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Assessments of Sequential Intensity Modulated Radiation Therapy Boost (SqIB) Treatments Using HART ANIL PYAKURYAL, Northwestern Memorial Hospital /University of Illinois at Chicago — A retrospective study was pursued to evaluate the SqIB treatments performed on ten head and neck cancer patients(n=10).Average prescription doses (PDs) of 39 Gy,15Gy and 17.8Gy were delivered consecutively from larger to smaller planning target volumes(ptvs) in three different treatment plans using 6 MV X-ray photon beams from a Linear accelerator (SLA Linac, Elekta) on BID weak on-weak off schedules. These plans were statistically evaluated on basis of plan indices (PIs),dose response of targets and critical structures, and dose tolerance(DT) of various organs utilizing the DVH analysis automated software known as Histogram Analysis in Radiation Therapy-HART(S.Jang et al., 2008, Med Phys 35, p.2812). Mean SqIB PIs were found consistent with the reported values for varying radio-surgical systems.The 95.5%(n=10)of each ptvs and the gross tumor volume also received 95% (n=10)of PDs in treatments. The average volume of ten organs (N=10) affected by each PDs shrank with decreasing size of ptvs in above plans.A largest volume of Oropharynx (79%,n=10,N=10) irradiated at PD, but the largest volume of Larynx (98%, n=10, N=10) was vulnerable to DT of structure (TD50).Thus, we have demonstrated the efficiency and accuracy of HART in the assessment of Linac based plans in radiation therapy treatments of cancer.

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