



Pathology Biology Section – 2010

G41 Classification of Asphyxia: The Need for Standardization

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After attending this presentation, attendees will better understand the lack of uniformity in the classification of asphyxia and the need for standardization.

This presentation will impact the forensic science community by proposing a unified system of classification of asphyxia.

Introduction: Asphyxial deaths are common in forensic practice. Unfortunately, the classification of asphyxia and the definition of its subtypes are far from being uniform, varying widely from one textbook to another and from one paper to the next. This presentation will begin by summarizing the definitions that are currently described in the literature and highlighting their discrepancies. An attempt will then be made to draw on the mainstream definitions to create a unified system of classification.

Classification and definition of types of asphyxia in the literature: A comprehensive review of the different classifications of asphyxia found in the literature will be presented as well as a thorough compilation of definitions of each term. From this complete review, the most widely accepted views will be drawn. The following recommendations will be discussed, with their underlying rationale:

a) *Unified classification model:* It is proposed that asphyxia should be classified into four main categories: suffocation, strangulation, mechanical asphyxia, and drowning. Suffocation subdivides into smothering, choking and confined spaces/ entrapment/ vitiated atmosphere. Strangulation includes three separate forms: manual, ligature and hanging. Mechanical asphyxia encompasses positional as well as traumatic asphyxia.

b) *Suffocation:* Some authors confusingly use this term synonymously with smothering. Considering the lack of specificity of this term, its use is strongly discouraged in death certificates and requires replacement with a more precise descriptor.

c) *Smothering and choking:* There is no consensus as to the anatomical landmark serving as a boundary between these entities. The epiglottis is proposed as a standardized anatomical landmark. If confronted with an obstruction extending above as well as below the epiglottis, it is recommended to use the lowest level of airway obstruction in classifying the case.

d) *Mechanical asphyxia:* Mechanical asphyxia has been defined by different authors as either a specific entity characterized by restriction of respiratory movements by external pressure on the chest or abdomen or as a broad term encompassing several types of asphyxia caused by various mechanical means. To avoid confusion, it is recommended to keep the phrase mechanical asphyxia as a specific term to designate asphyxia by restriction of respiratory movements.

e) *Strangulation and hanging:* The classification of hanging is controversial: several authors consider hanging to be a type of strangulation or a subtype of ligature strangulation, whereas other authors consider strangulation and hanging as different entities. It is recommended that hanging should be regarded as a type of strangulation, along with manual and ligature strangulation. Some authors believe that accidental hanging can also occur without a ligature: it is however recommended to restrict the appellation of hanging for cases involving some type of ligature tightened by the weight of the body. Furthermore, it is recommended that all asphyxial deaths caused by external pressure on the neck structures should be labeled strangulation and terms such as positional asphyxia should be avoided in these circumstances. If a strangulation does not fall into the category of manual, ligature or hanging it should be labeled as strangulation NOS (not otherwise specified).

f) *Drowning:* It is recommended that drowning should be included in the forensic classification of asphyxia. However, this inclusion does not necessarily mean that the entity should be discussed in the chapter of asphyxia in textbooks or formal teaching. A better approach would be to include drowning in the classification of asphyxia but discuss it further in the context of the investigation of bodies recovered in water.

Conclusion: At this point in time, there is so much variation in the classification and definitions of terms that research and practice are inevitably tainted by confusion. Unfortunately, similar research designs can lead to totally different results depending on the definitions used. Closely comparable cases are called differently by equally competent forensic pathologists. The proposed unified model in this study was designed in an effort to standardize the classification of asphyxia in the forensic context.

Forensic Pathology, Asphyxia, Classification