



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Extremity Injury Management

Comparing Immediate and Delayed Deployment-related Amputations

Extremity injuries comprise the largest proportion of injuries resulting from the conflicts in Iraq and Afghanistan. While advancements in medical care and technology have made limb salvage efforts possible, many extremity injuries still progress to amputation, either immediately (within the first 24 hours) or later as a result of failed limb salvage. To further explore amputation timing and why some extremity injuries proceed to delayed amputations and others do not, researchers at the Naval Health Research Center (NHRC; San Diego, CA) queried the Expeditionary Medical Encounter Database (EMED), a repository for deployment-related medical encounter information, for all major amputations (those of partial hand or foot and greater) from 2001 to 2017. Descriptive statistics were calculated to assess differences in characteristics between Service members with immediate or delayed amputations.

A total of 1,705 Service members with deployment-related amputations were identified from 2001 to 2017. Nearly three-quarters of this population sustained at least one immediate amputation ($n = 1,241$), while the remaining 464 (27 percent) sustained only delayed amputations. The groups differed in relation to the mechanism of injury, with 94 percent of the immediate group being injured by blast mechanism compared with 80 percent of the delayed group ($p < .001$). Gunshot wounds were more common in Service members with delayed amputations, at 11 percent compared to two percent of the immediate group ($p < .001$). The percentage of Service members injured in a non-battle injury was also twice as high in the delayed group, at six percent compared to three percent ($p < .005$). Groups also differed in regard to posture. Forty-four percent of individuals who underwent an immediate amputation were mounted in a vehicle at the time of injury compared to 62 percent of individuals with only delayed amputations ($p < .001$). In addition, those with an immediate amputation had a significantly higher mean injury severity score (ISS) than the delayed group (20.1 vs. 14.6, $p < .001$). Differences in amputation sites were also observed between the groups. Transtibial amputations were the most common lower extremity amputation site, accounting for 77 percent of delayed lower extremity amputations compared with only 45 percent of immediate lower extremity amputations. In the upper extremities, transradial amputations were the most common in both groups, representing 57 percent of delayed upper extremity amputations but only 34 percent of immediate upper extremity amputations.

Using these findings, appropriate care and sufficient support for injured Service members can be planned and delivered to address their current and future needs.

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