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**REPLY: LOOK  
DEEPER INTO  
THROMBOCYTOPENIA**  
Reply to the Editor:



Transient periprocedural thrombocytopenia is common after biological aortic valve replacement (AVR) regardless of the prosthesis type or implant modality.<sup>1</sup> This phenomenon is more frequent in sutureless and stentless prostheses than in conventional sutured valves.<sup>1</sup> Many hypotheses have been raised, except in some cases of platelet transfusion, thrombocytopenia was never associated with poor outcomes.<sup>2-4</sup> Because it is not clinically relevant, Vendramin and Bortolotti<sup>5</sup> correctly pose the following questions: Do we really need to solve it and why should we still be worried? The Perceval S valve (LivaNova, London, UK) is considered the evolution of the Freedom SOLO (LivaNova) stentless valve, and both valves have been associated with postoperative thrombocytopenia.<sup>2,4</sup> There are 2 major issues that have never been addressed. First, Jiritano and colleagues<sup>6</sup> and my group<sup>7</sup> demonstrated that these valves were also associated with higher mean platelet volume and platelet distribution width compared with other prosthetic valves, indicating possible platelet activation. These platelets might be metabolically and enzymatically more active in comparison with smaller ones because they contain more alpha granules, produce more thromboxane A<sub>2</sub>, and feature high expression of adhesive glycoproteins.<sup>8</sup> Increased mean platelet volume and platelet distribution width have been identified as risk factors for thrombotic events, such as acute coronary syndromes and ischemic neurologic events.<sup>9,10</sup> To date, no study has investigated the 1-year follow-up of patients undergoing AVR with thrombocytopenia. Second, in the setting of multi-organ failure, thrombocytopenia after surgery might be clinically relevant and associated with worse outcomes.

Thrombocytopenia after surgical AVR is underestimated, and no study has been well designed to look at these issues. My suggestion is to look deeper into this phenomenon.

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## References

1. Jiritano F, Santarpino G, Serraino GF, Ten Cate H, Matteucci M, Fina D, et al. Periprocedural thrombocytopenia after aortic bioprosthesis implant: a systematic review and meta-analysis comparison among conventional, stentless, rapid-deployment and transcatheter valves. *Int J Cardiol.* 2019;296:43-50.
2. Miceli A. Commentary: Thrombocytopenia yes... thrombocytopenia no... that is the question. *J Thorac Cardiovasc Surg.* 2020;160:70-1.
3. Miceli A. Tissue valve, nitinol stent, or storage solution? The mystery still goes on. *J Thorac Cardiovasc Surg.* 2016;152:1633-4.
4. Stegmeier P, Schlömicher M, Stiegler H, Strauch JT, Bechtel FM. Thrombocytopenia after implantation of the Perceval S aortic bioprosthesis. *J Thorac Cardiovasc Surg.* 2020;160:61-8.
5. Vendramin I, Bortolotti U. The thrombocytopenia conundrum after aortic bioprosthetic implantation: do we really need to solve it? *J Thorac Cardiovasc Surg.* 2021;161:e21-2.
6. Jiritano F, Cristodoro L, Malta E, Mastroroberto P. Thrombocytopenia after sutureless aortic valve implantation: comparison between Intuity and Perceval bioprostheses. *J Thorac Cardiovasc Surg.* 2016;152:1631-3.
7. Miceli A, Gilmanov D, Murzi M, Parri MS, Cerillo AG, Bevilacqua S, et al. Evaluation of platelet count after isolated biological aortic valve replacement with Freedom Solo bioprosthesis. *Eur J Cardiothorac Surg.* 2012;41:69-73.
8. Martin JF, Kristensen SD, Mathur A, Grove EL, Choudry FA. The causal role of megakaryocyte-platelet hyperactivity in acute coronary syndromes. *Nat Rev Cardiol.* 2012;9:658-70.
9. Alvitigala BY, Azra MAF, Kottahachchi DU, Jayasekera MMPT, Wijesinghe RANK. A study of association between platelet volume indices and ST elevation myocardial infarction. *Int J Cardiol Heart Vasc.* 2018;21:7-10.
10. Greisenegger S, Endler G, Hsieh K, Tentschert S, Mannhalter C, Lalouschek W. Is elevated mean platelet volume associated with a worse outcome in patients with acute ischemic cerebrovascular events? *Stroke.* 2004;35:1688-91.

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**REPLY: TRANSIENT  
THROMBOCYTOPENIA  
AFTER PERCEVAL S  
IMPLANTATION: A  
GOOD REASON TO  
CONTINUE WITH THE  
RESEARCH**



**Reply to the Editor:**

We read with interest the letter by Vendramin and Bortolotti<sup>1</sup> regarding transient thrombocytopenia after surgical aortic valve replacement with the Freedom Solo stentless (FSS) prosthetic valve (LivaNova, London, United Kingdom) and with the Perceval S valve (LivaNova, London, United Kingdom). We note that the title of the letter suggests resignation about the enigma of thrombocytopenia because no valid scientific evidence has been demonstrated to date and awareness because, fortunately, transient thrombocytopenia is not associated with poor early prognosis and deleterious effects. Therefore, their question “Do we really need to solve it?” seems appropriate in this context.

In our commentary,<sup>2</sup> we pointed out that Steigmer and colleagues<sup>3</sup> failed to demonstrate statistically significant differences among groups in reoperation for bleeding and the lowest corrected platelet count, even though the worst values were reported for the Perceval S group. As we stated, the main reason for the absence of difference was the small sample size, rather than actual evidence of absence. Indeed, some