and using the same patient anatomy and fractionation schedule virtual plans for intensity modulated radiotherapy (IMRT) were made. The PTV in IMRT plans was created by 5 mm volumetric extension around the PTV used in BT plans. PTVeval was formed from PTV with geometrical limitation to the skin. Detailed dose-volume histogram analysis was carried out for the PTVs, breasts, lungs, skin, ribs and heart. Means, standard deviations were calculated and the corresponding parameters were statistically compared. Wilcoxon matched pairs analysis was performed for test of significance.

**Results:** The target coverage represented by V90 was better for IMRT (100% vs. 97%, $p<0.05$), but the D90 was higher for BT (103% vs. 100%, $p<0.05$). The conformity numbers were 0.73 for BT and 0.84 for IMRT ($p<0.05$). The V100, V90 and V50 for non-target breast were 1.7% vs. 0.2% ($p<0.05$), 2.8% vs. 4.3% ($p<0.05$) and 11.5% vs. 23.9% ($p<0.05$) for BT and IMRT plans, respectively. For ipsilateral lung the V5 was not significantly different in the two groups, but the V10 was lower for BT (11.7% vs. 20.5%, $p<0.05$). For contralateral breast and lung no significant differences in D0.1ccm were observed. For patients with left sided lesion the dose to heart was less with IMRT for D0.1ccm (15.3% vs. 22.7%, $p<0.05$). The most exposed skin volume (0.1 ccm) received significantly less dose with BT (64.4% vs. 92.4%). The same is true for ribs with values of 51.3% vs. 71.2%. With BT the ribs never received the prescribed dose, while with IMRT the D0.1ccm exceeded the prescribed dose in five cases.

**Conclusion:** With both BT and IMRT techniques acceptable target coverage can be obtained, but the conformity of dose distributions is better with IMRT. The dose to organs at risk is less with BT compared to IMRT, except for the heart. Generally, the BT and IMRT can be alternative techniques for partial breast irradiation, but in individual cases the recommended technique depends on the tumour location.

**EP-1958**

**Treatment results of Mammosite catheter in combination with whole breastirradiation**

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**Purpose or Objective:** To report the initial outcomes of patients treated with the MammoSite brachytherapy device (MSBT) as a boost followed by external whole breast irradiation (WBI).

**Material and Methods:** From June 2011 to March 2014, 107 patients (typically pT1-2, pN0-1, M0) were treated with breast-conserving therapy (BCT) and adjuvant radiotherapy with MSBT (15 Gy in 2.5 Gy fractions) followed by WBI (median 50.4 Gy). Toxicity was classified according to the Common Terminology Criteria for Adverse Events v3.0. The median follow-up was 21 months.

**Results:** So far no ipsilateral breast-tumor recurrences were observed, 102 patients (95%) were alive at last follow-up. Two patients (2%) developed distant metastasis. Five patients (5%) died during follow-up, only one as a result of breast cancer. The 2-year disease-free survival was 95 ± 3%. The incidence of asymptomatic and symptomatic seroma in 90 days after MSBT was 28% and 10%, respectively. Infectious mastitis was observed in 3 patients (3%), who were treated successfully with antibiotics. Only 3 patients (3%) developed a radiodermatitis > grade 2 after WBI.

**Conclusion:** The boost technique used in this study seems to provide excellent local control with acceptable toxicity, similar to the results observed with other forms of interstitial accelerated partial-breast irradiation as a boost. Long-term follow-up is necessary to refine the patient selection criteria and to assess efficacy and late toxicities.

**EP-1959**

**Dosimetric consequences from minimal displacements in APBI brachytherapy using the SAVI applicator**

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**Purpose or Objective:** Evaluate the necessity of a complete CT scan before each treatment in the APBI and the use of additional immobilization devices

**Material and Methods:** A retrospective study was performed on 25 patients treated in the 2013-2015 period with APBI brachytherapy. The CT scans of each patient taken before each treatment were imported in to the planning system. Each CT scan was registered with the initial one. Dosimetric evaluations respective to the initial CT scan image series were performed. The deviation of dose received by the skin and ribs in each treatment were calculated and minimum, maximum and average dose received by skin and ribs were recorded and compared to the initial plan's results.

**Results:** Small deviations in displacements were observed from the SAVI applicator to the ribs and the skin surface. Dosimetric evaluations revealed, very small changes in the inter-fractionation position make significant differences in the maximum dose to these critical organs. As a result, the maximum dose varied between 10% and 32% in ribs and skin surface.

**Conclusion:** The CT scan before each treatment is necessary to minimize the uncertainty in setup and any intervention if deemed necessary. This study indicates, in 30% of the cases needed re-planning between treatments to minimize the risk of critical organs to be overdosed. We conclude that the physicist should evaluate the position of the device by analyzing the CT images before each treatment and consider re-planning is the deviations are high. Also this study reveals the urgent need of improving the immobilization methods when treating APBI with SAVI applicator. This type of treatment will benefit of deformable registration at each treatment and adaptive planning

## Electronic Poster: Brachytherapy track: Gynaecology

**EP-1960**

**Exclusive brachytherapy of vaginal cuff: ethical considerations on quality of life after treatment**

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**Purpose or Objective:** To evaluate efficacy, clinical and psychological impact of chronic toxicity, of exclusive BRT of vaginal cuff in patients (pts) affected by endometrial cancer after hysterectomy (**EC**)

**Material and Methods:** From January 2010 to December 2014 we studied 108 pts with EC treated with exclusive BRT. Treatment was performed with cylinder in vagina to sterilize vaginal cuff, fractionation 6 - 30 Gy, prescription to 0.5 cm from surface of cylinder, active length almost 3 cm. We evaluated efficacy, quality of life and impact on sexual activity after BRT filling out a test designed to investigate following areas: 1) social relations and personal emotions, 2) couple intimacy and sexuality , 3) impact of treatment on sexuality and doctor-patient relationship before BRT

**Results:** 96 evaluable pts median follow-up 24 months (range 9-60); median age 62 years (40-88); histology revealed 2 cr. squamous and 94 adenocarcinoma; grading G1 for 15% , G2 for 65% and G3 for 20% of cases; all pT1b stage; lymph node