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Case report

An interesting case of a self-apposing stent implantation in an aneurysmatically dilated artery in acute myocardial infarction with high quality optical coherence tomography images☆

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ABSTRACT

56-Year-old man with non-ST-segment elevation myocardial infarction. Coronary angiography showed aneurysmatic changes of the left circumflex artery with near occlusion of this vessel. We have decided to implant a Self-Apposing® Coronary Stent Xposition S (Stentys SA, Paris, France). In optical coherence tomography a good stent apposition has been confirmed. A complete distal flow in the infarct-related artery was achieved. Implantation of DES in a large vessel, especially with aneurysmatic dilatation is limited due to difficulties in choosing a proper stent size. Undersizing may cause stent malapposition which carries an increased risk of late and very late stent thrombosis. Oversizing may lead to dissection or even vessel perforation. In presented case choosing a proper stent size was not so easy because of aneurysmatic changes of the artery. The vessel diameter in the aneurysm area was about 6 mm. Regular DES are commercially available in maximal sizes up to 4.5–5.0 mm. In this case we have chosen the largest Stentys stent size available (3.5–4.5 × 27 mm) which is designed to target vessels of diameter between 3.5 and 6.0 mm. Self-apposing stents present useful features which might have advantages over conventional drug-eluting stents in specific angiographic situations.

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Introduction

Implantation of a new-generation drug-eluting stent (DES) is a preferred method of reperfusion in patients with acute myocardial infarction (MI) in most angiographic situations.^{1,2} However, these devices also have some limitations. They are commercially available in maximal sizes up to 4.5–5.0 mm. Implantation of DES in a large vessel, especially with aneurysmatic dilatation is limited due to difficulties in choosing a proper stent size. Undersizing may cause stent malapposition which carries an increased risk of late and very late stent thrombosis. On the other hand, oversizing may lead to dissection or even vessel perforation.^{1,3}

Case report

A 56-year-old Caucasian man was transferred to our department because of non-ST-segment elevation MI. On admission the patient was clinically stable. The ECG showed sinus rhythm, 50 beats per minute, negative T waves in III, aVF. Transthoracic echocardiography revealed hypokinesia of the middle and apical segment of the lateral wall with left ventricular ejection fraction of 60%. The patient was treated with a loading dose of acetylsalicylic acid and unfractionated heparin and was transferred to the cathlab for a coronary angiogram. Coronary angiography performed through the radial access showed aneurysmatic changes of the left circumflex artery with near occlusion of this vessel (90% stenosis by visual assessment) (Fig. 1). A loading dose of ticagrelor has been administered and an immediate PCI of the infarct-related artery with guiding catheter Launcher 6FEU 4.0, and BMW guidewire was performed. Pre-dilatation with balloon-catheter Maverick 3.5 × 15 mm up to 8 atm. Due to ectatic dilatation of the artery we have decided to implant a Self-Apposing® Coronary Stent Xposition S (Stentys SA, Paris, France). Post-dilatation was performed with 4.5 × 15 mm balloon catheter Maverick XL inflated to 6–8 atm. In optical coherence tomography (OCT) a good stent apposition has been confirmed with a few not adhering struts. The maximal distance between stent struts and the vessel wall was 0.5 mm (Figs. 1 and 2). A complete distal flow

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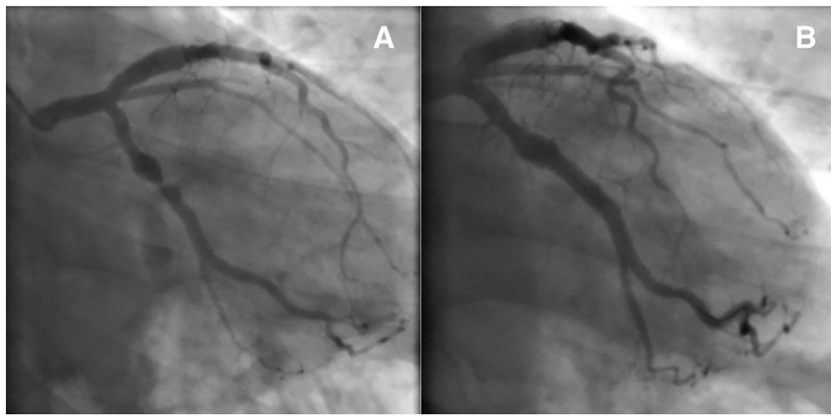


Fig. 1. Fluoroscopy image of the left coronary artery. A – left circumflex artery before the procedure; B – left circumflex artery after the procedure.

in the infarct-related artery was achieved. After four days of hospitalization the patient was discharged home in a good general condition with a recommendation for the use of dual antiplatelet therapy (acetylsalicylic acid and ticagrelor) for 12 months.

