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Commentary: The Reproducibility Of Bicuspid Valve-Sparing Root Replacement

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Conflict Of Interest: None.

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Central Message: The comparativeness of valve-sparing root replacement and bio-bentall for BAV should be read in the light of the criteria used to consider individual BAVs acceptable for repair. '



Central Picture Legend: Amedeo Anselmi, MD PhD

The current work by Nguyen and associates from the Columbia University elicits a number of considerations in the lively field of valve-sparing root replacement. The Authors focus on those bicuspid aortic valves (BAV) which can be considered to be potentially sparing in absence of significant calcification or infection. The second element of interest – and an assumption coherent with the current evolution – consists in the comparison of BAV-sparing root replacement vs. bio-bentall root replacement. Indeed, paralleling the evolution observed with aortic valve replacement, the use of bioprostheses for the performance of Bentall operation gains increasing role with respect to mechanical valves in young individuals willing to avoid the complications and constraints of lifelong anticoagulants. This series is important in its capacity to focus on this quite selected population, in its numbers and its capacity to build a propensity-matching to comparatively evaluate the 10-years outcomes among the two subgroups, which represents itself a prestigious achievement from this surgical team. The price paid for such specificity is the relatively limited sample size. The Authors suggest similar 10-year outcomes among the two approaches concerning survival and reinterventions. Nonetheless, two facets need to be considered in the interpretation of this conclusion. The first one: this expert team was quite aggressive in including BAVs requiring cusp repair procedures complementary to reimplantation (mainly raphe plication or leaflet free edge plication, as many as 83% of patients); these are known to increase the risk of reoperation, and one could evoke the existence of a bias favoring bio-bentall in this experience. The second: this follow-up analysis failed to capture other valve-related events typical of bioprostheses: valve thrombosis and nonstructural valve dysfunction – which may represent a second bias favoring bio-bentall. BAV-sparing root replacement remains an elegant and captivating solution, whose advantages over bio-bentall can be evident if the cursor for its performance is set in favor of anatomically favorable conditions (native valve anatomy and function).

Additionally, one underlines the ease and safety of valve-in-valve TAVR for structural deterioration of a stented bioprosthesis employed in a Bentall operation, while the transcatheter option would be far less comfortable to manage a failing and reimplanted native aortic valve (most

native valve failures occurring during follow-up in these patients consist in pure regurgitations). It remains open to discussion whether this latter consideration should participate to the decision-making in the 'grey-zone' cases where native valve preservation would be feasible, but at the price of additional cusp procedures potentially increasing the likelihood of recurrent valve dysfunction over time. Finally, many patients in this series (49% of the bio-Bentall subgroup) received a stentless 3f Enable® valve as a bioprosthesis; the durability of this valve device (which is currently out of the market) is less known than others, and will need to be closely evaluated during future follow-up.

The Authors correctly draw a moderate and equilibrated conclusion, underlining the role of patient's information at the time of surgical consultation with respect to his/her individualized risk of reoperation after either conservative BAV surgery or replacement with a bioprosthesis. The principle of this shared and informed decision-making has been encompassed since several years in international guidelines about the choice of heart valve prosthesis, and is fittingly transposed to the analyzed situation.

References

1. Nguyen S, Yamabe T, Zhao Y et al. Bicuspid-Associated Aortic Root Aneurysm: Mid to Long-Term Outcomes of David V Versus the Bio-Bentall Procedure. *Semin Thorac Cardiovasc Surg* 2021: in press.