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Wireless Based System for Continuous Electrocardiography Monitoring during Surgery

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Abstract : This paper presents a system designed for wireless acquisition, the recording of electrocardiogram (ECG) signals and the monitoring of the heart’s health during surgery. This wireless recording system allows us to visualize and monitor the state of the heart’s health during a surgery, even if the patient is moved from the operating theater to post anesthesia care unit. The acquired signal is transmitted via a Bluetooth unit to a PC where the data are displayed, stored and processed. To test the reliability of our system, a comparison between ECG signals processed by a conventional ECG monitoring system (Datex-Ohmeda) and by our wireless system is made. The comparison is based on the shape of the ECG signal, the duration of the QRS complex, the P and T waves, as well as the position of the ST segments with respect to the isoelectric line. The proposed system is presented and discussed. The results have confirmed that the use of Bluetooth during surgery does not affect the devices used and vice versa. Pre- and post-processing steps are briefly discussed. Experimental results are also provided.

Keywords : electrocardiography, monitoring, surgery, wireless system
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