Mapping and Ablation Strategy for Ablation of VT after healed MI

Ashraf El-Shalakany, MD, PhD, FACC, FHRS, FSCAI
Director Arrhythmia & Interventional Cardiology Clinic, Coral Springs FL

CENTRAL ILLUSTRATION: Role of Catheter Ablation in the Management of Patients With Structural Heart Disease


Srinivas R. Dukkipati et al. JACC 2017;70:2924-2941
Entrainment/Mapping Criteria for the Prediction of Termination of Ventricular Tachycardia by Single Radiofrequency Lesion in Patients With Coronary Artery Disease
Ashraf El-Shalakany, Tomy Hadjis, Panos Papageorgiou, Kevin Monahan, Laurence Epstein, Mark E. Josephson
Circulation. 1999;99:2283-2289

Exact entrainment.

Example of patient meeting all 3 criteria.

Successful ablation at site has all 3 criteria A, Intracardiac recording during entrainment demonstrating all 3 criteria.
Srinivas R. Dukkipati et al. JACC 2017;70:2924-2941
Mapping of Ventricular Tachycardia Post MI for Critical Sites

1. Hemodynamically stable VT that can be mapped is about 1/3 to 1/2 of the VT.
2. Entrainment mapping during VT
3. Pacemapping during SR
4. Voltage Map during SR between 0.5-1.5 mVolt
5. Potential map for LP during SR
6. DEEP (Delayed Evoked Potentials) mapping
Ablation Strategy for Ventricular Tachycardia Post MI

1. During VT guided with activation mapping and entrainment.
2. If unstable VT or multiples or stable VT depending on operator preference:
   a. Pace mapping during SR
   b. Substrate mapping/ modification utilizing Voltage Map between 0.5-1.5 mVolt or late potentials, DEEP (Delayed Evoked Potentials) mapping
   c. Linear ablation could be considered substrate modification
3. Using irrigated tip RF ablation catheter 30-50 watts with temperature limit of 50 C.
Enrolled
N=249

Excluded (n=16)

Safety Cohort
n=233

Discontinued (n=9)

Efficacy Cohort
n=224

6-Month Effectiveness Cohort
n=184*

Long-Term Effectiveness Cohort
1 year, n=176*
2 years, n=161*
3 years, n=141*

Francis E. Marchlinski et al. JACC 2016;67:674-683
Misconception

1. Reentry is determined by a fixed substrate at the scar
2. low voltage implies dense scar
3. Isthmus/es defined by entrainment are valid and accurate
4. Current mapping tools are enough to determine barriers forming channels during reenrant VT.
Dependence of bipolar voltage on conduction velocity and angle of incidence

Mark E. Josephson, and Elad Anter JACEP 2015;1:341-352
Conclusion

• 1. VT post MI carry long term poor outcome
• 2. First line of therapy is ICD
• 3. Addressing VT ablation early
• 4. Assess if VT hemodynamically stable or not
• 5. using multiple mapping techniques utilizing 3 D mapping for best outcome
• 6. Still acute success rate around 75% with 2 year recurrence rate around 50%.

• Still room to improve