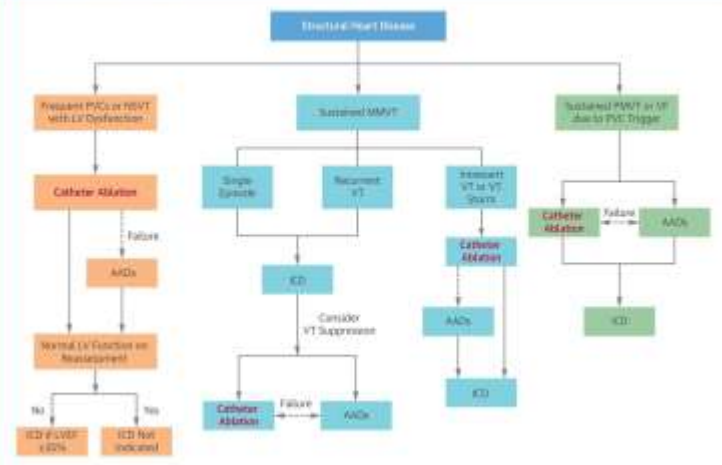


Mapping and Ablation Strategy for Ablation of VT after healed MI

Ashraf El-Shalakany, MD, PhD, FACC, FHR, FSCAI

Director Arrhythmia & Interventional Cardiology Clinic, Coral Springs FL

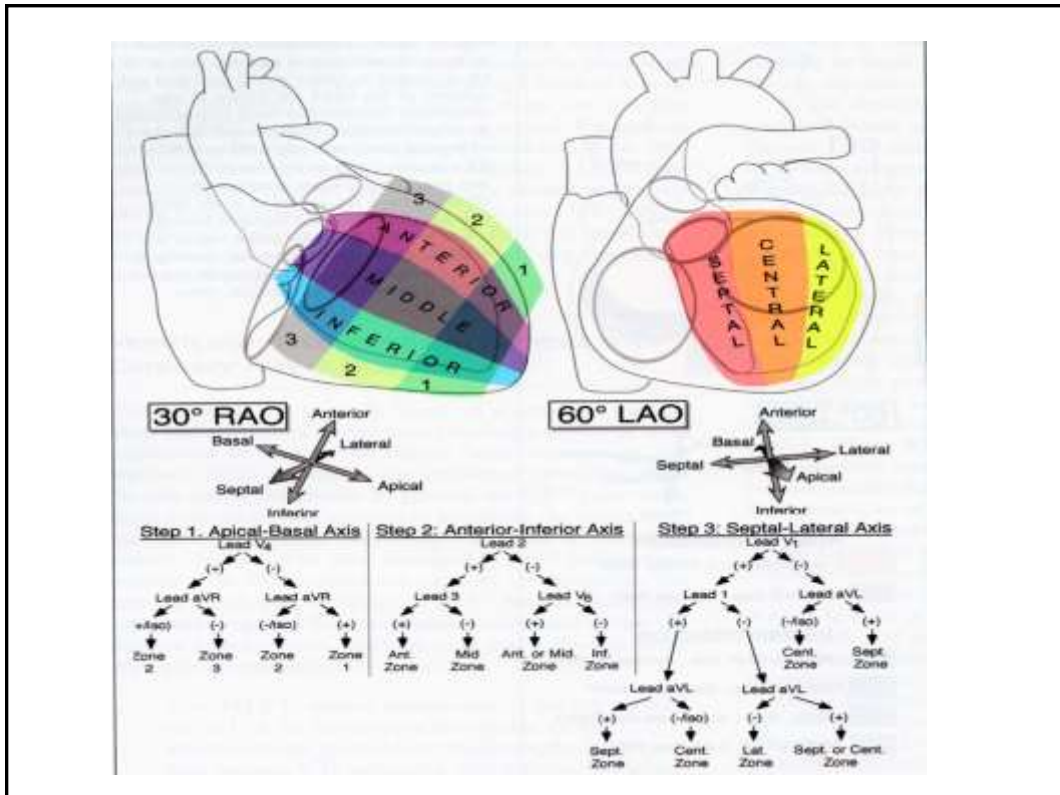
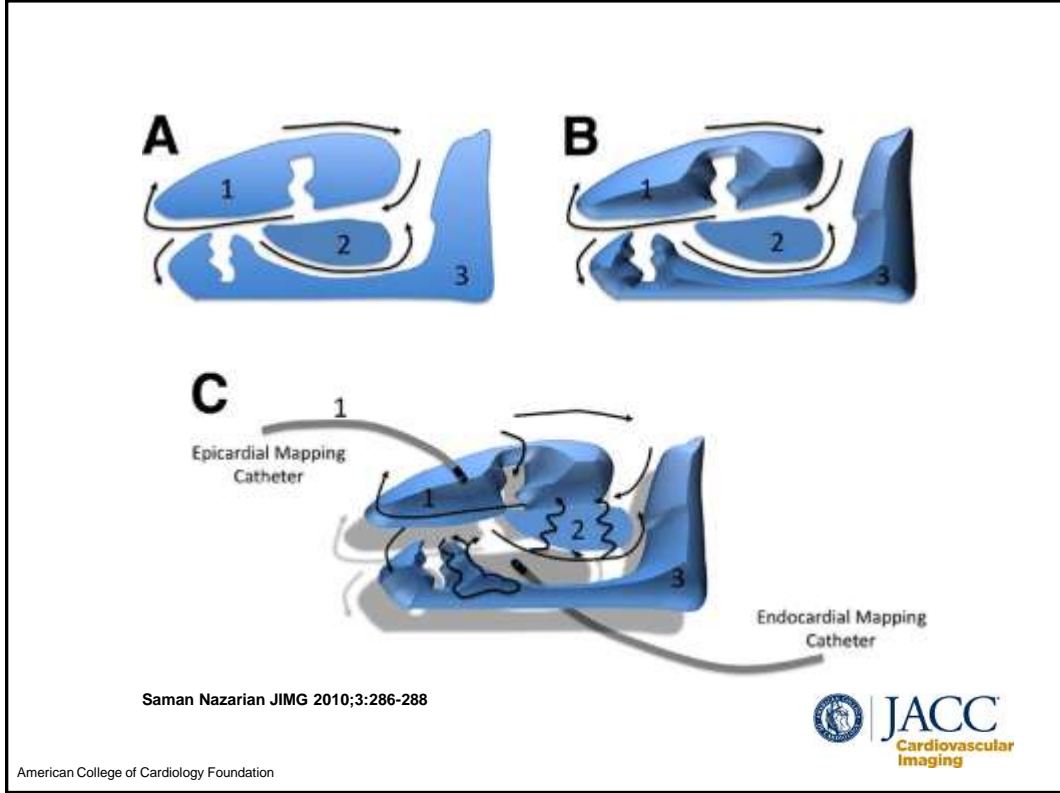
CENTRAL ILLUSTRATION: Role of Catheter Ablation in the Management of Patients With Structural Heart Disease

