STATEMENT OF THE ARGENTINE COLLEGE OF CARDIOVASCULAR SURGEONS ON THE 2021 CORONARY REVASCULARIZATION GUIDELINES REPORTED BY THE AMERICAN COLLEGE OF CARDIOLOGY AND THE AMERICAN HEART ASSOCIATION

The recent publication of the 2021 ACC/AHA Guideline for Coronary Artery Revascularization[1] has drawn interest worldwide and called the attention of the surgical community due to the controversies and setbacks expressed, which do not seem reflect the best therapeutic options for patients with stable coronary artery disease (SCAD).

The Argentine College of Cardiovascular Surgeons, and other international scientific societies of cardiac surgery[2-4] have presented their position through their Cardiothoracic Surgery Committee.

The new guidelines express a change in the recommendation from 1 to 2b on coronary artery bypass graft (CABG) over medical therapy alone to improve survival in patients with 3-vessel CAD with preserved left ventricular (LV) function and no left main coronary artery disease (LMCAD). On the other hand, the same degree of recommendation is given to percutaneous coronary intervention (PCI), although it is clarified that "the usefulness of PCI to improve survival is uncertain" (Chapter 7.1 related to revascularization on the survival of patients with stable coronary artery disease [SCAD]).

This change of recommendation is based on the author's interpretation of the results of the ISCHEMIA study[5] that was not designed to compare the results between surgery and the optimal medical treatment (OMT). In this study, patients were randomized to an invasive or conservative strategy group. There was no evidence that an initial invasive strategy—compared to an initial conservative strategy—reduces the risk of ischemic cardiovascular events or the all-cause mortality over a median of 3.2 years[5]. However, it did show that an invasive strategy would seem to reduce the risk of infarction and improve quality of life, although no differences were reported between the groups compared to mortality. Only 26% of the patients with an initial invasive strategy who received revascularization were treated with surgery. Considering that 42% of the patients had diabetes and 71% multivessel disease, it is likely that CABG has been underestimated, leaving the choice between PCI and CABG to local working groups.

The new guidelines show no additional randomized controlled trial (RCT) to support this downgrade in the level of evidence. It is just enough to review the literature to verify that the only treatment that has had an impact on the survival and the incidence rate of myocardial infarction is surgery. From the metanalysis

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published by Yusuf et al. in The Lancet back in 1994 until now, all observational and randomized studies have shown a significant decrease in the mortality rate reported from 5 to 10 years in patients treated with surgery, even more among the highest risk patient subgroups[6].

Although recent studies have shown tremendous improvement in medical therapy[6], better management should include not only the use of cardioprotective drugs, but also risk factor controls, which may decrease the prevalence of refractory angina and the need for subsequent revascularization. This is reflected on the BARI-2D, COURAGE and FREEDOM clinical trials where the rate of patients with a complete medical treatment (tobacco cessation glycohemoglobin, LDL, systolic blood pressure control) was only 23%, 18%, and 8%, respectively[7,8,9].

On the other hand, to assume that revascularization strategy between PCI and CABG is similar or equivalent is wrong. Numerous studies such as the Syntax, the Excel, and the Noble[10,11,12] have already demonstrated the superiority of CABG reducing revascularization and perioperative infarction compared to PCI.

According to different randomized studies comparing PCI vs CABG, the benefits of myocardial revascularization are more evident after 3 years when the mortality, infarction, and need for revascularization curves begin to diverge in favor of surgery.

It is remarkable that the new guidelines do not take into consideration this previously published evidence demonstrating that total arterial revascularization offers excellent survival benefits, reduces the rate of MI, and the recurrence of symptoms at long-term follow-up[13-14].

Another controversial recommendation of the recent 2021 guidelines committee is the use of the radial artery over venous accesses for revascularization purposes. The radial artery has shown greater benefits on patency, fewer adverse cardiac events, and higher survival rates. However, the authors equal radial artery access to the IMA graft (I) and even superior to the BIMA graft (2a). Since this recommendation is supported by small studies only, it would seem not to have been sufficiently substantiated[15]. Furthermore, radial approach for percutaneous procedures has become an IA indication, which stands as another relevant reason to embolden different subspecialties like cardiologists, cardiovascular surgeons, and interventional cardiologists when drafting the guidelines.

The Argentine College of Cardiovascular Surgeons values the effort and work done by the ACC/AHA committee preparing these guidelines. However, following the precepts coming from the heart team and the interdisciplinary joint work done to achieve better outcomes, we consider that the inclusion, approval, and endorsement of this type of recommendations including other international surgical scientific societies like STS, AATS, EACTS, LACES is necessary for a better understanding and agreement on the current evidence available.

Finally, although it is true that the publication of these guidelines is very relevant in our decision-making process, we must take into account their real-world applicability considering the needs and problems of the own environment for a better management of our patients[16].

REFERENCES

1. Jennifer S. Lawton, MD, FAHA, Chair†; Jacqueline E. Tamis-Holland, MD, FAHA, FACC, FSCAI, Vice Chair‡; Sripal Bangalore, et al. 2021 ACC/AHA/SCAI Guideline for Coronary Artery Revascularization: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. Circulation. 2021; 144: 00–00. DOI: 10.1161/CIR.0000000000001039.

