Introduction: Although several strategies were advocated in catheter ablation of stable monomorphic ventricular tachycardia (VT), therapeutic strategies have not been established in polymorphic VT.

Methods: A 49 year-old man who had no history of cardiac events was admitted to our hospital due to acute decompensated heart failure. The electrocardiogram (ECG) showed atrial fibrillation with QT interval prolongation. The echocardiogram revealed a poor left ventricle function with diffuse hypokinesis. Coronary angiography and endocardial biopsy revealed no apparent etiology of heart failure. About 3 weeks after admission, radiofrequency (RF) ablation was performed due to frequent episodes of polymorphic VT despite using various types of anti-arrhythmic drugs under deep sedation. Endocardial electroanatomical mapping of the left ventricular (LV) endocardium during sinus rhythm constructed by using multi-electrode mapping catheter (HD Grid®) revealed no presence of a low voltage area. Delayed potential (DP) could be recorded in the LV posterior wall in accordance with the terminal portion of the T wave of the 12 lead ECG. RF ablation was performed at the area. The amplitude of the delayed potential decreased with each delivery of RF energy, and QT interval shortened after RF ablation. At the end of the session, polymorphic VT was not inducible.

Result: Up to now, polymorphic VT has not been recurred with the treatment of bisoprolol 1.25 mg daily.

Conclusion: RF ablation guided by DP might be effective for treatment of polymorphic VT in patients without ventricular scar.