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Commentary: Percutaneous coronary intervention for left main lesions: Once again coronary artery bypass grafting gets the shaft

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The decision to perform a percutaneous coronary intervention (PCI) versus coronary artery bypass grafting (CABG) surgery, for all types of coronary lesions including left main disease (LMD), has been determined by the number and complexity of the coronary lesions as assessed by the Synergy Between Percutaneous Coronary Intervention With Taxus and Cardiac (SYNTAX) surgery score and whether a complete revascularization can be obtained by the technique that is chosen.

LMD may occur in the ostium, shaft, or distal portion of the vessel. Although distal LMD involving the bifurcation of the left anterior descending and left circumflex arteries may require more complex PCI techniques, a recent subgroup analysis of the Evaluation of XIENCE Versus Coronary Artery Bypass Surgery for Effectiveness of Left Main Revascularization trial did not find any difference in mortality or morbidity between PCI and CABG in the ostial, shaft, or distal unprotected left main coronary arteries (ULMCAs).¹ However, in the MAIN COMPARE registry, CABG was associated with decreased mortality and major adverse cardiovascular events (MACE) compared with PCI in patients with distal ULMCA, but there was no difference in outcomes in patients with ostial or shaft ULMCA disease.²

In this edition of the *Journal*, DeFilippo and colleagues³ report the results of a meta-analysis to determine outcomes after PCI versus CABG for ULMCA disease according to the site of the LMD.³ They found that after a 5-year follow-up, PCI was associated with a significantly higher risk of MACE compared with CABG for distal ULMCA

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CENTRAL MESSAGE

In low-risk patients with ostial/shaft LMD, in the absence of acute coronary syndromes and complex distal disease in whom complete revascularization cannot be achieved, PCI might be an alternative to CABG.

driven by a higher rate of repeat revascularization. There was no significant difference in mortality or MACE in LMD involving the ostium or shaft. The authors concluded that “PCI should be regarded as a valid alternative to CABG for patients with ostial/shaft ULMCA.” Unfortunately, there are significant limitations with this database that limit any conclusions that can be made.

Important data regarding the CABG procedures that were performed and their postoperative management are missing from these studies. The use of the left internal thoracic artery and other arterial grafts was reported in only 44% of the studies. Multiple arterial grafting has been shown to improve long-term survival in certain subsets of patients undergoing CABG.⁴ Data on “on versus off” CABG was not reported in 55% of the studies. Off CABG surgery has been found to decrease long-term survival after CABG and increase the need for re-revascularization procedures.^{5,6} The use of guideline-directed medical therapy (GDMT) in CABG versus PCI is unknown. The failure to maintain GDMT after CABG has been shown to decrease survival and increase MACE. GDMT is more likely to occur after CABG versus PCI and negates the early benefits of CABG in reducing mortality and MACE compared with PCI.⁷

In view of the small number of patients presenting with acute coronary syndromes, the low-medium SYNTAX scores, and the low risk of the reported patients, it is unclear as to how these data can be used to determine the

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revascularization strategy in the majority of patients who present with LMD. I disagree with the authors that PCI should be regarded as a valid alternative to CABG for patients with ostial/shaft ULMCA. Instead, on the basis of the data derived from this meta-analysis, I would conclude that “In patients presenting with ostial/shaft LMD who are at low risk; in the absence of acute coronary syndromes and multiple distal coronary lesions, in whom complete revascularization cannot be achieved, PCI might be an alternative to CABG.”

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