AbstractID: 12564 Title: Intrabeam-Intraoperative radiotherapy unit Quality Assurarance measurements with EDR2 films and Radiological Imaging Technology

Purpose: EDR2-QA films were developed for patient dosimetry in Intra-operative radiotherapy. In this study a method to evaluate the isotropy, PDD, Isodose and beam deflection using EDR2-QA films and a vidar scanner with RIT Software was developed and tested.

Methods and Materials: Intrabeam System is (50KeV, 40μA) intraoperative radiotherapy unit. X-ray source (XRS) equipped with a 10 cm long (ø 3.2 mm) probe. Five Films were irradiated for one minute each at a distance of 5cm from the source in all 5 directions (0^0, 90^0, 180^0, 270^0 and perpendicular to the source) with flat surface facing towards the source. Percentage depth doses were derived by exposing the film vertically down from the source.

Results: Horizontal and vertical profiles from films in all directions were taken and compared with the help of RIT software. A difference of 0.7% was found between the profiles at 12cm from the central axis. PDD'S were obtained with the film (which was kept vertically down from the source) by normalizing the values at 2 cm depth (known dose) from the surface. These PDD'S proved 1/r3 and can be implemented on CT. Dose distributions were also derived by RIT software. Films were exposed at different distances from the source and found that these doses are comparable with the doses obtained from Ionization chamber (<1%).

Conclusion: Some of these QA procedures can be incorporated as periodic and some can be incorporated as regular QA procedures before taking any patient. These film measurements proved and shown the simple way of checking the Isotropy, PDD, Isodose and beam deflection. These tests also useful to take beam data for planning systems to view the dose on CT images in 2D and 3D, which is not available on the present system.