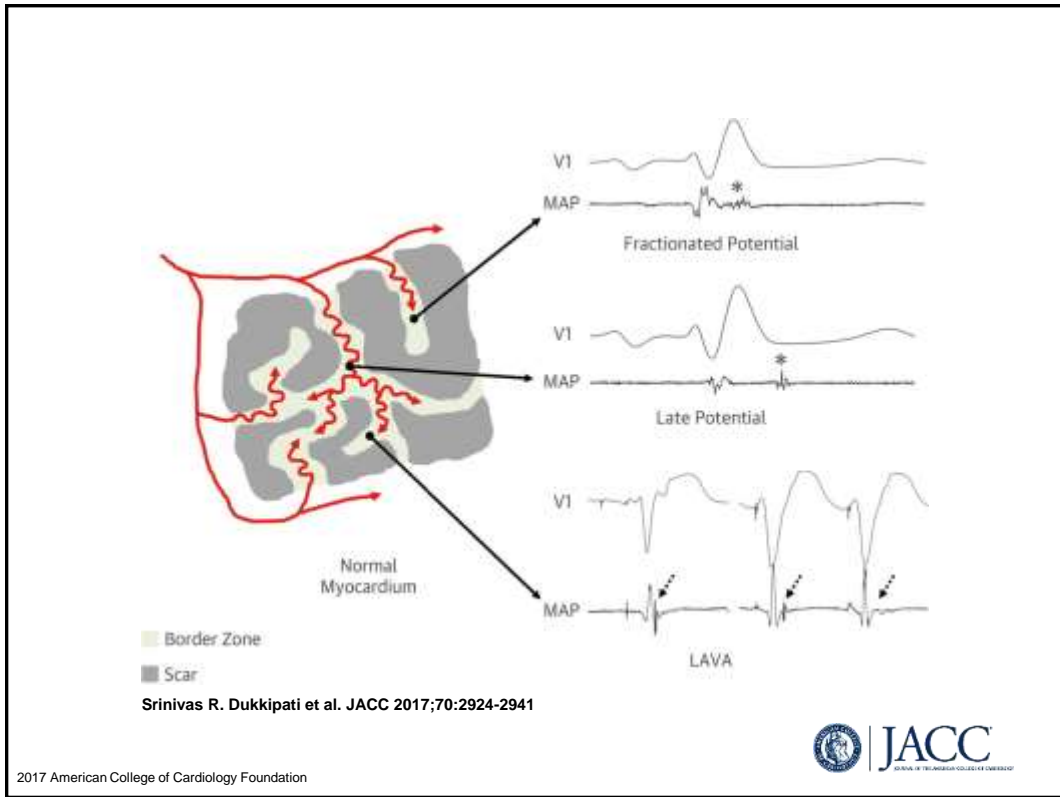
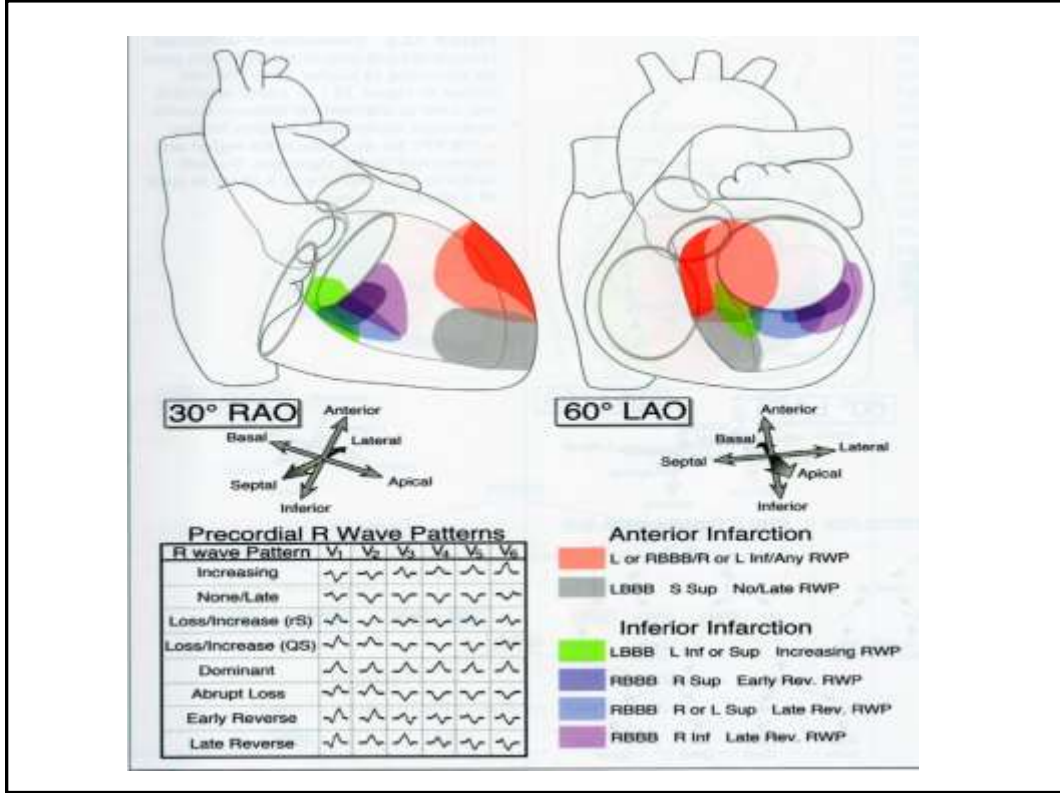


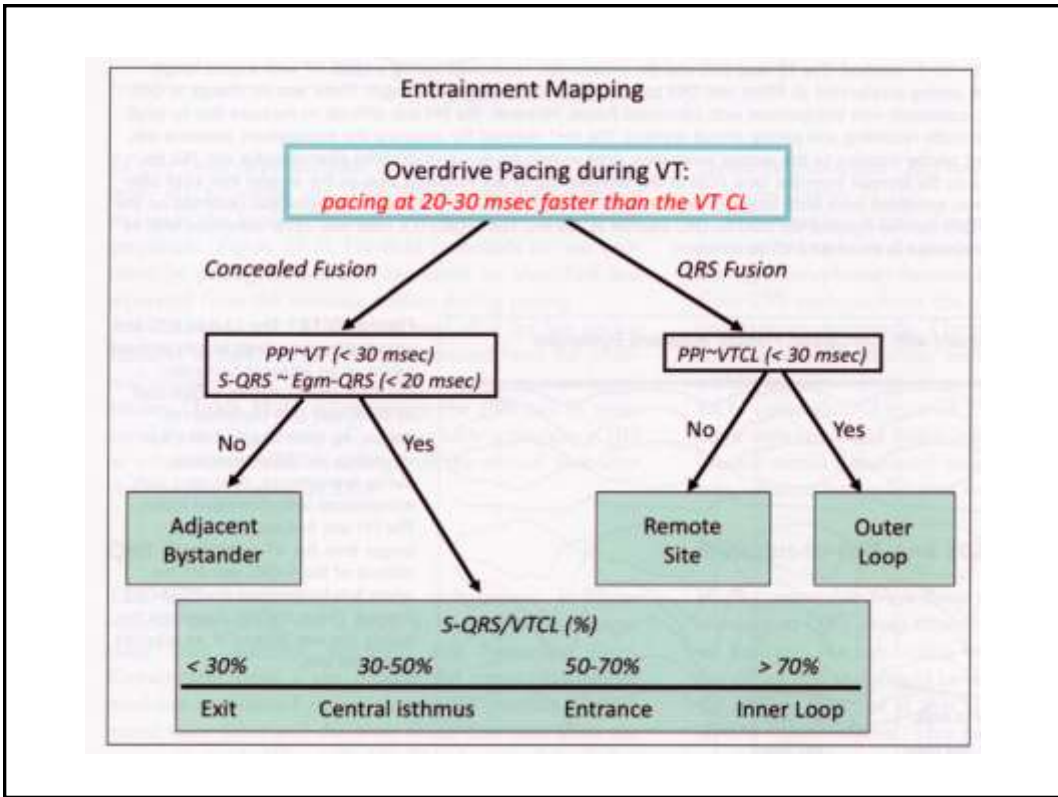
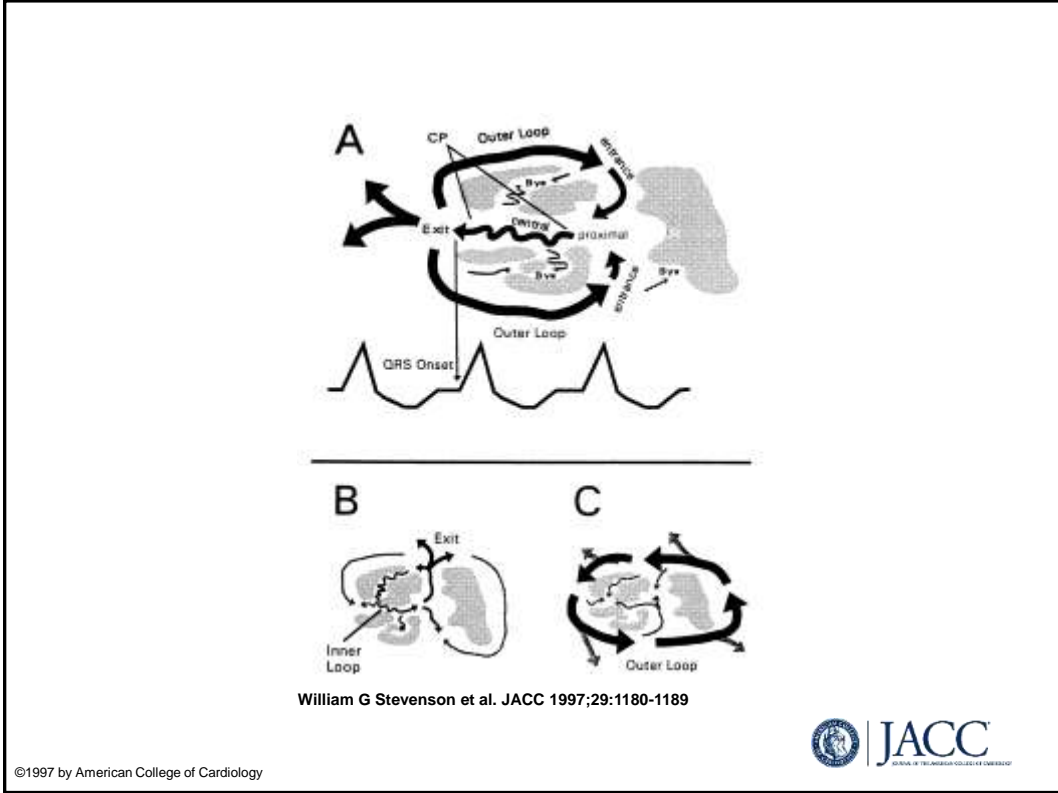
Dukkipati, S.R. et al. J Am Coll Cardiol. 2017;70(23):2924-41.

