G39 Evaluation of Clinical Diagnostic Accuracy in Post-Coronary Artery Bypass Graft Surgery Mortality

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The goal of this presentation is to demonstrate the medical and legal value of autopsy in non-forensic deaths, specifically those occurring after coronary artery bypass graft surgery.

This presentation will impact the forensic community and/or humanity by examining the value of performing autopsies in post-surgical deaths. The commonly held view amongst clinicians is that autopsies are of value for plaintiffs in medical malpractice suits. This paper shows that the autopsy can answer questions and provide valuable information on surgical technique, thereby decreasing the chances of litigation.

This presentation compares the accuracy of clinical diagnoses in post-coronary artery bypass grafts (CABG) mortalities to those made via postmotrem diagnosis.

In accordance with relevant Australian legislation, all deaths within 24 hours of surgical anesthesia must be reported to the coroner. As part of this notification, detailed medical, surgical and anesthetic information is provided, medical charts are perused and a postmortem examination is conducted. Clinicians who treated the decedent are required to provide an opinion on the likely cause of death prior to being informed of the autopsy findings. The autopsy pathologist is therefore in an ideal position to ascertain the accuracy of clinical diagnoses after a comprehensive postmortem examination is performed.

A total of 140 deaths within 24 hours of CABG surgery were identified in the Department of Forensic Medicine in Central Sydney, Australia database spanning an 8 year period between 1996 and 2003. Of these, detailed information was available in 134 cases. Comprehensive autopsies, including histology, and–where relevant–toxicology and a range of other investigations, were conducted in all cases. Deaths were examined from seven hospitals, and all hospitals providing a cardiac surgery service in the Department's geographic coverage area were represented.

At autopsy, 23% of cases demonstrated clear discordance between clinical and pathological diagnoses. These deaths occurred despite intensive care monitoring, which presumably supplies exceptional vigilance in post-surgical care. Commonly misidentified conditions included pump failure, peri-surgical myocardial infarction, aortic dissection, and arrhythmia. Clinicians were more likely to diagnose acute myocardial infarction than autopsy pathologists. Errors in cause of death formulation were identified in the vast majority of cases on the basis of gross pathological findings, with histologic examination being of assistance in supporting the diagnosis rather than identifying a different or additional cause of death. Though there is a significant rate of diagnostic error in determining cause of death in post-CABG deaths, fewer than 1% of study deaths were a result of surgical error. The single error identified was a case of iatrogenic rupture of the iliac artery.

Hospital autopsy rates have fallen from a high of 30-40% in the 1960s to single digit rates today. This precipitous decline represents a myriad of lost opportunities to improve post-surgical outcomes. A reason frequently given for the decline in autopsy rates is a fear that the autopsy could be used as a tool to assist the plaintiff's attorney in malpractice litigation. Studies like this one suggest the opposite. Not only are autopsies an important clinical and post-surgical audit tool, but helpful in minimizing uncertainty in relation to possible errors in clinical management and surgical technique. The findings of this study suggest that the postmotrem examination is far more likely to shield a clinician from liability than to expose technical mistakes.

Autopsy, CABG Surgery Deaths, Postmortem Diagnosis

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