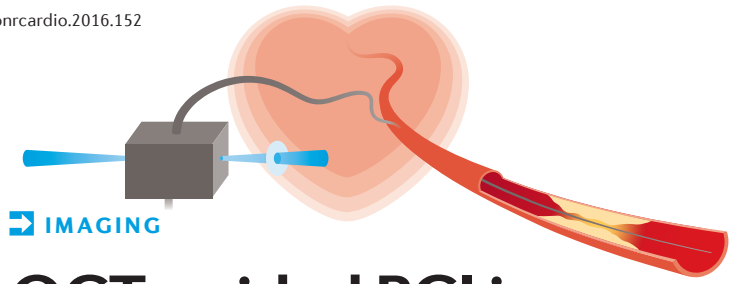
Nature Reviews Cardiology | Published online 15 Sep 2016; doi:10.1038/nrcardionrcardio.2016.152



V. Summersby/NPG

IMAGING

OCT-guided PCI improves procedural strategy

Optical coherence tomography (OCT)-guided percutaneous coronary intervention (PCI) is linked with higher postprocedural fractional flow reserve (FFR) compared with angiography-guided PCI in patients with non-ST-segment elevation acute coronary syndrome (NSTE-ACS). This finding was presented at the ESC Congress 2016 in Rome, Italy and simultaneously published in *Circulation*.

OCT is increasingly used to characterize plaque morphology in patients with ACS, and offers potential advantages compared with standard-of-care angiography, as it allows visualization of lesion features that cannot be seen by angiography alone. However, to date, no randomized study has assessed the value of OCT-guided PCI in patients with NSTE-ACS. According to lead investigator Nicolas Meneveau, the DOCTORS trial was designed "to evaluate whether OCT-guided angioplasty would provide useful clinical information beyond that obtained by angiography … and the impact on the functional result of angioplasty as assessed by FFR after stent implantation".

DOCTORS is a multicentre, prospective, randomized trial comparing OCT-guided PCI to angiography-guided PCI. The primary end point of the study was FFR measured after the procedure, and the safety end points included rate of acute kidney injury, duration of the procedure, fluoroscopy time, quantity of contrast media used, and radiation dose delivered. All patients were followed-up for 6 months.

A total of 120 patients with NSTE-ACS were included in the angiography-guided group, and 120 patients in the OCT-guided group. OCT guidance resulted in a change in procedural strategy in half of all patients in the OCT-guided group. FFR was significantly higher in the OCT-guided group than in the angiography-guided group (0.94 ± 0.04 versus 0.92 ± 0.05; $P = 0.005$), and the number of patients with FFR >0.90 (a marker of favourable prognosis) was also higher in the OCT-guided group (99 versus 77; $P = 0.0001$). Post-PCI OCT showed stent underexpansion in 42% of patients, edge dissection in 37.5%, stent malapposition in 32%, and incomplete lesion coverage in 20%, which resulted in increased use of poststent overdilatation in the OCT-guided group compared with the angiography-guided group (43% versus 12.5%, $P < 0.0001$).

Although patients in the OCT-guided group experienced longer procedural duration and increased use of contrast medium, no significant differences were observed in the rate of periprocedural myocardial infarction or acute kidney injury. Furthermore, the rate of major adverse cardiac events was not different between the two groups.

"The DOCTORS study adds to the growing body of evidence supporting a potential benefit of OCT to guide PCI, suggesting that there may be a role for OCT as a complement to fluoroscopy for the guidance of PCI procedures in ACS," explains Meneveau. "Going forward, confirmation of these results in a larger prospective study with clinical end points is warranted before OCT guidance could be integrated into standard of care in patients with ACS."

Karina Huynh

ORIGINAL ARTICLE Meneveau, N. *et al.* Optical coherence tomography to optimize results of percutaneous coronary intervention in patients with non-ST-elevation acute coronary syndrome: results of the multicenter, randomized DOCTORS (Does Optical Coherence Tomography Optimize Results of Stenting) study. *Circulation* http://dx.doi.org/10.1161/CIRCULATIONAHA.116.024393 (2016)