Srinivas R. Dukkipati et al. JACC 2017;70:2924-2941







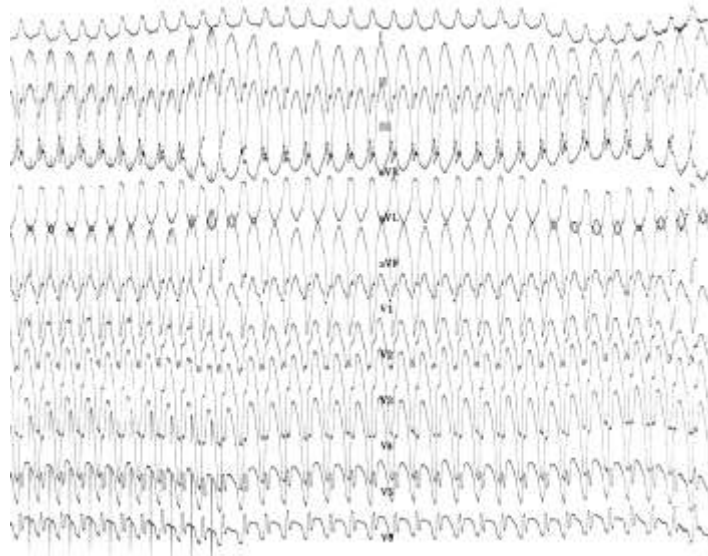


Entrainment/Mapping Criteria for the Prediction of Termination of Ventricular Tachycardia by Single Radiofrequency Lesion in Patients With Coronary Artery Disease

Ashraf El-Shalakany, Tomy Hadjis, Panos Papageorgiou, Kevin Monahan, Laurence Epstein, Mark E. Josephson

Circulation. 1999;99:2283-2289

Exact entrainment.

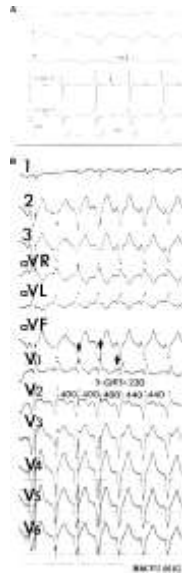


Ashraf El-Shalakany et al. Circulation. 1999;99:2283-2289



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Example of patient meeting all 3 criteria.

