Clinical quality assurance for 106Ru ophthalmic applicators.

BACKGROUND AND PURPOSE: Episcleral brachytherapy using 106Ru/106Rh ophthalmic applicators is a proven method of therapy of uveal melanomas sparing the globe and in many cases sparing the vision. In the year 2001, an internal clinical quality assurance procedure revealed that part of the ophthalmic applicators leaked and that the calibration was erroneous. Consequently, the producer modernized its production procedures and, in May 2002, introduced a dose rate calibration that is traceable to the NIST standard. This NIST calibration confirmed that the previous calibration had been incorrect. In order to study the effects of the producer's new internal quality assurance procedures on the ophthalmic applicators, applicators of this new generation were submitted to a newly improved internal clinical acceptance test.

PATIENTS AND METHODS: The internal clinical acceptance test consists of a leakage test and a dosimetric test of the ophthalmic applicators. The leakage test simulates contact of the ophthalmic applicators with chloride containing body fluid. The dosimetric tests measure depth dose curves and dose rate with a plastic scintillator dosimetric system and compare them with the indications in the producer's certificate. Furthermore, the depth dose profile of the most frequently used applicator (type CCB) was compared with published data.

RESULTS: The internal clinical leakage test showed that all of the tested ophthalmic applicators
belonging to the new generation (n=17) were tight and not contaminated. The dosimetric acceptance
tests applied to seven different types of applicators revealed that the relative depth dose profiles in
the therapeutically relevant range (up to a depth of