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Comparison of the survival between CABG vs. PCI procedures in patients with poor left ventricular function (ejection fraction <30%): A propensity-matched analysis

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Background: Existing evidence comparing the outcomes of coronary artery bypass graft surgery (CABG) vs. percutaneous coronary intervention (PCI) in patients with poor left ventricular function (LVF) is sparse and flawed. This is largely due to patients with poor LVF being underrepresented in major research trials and the outdated nature of some studies which do not consider drug-eluting stent (DES) PCI.

Methods: Following strict inclusion criteria 717 patients who underwent revascularization by CABG or PCI between 2002 and 2015 were enrolled. 100% of the patients had poor LVF (defined by ejection fraction <30%). By employing a propensity score analysis, 186 suitable matches (93 CABG, 93 PCI) were identified. Several outcomes were evaluated, in the matched population, using data extracted from national registry databases.

Results: CABG patients required a longer length of hospital stay post-revascularization compared to PCI, 8.91±1.38 and 4.96±1.38 days respectively ($p<0.0001$). Cox-regression proportional-hazards analysis found that PCI had a higher adjusted five-year mortality rate (HR 1.752, 95% CI 0.998-3.078, $p=0.05$). This trend was consistent amongst urgent cases of revascularization, patients with three or more vessels with coronary artery disease, and cases where complete revascularization was achieved. Sub-analysis found the cumulative five-year survival distribution for PCI with DES to be significantly higher than PCI without DES, but still lower than CABG (log-rank $p=0.037$; CABG 67.6±5.3%, PCI with DES 54.6±3.3%. PCI without DES 46.2±4.7%).

Conclusion: Despite a longer length of hospital stay, CABG patients experience a greater post-procedural survival benefit compared to PCI patients. We have demonstrated this at 30 days, 90 days, 1 year, 3 years and 5 years following revascularization. At present, CABG remains a superior revascularization modality to PCI in patients with poor LVF.

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