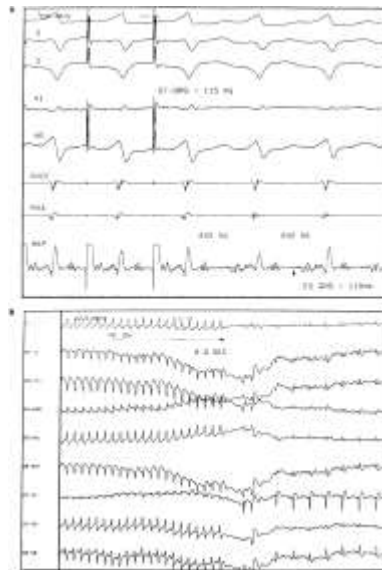


Ashraf El-Shalakany et al. *Circulation*. 1999;99:2283-2289



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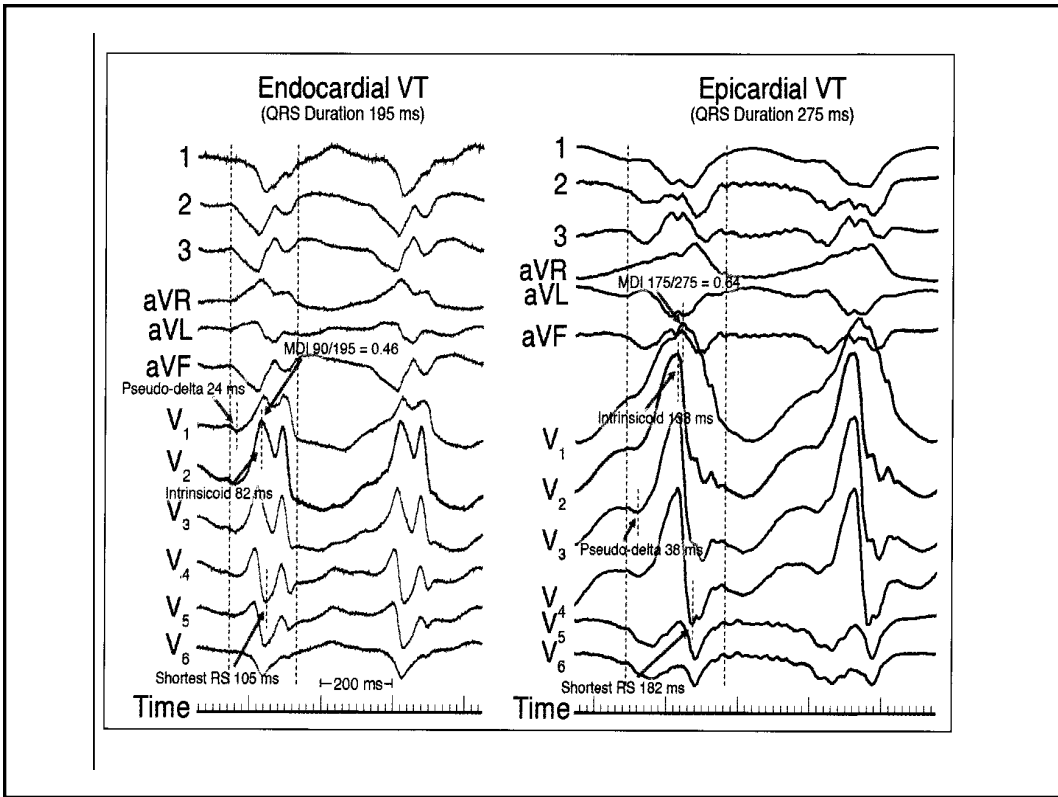
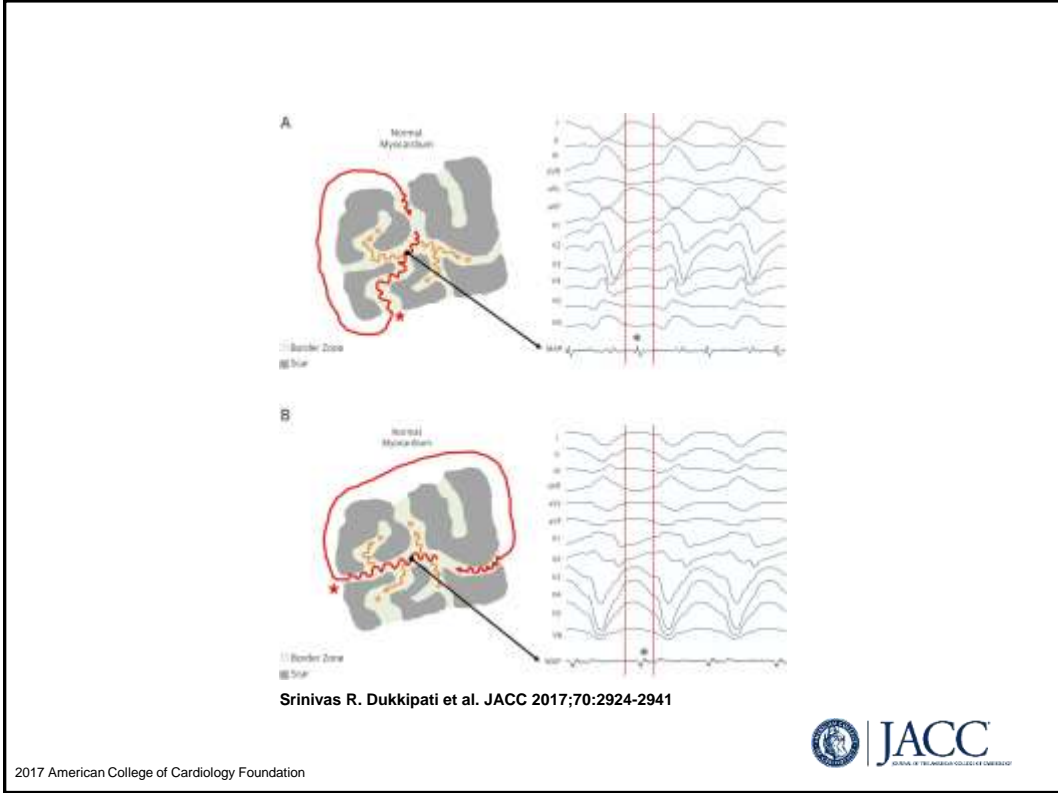
Successful ablation at site has all 3 criteria A, Intracardiac recording during entrainment demonstrating all 3 criteria.



Ashraf El-Shalakany et al. *Circulation*. 1999;99:2283-2289

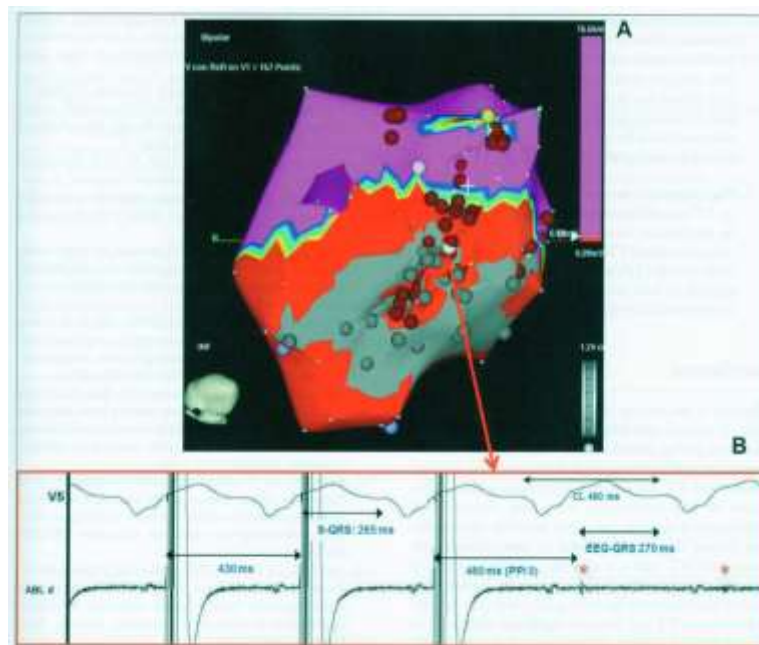


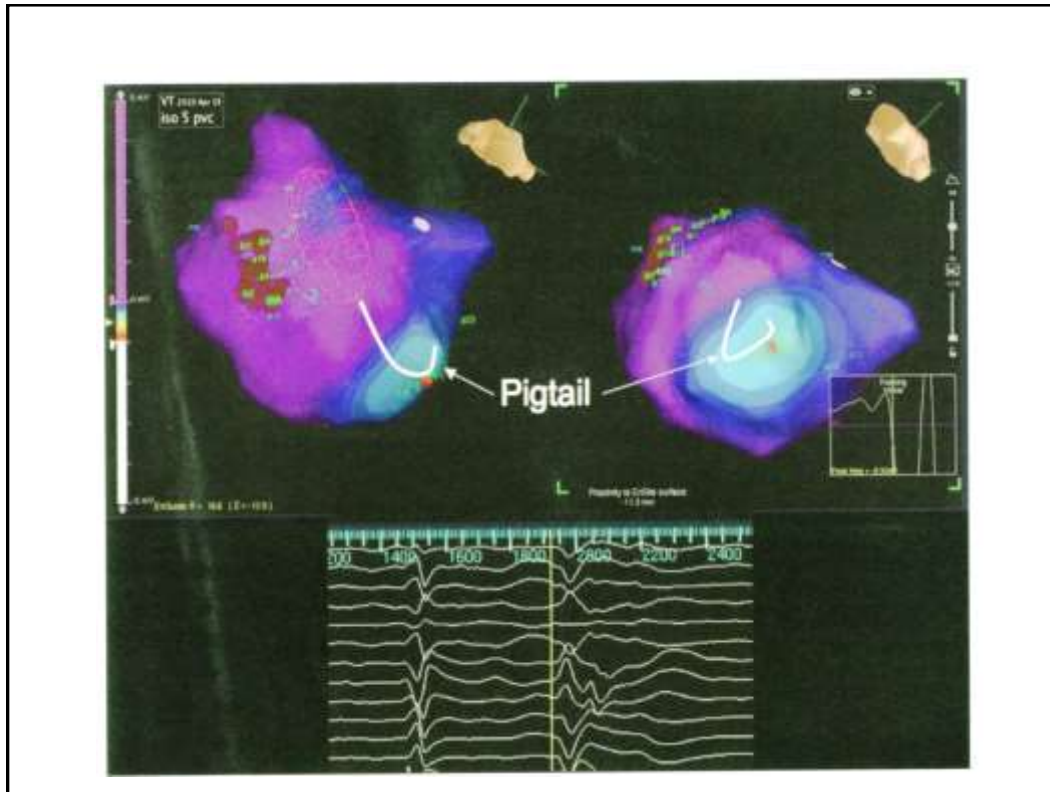
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Mapping of Ventricular Tachycardia Post MI for Critical Sites

