Whole pelvic radiotherapy (WPRT) is used to treat lymph node disease in cervical cancer patients. The total dose ranges from 45-50 Gy, and is limited primarily by small bowel tolerance. A recent study[1] has documented intensity-modulated whole pelvic radiotherapy (IM-WPRT) as a means of reducing the volume of small bowel irradiated. While conventional doses are sufficient in most patients, higher doses may be beneficial for patients who have pelvic lymph node involvement. The goal of this work was to evaluate IMRT as a method of escalating dose to selected pelvic nodes using sequential or simultaneous integrated boost (SIB) techniques. The sequential approach consists of IM-WPRT (45 Gy) followed by an IMRT boost (14.4 Gy) to the nodes at risk. In the SIB technique, IM-WPRT is used to deliver 45 Gy to the large target while simultaneously delivering the same biological equivalent dose as the sequential boost to the pelvic nodes. Both methods were compared in terms of dose conformity, heterogeneity, and dose to normal tissues. SIB was found to be superior to sequential boosting in terms of dose conformity and homogeneity for the boost and primary targets. The volume of small bowel receiving greater than 50 Gy was 30% less using SIB compared to sequential boosting. These results indicate that SIB is a potential means of boosting dose to selected lymph nodes without significantly increasing dose received by surrounding normal tissues.

[1]Roeske, et al. Int. J. Radiat., Oncol., Biol., Phys. 48(5), (2000).

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