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Authors: Robert Sobczyński, Jarosław Trębacz, Paweł Kleczyński, Maciej Stąpór, Janusz Konstanty-Kalandyk, Bogusław Kapelak, Jacek Legutko

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Transcarotid transcatheter aortic valve implantation in selected patients. Authors' reply

Short title: Authors' reply: Transcarotid TAVI

Robert Sobczyński[1], Jarosław Trębacz[2], Paweł Kleczyński[2, 3], Maciej Stąpór[2, 3], Janusz Konstanty-Kalandyk[1, 4], Bogusław Kapelak[1, 4], Jacek Legutko[2, 3]

[1]Department of Cardiac Surgery and Transplantation, St. John Paul II Hospital, Kraków, Poland
[2]Department of Interventional Cardiology, St. John Paul II Hospital, Kraków, Poland
[3]Department of Interventional Cardiology, Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland
[4]Department of Cardiac Surgery and Transplantation, Institute of Cardiology, Jagiellonian University Medical College, Kraków, Poland

Correspondence to:
Robert Sobczyński, MD, PhD,
Department of Cardiac Surgery and Transplantation,
St. John Paul II Hospital,
Prądnicka 80, 31–202 Kraków, Poland,
phone: +48 12 614 30 75,
e-mail: sobczynski@poczta.fm

We are grateful for the interest generated by our publication and for the highly practical questions raised by the authors of the letter [1]. Their comments clearly reflect substantial first-hand expertise in the nuanced and still-evolving domain of alternative-access transcatheter aortic valve implantation (TAVI). We fully share the overarching objective of continuously refining procedural strategies, and we believe that inter-center dialogue and transparent experience sharing are indispensable for optimizing outcomes in this particularly vulnerable patient population.

Response to point 1

Contemporary society guidance on alternative-access transcatheter aortic valve replacement focuses primarily on patient selection, imaging-based access planning, and technical execution,

and does not prescribe a universal requirement for a specific intra-procedural cerebral neuromonitoring modality [2]. In our series, the use of near-infrared spectroscopy (NIRS) was intended as an adjunctive safety signal — to detect any clinically meaningful deterioration in regional cerebral oxygenation should it occur, and to provide a physiologic context for neurological assessment in the post-procedural period.

We agree that the value of monitoring is contingent upon a predefined response pathway. In the event of a significant NIRS decline during the decisive procedural phase, rescue manoeuvres are inherently limited; therefore, management would be centered on: 1) immediate verification of signal integrity and probe position; 2) optimization of systemic determinants of cerebral oxygen delivery (augmentation of mean arterial pressure, correction of arrhythmia, optimization of oxygenation/ventilation and hemoglobin status where relevant); and — critically — 3) minimization of carotid flow compromise time through streamlined catheter manipulation and expeditious completion of the essential steps without compromising procedural quality. In our cohort and in our subsequent institutional experience, we have not encountered a scenario requiring escalation beyond this pragmatic, physiology-driven approach.

We also acknowledge the authors' comment regarding ischemic preconditioning. While our report was not designed to assess preconditioning protocols, a brief, controlled carotid occlusion performed under NIRS surveillance may indeed serve as a pragmatic, real-time appraisal of collateral cerebrovascular reserve through the circle of Willis in selected patients [2]. Finally, we consider it plausible that the low-profile characteristics of contemporary balloon-expandable delivery systems may help reduce the duration and severity of carotid flow limitation, although this hypothesis warrants systematic study rather than extrapolation from small series.

Response to point 2

In our procedural model, we deliberately aim to preserve antegrade carotid flow throughout all preparatory stages — from the surgical exposure and initial puncture through to the introduction of the definitive large-bore sheath, which constitutes the principal moment of hemodynamic flow limitation. We agree that embolization from disrupted or hyperplastic intima cannot be fully excluded in an elderly, atherosclerosis-prone TAVI population. However, this risk is not unique to transcarotid access; embolic burden in TAVI is multifactorial and may arise from manipulation of the aortic arch, native valve complex, and diseased vasculature across access strategies.

With respect to adjunctive cerebral protection, available randomized evidence has not consistently demonstrated a significant reduction in overall clinical stroke with routine cerebral embolic protection during TAVI [3] Consequently, our emphasis remains on: 1) stringent pre-procedural screening (computed tomography angiography/duplex-based exclusion of prohibitive carotid disease or unstable plaque morphology); 2) atraumatic surgical handling and meticulous arteriotomy management; and 3) targeted measures at the most emboligenic moment — namely, brief distal clamping with flushing at device removal to reduce the probability of distal microembolization from the access segment.

We did not perform simultaneous internal carotid artery clamping during common carotid intervention, as this could introduce an additional hypoperfusion stressor in a population with variable collateral reserve. Instead, we favor limiting the duration of flow compromise to the irreducible minimum and using distal control selectively at sheath removal, where its mechanistic rationale is strongest.

Clarification regarding the access-site event and VARC-3 classification

We appreciate the opportunity to clarify endpoint adjudication. The case requiring urgent surgical revision for suspected residual access-site narrowing did not meet Valve Academic Research Consortium version 3 (VARC-3) criteria for a major vascular complication; we agree that it is best classified as a VARC-3 minor vascular complication [4].

We fully concur that access selection must be individualized, algorithm-driven, and anchored in meticulous imaging evaluation and institutional expertise. Contemporary consensus guidance emphasizes the importance of comprehensive anatomic assessment and structured decision-making for non-femoral access selection [1]. In our practice, subclavian/axillary access is also utilized within a comparable algorithmic framework, consistent with published experience in complex peripheral vascular anatomy (including scenarios with extensive aortic stent constructs and occlusive disease) [5].

In conclusion, we thank the authors for a constructive and clinically relevant discussion. We believe that continued cross-centre exchange, particularly regarding peri-procedural neuroprotection, access-site management, and standardized endpoint reporting, will progressively refine best practices and improve outcomes for patients who require alternative-access TAVI.

Article information

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