

Combined endocardial and epicardial ventricular tachycardia ablation for ischemic and nonischemic dilated cardiomyopathy

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Background: Patients with ischemic (IHD) and nonischemic (NICM) dilated heart disease and reduced left ventricular ejection fraction are at increased risk of ventricular tachycardias (VTs) or sudden cardiac death. VT catheter ablation is an invasive treatment modality for antiarrhythmic drugs-resistant VT that reduces arrhythmic episodes, improves quality of life and improves survival in patients with electrical storm. Direct comparison of the outcomes from combined and non-combined endoepicardial ablations is limited by patient characteristics, follow-up durations, protocols heterogeneity and scarcity of randomized trials. We aim to investigate the long-term clinical outcomes of these 2 strategies in the IHD and NICM populations.

Methods: Multicentric observational registry including 316 consecutive patients who underwent combined (C-ABL) and non-combined (NC-ABL) endoepicardial ventricular tachycardia (VT) ablation for drug-resistant VT between January 2008 and July 2019. Chagas' disease patients were excluded. Primary and secondary efficacy endpoints were defined as VT-free survival and all-cause death after ablation. Safety outcomes were defined by 30-days mortality and procedure-related complications.

Results: Most of the patients were male (85%), with IHD (67%) and a mean age of 63±13 years. During a mean follow-up of 3±2 years, 117 (37%) patients had VT recurrence and 73 (23%) died. Multivariate survival

analysis identified storm (ES) at presentation (HR=2.17; 95% CI 1.44–3.25), IHD (HR=0.53, 95% CI 0.36–0.78), left ventricular ejection fraction (LVEF) (HR=0.97, 95% CI 0.95–0.99), New York Heart Association (NYHA) functional class III or IV (HR=1.79, 95% CI 1.13–2.85) and C-ABL (HR=0.49, 95% CI 0.27–0.92) as independent predictors of VT recurrence. In 135 patients undergoing two or more ablation procedures only C-ABL (HR=0.36, 95% CI 0.17–0.80) and ES at presentation (HR=2.42, 95% CI 1.24–4.70) were independent predictors of arrhythmia recurrence. The independent predictors of all-cause mortality were ES (HR=2.17, 95% CI 1.33–3.54), LVEF (HR=0.95, 95% CI 0.92–0.98), age (HR=1.03, 95% CI 1.01–1.05), NYHA functional class III or IV (HR=2.04, 95% CI 1.12–3.73), and C-ABL (HR=0.22, 95% CI 0.05–0.91). The survival benefit was only seen in patients with a previous ablation (P for interaction=0.04) – Figure 1. Mortality at 30-days was similar between NC-ABL and C-ABL (4% vs. 2%, respectively, P=0.777), as was the complication rate (10.3% vs. 15.1% respectively, P=0.336).

Conclusion: A combined endo-epicardial approach appears to be associated with greater VT-free survival and overall survival in ischemic and non-ischemic patients undergoing repeated VT catheter ablations. Both strategies seem equally safe.

