3486

Verifying Setup Accuracy Using Cone-Beam CT

Seungjong Oh[1] Tae-Suk Suh[1], Siyong Kim[2], Hosang Jin[2], and Heeteak Chung[2]

[1] Catholic University of Korea, [2] University of Florida

bhead@catholic.ac.kr

Conventionally, the patient setup was performed based on skin marks, whereas the cone-beam CT (CBCT) integrated linear accelerator enables setup verification based on internal organs rather than skin marks. In this study, the accuracy of the conventional setup process was verified using CBCT. Patients underwent CBCT after the conventional setup, and then CBCT reconstruction and simulated CT images were registered. The setup errors were defined as the translation difference of registration and were checked using 32 fractions. Thirty-two CBCT projection data were selected from 3 organs, spine (5 fractions, 1 patient), lung (9f, 2p) and prostate (18f, 2p), in 5 patients. The setup errors ranged from 0.25 cm to 1.03 cm (0.58±0.23 cm). According to the results, the setup error of the conventional method was not good. For precise radiation delivery, the setup process should be performed using internal organs rather than external marks.

Keywords : Setup Error, Cone-Beam CT