Purpose: To investigate the dosimetric difference in sparing bone marrow in the radiotherapy of whole pelvic node comparing 6MV and 15MV X-ray RapidArc plans.

Methods: Twelve patients who had undergone radical surgery for cervical cancer and with demonstrated multiple pelvic lymph node metastases were treated with radiotherapy were selected. All pelvic bone was delineated to define the bone marrow, and the pelvic bones consisted of the hip bone, the sacrum, the vertebral body near planning target volume (PTV), and the upper parts of femur. RapidArc plans applying 6MV and 15MV X-ray with one single whole arc (counter-clockwise from 179° to 181°) were generated for each patient, and named RapidArc-6MV and RapidArc-15MV. The prescription dose was 2.0Gy/fractionx28fractions. The dosimetric differences were compared.

Results: There were no significant differences in conformity index (0.90±0.03 Vs 0.89±0.04), homogeneity index (1.08±0.01 Vs 1.08±0.02) and external volume index (0.08±0.04 Vs 0.09±0.05) between RapidArc-6MV and RapidArc-15MV (P>0.05). Neither there were no significant differences in V5 (93.6±6.4Vs92.2±7.3), V10 (88.6±9.3Vs88.3±9.2), V20 (76.9±12.6Vs76.9±11.2), V30 (57.9±10.5Vs55.9±11.5), V40 (35.2±10.2Vs34.9±10.9) between RapidArc-6MV and RapidArc-15MV (P>0.05). The monitor untie of RapidArc-6MV (552±40Mu) was more than RapidArc-15MV (455±44 Mu) with significant difference (P<0.05).

Conclusions: Compared to 15MV X-ray RapidArc plans, there was no dosimetric benefit in sparing bone marrow in the radiotherapy of whole pelvic lymph node applying 6MV X-ray.