

The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.



**REPLY: VALVELESS
SAPHENOUS VEIN
GRAFTS FOR CORONARY
ARTERY BYPASS
GRAFTING: FIRST, DO NO
HARM**



Reply to the Editor:

Graft patency is a key determinant of the long-term outcomes after coronary artery bypass grafting (CABG).¹ Despite its inferior patency compared with arterial grafts, the saphenous vein (SV) remains a popular conduit for CABG due to multiple reasons, including lack of conclusive data showing the superiority of arterial conduits other than the left internal thoracic artery to the left anterior descending coronary artery bypass, ease of harvest, option of harvesting parallel to other parts of surgery, ample length, and comfortable surgical handling due to its large caliber and wall texture.¹

Time-related deterioration in SV graft patency is a result of 3 distinct pathologic processes—early thrombosis secondary, mostly, to technical errors, intermediate stenosis due to adaptive intimal hyperplasia, and late accelerated atherosclerosis. Thus, 1-, 5- and 10-year SV graft patency rates are in the range of 81% to 97.9%, 75% to 86%, and 50% to 60%, respectively.¹

The impact of SV valves on graft patency has been studied extensively.² Physiological studies showed that under certain flow dynamics SV valves create pressure “traps,” stasis, and turbulent flow, leading to localized endothelial injury and nidi of accelerated atherosclerosis.² This valve-induced pathophysiology compromises the patency of SV grafts with valves compared with those that are valveless.³

Therefore, it makes perfect sense to preferentially use valveless SV as conduits for CABG.

The key issue is how to obtain valveless SV grafts. Recently, Hwang and colleagues⁴ advocated the use of a valvulotome to mechanically destroy the valves, as a strategy to improve composite left internal thoracic artery–SV composite grafts patency. The practice of using an intraluminal metal instrument to destroy vein valves is controversial and, we believe, should be avoided altogether. The use of a valvulotome not only leaves behind valve remnants that may augment turbulent flow but could potentially result in extensive endothelial injury along the entire length of the conduit. Mechanical endothelial injury has been repeatedly shown to be a major predisposing factor for early graft failure.⁵

In contrast, we fully concur with the approach suggested by Filho and colleagues,⁶ published in this issue of *JTCVS Techniques*. To comply with our very basic commitment as surgeons—“first, do no harm,” the use of valvulotome should be discouraged. Careful harvesting of naïve valveless SV segments should be the preferred technique to obtain valveless SV conduits for CABG.

Oz M. Shapira, MD

Department of Cardiothoracic Surgery
Hadassah Hebrew University Medical Center
Jerusalem, Israel

References

1. Gaudino M, Antoniadis C, Benedetto U, Deb S, Di Franco A, Di Giammarco G, et al; for the ATLANTIC Alliance. Mechanisms, consequences, and prevention of coronary graft failure. *Circulation*. 2017;136:1749-64.
2. Thubrikar MJ, Robicsek F, Fowler BL. Pressure trap created by vein valve closure and its role in graft stenosis. *J Thorac Cardiovasc Surg*. 1994;107:707-16.
3. Lajos TZ, Robicsek F, Thubrikar M, Urschel H. Improved patency of coronary conduits: “valveless” veins and/or arterial grafts. *J Card Surg*. 2007;22:170-7.
4. Hwang HY, Lee Y, Sohn SH, Choi JW, Kim K. 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.
5. Thatte HT, Khuri SF. The coronary artery bypass conduit: I. Intraoperative endothelial injury and its implications on graft patency. *Ann Thorac Surg*. 2001;72:S2245-52.
6. Lobo Filho HG, Lobo Filho JG, Pimental MD. Left internal thoracic artery and saphenous vein composite grafts: the value of valveless veins. *J Thorac Cardiovasc Surg Open*. 2021;8:379.

<https://doi.org/10.1016/j.xjon.2021.09.001>