

## H92 The Dentist's Nightmare: A Case of Massive Left Ventricular Infarction After Dental Implantation

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**Learning Overview:** After attending this presentation, attendees will appreciate some of the sometimes fatal complications of dental implant surgery.

**Impact on the Forensic Science Community:** This presentation will impact the forensic scientific community by discussing a case of sudden death in a 54-year-old man who died about two hours after a dental implant surgery that required the administration of articaine.

Sudden death is a rapid, unexpected, and unpredictable event that occurs without the possibility of clinical evaluation and in apparently healthy subjects in normal activities or in patients already diagnosed in an apparently benign phase of disease. Sudden cardiac and non-cardiac deaths fall into this category. Sudden cardiac death is a natural and sudden event in which death from cardiac causes occurs, with the sudden loss of consciousness within one hour of the onset of symptoms or in cases of unassisted death from cardiac causes in subjects alive in the previous 24 hours.

This report presents the case of a 54-year-old man found in poor health on the driver's side of his regularly parked car. Two hours earlier, he had undergone a dental implant operation that required the administration of an anesthetic of the articaine type. Given the absence of complications, the dentist discharged him and prescribed antibiotic therapy and naproxen for pain. Shortly thereafter, the man phoned his wife and reported chills and cold sweats and subsequently began to feel sick. Timely resuscitation maneuvers and intervention by health workers were unsuccessful.

On external examination, only the signs of dental intervention were visible on element 3.6 and a puncture mark on the mucosa of the oral vestibule in the vicinity of the surgical site. At the autopsy, the only finding was that of pulmonary edema. The heart was fixed in 10% buffered formalin consistent with the protocols for sudden death. Similarly, organ and fluid samples were taken for histological and toxicological investigations. Blood samples were also taken from the femoral vein for the determination of tryptase in order to exclude anaphylaxis.

The fixed heart was subjected to Postmortem Cardiac Magnetic Resonance (PMCMR) that revealed the presence of areas of altered intensity throughout the left ventricle compatible with early ischemia.

Examination of the coronary arteries on the fixed heart showed the presence of non-critical stenosis (maximum 50%) of the anterior descending and circumflex arteries. In the section of the myocardium, there were discolored areas suggesting ischemia; therefore, targeted sampling was also carried out on the basis of the imaging findings. Histology allowed confirmation of the diagnostic suspicion of early ischemia by demonstrating the presence of areas of myocytes necrosis, as well as non-specific alterations such as myofiber break-up and wavy myocardial fibers.

The toxicological tests carried out on blood and urine samples made it possible to detect only the presence of articaine in the urine sample, compatible with the therapeutic use of articaine.

At the end of the investigations, the cause of death was an extensive myocardial infarction due to a coronary spasm probably induced by the therapeutic doses of articaine.

In conclusion, the autopsy investigation, the histological review, the PMCMR, and the toxicological investigations are indispensable tools in postmortem investigations. This approach to postmortem diagnosis is essential to investigate the cause of death, especially in cases of forensic interest where it is necessary to discern between natural events and cases possibly attributable to inadequate health care.

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### Sudden Cardiac Death, Anesthetic Drug, Autopsy Investigation