



## H41 The Petechiae Enigma—Manual Strangulation in the Absence of Petechiae

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**Learning Overview:** After attending this presentation, attendees will have a better understanding of the medical findings in manual strangulation, specifically including that petechial bleeds are neither diagnostic nor required for the diagnosis.

**Impact on the Forensic Science Community:** This presentation will impact the forensic science community by reinforcing that petechial bleeds are not diagnostic nor are they required for the diagnosis of manual strangulation.

Asphyxial deaths come in many forms at all stages of the respiratory process from the environmental content (environmental asphyxia) to the carriage of oxygen (choking) to the cardiorespiratory system for delivery (strangulation/hanging) to the cell for ultimate consumption (biochemical). Strangulation occurs by two major modes: manual and ligature. Both involve impingement on these processes, most always by means of vascular compromise.

Among the many findings which may be present in strangulation cases, damage to the hyoid bone and/or thyroid cartilage may be considered by the unfamiliar to be pathognomonic of manual strangulation and their presence required to make the diagnosis. Pathologists are well-versed in the meticulous dissection and observation required to document not only the presence or absence of such findings but also the many other findings which may be present, or absent, in manual strangulation. Petechial bleeds, especially those of the conjunctiva, are considered by many to be the *sine qua non* of strangulation—especially manual strangulation.

Common features referenced as “expected findings” in cases of manual strangulation include strap muscle bleeds, hyoid fractures, laryngeal fractures, facial petechiae, conjunctival petechiae, mucosal petechiae, and external neck trauma (inflicted contusions and/or abrasions and/or fingernail marks). In some forms of neck compression (i.e., the carotid sleeper hold also known as the Lateral Vascular Neck Restraint [LVNR]), the surface used is so broad that external and internal direct trauma is minimized as it is dissipated over larger areas. Since this force is applied lower and more broadly on the neck, observable damage to the bony and cartilaginous structures (including the airway) is not expected. Since this means of asphyxiation results in a rapid loss of consciousness, there is little time for struggle to result in secondary injuries. Properly applied, the LVNR would not be expected to produce many, if any, petechial bleeds.

While common in most strangulations, petechial bleeds may be inconspicuous or even absent in some types of strangulation and vascular constriction of the neck, such as the carotid sleeper hold. It takes very little pressure to occlude the venous return to the heart via the jugular veins and only slightly more to occlude the arterial supply via the carotid arteries. The net result is that, under the “right” circumstances, minimal-to-no directly observable damage may be expected at the site(s) of injury in such cases. If applied briefly, the LVNR can cause loss of consciousness and death within minutes or less. If released prior to death, the result of a properly applied LVNR may be strangulation with no documentable findings.

Through a series of cases of manual strangulation involving the carotid sleeper hold, this presentation will document the relative paucity of trauma that may be associated with such deaths.

The danger is that the novice or one speaking outside their area(s) of expertise may misinform the arbiter of fact by “eliminating” strangulation in subtle cases based on personal bias, misinformation, and misconceptions. In so doing, a practitioner may prevent truth in evidence by obfuscating relevant testimony. The net result being a miscarriage of justice.

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### Petechiae, Manual, Strangulation