Author has nothing to disclose with regard to commercial support.

RADIAL ARTERY USE IS SAFE IN PLUMBERS AND SURGEONS

To the Editor:

In his Editorial Commentary in the *Journal*, Dr Craig Smith¹ declares that the “best in class” coronary surgery in 2018 is the use of both internal thoracic arteries to bypass the left-sided circulation and then the use of any graft to bypass the right coronary artery. Although this may be true, Smith¹ goes further and raises 2 important issues regarding use of the radial artery (RA)—its safety and its use in surgeons.

There is exceptionally strong evidence supporting the safety of RA use,^{2,3} despite Smith’s suggestion that harvesting the RA may result in hand ischemia, tissue loss, and even amputation.¹ This last devastating complication is of course a concern, but it is essentially a never event providing a modified Allen test is properly performed. In our experience, a negative result of an Allen test with pulse oximetry eliminates approximately 3% to 5% of potential patients, after excluding those rare patients with scleroderma, Reynaud disease, or vascular disease. This has resulted in zero episodes of any degree of hand ischemia or tissue loss in my personal experience in nearly 4000 RA harvests in 22 years. In addition, Smith¹ misrepresents the cited *Hand Clinics* article⁴ as evidence for hand ischemia after RA harvest during coronary artery bypass grafting (CABG). The referenced “plumber who used his hand as a hammer” had a complex arm injury requiring a radial artery forearm flap for elbow coverage. This failed, and he subsequently required a salvage ulnar artery reconstruction with saphenous vein to preserve his thumb and index finger. Clearly, there is absolutely no connection of this complex arm injury patient with the use of the RA during CABG.

In addition, Smith’s claim that there is “common surgical folklore” that RAs are not used in surgeons (or musicians)¹ is simply not true. I personally have used the RA in vascular, general, orthopedic, urologic, ophthalmologic and

gynecologic surgeons, all of whom returned to unrestricted surgical practice. Moreover, numerous internists and even cardiologists all returned to work full time. So, yes, the RA has been used in busy surgeons and physicians who resumed busy practices.

Across the United States, use of a second arterial graft during CABG is disappointingly and persistently low. Those cardiac surgeons considering starting a RA program are not well served by Smith’s remarks suggesting serious hand ischemia or loss of hand function with RA use. The available evidence clearly supports use of the RA as a safe and highly effective strategy to improve outcomes after CABG.⁵

I am also not yet ready to retire, but I will be delighted to have both RAs harvested should I need CABG. I am highly confident that I will be back at full-time work without limitations.

Robert F. Tranbaugh, MD

Department of Cardiothoracic Surgery
Weill Cornell Medicine
New York, NY

References

1. Smith CR. Radial artery advocacy. *J Thorac Cardiovasc Surg.* 2019;157:578-9.
2. Holman WL, Davies JE, Lin JY, Wang Y, Goldman S, Bakaeen FG, et al. Consequences of radial artery harvest: results of a prospective, randomized multicenter trial. *JAMA Surg.* 2013;148:1020-3.
3. Schena S, Crabtree TD, Baker KA, Guthrie TJ, Curci J, Damiano RJ, et al. Absence of deterioration of vascular function of the donor limb at late follow-up after radial artery harvesting. *J Thorac Cardiovasc Surg.* 2011;142:298-301.
4. Chim H, Bakri K, Moran SL. Complications related to radial artery occlusion, radial artery harvest, and arterial lines. *Hand Clin.* 2015;31:93-100.
5. Tranbaugh RF, Lucido DL, Kimitrova KR, Hoffman DM, Geller CM, Dincheva GR, et al. Multiple arterial grafting should be routine. *J Thorac Cardiovasc Surg.* 2016;150:1537-44; discussion 1544-5.

<https://doi.org/10.1016/j.jtcvs.2018.09.024>

JUST ANOTHER CABG...

Reply to the Editor:

The year 2018 is a particularly important year for coronary artery bypass grafting (CABG) surgery. After more than 4 decades of debate, the first randomized trial-based demonstration of a clinical benefit from using a second arterial graft (the radial artery) instead of the saphenous vein was published by the Radial Artery Database International Alliance (RADIAL) investigators.¹ The final results of the Arterial Revascularization Trial (ART), which have been awaited for more than 15 years, were presented at this year’s European Society of Cardiology meeting. The main intention-to-treat analysis did not show any clinical benefit related to the use of 2 versus 1 internal thoracic arteries,² although a treatment

The Editor welcomes submissions for possible publication in the Letters to the Editor section that consist of commentary on an article published in the *Journal* or other relevant issues. Authors should: • Include no more than 500 words of text, three authors, and five references. • Type with double-spacing. • See <http://jtcvs.ctsnetjournals.org/misc/fora.shtml> for detailed submission instructions. • Submit the letter electronically via jtcvs.editorialmanager.com. Letters commenting on an article published in the JTCVS will be considered if they are received within 6 weeks of the time the article was published. Authors of the article being commented on will be given an opportunity to offer a timely response (2 weeks) to the letter. Authors of letters will be notified that the letter has been received. Unpublished letters cannot be returned.

