

# Assessment of platelet function during transcatheter aortic valve implantation

 Zvonimir Ostojić\*,  
 Jure Samardžić,  
 Saša Pavašević,  
 Dubravka Šipuš,  
 Ivica Šafradin,  
 Vlatka Rešković Lukšić,  
 Jadranka Šeparović Hanževački,  
 Boško Skorić,  
 Davor Miličić,  
 Joško Bulum

University of Zagreb School of  
Medicine, University Hospital  
Centre Zagreb, Zagreb, Croatia

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**\*ADDRESS FOR CORRESPONDENCE:** Zvonimir Ostojić, KBC Zagreb, Kišpaticeva 12, HR-10000 Zagreb, Croatia. /  
Phone: +385-91-8980-702 / E-mail: [ostojiczvonimir@gmail.com](mailto:ostojiczvonimir@gmail.com)

**ORCID:** Zvonimir Ostojić, <https://orcid.org/0000-0003-1762-9270> • Jure Samardzic, <https://orcid.org/0000-0002-9346-6402>  
Saša Pavašević, <https://orcid.org/0000-0002-3705-0226> • Dubravka Šipuš, <https://orcid.org/0000-0002-5631-0353>  
Ivica Šafradin, <https://orcid.org/0000-0003-4519-5940> • Vlatka Rešković Lukšić, <https://orcid.org/0000-0002-4721-3236>  
Jadranka Šeparović Hanževački, <https://orcid.org/0000-0002-3437-6407> • Boško Skorić, <https://orcid.org/0000-0001-5979-2346>  
Davor Miličić, <https://orcid.org/0000-0001-9101-1570> • Joško Bulum, <https://orcid.org/0000-0002-1482-6503>

**Introduction:** Recent studies described changes in platelet reactivity (PR) in days following transcatheter aortic valve implantation (TAVI).<sup>1</sup> However, precise time course and duration of these changes have not been fully investigated. Aim of the study was to investigate PR changes during and after TAVI.

**Patients and Methods:** Study included 40 consecutive patients with severe and symptomatic aortic stenosis undergoing transfemoral TAVI procedure. Patients' clinical characteristics were collected from medical records. All patients who did not have chronic dual antiplatelet therapy received loading dose of aspirin and clopidogrel (300 mg) one day before the procedure followed by their standard maintenance doses. PR was measured in seven time points: before start of procedure (T1), after heparin administration (T2), 10 minutes after valve implantation (T3), at the end of procedure (T4), and on 3<sup>rd</sup>, 6<sup>th</sup> and 30<sup>th</sup> postoperative day (T5-7). PR was measured using impedance aggregometer in response to three platelet aggregation agonists using ASPI, ADP and TRAP test.

**Results:** Mean patient age was 82.7 years with majority of patients being male 60% (N=25). All patients underwent successful transfemoral TAVI procedure using either self-expandable (N=25, 62.5%) or balloon-expandable valve. Mean postimplantation gradient was 9.97±4.44 mmHg. More than mild paravalvular regurgitation persisted in 2 (5%) patients. Values of PR in each tested time point are presented in **Table 1**. There was no significant difference in PR between T1 and T2. After the valve implantation significant reduction of PR in all 3 tests was observed. PR continued to decline on consecutive measurements, with lowest values reached on 3<sup>rd</sup> post-TAVI day (T5). On T6, value of ASPI test were not significantly different to the ones measured on T1, while values of ADP and TRAP test remained significantly lower. By 30<sup>th</sup> post-TAVI day PR values reached levels not significantly different compared to T1.

**TABLE 1. Results of platelet reactivity test using ASPI, ADP and TRAP test in tested time points.**

	T1	T2	T3	T4	T5	T6	T7	P
ASPI	22.97±23.01	19.17±19.61	10.36±11.60	10.23±11.38	9.71±10.68	15.28±17.32	20.97±21.26	< 0.001
ADP	40.46±23.68	33.11±20.45	24.15±14.07	22.18±12.63	14.95±8.59	27.81±17.96	33.11±23.60	< 0.001
TRAP	91.69±32.50	93.42±27.71	69.31±26.57	64.05±24.20	40.97±17.71	69.09±29.08	88.06±35.51	< 0.001

Values are presented in Units (U)

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**Conclusions:** Presented results indicate that transfemoral TAVI induces transient decrease in PR regardless of the platelet activation pathway. Significant reduction of PR is observed 10 minutes after valve implantation with continuous decrease until 3<sup>rd</sup> day post-TAVI after which it is gradually increasing to pre-TAVI values.

## LITERATURE

1. Orvin K, Eisen A, Perl L, Zemer-Wassercug N, Codner P, Assali A, et al. Platelet reactivity in patients undergoing transcatheter aortic valve implantation. *J Thromb Thrombolysis.* 2016 Jul;42(1):11-8. <https://doi.org/10.1007/s11239-015-1322-3>