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# Evaluation of Reporting Deficiencies, Methodological Gaps, and Hemodynamic Paradoxes in the ScienCrown Transcatheter Valve: A Comprehensive Critical Analysis

LETTER TO THE EDITOR

To the Editor,

We read with interest the case report by Ding et al[1] on simultaneous transapical aortic and mitral valve-in-valve implantation using the ScienCrown valve. While we appreciate the authors' pioneering effort, serious deficiencies in the reporting of clinical and procedural data limit the scientific value of the study.

First, we observed a hemodynamic paradox in the acute post-procedural period. Within 24 hours, the mean aortic gradient increased from 6 mm Hg to 13.39 mm Hg, while the mean mitral gradient decreased from 5 mm Hg to 2.52 mm Hg. This opposite trend between 2 identical valves implanted in the same session raises questions regarding either the acute stability of the valves or the reliability of the measurements. More critically, technical analysis of the echocardiographic images in Figures 1 and 3 suggests potential measurement bias. In Figure 1A, the Doppler envelopes appear to be over-traced, potentially including flows or artifacts outside the valve, which might have overestimated the pre-procedural gradient of 44 mmHg. Conversely, in Figure 3A, the tracings for post-procedural aortic gradient measurements appear under-traced, suggesting that the reported value of 13.39 mmHg may not fully reflect the true velocity-time integral and could underestimate the gradient. This deviation from standard measurement methods seriously compromises the validity of the reported hemodynamic success.

Second, many vital procedural details are missing from the article. Total procedure time, contrast volume used, and whether postoperative acute kidney injury developed are not reported. Furthermore, the absence of any mention of pre- and post-procedural electrocardiogram (ECG) comparisons essential for understanding the impact of a new transcatheter valve on the conduction system means potential new conduction defects may have been overlooked.

Lastly, the use of a 27-French sheath via the transapical route carries a high risk of vascular and apical injury. Although double purse-string sutures are mentioned, the technique for closing such a large access site and whether any complications related to the transapical approach (such as pseudoaneurysm, bleeding, or wall motion abnormality) occurred during follow-up are not provided. Considering the 9.38% high vascular complication rate reported in the data by Chen et al[2] due to the device's retrievable design, the claim that the device is safe and predictable requires stronger supporting data.

In conclusion, full transparency must be ensured in such complex and novel procedures; procedure duration, contrast load, renal function, ECG changes, and short- to mid-term follow-ups must be reported.

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