AbstractID: 13959 Title: Replacing Film with Computed Radiography for Routine Linear Accelerator QA

Purpose:
To evaluate the feasibility of using diagnostic computed radiography (CR) plates to replace radiographic films for linear accelerator QA.

Method and Materials:
Type C Fujifilm CR plate (size 25.2x30.3cm) was tested with image reader FUJIFILM FCR PROFECT CS. Spatial resolution of 10 pixels/mm was used for image reading. The image plate was used without the cassette for linear accelerator QA. Plate or film was setup on the treatment table at isocenter (100cm SSD). A 3mm thick Plexiglas template with stainless steel beads markers was placed over the plate and aligned to the light filed. Exposure of 10 mus or 40 mus was delivered to a 10x10cm and 20x20cm field setting respectively using a 6 MV photon.

The spatial accuracy and spatial uniformity of the CR image were evaluated and compared with Kodak X-Omat V film. The distances measured in various directions on the CR image and Kodak X-Omat V film were compared with the actual distances on the template to evaluate the spatial accuracy and image distortion under different conditions.

Results:
The distance measured in three different directions had error within 1%. Good spatial accuracy and good spatial uniformity were observed. Results were comparable for both FUJI CR plate and Kodak film.

Conclusion:
Uses of CR plate for routine QA give a comparable result to that of film. Similar results were also observed when used for light field-radiation field coincidence test, star shot tests and MLC picker fence test. Hence the FUJIFILM CR plate is suitable for the linear accelerator routine QA procedure. With the facing out of films in most hospital, CR plates commonly used in diagnostic radiology made a good and relatively inexpensive substitute for use in routine linear accelerator QA procedure.