Purpose or Objective: To analyze possible clinical value of lymph flow visualization as the guide for irradiation of IMLN.

Material and Methods: On the first stage of the study we combined data of 8 published studies that analyzed lymph flow from primary BC (4541 patients) after intra- peri-tumoral injection of nanom-sized 99mTc-nanocolloids. Using this data we determined probability of lymph flow from BC of internal/central or lateral localization to IMLN. In 7 studies (4359 women) auxiliary staging was accompanied by biopsy of sentinel lymph nodes localized in internal mammary region. This data made it possible to estimate probability of IMLN metastatic invasion in relation to the status of auxiliary LN. At the final stage of the study we calculated probability of IMLN invasion by BC in 4 randomized and 2 observation studies that analyzed effect of IMLN irradiation on overall survival. Additionally, we tried to calculated possible additional gain in survival if patients from this 6 (4+2) trials would be treated according to lymph flow guided irradiation of IMLN.

Results: According to results of 8 published studies lymph flow from lateral BC to IMLN was detected in 16% (727/4541), from internal/central lesions in 35% (1589/4541). Evaluation of 7 studies (4359 women) showed that in patients with noninvolved auxiliary LN metastases in IMLN were revealed in 7.8% , in patients with positive auxiliary nodes in 38.1% cases. In all 6 studies that evaluated clinical value of IMLN irradiation, calculated probabilities of IMLN metastatic invasion in “high risk patients” didn’t exceed 10%. If IMLN irradiation would be performed only in patients with lymph flow to IMLN about 72.1%-76.8% of “high risk patients” would escape RT to LM region. In remained 23.2%-28.9% patients with visualized internal mammary sentinel lymph nodes their irradiation would improve overall survival from 1.6%-3.3% to 6.9%-14.2%.

Conclusion: visualization of lymph flow from breast cancer after intratumoral injection of nanom-Tc-nanocolloids make decision about irradiation of IMLN more precise and efficient. Irradiation of visualized IMLN can significantly (6.9%-14.2%) improve overall survival in this group of patients with BC.

Purpose or Objective: To assess the feasibility of Simultaneous Integrated Boost in Intensity Modulated Radiotherapy (SIB-IMRT) for breast cancer (BC) in the attempt to reduce the radiation treatment time. Results in terms of late toxicity and local control were compared with a control group (CG) of patients treated with 3-dimensional (3-D) conformal radiotherapy plus sequential boost.

Material and Methods: MARA-2 was conceived as a single arm phase II trial. Patients with moderate-high risk BC were enrolled and treated with forward-planned IMRT technique. Whole breast and tumor bed received a total dose of 50 Gy and 60 Gy (10 Gy concomitant boost) in 25 daily fractions, respectively. In CG group, prescribed dose to the breast was 50.4 Gy in 28 fractions with a sequential 10 Gy boost to the tumor bed in 4 fractions. Late skin and subcutaneous toxicity were evaluated using EORTC/RTSG scoring scale.

Results: Four hundred and fifty one patients were included in our study (MARA-2: 321; CG: 130). Median follow up was 52 months (range: 3-115). G1 and G2 late skin toxicities were acceptable without significant differences between the two groups. No Gr 3 late skin toxicity was observed in MARA-2. At univariate analysis, late G1 and G2 subcutaneous toxicities were significantly lower in MARA-2 (p< 0.001). 5-year Gr 2 subcutaneous late toxicity free-survival (LTFS) were 73.4% and 38.5% in CG and MARA-2 respectively; moreover, 5-year G2 subcutaneous LTFS were 96.5% and 80.0% in CG and MARA-2 respectively. 5-year Gr 3 subcutaneous LTFS was 0.9% in MARA-2 and 0% in CG, respectively. No differences were found in term of loco-regional control (LC) with a 3-LC of 96.7% and 97.6% in CG and MARA-2, respectively (p=0.676).

Conclusion: The use of SIB-IMRT technique in postoperative radiotherapy of BC allowed to reduce overall treatment time without significantly increasing the incidence of G2 late effects.
All patients developed CCPP within 1 year from first period between April 2012 and February 2015 (34 months). Developed CCPP (29 capsulectomy, because 3 bilateral) in the reported in Table 1.

Results:

Characteristics of both groups are reported in Table 1.

Univariate analysis showed a positive association between Baker Score and radiotherapy (OR: 1.65), and hyalnosis and radiotherapy (OR: 1.3). Multivariate analysis confirmed association between CCPP and radiotherapy (OR: 17.9), chemotherapy (OR: 4.3) and hormone therapy (OR: 48.44) in terms of contraction grade and simil-synovial reactions respectively.

Conclusion: Radiotherapy after breast reconstruction significantly influenced onset and severity of CCPP, although other variables contributed to CCPP multifactorial aetiology. In particular, hormone therapy and chemotherapy played a role in modifying capsular architecture.

Purpose or Objective: Evaluation of radiation-induced morbidity is routinely done as an integrated part of treatment response follow-up, and can be scored according to clinical assessment tools such as the CTCAE or LENT-SOMA. Objective measures in this evaluation would be valuable given their quantitative nature, facilitating comparison across cohorts and treatment institutions. High-frequency ultrasound (US) is a high-precision, objective tool to measure dermis thickness of the skin. We aimed to analyze dermis thickness in a cohort of women following radiotherapy (RT) for breast cancer with various grades of induration and edema.

Material and Methods: The cohort was recruited from the DBCG HYPO/PBI RT protocols and comprised 15 women treated for early breast cancer during 2009-2013 with lumpectomy and RT 50 or 40 Gy +/- systemic therapy. Clinical morbidity follow-up of induration and edema was done at baseline and annually according to the LENT-SOMA. Dermis thickness was measured in mm using high-frequency US. Points of measurement were 3 cm from the areola in four quadrants in both irradiated and contralateral non-irradiated breasts. Differences in mean dermis thicknesses were tested by two-tailed paired t-test. The US scanner utilized was a high-resolution 20 MHz DermaScan® C from Cortex Technology ApS. This device is optimized for recognizing structures at 60 µm, corresponding to tissue microstructures sized like collagenous fibres.

Results: Median follow-up time was 3.0 years (range 1.0 - 4.6). Overall, mean dermis thicknesses were 2.22 mm (1.78 - 2.66) in the irradiated (I) breast and 1.26 mm (95% CI: 1.08 - 1.44) in the contralateral (C) breast. Mean difference between breasts was 0.96 mm (0.49 - 1.43, p<0.001). Dermis thickness was distributed in quadrants as follows: Lower lateral I: 2.62 (1.92 - 3.31) C: 1.11 (0.96 - 1.26), lower medial I: 2.64 (2.06 - 3.21) C: 1.45 (1.18 - 1.72), upper lateral I: 1.55 (1.33 - 1.78) C: 1.17 (1.01 - 1.34), upper medial I: 2.08 (1.49 - 2.67) C: 1.31 (1.09 - 1.53). In patients without clinical edema, the mean difference in dermis thickness for grade 1 induration was 0.35 mm (-0.46 - 1.16, p=0.21) and for grade 2 induration 0.71 mm (-0.01 - 1.43, p=0.05). In patients with clinical edema, only one patient had grade 1 induration (dermis thickness difference 1.34 mm). In