Editorial

The search for long-term outcome predictors

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The most suitable technique for revascularisation in patients with left main or multivessel coronary artery disease is still widely debated (1-3). A growing number of randomised controlled trials as well as data from meta analyses have compared both coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI) with drug-eluting stents (DES) (4-9). Although there is a growing body of evidence behind the use of CABG over PCI in patients with multivessel and left main coronary artery disease (7-9), in clinical practice the decision is often not clear cut. The identification of specific predictors of post-intervention outcomes may help guide patient-specific, clinical decision making regarding appropriate revascularisation strategies.

Chang and colleagues (10) have recently published the results of their retrospective study of pooled data from the BEST (4), PRECOMBAT (5) and SYNTAX (6) trials: "*Predictors of long-term outcomes after bypass grafting versus drug-eluting stent implantation for left main or multivessel coronary artery disease*." They are to be congratulated for their attempts to ascertain potential pre-operative factors which may help us predict outcomes following CABG or PCI with DES in order to help guide the choice of suitable revascularisation strategy.

Chang *et al.* analysed data from a total 3,230 patients pooled from the above studies (98.5% of the total cohort) with 1,538 having undergone CABG and 1,692 having undergone PCI with DES. They used the Cox proportional hazards model to determine predictors of long-term outcomes. Diabetes mellitus, SYNTAX score and previous MI were found to independently relate to death from any cause in the PCI group. Chronic kidney disease (CKD) was an independent predictor of a composite outcome of death, MI or stroke in the CABG group and complete revascularisation and previous MI in the PCI group. In those without CKD, CABG was more favourable than PCI with regard to the composite outcome. They also demonstrated a higher incidence of stroke after CABG in patients without previous stroke but the inverse in patients with previous stroke. Furthermore, Chang and colleagues found that death from any cause in the CABG group was significantly related to the EuroSCORE, but not to SYNTAX score. All-cause mortality was also found to be significantly lower with CABG than PCI in patients with a high SYNTAX score.

Their results are in keeping with previously established predictors of mortality following CABG or PCI which are already included in the EuroSCORE (11). Based on their findings Chang *et al.* have proposed that CABG may be a more appropriate revascularisation strategy in patients with a high SYNTAX score, diabetes mellitus or previous MI as well as those with a previous stroke and intermediate SYNTAX score. Caution must be taken however, when interpreting these conclusions given the studies limitations, as outlined by the authors themselves.

Despite a growing number of randomised controlled trials comparing CABG and PCI with DES, the appropriate revascularisation strategy in patients with multivessel or left main coronary artery disease remains unclear, as the trials were underpowered to detect a difference in all-cause mortality. That said, data from meta-analyses would

suggest that CABG is superior to PCI with DES in patients with unprotected left main (8) and multivessel (9) coronary artery disease. Further, appropriately powered studies are needed for more definitive conclusions. Until that time, predictors of long-term outcomes may help guide clinical decision making in offering patients the most appropriate revascularisation strategy.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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