

Paclitaxel crystal visualisation by optical coherence tomography following drug-eluting balloon angioplasty of a late in-stent restenosis coronary lesion



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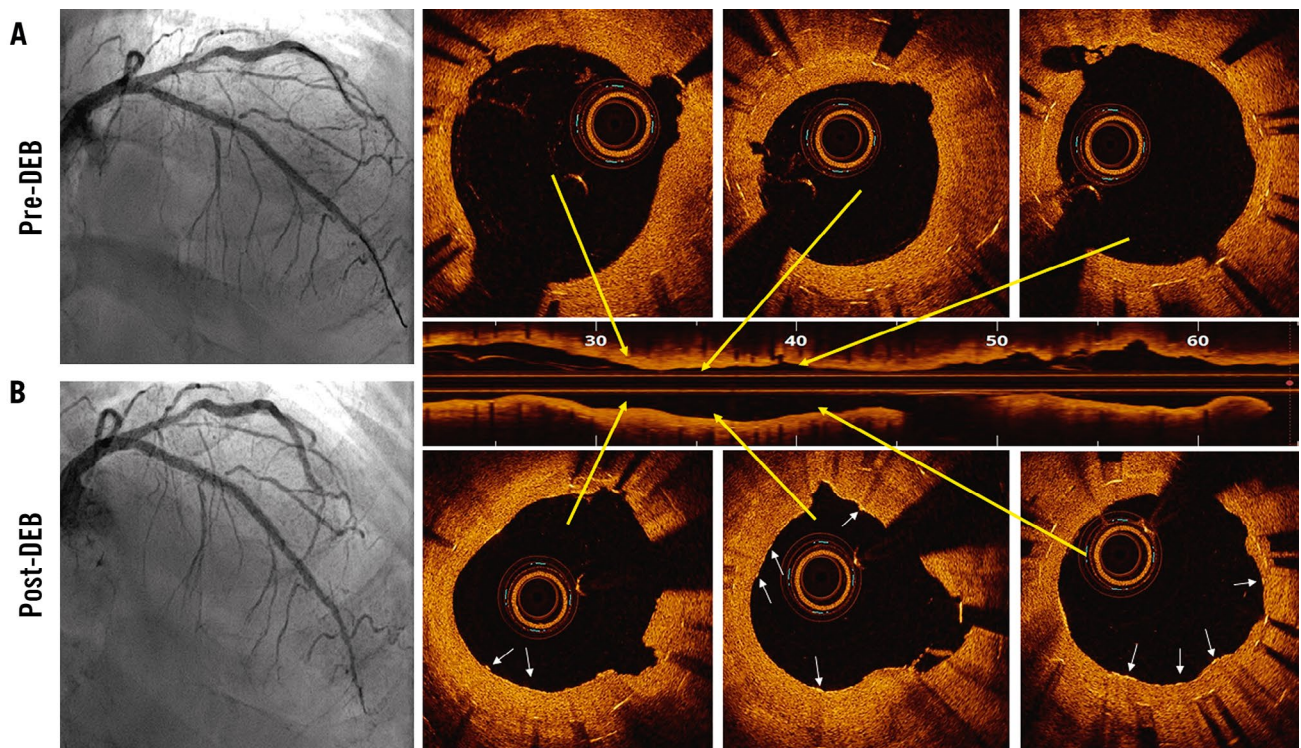


Figure 1. Optical coherence tomography (OCT) examination after balloon angioplasty of a mid-left anterior descending artery (LAD) in-stent restenosis (ISR) lesion. A) Angiographic luminal gain is shown following plain balloon angioplasty, and OCT shows homogeneous intimal hyperplasia along with two layers of underexpanded stents. B) The final angiographic outcome of the mid-LAD ISR lesion is shown, and OCT shows good luminal gain and visualisation of multiple tiny, bright paclitaxel crystals (white arrows) adhered to the endoluminal surface of the arterial wall.

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A 61-year-old hypertensive, non-diabetic, non-smoking male presented with rest angina in the emergency room. He had undergone percutaneous coronary intervention (PCI) of the mid-left anterior descending artery (LAD) with a 3.0x33 mm CYPHER stent (Cordis) deployment 15 years previously and a repeat PCI of mid-LAD late in-stent restenosis (ISR) with a 3.0x32 mm TAXUS stent (Boston Scientific) 3 years prior, at an outside hospital. His clinical examination was unremarkable. An electrocardiogram (ECG) showed right bundle branch block. An echocardiogram revealed a left ventricular ejection fraction of 45% and mild hypokinesia of the anterior wall. Coronary angiography revealed 90% diffuse ISR of the mid-LAD stent (**Moving image 1**). It was dilated with a 3.0x20 mm non-compliant balloon followed by a 3.0x15 mm WOLVERINE cutting balloon (Boston Scientific). Optical coherence tomography (OCT [St Jude/Abbott]) revealed homogeneous, diffuse intimal hyperplasia of the double-layered, underexpanded mid-LAD stented segment (**Figure 1A, Moving image 2**). It was further dilated with a 3.5x15 mm non-compliant balloon followed by a 4.0x30 mm paclitaxel-coated drug-eluting balloon (DEB; AGENT percutaneous transluminal coronary angioplasty balloon [Boston Scientific]). Angiography revealed no residual stenosis (**Figure 1B**). Repeat OCT revealed good luminal gain with a minimal lumen area of 4.99 mm². It also showed multiple tiny, bright particles of approximately 10 µm in size

adhered to the luminal surface of the arterial wall, suggestive of paclitaxel crystals from the DEB (**Figure 1B, Moving image 3**). These bright particles were not present in the OCT run before DEB inflation. The patient had an asymptomatic clinical follow-up of 4 months.

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Conflict of interest statement

The authors have no conflicts of interest regarding the present study to declare.

Supplementary data

Moving image 1. Coronary angiogram showed 90% diffuse ISR of the mid-LAD stents.

Moving image 2. OCT following plain balloon dilation of the ISR lesion showed diffuse homogeneous intimal hyperplasia.

Moving image 3. OCT following drug-eluting balloon angioplasty showed good luminal gain and visualisation of multiple tiny bright particles (paclitaxel crystals) adhered to the endoluminal surface of the artery.

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