©Copyright by Croatian Cardiac Society. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/) which permits users to read, download, copy, distribute, print, search, or link to the full texts of these articles in any medium or format and to remix, transform and build upon the material, provided the original work is properly cited and any changes properly indicated.

Mechanical Circulatory Support as a Bridge to Definitive Treatment of Mechanical Complications of Myocardial Infarction: A Single-Centre Experience

Luka Antolković[1]*, Aleksandar Blivajs[1], Tomislav Čikara[1], Ivan Kralj[2], Anita Pleško[1]

[1]Dubrava University Hospital, Zagreb, Croatia
[2]University of Zagreb, School of Medicine, Zagreb, Croatia

KEYWORDS: acute coronary syndrome, mechanical complications of myocardial infarction, mechanical circulatory support.

CITATION: Cardiol Croat. 2026;21(11-12):340. | https://doi.org/10.15836/ccar2026.340

***ADDRESS FOR CORRESPONDENCE:** Luka Antolković, Klinička bolnica Dubrava, Av. G. Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-91-7860-886 / E-mail: lukaantolkovic0@gmail.com

ORCID: Luka Antolković, https://orcid.org/0000-0002-5313-2213 • Aleksandar Blivajs, https://orcid.org/0000-0003-3404-3837 Tomislav Čikara, https://orcid.org/0000-0001-8012-4481 • Ivan Kralj, https://orcid.org/0009-0009-2469-7440 Anita Pleško, https://orcid.org/0009-0009-7659-7011

Introduction: Mechanical complications of acute myocardial infarction remain associated with high mortality despite advances in reperfusion therapy[1]. Their management requires timely diagnosis, multidisciplinary decision-making, and individualized strategies for circulatory stabilization and definitive surgical treatment[2]. We aimed to describe our single-centre experience with mechanical circulatory support (MCS) as a bridge to definitive treatment and report in-hospital outcomes.

Patients and Methods: This retrospective observational study included 11 patients treated for mechanical complications of myocardial infarction at University Hospital Dubrava between September 13, 2023, and October 9, 2026. Nine patients had post-infarction ventricular septal defect (VSD), and two had papillary muscle rupture with acute mitral regurgitation. Continuous variables were summarized as medians and interquartile ranges (IQRs), and categorical variables as counts and percentages. Between-group comparisons were performed using the Mann–Whitney U test and Fisher's exact test, as appropriate.

Results: MCS was used in nine patients (81.8%). Six patients received venoarterial extracorporeal membrane oxygenation (VA-ECMO), four received an intra-aortic balloon pump (IABP), and one received Impella in combination with VA-ECMO; support modalities overlapped. Eight patients (72.7%) underwent definitive surgical treatment. Among patients receiving MCS, six of nine (66.7%) proceeded to surgery, with a median interval of 11 days (IQR 8.75–16.25). One patient underwent successful heart transplantation following initial VA-ECMO support. Of three patients receiving IABP without ECMO, two proceeded to surgery and both survived the procedure. Among six patients receiving ECMO, four proceeded to surgery and two survived surgical treatment. Overall in-hospital mortality was 54.5% (6/11; 95% exact confidence interval [CI], 23.4–83.3%). Five patients (45.5%) survived hospital discharge, and all remained alive at six-month follow-up. Admission lactate levels were numerically higher in the ECMO group than in the IABP-only group (median 6.10 mmol/l vs. 1.95 mmol/l; p = 0.10). No statistically significant differences were observed in admission creatinine (265 µmol/l vs. 114 µmol/l; p = 0.69) or AST levels (1228 U/l vs. 37 U/l; p = 0.71).

Conclusion: In this small single-centre cohort, MCS was used as a bridging strategy to definitive treatment in patients with mechanical complications of myocardial infarction. Two-thirds of patients receiving MCS proceeded to surgery. Despite substantial in-hospital mortality, these findings illustrate the clinical feasibility of a stabilization strategy incorporating MCS in selected high-risk patients. The small sample size and retrospective design preclude conclusions regarding the comparative effectiveness of individual support modalities.

RECEIVED:
October 25, 2026
UPDATED:
November 4, 2026

LITERATURE

1. Damluji AA, van Diepen S, Katz JN, Menon V, Tamis-Holland JE, Bakitas M, et al; American Heart Association Council on Clinical Cardiology; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiovascular Surgery and Anesthesia; and Council on Cardiovascular and Stroke Nursing. Mechanical Complications of Acute Myocardial Infarction: A Scientific Statement From the American Heart Association. Circulation. 2021 Jul 13;144(2):e16-e35. https://doi.org/10.1161/CIR.0000000000000985
2. Meza-González YA, Manzur-Barbur MC, Ochoa-Díaz AF, Ariza-Ordoñez N, Vásquez-Rodríguez JF, Rodríguez-González MJ. Untangling Mechanical Complications of Acute Myocardial Infarction. JACC Case Rep. 2025 Apr 2;30(7):103400. https://doi.org/10.1016/j.jaccas.2025.103400