

# The Tragically Hip Trauma in Elderly Patients



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## KEYWORDS

• Elderly • Falls • Trauma • Geriatric

## KEY POINTS

- Geriatric trauma is different in terms of mechanisms of injury and injuries sustained, which leads to delays in diagnosis and treatment.
- In the geriatric patient, low-impact trauma can be associated with severe injury.
- Elderly trauma patients can have good outcomes with high quality of life, with early interventions and prevention of complications.
- Standard trauma care is based on evidence where the elderly are underrepresented.

## WHAT IS GERIATRIC TRAUMA AND WHY DOES IT MATTER?

Trauma is traditionally considered a disease of young men after motor vehicle collisions and interpersonal violence. The acute trauma chain of care has been organized to identify and transport the severely injured patient to high-level trauma centers for life-saving interventions. This strategy has been highly effective, positively impacting the traditional trimodal distribution of mortality (immediate, early, and late) through early recognition and treatment of life-threatening conditions to reflect fewer early and late deaths.<sup>1</sup>

Just as trauma care evolves, so does the population of traumatically injured patients. As life expectancy increases, geriatric patients are more likely to suffer significant injuries later in life. The typical geriatric trauma patient, however, is distinctly different from the typical young and healthy male involved in high risk activities. Geriatric trauma patients are more likely to be female, have multiple comorbidities, and be described as “frail”: a biologic syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems. Frailty is a condition that requires a multidisciplinary team effort to prevent

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deterioration and adverse outcomes after injuries or illnesses that would not otherwise pose serious health threats to nonfrail patients.<sup>2</sup>

The frail geriatric patient who has fallen from standing does not succumb to exsanguination during the golden hour of trauma, but rather dies of pneumonia in the recovery phase or enters the trajectory of rapid functional decline after a hip fracture.

Elderly patients with both low- and high-energy trauma are less likely than younger patients to be sent to a trauma center,<sup>3</sup> despite their higher rates of poor outcomes. New recommendations attempt to address this discrepancy by directing more elderly patients to advanced trauma care. To optimize outcomes, accurate risk stratification, evidence-based treatment options, and clear goals of care are needed. Even among elderly patients, different priorities exist depending on age, frailty, and mechanism of injury. The 94-year-old nursing home patient who fell out of bed is distinctly different from the 67-year-old motorcyclist injured in a crash, even though they both may have sustained life-threatening injuries.

### **AGE AS A RISK FACTOR IN TRAUMA: WHEN DO YOU GET OLD?**

Several studies have shown that trauma in the geriatric population is associated with increased acute and long-term mortality.<sup>4–10</sup>

Advancing age is an independent predictor of mortality after trauma; however, there is no well accepted threshold or cutoff for what constitutes a “geriatric” patient<sup>11</sup> nor is there a definite cutoff that accurately predicts outcome. Various age values have been proposed, ranging between 45 and 80.<sup>11</sup> Adams and colleagues<sup>4</sup> found that age 45 years and older was associated with increased mortality after trauma, whereas Pandya and colleagues<sup>12</sup> found a significant increase in mortality among patients 55 years and older involved in motor vehicle collisions. Other studies found an increased mortality in patients older than 60 years<sup>13,14</sup> and 65 years of age.<sup>15</sup> In a cross-sectional study of 75,658 trauma patients, Caterino and colleagues<sup>16</sup> found a threshold value of 70 to 74 years for mortality rate stratified by Injury Severity Score (ISS). The range of cutoffs are more likely related to study limitations or statistical nuances than inherent differences among the study populations. These studies simply highlight the importance of advanced age on morbidity and mortality after trauma.

Interestingly, Friese and colleagues<sup>17</sup> found that the risk of death after injury is proportional to patient age until 84 years, after which the mortality rates actually decline. This trend may be related to survivor bias, whereby a greater proportion of those living past 84 years of age are in better health, contributing to this somewhat paradoxical finding. A study by Adams and associates<sup>18</sup> suggests that variance in mortality for younger and older trauma patients was minimal (4%–7%) after patients with active do not resuscitate orders were excluded from analysis.

### **THE ELDERLY ARE NOT JUST OLD ADULTS: FRAILITY AS A RISK FACTOR**

Elderly patients have a higher incidence of medical comorbidities and lower physiologic reserves, increasing their susceptibility to even minor trauma.<sup>19,20</sup> In fact, age may be an overly simplistic measure to understand outcomes in geriatric trauma patients and better predictor may be the degree of frailty.<sup>1</sup>

Frailty is composed of both the degree of loss of physiologic reserve and increased incidence and severity of comorbid disease.<sup>21</sup> Biologically, this translates to musculoskeletal, neuroendocrine, nutritional, and immunologic defects that contribute to a physical state of muscular weakness and other functional impairment.<sup>21,22</sup>

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