Vascular Brachytherapy Case Studies

The following two cases treated by Professor Silber at Dr Müller Hospital in Munich, Germany show how the Novoste™ Beta-Cath™ System may help patients with two-vessel disease or recurrent restenoses. The patient in case 1 is part of the BRIE trial and the patient in case 2 is involved in the RENO Registry.

Case 1

A 50-year-old male presented with stable angina due to two-vessel disease and narrowing of both the left anterior descending (LAD) coronary artery and the right coronary artery (RCA) (Figures 1a and 1c). Risk factors included smoking and hyperlipidemia. Balloon angioplasty (3.0 mm diameter x 10 mm length; 15 atm) was performed and significant dissection occurred at the proximal LAD. Using the Beta-Cath™ 30-mm source train, a dose of 18 Gy (2 mm from the center of the source) was delivered. Following brachytherapy, a stent was implanted (Guidant ML RX Duet Stent, 3.5 mm diameter x 23 mm length). The same source train (dose of 14 Gy) was used in the RCA, but there was no need for stent implantation. Follow-up coronary angiography performed 6 months after VBT showed no evidence of restenosis in either the LAD (Figure 1b) or RCA (Figure 1d).

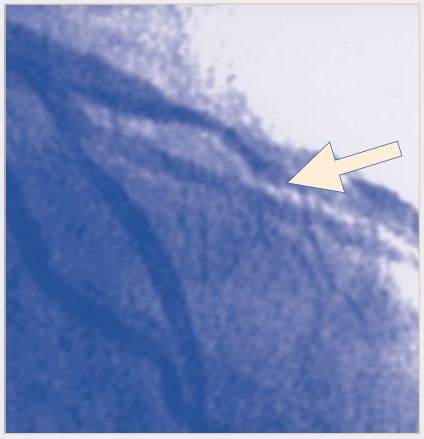

Figure 1a. Angiogram showing de-novo stenosis in the LAD.

Figure 1b. Follow-up angiogram taken 6 months following brachytherapy.

Figure 1c. Angiogram showing de-novo stenosis in the RCA.

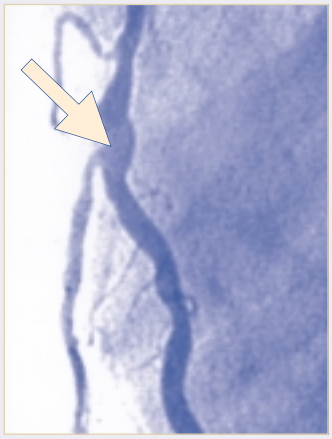

Figure 1d. Follow-up angiogram taken 6 months following brachytherapy.

Case 2

A 66-year-old male smoker with hyperlipidemia presented with coronary two-vessel disease. Whereas the occluded RCA was successfully reopened in September 1997 and remained open, the lesion in the circumflex artery (RCX) required several interventions. In November 1997, an InFlow Gold stent (Inflow, Munich, Germany; 3.0 mm diameter x 11 mm length) was implanted (balloon dilatation, 10 atm; diameter, 3.0 mm). Following the recurrence of angina (Figure 2a), the in-stent restenosis was treated in August 1998 by percutaneous transluminal coronary angioplasty with a cutting balloon (IVT, San Diego, CA, USA; 3.25 mm diameter x 10 mm length; 9 atm). The stent restenosed again and was treated in December 1998 with rotablation (2 mm burr; 136 000 rpm) and dilated with a balloon (3.5 mm diameter x 10 mm length; 14 atm). The patient received VBT for the third in-stent restenosis in July 1999. The RCX was dilated with a cutting balloon (3.25 mm diameter x 10 mm length; 8 atm) and a dose of 16 Gy (2 mm from the center of the source; radiation time, 3 min 42 s) was delivered using the Beta-Cath™ 40-mm source train. Follow-up coronary angiography after 7 months revealed a good result and some evidence of positive remodeling with an increase in luminal diameter (Figure 2b).

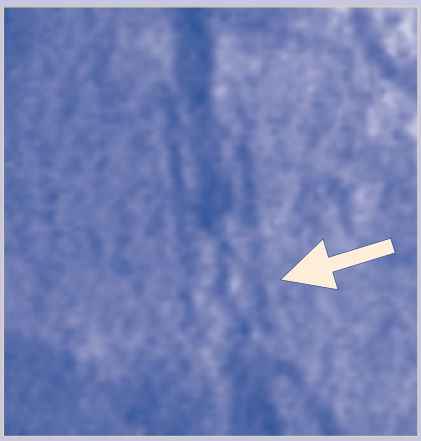

Figure 2a. Angiogram of the third in-stent restenosis.

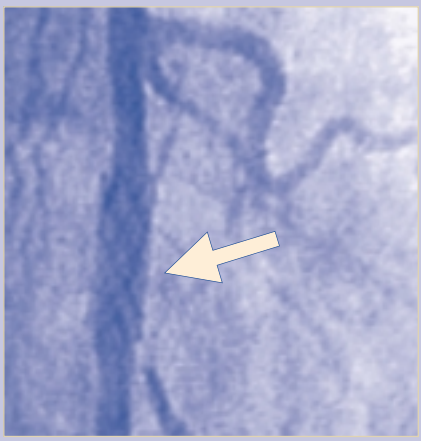

Figure 2b. Follow-up angiography with brachytherapy after 7 months.