Supplemental Video 1

Perfusion study during bilateral lung ventilation in a healthy piglet. Real-time tracing of the trajectory of a bolus of hypertonic saline inside the thorax. The intensity of the signal represents the instantaneous slope (first derivative) of the impedance-time curve for each pixel. Thus, bright colors mean that the saline is arriving at fast rates at that region. The graph at the bottom represents the average impedance perturbation found in all pixels. The resultant curve is a dilution curve following typical first-pass kinetics of a contrast agent. During the saline passage it is possible to track the following anatomical structures: right atrium, right ventricle, pulmonary hilum, right and left lungs, left atrium, and left ventricle.

Supplemental Video 2

Online EIT images during mechanical ventilation used for the pulsatility analysis. During the first part of the video, images and concomitant global impedance signals (the average impedance perturbation found in all pixels is presented in the graph at the bottom) corresponding to ventilation are shown, with a blue to white color scale. The signals were not filtered and it is possible to note the pulsatile perturbations caused by heart beatings, superposed to breath movements. Afterwards, images and concomitant global signal were filtered (ECG gated mean) and only the impedance perturbations related to cardiac beats are visible (in a red to yellow color scale). Ventilation signals were still present but almost completely filtered out. Such filtered swings in impedance, found in pixels corresponding to pure lung areas, were used for our pulsatility analysis.
(see text). Note that it is possible to discriminate the ventricular area, which was excluded from our pulsatility analysis, by looking at the phase of the pulsatility signal.

**Supplemental Video 3**

Perfusion study during unilateral lung ventilation (left lung atelectasis) in a non-injured piglet. Real-time tracing of the trajectory of a bolus of hypertonic saline inside the thorax. Color codes and graphs have the same meaning as in video 1. During the saline passage, it was possible to track the following anatomical structures: right atrium, right ventricle, pulmonary hilum, right and left lungs and left atrium. Because the contrast passed through the lung at slower rates (when compared to video 1), it was not possible to visualize the left ventricle.