margin = 2.25mm (Range 1.25-3mm). Median PTV volume = 32cc (Range= 6-1879cc).Prescription dose was 30-36Gy in 3-5# (BED using α/ß=10, 48-79). Dose was prescribed to the Median 64% isodose line (Range 48-78%). Median coverage was 98.3% (range 95.2-99.9%). Treatment delivery was tracked with fiducials and the Synchrony system.
**Results:** Outcome data was available for 10 patients. Local Control rate was 100%. 4 patients (40%) progressed distantly, 2 in the IMC Node group, and 2 in the Sternum group. One of the patients that progressed distantly in the Sternal group had distant disease at the time of CyberKnife. Of those that progressed distantly, 75% had received chemotherapy as their first treatment at the time of Sternal/IMC node recurrence. Median Disease-Free Interval (DFI) in progressors was 2 years (Range 1-6 yrs), compared to a DFI in Non-progressors of 3 years (Range 1-13 yrs). Median Progression-Free Survival for the IMC node group, Sternal group, and Cohort as a whole were 6, 2 and 4 months respectively. The follow-up data was, however, less mature for the Sternal group. Overall Survival (OS) rate was 90%. The patient that died was had Sternal recurrence patient with small lung metastases at the time of CyberKnife treatment. She died of lepto-meningeal disease. Median OS for IMC node group, Sternal group and Cohort as a whole were 16, 2 and 6 months respectively. However, follow-up data is less mature for the Sternal group. Treatment was well tolerated with only 25% of the group experiencing acute toxicity (G1). Only 1 patient experienced Late toxicity (fleeting G3 symptoms), the patient had received prior rdaiotherapy.
**Conclusions:** SBRT is a feasible treatment approach for patients with Sternal/IMC nodal recurrence of Breast Cancer. The technique is well tolerated, even in those who have received prior Radiotherapy. The outcome data is still immature, but the early Local Control rates (100%), and Overall Survival rates (90%) at a Median follow-up of 11 months are encouraging.

**PO-0751**
**Stereotactic body radiation therapy (SBRT) for abdominopelvic re-irradiation: early results**
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**Purpose/Objective:** The management of disease recurrence within a previously irradiated pelvic field is a challenging clinical problem. The ability to re-irradiate the pelvis to a therapeutically meaningful dose is limited by the cumulative dose received by adjacent pelvic organs at risk (OAR). The Cyberknife radiosurgery system enables highly conformal dosimetry with rapid dose fall off outside of the target. This, in combination with the use of small treatment margins facilitated by tumour tracking, make it a potentially attractive delivery platform for re-irradiation.
The aim of this retrospective study was to review the toxicity and early efficacy data of patients receiving SBRT with the Cyberknife platform for pelvic re-irradiation at our institution.
**Materials and Methods:** Patients receiving Cyberknife SBRT to abdominopelvic targets sited within a previously irradiated field were retrospectively identified. Details on primary site histology, prior external beam radiotherapy (EBRT), re-irradiation dose and indication for re-treatment were obtained from the patient's electronic notes. Radiotherapy toxicity was graded using CTCAE v4.0. Follow up consisted of clinical examination and radiological assessment. In field local control and time to progression were calculated from the day of completing SBRT until the date of radiological evidence of progression using standard RECIST criteria.
**Results:** 16 patients were treated between 01.08.11-01.11.12. Median follow up was 6 months (range 1-15). 8 patients had primary gynaecological malignancies, 7 colorectal and 1 melanoma. Median age was 59 years (range 27-85). Indications for re-irradiation were nodal recurrence (6), soft tissue recurrence (7) and positive margins following surgery (3). Median time from previous EBRT was 20 months (range 1-156). Median previous EBRT dose was 50.4 Gy (range 30-54) in 28 fractions (range 10-39). 3 patients with gynaecological primaries had also received prior brachytherapy. Median re-irradiation dose was 30 Gy (range 18-35) in 3 fractions. 44% of patients had no recordable toxicity. 3 patients with pelvic side wall recurrences experienced G2 pain during treatment, which resolved shortly after completion of SBRT. One patient developed a colovesical fistula 2 months after SBRT (G4 toxicity). This was associated with local disease recurrence therefore the aetiology was unclear. At last follow up, local control is 94% (15/16 patients). A single patient had an in field recurrence 2 months after SBRT. 6/16 patients (38%) have relapsed at distant sites. Median time to relapse at any site was 3 months (range 2-11).
**Conclusions:** At this early time point of data analysis, minimal toxicity has been observed to date. Cyberknife SBRT is a promising method for pelvic re-irradiation and warrants further investigation.

