Good outcomes with multiple limb salvage after severe combat injuries

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For survivors of severe combat injuries threatening more than one limb, reconstructive surgical procedures using tissue flaps have a good record of safety and effectiveness in avoiding amputation, reports a paper in the August issue of *Plastic and Reconstructive Surgery*, the official medical journal of the American Society of Plastic Surgeons (ASPS).

Experience with multiple limb salvage procedures in solders injured in Iraq and Afghanistan shows good success rates, with no increase in complications compared to single-flap techniques, report Dr. Ian Valerio of Walter Reed National Military Medical Center and colleagues.

Encouraging Results with Multiple Limb Salvage Procedures

The researchers analyzed limb salvage procedures in military personnel sustaining combat-related injuries to multiple limbs while serving in Iraq and Afghanistan. "Limb salvage" refers to surgical reconstruction carried out to avoid amputation and maximize functioning of the surviving extremity.

From 2003 through 2012, a total of 359 limb salvage procedures were performed at the National Capital Consortium. Of these, 48 procedures involved attempts to salvage two or more injured limbs. "Critical to each of the cases presented in our series was maintenance of residual limb length and a functioning joint (wrist joint and knee joint)," Dr. Valerio

and colleagues write.

The limb salvage procedures were performed an average of about one month after initial injury. About 90 percent of patients were injured by blasts from improvised explosive devices; about 60 percent of the threatened limbs were lower extremities (leg to foot). Injuries were more severe in the multiple-extremity salvage group, based on a standard scoring system.

Yet the overall complication rate was similar between groups: 26 percent for patients undergoing single-extremity salvage versus 33 percent in the multiple-limb group. This was so despite the use of additional tissue flaps for reconstruction in patients undergoing multiple-limb salvage.

With Improvements in Survival, Need for Advanced Reconstruction

The overall flap success rate was about 90 percent in both groups. Long-term amputation rates were similar as well. Complications related to one type of tissue flap (free flaps) were higher in the multiple limb-salvage group.

Advances in forward surgical care have increased the survivability of severe blast-related combat injuries. "The conflicts in Iraq and Afghanistan have highlighted a unique group of patients surviving multiple extremity war injuries complicated by open fractures requiring complex reconstruction," according to Dr. Valerio and coauthors.

The new study is one of the first to focus on the outcomes of limb-salvage procedures in these severely injured patients. For patients who may have already lost one or more limbs, preservation of the remaining limbs is "even more critical" to facilitate early ambulation (walking) as

well as potentially optimizing rehabilitation and related activities of daily living goals after reconstruction, the authors note.

"Our experience supports limb salvage in the multiple extremity injured patients with avoidance of higher limb amputation levels, despite a higher injury severity score." Dr. Valerio and coauthors conclude. They hope their experience will contribute to further improving the outcomes of surgical reconstruction—and thus long-term rehabilitation and functioning—for survivors of severe and limb-threatening combat injuries.

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