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Avoiding bypass surgery for recurrent in-stent restenosis by intracoronary brachytherapy with beta-radiation: results of a 3-year follow-up

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Background: Recently presented 5-year follow-up of the gamma-1 study showed no significant difference between placebo and brachytherapy. These results raise the question whether the long-term results was related to gamma-radiation only or applies also to beta-radiation.

Methods: This is an analysis of the prospective and continuous clinical follow-up of our patients which were treated with brachytherapy for in-stent restenosis. The 3-year follow-up was assessed in 170 consecutive patients. The rate of death, myocardial infarction, re-PCI of vessel treated with brachytherapy, PCI of a different vessel was compiled and the MACE rate calculated. 35.3% of the patients had a first, 36.5% had a second, 12.9% had a third and 15.3% had at least a fourth in-stent restenosis. The dose was 18.4 Gy at 2 mm from the center of the radiation source in vessel diameter from 2.5 to 3.5 mm and was 23.0 Gy in vessel diameter 3.5 to 4.0 mm, 20 Gy in 1 mm from the center of the radiation source.

Results: The mean age was 61±9 years. The treated stent diameter was 3.03±0.36 mm (2.25-4.0) and the stent length was 23±12 mm (8-60). The radiated vessel length was 54±21 mm (30-120).

Conclusions: The 3-year follow-up of "real world" intracoronary brachytherapy with beta-radiation in patients with mainly recurrent in-stent restenosis shows that good results are maintained. The re-PCI of the target vessel continuously declined. Thus, bypass surgery could be avoided in 87% of the patients within the 3-year follow-up period.

Table 1

parameter (%)	1 year	2 years	3 years
cardiac death	0	0	0
free of infarct	97.7	95.3	94.1
free of PCI - target vessel	74.7	63.5	58.2
free of PCI - other vessel	87.1	84.7	3.5
free of CABG	94.1	89.4	87.1
free of MACE	64.1	53.5	50.6