

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 hormonal therapy 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 hormonal therapy. 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 experienced 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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#### 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 LDP, 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