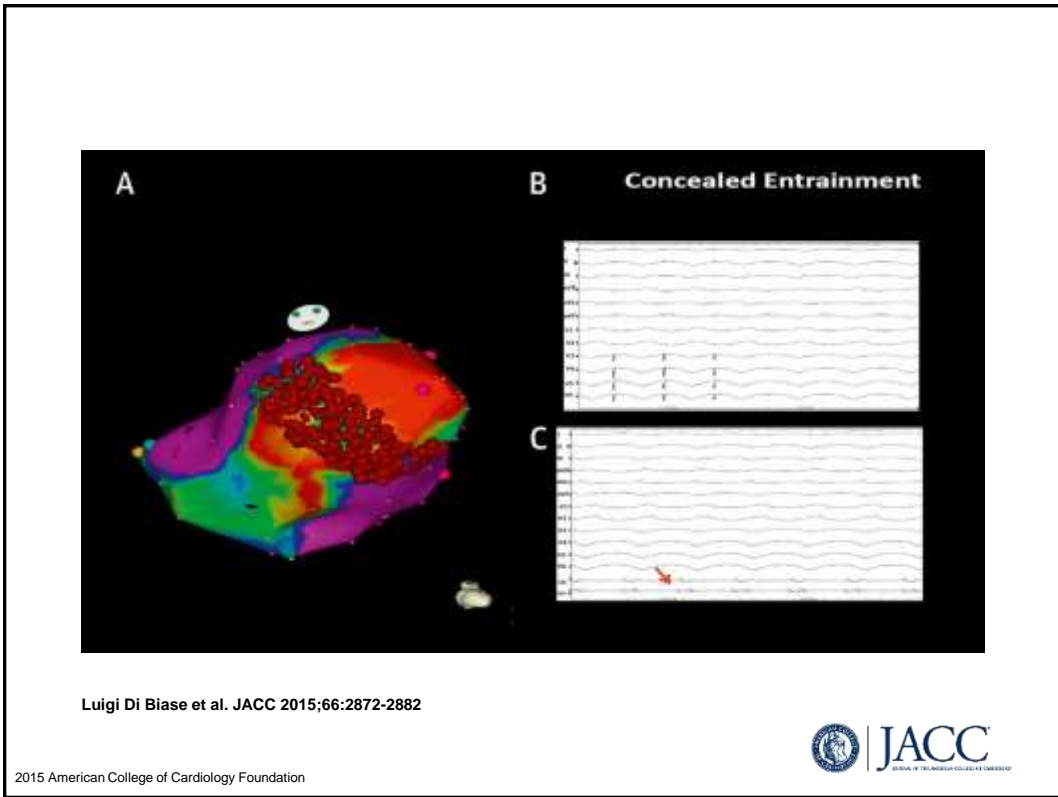
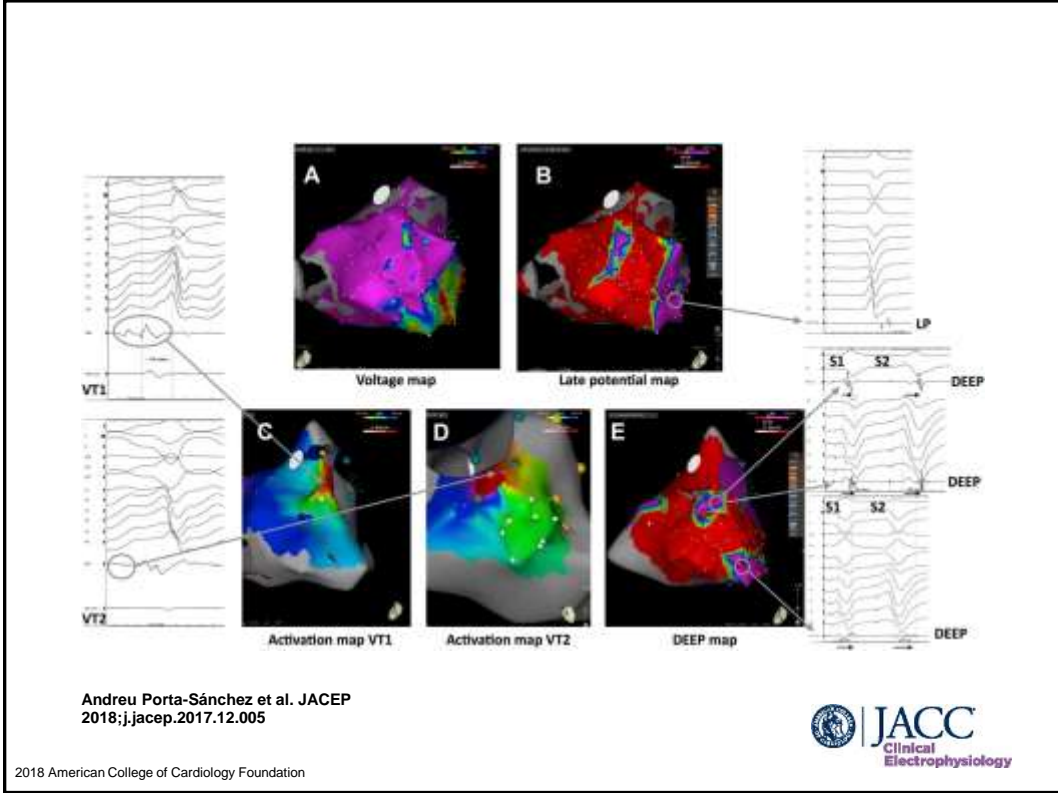
1. Hemodynamically stable VT that can be mapped is about 1/3 to 1/2 of the VT.
2. Entrainment mapping during VT
3. Pacemapping during SR
4. Voltage Map during SR between 0.5-1.5 mV
5. Potential map for LP during SR
6. DEEP (Delayed Evoked Potentials) mapping

