

MODIFIED PROTOCOL TO OBTAIN ECG IN PATIENTS WITH SUSPICION OF ARVC/D

The tracing should run at a double velocity (50 mm/s) and double voltage (20 mm/s) to compare the duration of QRS complexes (QRSd) in different leads, as well as to try to record Epsilon waves.

The Fontaine bipolar precordial leads

The tracing should be obtained from I and aVF at double velocity and amplitude, placing the electrode of the left arm on the xiphoid appendix, the one from the right arm on the manubrium sternum, and the one from the left leg on the rib at the fourth or fifth space with the aim of improving the ability to detect Epsilon waves.

The Fontaine bipolar precordial leads are placed at the manubrium of sternum, xiphoid, and V4 positions using the right arm connection, left arm connection, and left foot connection, respectively.

Epsilon waves are detected by:

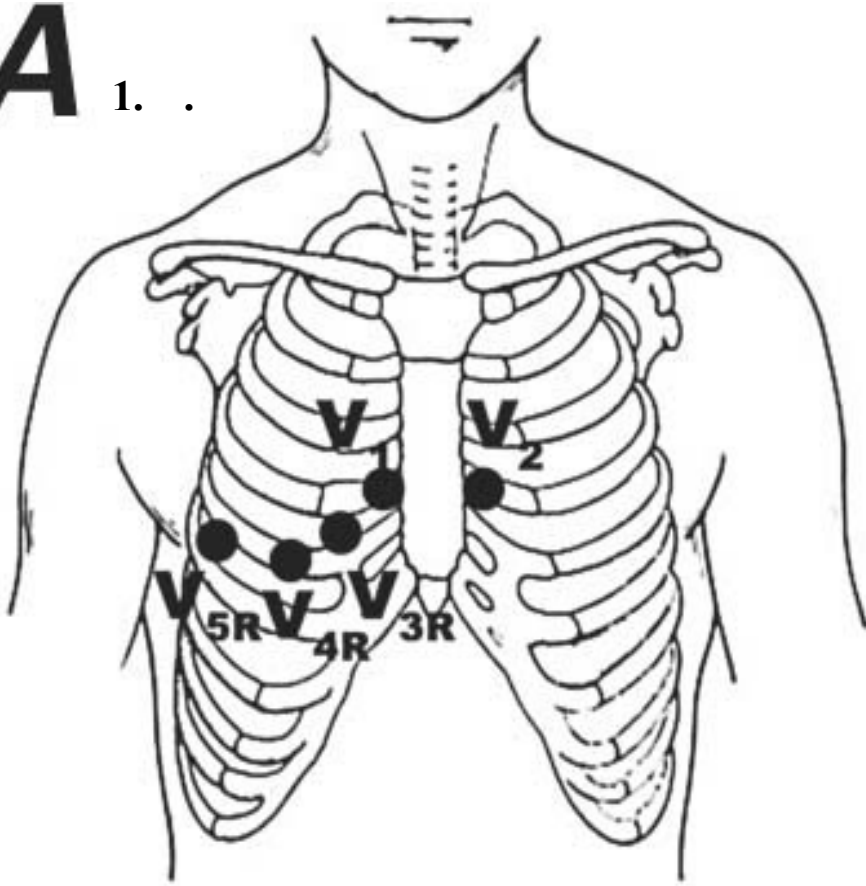
- 1) Standard 12-lead electrocardiography (S-ECG)
- 2) Right-sided precordial lead electrocardiography (R-ECG)
- 3) Fontaine bipolar precordial lead electrocardiography (F-ECG).

The detection rate using combined methods is significantly higher than that by S-ECG alone.

Fontaine bipolar precordial lead have the best sensitivity among the three options. the placement of the foot lead (positive) in position V4 provides, instead of regular leads I, II, and III, three bipolar chest leads that can be called FI, FII, and FIII. Tracings are then produced by setting the machine on regular leads I, II, and III. This arrangement is used to record specifically the potentials developed in the RV, from the RVOT to the diaphragmatic area. The vertical bipolar lead FI, (similar to aVF lead), seems to be the most appropriate to record epsilon waves; it also magnifies the atrial potentials. As late potentials were supposed to be the result of late activation of a limited group of fibers, the term "post-excitation" looked logical, since it was observed after the main excitation of the ventricle, leading to the QRS complex. The term "epsilon" was appropriate, because it occurs in the Greek alphabet after delta; thus, delta represents the preexcitation and epsilon the post-excitation phenomenon.

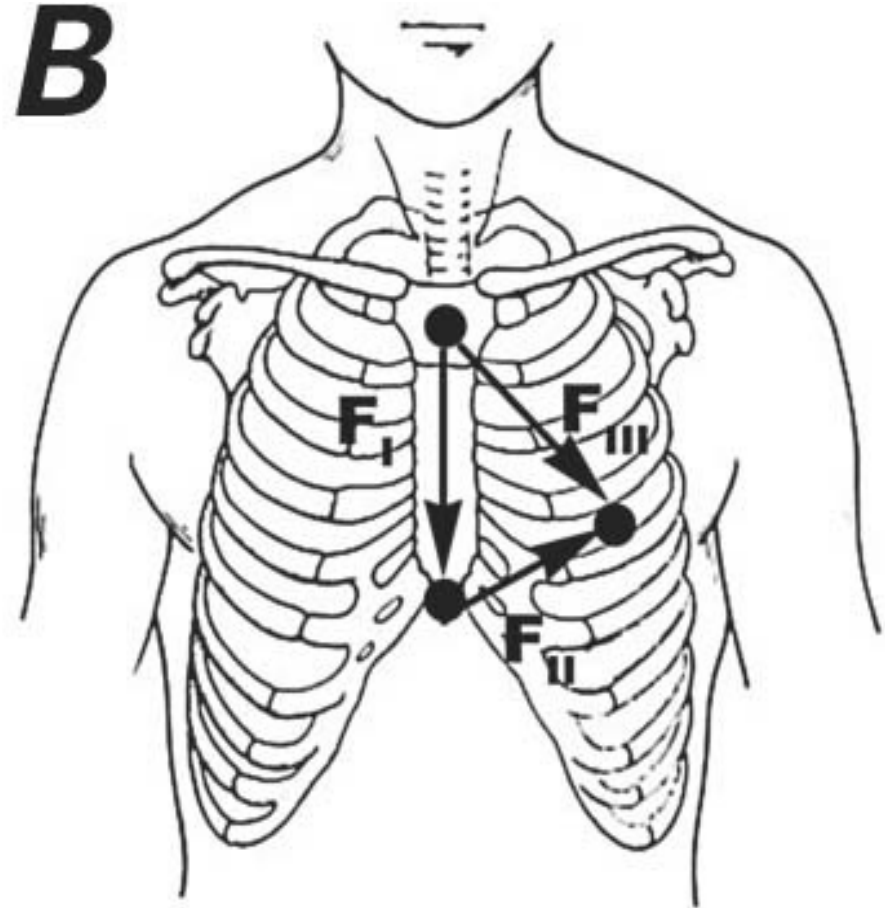
1. **Fontaine G, et al. Annu Rev Med. 1999;50:17-35.**

A 1. .



Right precordial leads

B



The Fontaine bipolar precordial leads