

# Should We Use Left Internal Thoracic Artery to Graft Left Anterior Descending Coronary Artery at Re-operative CABG?

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Coronary artery bypass grafting (CABG) has prolonged the life of a number of patients with coronary artery disease (CAD) [1, 2]. Today, in addition to patients undergoing first-time CABG, cardiac surgeons are faced with many patients who need coronary reoperations. The benefit of left internal thoracic artery (LITA) to left anterior descending artery (LAD) grafting is well-proven by the study published in the NEJM in 1986 by Loop et al [3]. This study showed significant improvement in survival at 10 years in patients who received LITA to LAD as compared to the patients who received saphenous vein graft (SVG) to LAD at primary CABG. Therefore, LITA to LAD grafting is considered the gold standard in primary coronary revascularization. However, it was not known if this is also true for re-operative CABG. Therefore, to find whether LITA to LAD grafting at coronary reoperation is safe and beneficial, researchers at Cleveland Clinic conducted a study which they published in the Journal of American College of Cardiology (JACC) [4].

They found that from 1985 to 2007, re-operative CABG was performed in 3473 patients who did not receive LITA during their primary CABG and who now had anterior wall ischemia. Of the patients who underwent re-operative CABG, 1084 received SVG graft to LAD and the remaining received LITA to LAD. Propensity-matching was done for fair comparison of outcomes. End-points of study were in-hospital outcomes and long-term mortality. Median follow-up was 14 years (mean 11±8.2). Total available follow-up was 37,638 patient-years and ten-percent of the patients were followed for more than twenty-two years.

The outcomes in 908 matched patient-pairs showed that in-hospital death, stroke, and respiratory failure were significantly lower in the LITA to LAD group (p-values for all comparisons were <.05) compared to SVG to LAD group. Long-term survival was also better with LITA to LAD grafting (p=0.005). The instantaneous risk of death overtime showed that there was a high early risk lasting for about 6

months followed by gradually increasing risk over 20 years. This rate of increase was higher for the SVG group than for the LITA group. The difference in survival across time showed absolute risk reduction of 6% at 20 years with maximum survival advantage of LITA grafting becoming evident at around 12 years after re-operative CABG. The number needed to treat to save one life with LITA as compared to SVG over a period of 20 years was 16.

Some of the limitations of this study include that it was a non-randomized, observational study and patient selection could have influenced its findings. To account for this the investigators used propensity score-matching. Deaths in the study represent all-cause mortality and, therefore, we don't know how many deaths were cardiac-related.

## REFERENCES

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