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**Backgrounds:** The current guidelines recommended that a surgical option should be selected for patients with left main and/or multi-vessel coronary artery disease (LM/MVCAD) at low surgical risk. We sought to assess the adequacy of referral to percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) of those patients with complex LM/MVCAD at our institution. **Methods:** We retrospectively enrolled a total of 280 patients with LM/MVCAD, high SYNTAX score  $\geq 32$ , and low EuroSCORE  $< 5$  in our institution during 2009-2010. We calculated the concordance rate between the revascularization modality and the guideline recommendation as well as clinical outcomes at the 3-year follow-up. **Results:** The agreement rate between the revascularization procedure and the guideline recommendation was 36.8%, with only 103 patients underwent CABG, and the other 177/280 (63.2%) patients underwent PCI. Patients without agreement between the revascularization modality and the guideline recommendations (PCI group) had higher rates of the composite of mortality, recurrent nonfatal myocardial infarction and stroke, and target vessel failure (30.5% vs. 10.7%,  $P=0.001$ ), mainly driven by repeat revascularization (22% vs. 5.8%,  $P=0.002$ ) compared to those who underwent CABG. Moreover, there have been no significant differences in the 3-year outcomes between diabetics vs. non-diabetics and between patients with LM vs. non-LM diseases. **Conclusions:** Although integrating the guideline into the decision-making process for assigning patients to revascularization would yield better clinical outcomes, there was considerable disagreement between a clinical judgment-based coronary revascularization and the guideline-based allocation process as to the preferred revascularization modality for patients with complex LM/MVD.