Authors have nothing to disclose with regard to commercial support.

EXPANDING THE USE OF BILATERAL INTERNAL THORACIC ARTERY: YES! WE CAN

To the Editor:

Change will not come if we wait for some other person or if we wait for some other time. We are the ones we've been waiting for. We are the change that we seek.

—Barack Obama

Speech in Chicago, February 5, 2008

We welcome the perspectives shared by Shih and Lee.¹ We agree that the results of one center cannot always be generalized to others; however, they may serve as a benchmark. It is likely that centers of excellence may become referral centers for patients requiring coronary artery bypass grafting (CABG) with the use of bilateral internal thoracic artery (BITA) grafts. We expect that this practice will be primarily driven by payers, cardiologists, and patients.

We do not believe that the lower rate of BITA usage in the United States (<5%) stems mainly from lack of surgical skills. It is hard to accept that 95% of CABG procedures are performed by surgeons who are incapable of performing BITA grafting. It may be the lure of short-term outcomes that is the major driving force behind surgeons opting for saphenous vein grafting. Even if BITA grafting involves a steep learning curve, this can certainly be surmounted with adequate training, as proved in our clinic. This involves a sustained drive toward improvement and dedicated teaching of residents and fellows, in which it is imperative for a staff surgeon to scrub in and teach BITA harvest.

The suggested use of subgroup analysis instead of interaction analysis¹ to identify differential effects in high-risk populations with regard to persistence of survival advantage can yield spurious findings because of the multiplicity of tests. Such analyses also fail to address

whether the treatment effect in the subgroup differs from that among all other patients.²

Analysis of our own data in 2012,³ and the long-term survival benefits associated with BITA revascularization that we discovered, led to the increase of BITA use in our center.⁴ Consequently, consistent efforts to educate the trainees to harvest skeletonized BITA also played a major role, because concern for sternal infections became less of an issue. Indeed, even in our center, there is still a long way to go with the current BITA grafting rate (30% or less).⁴

We agree that the mounting evidence of survival benefit with BITA grafting is mainly retrospective in nature, but we were disappointed to realize that the midterm 5-year results of the Arterial Revascularization Trial⁵ were “enthusiastically” accepted by Shih and Lee¹ as the final results. A recent large study comparing revascularization with BITA versus single internal thoracic artery grafts, confirmed again that no difference in survival rates were observed at 5 years but a clear survival advantage for BITA grafting was observed at 12 years of follow-up.⁶ Importantly, the methodologic shortcomings in the Arterial Revascularization Trial⁷ have led to the conduct of the prospective randomized Randomization of Single Versus Multiple Arterial Grafts (ROMA) trial.⁸

In the world of rapidly evolving drug-eluting stents, it is incumbent on us to achieve superior results with CABG. Can we therefore honestly answer and justify to our patients that a saphenous vein graft is better than a right internal thoracic artery graft?

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References

- Shih T, Lee R. Bilateral internal mammary artery use—are the results of one center generalizable to others? *J Thorac Cardiovasc Surg.* 2018;155:2344-5.
- Pocock SJ, Assmann SE, Enos LE, Kasten LE. Subgroup analysis, covariate adjustment and baseline comparisons in clinical trial reporting: current practice and problems. *Stat Med.* 2000;21:2917-30.
- Locker C, Schaff HV, Dearani JA, Joyce LD, Park SJ, Burkhart HM, et al. Multiple arterial grafts improve late survival of patients undergoing coronary artery bypass graft surgery: analysis of 8622 patients with multivessel disease. *Circulation.* 2012;126:1023-30.
- Saran N, Locker C, Said SM, Daly RC, Maltais S, Stulak JM, et al. Current trends in bilateral internal mammary artery use for coronary revascularization: extending benefit to high-risk patients. *J Thorac Cardiovasc Surg.* 2018;155:2331-43.
- Taggart DP, Altman DG, Gray AM, Lees B, Gerry S, Benedetto U, et al; ART Investigators. Randomized trial of bilateral versus single internal-thoracic-artery grafts. *N Engl J Med.* 2016;375:2540-9.

