

# Detection of the left accessory pathway with synthesized 18-lead electrocardiography in WPW syndrome

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The synthesized 18-lead electrocardiography (18 lead-ECG) provides right-sided leads (V3R, V4R and V5R) and back leads (synV7, synV8 and synV9) via a mathematical computation so that only the standard 12 leads are used, and additional leads or techniques are not required [1]. 18 lead-ECG is useful for diagnosing the origin of a premature ventricular contraction and the risk area of myocardial infarction [2].

If we analyze the 18 lead-ECG, we can easily detect the delta wave polarity change because normal chest leads, and synthesized back leads are positioned to surround the mitral annulus (Figure 1A). Since the polarity of the delta wave is the same as the polarity of ventricular extrasystoles from the mitral annulus, we can determine the location of the left accessory pathway.

We show the 18 lead-ECG from a patient (Figure 1B) (recording system: ECG-2550: Nihon Kohden, Inc. viewer: ECG-Viewer Lite: Nihon Kohden, Inc.). The delta wave polarity was positive in V5, slightly

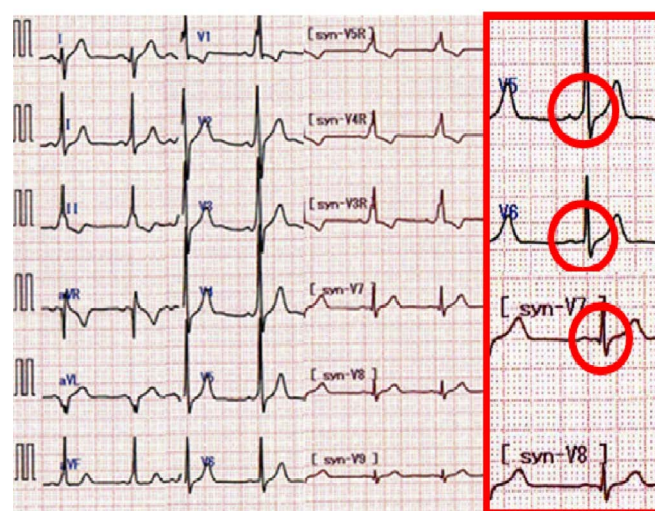


Figure 1B. Synthesized 18-lead electrocardiography results for a patient

positive in V6 and slightly negative in V7; thus, the delta wave polarity allowed us to speculate that the accessory pathway was located in the left lateral, and we can determine the location of the left accessory pathway before performing an electrophysiological study (EPS). The routine 18 lead-ECG before and after EPS will give us important information that will shorten the EPS time and confirm the successful ablation of the left accessory pathway.

## References

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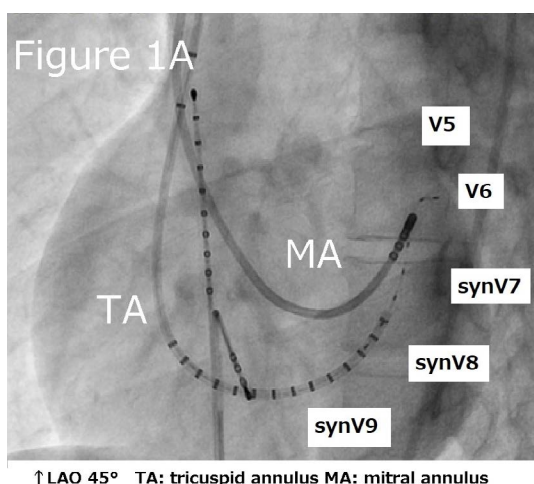


Figure 1A. Virtual placement of the leads and successful ablation point for the left accessory pathway

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