

## **Use of Both Internal Thoracic Artery Bifurcation Branches to Two Separate Target Coronary Vessels**

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**Background:** Recent interest has focused on extensive ITA myocardial revascularization. Maximizing ITA availability, however, remains a challenge. We report a novel use of skeletonized ITA in which the native bifurcation is preserved and both end-branches are anastomosed to two separate respective target vessels.

**Methods:** In 15 consecutive selected patients undergoing skeletonized bilateral ITA grafting, in-situ bifurcated right ITA (RITA) was deployed on two separate coronary targets. Functional assessment of the bifurcated RITA graft was performed electively by cardiac computed tomographic angiography.

**Results:** RITA was routed retroaortic via the transverse sinus to the marginal (M) territory and through a pericardial opening to the posterior descending artery (PDA) in 13 and two patients, respectively. The following coronary pairs were anastomosed: M1-M2 (13/15), PDA-posterolateral (1/15) and diagonal-intermediate artery (1/15). The ITA grafts/patient ratio was  $4.66 \pm 0.90$ . There were no early major adverse events (30-day mortality, myocardial infarction, stroke or sternal infection). Hypoperfusion syndromes were not documented. At mid-term follow-up (17 to 60 months, median 41), the respective incidence of re-angina, myocardial infarction and repeat revascularization was 7% (n=1), 7% (n=1) and 0%. 5-year survival and freedom from major adverse cardiac events (Kaplan-Meier) were 100% and 86%, respectively.

**Conclusions:** Provided the ITA and its distal branches, the superior epigastric and musculophrenic arteries, are skeletonized with adequate distal caliber and flow, selected use of bifurcated ITA appears feasible. This increases the versatility of ITA grafting and reduces the need for sequential grafts. These preliminary observations are currently restricted to the non-LAD territory and should be corroborated by larger datasets.