JACC: CARDIOVASCULAR INTERVENTIONS
VOL. 6, NO. 1, 2013

ISSN 1936-8798/$36.00
PUBLISHED BY ELSEVIER INC.
http://dx.doi.org/10.1016/j.jcin.2012.11.003

EDITORIAL COMMENT

Minimally Invasive Bypass Surgery For Stenosis of the Left Anterior Descending Artery

10-Year Results From a Randomized Controlled Trial*

John G. Byrne, MD, Marzia Leacche, MD

Nashville, Tennessee

We read with great interest the paper by Blazek et al. (1) in this issue of *JACC: Cardiovascular Interventions*. This is an important contribution to the debate on which treatment modality is best for lesions that involve the left anterior descending artery (LAD). Although percutaneous coronary intervention (PCI) offers a much less invasive treatment option compared with coronary artery bypass graft surgery, the long-term patency rate of the left internal mammary artery (LIMA) to LAD graft has rendered the LIMA–LAD as the gold standard for revascularization of the LAD (2). Its patency rate can reach as high as 95% to 98% at 10- to 20-year follow-up.

See page 20

In addition, as correctly pointed out by the authors (1), the rates of target vessel revascularization (TVR) are higher in PCI compared with coronary artery bypass graft surgery. This finding is especially true when using PCI in the LAD territory (2). It is also known that in patients who have multivessel coronary artery disease involving the LAD, the potential advantages of using sole multivessel PCI as a treatment option are diminished by the higher TVR rates associated with stenting of the LAD.

In the report by Blazek et al. (1), it was also noted that the need for TVR was significantly higher at the 10-year follow-up in the PCI group compared with the minimally invasive direct coronary artery bypass group (34% vs. 11%; $p < 0.01$). Although the analysis revealed that these significant differences were attributed mainly to occurrences within the first 7 months, this finding still raises concerns. The myocardium would be more vulnerable to insult or injury during the acute or short-term phase compared with the much longer-term phase, by which time it has had ample opportunity to undergo reverse remodeling. Therefore, it would be crucial to ensure its protection and survival during the early period. Moreover, it is important to realize that the clinical repercussions can be far more serious for patients who experience stent complications compared with patients who experience graft occlusion (3).

The authors (1) also correctly pointed out that previous studies have had restenosis rates as high as 50% in proximal LAD lesions and that lesions in this location have been identified as risk factors for restenosis after bare-metal stent (BMS) deployment (4–6). They also acknowledged the fact that the current study was performed by using BMS procedures, which have lower patency rates compared with the more current and widely used drug-eluting stents. Hence, the results in this study may not accurately reflect the current standards of clinical practice. Also, due to the fact that blinding was not possible in this study, it somewhat limits the scope of the conclusion that 10-year follow-up of PCI with BMS versus minimally invasive direct coronary artery bypass for isolated proximal LAD lesions was associated with similar long-term outcomes.

In addition, the benefits and patency of the LIMA–LAD graft far exceed a 10-year time period (3). The study by Blazek et al. (1) included a follow-up comparison of up to 10 years. The intrinsic details of what occurs beyond this time period will require further elucidation. Hence, more extensive follow-up studies would have to be conducted to formulate reliable conclusions regarding longer-term comparisons of PCI versus LIMA–LAD grafting.

This report (1) confirmed the already established fact that the rates of TVR are significantly higher overall with PCI of the LAD compared with LIMA–LAD grafts. Also, it is known that the clinical consequences of stent complications can be far more serious than the complications of graft occlusion. Due to these reasons and the others discussed, we advocate using a LIMA–LAD graft to address proximal LAD lesions, especially in younger patients and in patients with diabetes. Its benefits and patency have been analyzed, are well established, and have stood the test of time.

Reprint requests and correspondence: Dr. John G. Byrne, Department of Cardiac Surgery, Vanderbilt University Medical Center, 1215 21st Ave South, Nashville, Tennessee 37232-8802. E-mail: john.byrne@vanderbilt.edu.

*Editorials published in the *JACC: Cardiovascular Interventions* reflect the views of the authors and do not necessarily represent the views of *JACC: Cardiovascular Interventions* or the American College of Cardiology.

From the Department of Cardiac Surgery, Vanderbilt University Medical Center, Nashville, Tennessee. Both authors have reported that they have no relationships relevant to the contents of this paper to disclose.

REFERENCES

1. Blazek S, Holzhey D, Jungert C. Comparison of bare-metal stenting with minimally invasive bypass surgery for stenosis of the left anterior

JACC: CARDIOVASCULAR INTERVENTIONS, VOL. 6, NO. 1, 2013
JANUARY 2013:27–8

descending coronary artery: 10-year follow-up of a randomized trial. J Am Coll Cardiol Intv 2013;6:20–6.
2. Jaik NP, Umakanthan R, Leacche M, et al. Current status of hybrid coronary revascularization. Expert Rev Cardiovasc Ther 2011;9:1331–7.
3. Leacche M, Umakanthan R, Zhao DX, Byrne JG. Surgical update: hybrid procedures, do they have a role? Circ Cardiovasc Interv 2010;3:511–8.
4. Drenth DJ, Winter JB, Veeger NJ, et al. Minimally invasive coronary artery bypass grafting versus percutaneous transluminal coronary angioplasty with stenting in isolated high-grade stenosis of the proximal left anterior descending coronary artery: six months' angiographic and clinical follow-up of a prospective randomized study. J Thorac Cardiovasc Surg 2002;124:130–5.
5. Jaffery Z, Kowalski M, Weaver WD, et al. A meta-analysis of randomized controlled trials comparing minimally invasive direct coronary bypass grafting versus percutaneous coronary intervention for stenosis of the proximal left anterior descending artery. Eur J Cardiothorac Surg 2007;31:691–7.
6. Kastrati A, Schömig A, Elezi S, et al. Predictive factors of restenosis after coronary stent placement. J Am Coll Cardiol 1997;30:1428–36.

Key Words: bare metal stents ■ left anterior descending artery ■ minimally invasive bypass surgery.