Discussion

Recently, Stentys company has presented a sirolimus-eluting version of Stentys stent (Xposition S) with a new balloon delivery system aimed to facilitate stent positioning. The stent is now mounted on a semi-compliant balloon and is restrained by a splittable sheath. The balloon is inflated to relatively low pressures, only in order to split the sheath and release the stent. After deflation the balloon and sheath are withdrawn leaving the stent apposed to the vessel wall. This

overcomes a forward jump complication of the device known from the previous trigger delivery system.^{4–6} The latest version of Stentys Xposition S presents radio-opaque stent end markers to improve precise placement of the device. Self-apposing stents are particularly effective in angiographic situations where precise sizing is difficult.¹ In presented case choosing a proper stent size was not so easy because of aneurysmatic changes of the artery. The vessel diameter in the aneurysm area was about 6 mm (Figs. 1 and 2). Regular DES are commercially available in maximal sizes up to 4.5–5.0 mm. In this case we have chosen the largest Stentys stent size available (3.5–4.5 × 27 mm) which is designed to target vessels of diameter between 3.5 and 6.0 mm (Fig. 2).

The efficacy and safety of Stentys Self-Apposing stent in ST-segment elevation MI patients has been confirmed previously. No malapposed

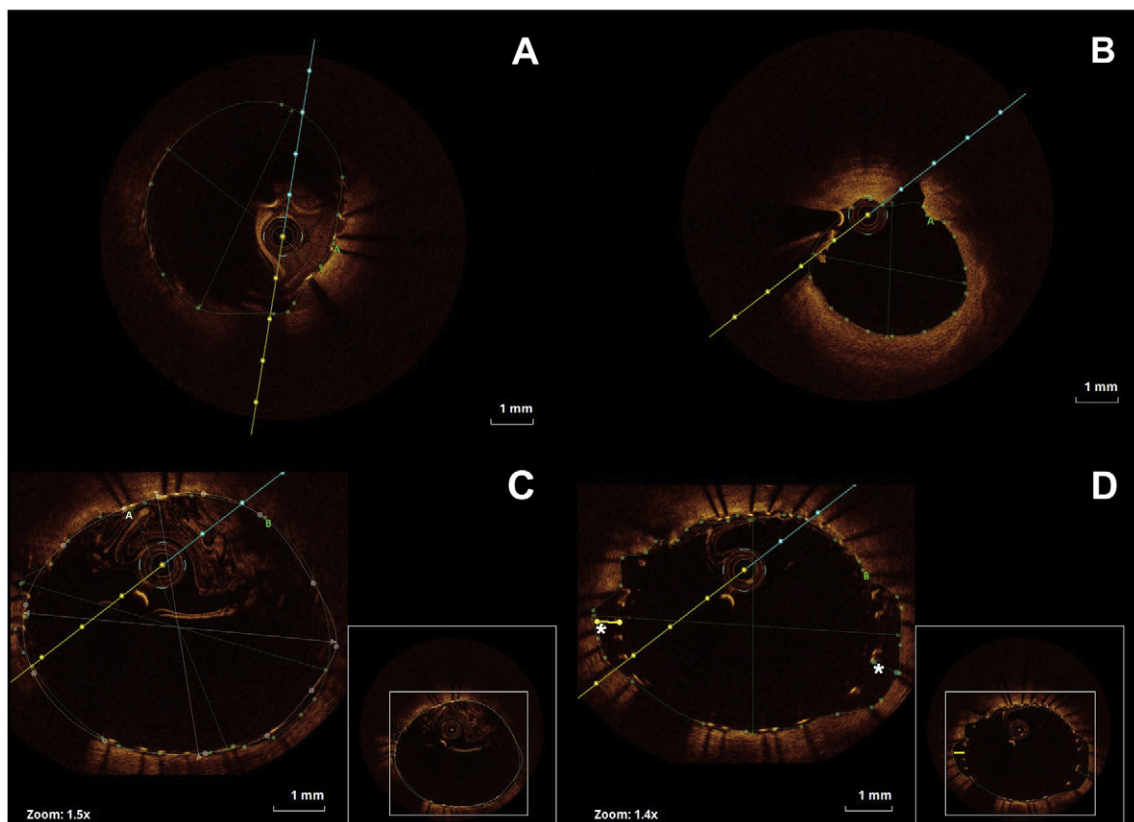


Fig. 2. Optical coherence tomography imaging of the left circumflex artery. A – distal part of the lesion with mean diameter of 4.87 mm and max diameter of 5.26 mm; B – proximal part of the lesion with mean diameter of 3.43 mm and max diameter of 3.76 mm; C – mid part of the lesion with mean diameter of 5.56 mm and max diameter of 6.29 mm; D – result of after stent implantation without complete stent apposition – 0.5 mm (asterisk).

stent struts at 6 months, and lower rate of acute stent malapposition (at 3 days) as compared to balloon-expandable stents was reported.^{7–9} In our case we performed post-dilatation after stent implantation, which is currently recommended to decrease the risk of late in-stent thrombosis.¹⁰

Self-apposing stents present useful features which might have advantages over conventional DES in specific angiographic situations. Thus, self-apposing stents could become a new therapeutic option for selected patients.

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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