



## Pathology & Biology Section – 2008

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### **G15 Cardiovascular Trauma in Motor Vehicle Collisions: A 20 Year Retrospective Study and Review of the Literature**

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The goal of this presentation is to identify and classify cardiovascular trauma and injuries sustained in motor vehicle collisions. The audience participants will be able to determine cause of death due to cardiovascular injuries in motor vehicle collisions and become familiar with injury patterns and the corresponding motor vehicle collision scenarios. In addition, autopsy techniques applicable to motor vehicle collisions will be reviewed.

The motor vehicle collision has been, is, and will remain a major cause of death in the United States and internationally. Previous studies of motor vehicle collisions have led to significant advances in automobile safety and safety precautions. This presentation will impact the forensic science community by demonstrating how it is essential to continue to study motor vehicle collisions, so that even greater safety advancements and initiatives can be developed.

The motor vehicle collision (MVC) is the major cause of accidental injury and death in the United States and developed countries. Previous studies of traumatic injuries sustained in MVC have led to significant advances in safety precautions and devices. Resultant cardiovascular trauma resulting in death includes great vessel rupture, cardiac rupture, cardiac contusion, commotio cordis, and coronary artery dissection. The authors retrospectively reviewed all cases referred to the Forensic Pathology Section of the Medical University of South Carolina (Charleston, SC) over a twenty-year period from January 1988 through December 2007. Cases of MVC autopsies were examined for the presence or absence of any cardiovascular trauma. Cardiovascular trauma was defined as trauma to the heart proper as well as to the pulmonary arteries, vena cava, aorta, and major tributaries of the aorta. Other variables reviewed were the type of vehicle, number of vehicles involved, location in the car of the decedent, seat belt usage, element of ejection, airbag deployment, type of collision, site of vehicle impact, decedent demographics, injury-to-death time interval, cause and manner of death, and toxicological findings. Cases in which the cardiovascular trauma was the cause of death were further examined. Useful autopsy procedures and ancillary studies are discussed.

**Motor Vehicle Collision, Cardiovascular Trauma, Autopsy Techniques**