

AbstractID: 1999 Title: Endovascular treatment of intracranial aneurysms with radioactive coils: initial clinical experience

Endovascular treatment of intracranial aneurysms is safe and effective but is associated with angiographic recurrences. Beta radiation prevents recanalization after coil embolization in experimental models. This effect is also robust with respect to dose delivery. We wanted to assess the feasibility of using radioactive coil embolization to improve long-term results of endovascular treatment. Platinum coils were ion-implanted with 0.13 to 0.26  $\mu\text{Ci}/\text{cm}$  of  $^{32}\text{P}$ . Forty-one patients aged 34 to 84 years with 44 aneurysms with a high propensity for recurrences were included. Radioactive coils were introduced into aneurysms to reach a target volumetric activity of  $0.018 \mu\text{Ci}/\text{mm}^3$ . Nonradioactive coils were also used to ensure the same safety and the same angiographic results as the standard procedure. Angiographic results, procedure-related complications, and neurological events during follow-up were recorded. Angiographic follow-up data are available in 36 lesions 6 months after treatment. Forty of 44 aneurysms (91%) could be treated with radioactive coils. Target activities could be reached in 88% of lesions that could actually be coiled (35/40). Total activities ranged from 1.72 to 80.9  $\mu\text{Ci}$ , for a mean of  $20.13 \pm 20.80 \mu\text{Ci}$ . Procedure-related complications occurred in 7% of patients. Initial angiographic results were satisfactory (complete occlusions or residual necks) in 75% of lesions. Angiographic recurrences occurred in 11 (31%) of patients followed, within the expected range for standard coils. There was no complication from beta radiation during a mean follow-up period of 10 months. Radioactive coil embolization is feasible; target volumetric activities can be reached in most aneurysms considered for endovascular treatment.