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EDITORIAL

Acute coronary syndrome: an ideal scenario for direct Absorb implantation?

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Article Rzeszutko et al., see p. 1434

Implantation of the drug-eluting bioresorbable vascular scaffold (BVS) (Abbott Vascular, Santa Clara, CA, USA) has been shown to be safe [1–7], and it may provide additional advantages compared to metallic stent implantation [1–3]. However, due to the particular features of the platform (strut thickness — 152 μm, crossing profile — 1.4 mm) and the high rate of scaffold thrombosis reported [4, 5], it has been strongly recommended that before the BVS implantation the lesion be prepared through predilation and that systematic postdilation with proper sizing of the device be performed [6].

However, the characteristics of the treated lesions are different, depending on the clinical setting. Our group confirmed the feasibility and safety of direct implantation in favourable lesions [7]: in acute coronary syndromes (ACSs) the rate of success was 88%, and in lesions of stable patients (selected by a previous intravascular ultrasound) the success rate was 84%. In the setting of ACS, when the plaque is soft and the struts are easily embedded, direct implantation should not be an issue. In fact, in the TROFI II trial [8] in patients with ST-segment elevation myocardial infarction, direct implantation was performed in almost half of the lesions, and the healing score at six months was similar to that observed for the Xience stent, with a tendency to be even better. Rzeszutko et al. [9] confirm that direct implantation in this scenario is feasible (91% success rate), saves procedural and fluoroscopy times, and uses less contrast dye compared with implantation with previous predilation (control group). In addition, direct implantation enables to accomplish correct expansion, as revealed by the greater acute gain compared with the predilation group (1.89 ± 0.7 mm vs. 1.59 ± 0.7 mm). Another point of interest is that no-reflow phenomenon was not observed in any of the lesions with direct implantation, despite the presence of thrombus in 65% of these lesions. This could be explained by the covered vessel area provided by the Absorb, which has a footprint that doubles that of metallic stents (26% in Absorb vs. 12% in Xience). This could enhance the possibility to trap thrombus and thereby to reduce the risk of no-reflow phenomenon. However, an important issue in this setting is the correct selection of the stent diameter. In the absence of intracoronary image guidance, the diameter could be underestimated due to the vasoconstriction and presence of thrombus. This could favour incomplete scaffold apposition and be a potential niche for thrombosis.

The use of direct implantation in a different clinical scenario should be avoided, especially in the absence of intracoronary imaging guidance. In ACS the plaque is soft, therefore it is easy to cross the lesion, and the strut is embedded in the plaque, favouring vascular healing. Furthermore, as revealed in the study of Rzeszutko et al. [9], correct expansion of the platform is obtained, minimising the possibility of scaffold thrombosis. However, in stable patients, lesions have fibrocalcic plaques that may prevent correct expansion of the platform despite an aggressive postdilation. In the CORPAL registry with Absorb [10] we included 569 lesions treated with direct implantation, 367 in the setting of ACS, and 202 in stable patients. After a mean follow-up of 29 months, the rate of scaffold thrombosis in patients with ACS was 0.87%, while in stable patients it was 4%. The high thrombosis rate could be explained by the inability to obtain a proper expansion. In addition, in this context, we probably induced double stress to the platform (first expanding the platform against a hard plaque and then performing a more aggressive postdilation), which could have weakened its radial force. Furthermore, it was recently suggested that an eccentric expansion could alter the laminar flow, favouring the development of thrombosis, and that a circular expansion can only be ensured with an aggressive predilation in fibrotic plaques [11].

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Therefore, based on direct BVS implant studies [7–9] in the setting of ACS, we can conclude that it is a feasible technique with excellent immediate results. However, it is necessary to confirm whether or not this technique has a negative impact in the long term.

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