AbstractID: 1483 Title: Radiographic film calibration for IMRT verification using seven static strips

Purpose: To measure a sensitometric curve using a single sheet of film, we exposed the KODAK XV2 film with seven static strips by the movement of the upper jaw.

Materials and Methods: We exposed seven fields in a single XV2 film perpendicular to the beam from field size 19 × 3 cm^2 to 19 × 21 cm^2 in 3 cm increment of Y1-axis jaw. Each field was delivered 20 MU. We measured the dose of each field by 0.6 cc Farmer type ion chamber. We compared with the standard method of delivering different doses to 10 × 10 cm^2 fields in the centers of individual XV2 films. Also, we compared the sensitometric curve at the depth of 1.6, 3.5, 6.0 and 8.5 cm, and repeated it three times. Besides, we applied the calibration curve of standard method and static strip to verify the dose of IMRT patient.

Results: The sensitometric curve of this method agreed with the standard film calibration method. The maximum discrepancy between two methods was less than ±2%. The difference of sensitometric curve between the different depth was less than ±3%. In the verification of IMRT, high agreement between the calibration curve of two methods was found.

Discussion: For Step-and-Shot IMRT dose verification, we may use this method for a better calibration results. The quick delivery time, ease of use, lower cost and agreement with the traditional static film calibration method shows that the seven strips calibration method is superior to previous procedures.