initial lumpectomy is the preferred option rather than delayed administration by reopening the wound. We therefore estimated the number of cancer foci in quadrants other than the original tumour and compared the incidence of recurrence in such quadrants as per treatment received (TARGIT vs. EBRT).

Results: 793 patients in the prepathology stratum randomized to TARGIT had only TARGIT as their radiotherapy and had. 2098 women years of follow up. The 5 year local recurrence rate in those who received TARGIT alone was 2.7% (95% CI 1.35.5), which was not different from the whole prepathology cohort randomized to TARGIT: 2.1% (1.14.2). In these 793 patients, one would expect 63% (i.e., 500) of patients to have additional foci of cancer in their breasts and 80% of these (i.e., 400) should be in quadrants other than the index quadrant. In reality, after 2098 women years of follow up, 7 patients had recurrence in the scar, 6 had new contralateral cancers and 2 had cancers growing in other quadrants implying that the remaining 398 foci had remained dormant. Amongst 935 patients who received whole breast radiotherapy the same number of cancers (n=2) grew in other quadrants and there were 5 new contralateral cancers. Of note, 94.4% of cases in the TARGIT A trial did not have a preoperative MRI, so patients who may have had multicentric foci detectable by MRI would have not been excluded from the trial.

Conclusions: Cancer foci in breast that are away from the site of the primary tumour remain dormant and behave no differently from those in the contralateral breast. They also appear to be unaffected by whole breast radiotherapy or are treated sufficiently by systemic therapies. This analysis from the randomized TARGIT A trial provides further proof supporting partial breast irradiation.

References:

1. Vaidya JS, Vyas JJ, Chinoy RF, et al. Multicentricity of breast cancer: whole organ analysis and clinical implications. British Journal of Cancer 1996;74(5):8204.

2. Vaidya JS, Wenz F, Bulsara M, et al. Risk adapted targeted intraoperative radiotherapy versus whole breast radiotherapy for breast cancer: 5 year results for local control and overall survival from the TARGIT A randomised trial. The Lancet 11 November 2013, DOI: 10.1016/s01406736(13)619509.

OC-0473

Intraoperative radiotherapy (IORT) in breast cancer: analysis of 6,816 cases from ISIORT database

M. Krengli[1], F. Sedlmayer[2], F. Calvo[3], F. Wenz[4], M. Alessandro[5], R. Mazzarotto[6], R. Corvò[7], S. Adamczyk[8], C. Fillini[9], F. Fusconi[10], M. Osti[11], L. Tomio[12], I. Azinovic[13], A. Ciabattoni[14], W. Polkowski[15], A. Di Grazia[16], A. Gava[17], L. Abdach[18], C. Iotti[19], J. Dubois[20], G. Catalano[21], F. Cazzaniga[22], C. Schumacher[23], R. Weytjens[24], C. Pisani[1]

[1]University of Piemonte Orientale, Radiotherapy, Novara, Italy
[2]University Hospital, Radiotherapy, Salzburg, Austria
[3]University Hospital Gregorio Maranon, Radiotherapy, Madrid, Spain
[4]University Medical Center, Radiotherapy, Mannheim, Germany
[5]Hospital, Radiotherapy, Città di Castello, Italy
[6]University Hospital, Radiotherapy, Verona, Italy
[7]University Hospital, Radiotherapy, Genova, Italy
[8]Greater Poland Cancer Center, Radiotherapy, Poznan, Poland
[9]Hospital, Radiotherapy, Cuneo, Italy
[10]Hospital, Radiotherapy, Foligno, Italy
[11]University Hospital Sant'Andrea, Radiotherapy, Roma, Italy
[12]Hospital, Radiotherapy, Trento, Italy
[13]Instituto Madrileño de Oncologia, Radiotherapy, Madrid, Spain
[14]Hospital San Filippo Neri, Radiotherapy, Roma, Italy
[15]Hospital, Radiotherapy, Lublin, Poland
[16]Hospital, Radiotherapy, Catania, Italy
[17]Hospital, Radiotherapy, Treviso, Italy
[18]Hospital, Radiotherapy, Haifa, Israel
[19]Hospital, Radiotherapy, Reggio Emilia, Italy
[20]Hospital, Radiotherapy, Montpellier, France
[21]Hospital, Radiotherapy, Castellanza, Italy
[22]Hospital, Radiotherapy, Bergamo, Italy
[23]Hospital, Radiotherapy, Koln, Germany
[24]Hospital, Radiotherapy, Wilrijk, Belgium

Purpose/Objective: A joint analysis of clinical and technical data from 34 centres within the International Society of Intraoperative Radiation Therapy (ISIORT) was undertaken in order to identify the range of intraoperative radiotherapy (IORT) indications and techniques for various tumour sites. In this survey we analysed breast treatments.

