

Are Geriatric Victims of High-Energy Trauma Likely to Return to Functional Independence?

I. Leah Gitajn, MD¹; Stephen Breazeale, BS¹; Peter Berger, BS¹; Carrie Schoonover, BS¹; Renan Castillo, MD²; Robert V. O'Toole, MD¹; Christina Boulton, MD¹

¹RA Cowley Shock Trauma Center, University of Maryland School of Medicine, Baltimore, Maryland, USA

²John Hopkins Bloomberg School of Public Health, Baltimore, Maryland, USA

Background/Purpose: As our population ages and the elderly maintain independent function later in life, the frequency of geriatric high-energy trauma is increasing. While low-energy trauma has been studied extensively in this population, there are no studies evaluating functional outcomes after high-energy trauma in the elderly. The purpose of this study was twofold: (1) to determine the mobility and physical function after geriatric high-energy trauma and (2) to compare physical function after high-energy trauma to that of age-adjusted norms after geriatric low-energy trauma. Our hypothesis was that a high-energy trauma mechanism would lead to more severe injury and poorer functional outcomes.

Methods: Patients studied presented to a single Level I trauma center from 2004-2009 with age >65 years and pelvic or lower extremity fracture caused by a high-energy mechanism (fall from height, MVC [motor vehicle collision], MCC [motorcycle collision], pedestrian struck). Patient chart review was performed to identify pertinent demographic, patient, and injury factors. Patient pre- and postinjury ambulatory status and living situation were then collected via telephone from either patients or their primary caregiver. The Patient Reported Outcomes Measurement Information System (PROMIS) was also used to assess physical function. Each PROMIS Physical Function question is a validated instrument in which higher scores indicate higher physical function and the population mean is 50. 536 patients with high-energy pelvis and lower extremity fractures were identified. In-hospital mortality was 7% (38 patients). For those who did not expire in the hospital, 1-year mortality was 5% (26 patients) and 5-year mortality was 20% (100 patients). Over half of patients, 308 (57%), were still alive at the time of the study. Of these, 105 were able to be reached by telephone. Eight patients declined participation and 97 patients were enrolled and made up the study group with average follow-up of 8.8 years (SD 1.7 years). 50% had 2 or more fractures, and the average ISS = 16. Prior to their injury all patients were able to mobilize outdoors.

Results: Currently, 91 patients (94%) are able to mobilize outdoors; however, 37% now require an assistive device compared with 1% preinjury. A small number of patients (4%) are now limited to walking indoors or require a wheelchair for mobilization (2%). Of the 97 patients analyzed, only 12 patients (12%) transitioned from living independently to needing assistance at home, and 4 patients (4%) required permanent residence in a skilled nursing facility (see table). In comparison, historical data show elderly patients with low-energy proximal femur fractures return to prefracture level of mobility only 40% of the time and one in four fails to regain sufficient independence to remain in their own home. The average PROMIS Physical Function score in our study group was 41 (SD 9.6), which compares favorably to age-matched US population 45.1 (age 65-74 years, mean 46.3 [SD 8.4] and age ≥75 years, mean 45.1 [SD 7.8]).

Conclusion: Contrary to our initial hypothesis, geriatric victims of high-energy trauma recover surprisingly well from their injuries. Their physical function approaches that of age-adjusted norms and is markedly superior to patients of similar age injured in low-energy mechanisms. Although many patients had a moderate decrease in functional status such as the addition of an assistive device, the vast majority maintained the ability for independent living (74%) and community ambulation (94%). Better functional outcomes despite higher injury severity suggest that elderly victims of high-energy trauma may represent a more robust subset of the elderly than those who are victims of low-energy trauma. This information is important in the counseling of patients and families following high-energy injury and can be used to guide expectations during rehabilitation.

TABLE 1: Functional Outcomes

		All patients
Pre-injury mobility		
	Mobilizes outdoors independently	96 (99%)
	Mobilizes outdoors with assistive device	1 (1%)
	Limited to walking indoors with assistive device	0
	Unable to walk	0
Current mobility		
	Mobilizes outdoors independently	55 (56%)
	Mobilizes outdoors with assistive device	36 (37%)
	Limited to walking indoors with assistive device	4 (4%)
	Unable to walk	2 (2%)
Pre-injury living arrangement		
	Nursing facility	1 (1%)
	Home with adult children	18 (19%)
	Home with spouse	54 (56%)
	Home alone	24 (25%)
Current living arrangement		
	Nursing facility	5 (5%)
	Home with adult children	20 (21%)
	Home with spouse	48 (49%)
	Home alone	24 (25%)

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.