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IMAGES IN INTERVENTION

Coronary Artery Aneurysm After Everolimus-Eluting Bioabsorbable Vascular Scaffold Implantation

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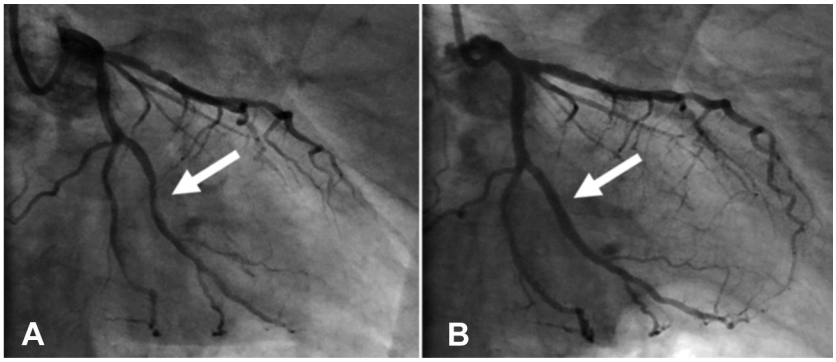
Among the rare complications after percutaneous coronary intervention, coronary artery aneurysms (CAA) reportedly have an incidence of 0.3% to 6.0%. The detection of CAAs vary from 3 days to up to 4 years after drug-eluting stent (DES) and from 6 days to up to 6 years after bare-metal stents (BMS) implantation. Associated factors include residual dissection and deep arterial wall injury caused by oversized balloons or stents, high-pressure balloon inflations, atherectomy, and laser angioplasty (1,2). Though the pathogenesis of CAA after DES, as well as after BMS, implantation has been studied, there seems to be neither sufficient literature nor adequate evidence of CAA after a bioabsorbable stent implantation. A 59-year-old male patient with exertional angina underwent percutaneous coronary intervention of the first obtuse marginal branch. After pre-dilation with a regular balloon, a 3.0 × 18-mm bioabsorbable vascular scaffold (BVS) (Absorb, Abbott Vascular, Santa Clara, California) was positioned with good immediate results (Figure 1). An angiographic and intravascular ultrasound (IVUS) follow-up at 6 months revealed an aneurysm in the stented segment (Figure 2). Due to atypical complaints of the patient, an angiographic and IVUS follow-up was recommended. At 1 year, the aneurysm had significantly increased in size (Figure 3), and a covered stent (3.0 × 18 BeGraft,

FIGURE 1 Coronary Angiography of the Obtuse Marginal Branch



(A) Stenosis of the obtuse marginal branch **(white arrow)**; **(B)** result immediately after implantation of a bioabsorbable vascular scaffold. The **white arrow** is the repaired stenosis of the obtuse marginal branch after implantation of a bioabsorbable stent.

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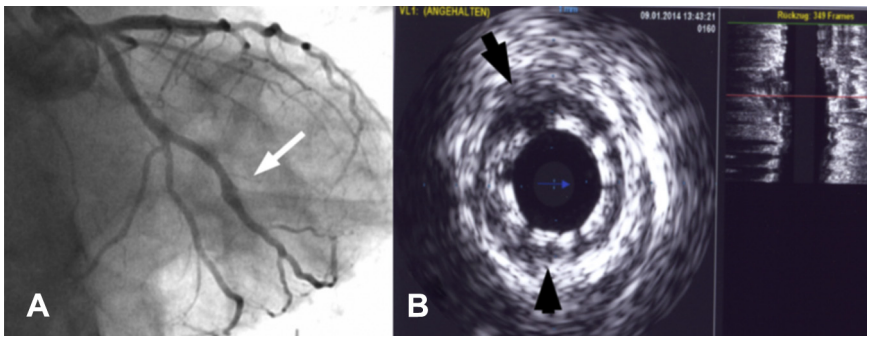
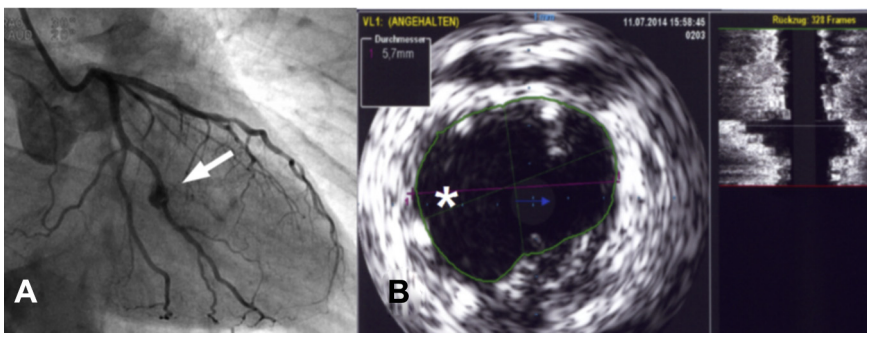
FIGURE 2 Coronary Angiography and IVUS After 6 Months



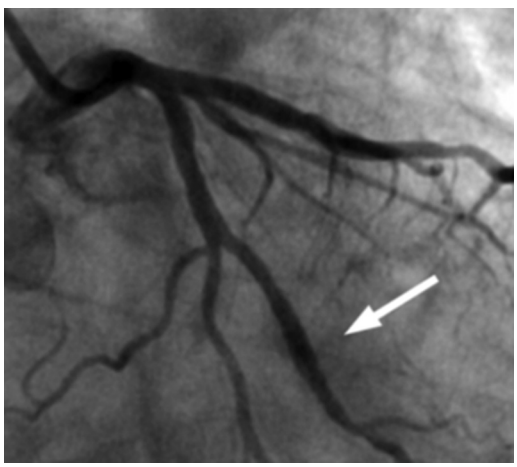
(A) Coronary angiography after 6 months: aneurysmatic structure in the stented segment of the obtuse marginal branch **(white arrow)**; **(B)** intravascular ultrasound (IVUS): visualization of the aneurysmatic structure **(black arrows)**.

FIGURE 3 Coronary Angiography and IVUS After 12 Months



(A) Coronary angiography after 12 months: large aneurysmatic structure in the stented segment of the obtuse marginal branch **(white arrow)**; **(B)** intravascular ultrasound (IVUS): visualization of the aneurysmatic structure **(asterisk)**.

FIGURE 4 Coronary Angiography: Final Result



Coronary angiography: final result of the obtuse marginal branch after implantation of a covered stent in the aneurysmatic region **(white arrow)**.

Bentley InnoMed, Hechingen) was implanted to exclude the aneurysm (Figure 4). It could be hypothesized that the distinct morphological attributes of the BVS stent such as relatively thicker struts and the slower expandability requiring higher pressures of balloon inflations (thereby causing deep arterial wall injury) during implantation as well as inflammatory/hypersensitivity changes (occurring in the vessel wall) after implantation could play a multifactorial role in the pathogenesis of a CAA (2). Further studies are desired to comprehensively study the incidence and understand the underlying pathomechanisms of CAAs after bioabsorbable stent implantation.

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