

## **Chest wall irradiation with MLC-shaped photon and electron fields**

In the DDHCC chest wall irradiation after mastectomy is performed with a medial AP electron field matched to a cranial/lateral AP photon field. On conventional treatment units the photon field consists of two segments, shaped with customized blocks, to generate a broadened penumbra. The electron field is produced with an insert in the standard electron applicator. The treatment couch is temporarily rotated in between delivery of the electron and photon fields for safe removal of the electron applicator.

An improved treatment technique was developed for the MM50 Racetrack Microtron. Due to the scanning beam principle and the helium in the treatment head of the MM50, the MLC can be used to shape both photon and electron fields for treatments with the applied source-to-surface distance of 100 cm. All fields are set up and delivered under computer control.

The use of three MLC-defined photon beam segments (instead of two) and of computer controlled (small) treatment table movements in between segments, resulted in improved dose homogeneity at all depths in both the cranial and the lateral junction areas. In-vivo dosimetry in the junction areas showed that systematic over- and underdosages could be reduced from more than 20 % to less than 10 %. The day-to-day variations could be reduced from 22% (1SD) to 10 %. Cerrobend blocks, inserts, and table rotation to remove the electron applicator are no longer needed. The treatment time is reduced from 10 to 4.5 minutes.

