The Rap Sheet on Restraints

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Lawsuits

Handcuffs and other restraints are used to ensure the safety of the detained, ensure the safety of the officer, and provide control over the detained. Handcuffing that causes injury is gaining awareness in the media and – in some cases – has resulted in significant lawsuits. Consider the news article headline below: a man suffered nerve damage as a result of officers refusing to loosen handcuffs. Cases like these are becoming more prevalent in the media.

HANDCUFF SUIT NETS $303,000 MAN ARREST DAMAGED HANDS

By MIKE FOLKS, Staff Writer

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A jury on Friday awarded $303,000 to a man who said sheriff's deputies caused nerve dar wrists by refusing to loosen handcuffs after a 1990 arrest in Boca Raton.

The Palm Beach County Circuit Court jury deliberated for four hours before finding the Palm B Sheriff's Office guilty of negligent handcuffing.

Handcuff Anatomy

Handcuffs are permitted for use when someone is suspected of a violent crime, when someone has a known history to be violent, and an officer has reason to believe it is necessary. While handcuffs are appropriate for gaining control over a suspect, certain measures must be taken to ensure handcuffs do not cause harm.

Typically, handcuffs are made by two steel plates that are riveted together and have ratchet teeth to tighten to a subject's wrist. Once handcuffs are applied, they cannot be loosened unless a key or metal shiv is inserted. By inserting a key to loosen a handcuff, it poses risk to an officer. There is a chance the handcuffs can loosen too much, allowing the detained to escape. However, handcuffs can be tightened further after they are applied, unless a double locking mechanism is engaged. Failure to engage the double lock can result in inadvertent tightening, leading to nerve compression injuries. Handcuff-related injuries, such as nerve damage, are not uncommon.

Background

Overly tight handcuffs or movements by the detainee can cause the plates to compress blood vessels and nerves. The superficial radial nerve is particularly susceptible to compression as it runs along the outside of the radius bone at the wrist (Richmond and Fligelstone, 1988; Scott et al., 1989). Handcuff neuropathy due to prolonged compression results in numbness in the fingers, which can impair dexterity, and the ability to detect harmful situations like touching sharp objects or burning heat. Severity of nerve damage is related to handcuff tightness, length of time under compression, and the intensity with which the detainee resists (Payne-James, 2016), which can lead to neuropathy, even if the handcuffs are correctly applied (Payne-James, 2016).

Tests demonstrated that constant compression of 60 mm Hg (approximately 1 PSI) pressure to a nerve can cause total functional loss after 150 minutes and that constant compression of even 30 mm Hg (approximately ½ PSI) reduces nerve function by 50% after 210 minutes (Szabo and Sharkey, 1993). Given this knowledge of how prolonged nerve compression affects nerve function, a study was commissioned to compare the risk of handcuff neuropathy with various handcuff designs. GTD Scientific Inc. was engaged to conduct the study.

Our Task

Since an individual of any gender or build might be placed in handcuffs, this study is designed to encompass a broad population: from a small female to a large male. Forearm models were constructed to simulate the two bones of the wrist for each category. A simulated nerve was created from a silicone tube pressurized with a fluid (mineral oil)

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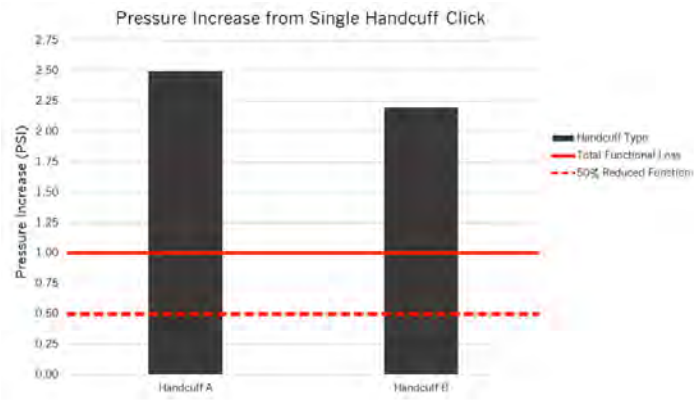
and connected to a pressure sensor. Two different styles of handcuffs were compared.

The handcuff was placed around the forearm-nerve model and the ratchet mechanism was engaged to tighten the handcuff. The increase in nerve pressure was monitored when advancing the ratchet. Once a firm "fit" was acquired, the amount of tightening required to obtain a fit that exceeded injury thresholds was negligible and – in some cases – a single click (see figure).

Findings

Once the handcuff was fitted firmly to the model, the increase in pressure for tightening a single click of the ratchet system was significant, roughly 130 mm Hg (approximately 2.5 PSI) for the first handcuff type and 115 mm Hg (approximately 2.2 PSI) in the second handcuff type presented in the lower figure. These pressures are both well above the values shown to produce total loss of function in a nerve when applied over a prolonged period (Szabo and Sharkey, 1993).



Who to Blame?

These findings establish an understanding that there is a certain level of training that officers must have to ensure the safety of the detained. Officers should always engage the double locking mechanism to prevent further tightening of handcuffs, and ensure that handcuffs are applied correctly. With equal amount of weight, those who are detained must take a certain level of responsibility for their safety by complying with an officer's commands and refraining from struggling and other motions they may attempt to free themselves from handcuffs. Excess struggling may cause swelling thus elevating any risk of damage. Considering current handcuff designs and future design improvements may also reduce the chance of injury. Police departments investing in safer handcuff designs will better relationships with officers and the public and ultimately encourage safety overall.

Works Cited

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