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Original research (includes database studies and QI projects)

**Title:** Catheter ablation of ventricular arrhythmia in patients with mitral valve regurgitation

**Description:** This is a database study that includes comprehensive outcomes and descriptive data of ventricular ablation in patients with mitral valve regurgitation.

## **Catheter ablation of ventricular arrhythmia in patients with mitral valve regurgitation**

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**Introduction:** Data regarding ventricular tachycardia (VT) or premature ventricular complex (PVC) ablation in patients with mitral regurgitation (MR) is limited. We aimed to investigate the characteristics, safety, and outcomes of radiofrequency catheter ablation (CA) in patients with MR and ventricular arrhythmias (VA).

**Methods:** We identified consecutive patients with moderate or severe MR who underwent CA for VT or PVC between January 2013- December 2018. We investigated the mechanism of arrhythmia, ablation approach, peri-procedural complications, and outcomes.

**Results:** In our cohort of 47 patients (77% men, mean age  $68\pm 12$  years, left ventricular ejection fraction  $34.2\pm 15\%$ ) with MR underwent CA (33 VT; 14 PVC). Access to the left ventricle was via trans-septal approach in 32 patients and retrograde aortic approach was used in 8 patients. Epicardial approach was combined with trans-septal approach in 4 patients and with retrograde aortic approach in one patient. Clinical VA substrates involved the peri-mitral area in 15 (32%) patients. No procedure-related complications were reported. Patients who underwent VT ablation had a significantly lower survival rate at 1-year post-ablation compared to those who underwent PVC ablation (Log-rank  $P=0.01$ ). There was no significant difference in 1-year recurrence-free survival rate between patients who underwent VT ablation and those who underwent PVC ablation (Log-rank  $P=0.15$ ). There was no significant difference in 1-year survival rate or 1-year recurrence-free survival rate post-ablation between patients with ischemic cardiomyopathy (ICM) and those with non-ischemic cardiomyopathy (NICM) (Log-rank  $P=0.20$  and  $P=0.90$ , respectively). No arrhythmia-related death was documented on long-term follow-up.

**Conclusion:** CA of VAs can be performed safely in patients with MR with reasonable long-term outcomes.