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6. Iribarne A, Schmoker JD, Malenka DJ, Leavitt BJ, McCullough JN, Welder PW, et al; Northern New England Cardiovascular Disease Study Group. Does use of bilateral internal mammary artery grafting reduce long-term risk of repeat coronary revascularization? A multicenter analysis. *Circulation*. 2017;136:1676-85.
7. Luthra S. Degrees of belief and the burden of proof: the ART Trial. *Ann Thorac Surg*. 2017;104:1441-4.
8. Gaudino M, Alexander JH, Bakaeen FG, Ballman K, Barili F, Calafiore AM, et al. Randomized comparison of the clinical outcome of single versus multiple arterial grafts: the ROMA trial—rationale and study protocol. *Eur J Cardiothorac Surg*. 2017;52:1031-40.

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BILATERAL INTERNAL THORACIC ARTERY USE: CLOSING THE KNOWLEDGE GAP

Reply to the Editor:

We thank Saran, Locker, and Joyce¹ for their letter to the Editor.

We are in agreement with many of their points, particularly that the current low use of bilateral internal thoracic artery (BITA) grafts is not due to a nationwide lack of surgical skills. When a surgical professional community is appropriately motivated by compelling scientific evidence, surgical practice can change significantly, as it did for left internal thoracic artery use after the landmark studies of Lytle and colleagues² and Loop and associates³ describing the long-term benefits of left internal thoracic artery use.

We believe that the primary reason for the inertia maintaining low BITA use is that a significant knowledge gap still continues to exist with regard to its risks and benefits. We applaud Saran and colleagues⁴ for their analysis of a large propensity-matched cohort of patients at a single institution demonstrating a survival benefit for patients receiving BITA grafts. We maintain, however, that their excellent results may not be reproducible at all hospitals performing coronary artery bypasses nationally.

Saran, Locker, and Joyce¹ are correct that the Arterial Revascularization Trial has only reported midterm 5-year results.⁵ Final 10-year results of the Arterial Revascularization Trial and additional prospective studies, such as the Randomization of Single versus Multiple Arterial Grafts trial,⁶ may help inform us of the true benefits and costs of BITA use.

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No one is arguing that a saphenous vein graft is better than a right internal thoracic artery graft in terms of long-term patency. The knowledge gap exists as to whether BITA use will confer a superior long-term survival advantage across a variety of surgical practice environments without increasing the risk of potentially devastating sternal wound infections. Saran and colleagues⁴ have done a laudable job of endorsing their center's positive experience in increasing BITA use. More work must be done, however, to close this knowledge gap and increase BITA utilization nationally.

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References

1. Saran N, Locker C, Joyce DL. Expanding the use of bilateral internal thoracic artery: yes! we can. *J Thorac Cardiovasc Surg*. 2018;156:1003-4.
2. Lytle BW, Loop FD, Cosgrove FD, Ratliff NB, Easley K, Taylor PC. Long-term (5 to 12 years) serial studies of internal mammary artery and saphenous vein coronary bypass grafts. *J Thorac Cardiovasc Surg*. 1985;89:248-58.
3. Loop FD, Lytle BW, Cosgrove DM, Stewart RW, Goormastic M, Williams GW, et al. Influence of internal mammary artery graft on 10-year survival and other cardiac events. *N Engl J Med*. 1986;314:1-6.
4. Saran N, Locker C, Said SM, Daly RC, Maltais S, Stulak JM, et al. Current trends in bilateral internal mammary artery use for coronary revascularization: extending benefit to high-risk patients. *J Thorac Cardiovasc Surg*. February 22, 2018 [Epub ahead of print].
5. Taggart DP, Altman DG, Gray AM, Lees B, Gerry S, Benedetto U, et al. Randomized trial of bilateral versus single internal-thoracic-artery grafts. *N Engl J Med*. 2016;375:2540-9.
6. Gaudino M, Alexander JH, Bakaeen FG, Ballman K, Barili F, Calafiore AM, et al. Randomized comparison of the clinical outcome of single versus multiple arterial grafts: the ROMA trial—rationale and study protocol. *Eur J Cardiothorac Surg*. 2017;52:1031-40.

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