Material and Methods: 25 Patients were included, with regional nodes level I-IV. Twelve were left-sided with breath-hold treatments. Overlapping regions were created from 2-3 3DCRT open fields and 2-4 IMRT fields. For level I-IV (also with parasternal lymph node involvement), plan as for level I/II above, with an abutment involving no more than 2 fields. Previously 3DCRT treatments required 10-12 fields, hybrid plans require at most 7 fields (each 3 segments) and only half of the MUs.

Conclusion: Hybrid 3DCRT-IMRT plans are a major improvement on the current 3D CRT technique, with fewer hotspots and more control over the dose to OARs and the improvement on the current 3DCRT technique, with fewer hotspots and more control over the dose to OARs and the implementation of autosegmentation and direct planning for numerous anatomical districts. Our department is implementing this technology and, up to date, we are testing QA planning procedures compared to our clinical standards in order to define which districts could take advantage from the use of the MRI-60Co technology. Aim of this investigation was to assess the impact of the implementation of the ViewRay magnetic resonance imaging (MRI)-guided 60Co radiation therapy system through an in silico planning analysis for cervical cancer treatments.

Material and Methods: Patients affected by cervical cancer (cT3; cN0, cN+) were manually segmented on Eclipse TPS V11. RapidArc (6-15 MV arcs) and 5 beams (6-15 MV) sliding window IMRT treatment plans were calculated according to our usual QA protocols by skilled planners. The PTV1 (CTV1+7/10 mm margin) was represented by the tumor, the PTV2 (CTV2+7 mm margin) by drainage pelvic nodes. The OARs considered for this analysis were the body, the bowel bag and the bladder. The total prescribed dose for PTV2 was 39.6/1.8 Gy and 50.6/2.3 Gy for PTV1 through simultaneous integrated boost. The PTV V95 and OARs QUANTEC dose constraints on the DVHs and Wu’s homogeneity indexes (HI) were then analyzed to ensure the dosimetric reliability of the plans. The structure sets were then uploaded on the MRIdian workstation and a 60Co plan was calculated by beginner planners after a specific training session. The DVHs and HI were then compared to the RapidArc and IMRT gold standard in order to evaluate MRIdian’s performances.

Results: We calculated ten sets of three plans (MRI-60Co, RapidArc and 5 beams static IMRT) for ten consecutive patients. The MRI-60Co system showed a better HI when compared to the other techniques for PTV1, while this advantage could not be appreciated for PTV2, even if a better PTV2 V100 (39.6 Gy) was observed. Comparable mean doses for the bladder were registered, while a higher bowel V45 was observed (even if still in the constraints limits). Low dose body V5 was higher for the MRI-60Co system. The results are summarized in table 1.
Conclusion: We registered an higher PTV dose coverage between MRIdian’s and the RapidArc and IMRT plans for cervical cancer, with a HI advantage for the PT1V. Differences were described for OaRs, especially for low dose areas (V5 Body). The MRIdian’s planning platform showed to be user friendly and allowed to reach dosimetric goals comparable to RapidArc and IMRT gold standards. The evaluation of a possible reduction in PTV margins and a proper target coverage by MRI based gating will be analyzed when the system will become operative.

PO-1009
VMAT planning approach to avoid superficial underdosage for accelerated partial breast irradiation
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Purpose or Objective: Accelerated Partial Breast Irradiation (APBI) is a RT approach that treats only the lumpectomy bed and residual motions can be manually increased with fluence outside the breast contour to account for breathing and residual motions. The APBI target is required to account for involuntary and residual motions. A simple procedure was to fully cover the target.

Poster: RTT track: Head and neck reduction of margins and side effect

PO-1010
Partial delegation in 2-D match set-up evaluation for H&N IGRT treatment: preliminary results
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Purpose or Objective: The aim of this study was to determine the magnitude of discrepancies between radiation oncologists and radiation therapists to define a partial delegation of verification when 2-D orthogonal Kilovoltage (Kv) images are evaluated for daily set-up verification in head and neck cancer patients.

Material and Methods: Daily on-line Kv-images of patients with head and neck cancer were evaluated for set-up verification both on-line by one of 7 radiation therapists (RTT) with adequate training, and off-line by a radiation oncologist (RO). All patients were treated by volumetric-modulated arc therapy (VMAT), with a LINAC 6 MV photon beam equipped with Millenium 120 MLC and on-board imaging system (VARIAN Medical System). Manual bone anatomy matching was used to determine translational displacements in all three axes (x, y, z) and discrepancies between RTT and RO were calculated. The concordance of decisions between RTT and RO were calculated, in particular for differences inferior, equal and superior to 3 mm. Results are presented as mean values, population systematic (Σ ) and random (σ ) errors. ANOVA test was used to test differences between groups. SPSS software was used for the statistical analysis.

Results: In this analysis 33 consecutive patients treated from March to September 2015 were included. Nine hundred ten (910) Kv images were obtained and 2730 measures were made by the RO and RTT. A total agreement between RO and RTT was observed in 12.2% of cases. An inter-observer discrepancy of ±3mm or less and ±4 mm or less on at least one direction was recorded respectively in 98.4% and 99.3%