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Practical use of emergency tourniquets to stop bleeding in major limb trauma.

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Abstract

BACKGROUND: Previously we showed that tourniquets were lifesaving devices in the current war. Few studies, however, describe their actual morbidity in combat casualties. The purpose of this study was to measure tourniquet use and complications.

METHODS: A prospective survey of casualties who required tourniquets was performed at a combat support hospital in Baghdad during 7 months in 2006. Patients were evaluated for tourniquet use, limb outcome, and morbidity. We identified potential morbidities from the literature and looked for them prospectively. The protocol was approved by the institutional review board.

RESULTS: The 232 patients had 428 tourniquets applied on 309 injured limbs. The most effective tourniquets were the Emergency Medical Tourniquet (92%) and the Combat Application Tourniquet (79%). Four patients (1.7%) sustained transient nerve palsy at the level of the tourniquet, whereas six had palsies at the wound level. No association was seen between tourniquet time and morbidity. There was no apparent association of total tourniquet time and morbidity (clots, myonecrosis, rigor, pain, palsies, renal failure, amputation, and fasciotomy). No amputations resulted solely from tourniquet use. However, six (2.6%) casualties with eight preexisting traumatic amputation injuries then had completion surgical amputations and also had tourniquets on for >2 hours. The rate of limbs with fasciotomies with tourniquet time \leq 2 hours was 28% (75 of 272) and >2 hours was 36% (9 of 25, $p = 0.4$).

CONCLUSIONS: Morbidity risk was low, and there was a positive risk benefit ratio in light of the survival benefit. No limbs were lost because of tourniquet use, and tourniquet duration was not associated with increased morbidity. Education for early military tourniquet use should continue.

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