OBJECTIVE: We sought to characterize the long-term outcomes of patients undergoing intracoronary brachytherapy using Beta-irradiation (Beta-BT).

BACKGROUND: Beta-BT is effective in reducing angiographic restenosis as well as target vessel revascularization (TVR) in patients with in-stent restenosis (ISR) after bare-metal stenting (BMS). METHODS: 81 consecutive patients undergoing Beta-BT for ISR (irradiated length 32 [32-54] mm) after BMS in native vessels (n = 79) or saphenous vein grafts (n = 2) between 2001 and 2003 were followed. Major cardiac events (MACE), including cardiac death, nonfatal myocardial infarction (MI), and TVR occurring > 1 year or > 1 year were assessed 5.2 (4.4-5.6) years after the index procedure. RESULTS: During the entire follow-up period, the total MACE rate was 49.4%. Within the first year and at > 1 year, MACE rates were 25.9% and 23.5%, cardiac death occurred in 2.4% and 6.2%, and nonfatal MI in 6.2% and 12.3% for annual cardiac death/MI rates of 8.7% at < 1 year and 4.1% thereafter. TVR was required in 19% at < 1 year and in 16% of patients later on. The only independent predictor of MACE occurring < 1 year was an irradiated vessel length > 32 mm (odds ratio [OR] 2.73, 95% confidence interval [CI] 1.10-6.78; p = 0.03). The best, albeit not statistically significant, predictor of MACE occurring at > 1 year was the presence of diabetes mellitus (OR 2.49, 95% CI 0.94-6.57; p = 0.07). CONCLUSIONS: Patients undergoing Beta-BT for ISR after BMS carry a substantial risk of MACE also beyond the first year, with annual cardiac death and nonfatal MI rates of 1.5% and 2.9% up to 5 years postprocedure.