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### Impact of Concomitant Aortic Valve Replacement in Patients with Mild-to-Moderate Aortic Valve Regurgitation Undergoing LVAD Implantation: Propensity Score-Matched Analysis of the EUROMACS Dataset

A. Loforte,<sup>1</sup> G. Nersesian,<sup>2</sup> G. Gliozzi,<sup>3</sup> G. Gallone,<sup>4</sup> A. Spitaleri,<sup>1</sup> F. Schoenrath,<sup>2</sup> I. Netuka,<sup>5</sup> D. Zimpfer,<sup>6</sup> T. De By,<sup>7</sup> M. Boffini,<sup>1</sup> I. Vendramin,<sup>3</sup> J. Gummert,<sup>8</sup> V. Falk,<sup>2</sup> B. Meyns,<sup>9</sup> M. Rinaldi,<sup>1</sup> and E. Potapov.<sup>2</sup> <sup>1</sup>Department of Surgical Sciences, City of Health and Science Hospital, Department of Cardiac Surgery, University of Turin, Turin, Italy; <sup>2</sup>Department of Cardiothoracic and Vascular Surgery, Deutsches Herzzentrum der Charite, Berlin, Germany; <sup>3</sup>Department of Cardiac Surgery, SMaria della Misericordia University Hospital of Udine, Udine, Italy; <sup>4</sup>Department of Medical Sciences, City of Health and Science Hospital, Department of Cardiology, University of Turin, Turin, Italy; <sup>5</sup>Department of Cardiovascular Surgery, Institute for Clinical and Experimental Medicine, Prague, Czech Republic; <sup>6</sup>Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria; <sup>7</sup>EUROMACS, Windsor, United Kingdom; <sup>8</sup>Department of Thoracic, Cardiac and Vascular Surgery, Herz und Diabeteszentrum NRW, Bad Oeynhausen, Germany; <sup>9</sup>Department of Cardiac Surgery, University Hospital Leuven, Leuven, Belgium

**Purpose:** Aortic valve regurgitation (AR) may be observed in patients undergoing left ventricular assist device (LVAD) implantation. AR in LVAD recipients leads to a persistent heart failure scenario. In this study we compared the outcomes of LVAD patients with preoperative mild-to-moderate AR who underwent a concomitant aortic valve replacement (AVR) to those in whom AR was left untreated.

**Methods:** A retrospective propensity score-matched analysis of adult patients enrolled in the EUROMACS registry between January 2011 and December 2021 was performed. Patients with mild-to-moderate AR were divided into two groups: with and without concomitant biological AVR. Patients, who underwent aortic valve repair or mechanical AVR were excluded from the analysis.

**Results:** Following 1:1 propensity score matching, each group consisted of 55 patients. The mean age was 59 ± 11 years, 101 (92%) were male, 67 (61%) were on inotropic support, and 30 (27.3%) on temporary mechanical circulatory support. Eighty-two (74.5%) patients presented mild and 28 (25.5%) moderate AR. AVR patients demonstrated longer duration of invasive ventilation (353 ± 526 min vs. 133 ± 272 min, p=0.017), but similar incidence of postoperative reintubation and dialysis. Patients in non-AVR cohort had a higher incidence of pump thrombosis (11 (20%) vs. 3 (5.5%), p=0.022) but less major bleeding events (9 (16.4%) vs. 18 (32.7%), p=0.046). The 30-day mortality was 10.9% vs. 14.5% (p=0.59) in non-AVR and AVR group, respectively. One-year mortality was 30.9% vs. 43.6% (p=0.19), 3-year mortality 41.8% and 58.2% (p=0.1), and 5-year

mortality (47.3% and 63.6% (p=0.1), respectively). There was no difference in the incidence of heart transplantation (7 (12.7%) vs. 9 (16.4%), p=0.59) and LVAD weaning (2 (3.6%) vs. 5 (9.1%), p=0.22) between the non-AVR and AVR group, respectively.

