

Manuel Carnero Alcázar,^{a,◆,*} José López Menéndez,^{a,b,◆}
 Jorge Rodríguez-Roda Stuart,^{a,b,◆}
 and Luis Carlos Maroto Castellanos^{a,◆}

^aServicio de Cirugía Cardíaca, Hospital Clínico San Carlos, Madrid, Spain

^bServicio de Cirugía Cardíaca, Hospital Universitario Ramón y Cajal, Madrid, Spain

*Corresponding author.

E-mail address: mcarneroalcazar@gmail.com

(M. Carnero Alcázar).

◆Appendix shows the institution to which the authors belong and their positions.

Available online 28 April 2023

REFERENCES

1. McInerney A, García Márquez M, Tirado-Conte G, et al. In-hospital outcomes following percutaneous versus surgical intervention in the treatment of aortic

- stenosis and concomitant coronary artery disease. *Rev Esp Cardiol*. 2023. <http://dx.doi.org/10.1016/j.rec.2022.12.011>.
2. Mack MJ, Herbert M, Prince S, et al. Does reporting of coronary artery bypass grafting from administrative databases accurately reflect actual clinical outcomes? *J Thorac Cardiovasc Surg*. 2005;129:1309–1317.
3. Prasad A, Helder MR, Brown DA, Schaff HV. Understanding Differences in Administrative and Audited Patient Data in Cardiac Surgery: Comparison of the University Health System Consortium and Society of Thoracic Surgeons Databases. *J Am Coll Surg*. 2016;223:551–557e4.
4. Lowres N, Mulcahy G, Jin K, et al. Incidence of postoperative atrial fibrillation recurrence in patients discharged in sinus rhythm after cardiac surgery: a systematic review and meta-analysis. *Interact Cardiovasc Thorac Surg*. 2018;26:504–511.
5. Martín-Vegue AJR. International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM): only shadows in its implementation. *Rev Calid Asist*. 2017;32:6–9.
6. Austin PC. Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity-score matched samples. *Stat Med*. 2009;28:3083–3107.

<https://doi.org/10.1016/j.rec.2023.02.015>

1885-5857/© 2023 Sociedad Española de Cardiología. Published by Elsevier España, S.L.U. All rights reserved.

In-hospital outcomes after PCI and TAVI versus combined aortic valve replacement and coronary surgery. Response



Acerca de los resultados hospitalarios tras ICP y TAVI frente a la sustitución quirúrgica de la válvula aórtica y cirugía coronaria combinadas. Respuesta

To the Editor,

We appreciate the interest expressed by Carnero et al. in our article on hospital outcomes in patients with aortic stenosis and concomitant coronary artery disease.¹ Previous studies have validated the usefulness of the Minimum Data Set (MDS) for analyzing clinical process outcomes in Spain, including research by Carnero et al.² We recognize that some postprocedural complications may have been underestimated due to undercoding the MDS, a limitation that was acknowledged in our article. However, the results concerning more serious complications, such as in-hospital mortality, are not affected by this limitation.

It was noted that the results could be biased by the nonexclusion of surgical procedures involving the thoracic aorta, septal defects, and mitral/tricuspid repairs. According to our data, an analysis excluding such procedures would result in a population of 4388 patients with surgical aortic valve replacement (SAVR) and coronary artery bypass grafting (CABG), with an associated crude mortality rate of 6.98%, which is higher than that of the transcatheter aortic valve implantation (TAVI) and percutaneous coronary intervention (PCI) group (3%; $P = .001$). The propensity score analysis corresponding to these exclusions showed that for 774 matched patients, mortality in the TAVI + ICP group was lower than that in the SAVR + CABG group (mean treatment effect, 3.3% vs 7.2%; odds ratio [OR] = 0.44; 95% confidence interval [95%CI], 0.26–0.74; $P < .001$).