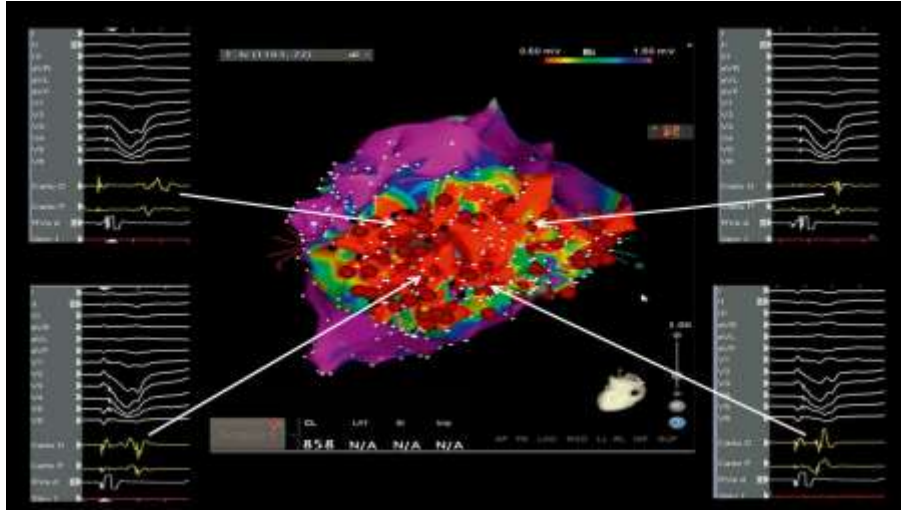




Ablation Strategy for Ventricular Tachycardia Post MI

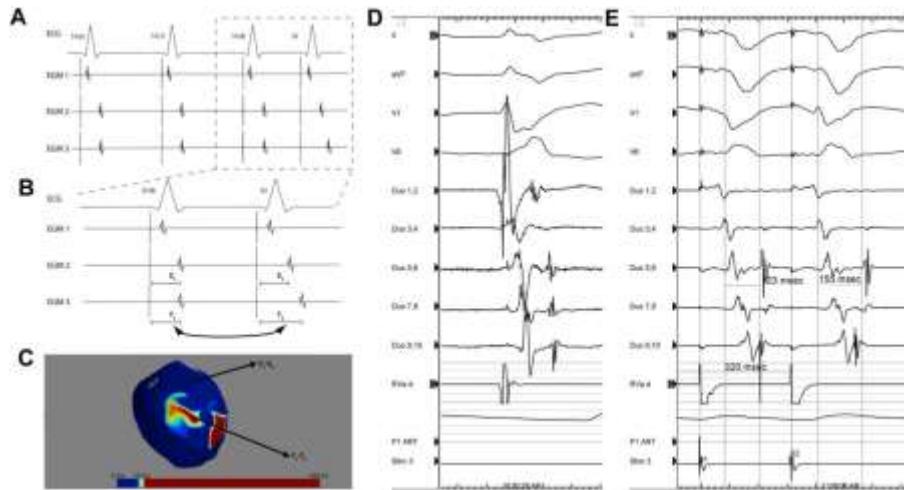
1. During VT guided with activation mapping and entrainment .
2. If unstable VT or multiples or stable VT depending on operator preference:
 - a. Pace mapping during SR
 - b. Substrate mapping/ modification utilizing Voltage Map between 0.5-1.5 mVolt or late potentials, DEEP (Delayed Evoked Potentials) 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.





Luigi Di Biase et al. JACC 2015;66:2872-2882

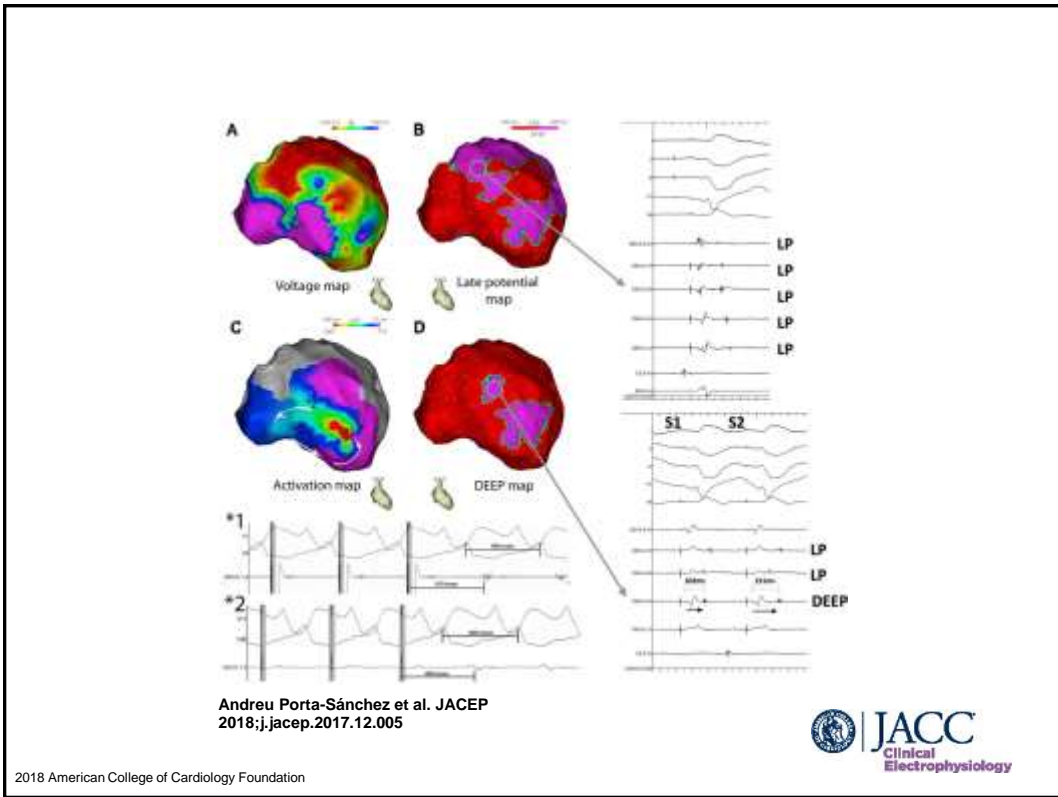
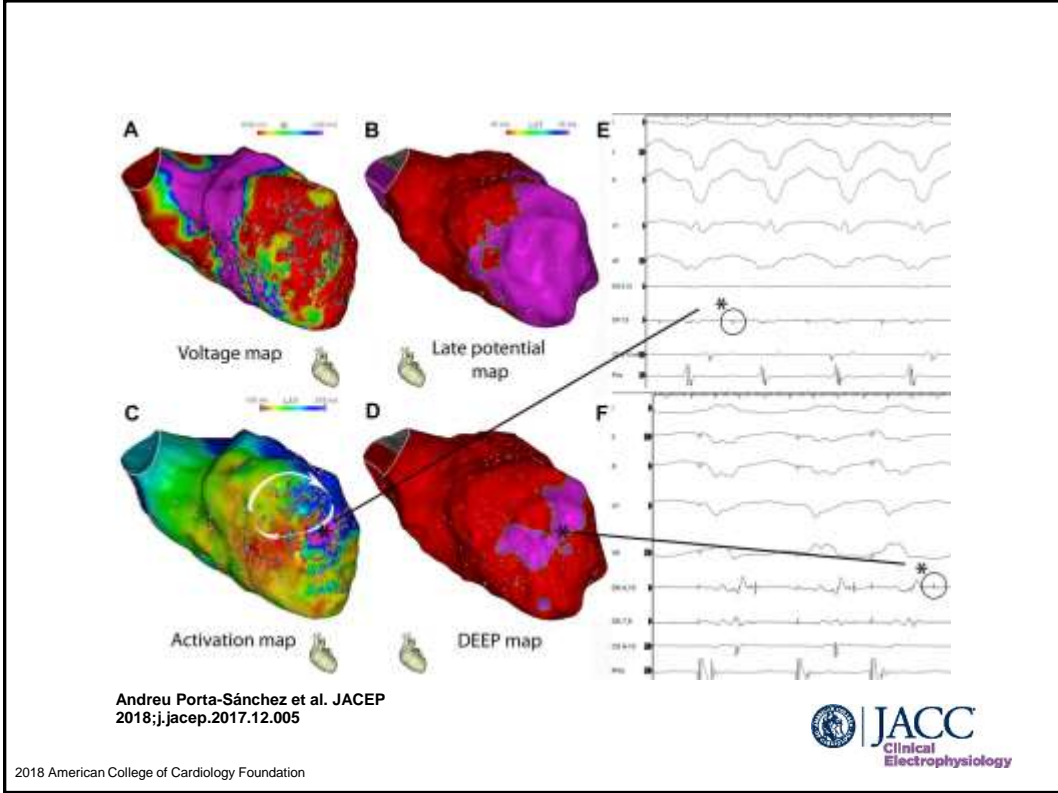
2015 American College of Cardiology Foundation

