

patients (7%). There seemed to be no correlation between central lung depth and irradiation of the cardiac apex in our series.

Long-term follow-up of older series suggests no risk of premature cardiovascular incidents if less than 4% of the cardiac volume is irradiated. 93% of left-sided breast cancer patients can be treated without significant cardiac irradiation, however a minority of patients may need more sophisticated treatment planning to completely eliminate unnecessary cardiac toxicity.

O-106. INTRAOPERATIVE RADIOTHERAPY AFTER BREAST CONSERVING THERAPY – AN ALTERNATIVE TO CONVENTIONAL POSTOPERATIVE BOOST?

R. Reitsamer, F. Peintinger, F. Sedlmayer, M. Kopp, C. Menzel, W. Cimpoia, G. Glück. *Landesklinik für Spezielle Gynäkologie Salzburg; Abteilung für Gynäkologie Landeskrankenhaus Leoben; Landesklinik für Radiotherapie Salzburg, Austria*

Introduction: Local recurrence (LR) rate after breast conserving therapy (BCT) varies between 5% and 8%. One of the reasons for LR could be a "geographic miss" during boost irradiation of the tumor bed. Therefore high quality boost techniques are demanded.

Methods: From 10–98 until 12–00 160 patients with stage I and stage II breast cancer were operated in a dedicated IORT facility. After tumorectomy the tissue surrounding the excision cavity was temporarily approximated by sutures to bring the tissue in the radiation planning target volume. A single fractional dose of 9 Gy was applied to the 90% reference isodose with energies ranging from 4–15 MeV, using round tubes 5 to 6 cm in diameter. After wound healing patients received additional 51 to 56 Gy EBRT to the whole breast.

Results: There were no early complications associated with the use of IORT. In five patients a secondary mastectomy had to be performed because of tumormulticentricity in the final pathological report. Two patients developed rib necrosis. In five patients wound healing problems occurred. To date there has been no local recurrence, cosmesis of the breast has been excellent.

Conclusion: Interim results suggest that IORT after breast conserving therapy could be a reliable alternative to conventional postoperative fractionated boost by accurate dose delivery and avoiding of geographic miss, by enabling of smaller treatment volumes and complete skin sparing and by reducing the postoperative radiation time for 7 to 10 days.

O-107. TARGETED INTRA-OPERATIVE RADIOTHERAPY (TARGIT) FOR BREAST CANCER – A RANDOMISED TRIAL

J.S. Vaidya, M. Baum, J.S. Tobias, J. Houghton, M. Keshtgar, R. Sainsbury, I. Taylor, D. D'Souza, S. Morgan, M. Metaxas, K. Harte, A. Sliski, E. Thomson. *University College London, UK & Photoelectron Corporation, USA*

The need for 6-wks of post-operative radiotherapy after breast conserving therapy is both inconvenient and costly. It may cause

many women from geographically remote areas to choose mastectomy. A rationale for avoiding whole breast radiotherapy by delivering intra-operative radiotherapy is emerging.

Whole-organ analysis of mastectomy specimens¹ revealed that 80% of occult cancer foci are situated remote from the index quadrant. In contrast, over 90% of local recurrences after breast conserving therapy occur near the original tumour – even when radiotherapy is not given and irrespective of margin status. Therefore, these occult cancer foci may be clinically irrelevant and targeted radiotherapy to the peri-tumoural area alone might provide local control.

'Intrabeam' (PeC) is a portable electron-beam driven device that can deliver therapeutic radiation (soft x-rays) in 20–30 minutes within a standard operating theatre environment. The pliable breast tissue – the target – is wrapped around a spherical applicator – the source – providing truly conformal radiotherapy. The prescribed dose is 5–20 Gy at 1 cm and 0.2 cm respectively, from the tumour bed. The biologically effective dose is 7–53 Gy for $\alpha/\beta = 1$ and 20–120 Gy for $\alpha/\beta = 1.5$.

In our pilot study of 25 patients (age 30–80 years, T = 0.42–4.0 cm), we replaced the routine post-operative tumour bed boost with targeted intra-operative radiotherapy. There have been no major complications and no patient has developed local recurrence, although the median follow-up time is short at 21 months.

Having established the safety and feasibility in the pilot study, we started a randomised trial in March 2000. This compares TARGIT with conventional post-operative radiotherapy for infiltrating duct carcinomas with local recurrence and cosmesis as the main outcome measures. If proven effective, TARGIT could eliminate the need for post-operative radiotherapy potentially saving time, money and breasts.

References

- [1] Vaidya JS et al. Multicentricity of breast cancer: whole organ analysis and clinical implications. *Br J Cancer* 1996 Sep; 74 (5): 820–4

O-108. PERCUTANEOUS MINIMALLY INVASIVE STEREOTACTIC PRIMARY RADIOTHERAPY: A NOVEL APPROACH FOR BREAST CANCER IN ELDERLY WOMEN

J.S. Vaidya, M. Hall-Craggs, M. Baum, J.S. Tobias, M. Keshtgar, R. Sainsbury, I. Taylor, D.P. D'Souza, S.V. Naidu, S. Morgan, K.J. Harte, A.P. Sliski, E. Thomson. *University College London, UK & Photoelectron Corporation, USA*

As the population ages, many elderly women are affected by breast cancer. Local treatment is advisable, in addition to tamoxifen, but many of these women may not be fit enough to stand an operation.

We describe a novel approach of dealing with this growing problem with minimal intervention using three converging technologies:

- (a) the Fisher Mammostest table for digital real-time tumour localisation