2. Joseph F. Sabik, III, MD, Faisal G. Bakaeen, MD, Marc Ruel, MD, MPH, Marc R. Moon, MD, S. Christopher Malaisrie, MD, John H. Calhoon, MD, Leonard N. Girardi,MD, Robert Guyton, MD, for the American Association for Thoracic Surgery and Society of Thoracic Surgeons. The American Association for Thoracic Surgery and Society of Thoracic Surgeons Reasoning for Not Endorsing the 2021 ACC/AHA/SCAI Coronary Revascularization Guidelines. DOI: 10.1016/j.athoracsur.2021.12.003

3. https://www.eacts.org/wp-content/uploads/2021/12/EACTS-comment-ACC-AHA-SCAIcoronary-artery-revasc.pdf

4. http://latamlaces.org/news/institutional/highlighted/letter-behalf-laces-and-its-board-directorsregarding-recently

5. D.J. Maron, J.S. Hochman, H.R. Reynolds, et al. Initial Invasive or Conservative Strategy for Stable Coronary Disease. N Engl J Med 2020; 382:1395-407.

6. S. Yusuf, D. Zucker, P. Peduzzi, L.D. Fisher, T. Takaro, J.W. Kennedy, et al. Effect of coronary artery bypass graft surgery on survival: Overview of 10-year results from randomized trials by the Coronary Artery Bypass Graft Surgery Trialists Collaboration. Lancet., 344 (1994), pp. 563-570

7. The BARI 2D study: a randomised trial of therapies for type 2 diabetes and coronary artery disease. Diab Vasc Dis Res 2010 Jan;7(1):69-72.

8. Optimal Medical Therapy with or without PCI for Stable Coronary Disease William E. Boden, M.D., Robert A. O'Rourke, M.D., Koon K. Teo, M.B., B.Ch., Ph.D., Pamela M. Hartigan, Ph.D., David J. Maron, M.D., William J. Kostuk, M.D., Merril Knudtson, M.D., Marcin Dada, M.D., Paul Casperson, Ph.D., Crystal L. Harris, Pharm.D., Bernard R. Chaitman, M.D., Leslee Shaw, Ph.D., et al., for the COURAGE Trial Research Group*

9. The FREEDOM Trial: Revascularization in Diabetics with Multivessel Disease: A PopulationBased Evaluation of Outcomes

10. Thuijs D, Kappetein AP, Serruys PW, Mohr FW, Morice MC, Mack MJ, et al. Percutaneous coronary intervention versus coronary artery bypass grafting in patients with three-vessel or left main coronary artery disease: 10-year follow-up of the multicentre randomised controlled SYNTAX trial. Lancet. 2019;394(10206):1325- 34.

11. Holm NR, Makikallio T, Lindsay MM, Spence MS, Erglis A, Menown IBA, et al.Percutaneous coronary angioplasty versus coronary artery bypass grafting in the treatment of unprotected left main stenosis: updated 5-year outcomes from the randomised, non-inferiority NOBLE trial. Lancet. 2020;395(10219):191-9.

12. Stone GW, Kappetein AP, Sabik JF, Pocock SJ, Morice MC, Puskas J, Kandzari DE, Karmpaliotis D, Brown WM, Lembo NJ, Banning A, Merkely B et al., for the EXCEL Trial Investigators FiveYear Outcomes after PCI or CABG for Left Main Coronary Disease. N Engl J Med 2019; 381:1820- 1830

13. Weintraub WS, Grau-Sepulveda MV, Weiss JM, O'Brien SM, Ph.D., Peterson ED, Kolm P, Zhang Z, Klein LW, Shaw RE, McKay Ch, Ritzenthaler LL, M.B.A., Popma JJ, Messenger JC, DM, M.D., Grover FL, M.D., Mayer JE, M.D., Shewan CM, Garratt KN, M.D., Moussa ID, Dangas GD and Edwards FH. Comparative Effectiveness of Revascularization Strategies. N Engl J Med. 2012 Apr 19; 366(16): 1467–1476.

14. Seung-Jung Park, Jung-Min Ahn, Young-Hak Kim, Duk-Woo Park, Sung-Cheol Yun, JongYoung Lee, Soo-Jin Kang, Seung-Whan Lee, Cheol Whan Lee, Seong-Wook Park, Suk Jung Choo, Cheol Hyun Chung, Jae Won Lee, David J. Cohen, Alan C. Yeung, Seung Ho Hur, Ki Bae Seung, Tae Hoon Ahn, Hyuck Moon Kwon, Do-Sun Lim, Seung-Woon Rha, Myung-Ho Jeong, Bong-Ki Lee, Damras Tresukosol, Guo Sheng Fu, and Tiong Kiam Ong. For the BEST Trial Investigators. Trial of Everolimus-Eluting Stents or Bypass Surgery for Coronary Disease.N Engl J Med 2015;372:1204-12.

15. Gaudino M, Benedetto U, Fremes S, Biondi-Zoccai G, Sedrakyan A, Puskas JD, et al. RadialArtery or Saphenous-Vein Grafts in Coronary-Artery Bypass Surgery. N Engl J Med. 2018;378(22):2069-77.

16. Sinha Sh, Dimagli A, Dixon L, Gaudino L, Caputo M, Vohra H A et al. Systematic review and meta-analysis of mortality risk prediction models in adult cardiac surgery, Interact CardioVasc Thorac Surg, 2021; 33 (5): 673–686.