

# Multipolar mapping for catheter ablation of premature ventricular complexes originating from papillary muscles in the structurally normal heart

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April 27, 2020

## Abstract

**Introduction:** Previous studies on radiofrequency catheter ablation of premature ventricular complexes (PVCs) arising from the left ventricle (LV) papillary muscles (PM) show a modest procedural success rate with higher recurrence rate. This study explored the utility of using a multipolar catheter for ablating the PM PVCs. **Methods and Results:** Endocardial mapping was performed via retrograde aortic approach using a steerable duodecapolar catheter in 6 patients and conventional point-by-point catheter in 5 patients, respectively. Compared with patients in point-by-point catheter group, duodecapolar catheter mapping demonstrated higher efficiency with an average procedure time and fluoroscopy time. The values of earliest activation time during mapping using duodecapolar catheter were significantly greater ( $32.3 \pm 3.9$  ms vs.  $25.4 \pm 2.8$  ms). The mean number of ablation applications points in the duodecapolar catheter group was  $6.8 \pm 1.9$  with an average overall ablation duration of  $6.1 \pm 3.0$  minutes, which was significantly less compared to the point-by-point catheter group. There were no complications in duodecapolar catheter group whereas one cardiac tamponade occurred in the point-by-point catheter group. All 6 patients (100%) in the duodecapolar catheter group demonstrated acute successful ablation whereas only 3 of the 5 patients (60%) with point-by-point catheter ablation succeeded, and the intermediate success rate remained the same after an average follow-up of  $9.7 \pm 3.2$  months. **Conclusions:** Mapping and ablation of PM PVCs using a duodecapolar catheter facilitated identification of earliest activation potentials and pace mapping, and demonstrated a high success rate during follow-up when compared to conventional mapping techniques.

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