IMRT is the best for PBI

years) in determining the ultimate efficacy of a treatment. We know that most data mature to be allow practitioners and patients to consider a different methods in the studies, but in any case a favorable right to be offered an informed choice. IMRT is the best for PBI

effective and has few side effects, rather than any inferiority margin of 2.5%, set at the outset. Overall, breast cancer mortality in the IORT arm was 2.6% versus 1.9% in the WBI arm. In addition, non-breast cancer deaths were found to be significantly reduced in the IORT arm: 1.4% versus 3.5%, with p = 0.004. Both the accuracy and completeness were assessed by different methods in the studies, but in any case a favorable outcome has been shown. The comparison between the current standard or alternative PBI approaches for early stage breast cancer with data coming IORT techniques poses a dilemma as to when preliminary results are sufficiently mature to allow practitioners and patients to consider a new treatment approach as safe. We know that most data from studies of breast conservation therapy have demonstrated the importance of long-term data (up to 20 years) in determining the ultimate efficacy of a treatment. The level 1 randomized evidence produced by the IORT trials show that this technique is very convenient for the patient, effective and has few side effects, rather than any postoperative treatment or procedures. Patients have every right to be offered an informed choice.

SP-0306
IMRT is the best for PBI
B. Offersen

Several clinically controlled randomized trials on accelerated partial breast irradiation (APBI) are currently being conducted and some of these have now published results. The trials have used different strategies, for example different patient selection criteria, doses and number of fractions, overall treatment time, treated volume and radiation techniques. Many trials have compared the APBI treatment to whole breast irradiation (WBI) 50 Gy/25 fr followed by a boost. External beam APBI is an attractive strategy, because every radiation department will be able to do the dose planning. The demand for technical skills is in principle not higher than for conventional dose planning. Few randomized trials have reported data, but unfortunately the largest one has not been promising.

In the phase III randomized RAPID trial significantly worse cosmetic outcome was reported with median follow up 36 months in 2135 patients randomized 1:1 to APBI based on 3D-CRT with 38.5 Gy/10 fractions, 5 days, versus WBI based on 42.5 Gy/16 fr or 50 Gy/25 fr +/-boost. Adverse cosmesis was higher in APBI-treated patients compared with WBI patients as assessed by trained nurses (29% vs 17%; p=0.001) and by patients (26% vs 18%; p=0.02). Grade 3 adverse events were seen in 1.4% of APBI patients, and not in WBI patients. With median 5 years follow up data from another phase III trial involving 520 patients randomized to APBI with IMRT using 30 Gy/5 fr versus WBI using 50 Gy/25 fr +/- boost has been reported by Livraghi coworkers. Significant cosmetic results were seen in IMRT patients remaining acute (p=0.0001), late (p=0.004) and cosmetic morbidity (p=0.045). Local recurrence was seen in 1.5% of the patients. Thus data from large phase III trials supporting routine use of external beam APBI at the present time are not available. However, it is to be expected that the UK IMPORT LOW Trial will be able to report data from >2000 patients with median 5 years follow up at the Early Breast Cancer Conference (EBCC) March 2016. In that trial the strategy is based on 40 Gy/15 fr in all 3 arms, where arm 1 is WBI, arm 2 is partial breast irradiation, and arm 3 has a gradual dose using 40 Gy/15 fr to partial volume and 36 Gy/15 fr to residual breast. At EBCC, data on morbidity will also be reported from the DBCG PBI trial, which has included >800 patients and randomized them to APBI versus WBI using 40 Gy/15 fr in both arms. Data from these 2 trials will be presented and discussed at ESTRO 35. If the results from the IMPORT LOW Trial show that PBI using 40 Gy/15 fr is safe, and these data are supported by results from the DBCG PBI trial using the same treatment, then there is support for the statement that IMRT is the best for PBI.

However, we are also awaiting results from the ongoing NSABP B-39/RTOG 0413 trial, which has accrued >4000 patients, who were randomized to APBI versus WBI. The majority of patients in the APBI arm have been treated with 3D-CRT. Many of the APBI trials were designed and initiated a decade ago, where the local recurrence risk was higher than we see today. Therefore some of these trials are underpowered to support the statement they are investigating. It is also expected that results from several trials investigating external APBI will be published in the near future, and hopefully results from the trials will be included in meta-analyses to achieve enough statistical power to identify subgroups of patients where APBI is safe and other subgroups where WBI is to be preferred.

SP-0307
Dosimetric pros and cons of available PBI techniques
T. Majord

Partial breast irradiation (PBI) can be performed with various techniques including both brachytherapy (BT) and external beam radiotherapy (EBRT). These methods differ from each other regarding technical skill and dosimetric characteristics. Recent developments in imaging, dose calculation algorithms and beam delivery techniques have made all methods clinically feasible, but in most institutions the applied method mostly depends on the physician’s preference and the technical availability.

Among all techniques the longest experience exists with multichaneter interstitial BT which can provide highly conformal dose distribution, large dose gradient at target edge, but it is quite complex and requires certain manual skillfulness. The possible geometric miss can result in significant underdosage of the target.

Technically, the intracavitary applicators are easier to be used and with balloon-type applicators no geometric miss can occur, but proper tissue conformance is not always guaranteed. In dosimetric point of view drawbacks of the Mammosite applicator are the spherical dose distribution, the symmetric margin and the potential high dose to skin, lungs and ribs. In some anatomical situation the balloon can be asymmetric resulting in asymmetric target coverage. The multichannel applicators are more flexible regarding shaping the dose distribution and reducing dose to critical structures without compromising the target volume coverage. With these applicators asymmetric margins can be used to a small degree.

In intraoperative electronic BT using spherical applicators the dose distribution is also spherical and a large dose inhomogeneity develops due to the sharp dose fall-off of the low energy X-ray beam. The margin is always symmetric, but the geometric accuracy is always ensured.

At intraoperative irradiation with electron beams there is no 3D-defined target volume, modulation possibilities to shape the dose distribution are very limited and conformal radiotherapy cannot be performed.

Linear accelerators based EBRT techniques expose relatively large volumes of normal breast to high dose mainly due to the extended target volume created from CTV. In three-dimensional conformal radiotherapy (3D-CRT) dose to contralateral breast, lung or heart can be reduced with