



G88 Postmortem Examination of Coronary Artery Stents Using a Hand-Held Rotary Tool

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The goal of this presentation is to describe a practical technique for postmortem evaluation of coronary artery stents.

This presentation will impact the forensic community by permitting evaluation of intra-luminal patency, thrombosis, and restenosis of coronary artery stents and assist in determination in assigning cause and manner of death.

Since the development of the intra-luminal coronary artery stent in the late 1980's the use of coronary stents has increased dramatically worldwide. In 2005 one or more stents were placed within coronary arteries of 620,000 patients in the United States. Numerous clinical studies have shown the benefits of coronary artery stents in the treatment coronary artery disease; however, the main early complication with an intra-luminal coronary artery stent is thrombosis, while the primary long-term complication is in-stent restenosis. Today, stent surfaces and coatings are designed to prevent thrombogenesis and many elute drugs that inhibit neointimal proliferation to reduce in-stent restenosis. Despite advances in stent technology, stent thrombosis and in-stent restenosis remain common complications that can lead to myocardial ischemia, infarction and possible death. Discovery of clinically significant stent complications at autopsy can be crucial for the pathologist trying to determine the cause or manner of death. However, evaluation of coronary artery stents at autopsy is challenging and has been limited to postmortem angiography, serially sectioning the stent with a low-speed diamond saw or simply by visual examination of the stent lumen and estimating any luminal narrowing. Most medical examiner offices cannot afford the expense, space, or training required for postmortem angiography or a low-speed diamond saw to examine coronary artery stents.

A hand-held rotary tool can serially section coronary artery stents with minimal deformation of the stent, distortion of the luminal space or disruption of intra-luminal contents. The excised coronary artery stent is serially sectioned in 2-3 mm increments. When laid out in cross-section from proximal to distal, the sections of the stent and surrounding coronary artery can be assessed and photographed. Luminal contents can be removed by careful dissection using 20-gauge needles. Subsequent histological evaluation can determine if the intra-luminal material is postmortem clot or premortem thrombus. Sectioning of coronary stents with a hand-held rotary tool is affordable, easy to master, and permits objective assessment of intra-luminal coronary artery stent patency, thrombosis or restenosis.

Forensic Science, Coronary Artery Stent, Hand-Held Rotary Tool