Background - Alcohol septal ablation (ASA) is a standard treatment modality for Hypertrophic Obstructive Cardiomyopathy (HOCM). ASA also serves as a human model of an iatrogenic acute myocardial infarction (AMI), and the release patterns of the standard serum cardiac biomarkers are consistent following both an ASA and an AMI. Saliva has been previously shown to be a diagnostic fluid source for detecting biomarkers associated with cardiac injury, inflammation and risk of cardiovascular disease. Our goal was to correlate the kinetic release patterns of cardiac injury with both the standard cardiac biomarkers and biomarkers of inflammation in both serum and saliva following ASA for treatment of HOCM.

Methods - Serum and unstimulated whole saliva (UWS) analytes were measured in samples from ASA patients (n=15) collected at baseline and at 8, 16, 24 and 48 hours post-procedure. Samples were analyzed for 13 proteins relevant to cardiovascular disease using Beadlyte technology (Luminex®), ELISA, Regression analyses and ANOVA to determine the kinetic release patterns of each biomarker.

Results - Troponin I, Creatinine Kinase MB Fraction (CK-MB) and Myoglobin levels rose rapidly in serum and peaked at >800-fold, 175-fold, and 10-fold, respectively, above baseline levels between 4 and 16 hours post-ASA (p<0.001). All 13 biomarkers were detectable in UWS, but only levels of Troponin I and C-reactive protein were significantly elevated during the postoperative course. UWS C-reactive protein levels increased 4.4-fold over baseline at 4 hours (p<0.05) and continued to rise to >12-fold by 48 hours post-ASA (p<0.05). UWS Troponin I rose 2-fold by 16 hours (p=0.1) and remained elevated longer in UWS than in serum (2.7-fold at 48 hours [p=0.009]). UWS CK-MB and Myoglobin demonstrated kinetic release patterns similar to serum.

Conclusion - Kinetic release patterns of serum cardiac biomarkers correlate following both ASA and an AMI. Saliva reflects these patterns although only UWS Troponin I and C-reactive protein are significantly elevated above baseline levels. These data suggest that a saliva-based test may be useful for providing important screening diagnostic information relevant to cardiac injury following an AMI.