For PTV, statistically significant differences were observed between AAA (Dw) and AXB (Dw) for V100%, V50% and CI100%. While V100% was higher for AXB (Dw), V50% was lower. Dw5%, V100%, CI100% and HI values were lower for AXB (Dw) compared to AXB (Dw). Variance analyses showed significant differences in HI in all cases. For OAR, AXB (Dw) doses were lower than AAA (Dw), except for ribs, were photoelectric effect is correctly predicted by AXB. On the other hand AXB (Dw) doses were lower than AXB (Dw). Not all these differences were significant. F-tests showed no differences in populations variances. Observed differences arise from AXB superior radiation transport modelling and the effects of mapping CT images to materials in AXB. All these differences are not clinically relevant although plan normalization may be altered.

**Conclusions:** Several statistically significant differences can be observed in dose prescription and dose-volume reporting to the PTV and OAR of lung SBRT treatments between AXB (Dw), AAA (Dw) and AXB (Dw). These differences are not clinically relevant although plan normalization may be altered.

**EP-1430**

Stereotactic body radiotherapy (SBRT) for peripheral lung tumors. A comparison of two VMAT delivery techniques

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**Purpose/Objective:** The aim of this study was to evaluate and compare the efficiency between two different VMAT techniques for stereotactic body radiotherapy (SBRT) in peripheral lung tumors.

**Materials and Methods:** Five patients with a single peripheral lung tumor smaller than 50 cc (range 12.4, 48.6 cc) were included in this study. Two different VMAT plans were created for each patient. The first plan was performed using one-arc rotating 360º (1ARC). The second plan was performed using one-arc rotating 180º, from 180º to 0º, at the ipsilateral side of the affected lung (1SEMIARC). Both plans were calculated by the Monaco treatment planning system (version 3.30.01), using 6 MW photons generated from Elekta Synergy Beam Modulator linac. Three risk-adapted fractionation schemes were used (3 fractions of 18 Gy, 3 fractions of 16 Gy, and 5 fractions of 10 Gy). The objectives for PTV and organs at risk (OAR) matched to those used in ROSEL protocol. Both plans were normalized to deliver 100% of prescribed dose to 98% of PTV. Dosimetry comparison was made in terms of the percentage of healthy lung receiving a minimum biological equivalent dose of 20 Gy (HLV20) and the percentage of contralateral lung receiving a minimum biological equivalent dose of 5 Gy (CLV5). Paddick conformity index (PCI), RTOG homogeneity index (HI) and the maximum absorbed dose to spinal cord, esophagus and heart were also compared. Monitor units per gray (MU/Gy) and treatment delivery time (TDT), excluding any time needed for additional imaging and set-up, were also measured for treatment delivery efficiency comparison. A descriptive analysis (mean ± SD) of every variable was obtained for both plans in each patient. Dosimetry comparison between both plans was performed using a two-sided Student’s t test. Differences were considered statistically significant if p < 0.05.

**Results:** DVH analysis revealed that all plans created for each patient fulfilled the specified dose constraints. TDT was reduced by 27.3 % (p < 0.001) for 1SEMIARC compared with 1ARC, for the 18 Gy fraction scheme. 1SEMIARC plans achieved lower CLV5 compared with 1ARC plans (difference of 49.9%, p < 0.02) 1SEMIARC plans showed similar PCI, HI, HLV20 and maximum doses to the OARs compared with 1ARC plans (p > 0.05). See Table I.

**Table I:** Summary of study parameters between the two treatment techniques (mean ± SD)

**Conclusions:** The result of this study comparing two different VMAT techniques for the treatment of peripheral lung tumors, confirms the ability of one-arc VMAT field, rotating 180º at the ipsilateral side of the lung, to deliver highly conformed dose distributions. In addition to the dosimetric gains in the contralateral lung, one-arc VMAT field rotating 180º technique achieve a shorter treatment time, accomplishing a reduction of the risk of intrafraction baseline shifts in tumor position, compared with one-arc VMAT field rotating 360º technique.

**EP-1431**

Initial clinical experience with Pinnacle’s Auto-Planning

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**Purpose/Objective:** To assess both plan quality criteria and optimization efficiency of automatically generated VMAT treatment plans for prostate cancer including seminal vesicles and lymph nodes.

**Materials and Methods:** Manually (MP) and automatically (AP) generated VMAT treatment plans (Pinnacle© TPS V9.10, X4170 Smart-Enterprise) were compared for 10 prostate cancer cases. Each treatment plan (TP) contained a primary target volume (PTV) including prostate, seminal vesicles and...