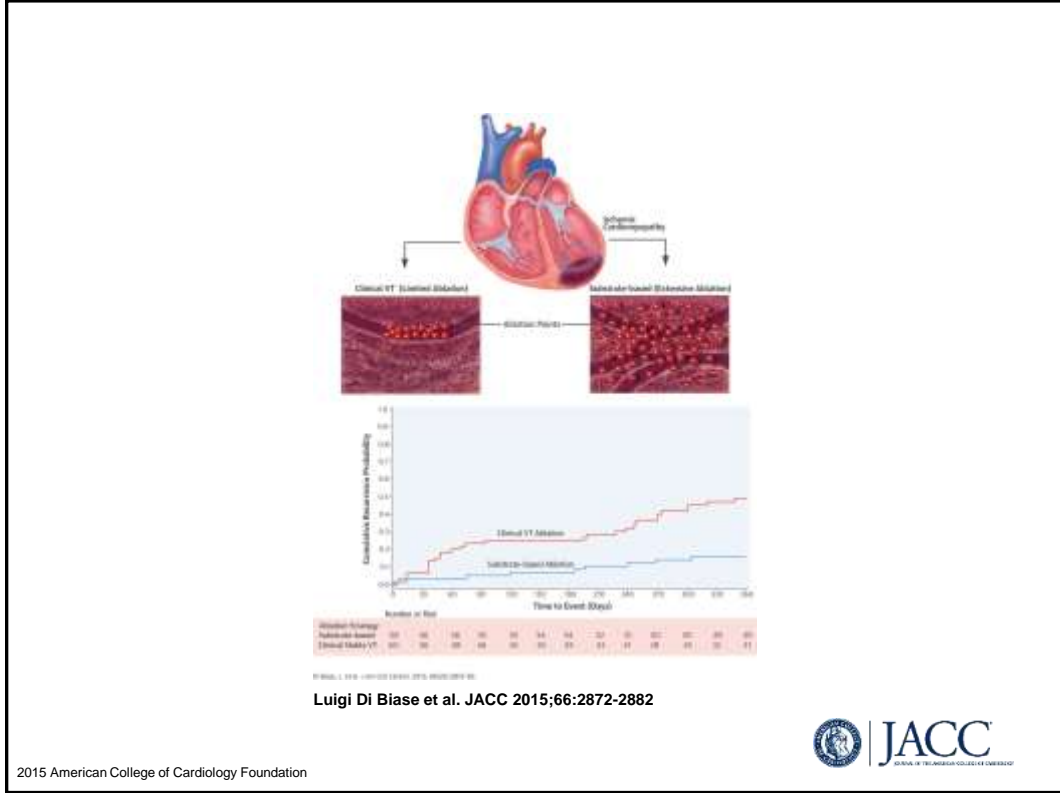


Andreu Porta-Sánchez et al. JACEP 2018;j.jacep.2017.12.005

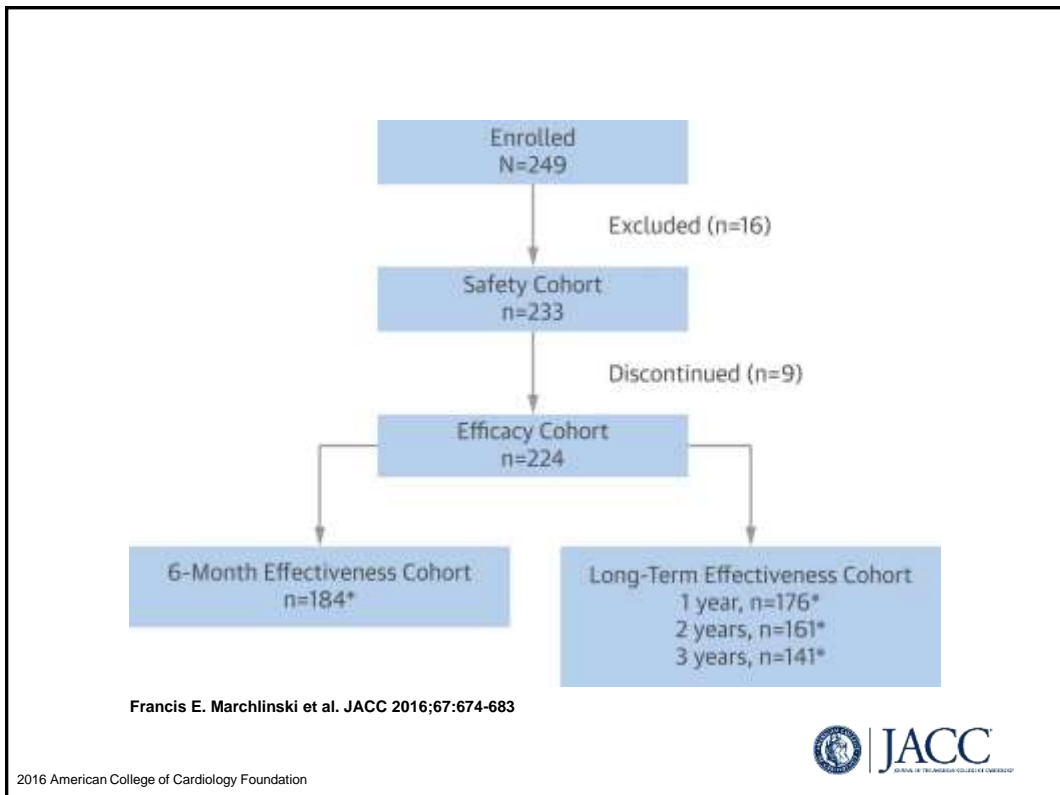
2018 American College of Cardiology Foundation





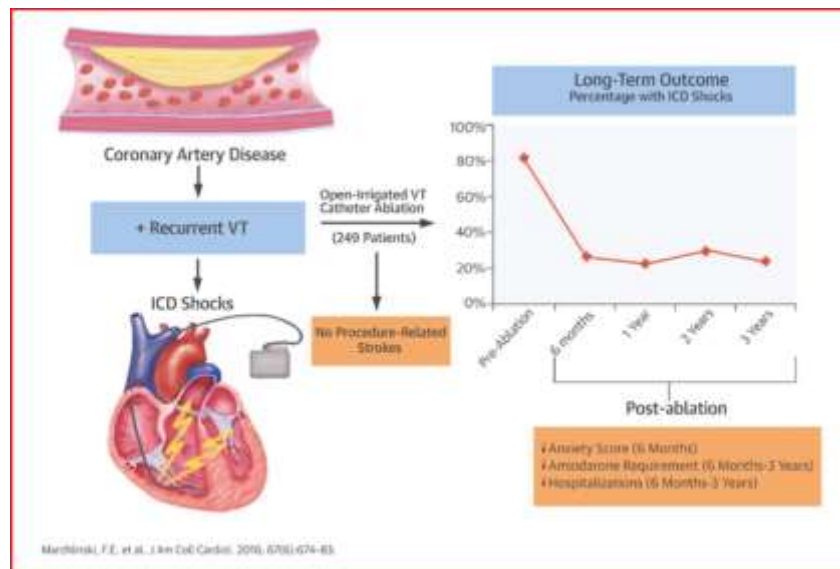


2015 American College of Cardiology Foundation



2016 American College of Cardiology Foundation





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



2016 American College of Cardiology Foundation

Misconception

1. Reentry is determined by a fixed substrate at the scar
2. low voltage implies dense scar
3. Isthmuses defined by entrainment are valid and accurate
4. Current mapping tools are enough to determine barriers forming channels during reentrant VT.