Materials and Methods: Since 2007, we collected demographic, clinical and technical data related to IORT procedures in a common database. Prospective and retrospective data entry was possible. The current study analysed 6,816 breast tumours.

Results: Breast tumours represent 80.3% of all data of the ISIORT survey that encompassed 8,493 IORT procedures performed from 1992 to 2014. Median age of breast patients was 61.1 years (range 16-90). Gender was female in 99.7% and male in 0.3% of cases.

In 6,702 cases (98.3%), IORT was a component of radical treatment for primary, newly diagnosed disease and in 114 cases (1.7%), it was an attempt to rescue localized recurrent breast cancer.

IORT was performed as a boost before or after EBRT in 3,258 cases (47.8%) with doses of 8–12 Gy. In 3,558 cases (52.6%), IORT was used as single radiation treatment modality with doses of 18 Gy, 20 Gy or 21 Gy. The patients enrolled in study protocols represented 33% of those treated by a single dose and 6.3% of those treated by a boost dose.

IORT was delivered after and before tumour removal in 39% and 61% of cases, respectively.

In 6,406 cases (94%), IORT was performed using electrons of 4-12 MeV energy. The most used applicators (77% of cases) were 5 or 6 cm in diameter and bevel angle was 0° in the majority of cases (88%). Four hundred and ten cases (6% of patients) were treated with a 50-kV x-ray source in a single centre. X-rays treatments were delivered by a spherical applicator inserted into the surgical cavity after tumour removal.

Conclusions: At present, the ISIORT database represents the largest clinical and technical IORT data collection.

Breast cancer is the most frequent IORT treatment performed in the 34 participating centres. From this analysis, it emerged that in most cases IORT was used as single shoot of 18-21 Gy, the most employed treatment modality was electron beam and the procedure was most frequently performed after tumour removal. Only a minority of patients was included in clinical trials.

Further data analyses could enhance multi-institutional performance and serve as a basis for designing clinical trials in an effort to define the role of IORT in tailored multimodality therapeutic approaches.

OC-0474

Hypofractionated WBI plus IOERT-boost in early stage breast cancer (HIOB): Updated results of a prospective trial

G. Fastner[1], R. Reitsamer[2], D. Murawa[3], P. Milecki[4], E. Hager[5], A. Ciabattoni[6], R. Brimmer[7], J. Reiland[8], W. Budach[9], F. Sedlmayer[1]

[1]*Paracelsus Medical University Landeskrankenhaus, Radiotherapy and Radio-Oncology, Salzburg, Austria*
[2]*Paracelsus Medical University Landeskrankenhaus, Special Gynecology, Salzburg, Austria*
[3]*Wielkopolska Cancer Centre, Surgical Oncology and General Surgery, Poznan, Poland*
[4]*Wielkopolska Cancer Centre, Radiation Oncology and Radiotherapy, Poznan, Poland*
[5]*Klinikum Klagenfurt, Radiotherapy and Radiooncology, Klagenfurt, Austria*
[6]*San Filippo Neri Hospital, Radiotherapy, Rome, Italy*
[7]*St.Lukes Hospital, General Surgery, Cedar Rapids, USA*
[8]*Avera McKennan Hospital and University Health Center, Surgery, Sioux Falls, USA*
[9]*University Clinic Düsseldorf, Radiotherapy and Radiooncology, Düsseldorf, Germany*

Purpose/Objective: To assess the role of an intraoperative electron boost (IOERT) in combination with hypofractionated whole breast irradiation (WBI) in terms of in-breast tumor control and cosmetic outcome.

Materials and Methods: Starting in Jan 2011, a prospective multi-center single arm trial is conducted by the ISIORT. Patients receive an IOERT boost of 10 Gy (Dmax 11.1 Gy) followed by a WBI of 40.5 Gy in 15 fractions (2.7 Gy single dose). 5-year in-breast-recurrence rates will be analyzed in 3 different age groups (35-40 y, 41-50 y, > 50y) and tested against the respective best published results from randomized prospective trials by the use of a sequential probability ratio test (SPRT). Acute reactions are assessed by CTC-scoring, late reactions according to LENT-SOMA criteria. Cosmesis is evaluated by a 5-point-Scoring System (van Limbergen, double evaluation) starting prior to WBI on the basis of repeated photodocumentation in standardized positions.

