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Survival with emergency tourniquet use to stop bleeding in major limb trauma.

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Abstract

OBJECTIVE: The purpose of this study was to determine if emergency tourniquet use saved lives.

SUMMARY BACKGROUND DATA: Tourniquets have been proposed as lifesaving devices in the current war and are now issued to all soldiers. Few studies, however, describe their actual use in combat casualties.

METHODS: A prospective survey of injured who required tourniquets was performed over 7 months in 2006 (NCT00517166 at ClinicalTrials.gov). Follow-up averaged 28 days. The study was at a combat support hospital in Baghdad. Among 2,838 injured and admitted civilian and military casualties with major limb trauma, 232 (8%) had 428 tourniquets applied on 309 injured limbs. We looked at emergency tourniquet use, and casualties were evaluated for shock (weak or absent radial pulse) and prehospital versus emergency department (ED) tourniquet use. We also looked at those casualties indicated for tourniquets but had none used. We assessed survival rates and limb outcome.

RESULTS: There were 31 deaths (13%). Tourniquet use when shock was absent was strongly associated with survival (90% vs. 10%; $P < 0.001$). Prehospital tourniquets were applied in 194 patients of which 22 died (11% mortality), whereas 38 patients had ED application of which 9 died (24% mortality; $P = 0.05$). The 5 casualties indicated for tourniquets but had none used had a survival rate of 0% versus 87% for those casualties with tourniquets used ($P < 0.001$). Four patients (1.7%) sustained transient nerve palsy at the level of the tourniquet. No amputations resulted solely from tourniquet use.

CONCLUSIONS: Tourniquet use when shock was absent was strongly associated with saved lives, and prehospital use was also strongly associated with lifesaving. No limbs were lost due to tourniquet use. Education and fielding of prehospital tourniquets in the military environment should continue.

Comment in

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