

AbstractID: 10232 Title: Volumetric modulated arc therapy for the treatment of paraspinal lesions

Purpose: Volumetric Modulated Arc Therapy (VMAT) is a recent treatment modality that synchronizes gantry rotation, multileaf collimator motion and dose rate modulation, usually in a single arc. In this feasibility study, we evaluate the efficacy of VMAT, using an optimization algorithm developed at our institution, for paraspinal stereotactic body radiation therapy (SBRT). **Method and Materials:** Ten patients with paraspinal lesions were retrospectively planned with VMAT and results were compared to 5 - 8 field treated IMRT plans. Tumor locations varied from C3 to L1. The prescription dose was 24 Gy and cord was constrained to 14 Gy. To compare plan quality, PTV D(99%), D(95%), V(22.8Gy), Dmax, cord Dmax and Dmean, esophagus D(2cc), and lung Dmean were reviewed. Monitor units were assessed to evaluate plan efficiency. **Results:** Patient averaged PTV D(99%), D(95%), Dmax and V(22.8Gy) were 18.7, 21.7, 29.6 Gy and 92.8% respectively for VMAT and 18.5, 21.8, 28.4 Gy and 93.5% respectively for IMRT. Average cord Dmax was 13.8 and 13.9 Gy for VMAT and IMRT, respectively, but the cord Dmean with VMAT was 34% less than with IMRT. The average esophagus D(2cc) was 14.4 Gy for VMAT and 17.5 Gy for IMRT. The average mean lung dose was 2.8 Gy for VMAT and 2.3 Gy for IMRT. The average MUs were 4817 and 12343 for VMAT and IMRT plans, respectively. **Conclusion:** PTV coverage was similar for VMAT and IMRT with the exception of slightly higher hot spots with VMAT. For critical structures near the PTV such as cord and esophagus, maximum doses were similar but mean doses were lower with VMAT. Structures farther way from the PTV (e.g. lung) had higher mean doses with VMAT. VMAT plans were more efficient with substantially lower MUs than IMRT. **Conflict of Interest (only if applicable):** Research agreement with Varian Corporation