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Coronary artery bypass graft surgery versus percutaneous coronary intervention in patients with three-vessel disease and left main coronary disease: 5-year follow-up of the randomised, clinical SYNTAX trial

Prof [Friedrich W Mohr MD a](#), [Marie-Claude Morice MD b](#), Prof [A Pieter Kappetein MD c](#), Prof [Ted E Feldman MD d](#), Prof [Elisabeth Stähle MD e](#), [Antonio Colombo MD f](#), [Michael J Mack MD g](#), Prof [David R Holmes MD h](#), [Marie-angèle Morel BSc i](#), [Nic Van Dyck RN j](#), [Vicki M Houle PhD j](#), [Keith D Dawkins MD j](#), Prof [Patrick W Serruys MD c](#)

Summary

Background

We report the 5-year results of the SYNTAX trial, which compared coronary artery bypass graft surgery (CABG) with percutaneous coronary intervention (PCI) for the treatment of patients with left main coronary disease or three-vessel disease, to confirm findings at 1 and 3 years.

Methods

The randomised, clinical SYNTAX trial with nested registries took place in 85 centres in the USA and Europe. A cardiac surgeon and interventional cardiologist at each centre assessed consecutive patients with de-novo three-vessel disease or left main coronary disease to determine suitability for study treatments. Eligible patients suitable for either treatment were randomly assigned (1:1) by an interactive voice response system to either PCI with a first-generation paclitaxel-eluting stent or to CABG. Patients suitable for only one treatment option were entered into either the PCI-only or CABG-only registries. We analysed a composite rate of major adverse cardiac and cerebrovascular events (MACCE) at 5-year follow-up by Kaplan-Meier analysis on an intention-to-treat basis. This study is registered with [ClinicalTrials.gov](#), number [NCT00114972](#).

Findings

1800 patients were randomly assigned to CABG (n=897) or PCI (n=903). More patients who were assigned to CABG withdrew consent than did those assigned to PCI (50 vs 11). After 5 years' follow-up, Kaplan-Meier estimates of MACCE were 26.9% in the CABG group and 37.3% in the PCI group (p<0.0001). Estimates of myocardial infarction (3.8% in the CABG group vs 9.7% in the PCI group; p<0.0001) and repeat revascularisation (13.7% vs 25.9%; p<0.0001) were significantly increased with PCI versus CABG. All-cause death (11.4% in the CABG group vs 13.9% in the PCI group; p=0.10) and stroke (3.7% vs 2.4%; p=0.09) were not significantly different between groups. 28.6% of patients in the CABG group with low SYNTAX scores had MACCE versus 32.1% of patients in the PCI group (p=0.43) and 31.0% in the CABG group with left main coronary disease had MACCE versus 36.9% in the PCI group (p=0.12); however, in patients with intermediate or high SYNTAX scores, MACCE was significantly increased with PCI (intermediate score, 25.8% of the CABG group vs 36.0% of the PCI group; p=0.008; high score, 26.8% vs 44.0%; p<0.0001).

Interpretation

CABG should remain the standard of care for patients with complex lesions (high or intermediate SYNTAX scores). For patients with less complex disease (low SYNTAX scores) or left main coronary disease (low or intermediate SYNTAX scores), PCI is an acceptable alternative. All patients with complex multivessel coronary artery disease should be reviewed and discussed by both a cardiac surgeon and interventional cardiologist to reach consensus on optimum treatment.

Funding

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[a](#) Herzzentrum Universität Leipzig, Leipzig, Germany

[b](#) Hôpital Privé Jacques Cartier, Massy, France

[c](#) Erasmus University Medical Center Rotterdam, Rotterdam, Netherlands

[d](#) Evanston Hospital, Evanston, IL, USA

[e](#) University Hospital Uppsala, Uppsala, Sweden

[f](#) San Raffaele Scientific Institute, Milan, Italy

[g](#) Heart Hospital Baylor Plano, Baylor Healthcare System, Dallas, TX, USA

[h](#) Mayo Clinic, Rochester, MN, USA

[i](#) Cardialysis, Rotterdam, Netherlands

[j](#) Boston Scientific, Natick, MA, USA

 Correspondence to: Prof Friedrich W Mohr, Herzzentrum Universität Leipzig, 04289 Leipzig, Germany

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