



Ross procedure in bicuspid aortic valve pathologies

Martin Misfeld^{1,2,3,4,5}, Michael A. Borger¹

¹University Department of Cardiac Surgery, Leipzig Heart Center, Leipzig, Germany; ²Department of Cardiothoracic Surgery, Royal Prince Alfred Hospital, Sydney, Australia; ³Institute of Academic Surgery, Royal Prince Alfred Hospital, Sydney, Australia; ⁴The Baird Institute of Applied Heart and Lung Surgical Research, Sydney, Australia; ⁵Sydney Medical School, University of Sydney, Sydney, Australia

Correspondence to: Martin Misfeld, MD, PhD. University Department of Cardiac Surgery, Leipzig Heart Center, Struempellstrasse 39, Leipzig 04289, Germany. Email: martinmisfeld@yahoo.com.

Comment on: Yammine M, Williams E, El-Hamamsy I. The Ross procedure for bicuspid aortic valve: total root implantation technique. *Ann Cardiothorac Surg* 2022;11:484-6.



Submitted Sep 21, 2022. Accepted for publication Oct 04, 2022.

doi: 10.21037/acs-2022-0122

View this article at: <https://dx.doi.org/10.21037/acs-2022-0122>

We read with great interest the article of performing the Ross procedure in patients with bicuspid aortic valves (BAVs) using the total root implantation technique (1). This comment also relates to a previous issue in the *Annals of Cardiothoracic Surgery* of the Ross procedure itself.

It is well known that the Ross operation is performed using different techniques. Sievers has performed the Ross procedure in a modified sub-coronary technique, originally described by Ross in 1967 (2). Long-term results of this technique are excellent, also when performed in patients with BAV (3). As patients undergoing the Ross procedure are mainly of young age and therefore present often with a type I BAV (4), a word of caution should be raised if a type 0 BAV (“true BAV”) is present. In patients with this type, orientation of the coronary ostia are opposed at a 180° angle to each other. Not limited to the sub-coronary technique, this orientation of the coronary ostia makes the implantation of the pulmonary autograft in the aortic root challenging, if not impossible. With the sub-coronary technique, three new commissures have to be created for autograft orientation (4). Therefore, in type 0 BAV, we do not perform the Ross procedure, as the sub-coronary technique is our preferred technique (*Video 1*) (5).

Clinical vignette of a patient with type 0 BAV

A 49-year-old male is scheduled for elective aortic valve replacement with combined aortic valve lesion in a type 0 BAV lateral (4). An intra-operative view on a true type 0 lateral BAV is depicted. It is demonstrated using Overholt

forceps that the coronary ostia are at a 180° angle to each other. The potential orientation of the autograft and risk of impairment of coronary ostia perfusion is shown using a valve sizer. In this scenario a Ross procedure is not performed. The aortic valve was replaced using a bioprosthetic valve, as requested by the patient.

Acknowledgments

Funding: None.

Footnote

Conflicts of Interest: Both authors have no conflicts of interest to declare.

Open Access Statement: This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

References

1. Yammine M, Williams E, El-Hamamsy I. The Ross procedure for bicuspid aortic valve: total root implantation

- technique. *Ann Cardiothorac Surg* 2022;11:484-6.
2. Ross DN. Replacement of aortic and mitral valves with a pulmonary autograft. *Lancet* 1967;2:956-8.
 3. Sievers HH, Stierle U, Petersen M, et al. Valve performance classification in 630 subcoronary Ross patients over 22 years. *J Thorac Cardiovasc Surg* 2018;156:79-86.e2.
 4. Sievers HH, Schmidtke C. A classification system for the bicuspid aortic valve from 304 surgical specimens. *J Thorac Cardiovasc Surg* 2007;133:1226-33.
 5. Misfeld M, Etz CD, Borger MA, et al. The Ross sub-coronary technique. *Ann Cardiothorac Surg* 2021;10:538-40.

Cite this article as: Misfeld M, Borger MA. Ross procedure in bicuspid aortic valve pathologies. *Ann Cardiothorac Surg* 2022;11(6):637-638. doi: 10.21037/acs-2022-0122