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Efficacy of tourniquets exposed to the afghanistan combat environment stored in individual first aid kits versus on the exterior of plate carriers.

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Abstract

Between February and May 2010, 1st Battalion, 6th Marines reported a 10% (10/92) breakage rate for tourniquets. One theory suggested was that tourniquets were weakened by exposure to the Afghan environment. Our study was designed to compare three groups of Afghanistan-exposed tourniquets to unexposed tourniquets. The three experimental arms were: (1) Afghan-exposed tourniquets worn on the plate carrier, (2) Afghan-exposed tourniquets carried in the Individual First Aid Kit (IFAK) and wrapped in manufacturer plastic wrapping, and (3) Afghan-exposed tourniquets carried in the IFAK with the manufacturer plastic wrapping removed. The outcome measures of this study were efficacy, breakage, and number of turns required to successfully stop the distal pulse. Tourniquets worn on the plate carrier had an efficacy of 57%, which was significantly lower than the control efficacy rate of 95.2%. When compared to the control arm, there were no significant differences in efficacy between the tourniquets stored in the IFAK with or without manufacturing packaging. No control tourniquets or tourniquets stored in IFAKs broke; however, 46 (12%) of the plate carrier-exposed tourniquets did break. No statistically significant differences were found between the four groups with regard to the median number of turns required to stop the distal pulse.

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