

Long-term outcome of revascularization with composite T-grafts: Is bilateral mammary grafting better than single mammary and radial artery grafting?

Dmitry Pevni, MD,^{a,c} Rephael Mohr, MD,^{a,c} Yosef Paz, MD,^{a,c} Amir Kramer, MD,^{a,c} Yanai Ben-Gal, MD,^{a,c} Nahum Neshet, MD,^{a,c} and Benjamin Medalion, MD^{b,c}

ABSTRACT

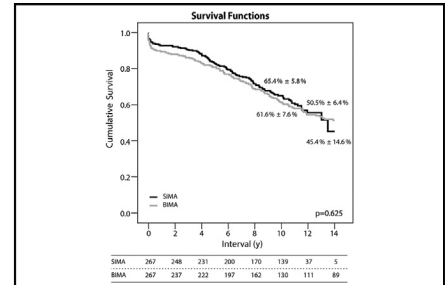
Objective: Bilateral internal mammary artery (BIMA) grafting is associated with improved survival. However, many surgeons are reluctant to use this technique, owing to the potentially increased risk of sternal infection. The composite T-graft with radial artery (RA) attached end-to-side to the left internal mammary artery (IMA) provides complete arterial revascularization without increased risk of sternal infection. The purpose of this study is to compare outcomes of these 2 strategies.

Methods: Patients who underwent BIMA grafting using the composite T-graft technique, between 1996 and 2010 (n = 1329), were compared with 389 patients who underwent composite grafting with a single IMA + RA during the same time period.

Results: Patients undergoing single IMA grafting were older, more often women, and more likely to have diabetes, peripheral vascular disease, and COPD, and to need an emergency operation. Congestive heart failure, left main disease, and recent myocardial infarction were more prevalent with bilateral grafting. Propensity-score matching was used to account for differences between groups in preoperative patient characteristics. The 268 matched pairs had similar characteristics.

The median follow-up time was 14.19 (95% confidence interval 13.43-14.95) years. Operative mortality and Kaplan–Meier 10-year survival of the 2 matched groups were similar (3.4% vs 3.7%, and 61.6% vs 64%, for the groups treated with BIMA and single IMA, respectively). Cox-adjusted survival was similar ($P = .514$). Age, chronic renal failure, and performance of <3 bypass grafts were independent predictors of decreased survival.

Conclusions: This study suggests that long-term outcomes of arterial revascularization with a composite T-graft constructed using left IMA and RA are not inferior to outcomes after BIMA grafting. (J Thorac Cardiovasc Surg 2016;151:1311-9)



Survival of the groups treated with BIMA grafting and with single IMA + RA grafting, after propensity-score matching. Long-term survival of patients undergoing composite T-grafting with single, left, IMA and RA is not inferior to that with BIMA grafting. Values in rows below graph indicate numbers of patients receiving each treatment at corresponding number of years.

Central Message

Composite T-grafting with a single, left internal mammary artery + radial artery, is as good as bilateral mammary grafting; a radial artery T-graft is recommended.

Perspective

Bilateral internal mammary artery grafting is associated with improved survival. However, surgeons are reluctant to use this technique, owing to increased risk of sternal infection. This study has shown that the long-term outcomes of revascularization with a composite T-graft incorporating the RA attached end-to-side to the left IMA are as good as those with BIMA grafting. This technique provides arterial revascularization with lower risk of sternal infection.

See Editorial Commentary page 1320.

From the ^aDepartment of Cardiothoracic Surgery, Tel Aviv Sourasky Medical Center; ^bFaculty of Medicine, Tel Aviv University; and ^cDepartment of Cardiothoracic Surgery, Rabin Medical Center, Petah Tikva, Tel Aviv, Israel.

Nahum Neshet and Benjamin Medalion contributed equally to this work.

Received for publication Jan 27, 2015; revisions received Nov 20, 2015; accepted for publication Dec 7, 2015; available ahead of print Jan 13, 2016.

Address for reprints: Rephael Mohr, MD, Department of Cardiothoracic Surgery, Tel Aviv Sourasky Medical Center, 6 Weizman St, Tel Aviv 64239, Israel (E-mail: pevni@gmail.com).

0022-5223/\$36.00

Copyright © 2016 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.12.005>

The use of internal mammary artery (IMA) grafting in patients who have multivessel coronary disease is associated with improved long-term survival.¹ Further,

Scanning this QR code will take you to the article title page.



Abbreviations and Acronyms

BIMA	= bilateral internal mammary artery
CI	= confidence interval
COPD	= chronic obstructive pulmonary disease
IMA	= internal mammary artery
MI	= myocardial infarction
OR	= odds ratio
RA	= radial artery

survival benefit may be achieved with the use of 2 IMAs, ie, bilateral IMA (BIMA) for revascularization of the left coronary system.² Therefore, various strategies for left-sided (left anterior descending and circumflex) revascularization were developed. One popular technique that enables complete arterial revascularization of the left system is the composite T-graft.³ Mid- and long-term outcomes of patients undergoing BIMA grafting using composite T-grafts are similar to those using only in-situ grafts.^{4,5}

Despite the better long-term survival, BIMA grafting is not being used routinely by many surgeons, owing to the reported increased risk of sternal wound complications.⁶ However, the good clinical outcomes of patients undergoing BIMA grafting, along with the early, or earlier, failure of saphenous vein grafts, has led to the introduction of other arterial conduits into clinical practice, in the belief that their long-term patency will be better than that of saphenous vein grafts. One of the free arterial conduits thus introduced was the radial artery (RA). In our practice, we followed suggestions made by Calafiore and colleagues⁵ and connected the free RA end to the side of the left IMA, thus constructing a composite T-graft with this conduit.