**Conclusion:** Patients with mild-to-moderate AR undergoing concomitant AVR during LVAD implantation have similar survival compared to those without AVR. Patients with concomitant AVR observed a higher risk of bleeding complications but had less pump thrombosis events.

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### Cryoablation for Ventricular Arrhythmia During Left Ventricular Assist Device Implantation is Safe and Feasible: A Retrospective Cohort Study

C.P. Wong, I. Bhatia, O.J. Lee, and C. Ho. Queen Mary Hospital, Hong Kong, Hong Kong

**Purpose:** Post-operative ventricular arrhythmia (VA) occur in up to 60% of left ventricular assist device (LVAD) recipients, associated with increased mortality and morbidity, including right ventricular dysfunction. This study aims to evaluate the safety and efficacy of a novel treatment, concomitant surgical cryoablation with LVAD implantation, in reducing post-operative VAs.

**Methods:** A single-centre retrospective cohort study was designed including consecutive LVAD recipients with documented preoperative VAs. Patients were stratified by whether they had concomitant cryoablation performed ("Cryo Group") or not ("Non-cryo Group"). The primary outcome was the occurrence of post-operative VAs, while secondary outcomes included 30-day all-cause mortality, anti-arrhythmic drug (AAD) use, and complications.

**Results:** Our cohort consisted of 14 patients in the Cryo Group and 25 patients in the Non-cryo Group, with >= 80% of patients in either group receiving Heartmate III. Post-operative VAs occurred in 36% of patients in the Cryo Group and 56% in the Non-cryo Group (p=.22). Early post-operative VA (within 30 days post-operatively) occurred in 14% of patients in the Cryo Group and 24% in the Non-cryo Group (p=.69). At 6 months post-operative, 50% of surviving patients in the Cryo Group and 76% in the Non-Cryo group remained on AAD (p=.12). The 1-year survival probability was 71.4% in the Cryo Group and 80.0% in the Non-cryo Group (p=.25). There were no statistically significant differences in the rates of the predefined complications, including re-sternotomy for hemostasis, tracheostomy requirement and thromboembolic events. Duration of hospital stay (p = 0.12) and ICU stay (p = 0.07) did not differ significantly. There were no 30-day all-cause mortality in the Cryo Group.

**Conclusion:** This study represents the largest reported cohort of patients undergoing concomitant cryoablation and LVAD implantation. Our findings suggest that this combined procedure is safe and feasible. Although limited by a modest sample size, there was a non-statistically significant trend towards reduced post-operative VAs and AAD use following surgical cryoablation. Moving forward, cryoablation should be considered as a treatment option in LVAD recipients with preoperative VAs.

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### Incidence and Risk Factors for Early Stroke Following Durable Left Ventricular Assist Device (LVAD) Implantation: An STS InterMACS Analysis

E. Molina,<sup>1</sup> D. Goldstein,<sup>2</sup> R. Cantor,<sup>3</sup> M. Kanwar,<sup>4</sup> D. Meyer,<sup>5</sup> U. Jorde,<sup>2</sup> O. Saeed,<sup>2</sup> K. Wood,<sup>6</sup> R. Rudraraju,<sup>3</sup> S. Lewis,<sup>3</sup> J. Kirklin,<sup>3</sup> F. Pagani,<sup>7</sup> and A. Kilic.<sup>8</sup> <sup>1</sup>Piedmont Heart Institute - Samsky Advanced Heart Failure Center, Atlanta, GA; <sup>2</sup>Montefiore Einstein Center for Heart and Vascular Care, New York, NY; <sup>3</sup>Kirklin Solutions, Hoover, AL; <sup>4</sup>Cardiovascular Institute at Allegheny Health Network, Pittsburgh, PA; <sup>5</sup>Baylor Scott and White Health, Baylor University Medical Center, Dallas, TX; <sup>6</sup>University of Rochester Medical Center, Rochester, NY; <sup>7</sup>University of Michigan, Ann Arbor, MI; <sup>8</sup>Medical University of South Carolina, Charleston, SC