

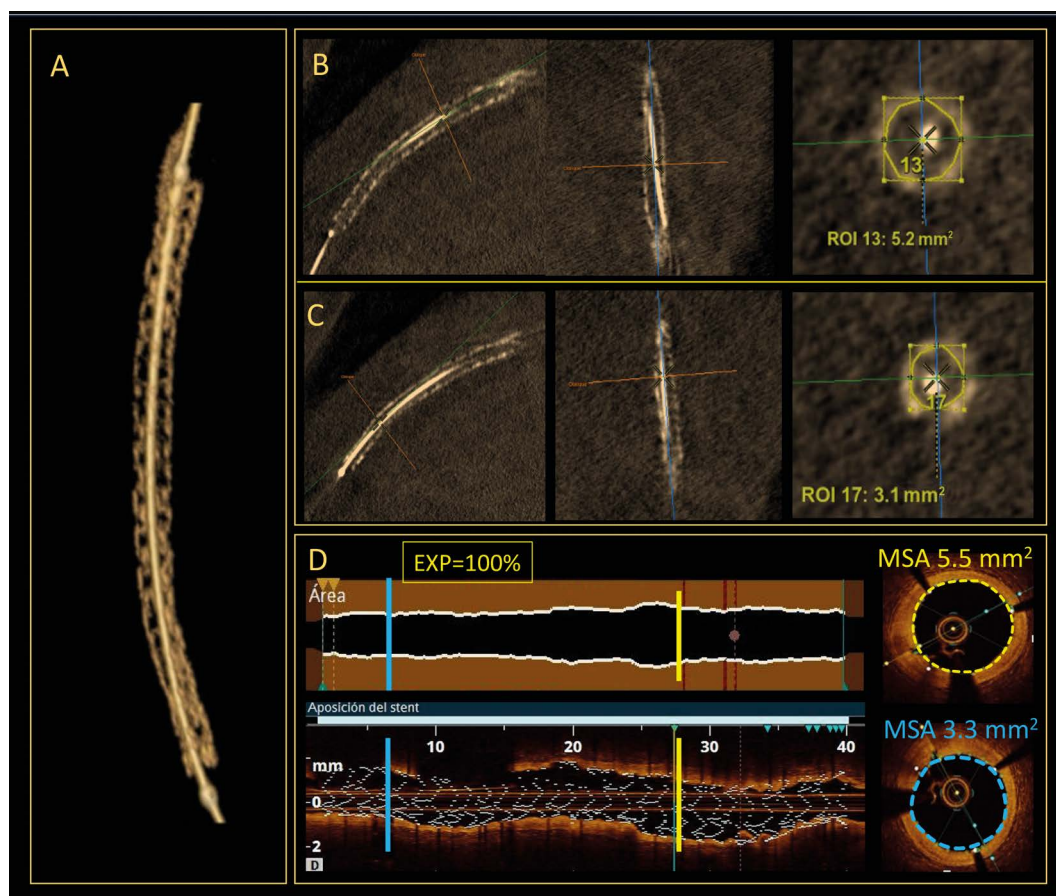
## Angio-based 3DStent for evaluation of stent expansion

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**Figure 1.** 3DStent and OCT images of the LAD after PCI. A) 3DStent volume-rendering reconstruction. B) 3DStent orthogonal views with stent area measurement of a proximal cross-section (right). C) 3DStent orthogonal views with stent area measurement of a distal cross-section (right). D) OCT showing 100% stent expansion (EXP) and stent area measurement of a proximal (yellow line) and a distal cross-section (blue line). LAD: left anterior descending artery; MSA: minimal stent area; OCT: optical coherence tomography; PCI: percutaneous coronary intervention; ROI: region of interest

A 66-year-old male with diabetes, dyslipidaemia and arterial hypertension was referred because of Canadian Cardiovascular Society (CCS) class III stable angina, despite optimal medical treatment. Coronary angiography showed severe stenosis of the left circumflex artery, which was successfully treated during the index procedure with a drug-eluting stent, and of the left anterior descending artery (**Moving image 1, Moving image 2**), which was scheduled for staged percutaneous coronary intervention (PCI). Staged PCI consisted of predilatation and implantation of a 2.5x39 mm drug-eluting stent, which was postdilated in the proximal part with a 3.0x15 mm non-compliant (NC) balloon (**Moving image 3**). Stent expansion was evaluated by optical coherence tomography (OCT) (**Moving image 4**) and by 3DStent (GE HealthCare). 3DStent image acquisition was performed by a 200° rotational angiography with the balloon of the stent inside the implanted stent (**Moving image 5**). 3DStent images are shown as volume-rendering reconstruction (**Figure 1A, Moving image 6**) and as two orthogonal longitudinal views in which the operator may scroll to select a specific cross-section (**Figure 1B, Figure 1C**), where the area and diameters may be measured. OCT revealed a minimal stent area (MSA) of 5.5 mm<sup>2</sup> in the proximal (**Figure 1D, yellow line**) and of 3.3 mm<sup>2</sup> in the distal (**Figure 1D, blue line**) segment of the stent, respectively, with 100% stent expansion and a distal MSA/distal reference lumen area ratio of 0.96. 3DStent comparison analysis showed a corresponding MSA of 5.2 mm<sup>2</sup> proximally (**Figure 1B**) and of 3.1 mm<sup>2</sup> in the distal segment (**Figure 1C**). The patient was discharged the same day and was asymptomatic at 2-month follow-up. Stent underexpansion is a strong predictor of major adverse events, such as cardiac death, target lesion-related myocardial infarction, or stent thrombosis<sup>1</sup>. 3DStent is a new angiography-based

tool, which may be used to assess stent expansion, in addition to intracoronary imaging.

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## Conflict of interest statement

The authors have no conflicts of interest to declare.

## Reference

1. Lee YJ, Zhang JJ, Mintz GS, Hong SJ, Ahn CM, Kim JS, Kim BK, Ko YG, Choi D, Jang Y, Kan J, Pan T, Gao X, Ge Z, Chen SL, Hong MK. Impact of Intravascular Ultrasound-Guided Optimal Stent Expansion on 3-Year Hard Clinical Outcomes. *Circ Cardiovasc Interv.* 2021;14:e011124.

## Supplementary data

**Moving image 1.** Coronary angiography illustrating severe disease of LAD before PCI.

**Moving image 2.** OCT of LAD before PCI.

**Moving image 3.** Coronary angiography of LAD at the end of procedure.

**Moving image 4.** OCT of LAD after PCI.

**Moving image 5.** 200-degree rotational angiography acquisition with the balloon inside the stent after final post-dilatation.

**Moving image 6.** 3D volume-rendering reconstruction.

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