The purpose of this report is to compare long-term outcomes of composite T-grafting using 2 IMAs with that using a single IMA and the RA. To control for bias in preoperative patient selection, we compared long-term results after propensity-score matching.

METHODS

This retrospective review of medical records and telephone questionnaires obtaining follow-up was approved by the Institutional Review Board of the Tel Aviv Medical Center. Between 1996 and 2010, a total of 3165 consecutive patients with multivessel coronary artery disease underwent left-sided arterial revascularization at the center. They constituted 74.9% of primary coronary artery bypass grafting procedures for multivessel disease that were performed in our institution during this time period. The composite T-graft technique^{7,8} was employed in 1718 of them. In 1329 patients, one IMA (in most cases, the right) was attached end-to-side to the other IMA. In the remaining 389 patients, the RA was connected end-to-side to the left IMA.

The BIMA grafting method was the dominant revascularization procedure performed in our institution throughout the study period for patients who had multivessel disease (4247 patients). In all, 3165

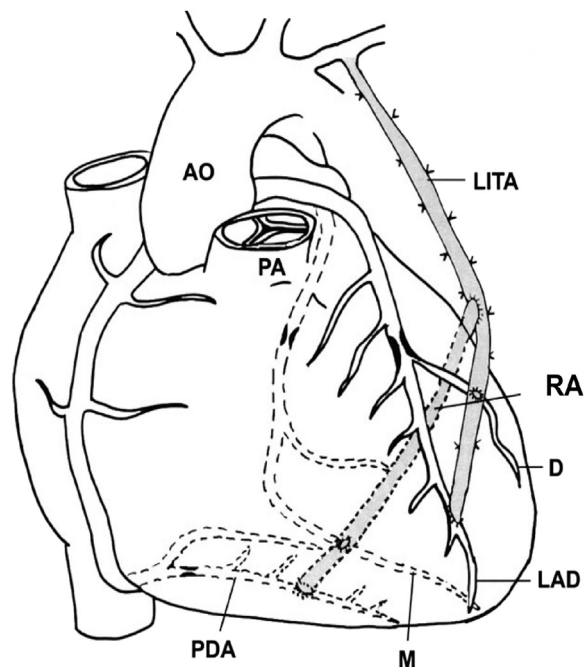


FIGURE 1. Composite T-graft with radial artery attached end-to-side to the left internal mammary artery. AO, Aorta; LITA, left interior mammary artery; PA, pulmonary artery; RA, radial artery; D, descending; PDA, pulmonary descending artery; M, main; LAD, left anterior descending.

(74.9%) underwent left-sided arterial revascularization (2776 BIMA and 389 single IMA + RA procedures); the remaining 1082 underwent single IMA + saphenous vein grafting.

During the study period, selection criteria for BIMA versus single IMA and RA were made mainly according to surgeon preference. The overall tendency was to not use BIMA in patients at increased risk for sternal wound complications (elderly, those who had COPD, or women who had diabetes and/or obesity).⁹ In addition, a composite T-graft with RA was used^{10,11} only when target coronary vessel stenosis was >80%. Surgeries for 363 (21.2%) of the patients were performed without extracorporeal circulation.^{7,8}

All IMAs were harvested as skeletonized vessels.⁷ Revascularization of the right system was performed with saphenous vein grafts, the right gastroepiploic artery, or the RA (Figure 1). From the second postoperative day, those who received the latter 2 were treated with oral calcium channel blockers (diltiazem), at 90 to 180 mg.⁷

Definitions and Data Collection

Patient data were analyzed according to euroSCORE (European System for Cardiac Operative Risk Evaluation) clinical data standards.¹² Diabetic patients included those treated with insulin or oral hypoglycemic agents. A perioperative myocardial infarction (MI) was defined as the postoperative appearance of new Q waves or an ST-segment elevation of >2 mm on an electrocardiogram, accompanied by a creatine phosphokinase-myocardial band >50 mU/mL, with or without a regional wall motion abnormality.¹³

A cerebrovascular accident was defined as a new permanent neurologic deficit and computed tomographic evidence of cerebral infarction. Deep sternal infection in this setting was defined as the presence of deep infection, in combination with late dehiscence requiring sternectomy. An emergency operation was one performed within 24 hours of coronary angiography.¹²

Download English Version:

<https://daneshyari.com/en/article/2978684>

Download Persian Version:

<https://daneshyari.com/article/2978684>

[Daneshyari.com](https://daneshyari.com)