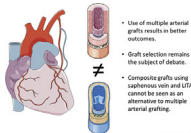


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REPLY: CAN YOU REALLY TURN A VEIN INTO AN ARTERY?

Reply to the Editor:

The choice of conduit to supplement the left internal thoracic artery (LITA) during coronary artery bypass grafting remains a subject of debate. Saphenous vein graft (SVG) is prone to failure, and its failure can occur in up to 12% of patients within the first 6 months postcoronary artery bypass grafting and in up to 46% within 1 year.^{1,2} In contrast, data supporting the use of additional arterial grafts are strong. Clinical outcomes are improved with addition of other arterial grafts to LITA–left anterior descending coronary artery, reducing the rates of early major adverse cardiac and cerebrovascular events³ and conferring a survival benefit after 15 years compared with SVG⁴ or percutaneous interventions.⁵ The choice of right internal mammary artery as the second arterial graft is often obvious for anatomical reasons and its excellent patency rates (96.9%), even if it is used as a free graft.⁶ In a recent study of 1325 patients who received in situ bilateral internal thoracic artery grafts to left coronary bed as a part of total arterial revascularization, the rate of graft failure after 18 years of follow-up was 1.6% for LITA, 2.9% for right internal mammary artery, and as high as 20.7% for the radial artery, which was used as a free graft to the right coronary bed.⁷

Hwang and colleagues⁸ reported that the use of SVG as a part of composite graft (SVG off the LITA) confers similar results as the use of multiple arterial grafts. The 10-year patency rates reported by Hwang and colleagues⁸ were excellent: 96.6% in the composite SVG group and 91.4% in the multiple arterial group. These findings are supported by the report of Lobo Filho and colleagues.⁹ They attribute these remarkable results to the use of valveless vein segments, to the avoidance of the proximal aortic anastomosis, and to the physiological effects of the proximal anastomosis to the LITA.⁹

While the “unique results in certain hands”¹⁰ are certainly commendable, it is hard to prove that “veins can be turned in to arteries” with similar outcomes and patency rates as multiarterial revascularization. Confirmation from additional studies and investigators will be needed before widespread use of this technique. In the meantime, while composite grafts using SVG off an arterial graft constitute an interesting alternative, most surgeons would probably prefer not to risk the compromise of the LITA–left anterior descending coronary artery graft. In the end, no matter how good the vein extension or Y-grafting technique is, one might argue nothing is better than an undisturbed arterial graft.

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References

1. Bourassa MG. Fate of venous grafts: the past, the present and the future. *J Am Coll Cardiol.* 1991;17:1081-3.
2. Alexander JH, Hafley G, Harrington RA, Peterson ED, Ferguson TB Jr, Lorenz TJ, et al. Efficacy and safety of edifoligide, an E2F transcription factor decoy, for prevention of vein graft failure following coronary artery bypass graft surgery: PREVENT IV: a randomized controlled trial. *JAMA.* 2005;294:2446-54.
3. Locker C, Schaff HV, Daly RC, Bell MR, Frye RL, Stulak JM, et al. Multiarterial grafts improve the rate of early major adverse cardiac and cerebrovascular events in patients undergoing coronary revascularization: analysis of 12 615 patients with multivessel disease. *Eur J Cardiothorac Surg.* 2017;52:746-52.
4. 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.
5. Locker C, Schaff HV, Daly RC, Dearani JA, Bell MR, Frye RL, et al. Multiple arterial grafts improve survival with coronary artery bypass graft surgery versus conventional coronary artery bypass grafting compared with percutaneous coronary interventions. *J Thorac Cardiovasc Surg.* 2016;152:369-79.
6. Isomura T, Hirota M, Yoshida M, Yamagishi S, Sumi K, Yoshida S. The growth potential and patency of free right internal thoracic arteries verified by computed tomography angiography. *Ann Thorac Surg.* 2021;112:1990-6.
7. Bonacchi M, Prifti E, Bugetti M, Cabrucci F, Cresci M, Luca F, et al. In situ skeletonized bilateral thoracic artery for left coronary circulation: a 20-year experience. *Eur J Cardiothorac Surg.* 2020;57:160-7.
8. Hwang HY, Lee Y, Sohn SH, Choi JW, Kim KB. Equivalent 10-year angiographic and long-term clinical outcomes with saphenous vein composite grafts and arterial composite grafts. *J Thorac Cardiovasc Surg.* 2021;162:1535-43.e4.
9. Lobo Filho HG, Lobo Filho JG, Pimentel MD. Left internal thoracic artery and saphenous vein composite grafts: the value of valveless veins. *J Thorac Cardiovasc Surg Open.* 2021;8:379.
10. Locker C. Apples remain apples NO matter what. *J Thorac Cardiovasc Surg.* 2019;157:e255-6.

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