Authors have nothing to disclose with regard to commercial support.

received analysis comparing 2 or more arterial conduits to a single internal thoracic artery did show a benefit in terms of mortality and major adverse cardiac events. The high crossover rate from the experimental arm to the control arm and the frequent use of the radial artery in both groups may have diluted the treatment effect. The debate on the role of multiple arterial grafts thus remains far from closed. Currently, the Randomized Comparison of the Outcome of Single vs Multiple Arterial Grafts (ROMA) trial (the second largest study ever in cardiac surgery) has completed the pilot phase and is enrolling 4300 patients in 50 centers to finally prove or refute the multiple arterial graft hypothesis.³

The fact that all this is happening 50 years after the first description of the coronary bypass operation by Favaloro⁴ is noteworthy. It is also instructive that 4 of the 5 largest randomized trials ever performed in cardiac surgery investigated technical details of the CABG operation (the choice of grafts or the use of cardiopulmonary bypass), which is not unexpected, because CABG represents the most commonly performed procedure in adult cardiac surgery in the United States and likely in the world.⁵

In fact, few procedures in the cardiothoracic arena have the same power to elicit impassioned opinions as CABG. A clear example of this is the elegant and balanced letter by Robert Tranbaugh in this issue of *The Journal of Thoracic and Cardiovascular Surgery*, responding to a commentary on another commentary on an original article; this invited reply is thus a commentary at the fourth level!

Clearly, CABG continues to be a central topic among cardiac surgeons, an operation to which we dedicate the greatest number of hours in the operating room and that benefits the greatest number of our patients. That said, we are troubled by the phrase “a CABG, only another CABG.” This sentiment can be commonly heard not only in cardiac surgery operating rooms and wards, but even at the most prestigious academic meetings and conferences, and with some detachment or disinterest.

As the debate on the radial artery clearly shows, there is much to consider in performing a high-quality CABG operation, and still a lot to be learned. Fifty years after Favaloro's initial description, almost every single detail of the procedure has been studied in depth, although, as in the radial artery case, controversy may still persist (of note, the use of the radial artery has now a class Ib indication in the 2018 European Society of Cardiology and European Association for Cardio-Thoracic Surgery guidelines⁶). In any case, thanks to masters like Bob Tranbaugh and Craig Smith, CABG remains not only the “bread and butter” but also the “main course” for most cardiac surgeons. We

may not agree on the details, but we all share passion for the main operation.

And the next debate is whether CABG should also, like complex aortic or mitral surgery, be considered as a subspecialty (superspecialty?) of adult cardiac surgery.

Mario Gaudino, MD^a

David P. Taggart, MD^b

Stephen E. Fremes, MD^c

^aDepartment of Cardiothoracic Surgery

Weill Cornell Medicine

New York, NY

^bNuffield Department of Surgical Sciences

University of Oxford

Oxford, United Kingdom

^cSchulich Heart Centre

Sunnybrook Health Science

University of Toronto

Toronto, Ontario, Canada

References

1. Gaudino M, Benedetto U, Fremes S, Biondi-Zoccai G, Sedrakyan A, Puskas JD, et al; RADIAL Investigators. Radial-artery or saphenous-vein grafts in coronary-artery bypass surgery. *N Engl J Med*. 2018;378:2069-77.
2. 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.
3. 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.
4. Mueller RL, Rosengart TK, Isom OW. The history of surgery for ischemic heart disease. *Ann Thorac Surg*. 1997;63:869-78.
5. Writing Group Members, Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, et al. American Heart Association statistics committee; stroke statistics subcommittee. Heart disease and stroke statistics—2016 update: a report from the American Heart Association. *Circulation*. 2016;133:e38-360.
6. Neumann FJ, Sousa-Uva M, Ahlsson A, Alfonso F, Banning AP, Benedetto U, et al; ESC Scientific Document Group. 2018 ESC/EACTS guidelines on myocardial revascularization. *Eur Heart J*. August 25, 2018 [Epub ahead of print].

<https://doi.org/10.1016/j.jtcvs.2018.09.059>

**RADIAL ARTERY USE IS
SAFE IN PLUMBERS
AND SURGEONS**

Reply to the Editor:

Both written and verbal criticisms of my Editorial Commentary on “Radial Artery Advocacy” indicate that my remarks felt more personal to some readers than I intended them to be. What provoked me to more than customary sarcasm was not personal and was not simply disagreement with the premise that the radial artery is the holy grail in our crusade for more arterial revascularization. The first trigger was when The American Association for Thoracic Surgery program committee gave plenary session prominence, as a “late-breaking” (??) trial, to a meta-analysis, as if to say