

Verification of field placement for rotational IMRT

Techniques for guaranteeing that intensity patterns are properly positioned relative to a patient's anatomy have not been developed for rotational IMRT. This paper points out the importance of at least assuring that the "slit" opening covers the treatment volume. Using the NOMOS MIMiC collimator, it is possible, and sometimes necessary, to position the treatment unit isocenter so that the collimator opening does not provide full target coverage as the gantry rotates. This report demonstrates that missing the target compromises the dose distribution by forcing normalization to relatively low isodose lines and increasing the dose to critical healthy structures. A simple check of the NOMOS output can detect potential problems. Caution is advised when the beam elements at the field edge are used in the modulation process. As a more complete check, a double-exposure film technique using the standard jaws is recommended to document field coverage. The technique uses both an anterior and one lateral film to show the extent of the collimator opening. The field size for these films is set to agree with the length of the beam slit (approximately 20 cm) in one direction and the slit width in the other direction. A double-exposure over-flash is used to show this slit relative to the patient's anatomy. Simulation of these fields is also recommended. Since CT scans must be available for any IMRT treatment, the use of CT-simulation simplifies this part of the process.

