postoperative complications was 10,9% (5 patients) : total necrosis – 1, marginal necrosis – 3, bleeding –1. In group IV only 1 (4,0%) had marginal necrosis of the flap. We observed no local relapses in this group.

Conclusion: Different techniques of immediate breast reconstruction with autologous tissues following radical surgery must become a standard in the surgical treatment of breast cancer.

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Second conservative treatment for early breast cancer: 12-years results from a pilot study.

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Aim of the study: To report the long term results obtained in a prospective group of patients treated by local excision and high-dose-rate brachytherapy for locally recurrent breast cancer.

Methods: Second lumpectomy followed by HDR brachytherapy implant to the tumor bed plus a 3 cm safety margin was offered to 43 patients with breast-only local recurrences after conservative treatment between 12/1990 and 04/2002. Patients were offered mastectomy, but they rejected it. Brachytherapy was given between 1 and 3 weeks after excision. Implants were done at the time of surgery in 37 cases and in the remaining 6 patients at the time of beginning treatment. The average number of implanted tubes was 7 (range 4-11) and the average volume of the reference isodose curve was 56 cc. HDR brachytherapy doses were 30 Gy in 12 fractions in 5 days. 34 patients received systemic treatment: 12 with chemotherapy; 11 with tamoxifen and 1 both. No patient was lost for follow-up. Special attention to local, regional or distant recurrence, survival, fibrosis, late effects and cosmesis was done during the follow-up period.

Results: All patients completed treatment. During the 12-year, 1-year minimum follow-up, there were 8 patients who had regional (2 cases) or distant metastases (6 cases) as their first site of failure. Three of them experienced a differed local recurrence and 1 of them died from the disease. Actuarial results at 12-year were: local control 84.2%; disease free survival 65.4%; and survival 90.7%. Cosmetic results were satisfactory in 89.4%. No patient experienced arm edema or grade 3-4 early or late complications. Between the 12 patients that were followed-up for at least 10-years, 10 of them were with their breast still in place at 10-year.

Conclusions: HDR brachytherapy was a safe and effective method of treatment for small-size, low-risk, local recurrence after local excision in conservatively treated patients. The dose of 30 Gy of HDR brachytherapy given in 12 fractions along 5 days at 2.5 Gy/fraction, 2-3 times every day was safe in patients previously treated. The good results achieved justifies the initiation of randomized trials exploring its use as standard treatment in selected patients with low-risk recurrent breast tumors.

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Radiation pneumonitis in early breast cancer patients: effects of systemic treatments

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The development of radiation pneumonitis in breast cancer depends mainly on the characteristics of the radiotherapy (RT) and the patient, but chemotherapy or hormone therapy (HT) may also influence its occurrence. Radiation-induced lung changes were investigated in 65 patients given RT after curative surgery for breast cancer. Twenty-five patients completed a taxane-based perioperative chemotherapy regimen ∗4 weeks prior to RT. Thirty-five patients received adjuvant HT (tamoxifen, n=27, anastrozole, n=8) ∗2 weeks before and during RT. Another 5 patients (controls) received no medication. Conformal RT was carried out according to CT-based 3D radiation treatment planning (Helax TMS) with a linear accelerator. The following RT parameters were analysed: the ipsilateral mean lung dose (MLD), the central lung distance (CLD), the lung volume receiving 20 Gy (V) , and the dose received by a 25% volume of the ipsilateral lung (D) . CT scans were performed prior to and 3-6 months after the completion of RT. In addition, plasma TGF-β levels were determined before and during HT, and also in the controls, as follows: before RT, at the completion of RT, and 3 months later. All the chemotherapy patients and 42-50% of the HT patients, and 20% of the controls received locoregional irradiation, while in the other cases only the operated breast was treated with RT. The irradiated lung volume was significantly larger in the patients who received chemotherapy than in the HT or control patients (table).

Radiogenic changes only rarely were detected in the patients after taxane chemotherapy, and no clinical symptom of pneumonitis occurred. Pneumonitis grade I was diagnosed in 3 cases in the tamoxifen group, and in 1 patient in the anastrozole group. However, minor radiogen changes were detected on CT in one-third of both groups. No radiogenic damage was seen in the controls. Radiation-induced lung changes well correlated with older age. The TGF-β levels were significantly higher after tamoxifen treatment, whereas no such effect was observed after anastrozole therapy (Table). Radiogenic pneumonitis is a rare event after postoperative treatment in breast cancer if conformal RT is carried out. The effect of tamoxifen in elevating the TGF-β level may play a role in the development of radiogen lung damage.

Abstract 431 – Table

	Age (year)	MLD (Gy)	CLD (cm)	$V_{20\,Gy}$ (%)	$D_{25\%}$ (Gy)	TGF-β before HT (ng/ml)	TGF-β after HT (ng/ml)
Taxane	52.9 ± 8.7	17.9 ± 2.17*	2.9 ± 0.5	38.7 ± 7.2*	36.6 ± 5.2*	–	–
Tamofixen	56.4 ± 11.9	13.8 ± 5.6	3.0 ± 0.9	28.4 ± 14.2	23.1 ± 16.8	24.04 ± 10.6	30.1 ± 10.7*
Anastrozole	65.5 ± 7.3	13.5 ± 4.8	3.1 ± 0.7	27.1 ± 11.8	21.5 ± 17.7	28.8 ± 6.9	20.5 ± 15.2
Control	59.4 ± 8.2	11.1 ± 6.6	2.7 ± 1.4	20.1 ± 14.9	12.0 ± 16.1	29.2 ± 5.1	36.0 ± 16.0

$p \leq 0.05$

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Breast scar and tumour cavity visualisation using MR imaging in the conventional radiotherapy treatment position

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Background: Scar and tumour cavity visualisation is essential for planning adequately targeted adjuvant breast external beam radiotherapy and boost dose treatment. This study investigated the role of MR imaging in visualising scar and tumour cavity.

Material and Methods: 0.2 T Siemens open MR scanner with image distortion correction and loop coil, treatment wedge, positional lasers and custom-made arm pole was used to scan in the conventional treatment position [1] women with early breast cancer treated by breast-conserving surgery. 28 cases were randomly selected. Blinded to pathology and surgery details, tumour cavity dimensions and scar position were measured on hard copy MR images by two middle grade oncologists and an experienced radiologist. Intra-person agreement (for oncologists) and inter-person agreement (between oncologists and radiologist) were calculated. Analysis was only performed where there were 10 or more pairs of results.

Results: Tumour cavity measurements

Intra-person correlation coefficient (intraclass correlation)

	oncologist 1 - oncologist 1	oncologist 2 - oncologist 2
Axial plane	r=0.47, n=26, p=0.0069	n=8
Coronal plane	r=0.71, n=12, p=0.0042	n=1
Sagittal plane	r=0.83, n=23, p<0.001	n=7

Inter-person correlation coefficient (Pearsons correlation)

	oncologist 1 - radiologist	oncologist 2 - radiologist
Axial plane	r=0.58, n=24, p=0.003	r=0.83, n=21, p<0.001
Coronal plane	r=0.73, n=11, p=0.011	n=8
Sagittal plane	r=0.39, n=21, p=0.077	r=0.83, n=15, p<0.001

Scar measurements

Intra-person correlation coefficient (Spearmans correlation)

	oncologist 1 - oncologist 1	oncologist 2 - oncologist 2
Axial plane	r=0.27, n=23, p=0.213	n=4
Coronal plane	n=8	n=1
Sagittal plane	r=0.78, n=18, p<0.001	n=4