

Sunflower artefact on post-PCI optical coherence tomography



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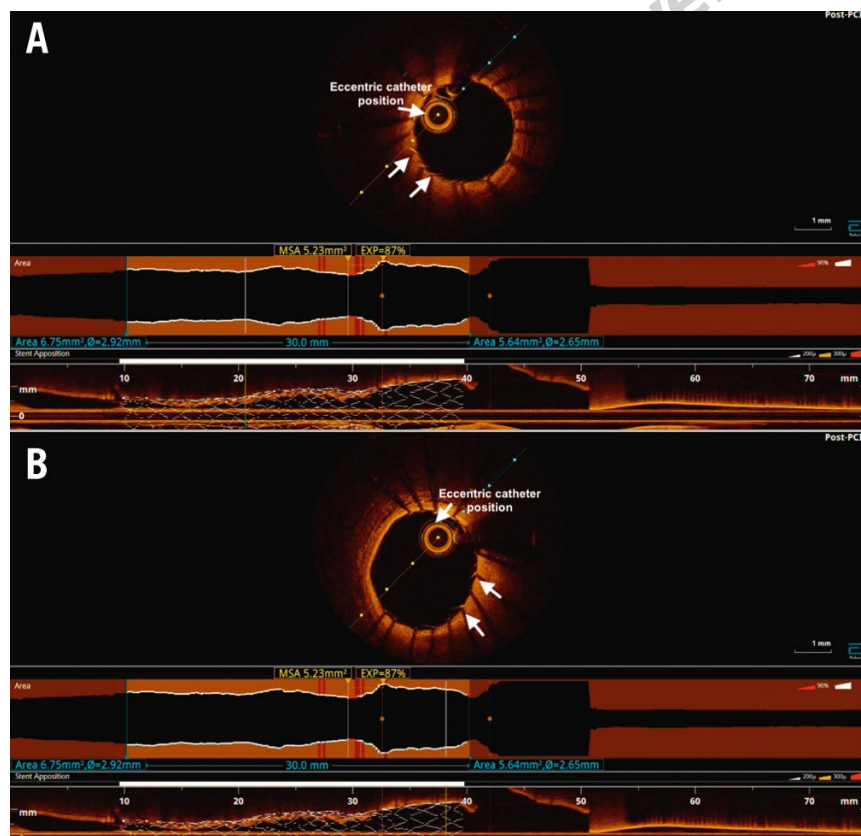


Figure 1. Sunflower artefact on post-PCI optical coherence tomography. A, B) Post-stenting OCT cross-sections, acquired after implantation of a 3.5x30 mm Resolute Onyx drug-eluting stent in the proximal LAD. The OCT imaging catheter is eccentrically positioned within the stented segment. Apparent diagonally displaced/floating struts are directed towards the catheter, creating a sunflower-like appearance and mimicking malapposition. Review of adjacent frames, the longitudinal reconstruction, and the pullback shown in **Moving image 1** confirmed acceptable apposition with no true malapposition. LAD: left anterior descending artery; OCT: optical coherence tomography; PCI: percutaneous coronary intervention

Optical coherence tomography (OCT) is frequently used after percutaneous coronary intervention (PCI) to assess stent expansion, edge complications, tissue protrusion, and strut apposition.¹⁻³ Interpretation must account for acquisition artefacts, because overcalling an artefact as malapposition can prompt unnecessary high-pressure post-dilatation. The sunflower artefact is a recognised pitfall in metallic stents: with an eccentrically positioned imaging catheter, bright strut reflections may appear to converge towards the catheter and simulate floating struts or malapposition.⁴

A 42-year-old female underwent coronary computed tomography angiography due to a moderate pretest probability for coronary artery disease. Her calcium score was 82, and a severe 80-90% stenosis was identified in the proximal left anterior descending artery (LAD). Invasive coronary angiography confirmed an 80-90% proximal LAD stenosis without marked tortuosity, heavy calcification, or significant bifurcation involvement. Written informed consent was obtained from the patient.

After predilatation with a 2.5 mm balloon, a 3.5x30 mm Resolute Onyx drug-eluting stent (Medtronic) was implanted in the proximal LAD. Post-dilatation was performed with a 3.5 mm non-compliant balloon at 18 atm, with proximal optimisation using a 3.5x6 mm balloon. No final kissing balloon inflation was required. The final angiographic result showed no residual stenosis and Thrombolysis in Myocardial Infarction 3 flow.

Post-PCI OCT was performed with a Dragonfly OpStar imaging catheter (Abbott). Multiple adjacent frames showed apparent diagonally displaced and partially floating struts directed towards the catheter, producing a sunflower-like pattern, initially suggesting malapposition (**Figure 1, Moving image 1**). Apposition was reassessed by reviewing contiguous frames, the longitudinal reconstruction, and the eccentric catheter position. Using conventional strut-to-wall assessment on contiguous frames, the apparent gaps were within an acceptable apposition range after accounting for the stent strut/reflection profile and vessel contour. There was no persistent separation across adjacent frames, underexpansion, edge dissection, nor clinically relevant tissue protrusion. No further post-dilatation was performed. The patient was discharged without events and remained asymptomatic at two-month follow-up.

This case is not intended to describe a new OCT artefact but to emphasise a recognised pitfall with direct procedural implications. Balloon-expanded metallic struts normally appose the vessel wall in a predominantly radial fashion; true oblique contact or diagonal floating should be suspected only when it persists across frames and correlates with the longitudinal view or an anatomical/mechanical explanation such as vessel curvature, eccentric calcified plaque, bifurcation or side-branch geometry, stent deformation, overlap, or underexpansion. In the present case, the apparent diagonal orientation followed the eccentric catheter rather than the vessel wall, supporting the likelihood of it being a sunflower artefact. Before treating apparent malapposition, operators should correlate the cross-sectional image with the catheter position, adjacent frames, and longitudinal reconstruction to avoid unnecessary post-dilatation and potential vessel injury.

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Conflict of interest statement

The authors have no conflicts of interest to declare.

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Supplementary data

Moving image 1. Post-PCI OCT pullback showing that the apparent malapposition corresponds to a sunflower artefact rather than true strut malapposition.

The supplementary data are published online at:

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