Methods: Transthoracic echocardiography was used to mark the location of the aortic root (traditional compressions), and the center of the left ventricle (LV) on animals (n=34) which were randomized to receive chest compressions in one of the two locations. Animals were hemorrhaged to MAP=20 to simulate traumatic PEA. After five minutes of PEA, basic life support (BLS) with mechanical CPR was initiated and performed for ten minutes followed by advanced life support (ALS) for an additional ten minutes. During BLS the area of maximal compression was verified using transthoracic echocardiography. Hemodynamic variables were averaged over the final two minutes of BLS and ALS periods. Differences in rates of survival were analyzed using Fisher’s exact test. A two-way repeated measures analysis of variance was performed for the hemodynamic variables.

Results: Six of the left ventricle group (35%) achieved ROSC compared to eight of the aortic root group (47%) (p=0.73). There was an increase in aortic systolic blood pressure (p=0.01), right atrial systolic blood pressure (p=0.01) and right atrial diastolic blood pressure (p=0.02) at the end BLS; there were no differences in hemodynamics during ALS.

Conclusion: In our swine model of traumatic PEA, chest compressions performed directly over the left ventricle improved blood pressures during BLS, but not ROSC.