



Technical Report: Obtaining Noise-Free Bipolar Recordings from Different Locations of the Heart Using Coronary Guidewires

Teknik Rapor: Koroner Teller Kullanılarak Kalbin Değişik Bölgelerinden Temiz ve Gürültüsüz Bipolar Kayıtlar Alınması

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Intracardiac recordings are relatively important for the diagnosis and treatment of arrhythmia. Specialized catheters are placed in different locations of the heart, such as the right atrium, right ventricle, and coronary sinus, to obtain these recordings⁽¹⁾. The intracardiac signals received from the catheters are collected in a connection box. The multiple inputs in the connection box are connected to the selected recording and stimulation channels by the recording apparatus. The recording apparatus comprises filters, amplifiers, display screens, and recording software. Electrophysiological study and ablation are completed using these intracardiac recordings. It is complicated and dangerous to access some locations of the heart such as the summit of the left ventricular and coronary arteries. The thinnest catheters used in daily practice, which are 5 French (1 French is exactly 1/3 mm) in size, are insufficient to reach these locations. The guidewires, which are used frequently in interventional cardiology, can be useful in the mapping and ablation of these hard-to-reach locations because of their small diameters and ability to be guided. In this technical report, two floppy guidewires [182 cm, straight tip shape, 0.014 inches (1 inch= 25.4 mm) in diameter, unibody stainless steel structure, uncoated at distal 3 cm spring coils] were used to obtain bipolar recordings. A floppy guidewire combines a hydrophilic-coated polymer sleeve with a soft tip and flexible body for especially tortuous coronary anatomy. The inputs in the connection box are connected to the distal tip of floppy guidewires using the recording apparatus (Figure 1). Using this, the noise-free recordings from different locations of the heart such as the right atrium, right ventricle, and coronary sinus are obtained (Figures 2 and 3). As a result, it is possible to obtain recordings from hard-to-reach locations of the heart using small and flexible guidewires, which are used frequently in the field of interventional cardiology. The use of these tools can strengthen our influences on mapping and ablation of difficult locations.

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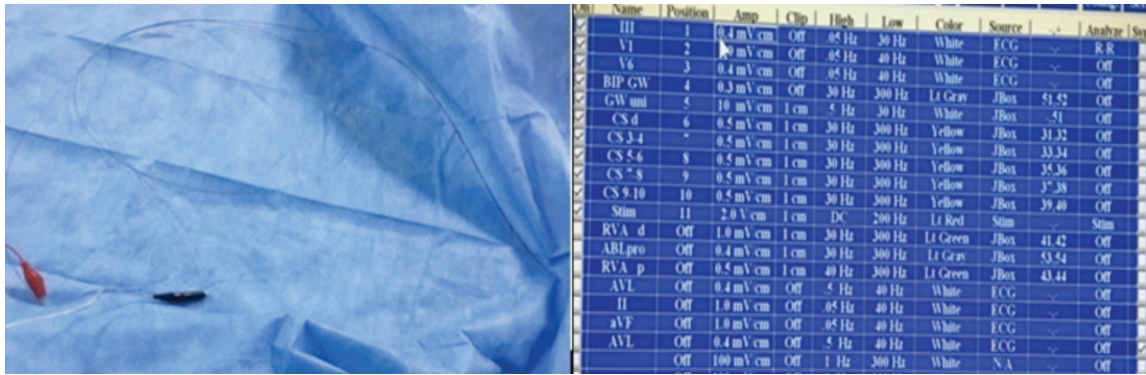


Figure 1. The inputs in the connection box are connected to the distal tip of floppy guidewires by the recording apparatus.

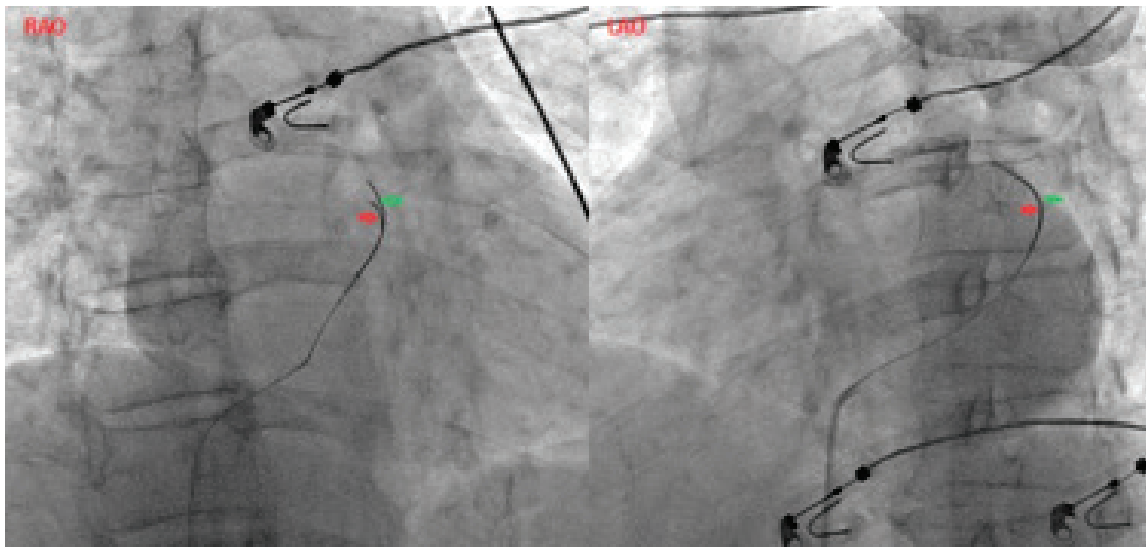


Figure 2. Two floppy guidewires (red and green arrows) in the coronary sinus.

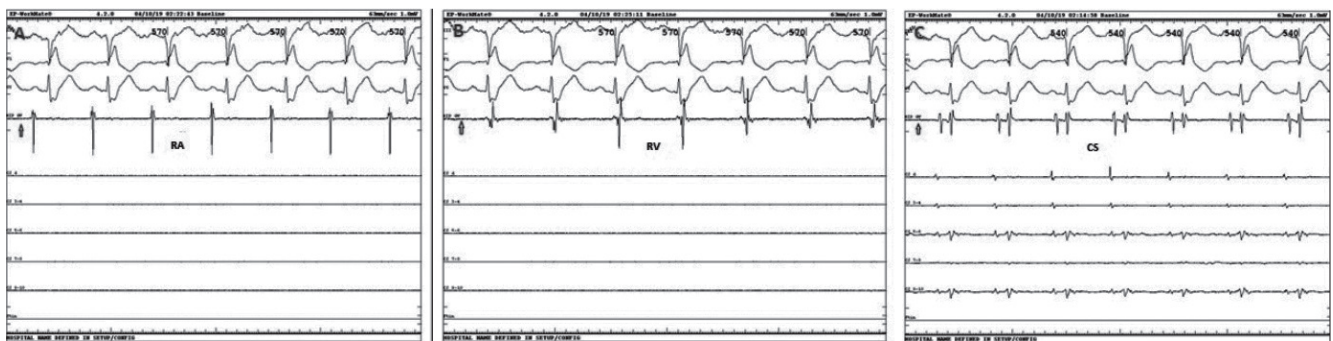


Figure 3. The noise-free recordings from the right atrium (RA), right ventricle (RV), and coronary sinus (CS).

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