Results: As of August 2014, within ten active institutions 645 patients have been recruited, 481 of them already in follow-up. Patient and tumor characteristics are summarized in Table 1. For IOERT, the median energy chosen was 7 MeV (range 4-12) with median tube diameters of 6 cm (4-8) and mean prescription depths of 19 mm (6.2 SD), resulting in mean D90 volumes of 19 ml. Perioperatively, no major complications were observed. Four weeks after the end of WBI and 479 evaluated patients, 177 (37%) showed no reactions (CTC 0), 277 (58%) presented with faint (CTC 1) and 24 (5%) with moderate to brisk erythema (CTC 2), respectively. Go-I late reactions (LENT-SOMA) occured in a mean frequency of 97%, 96%, 98% and 96% after 4-5 months,1,2 and 3 years follow-up, respectively. Cosmesis was assessed postoperatively by patients themselves (subjective) and doctors (objective). Baseline appearance was first assessed after wound healing prior to WBI and scored as sufficient (excellent and good) in 69%/74% of 614 subjective/447 objective evaluations. Respective results at 4-5 months, one, two and three years post RT were 87%/75% of 418/378, 89%/77% of 306/164, 83%/75% of 132/107 and 84%/87.5% of 31/24 ratings. At a median follow-up period of 12.6 months (range 0.5-37), three patients were metastasized, two died, no in-breast recurrence was noted.

Tab.1 Patient characteristics

Patient age (y)	**n**	**Histology**	**n**
35-40	15	IDC	416
41-50	120	ILC	50
> 50	405	mixed	46
T-stage		mucinous	8
0	3	tubular	15
1	460	medullary	2
2	76	others	3
x	1	**EIC-status**	
N-Stage		negative	482
0	467	positive	58
1	71	**Grade**	
x	2	G1	146
Resection status		G2	305
R0	540	G3	89
Resection margins mm	median 5(0.5-30)	**Her 2-neu Status**	
Multifocality		neg	483
no	462	pos	57
yes	78	**HR-Status**	
		neg	43
		pos	497

Conclusions: Tolerance of combined IOERT/hypofractionated WBI regimen is excellent, acute reactions moderate and late reactions insignificant in short-term assessment. With regard to postoperative appearance, early cosmetic results are not impaired. Both tumor control and cosmetic outcome have to be evaluated on long-term follow-up.

OC-0475

Differences in Quality of Life after external beam APBI and IORT for elderly breast cancer patients

P. Koper[1], A. Marinelli[2], M. Mast[3], F. Gescher[4], J. Merkus[5], U. Fischer[6], A. Petoukhova[7], H. Struikmans[1]

[1]*Haaglanden Medical Centre Location Westeinde Hospital, Radiotherapy, Den Haag, The Netherlands*
[2]*Haaglanden Medical Centre Location Westeinde Hospital, Surgery, Den Haag, The Netherlands*
[3]*Haaglanden Medical Centre Location Westeinde Hospital, Epidemiology, Den Haag, The Netherlands*
[4]*Haga hospital, Radiotherapy, Den Haag, The Netherlands*
[5]*Haga hospital, Surgery, Den Haag, The Netherlands*
[6]*Haaglanden Medical Centre Location Westeinde Hospital, Data Management, Den Haag, The Netherlands*
[7]*Haaglanden Medical Centre Location Westeinde Hospital, Physics, Den Haag, The Netherlands*

Purpose/Objective: The hypothesis is that partial breast irradiation after lumpectomy will have less impact on QoL, when compared to whole breast irradiation. We don't know the impact of the different partial breast irradiation techniques. We therefore compared the QoL parameters 'pain and fatigue' for external beam APBI and IORT in our phase 2 (feasibility) study.

Materials and Methods: Eligible patients were women aged 60 years or older with unilateral breast cancer with tumor stage Tis, T1 or T2 less than 3 cm treated within the context of a phase II study. For practical reasons using external beam APBI in one hospital, 10 daily fractions of 3.85 Gy, and IORT in the other hospital, 23.3 Gy in one fraction with electrons