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Age and long-term survival after transcatheter aortic valve implantation: the expected paradox reveals good clinical practice

Irzal Hadžibegović*, Daniel Unić, Ivana Jurin, Nikola Pavlović, Marin Pavlov, Tomislav Šipić, Savica Gjorgjievska, Igor Rudež, Šime Manola

Dubrava University Hospital, Zagreb, Croatia

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***ADDRESS FOR CORRESPONDENCE:** Irzal Hadžibegović, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-91-5333-091 / E-mail: irzalh@gmail.com

ORCID: Irzal Hadžibegović, https://orcid.org/0000-0002-3768-9134 • Daniel Unić, https://orcid.org/0000-0003-2740-4067
Ivana Jurin, https://orcid.org/0000-0002-2637-9691 • Nikola Pavlović, https://orcid.org/0000-0001-9187-7681
Marin Pavlov, https://orcid.org/0000-0003-3962-2774 • Tomislav Šipić, https://orcid.org/0000-0001-8652-4523
Savica Gjorgjievska, https://orcid.org/0000-0002-4304-1852 • Igor Rudež, https://orcid.org/0000-0002-7735-6721
Šime Manola, https://orcid.org/0000-0001-6444-2674

Introduction: Transcatheter aortic valve implantation (TAVI) has rapidly expanded across all age groups and surgical risk strata. While younger patients are generally expected to have better long-term outcomes, real-world registry data often challenge this assumption due to specific patient selection dynamics.[1] We evaluated the impact of chronological age on long-term survival in our institutional TAVI registry and aimed to interpret the underlying clinical mechanisms.

Patients and Methods: We analyzed long-term survival data from our prospective single-center TAVI registry. Patients were stratified into three distinct age groups: younger than 70 years (Group 1), 70 to 80 years (Group 2), and older than 80 years (Group 3). Baseline comorbidities, procedural success, and long-term all-cause mortality were assessed. Survival curves were generated using the Kaplan-Meier method and compared using the log-rank test.

Results: A total of 989 TAVI patients were evaluated (Group 1: 66; Group 2: 464; Group 3: 459 patients), with a median follow-up of 21 months. Survival rates at 12 and 24 months were 86% and 80% for patients <70 years, 91% and 87% for those aged 70–80, and 86% and 79% for patients >80 years, respectively. At last recorded follow-up, there were 69.7%, 74.6%, and 68.4% patients alive in Group 1, 2, and 3, respectively, with the longest follow-up time of 176 months in a patient still alive who received a self-expandable valve at the age of 75. Notably, the youngest cohort was very small and did not exhibit a significant survival advantage. This "expected paradox" was strongly driven by a markedly higher prevalence of malignancy, porcelain aorta, severe frailty, or morbid obesity that were not recognized by standard risk scores widely used in everyday practice (STS and Euroscore II in Group 1 were 3 and 2.7%, respectively) among patients <70 years. Group 2 comprised almost half of all TAVI patients and exhibited significantly better 1- and 2-years survival rates (Log-Rank, p=0.005), whereas patients in Group 3 had survival rates comparable to TAVI patients younger than 70 years.

Conclusion: Chronological age and SAVR procedural scores do not predict long-term survival after TAVI. Very small proportion of patients <70 years and the observed survival paradox confirms good clinical practice and appropriate Heart Team tailoring and budget management in our center. The growing volume of patients with a clear TAVI indication and clinical benefit before further clinical deterioration should be matched by a corresponding increase in TAVI budgets allocated to highly specialized centers.

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LITERATURE

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