

Preliminary Comparison Study of Two Electro-Mechanical Cardiopulmonary Resuscitation Devices

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Introduction: Over the past years several electro-mechanical devices have become available to the market, enabling paramedics to transport patients with cardiogenic shock to hospitals, while maintaining constant perfusion. These devices however have various mechanical structures and compression mechanisms that can affect the body perfusion. The presented paper shows the preliminary results of the comparison of two of such CPR devices using a pig model: the Lucas 2 and the Corpuls CPR.

Methods: Two middle sized domestic pigs weighing 30+-5 kg were used for this study. They were properly pre-medicated and given general anesthesia.

As preparation several sensors were placed to obtain vital parameters and blood flow during CPR. A normal oximeter was placed in the ear, and two regional oximetry sensors were placed at the level of the neck and on the tongue. Additionally the pressure at the left ventricle was captured using a Millar tip. The ECG and CO₂ were obtained using the Corpuls 3 monitoring system. After preparations were finished and before CPR all the parameters were recorded as a baseline. Afterwards the heart was stopped for 5 minutes and afterwards the CPR device was activated.

Results: The results obtained show that during the capturing of baseline parameters the mean carotid flow was of 0,31mL/min for the pig prepared for the Lucas 2 device and 230mL/min for the Corpuls device. After 3 minutes of CPR compressions the Lucas device generated 25% of the mean carotid flow, while the Corpuls device generated 76% of the carotid mean flow.

