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Background: For women undergoing breast conserving therapy boost radiotherapy on the tumor bed has been shown to significantly reduce the risk of local recurrence. Although the use of boost irradiation is recommended, the standard technique and the definition of the tumor bed volume have not been clearly established. We retrospectively analyzed two different planning techniques for the breast boost, comparing an advance boost technique on the tumor, administered with 'low dose fractionated radiotherapy' (LDFRT), and associated with neoadjuvant chemotherapy, with the standard sequential boost technique to the tumor bed, following

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 geographic miss were evaluated. A geographic 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 geographic 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 geographic 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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Poster discussion

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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Poster discussion

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.

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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.

Material and Methods: This study is divided into two parts. First part consisted in a retrospective study on 1937 mastectomies done in Institut 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