FACTORS AFFECTING THE CONDUCTION OF PDL

- Electrical coupling (intercalated disks)
- Anisotropic force of conduction
- Anisotropy of action potential
- Conduction velocity influenced by:
 - radius of axon/disk (axonal or disk)
 - length of axon/disk
 - membrane capacitance
- Size dependent (increases in size)
- Including: disease, ions, etc., inflammation and stress

High speed Purkinje fibers (fastest conduction)

Small diameter
Conduction velocity (CM/second)

Slowest conduction (slowest conduction)

Large diameter
Conduction velocity (CM/second)

Normal Conduction (AVN)

Abnormal Conduction (AVN)

ADAPTED FROM: HANCOCK, J. (2001). JACC 33(12):1341-1352

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

American College of Cardiology Foundation

COMPUTED
LV Scale

Trigger Setup

U1: H1 1 mV

U2: H2 1 mV

H1: H1-2 0.25 mV 0.295 mV

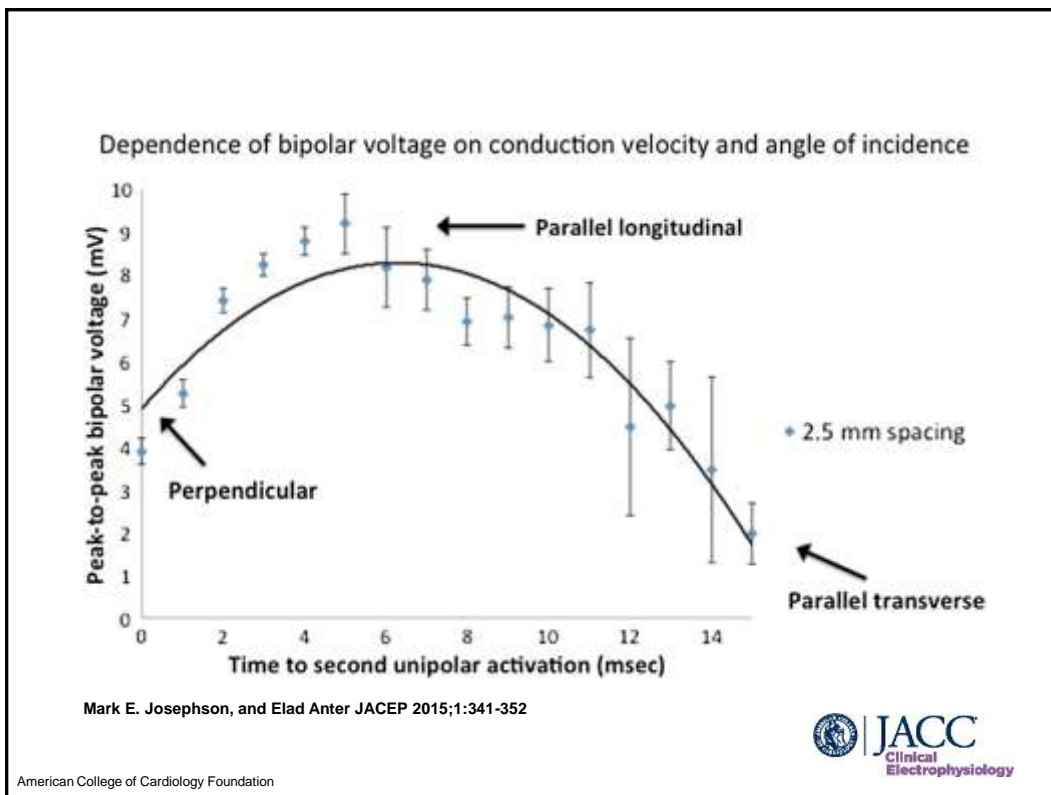
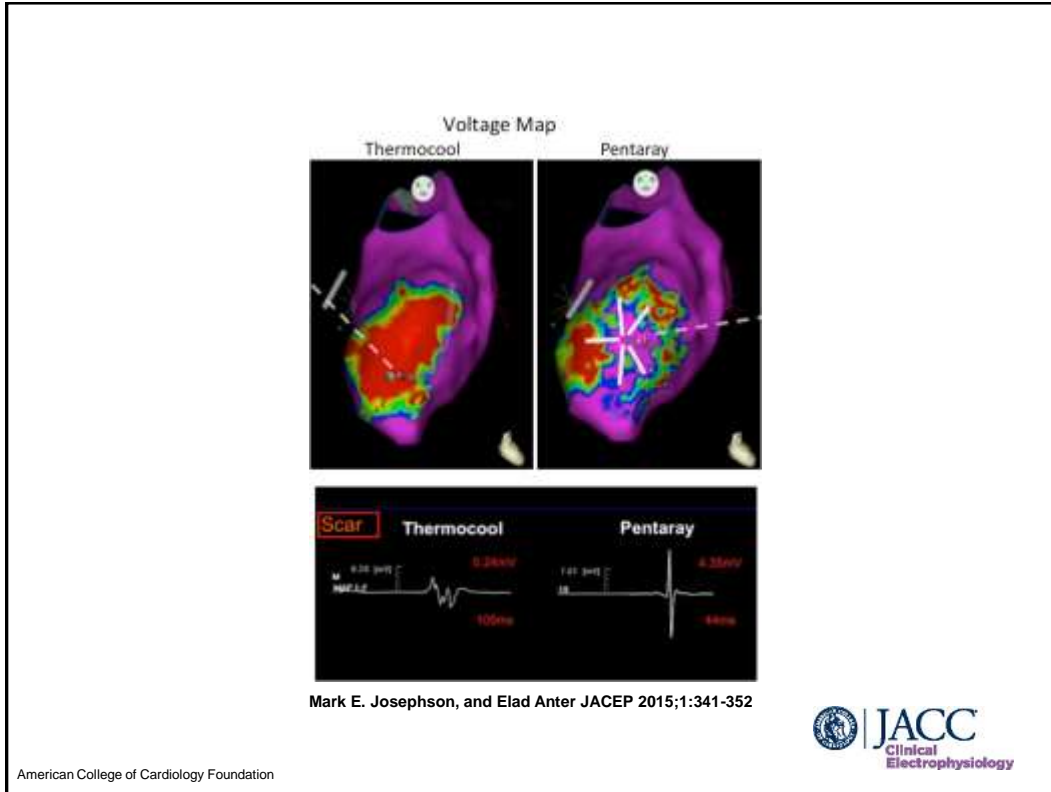
G2: 1 mV

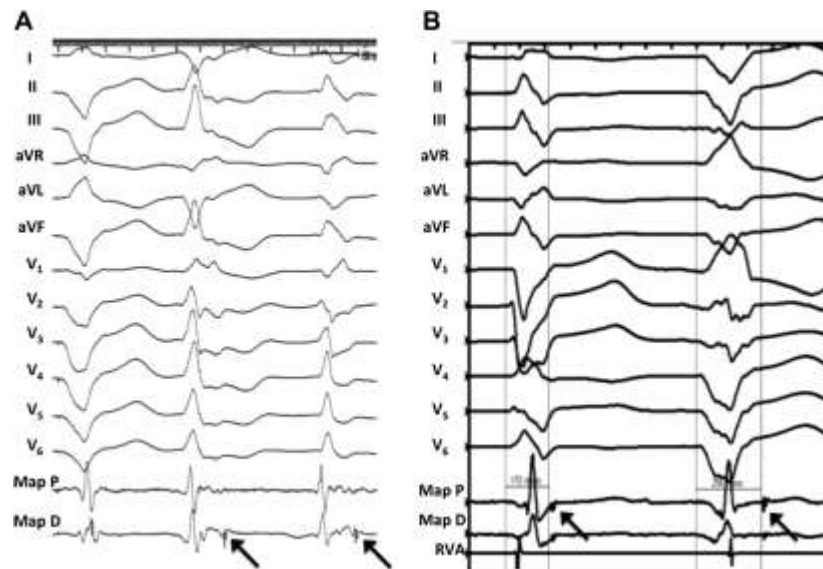
H2: 1 mV

G2: H2 0.25 mV 1.1 mV

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

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



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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**