Carnero et al. consider that the exclusion of patients undergoing TAVI and PCI in the same episode may involve bias. However, the validity of our study is limited to the comparison of the results in patients—with the characteristics described—who underwent TAVI after having undergone PCI in the previous 6 months vs

those who underwent SAVR + CABG in the same episode. Therefore, these results are not applicable to patients who underwent TAVI and PCI in the same episode, which is a therapeutic strategy that has also been used in a minority of previous registries ($< 10\%$).³

Other observations refer to the fact that the authors consider it “difficult” to univocally identify different events concerning the same patient in the MDS; nevertheless, our identification methodology has demonstrated its robustness through extensive use in numerous previous publications.⁴ The original letter noted the possible deficiency of MDS data after the implementation of ICD-10; however, the validity of the MDS to analyze clinical processes has also been demonstrated, as we mentioned at the beginning of this letter.² Lastly, the authors consider it “impossible” to determine whether the previous TAVI and PCI procedures were performed for the same clinical syndrome or for a different one; nonetheless, our article does not refer to any syndrome, but to procedures related to severe aortic stenosis (SAVS and TAVI) and concomitant coronary artery disease requiring revascularization (CABG and PCI).

Finally, regarding comments on the propensity score analysis, it should be noted that we have verified that our model does not present problems of linearity (the quadratic terms of the continuous variables are not significant) or collinearity (the mean variance inflation factor is 1.03). In addition, we have specified a new model with perfect matching in our study population (480 pairs) as well as another model that included the additional exclusions indicated by Carnero et al. (462 pairs). In both cases, we found that in-hospital mortality was lower in the post-TAVI + PCI group than in the SAVR + CABG group (mean treatment effect, 2.5 vs 7.5%; OR = 0.34; 95%CI, 0.16–0.67; $P < .001$; and 2.4 vs 6.7%; OR = 0.34; 95%CI, 0.15–0.70; $P = .002$).

We agree with the authors of the letter that the study results should be interpreted within the context described based on MBDS coding. However, until results from audited prospective clinical registries and randomized trials are available, this type of analysis contributes additional information to the scarce evidence available and may assist in hypothesis generation for future studies.

FUNDING

None declared.

SEE RELATED CONTENT:

<https://doi.org/10.1016/j.rec.2023.02.015>

AUTHORS' CONTRIBUTIONS

All authors contributed equally to the writing of the letter.

CONFLICTS OF INTEREST

L. Nombela-Franco: consulting fees from Edwards, Abbott Vascular, Products & Features, and Boston Scientific. The other authors declare that they have no conflicts of interest.

Luis Nombela-Franco,^{a,*} Angela McInerney,^a José Luis Bernal,^{b,c} and Javier Elola^b

^aInstituto Cardiovascular, Hospital Clínico San Carlos, Fundación para la Investigación Biomédica del Hospital Clínico San Carlos (IdISSC), Madrid, Spain

^bFundación Instituto para la Mejora de la Asistencia Sanitaria, Madrid, Spain

^cServicio de Información y Control de Gestión, Hospital Universitario 12 de Octubre, Madrid, Spain

* Corresponding author.

E-mail address: luisnombela@yahoo.com (L. Nombela-Franco).

 @luisnombela

Available online 16 July 2023

REFERENCES

1. McInerney A, García Márquez M, Tirado-Conte G, et al. In-hospital outcomes following percutaneous versus surgical intervention in the treatment of aortic stenosis and concomitant coronary artery disease. *Rev Esp Cardiol*. 2023. <https://doi.org/10.1016/j.rec.2022.12.0111>
2. Carnero Alcazar M, Hernandez-Vaquero D, Cubero-Gallego H, et al. Retrospective cohort analysis of Spanish national trends of coronary artery bypass grafting and percutaneous coronary intervention from 1998 to 2017. *BMJ Open*. 2021;7:e046141.
3. Barbanti M, Buccheri S, Capodanno D, et al. Transcatheter or surgical treatment of severe aortic stenosis and coronary artery disease: A comparative analysis from the Italian OBSERVANT study. *Int J Cardiol*. 2018;270:102–106.
4. Olmos C, Vilacosta I, Fernández-Pérez C, et al. *J Am Coll Cardiol*. 2017;70:2795–2804.

<https://doi.org/10.1016/j.rec.2023.04.009>

1885-5857/© 2023 Sociedad Española de Cardiología. Published by Elsevier España, S.L.U. All rights reserved.