## POSTER: CLINICAL TRACK: TARGET AND VOLUME DEFINITION AND IMAGING

**PO-0752**
**Reliability and feasibility of automatic segmentation in rectal cancer: a perspective study.**
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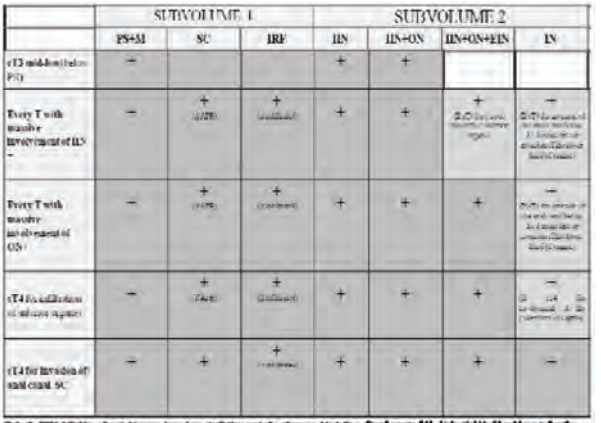
**Purpose/Objective:** The use of autosegmentation computed systems in clinical setting for locally advanced rectal cancer is time sparing with an acceptable Dice Coefficient for CTV, Mean Dice Coefficient (MDC) of 0.70, while it does not reach an adequate value for small nodal subvolumes (MDC=0.67) [(1)]. In this phase II study the objective is to verify in clinical setting the time sparing and the Dice Coefficient in bigger volumes (CTV and grouped nodal subvolumes) in locally advanced rectal cancer using the Smart Segmentation Knowledge Based Contouring (SS-KBC)® research program.
[(1)] *Clinical validation of atlas-based auto-segmentation of pelvic volumes and normal tissue in rectal tumors using autosegmentation computed system. Gambacorta et al, Acta Oncologica, in press*
**Materials and Methods:** 29 consecutive patients were selected between June and September 2012; images of 14 patients as atlas, 15 for validation. To test the reliability of the system for bigger volumes, the nodal subvolumes were grouped according to clinical stage and site of the tumor (tab1). According to our ongoing QA program two operators were involved: a Delineator and a Reviewer. CTV and pelvic grouped nodal subsites were contoured by Delineator in 2 different sequences (A-manual vs B-autosegmentation) of contouring using the same planning CT; all of them underwent to Indipendent Check by Reviewer. To improve the reliability of the system many anthropometric characteristics where analyzed (including BMI, sex, age, fertility state, sacro-coccigeal distance and the most anterior distance between upper iliac crests). The analysis was conducted to test the reliability of the system using Dice Coefficient and the total time spared by the Delineator to complete the 2 different sequences.




**Results:** In clinical practice the time spared by operator 1 to complete sequence A and B was of 14min vs 1min respectively; there was a statistically significant better MDC in favor of sequence A vs sequence B:
-CTV: sequence A (MDC=0.86) vs sequence B (MDC=0.78), p=0.001 (fig.1)
-Subvolume 1: sequence A (MDC=0.86) vs sequence B (MDC=0.77), p=0.001
-Subvolume 2a: sequence A (MDC=0.76) vs sequence B (MDC=0.66), p=0.001