# Accepted Manuscript


Response to “Hemodynamic consequences of restraints in the prone position in excited delirium syndrome”

Gary M. Vilke , MD Professor of Clinical Emergency Medicine Theodore C. Chan , MD Davut Savaser , MD Tom Neuman , MD

PII: S1752-928X(14)00090-0

DOI: 10.1016/j.jflm.2014.05.003

Reference: YJFLM 1032

To appear in: *Journal of Forensic and Legal Medicine*

Please cite this article as: Vilke GM, Chan TC, Savaser D, Neuman T, Response to “Hemodynamic consequences of restraints in the prone position in excited delirium syndrome”, *Journal of Forensic and Legal Medicine* (2014), doi: 10.1016/j.jflm.2014.05.003.

We thank Dr. XX for his interest in our study. We apologize for the length of our response, but Dr. XX's letter is nearly the length of the original manuscript with as many references.(1) One could make the case that the letter might be appropriate as an original journal submission, but because the author relies on speculative theories supported predominantly by isolated case reports of questionable applicability and no true experimental literature, as well as the fact that the author mischaracterizes many of his cited references, it is highly doubtful that Dr. XX's letter would ever survive peer review.

To start, Dr. XX states "Continuous chest compression may be innocuous… or may result in cardiorespiratory arrest…as shown by Burke and Hare", referring to the notorious 19th century pair who murdered very intoxicated individuals for the purpose of supplying anatomic specimens for the local medical school in Edinburgh, Scotland. Dr. XX has fallen victim to the misperception that "burking" refers to an asphyxial death by chest compression. In actuality, Burke's own confession indicates quite the opposite and that victims were "burked" by suffocation, not by some form of compressional asphyxia. In his confession, Burke reports using pillows or hands to cover the nose and mouth of unconscious intoxicated *supine* victims to suffocate them and that "…they lay across the body at the same time…it was not done for the purpose of preventing the person from breathing, but was only done for the purpose of keeping down the person's arms and thighs, to prevent the person struggling."(3) It is disappointing that Dr. XX did not review the historical record to more accurately portray the details of this case and furthermore it seems quite inappropriate to even compare an excited struggling individual with "superhuman strength" and a victim who is comatose from alcohol intoxication.

Dr. XX also mischaracterizes other references often leaving out key details in the experimental studies he uses to support speculative theories. For example, in discussing compressive chest forces, the author references a study of an experimental device that increased peak force over the chest by 680% over manual compression and "resulted in a right atrial peak pressure of 83 + 40 mmHg."(4) Clearly the more pressure applied to the chest the greater the peak pressure. However Dr. XX does not mention that this device which applied pressure "over a large surface area of the chest" was in reality a constricting band that went around the *entire* chest and was specifically "programmed to provide a consistent 20% reduction in the anterior-posterior dimension of the chest during the compression phase". This circumferential constrictive band is entirely different than the downward vectors of force created by a knee in the back of a prone struggling subject and has no applicability to this type of scenario.

Dr. XX also states " pressure on the spine during surgery in the prone position may "markedly" obstruct right ventricular outflow tract (RVOT) in certain circumstances" citing a single case report as evidence. What Dr. XX fails to mention is that this case involved an adolescent with congenital scoliosis described as having marked narrowing of the anterior-posterior diameter of the chest.(5) More importantly however, is that although this patient did indeed have a significant decrease in RVOT diameter with weight applied and a reduction in flow in the prone position, this occurred *only* when the patient was positioned with transverse bolsters. When the patient was positioned prone with longitudinal bolsters, the authors "found appreciably less impact to the RVOT, RV